CA MICS® Resource Management

Analyzer Option for MeasureWare Guide

Release 12.9

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Chapter 1: CA MICS ANALYZER FOR MEASUREWARE

As the number of management information systems installations using UNIX systems continues to grow, the need to systematically plan, control, and evaluate the environment is becoming increasingly important.

CA has responded to this need by developing the CA MICS Analyzer for MeasureWare (referred to as MW OS Agent Analyzer), a data integration application that is part of the CA MICS product suite. Like other data integration applications, the MW OS Agent Analyzer processes raw data for analyzing and managing specific technologies.

The MW OS Agent Analyzer uses data from Hewlett-Packard's MeasureWare (renamed by HP to OpenView) Agent's logglob, logappl, logproc, logdev, and logtran files to populate the CA MICS database's UNIX information area (AUM). Because this data is stored in the CA MICS database in a format common to all CA MICS products, you can use standard CA MICS facilities to integrate MW OS Agent Analyzer data with any other CA MICS management support applications such as financial and capacity management.

CA MICS offers online data access through the CA MICS Information Center Facility (MICF), which is a full-screen, menu-based processor that allows you to perform data analysis, inquiry, retrieval, and report functions.

The MW OS Agent Analyzer provides color graphics reports, using MICF, that enable you to combine data from multiple UNIX systems and to report on global system performance and workload, process activity, interesting processes, disks, and the profile of your system and its configuration.

This section contains the following topics:

1.1 Primary Areas of Application

The CA MICS Analyzer for MeasureWare (MW OS Agent Analyzer) provides data and reporting capabilities that aid in managing your UNIX environment in the following areas:

- Capacity Planning - The MW OS Agent Analyzer maintains a database of historical MeasureWare usage and performance data. This information can be used for growth and trend projections at both the system and organizational unit (such as division or department) levels.

- Performance Management - The MW OS Agent Analyzer enables you to examine and analyze specific workloads so you can optimize your resources. This information can be used for monitoring system behavior on a routine basis, investigating user reports of degraded performance, performing system tuning, and assessing the effects of changing system software and hardware configurations.

- Accounting and Chargeback - A standard interface to CA MICS Accounting and Chargeback enables you to use the Analyzer's UNIX Application Performance and UNIX Process Activity files to bill for UNIX system use. This data includes CPU time, I/O counts, and other resource usage information.

- Service Level Management - The MW OS Agent Analyzer enables you to use its data to create and maintain service level agreements (SLAs). Creating SLAs and reporting on the success of IS in meeting them requires that application data be in an easily accessible format. The Analyzer accomplishes this by combining data into user-specified groups (such as accounts payable) to provide consolidated reporting on SLA achievement.

- Management and Analytical Reporting - The MW OS Agent Analyzer enables you to group and summarize information directly from the CA MICS database to create useful ad hoc management and analytical reports. CA MICS facilities allow resummarization when the data in the CA MICS database does not address specific reporting needs.

1.2 Reporting and Inquiry Facilities

The MW OS Agent Analyzer enables you to use the MICF and standard SAS language interfaces to create ad hoc reports. CA MICS provides these interactive capabilities, which enable you to quickly respond to complex requests, so that you have the information you need to manage your IS organization each day. These capabilities are provided by:

- MICF--MICF is a panel-oriented productivity tool that helps you to access information in the CA MICS database. When you define input, selection criteria, and report options, MICF dynamically builds an inquiry program that executes in either interactive or batch mode. Then, depending on your specific requirements, MICF either prints the inquiry report, displays the results at your terminal, or catalogs the results for later viewing.

- The Standard SAS Language Interface--The CA MICS Workstation Facility (MWF) provides an online environment that supports the standard SAS language interface in both interactive and batch modes. SAS allows easy data manipulation and statistical analysis and provides coding facilities for programmers who are conducting extensive analysis efforts or designing new reports for IS business applications.

1.3 Files Overview

The MW OS Agent Analyzer builds the UNIX information area. Once created, this information area maintains system and user workload and utilization data.

File	Contents and Use
UNIX Global System Performance (AUMGPR)	Global system measurements; capacity, system load, and performance analyses
UNIX Application Performance (AUMAPP)	Interval-based measures; application use
UNIX Process Activity (AUMKPS)	Completed process measures; accounting and process analysis
UNIX Process Exception (AUMIPS)	Interesting process measures; performance and problem analyses; modeling
UNIX LAN Activity (AUMNIF)	Interval-based LAN measures; capacity analysis
UNIX Disk Activity (AUMDDA)	Global system measures; capacity analysis
UNIX System and Collector Profile (AUMMCF)	Global system measures; problem diagnosis, change tracking, reporting
UNIX Logical Volume Activity (AUMVLM)	Interval-based I/O and space measures; capacity analysis
UNIX Business Transaction SLO Activity (AUMTTA)	Interval-based business transaction measures; service level analysis

1.4 Product Prerequisites

The CA MICS Analyzer for MeasureWare runs in a CA MICS environment that operates under z/OS.

The data for the Analyzer comes from HP MeasureWare for HP-UX Systems (HP-UX). The Analyzer supports:

Your Environment and Release	scopeux Release
HP-UX 9.0	B.02.02
HP-UX 10.0	B.02.02
HP-UX 10.10 - 10.30	C.00.01
HP-UX 10.20 & 10.30	C.01.00 through C.02.15
HP-UX 10.20 & 11.0	C.02.30 through C.02.60
HP-UX 10.20, 11.0, and 11i	C.03.20 through C.03.50
HP-UX 11.0 & 11.11	C.03.58 through C.03.86

AIX 3.2	B.02.04
AIX 4.1.x and 4.2.x	B.02.19
AIX 4.3.1, 4.3.2, and 4.3.3	C.02.58 through C.03.15
AIX 4.3.2, 4.3.3, and 5L V5.1	C.03.40
AIX 4.3.2, 4.3.3, 5L V5.1 and V5.2	C.03.80
AIX 4.3.2, 4.3.3, 5L V5.1, V5.2, and V5.3	C.04.5

Solaris 2.5 & 2.5.1 (SunOS 5.4 & 5.6)	B.02.04
Solaris 2.5, 2.5.1, and 2.6 SunOS 5.4 and up	C.02.05 through C.02.06
Solaris 2.6, 7, and 8 SunOS 5.6 and up	C.02.53 through C.03.45
Solaris 2.6, 7, 8, and 9 SunOS 5.6 and up	C.03.75 and C.03.82

You may also want to consider installing SAS/GRAPH because some of the MICF inquiries distributed with the Analyzer use its facilities.

Chapter 2: ANALYZER USAGE GUIDELINES

The CA MICS Analyzer for MeasureWare provides:

- Repository management services for metrics from Hewlett-Packard's MeasureWare Agent Software, enabling you to manage your enterprise's UNIX system data using the same CA MICS techniques you use to manage MVS, VM, and VAX/VMS data

- Reports, using the CA MICS Information Center Facility (MICF), that enable you to manage the financial, capacity, and performance aspects of your enterprise's UNIX systems

This section contains the following topics:

2.1 Data Analysis

To help you better understand how to use the data provided by the Analyzer for MeasureWare, this section first presents information about the data available from UNIX systems. It then presents tables that help you choose CA MICS data elements for managing your systems.

About MeasureWare Metrics

Hewlett-Packard's MeasureWare Agent Software contains the following types of metrics:

o Global metrics report on system activity in 5-minute and user-defined summaries.

  The kinds of measures that comprise global metrics include:

  - CPU (usage at various priorities/modes)
  - disk (read and write rates; peak disk use)
  - networking (global LAN errors and collisions)
  - memory use, paging, and swapping
  - process queue length (CPU, memory, disk, network, IPC, and so on)
  - user and process workload
  - terminal transaction (rate and response time)
  - DCE server interface (completed operations, server errors, RPC response time)

o Application metrics capture data by user-defined applications, which are groups of processes.

  The kinds of measures that comprise application metrics include:

  - application identification (application number and name)
  - summary (CPU use during interval)
  - process count (numbers of processes)
  - terminal transaction (number of and rates of terminal transactions)
  - process wait (time spent in wait states)
  - CPU (usage for different reasons)
  - disk (read and write rates)
  - memory (virtual memory size, resident memory size)

- Process metrics capture data about each process (a process is similar to a transaction in MVS terminology). The kinds of measures that comprise process metrics include:

  - process identification (user name, interest codes)
  - process summary (runtime)
  - CPU (CPU use at various priorities/modes)
  - disk (read and write rates)
  - memory (page faults, resident set size, and virtual memory size)
  - terminal transaction (number of and rates of terminal transactions)
  - process wait (time spent in wait states)

- LAN metrics capture data about each network interface.

  The kind of measures that comprise LAN metrics include:

  - individual inbound and outbound packets, error and collision rates.

- Disk metrics capture data about each disk.

  The kinds of measures that comprise disk metrics include:

  - logical and physical disk I/Os, average queue length, disk utilization, disk space use

- Volume metrics capture data about each logical volume.

  The kinds of measures that comprise volume metrics include:

  - logical disk I/Os, disk space use

- Transaction metrics capture data about each business transaction tracked by HP Transaction Tracker.

  The kind of measures that comprise transaction metrics include:

  - defined parameters (transaction service-level objective, number of transaction bins, upper range response time for each bin)

  - transaction activity summary (the percent of transactions that violated service-level objectives,

completed and aborted transaction counts, transaction counts in various response time bins)

- Configuration metrics identify the system and collector on which the data was captured and the response time distributions and process thresholds established, among other measures.

  The kinds of measures that comprise configuration metrics include:

  - Record identification (date, time, length of measurement interval)

  - System and collector identification (system name, collector version, numbers of processors, disks, and LANs configured)

  - Interesting process thresholds (thresholds coded in the UNIX system's parm file)

Note: HP MeasureWare supports HP's Data Source Integration (DSI) package. The CA MICS Analyzer for MeasureWare does not support DSI data.

About the Analyzer for MeasureWare

The CA MICS Analyzer for MeasureWare helps you manage your UNIX environment by:

- Providing a common database for data from all of your UNIX systems

- Retaining UNIX system profile information

- Producing reports that enable you to compare data across UNIX systems and over time

The Analyzer helps you make the best use of computing resources by:

- Reporting on CPU usage and bottlenecks, and providing a detailed system performance summary

- Retaining data that you can use to develop your own reports

The Analyzer helps you analyze availability, response time, and throughput by:

- Reporting on LAN and disk traffic and transaction response
- Retaining data that you can use to develop your own reports

Analyzing UNIX Measurements

The tables in this chapter help you identify CA MICS elements useful for analyzing data by business area.

To analyze these measures ...	Use this table
Common Metrics	2-0
Global System	2-1
Application	2-2
Killed Process	2-3
Process Exception	2-4
LAN Activity	2-5
Disk Activity	2-6
Logical Volume	2-7
Transaction Tracker	2-8
System Configuration & Collector Profile	2-9

		COMMON METRICS		
HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
RECORD_TYPE	RTYPE	All Releases	All Releases	All Releases
DATE_SECOND	WRKTS	All Releases	All Releases	All Releases
INTERVAL	DURATION	All Releases	All Releases	All Releases
APP_SAMPLE	AUMSAMPL	All Releases	All Releases	All Releases
GBL_COLLECTOR	AUMSCOPE	All Releases	All Releases	All Releases
PROC_TTY	AUMLNTTY	All Releases	All Releases	All Releases
GBL_OSNAME	AUMOPSYS	All Releases	All Releases	All Releases
GBL_OSRELEASE	AUMOPSVR	All Releases	All Releases	All Releases
GBL_OSVERSION	AUMOPSLC	All Releases	All Releases	All Releases
GBL_MACHINE	AUMCPMDL	All Releases	All Releases	All Releases
APP_NAME	AUMAPU	All Releases	All Releases	All Releases
GBL_LOGFILE_VERSION	AUMLGVER	All Releases	All Releases	All Releases
APP_NUM	AUMAPNUM	All Releases	All Releases	All Releases
BYDSK_ID	AUMLDEV	All Releases	n/a	n/a
PROC_PROC_ID	AUMPIN	All Releases	All Releases	All Releases
PROC_PARENT_PROC_ID	AUMPPID	All Releases	All Releases	All Releases
PROC_GROUP_ID	AUMGRPID	All Releases	All Releases	All Releases
PROC_PRI	AUMPRI	All Releases	All Releases	n/a
PROC_PROC_NAME	AUMPROG	All Releases	All Releases	All Releases
PROC_USER_NAME	AUMUSER	All Releases	All Releases	All Releases
PROC_APP_ID	AUMAPNUM	All Releases	All Releases	All Releases
FS_DIRNAME	AUMDIRNM	C.02.60 and up	n/a	n/a

Table 2-0. Common Metrics

		GLOBAL METRICS			
Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
CPU Use					
	GBL_CPU_TOTAL_TIME	GPRCPUTM	All Releases	All Releases	All Releases
	GBL_CPU_USER_MODE_TIME	GPRUSRTM	All Releases	All Releases	All Releases
	GBL_CPU_REALTIME_TIME	GPRRTMTM	All Releases	n/a	n/a
	GBL_CPU_NICE_TIME	GPRNICTM	All Releases	n/a	n/a
	GBL_CPU_NORMAL_TIME	GPRNORTM	All Releases	n/a	n/a
	GBL_CPU_SYS_MODE_TIME	GPRSYSTM	All Releases	All Releases	All Releases
	GBL_CPU_CSWITCH_TIME	GPRCSWTM	All Releases	n/a	n/a
	GBL_CPU_INTERRUPT_TIME	GPRINTTM	All Releases	n/a	n/a
	GBL_CPU_SYSCALL_TIME	GPRSSCTM	All Releases	All Releases	All Releases
	GBL_CPU_WAIT_TIME	GPRPAUTM	n/a	All Releases	All Releases
	GBL_ACTIVE_CPU	GPRACCPU	C.02.65 and up	C.04.5 and up	C.02.05 and up
	** CALCULATED **	GPRCPUCP	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCCPU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCUSR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCNIC	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCNOR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCRTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCSYS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCCSW	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCINT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCSSC	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRNPROC	Check Derivation	Check Derivation	Check Derivation
Memory Use					
	GBL_MEM_SWAP	GPRSWPCT	All Releases	n/a	n/a
	GBL_MEM_PAGE_REQUEST	GPRPFLCT	All Releases	All Releases	All Releases
	GBL_MEM_PAGEOUT	GPRPGOCT	All Releases	All Releases	All Releases
	** CALCULATED **	GPRMMEMS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMMEMU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMEMUT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSWAPU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRACTVM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCHIT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSWOCT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCMEM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCMMS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCMMU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCAVM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPCSWS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSWPRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSWORT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPAGRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSHMSG	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSMEMS	Check Derivation	Check Derivation	Check Derivation

Table 2-1. Global System Data (Part 1 of 4)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Disk Use					
	GBL_DISK_PHYS_READ	GPRPRDCT	All Releases	All Releases	All Releases
	GBL_DISK_PHYS_WRITE	GPRPWTCT	All Releases	All Releases	All Releases
	GBL_DISK_PHYS_IO	GPRDSKIO	All Releases	All Releases	All Releases
	GBL_DISK_FS_READ	GPRDFRCT	All Releases	n/a	n/a
	GBL_DISK_FS_WRITE	GPRDFWCT	All Releases	n/a	n/a
	GBL_DISK_FS_IO	GPRFSDCT	All Releases	n/a	n/a
	GBL_DISK_VM_READ	GPRDMRCT	All Releases	All Releases	n/a
	GBL_DISK_VM_WRITE	GPRDMWCT	All Releases	All Releases	n/a
	GBL_DISK_VM_IO	GPRDMMCT	All Releases	All Releases	All Releases
	GBL_DISK_SYSTEM_READ	GPRDSRCT	All Releases	n/a	n/a
	GBL_DISK_SYSTEM_WRITE	GPRDSWCT	All Releases	n/a	n/a
	GBL_DISK_SYSTEM_IO	GPRFSMCT	All Releases	n/a	n/a
	GBL_DISK_RAW_READ	GPRDRRCT	All Releases	All Releases	All Releases
	GBL_DISK_RAW_WRITE	GPRDRWCT	All Releases	All Releases	All Releases
	GBL_DISK_RAW_IO	GPRRAWCT	All Releases	All Releases	All Releases
	GBL_DISK_BLOCK_READ	GPRDBRCT	n/a	All Releases	All Releases
	GBL_DISK_BLOCK_WRITE	GPRDBWCT	n/a	All Releases	All Releases
	GBL_DISK_BLOCK_IO	GPRDBKCT	n/a	All Releases	All Releases
	GBL_DISK_LOGL_READ	GPRLRDCT	All Releases	n/a	n/a
	GBL_DISK_LOGL_WRITE	GPRLWTCT	All Releases	n/a	n/a
	GBL_DISK_LOGL_IO	GPRLDKCT	All Releases	n/a	n/a
	GBL_DISK_PHYS_BYTE	GPRPKBCT	All Releases	All Releases	All Releases
	GBL_DISK_LOGL_READ_BYTE	GPRLRDKB	All Releases	n/a	n/a
	GBL_DISK_LOGL_WRITE_BYTE	GPRLWTKB	All Releases	n/a	n/a
	GBL_DISK_UTIL_PEAK	GPRMPBDU	All Releases	All Releases	All Releases
	GBL_DISK_TIME_PEAK	GPRMXDTM	All Releases	All Releases	All Releases
	GBL_FS_SPACE_UTIL_PEAK	GPRMPDSU	All Releases	All Releases	All Releases
	** CALCULATED **	GPRRDHIT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRDSKRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRDMRRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRDMWRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRDMMRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRDKLRT	Check Derivation	Check Derivation	Check Derivation
Networking					
	GBL_NET_IN_PACKET	GPRLPCKI	All Releases	C.02.58 and up	C.02.05 and up
	GBL_NET_OUT_PACKET	GPRLPCKO	All Releases	C.02.58 and up	C.02.05 and up
	GBL_NFS_CALL	GPRNFSCT	All Releases	All Releases	All Releases
	** CALCULATED **	GPRLCOLS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRLERRS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVLCL	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVLER	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRNFSRT	Check Derivation	Check Derivation	Check Derivation

Table 2-1. Global System Data (Part 2 of 4)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
User/Process Count					
	GBL_COMPLETED_PROC	GPRCPRCT	All Releases	All Releases	All Releases
	GBL_STARTED_PROC	GPRSPRCT	All Releases	All Releases	All Releases
	GBL_QUEUE_HISTOGRAM	GPRWAITQ	C.00.01 and up	All Releases	All Releases
	** CALCULATED **	GPRAVAPR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVPRO	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVUSR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVBIQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVRTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRRUNTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPROCT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAPRCT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRUSRCT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPTBLU	Check Derivation	Check Derivation	Check Derivation
Queue Length					
	GBL_NET_OUTQUEUE	GPROUTQU	C.02.00 and up	n/a	n/a
	** CALCULATED **	GPRAVCPQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVPRQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVMMQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVDKQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVIPQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVNTQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVSLQ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVSUS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSUSCT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRAVSWA	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSWACT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRCPQTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRPRITM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMMQTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRDKQTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRIPQTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRNTQTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSLQTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMQUSE	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMSGQU	Check Derivation	Check Derivation	Check Derivation
Identifying					
	GBL_PROC_SAMPLE	AUMSAMPL	All Releases	All Releases	All Releases

Table 2-1. Global System Data (Part 3 of 4)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
System Configuration			Check Derivation	Check Derivation	Check Derivation
			Check Derivation	Check Derivation	Check Derivation
	TBL_BUFFER_CACHE_AVAIL	GPRCACHE	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMXCPU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMXDSK	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMXLAN	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRCACHE	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMEMSW	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMEMSZ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRMEMUS	Check Derivation	Check Derivation	Check Derivation
System and Collector					
	GBL_SYSTEM_UPTIME_HOURS	GPRSUPTM	C.02.00 and up	n/a	C.02.05 and up
	GBL_TT_OVERFLOW_COUNT	GPROFLOW	C.02.00 and up	n/a	C.02.53 and up
	GBL_LOST_MI_TRACE_BUFFERS	GPRLOSTB	C.02.00 and up	n/a	C.02.53 and up
	TBL_INODE_CACHE_USED	GPRINODU	C.02.00 and up	n/a	C.02.53 and up
	TBL_BUFFER_CACHE_USED	GPRCHUSE	C.02.00 and up	n/a	n/a
	TBL_FILE_LOCK_USED	GPRLUSED	n/a	n/a	C.02.53 and up
Other Measurements					
	** CALCULATED **	GPRSCALL	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSCLRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSEMID	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRSEMST	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRTBLEN	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	GPRTBLUK	Check Derivation	Check Derivation	Check Derivation

Table 2-1. Global System Data (Part 4 of 4)

APPLICATION METRICS						
Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
CPU Use					
	APP_CPU_TOTAL_TIME	APPCPUTM	All Releases	All Releases	All Releases
	APP_CPU_USER_MODE_TIME	APPUSRTM	n/a	All Releases	All Releases
	APP_CPU_NICE_TIME	APPNICTM	All Releases	n/a	n/a
	APP_CPU_NORMAL_TIME	APPNORTM	All Releases	n/a	n/a
	APP_CPU_REALTIME_TIME	APPRTMTM	All Releases	n/a	n/a
	APP_CPU_SYS_MODE_TIME	APPSYSTM	All Releases	All Releases	All Releases
	** CALCULATED **	APPPCCPU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCUSR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCNIC	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCNOR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCRTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCSYS	Check Derivation	Check Derivation	Check Derivation
Memory Use					
	APP_MEM_VIRT	APPMEMVR	All Releases	All Releases	All Releases
	APP_MEM_RES	APPMEMRS	All Releases	n/a	n/a
	APP_MEM_UTIL	APPMEMOR	n/a	All Releases	All Releases
	** CALCULATED **	APPMEMPR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCMPR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPCMRS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPSWAPU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPFMAJ	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPFMIN	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPMAJRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPMINRT	Check Derivation	Check Derivation	Check Derivation
Wait States					
	APP_PRI_WAIT_PCT	APPPCSCP	All Releases	n/a	n/a
	APP_DISK_SUBSYSTEM_WAIT_PCT	APPPCSDK	All Releases	n/a	n/a
	APP_MEM_WAIT_PCT	APPPCSWP	All Releases	n/a	n/a
	APP_SEM_WAIT_PCT	APPPCSIM	All Releases	n/a	n/a
	APP_IPC_SUBSYSTEM_WAIT_PCT	APPPCSIP	All Releases	n/a	n/a
	APP_NETWORK_SUBSYSTEM_ WAIT_PCT	APPPCSLN	All Releases	n/a	n/a
	APP_OTHER_IO_WAIT_PCT	APPPCSOT	All Releases	n/a	n/a
	APP_SLEEP_WAIT_PCT	APPPCSDR	All Releases	n/a	n/a

Table 2-2. Application Data (Part 1 of 3)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Process Cnt					
	APP_COMPLETED_PROC	APPCPRCT	All Releases	All Releases	All Releases
	** CALCULATED **	APPAVAPR	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPAVPRO	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPAVSUS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPRUNTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPAVRTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPAPRCT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPROCT	Check Derivation	Check Derivation	Check Derivation
Disk Use					
	APP_DISK_FS_IO	APPDFSCT	All Releases	n/a	n/a
	APP_DISK_VM_IO	APPDMMCT	All Releases	n/a	n/a
	APP_DISK_RAW_IO	APPDRAIO	All Releases	n/a	n/a
	APP_DISK_SYSTEM_IO	APPDSYIO	All Releases	n/a	n/a
	APP_DISK_PHYS_IO	APPDSKIO	All Releases	All Releases	C.02.05 and up
	APP_DISK_LOGL_READ	APPLRDCT	All Releases	n/a	n/a
	APP_DISK_LOGL_WRITE	APPLWTCT	All Releases	n/a	n/a
	APP_DISK_LOGL_IO	APPLIOCT	All Releases	n/a	n/a
	APP_IO_BYTE	APPPKBCT	All Releases	All Releases	C.02.05 and up
	APP_DISK_PHYS_READ	APPPRDCT	All Releases	n/a	n/a
	APP_DISK_PHYS_WRITE	APPPWTCT	All Releases	n/a	n/a
	APP_DISK_BLOCK_IO	APPDBKCT	n/a	All Releases	All Releases
	APP_DISK_BLOCK_READ	APPDBRCT	n/a	All Releases	All Releases
	APP_DISK_BLOCK_WRITE	APPDBWCT	n/a	All Releases	All Releases
	** CALCULATED **	APPDFSRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPDMMRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPDRART	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPDSYRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPKBRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPSPRD	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	APPPSPWT	Check Derivation	Check Derivation	Check Derivation
Process Res. Manager					
	APP_PRM_LOGGING_MODE	APPLOGMD	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_ENTITLEMENT	APPMEMEN	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_UPPERBOUND	APPMEMUP	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_STATE	APPMEMST	C.03.20 and up	n/a	n/a
	APP_PRM_STATE	APPCPUST	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_AVAIL	APPMEMAV	C.03.20 and up	n/a	n/a
	APP_PRM_CPU_ENTITLEMENT	APPCPUEN	C.03.20 and up	n/a	n/a

Table 2-2. Application Data (Part 2 of 3)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Other Meas.					
	** EXIT **	APPCOST			
PRM Use					
	APP_PRM_CPUCAP_MODE	APPCPUCM	All Releases	n/a	n/a
	APP_PRM_CPU_ENTITLEMENT	APPCPUEN	C.03.20 and up	n/a	n/a
	APP_PRM_STATE	APPCPUST	C.03.20 and up	n/a	n/a
	APP_PRM_LOGGING_MODE	APPLOGMD	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_AVAIL	APPMEMAV	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_ENTITLEMENT	APPMEMEN	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_STATE	APPMEMST	C.03.20 and up	n/a	n/a
	APP_PRM_MEM_UPPERBOUND	APPMEMUP	C.03.20 and up	n/a	n/a
	** CALCULATED **	APPMEMUS	Check Derivation	Check Derivation	Check Derivation

Table 2-2. Application Data (Part 3 of 3)

KILLED PROCESS METRICS

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
CPU Use					
	PROC_CPU_TOTAL_TIME_CUM	KPSCPUTM	All Releases	All Releases	All Releases
	** CALCULATED **	KPSRUNTM	Check Derivation	Check Derivation	Check Derivation
Memory Use					
	** CALCULATED **	KPSRSSKB	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	KPSVSSKB	Check Derivation	Check Derivation	Check Derivation
Disk Use					
	PROC_DISK_PHYS_IO_CUM	KPSDSKIO	All Releases	n/a	n/a
	PROC_DISK_BLOCK_IO_CUM	KPSDBKCT	n/a	All Releases	C.03.45 and up
	PROC_IO_BYTE_CUM	KPSPKBCT	All Releases	All Releases	C.03.45 and up
	PROC_DISK_LOGL_IO_CUM	KPSLDKCT	All Releases	n/a	n/a
	** CALCULATED **	KPSAVDRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	KPSDBKRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	KPSPKBRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	KPSAVLRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	KPSSDKTM	Check Derivation	Check Derivation	Check Derivation

Table 2-3. Killed Process Data (Part 1 of 2)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Wait States					
	PROC_PRI_WAIT_TIME	KPSSCPTM	All Releases	n/a	n/a
	PROC_SYS_WAIT_TIME	KPSSSYTM	All Releases	n/a	n/a
	PROC_MEM_WAIT_TIME	KPSSVMTM	All Releases	n/a	n/a
	PROC_SLEEP_WAIT_TIME	KPSSDRTM	All Releases	n/a	n/a
	PROC_SEM_WAIT_TIME	KPSSIMTM	All Releases	n/a	n/a
	PROC_IPC_SUBSYSTEM_WAIT_TIME	KPSSIPTM	All Releases	n/a	n/a
	PROC_LAN_WAIT_TIME	KPSSLNTM	All Releases	n/a	n/a
	PROC_NFS_WAIT_TIME	KPSSNFTM	All Releases	n/a	n/a
	PROC_OTHER_IO_WAIT_TIME	KPSSOITM	All Releases	n/a	n/a

Table 2-3. Killed Process Data (Part 2 of 2)

PROCESS EXCEPTION METRICS

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
CPU Use					
	PROC_CPU_TOTAL_TIME	IPSCPUTM	All Releases	All Releases	All Releases
	PROC_CPU_USER_MODE_TIME	IPSUSRTM	All Releases	All Releases	All Releases
	PROC_CPU_NICE_TIME	IPSNICTM	All Releases	n/a	n/a
	PROC_CPU_NORMAL_TIME	IPSNORTM	All Releases	n/a	n/a
	PROC_CPU_REALTIME_TIME	IPSRTMTM	All Releases	n/a	n/a
	PROC_CPU_SYS_MODE_TIME	IPSSYSTM	All Releases	All Releases	All Releases
	PROC_CPU_CSWITCH_TIME	IPSCSWTM	All Releases	n/a	n/a
	PROC_CPU_INTERRUPT_TIME	IPSINTTM	All Releases	n/a	n/a
	PROC_CPU_SYSCALL_TIME	IPSSSCTM	All Releases	n/a	n/a
	PROC_RUN_TIME	IPSRUNTM	All Releases	All Releases	All Releases
	PROC_INTERVAL_ALIVE	IPSALITM	All Releases	All Releases	All Releases
	PROC_CPU_TOTAL_TIME_CUM	IPSCUMTM	Check Derivation	Check Derivation	Check Derivation
Memory Use					
	PROC_MAJOR_FAULT	IPSPFMAJ	All Releases	All Releases	All Releases
	PROC_MINOR_FAULT	IPSPFMIN	All Releases	All Releases	All Releases
	PROC_MEM_RES	IPSRSSKB	All Releases	All Releases	All Releases
	PROC_MEM_VIRT	IPSVSSKB	All Releases	All Releases	All Releases
Disk Use					
	PROC_DISK_PHYS_IO	IPSDSKIO	All Releases	n/a	n/a
	PROC_DISK_FS_READ	IPSDFRCT	All Releases	n/a	n/a
	PROC_DISK_FS_WRITE	IPSDFWCT	All Releases	n/a	n/a
	PROC_DISK_FS_IO	IPSFSDCT	All Releases	n/a	n/a
	PROC_DISK_VM_IO	IPSDMMCT	All Releases	n/a	n/a
	PROC_DISK_SYSTEM_IO	IPSDSYCT	All Releases	n/a	n/a
	PROC_IO_BYTE	IPSPKBCT	All Releases	All Releases	C.03.45 and up
	PROC_DISK_BLOCK_IO	IPSDBKCT	n/a	All Releases	All Releases
	PROC_DISK_BLOCK_READ	IPSDBRCT	n/a	All Releases	All Releases
	PROC_DISK_BLOCK_WRITE	IPSDBWCT	n/a	All Releases	All Releases
	PROC_DISK_LOGL_READ	IPSLRDCT	All Releases	n/a	n/a
	PROC_DISK_LOGL_WRITE	IPSLWTCT	All Releases	n/a	n/a
Identifying Metrics					
	PROC_INTEREST	IPSINTR	All Releases	All Releases	All Releases
	PROC_STOP_REASON	IPSSTOPR	All Releases	All Releases	All Releases
	PROC_PRMID	IPSPRMID	C.03.25 and up	n/a	n/a
	PROC_THREAD_COUNT	IPSTHCNT	C.02.00 and up	n/a	n/a

Table 2-4. Process Exception Data

NETWORK INTERFACE (LAN) METRICS					
Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Errors and Collisions					
	BYNETIF_COLLISION	NIFCOLCT	All Releases	All Releases	All Releases
	BYNETIF_ERROR	NIFERRCT	All Releases	All Releases	All Releases
	** CALCULATED **	NIFPSCOL	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	NIFPSERR	Check Derivation	Check Derivation	Check Derivation
Traffic					
	BYNETIF_IN_PACKET	NIFPKICT	All Releases	All Releases	All Releases
	BYNETIF_OUT_PACKET	NIFPKOCT	All Releases	All Releases	All Releases
	BYNETIF_NET_SPEED	NIFSPEED	C.03.25 and up	C.03.40	n/a
	BYNETIF_NET_MTU	NIFMTUSZ	C.03.25 and up	n/a	n/a
	** CALCULATED **	NIFPSPKI	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	NIFPSPKO	Check Derivation	Check Derivation	Check Derivation
Identifying					
	BYNETIF_NAME	NIFNAME	All Releases	All Releases	All Releases
	BYNETIF_QUEUE	NIFQUEUE	C.03.70 and up	n/a	n/a

Table 2-5. LAN Activity Data

		DISK METRICS			
Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Disk Busy					
	** CALCULATED **	DDAPCDUT	Check Derivation	Check Derivation	Check Derivation
I/O					
	BYDSK_PHYS_IO	DDADSKIO	All Releases	All Releases	All Releases
	BYDSK_PHYS_READ	DDAPRDCT	All Releases	All Releases	All Releases
	BYDSK_PHYS_WRITE	DDAPWTCT	All Releases	All Releases	All Releases
	BYDSK_PHYS_BYTE	DDAPKBCT	All Releases	All Releases	All Releases
	BYDSK_PHYS_READ_BYTE	DDARKBCT	n/a	All Releases	All Releases
	BYDSK_PHYS_WRITE_BYTE	DDAWKBCT	n/a	All Releases	C.02.05 and up
	BYDSK_FS_READ	DDADFRCT	All Releases	n/a	n/a
	BYDSK_FS_WRITE	DDADFWCT	All Releases	n/a	n/a
	BYDSK_VM_IO	DDADMMCT	All Releases	n/a	n/a
	BYDSK_SYSTEM_IO	DDASYSCT	All Releases	n/a	n/a
	BYDSK_RAW_READ	DDADRRCT	All Releases	n/a	n/a
	BYDSK_RAW_WRITE	DDADRWCT	All Releases	n/a	n/a
	BYDSK_LOGL_READ	DDALRDCT	All Releases	n/a	n/a
	BYDSK_LOGL_WRITE	DDALWTCT	All Releases	n/a	n/a
	** CALCULATED **	DDADSKRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPKBRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAWKBRT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSFRD	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSFWT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSMEM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSSYS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSRRD	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSRWT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSLRD	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAPSLWT	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDADDPDR	Check Derivation	Check Derivation	Check Derivation
Queue Length					
	** CALCULATED **	DDAAVQLN	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	DDAQLNSM	Check Derivation	Check Derivation	Check Derivation
Identifying					
	BYDSK_DEVNAME	DDANAME	All Releases	All Releases	All Releases
	BYDSK_DIRNAME	DDADIR	All Releases	n/a	n/a

Table 2-6. Disk Activity Data

		LOGICAL VOLUME METRICS			
Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Space Use					
	** CALCULATED **	VLMPCSPU	Check Derivation	n/a	n/a
	** CALCULATED **	VLMSPUSM	Check Derivation	n/a	n/a
	** CALCULATED **	VLMMNSPU	Check Derivation	n/a	n/a
	** CALCULATED **	VLMMXSPU	Check Derivation	n/a	n/a
I/O					
	LV_LOGL_READ	VLMLRDCT	up to C.01.00	n/a	n/a
	LV_LOGL_WRITE	VLMLWTCT	up to C.01.00	n/a	n/a
	** CALCULATED **	VLMPSLRD	Check Derivation	n/a	n/a
	** CALCULATED **	VLMPSLWT	Check Derivation	n/a	n/a
Identifying					
	LV_GROUP_NAME	VLMNAME	All Releases	n/a	C.02.06 and up
	LV_DIRNAME	VLMDIR	All Releases	n/a	C.02.06 and up
	FS_DIRNAME	VLMPTHNM	All Releases	n/a	n/a

Table 2-7. Logical Volume Data

| TRANSACTION METRICS |

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Parameter Settings					
	TT_SLO_THRESHOLD	TTASLOMX	All Releases	All Releases	All Releases
	TT_NUM_BINS	TTABINCT	All Releases	All Releases	All Releases
	TTBIN_UPPER_RANGE_(1-10)	TTAUPRxx	All Releases	All Releases	All Releases
Completed Transaction Activity					
	TT_COUNT	TTATRANS	All Releases	All Releases	All Releases
	TTBIN_TRANS_COUNT_(1-10)	TTATRNxx	All Releases	All Releases	All Releases
	TT_SLO_COUNT	TTAVSLCT	All Releases	All Releases	All Releases
	** CALCULATED **	TTATRNTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	TTAPCBXx	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	TTAAVTTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	TTAPCVSL	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	TTALGLIO	Check Derivation	Check Derivation	Check Derivation
Aborted Tran Activity					
	TT_ABORT	TTAABORT	All Releases	All Releases	All Releases
	TT_FAILED	TTATFAIL	C.01.00 and up	C.02.58 and up	C.02.05 and up
	** CALCULATED **	TTAABTTM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	TTAAVATM	Check Derivation	Check Derivation	Check Derivation
Correlator Metrics					
	TT_CLIENT_ADDRESS	TTACORAD	C.02.00 and up	C.02.58 and up	C.02.05 and up
	TT_CLIENT_ADDRESS_FORMAT	TTAADFMT	C.02.00 and up	C.02.58 and up	C.02.05 and up
	TT_CLIENT_TRAN_ID	TTATRNID	C.02.00 and up	C.02.58 and up	C.02.05 and up
ARM Use					
	TT_TRAN_ID	TTAARMID	All Releases	C.02.58 and up	All Releases
	TT_INFO	TTAARMIF	C.01.00 and up	C.02.58 and up	C.02.05 and up
	TT_APP_NAME	TTAARMNM	C.01.00 and up	C.02.58 and up	C.02.05 and up
	TT_UNAME	TTAARMUN	C.01.00 and up	C.02.58 and up	C.02.05 and up
	TT_APP_TRAN_NAME	TTAATNM	C.01.00 and up	C.02.58 and up	All Releases
CPU Use					
	** CALCULATED **	TTACPUTM	Check Derivation	Check Derivation	Check Derivation
Other					
	TT_NAME	TTANAME	All Releases	All Releases	All Releases
	** CALCULATED **	TTADSKIO	Check Derivation	Check Derivation	Check Derivation

Table 2-8. Business Transaction SLO Activity Data

		CONFIGURATION METRICS			
Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
CPU Use					
	GBL_NUM_CPU	MCFNCPUS	All Releases	All Releases	All Releases
	TBL_PROC_TABLE_AVAIL	MCFNPROC	All Releases	All Releases	All Releases
	** CALCULATED **	MCFMNCPU	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXCPU	Check Derivation	Check Derivation	Check Derivation
Memory Con-figuration					
	TBL_BUFFER_CACHE_AVAIL	MCFCACHE	All Releases	All Releases	All Releases
	GBL_SWAP_SPACE_AVAIL_KB	MCFMEMSW	All Releases	All Releases	All Releases
	GBL_MEM_PHYS	MCFMEMSZ	All Releases	All Releases	All Releases
	GBL_MEM_AVAIL	MCFMEMUS	All Releases	All Releases	All Releases
	TBL_SHMEM_TABLE_AVAIL	MCFSHMSG	C.02.00 and up	n/a	C.02.53 and up
	GBL_THRESHOLD_PROCMEM	MCFPRCMM	C.02.40 and up	n/a	C.03.70 and up
	** CALCULATED **	MCFMNCHC	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMNMEM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMNMUS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMNSWS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXCHC	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXMEM	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXMUS	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXSWS	Check Derivation	Check Derivation	Check Derivation
Disk Con-figuration					
	GBL_NUM_DISK	MCFNDSKS	All Releases	All Releases	All Releases
	** CALCULATED **	MCFMNDSK	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXDSK	Check Derivation	Check Derivation	Check Derivation
LAN Con-figuration					
	GBL_NUM_NETWORK	MCFNLANS	All Releases	All Releases	All Releases
	** CALCULATED **	MCFMNLAN	Check Derivation	Check Derivation	Check Derivation
	** CALCULATED **	MCFMXLAN	Check Derivation	Check Derivation	Check Derivation

Table 2-9. System Configuration & Collector Profile Data (Part 1 of 2)

Metric Type	HP Metric	CA MICS Data Element	HP-UX Platform OpenView Release	AIX Platform OpenView Release	SOL Platform OpenView Release
Collector Setting					
	GBL_THRESHOLD_CPU	MCFCPUMN	All Releases	All Releases	All Releases
	GBL_THRESHOLD_DISK	MCFIORMN	All Releases	All Releases	All Releases
	GBL_THRESHOLD_SHORTLIVED	MCFLOSHR	All Releases	n/a	n/a
	GBL_THRESHOLD_NOKILLED	MCFNOKIL	All Releases	All Releases	All Releases
	GBL_THRESHOLD_NONEW	MCFNONEW	All Releases	All Releases	All Releases
	GBL_THRESHOLD_WAIT_CPU	MCFWCPMN	All Releases	n/a	n/a
	GBL_THRESHOLD_WAIT_DISK	MCFWDKMN	All Releases	n/a	n/a
	GBL_THRESHOLD_WAIT_MEMORY	MCFWMEMN	All Releases	n/a	n/a
	GBL_THRESHOLD_WAIT_IMPEDE	MCFWIMMN	All Releases	n/a	n/a
	GBL_LOGGING_TYPES	MCFLGTPS	All Releases	All Releases	All Releases
	GBL_SYSTEM_ID	AUMSYSID	All Releases	All Releases	All Releases
	GBL_MACHINE_MODEL	MCFMCMOD	C.02.40 and up	n/a	n/a
	GBL_OSKERNELTYPE_INT	MCFKRNSZ	C.02.00 and up	n/a	n/a
	TBL_FILE_TABLE_AVAIL	MCFTBLUK	C.02.00 and up	n/a	C.02.53 and up
	TBL_FILE_LOCK_AVAIL	MCFLCKAV	C.02.00 and up	n/a	n/a
	TBL_INODE_CACHE_AVAIL	MCFINODE	C.02.00 and up	n/a	C.02.53 and up
	TBL_SEM_TABLE_AVAIL	MCFSEMID	C.02.00 and up	n/a	C.02.53 and up
	TBL_MSG_TABLE_AVAIL	MCFMSGQU	C.02.00 and up	n/a	C.02.53 and up
	GBL_THRESHOLD_PROCMEM	MCFPRCMM	C.02.40 and up	n/a	C.03.75 and up
	GBL_SUBPROCSAMPLEINTERVAL	MCFPRCIN	n/a	C.02.58 and up	C.02.53 and up

Table 2-9. System Configuration & Collector Profile Data (Part 2 of 2)

2.2 CA MICS Product Interfaces

```
CA MICS Accounting and Chargeback
---------------------------------

With ACT6260, CA MICS Accounting and Chargeback will support
the following MW OS Analyzer data elements that you can use
for billing resource or transaction usage.  The elements that
can be billed are:

  - UNIX/MW OS Application Total CPU Time
  - UNIX/MW OS Application System CPU Time
  - UNIX/MW OS Application User CPU Time
  - UNIX/MW OS Application Nice CPU Time
  - UNIX/MW OS Application Real Time CPU Time
  - UNIX/MW OS Application CPU Use at Normal Priorities
  - UNIX/MW OS Application Total Physical Disk I/O
  - UNIX/MW OS Application Logical Read Disk I/O
  - UNIX/MW OS Application Logical Write Disk I/O
  - UNIX/MW OS Application Physical Read Disk I/O
  - UNIX/MW OS Application Physical Write Disk I/O
  - UNIX/MW OS Application I/O Transfer Cnt in Kb
  - UNIX/MW OS Process CPU Time
  - UNIX/MW OS Process Total Physical Disk I/O
  - UNIX/MW OS Process Logical Disk I/O
  - UNIX/MW OS Process I/O Transfer Cnt in Kb
```

Chapter 3: MW OS AGENT ANALYZER REPORTS

The MW OS Agent Analyzer produces reports using the CA MICS Information Center Facility (MICF), which is part of the CA MICS Workstation Facility (MWF).

MICF inquiries produce meaningful reports from the CA MICS database and provide you with the flexibility to code and save your own report formats. You can execute and easily modify distributed MICF inquiries using the Database Inquiries option from the MICF main menu.

Refer to the CA MICS MICF Reference Guide for more information on MICF inquiries.

This section contains the following topics:

3.1 MICF Inquiries for the MW OS Agent Analyzer

The table below lists the MICF inquiries distributed with the MW OS Agent Analyzer. The remainder of this chapter follows this category listing. Each section contains a brief description of the inquiry and the panels used to generate it.

The Analyzer's color graphic reports (inquiry ID AUMCxx) cannot be reproduced in this guide, however the line graphics (inquiry ID AUMLxx) are included.

Category	Report Name	Inquiry ID	Use	For additional information, use ...
Multiple Systems	UNIX Global CPU Utilization	AUMCS1	Overview of systems and their use	n/a
	UNIX Global Queue Depth Comparison	AUMCS2	Overview of systems and their bottlenecks	n/a
Single Systems	UNIX Global Bottlenecks	AUMCS4	Identify bottlenecks	n/a
	UNIX Global Disk Summary	AUMCS6	Identify number of disk I/Os and busiest disk.	AUMCSB and AUMCSC
Applica-tions	UNIX Application Performance Summary	AUMLS2	Detailed application information.	AUMLS3
Killed Processes	UNIX Detail Killed Process	AUMLS3	Identify programs that make up the application group.	n/a
Disk	UNIX Top 5 Disk Utilization Comparison	AUMCSB	Identify busiest disks.	AUMCSC
	Disk I/O Activity	AUMCSC	Identify how a disk is being used.	n/a
	UNIX Logical Volume Activity	AUMCSD	Identify logical volume logical I/Os and disk space usage.	n/a
Global	UNIX System Performance Summary	AUMLS1	Identify how the system is being used.	n/a

The following sections describe the individual inquiries:

1 - UNIX Multiple System Inquiries
2 - UNIX Single System Inquiries
3 - UNIX Application Inquiries
4 - UNIX Process Activity Inquiries
5 - UNIX Disk Inquiries

```
  6 - UNIX Global Inquiries
```

3.1.1 UNIX Multiple System Inquiries

The MW OS Agent Analyzer provides the following inquiries that report on data from multiple UNIX systems:

```
  1 - UNIX Global CPU Utilization (AUMCS1)
  2 - UNIX Global Queue Depth Compare (AUMCS2)
```

3.1.1.1 UNIX Global CPU Utilization (AUMCS1)

The UNIX Global CPU Utilization chart uses measurements from the CA MICS AUMGPR file to display an overall view of processor utilization for multiple systems over the date and/or time ranges you select. The color graphic box charts display and categorize each system's utilization by zone and/or date intervals based on the report summarization options you select.

Each box on the chart depicts processor utilization over time or date. Multiple systems are displayed on separate rows of the chart. Actual processor busy is displayed below each box. The type of utilization activity is denoted by color within the boxes, where utilization activity types are:

For HP-UX systems:

- Context switch (GPRPCCSW)
- Normal (GPRPCNOR)
- Interrupt (GPRPCINT)
- Real time (GPRPCRTM)
- Nice (GPRPNOR)
- System calls (GPRPCSSC)

For Solaris or AIX systems:

- User mode (GPRPCUSR)
- System mode (GPRPCSYS)

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries

o Select AUMCS1, whose Catalog Group is Perform

o Complete the MICF Execution panel

o Complete the specification panel illustrated below
(Descriptions of the fields follow the panel)

The result displays on your terminal.

```
+-------------------------------------------------------------------------+
|-------------------- UNIX Global CPU Utilization ----------------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                  |
| Generate a plot for each value of Zone     ===> _ (Y/N)                 |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

```
Time-span - Required.  Default varies by report time-span.
The time-span of the CA MICS data base from which the primary
input files are selected.  Required input file(s) must be
available at the specified time-span.

Plot by hour - Required.  Defaults to Y.  At the DAYS and
WEEKS timespans, reports can be produced at an hourly level
or at the DAILY or WEEKLY level.  If you specify Y (Yes) to
Report by hour, the data is summarized and displayed by hour
and separate reports are produced for each day or week.  If
you specify N (No) to Report by hour, the data is summarized
by day or week and a single report listing all days or weeks
is produced.
```

Generate a plot for each value of Zone - Required. Defaults to Y. Reports for each zone can be generated when requested if you specify Y (Yes). The nature and resource requirements of UNIX processing very often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

3.1.1.2 UNIX Global Queue Depth Comparison (AUMCS2)

The UNIX Global Queue Depth Comparison chart uses measurements from the CA MICS AUMGPR file to display average process wait queue metrics for multiple systems over the date and/or time ranges you select. This color graphic box chart displays and categorizes each system's queue depth by zone and/or date intervals based on the report summarization options you select.

Each box on the chart depicts system queue depth over time or date. Multiple systems are displayed on separate rows of the chart. Total average queue depth is shown below each box. The type of resource causing the wait queue is denoted by color within the boxes, where the resource types are disk (GPRAVDKQ), network (GPRAVNTQ), IP communications (GPRAVIPQ), memory (GPRAVMMQ), run (GPRAVCPQ), and priority (GPRAVPRQ).

This report is not supported for Solaris or AIX systems because the elements needed are not all available from the data source.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select AUMCS2, whose Catalog Group is Perform
- Complete the MICF Execution panel
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result displays on your terminal.

```
+-------------------------------------------------------------------------+
|----------------- UNIX Global Queue Depth Comparison -----------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                  |
| Generate a plot for each value of Zone     ===> _ (Y/N)                 |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields

can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

3.1.2 UNIX Single System Inquiries

The MW OS Agent Analyzer provides the following inquiries that report on data from single UNIX systems:

1 - UNIX Global Bottlenecks (AUMCS4)
2 - UNIX Global Disk Summary (AUMCS6)

3.1.2.1 UNIX Global Bottlenecks (AUMCS4)

The UNIX Global Bottlenecks plot uses measurements from the CA MICS AUMGPR file to graphically display an overview of processor, memory, and peak disk utilization. These metrics are displayed by system over the date and/or time intervals you request.

Each color plot displays peak disk (GPRMPBDU), CPU (GPRPCCPU), swap space (GPRPCSWS), and memory (GPRPCMEM) utilization as line values over time. The left vertical axis represents utilization percentages. Memory management I/O activity rates (GPRDMMRT) are portrayed by shaded areas on the plots. The right vertical axis shows the I/O rate in seconds.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select AUMCS4, whose Catalog Group is Perform
- Complete the MICF Execution panel
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result will be displayed on your terminal.

```
+-------------------------------------------------------------------------+
|---------------------- UNIX Global Bottlenecks -------------------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                  |
| Generate a plot for each value of Zone     ===> _ (Y/N)                 |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY levels. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

```
Date - Optional.  No default.  Up to two date ranges in DD
MMM YY format.  The first value in each date range is the
starting date and the last value is the ending date.  The
ending date must be higher than the starting date.  The date
ranges should not overlap, but you can specify the higher
range before the lower range.  For example, a valid date
range specification is specifying date range 1 as
01 JAN 95 - 31 DEC 95 and specifying date range 2 as
01 JAN 94 - 31 DEC 94.  An input observation is selected if
its date value is greater than or equal to the starting date
and is less than or equal to the ending date of any specified
date range.

Hour - Optional.  No default.  0-23.  Up to three hour
ranges.  The first value is the starting hour and the last
value is the ending hour.  The ending hour must be higher
than the starting hour.  The hour ranges should not overlap,
but you can specify the higher range before the lower range.
For example, a valid hour range specification is 18 - 23 and
09 - 17.  An input observation is selected if its hour value
is greater than or equal to the starting hour and is less
than or equal to the ending hour of any specified hour range.

Zone - Optional.  No default.  1-character zone value from 1
to 9.  You can specify up to nine zone values.  An input
observation is selected if its zone value is equal to any of
the specified values.

Sysid - Optional.  No default.  1-4 character SYSID value.
You can specify up to six SYSIDs.  An input observation is
selected if its SYSID value is equal to any of the specified
values.
```

3.1.2.2 UNIX Global Disk Summary (AUMCS6)

The UNIX Global Disk Summary uses measurements from the CA MICS AUMGPR file to display an overall view of I/O activity and utilization at a system level over the date and/or time ranges you select. The color graphic plots are displayed by system, zone, and/or date intervals based on the report summarization options you specify.

Each plot displays the average I/O rate on the left axis and the total disk utilization percentage on the right axis over the date/time periods selected. The types of I/O activity (physical, logical, and memory management) contributing to the I/O rate are indicated by color. Utilization percentages are shown by lines.

The following MW OS Agent Analyzer data elements are displayed:

- GPRDKLRT (logical disk I/O rate)
- GPRDMMRT (virtual memory management I/O rate)
- GPRDSKRT (physical disk I/O rate)
- GPRMPBDU (percent utilization of busiest disk)

The following data element is not available from Solaris or AIX systems: GPRDKLRT (logical disk I/O rate)

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select AUMCS6, whose Catalog Group is Perform
- Complete the MICF Execution panel
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result displays on your terminal.

```
+-------------------------------------------------------------------------+
|---------------------- UNIX Global Disk Summary ----------------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                  |
| Generate a plot for each value of Zone     ===> _ (Y/N)                 |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields

can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY levels. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

3.1.3 UNIX Application Inquiries

The MW OS Agent Analyzer provides the following inquiry that reports on data about UNIX applications:

1 - UNIX Application Performance Summary (AUMLS2)

3.1.3.1 UNIX Application Performance Summary (AUMLS2)

The UNIX Application Performance Summary uses measurements from the CA MICS AUMAPP file to display an overall view of application performance in terms of throughput and utilization by system for the date and/or time intervals you request.

Each report provides metrics listed by application name. A separate report page is produced for each logical combination of system, zone, and date/time interval, depending on the report options you specify. Measurements that allow an overall view of application load, memory utilization, I/O activity, and throughput are provided. Wait statistics are provided when you specify that the report be produced for the DETAIL timespan.

The following MW OS Agent Analyzer data elements display:

- AUMAPU (application name)
- AUMAPNUM (application number)
- APPAVAPR (average processes active)
- APPAVPRO (average processes alive)
- APPDSKIO (physical I/Os)
- APPLIOCT (logical I/Os)
- APPPCCPU (total CPU use)
- APPPCMPR (main memory use - private resident)
- APPPCMRS (main memory use - resident)
- APPPCSCP (% CPU wait time)
- APPPCSDK (% disk I/O wait time)
- APPPCSDR (% time directed to wait)
- APPPCSIM (% software impede wait time)
- APPPCSIP (% interprocess communication wait time)
- APPPCSLN (% LAN I/O wait time)
- APPPCSOT (% non-LAN, disk, terminal I/O wait time)
- APPPCSWP (% memory wait time)
- APPPCSYS (% CPU use for system processing)
- APPPCUSR (% CPU use in user mode)
- APPPKBRT (I/O transfer rate)
- DURATION (duration)

For HP-UX B.10 systems, APPMEMPR (main memory use - private resident) is not available.

For HP-UX A.09 systems, APPPKBCT (I/O transfer rate) and APPMEMRS (memory use - resident) are not available.

For Solaris and AIX systems, the following data elements are not available:

- APPPCMPR (main memory use - private resident)
- APPPCMRS (main memory use - resident)
- APPPCSCP (% CPU wait time)
- APPPCSDK (% disk I/O wait time)
- APPPCSDR (% time directed to wait)
- APPPCSIM (% software impede wait time)
- APPPCSIP (% interprocess communication wait time)
- APPPCSLN (% LAN I/O wait time)
- APPPCSOT (% non-LAN, disk, terminal I/O wait time)
- APPPCSWP (% memory wait time)

To produce the report:

o Enter the CA MICS Workstation Facility (MWF)

- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select AUMLS2, whose Catalog Group is Perform
- Complete the MICF Execution panel
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result appears on your terminal and is illustrated at the end of this section.

Note: For this report, you can control the width of the report page (for example, to choose landscape versus portrait output) using the MICF Foreground Execution Parameters (MWF 2;0;2). On the line
Subset Display On ===>
type Page. Fill in a Page Width value that suits your reporting needs (80 to produce an 80 column report, for instance).

```
+-------------------------------------------------------------------------+
|----------------- UNIX Application Performance Summary ----------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Report by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|                                                                         |
|   Application                                                           |
|   Name(AUMAPU) ===> ____________________   ____________________         |
|                     ____________________   ____________________         |
|                     ____________________   ____________________         |
|                                                                         |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields

can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Report by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY levels. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a report for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Application Name (AUMAPU) - Optional. No default. 1-20 character application name (AUMAPU). You can specify up to six application names. An input observation is selected if its application name value is equal to any of the specified values.

```
                                    Detail Unix Application Performance Summary              09:46 Monday, June 23, 2008
                                 CA MICS Data Integration Applications - a2
                                   Reporting Period: 25SEP07:00:00 - 19MAY08:23:59

------------------------------------------------ SYSID=CS00 OS=HP-UX DATE=02-10-14 ------------------------------------------------
                                                        (continued)

       Application          |  Application              % CPU Use    % CPU Use    % CPU Use     % Memory Use       % Memory Use
Time   Name                 |    Number      Duration     Total     System Mode   User Mode   Private Resident       Resident
-----  -----------          |  -----------   --------   ---------   -----------   ---------   ----------------   ----------------

 0:20  peoplesoft           |        2        0:05:00      0.04         0.02         0.02             .                12.24
 0:25  network              |        4        0:05:00      0.01         0.01         0.00             .                 0.26
 0:25  other                |        1        0:05:00      0.45         0.20         0.25             .                 3.63
 0:25  other_user_root      |        6        0:05:00      4.97         2.82         2.15             .                 2.22
 0:25  peoplesoft           |        2        0:05:00      0.04         0.02         0.02             .                12.24
 0:30  network              |        4        0:05:00      0.01         0.01         0.00             .                 0.26
 0:30  other                |        1        0:05:00      0.34         0.14         0.20             .                 3.62
 0:30  other_user_root      |        6        0:05:00      4.99         2.85         2.14             .                 2.22
 0:30  peoplesoft           |        2        0:05:00      0.04         0.02         0.02             .                12.24
 0:35  network              |        4        0:05:00      0.01         0.01         0.00             .                 0.26
 0:35  other                |        1        0:05:00      0.30         0.10         0.20             .                 3.63

       Application          |   Logical     Physical   I/O Transfer   Avg Proc  Avg Proc  % Wait Time  % Wait Time  % Wait Time
Time   Name                 |    I/Os         I/Os     Rate (KBytes)    Alive     Active       CPU       Disk I/Os     Memory
-----  -----------          |  ---------   ----------  ------------   --------  --------  -----------  -----------  -----------

 0:20  peoplesoft           |        0           0          0.00         20       9.80       0.00         0.00         0.00
 0:25  network              |        0           0          0.00         27       5.00       0.00         0.00         0.00
 0:25  other                |     9000         420          0.00         41       3.30       0.00         0.00         0.00
 0:25  other_user_root      |   306300        1830          0.00         85      26.90       0.01         0.00         0.00
 0:25  peoplesoft           |        0           0          0.00         20       9.60       0.00         0.00         0.00
 0:30  network              |        0          60          0.00         27       5.40       0.00         0.00         0.00
 0:30  other                |     6900         420          0.00         41       3.70       0.00         0.00         0.00
 0:30  other_user_root      |   305700        1770          0.00         85      26.40       0.02         0.00         0.00
 0:30  peoplesoft           |        0           0          0.00         20       9.60       0.00         0.00         0.00
 0:35  network              |        0           0          0.00         27       4.70       0.00         0.00         0.00
 0:35  other                |     5400         390          0.00         40       3.40       0.06         0.00         0.00

       Application          |    % Wait Time        % Wait Time      % Wait Time     % Wait Time     % Wait Time
Time   Name                 |  Software Impedes     Interproc Comm     LAN I/Os       Directed       Other I/Os
-----  -----------          |  -----------------    --------------    -----------    -----------    -----------

 0:20  peoplesoft           |         0.00               2.39            0.00           4.10           0.00
 0:25  network              |         0.00               0.00            0.00          66.66           0.00
 0:25  other                |        11.62               2.97            0.00          21.71           0.00
 0:25  other_user_root      |         0.36               0.74            0.00          28.42           0.19
 0:25  peoplesoft           |         0.00               2.39            0.00           4.10           0.00
 0:30  network              |         0.00               0.00            0.00          66.66           0.00
 0:30  other                |        11.62               2.97            0.00          21.71           0.00
 0:30  other_user_root      |         0.37               0.75            0.00          28.96           0.19
 0:30  peoplesoft           |         0.00               2.39            0.00           4.10           0.00
 0:35  network              |         0.00               0.00            0.00          66.66           0.00
 0:35  other                |        11.61               2.98            0.00          22.47           0.01
```

3.1.4 UNIX Process Activity Analysis Inquiries

The MW OS Agent Analyzer provides the following inquiry that reports on data about UNIX processes:

1 - UNIX Detail Killed Process (AUMLS3)

3.1.4.1 UNIX Detail Killed Process (AUMLS3)

The UNIX Detail Killed Process report uses measurements from the AUMKPS file to display a detailed view of killed process activities in terms of resource consumption and performance by system for the date and/or time intervals you request.

Each report provides metrics listed by program name and measurement timestamp. A separate report page is produced for each logical combination of system and zone, depending on the report options you specify. Measurements that allow an overall view of process load, I/O activity, and wait statistics on various system resources are provided.

For HP-UX B.10 systems, the following MW OS Agent Analyzer data elements display:

- AUMAPU (application name)
- AUMLNTTY (logon TTY)
- AUMPIN (PIN)
- AUMPRI (priority)
- AUMPROG (program name)
- AUMUSER (user)
- DATE (date)
- KPSCPUTM (total CPU time)
- KPSDSKIO (physical disk I/Os)
- KPSLDKCT (logical disk I/Os)
- KPSRUNTM (run time)
- KPSSCPTM (CPU wait time)
- KPSSDKTM (disk I/O wait time)
- KPSSDRTM (directed wait time)
- KPSSIMTM (software impedes wait time)
- KPSSIPTM (IPC wait time)
- KPSSLNTM (LAN I/O wait time)
- KPSSNFTM (NFS wait time)
- KPSSOITM (other I/O wait time)
- KPSSSYTM (system wait time)
- KPSSVMTM (virtual memory wait time)
- SYSID (system ID)
- TIME (end time)

For Solaris and AIX systems, the following data elements are not available:

- KPSDSKIO (physical disk I/Os)
- KPSLDKCT (logical disk I/Os)
- KPSSCPTM (CPU wait time)
- KPSSDKTM (disk I/O wait time)
- KPSSDRTM (directed wait time)

- KPSSIMTM (software impedes wait time)
- KPSSIPTM (IPC wait time)
- KPSSLNTM (LAN I/O wait time)
- KPSSNFTM (NFS wait time)
- KPSSOITM (other I/O wait time)
- KPSSSYTM (system wait time)
- KPSSVMTM (virtual memory wait time)

To produce the report:

o Enter the CA MICS Workstation Facility (MWF)

o Choose option 2, CA MICS Information Center Facility (MICF)

o Choose option 2, Database Inquiries

o Select AUMLS3, whose Catalog Group is Perform

o Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result appears on your terminal and is illustrated at the end of this section.

Note: For this report, you can control the width of the report page (for example, to choose landscape versus portrait output) using the MICF Foreground Execution Parameters (MWF 2;0;2). On the line
Subset Display On ===>
type Page. Fill in a Page Width value that suits your reporting needs (80 to produce an 80 column report, for instance).

```
+-------------------------------------------------------------------------+
|------------------  UNIX Detail Killed Process Report  ----------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> DETAIL                                                    |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
|                                                                         |
| Data Selection:          Date Range 1         Date Range 2              |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy      |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|                                                                         |
|   Application  ===> ____________________   ____________________        |
|   Name(AUMAPU)      ____________________   ____________________        |
|                                                                         |
|   User Name    ===> _________________   _________________   ____________|
|   Program Name ===> _________________   _________________   ____________|
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

The timespan for this report is fixed as the DETAIL timespan.

Generate a report for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each

zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Application Name (AUMAPU) - Optional. No default. 1-20 character application name (AUMAPU). You can specify up to four application names. An input observation is selected if its application name value is equal to any of the specified values.

User Name - Optional. No default. 1-16 character user logon name (AUMUSER). You can specify up to three user logon names. An input observation is selected if its user name value is equal to any of the specified values.

Program Name - Optional. No default. 1-16 character process program name (AUMPROG). You can specify up to three process program names. An input observation is selected if its process program name value is equal to any of the specified values.

CA MICS Data Integration Applications
Detail Unix Detail Killed Process Report 10:23 Monday, June 23, 2008

---------- SYSID=CS00 OS=HP-UX DATE=02-10-14 ----------

Time Ended	Program Name	User	PIN	Priority	Logon TTY	Application Name	Run Time	Total CPU Time
21:06	vbda	root	27898	179	?	other_user_root	0:01:42.44	0:00:03.45
21:06	vbda	root	28342	178	?	other_user_root	0:00:10.10	0:00:00.26
21:06	vbda	root	27206	178	?	other_user_root	0:03:51.05	0:00:04.87
21:06	bdf	psoft	28809	178	?	peoplesoft	0:00:37.57	0:00:00.07
21:09	runmqchl	mqm	29763	137	?	other	0:00:01.79	0:00:00.35
21:13	vbda	root	28563	179	?	other_user_root	0:06:46.52	0:00:06.68
21:16	vbda	root	2574	178	?	other_user_root	0:00:28.93	0:00:00.75
21:16	vbda	root	28918	178	?	other_user_root	0:08:47.56	0:00:07.89
21:16	vbda	root	2946	178	?	other_user_root	0:00:16.68	0:00:00.51
21:19	vbda	root	28549	178	?	other_user_root	0:14:14.91	0:00:17.29

Time Ended	Program Name	Physical Disk I/Os	Logical Disk I/Os	Wait Time CPU	Wait Time Directed	Wait Time Disk I/O	Wait Time LAN I/O	Wait Time Other I/O
21:06	vbda	8471	5895	0:00:00.28	0:01:21.64	0:00:08.54	0:00:00.00	0:00:08.49
21:06	vbda	690	751	0:00:00.00	0:00:06.51	0:00:01.15	0:00:00.00	0:00:02.15
21:06	vbda	10976	7346	0:00:00.53	0:03:15.51	0:00:16.01	0:00:00.00	0:00:14.05
21:06	bdf	579	15	0:00:00.00	0:00:01.43	0:00:16.19	0:00:00.00	0:00:19.80
21:09	runmqchl	319	325	0:00:00.00	0:00:00.93	0:00:00.08	0:00:00.00	0:00:00.51
21:13	vbda	19336	9394	0:00:00.65	0:04:59.20	0:00:14.39	0:00:00.00	0:01:25.53
21:16	vbda	1888	1312	0:00:00.01	0:00:16.52	0:00:05.69	0:00:00.00	0:00:05.95
21:16	vbda	16017	11000	0:00:00.53	0:08:14.32	0:00:08.81	0:00:00.00	0:00:15.88
21:16	vbda	1329	956	0:00:00.03	0:00:11.32	0:00:01.48	0:00:00.00	0:00:03.34
21:19	vbda	52319	27650	0:00:01.11	0:09:47.66	0:01:35.41	0:00:00.00	0:02:33.11

Time Ended	Program Name	Wait Time SW Impedes	Wait Time Virt Memory	Wait Time NFS	Wait Time IP Comm	Wait Time System
21:06	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00
21:06	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.03
21:06	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00
21:06	bdf	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.07
21:09	runmqchl	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.08
21:13	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00
21:16	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00
21:16	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00
21:16	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00
21:19	vbda	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.00	0:00:00.08

INQUIRY: AUMLS3 RUN DATE: 23JUN08

3.1.5 UNIX Disk Inquiries

The MW OS Agent Analyzer provides the following inquiries that report on data about disk applications:

1 - UNIX Top 5 Disk Utilization Comparison (AUMCSB)
2 - UNIX Disk I/O Activity (AUMCSC)
3 - UNIX Logical Volume Activity (AUMCSD)

3.1.5.1 UNIX Top 5 Disk Utilization Comparison (AUMCSB)

The UNIX Top 5 Disk Utilization Comparison uses data from the CA MICS AUMDDA file to display disk utilization for the top 5 devices over the date and/or time ranges selected. The color graphic plots are displayed by system, zone, and/or date intervals based on the report summarization options you specify.

Each plot displays the average disk utilization percentage (DDAPCDUT) on the left axis over the date/time periods selected. The top five devices are those with the highest average utilization in the entire range of selected data. Utilization percentages for each device are represented by colored lines.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)

o Choose option 2, Database Inquiries

o Select AUMCSB, whose Catalog Group is Perform

o Complete the MICF Execution panel

o Complete the specification panel illustrated below
(Descriptions of the fields follow the panel)

The result will be displayed on your terminal.

```
+-------------------------------------------------------------------------+
|----------------- UNIX Top 5 Disk Utilization Comparison -------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                  |
| Generate a plot for each value of Zone     ===> _ (Y/N)                 |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes

07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing very often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

3.1.5.2 UNIX Disk I/O Activity (AUMCSC)

The UNIX Disk I/O Activity chart uses data from the CA MICS AUMDDA file to display disk activity rates by I/O type for selected disk devices over the date and/or time ranges you select. The color graphic charts are displayed by system, zone, and/or date intervals based on the report summarization options you specify.

Each chart displays logical and physical disk I/O activity rates as bars. The number of I/Os per second is shown on the left axis. Physical and logical I/O rates are displayed over the date/time periods you select. The type of physical I/O--file, memory management, system, and raw--are delineated by color.

This report is not supported for Solaris or AIX systems because the elements needed are not available from the data source.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select AUMCSC, whose Catalog Group is Perform
- Complete the MICF Execution panel
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result displays on your terminal

```
+------------------------------------------------------------------------+
|---------------------- UNIX Disk I/O Activity -------------------------|
| Command ===>                                                           |
|                                                                        |
| Composing CA MICS Inquiry:                                             |
|                                                                        |
| Database ===> ____________________________________________             |
| Cycle(s) ===> __ - __                                                  |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                 |
| Generate a plot for each value of Zone     ===> _ (Y/N)                |
|                                                                        |
| Data Selection:                                                        |
|                          Date Range 1         Date Range 2             |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy     |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __     |
|   Hour         ===> __ - __    __ - __    __ - __                     |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                  |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                      |
|                                                                        |
|   Device                                                               |
|   Name         ===> _________ __________ _________                     |
|                     _________ __________ _________                     |
+------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Disk Name - Optional. No default. 1-20 character disk name (DDANAME). You can specify up to six disk names. An input observation is selected if its disk name value is equal to any of the specified values.

3.1.5.3 UNIX Logical Volume Activity (AUMCSD)

The UNIX Logical Volume Activity chart uses data from the CA MICS AUMVLM file to display logical volume activity (disk space used and logical read/write rates) for selected logical volumes over the date and/or time ranges you select.

Each color plot displays the logical read rate (VLMPSLRD) and logical write rate (VLMPSLWT) as line values over time. The left vertical axis represents the I/O rate per second. Disk space used (VLMPCSPU) is portrayed by a shaded area on the plots. The right vertical axis shows the utilization percentage.

This report is not supported for Solaris or AIX systems because the elements needed are not available from the data source.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries

o Select AUMCSD, whose Catalog Group is Perform

o Complete the MICF Execution panel

o Complete the specification panel illustrated below
(Descriptions of the fields follow the panel)

The result displays on your terminal.

```
+-------------------------------------------------------------------------+
|--------------------- UNIX Logical Volume Activity --------------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                  |
| Generate a plot for each value of Zone     ===> _ (Y/N)                 |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|                                                                         |
|   Logical                                                               |
|   Volume Name  ===> ____________________ ____________________           |
|                     ____________________ ____________________           |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes

07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

```
Generate a plot for each value of Zone - Required.  Defaults
to Y.  Specify Y (Yes) to generate reports for each zone.
The nature and resource requirements of UNIX processing often
change from one zone to another (for example, prime shift
online demands versus production batch requirements at
non-prime shift periods).  Zone reporting gives you the
ability to display separate reports for each observed zone.
If you specify N (No), the data is summarized to the
appropriate level and displayed on a single report.

Date - Optional.  No default.  Up to two date ranges in DD
MMM YY format.  The first value in each date range is the
starting date and the last value is the ending date.  The
ending date must be higher than the starting date.  The date
ranges should not overlap, but you can specify the higher
range before the lower range.  For example, a valid date
range specification is specifying date range 1 as
01 JAN 95 - 31 DEC 95 and specifying date range 2 as
01 JAN 94 - 31 DEC 94.  An input observation is selected if
its date value is greater than or equal to the starting date
and is less than or equal to the ending date of any specified
date range.

Hour - Optional.  No default.  0-23.  Up to three hour
ranges.  The first value is the starting hour and the last
value is the ending hour.  The ending hour must be higher
than the starting hour.  The hour ranges should not overlap,
but you can specify the higher range before the lower range.
For example, a valid hour range specification is 18 - 23 and
09 - 17.  An input observation is selected if its hour value
is greater than or equal to the starting hour and is less
than or equal to the ending hour of any specified hour range.

Zone - Optional.  No default.  1-character zone value from 1
to 9.  You can specify up to nine zone values.  An input
observation is selected if its zone value is equal to any of
the specified values.

Sysid - Optional.  No default.  1-4 character SYSID value.
You can specify up to six SYSIDs.  An input observation is
selected if its SYSID value is equal to any of the specified
values.

Logical Volume Name - Optional. No default. 1-20 character
logical volume name (VLMNAME). You can specify up to four
logical volumes.  An input observation is selected if its
logical volume name value is equal to any of the specified
values.
```

3.1.6 UNIX Global Inquiries

The MW OS Agent Analyzer provides the following inquiry that reports on global data:

1 - UNIX System Performance Summary (AUMLS1)

3.1.6.1 UNIX System Performance Summary (AUMLS1)

The UNIX System Performance Summary uses measurements from the CA MICS AUMGPR file to display an overall view of system utilization and workload throughput by system for the date and/or time intervals you request.

Each report is organized into categories of related measurements that allow an overall view of system utilization, load, and performance. Categories include sections for processor load, memory utilization, I/O activity, and workload throughput.

For HP-UX systems, the following MW OS Agent Analyzer data elements are displayed:

- GPRAVAPR (active processes)
- GPRAVCPQ (run queue length)
- GPRAVDKQ (disk queue length)
- GPRAVIPQ (IPC resources queue length)
- GPRAVMMQ (memory queue length)
- GPRAVNTQ (network queue length)
- GPRAVPRO (alive processes)
- GPRAVPRQ (priority queue length)
- GPRAVUSR (user sessions)
- GPRDKLRT (logical I/O)
- GPRDMMRT (virtual memory management I/O rate)
- GPRDMRRT (memory management - reads)
- GPRDMWRT (memory management - writes)
- GPRDSKRT (physical I/O)
- GPRPAGRT (page fault rate)
- GPRPCCPU (total CPU busy)
- GPRPCCSW (CPU use - context switching)
- GPRPCHIT (% logical reads met by cache)
- GPRPCINT (CPU use - interrupt handling)
- GPRPCMEM (main memory % used)
- GPRPCMMS (main memory % used - system)
- GPRPCMMU (main memory % used - users)
- GPRPCNIC (CPU use - nice priority)
- GPRPCNOR (CPU use - normal priority)
- GPRPCRTM (CPU use - real time priority)
- GPRPCSSC (CPU use - system calls)
- GPRPCSWS (disk swap space % used)
- GPRPCSYS (CPU use - system mode)
- GPRPCUSR (CPU use - user mode)

For Solaris and AIX systems, the following data elements are displayed:

- GPRAVAPR (active processes)
- GPRAVCPQ (run queue length)
- GPRAVUSR (user sessions)
- GPRDMMRT (virtual memory management I/O rate)
- GPRDSKRT (physical I/O)
- GPRPAGRT (page fault rate)
- GPRPCCPU (total CPU busy)
- GPRPCMEM (main memory % used)
- GPRPCMMS (main memory % used - system)
- GPRPCMMU (main memory % used - users)
- GPRPCSWS (disk swap space % used)
- GPRPCSYS (CPU use - system mode)
- GPRPCUSR (CPU use - user mode)

To produce the report:

o Enter the CA MICS Workstation Facility (MWF)

o Choose option 2, CA MICS Information Center Facility (MICF)

o Choose option 2, Database Inquiries

o Select AUMLS1, whose Catalog Group is Perform

o Complete the MICF Execution panel

o Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result will be displayed on your terminal and is illustrated at the end of this section.

Note: For this report, the page width must be 132. Examine, and if necessary, change the page width using the MICF Foreground Execution Parameters (MWF 2;0;2). On the line
Subset Display On ===>
type Page. For Page Width, ensure that the value is set to 132.

```
+-------------------------------------------------------------------------+
|---------------------- UNIX System Performance Summary ----------------|
| Command ===>                                                            |
|                                                                         |
| Composing CA MICS Inquiry:                                              |
|                                                                         |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Report by hour if timespan is DAYS or WEEKS ===> _ (Y/N)                |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
|                                                                         |
| Data Selection:                                                         |
|                          Date Range 1         Date Range 2              |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date         ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|                                                                         |
+-------------------------------------------------------------------------+
```

Data base - Required. No default. Specify up to six data base unit IDs (the IDs of the CA MICS data base units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one data base unit, this parameter is set automatically. To display a selection list of valid data base unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified time-span of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (7 becomes

07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Time-span - Required. Default varies by report time-span. The time-span of the CA MICS data base from which the primary input files are selected. Required input file(s) must be available at the specified time-span.

Report by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly level or at the DAILY or WEEKLY levels. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a report for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of UNIX processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less

```
than or equal to the ending hour of any specified hour range.

Zone - Optional.  No default.  1-character zone value from 1
to 9.  You can specify up to nine zone values.  An input
observation is selected if its zone value is equal to any of
the specified values.

Sysid - Optional.  No default.  1-4 character SYSID value.
You can specify up to six SYSIDs.  An input observation is
selected if its SYSID value is equal to any of the specified
values.
```

Detail Unix System Performance Summary
CA MICS Data Integration Applications

SYSID=CS00 OS=HP-UX

INTVL-DAY (HR:MM-DD):	0:59-14	1:05-14	1:09-14	1:15-14	1:19-14	1:25-14	1:30-14	1:35-14	1:40-14	1:44-14	CHANGE %
CPU UTILIZATION PERCENTS											
System Mode	3.95	7.12	4.06	4.06	3.98	3.97	3.98	6.23	3.97	6.20	56.96 %
-- System Calls	2.99	5.94	3.07	3.05	3.01	2.98	2.99	5.16	2.99	5.16	72.58 %
-- Context Switching	0.10	0.14	0.10	0.09	0.09	0.09	0.09	0.12	0.09	0.12	20.00 %
-- Interrupt Handling	0.82	0.96	0.85	0.84	0.84	0.82	0.84	0.89	0.84	0.88	7.32 %
User Mode	2.42	3.95	2.45	2.42	2.44	2.42	2.46	3.66	2.47	3.68	52.07 %
-- Normal Priority	1.99	3.45	2.02	2.01	2.01	2.00	2.02	3.20	2.03	3.21	61.31 %
-- Nice Priority	0.14	0.14	0.14	0.13	0.14	0.13	0.15	0.12	0.15	0.13	-7.14 %
-- Real Time Priority	0.29	0.36	0.29	0.29	0.29	0.29	0.29	0.35	0.29	0.34	17.24 %
Total CPU Busy	6.37	11.07	6.51	6.48	6.42	6.39	6.44	9.89	6.44	9.88	55.10 %
MEMORY UTILIZATION											
Main Memory % Used	35.07	35.09	35.09	35.09	35.07	35.09	35.09	35.09	35.07	35.09	0.06 %
-- Users	18.66	18.68	18.68	18.68	18.66	18.68	18.68	18.68	18.66	18.68	0.11 %
-- System	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	16.41	---
Disk Swap Space % Used	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	---
Page Fault Rate	163.30	386.60	165.90	168.10	168.40	171.00	167.70	362.00	165.50	356.00	118.00 %
WORKLOAD AVERAGES											
User Sessions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Alive Processes	175.00	175.00	175.00	175.00	175.00	175.00	175.00	175.00	175.00	175.00	---
Active Processes	64.00	68.00	64.00	65.00	66.00	66.00	64.00	65.00	66.00	67.00	4.69 %
I/O LOAD PER SECOND											
Logical I/O	1046.00	1252.00	1048.00	1049.00	1047.00	1050.00	1048.00	1230.00	1049.00	1234.00	17.97 %
Physical I/O	10.00	65.30	12.50	10.40	10.50	9.90	10.20	24.60	10.80	23.30	133.00 %
Memory Management I/O	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Cache Hit Ratio	99.98	98.76	99.80	100.00	99.97	99.99	100.00	99.88	99.99	99.97	-0.01 %

Detail Unix System Performance Summary
CA MICS Data Integration Applications

SYSID=CS00 OS=HP-UX

INTVL-DAY (HR:MM-DD):	0:59-14	1:05-14	1:09-14	1:15-14	1:19-14	1:25-14	1:30-14	1:35-14	1:40-14	1:44-14	CHANGE %
AVERAGE QUEUE LENGTH											
Run	0.06	0.05	0.10	0.09	0.12	0.10	0.04	0.04	0.16	0.16	166.67 %
Priority	0.00	0.02	0.00	0.00	0.02	0.00	0.01	0.01	0.01	0.02	N/A
Disk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Memory	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
IPC Resources	2.90	2.85	3.08	2.88	2.85	2.87	2.85	2.85	2.88	2.85	-1.72 %
Network	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A

On this report, a Change % of N/A means that a percentage cannot be calculated because the divisor is 0.

A Change % of --- means that the percentage is 0 or that there was no data to compare.

Chapter 4: RESERVED

The CA MICS Analyzer for MeasureWare does not distribute exceptions.

Chapter 5: FILES

The Analyzer stores its data in the UNIX information area, whose three-character information area identifier is AUM.

The table in Figure 5-1 lists the product's files and the timespans that are activated for each file. For each file in the information area, the following information is provided:

XDWMYT - Defines the timespans in which the file is supported.

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

File - The SAS name used to access this file.

File Name - The descriptive label for the file.

MeasureWare Information Area	Date Generated: Tue, May 12, 2009

XDWMYT	File	File Name
XDWMY.	AUMAPP	UNIX APPLICATION PERFORMANCE FILE
XDWMY.	AUMDDA	UNIX DISK ACTIVITY FILE
XDWMY.	AUMGPR	UNIX GLOBAL PERFORMANCE FILE
X.....	AUMIPS	UNIX PROCESS EXCEPTION FILE
X..MY.	AUMKPS	UNIX PROCESS ACTIVITY FILE
X..M..	AUMMCF	UNIX SYSTEM AND COLLECTOR PROFILE
XDWMY.	AUMNIF	UNIX LAN ACTIVITY FILE
.....	AUMTTA	UNIX BUSINESS TRANSACTION SLO ACTIVITY
XDWMY.	AUMVLM	UNIX LOGICAL VOLUME ACTIVITY FILE

Figure 5-1. UNIX Information Area Files

This section contains the following topics:

5.1 Data Element Naming Conventions

There are two types of CA MICS data elements: standard and common. Standard data elements are unique to a CA MICS file, while common data elements are used by more than one CA MICS file.

The first three characters of a standard data element's name are the three-character file identifier to which the element belongs.

Common data elements do not use a data element prefix. They have a common definition across database information areas or across files within an information area. Common data elements are listed in the Sequence/Summary Data Elements and Common Data Elements sections of the data elements lists that accompany the following file documentation.

The following chart lists each file's descriptive name, its six-character file name, and the three-character standard data element name prefix.

Descriptive Name	File Name	Element Prefix
UNIX Global Performance File	AUMGPR	GPR
UNIX Application Performance File	AUMAPP	APP
UNIX Process Activity File	AUMKPS	KPS
UNIX Process Exception File	AUMIPS	IPS
UNIX LAN Activity File	AUMNIF	NIF
UNIX Disk Activity File	AUMDDA	DDA
UNIX System and Collector Profile	AUMMCF	MCF
UNIX Logical Volume Activity File	AUMVLM	VLM
UNIX Business Transaction SLO Activity	AUMTTA	TTA

5.2 UNIX Global Performance File (AUMGPR)

The UNIX Global Performance file contains global system measurements useful for capacity, system load, and performance analyses. It includes information about CPU use, disk I/Os, paging and swapping, and wait queues, and is derived from MeasureWare Global metrics.

The following sections describe the file's organization and list the data elements maintained.

5.2.1 AUMGPR File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	SYSID	AUMOPSYS	YEAR	MONTH	DAY
	HOUR				
WEEKS	SYSID	AUMOPSYS	YEAR	WEEK	ZONE
	HOUR				
MONTHS	SYSID	AUMOPSYS	YEAR	MONTH	ZONE
YEARS	SYSID	AUMOPSYS	YEAR	ZONE	
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-2. AUMGPR Timespan Granularity Chart

5.2.2 AUMGPR Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWMY.E	AUMOPSYS	- Operating System Name
XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWMY.E	SYSID	- System Identifier
XDW...E	WEEK	- Week of Year

```
 XDWMY.E  YEAR     - Year of Century
 XDWMY.E  ZONE     - Time Zone

Common Data Elements

 XDWMY.E  AUMCPMDL - System Model Identification
 XDWMY.E  AUMSAMPL - Number of Data Samples
 XDWMY.E  AUMSYSID - Name of Host System
 XD....E  DAYNAME  - Name of Day of Week
 XDWMY.E  DURATION - Recording Interval Time
 XDWMY.E  ENDTS    - End Time Stamp
 XDWMY.E  INTERVLS - Number of Recording Intervals
 XDWMY.E  STARTTS  - Start Time Stamp

Retained Data Elements

 XDWMY.E  GPRACCPU - CPUs Online per System
 XDWMY.E  GPRSUPTM - Time of Last System Reboot
```

```
Accumulated Data Elements

 XDWMY.E  GPRACTVM - Active Virtual Memory Size
 XDWMY.E  GPRAPRCT - Sum of Avg Processes Active
 XDWMY.E  GPRBIOCT - Processes Blocked on Local Disks
 XDWMY.E  GPRCACHE - Size of Buffer Cache Configured
 XDWMY.E  GPRCHUSE - The Size of Currently Used Buffers
 XDWMY.E  GPRCPQTM - CPU Queue Wait Time
 XDWMY.E  GPRCPRCT - Total Processes Completed
 XDWMY.E  GPRCPUCP - Total Available CPU Time
 XDWMY.E  GPRCPUTM - Total CPU Busy
 XDWMY.E  GPRCSWTM - CPU Busy for Context Switching
 XDWMY.E  GPRDBKCT - Block I/Os
 XDWMY.E  GPRDBRCT - Block Reads
 XDWMY.E  GPRDBWCT - Block Writes
 XDWMY.E  GPRDFRCT - Disk Reads by File System
 XDWMY.E  GPRDFWCT - Disk Writes by File System
 XDWMY.E  GPRDKQTM - Disk I/O Queue Wait Time
 XDWMY.E  GPRDMMCT - Virtual Memory Management I/Os
 XDWMY.E  GPRDMRCT - Disk Reads for Virt Memory Management
 XDWMY.E  GPRDMWCT - Disk Writes for Virt Memory Management
 XDWMY.E  GPRDRRCT - Raw Reads
 XDWMY.E  GPRDRWCT - Raw Writes
 XDWMY.E  GPRDSKIO - Physical Disk I/Os
 XDWMY.E  GPRDSRCT - Disk Reads for File System Management
 XDWMY.E  GPRDSWCT - Disk Writes for File System Management
 XDWMY.E  GPRFSDCT - File System I/Os
 XDWMY.E  GPRFSMCT - File System Management I/Os
 XDWMY.E  GPRINODU - Inode Entries in Use
 XDWMY.E  GPRINTTM - CPU Busy for Interrupt Handling
 XDWMY.E  GPRIPQTM - IPC Queue Wait Time
 XDWMY.E  GPRLCOLS - LAN Collisions
 XDWMY.E  GPRLDKCT - Logical Disk I/Os
 XDWMY.E  GPRLERRS - LAN Packet Errors
 XDWMY.E  GPRLOSTB - Trace Buffers Lost
 XDWMY.E  GPRLPCKI - Successful LAN Packets Received
 XDWMY.E  GPRLPCKO - Successful LAN Packets Sent
 XDWMY.E  GPRLRDCT - Logical Disk Reads
 XDWMY.E  GPRLRDKB - KBytes Logically Read From Disk
 XDWMY.E  GPRLUSED - Number of File Locks in Use
 XDWMY.E  GPRLWTCT - Logical Disk Writes
 XDWMY.E  GPRLWTKB - KBytes Logically Written To Disk
 XDWMY.E  GPRMEMSW - Amount of Swap Space Configured
 XDWMY.E  GPRMEMSZ - Amount of Main Memory Configured
 XDWMY.E  GPRMEMUS - Amount of Main Memory Available for User
 XDWMY.E  GPRMEMUT - Main Memory Used
 XDWMY.E  GPRMMEMS - Main Memory Used by System
 XDWMY.E  GPRMMEMU - Main Memory Used by Users
 XDWMY.E  GPRMMQTM - Memory Queue Wait Time
```

```
XDWMY.E  GPRMQUSE - Message Queues in Use
XDWMY.E  GPRMSGQU - Message Queues Available
XDWMY.E  GPRNFSCT - Network File System Requests
XDWMY.E  GPRNICTM - CPU Busy at Nice Priorities
XDWMY.E  GPRNORTM - CPU Busy at Normal Priorities
XDWMY.E  GPRNPROC - Value of NPROC Parameter
XDWMY.E  GPRNTQTM - Network Queue Wait Time
XDWMY.E  GPROFLOW - Unmeasurable New Transactions
XDWMY.E  GPROUTQU - Outbound Queue Lengths
XDWMY.E  GPRPAUTM - CPU Idle Due to I/O Wait
XDWMY.E  GPRPFLCT - Page Faults
XDWMY.E  GPRPGOCT - Number of Page Outs
XDWMY.E  GPRPKBCT - KBytes Physically Transferred
XDWMY.E  GPRPRDCT - Physical Disk Reads
XDWMY.E  GPRPRITM - Time Blocked on Priority
XDWMY.E  GPRPROCT - Sum of Avg Processes Alive
XDWMY.E  GPRPTBLU - Proc Table Entries Used
XDWMY.E  GPRPWTCT - Physical Disk Writes
XDWMY.E  GPRRAWCT - Raw I/Os
XDWMY.E  GPRRDHIT - Buffered Read Hits
XDWMY.E  GPRRTMTM - CPU Busy at Real Time Priorities
XDWMY.E  GPRRUNTM - Total Run Time of Completing Processes
XDWMY.E  GPRSCALL - Total System Calls
XDWMY.E  GPRSEMID - Semaphore Identifiers Available
XDWMY.E  GPRSEMST - Semaphore Identifiers in Use
XDWMY.E  GPRSHMSG - Table Memory Segments Available
XDWMY.E  GPRSLQTM - Sleep Queue Wait Time
XDWMY.E  GPRSMEMS - Shared Memory Segments in Use
XDWMY.E  GPRSPRCT - Total Processes Started
XDWMY.E  GPRSSCTM - CPU Busy for System Calls
XDWMY.E  GPRSUSCT - Procs Suspended During Interval
XDWMY.E  GPRSWACT - Processes Waiting to be Swapped in
XDWMY.E  GPRSWAPU - Swap Space Used
XDWMY.E  GPRSWOCT - Number of Swap Outs/Deactivations
XDWMY.E  GPRSWPCT - Process Swaps, Activation/Deactivation
XDWMY.E  GPRSYSTM - CPU Busy in System Mode
XDWMY.E  GPRTBLEN - File Table Entries Used
XDWMY.E  GPRTBLUK - Entries Used by Kernel
XDWMY.E  GPRUSRCT - Sum of Avg Login Users
XDWMY.E  GPRUSRTM - CPU Busy in User Mode
```

```
Maximum Data Elements

 XDWMY.E  GPRMPBDU - Percent Utilization of Busiest Disk
 XDWMY.E  GPRMPDSU - Peak Disk Space Utilization
 XDWMY.E  GPRMXCPU - Max Number of Processors Configured
 XDWMY.E  GPRMXDSK - Max Number of Disk Drives Configured
 XDWMY.E  GPRMXDTM - Time Busiest Disk Was Busy
 XDWMY.E  GPRMXLAN - Max Number of LAN Interfaces Configured

Derived Data Elements

 XDWMY.E  GPRAVAPR - Avg Number of Processes Active
 XDWMY.E  GPRAVBIQ - Avg Processes Blocked on Local Disks
 XDWMY.E  GPRAVCPQ - Avg Processes in Run Queue
 XDWMY.E  GPRAVDKQ - Avg Processes Waiting for Disk I/Os
 XDWMY.E  GPRAVIPQ - Avg Processes Waiting for IPC Resources
 XDWMY.E  GPRAVLCL - Rate of LAN Collisions per Minute
 XDWMY.E  GPRAVLER - Rate of LAN Errors per Minute
 XDWMY.E  GPRAVMMQ - Avg Processes Waiting for Memory
 XDWMY.E  GPRAVNTQ - Avg Processes Waiting for Network
 XDWMY.E  GPRAVPRO - Avg Number of Processes Alive
 XDWMY.E  GPRAVPRQ - Avg Processes Blocked on Priority
 XDWMY.E  GPRAVRTM - Avg Run Time of Completing Processes
 XDWMY.E  GPRAVSLQ - Avg Processes in Sleep State
 XDWMY.E  GPRAVSUS - Avg Number of Processes Suspended
 XDWMY.E  GPRAVSWA - Avg Number of Processes Waiting Swap-In
 XDWMY.E  GPRAVUSR - Avg Number of Login Users
 XDWMY.E  GPRDKLRT - Logical Disk I/O Rate
 XDWMY.E  GPRDMMRT - Virtual Memory Management I/O Rate
 XDWMY.E  GPRDMRRT - Virt Memory Management Disk Read Rate
 XDWMY.E  GPRDMWRT - Virt Memory Management Disk Write Rate
 XDWMY.E  GPRDSKRT - Physical Disk I/O Rate
 XDWMY.E  GPRNFSRT - Rate of Network File System Requests
 XDWMY.E  GPRPAGRT - Page Fault Rate
 XDWMY.E  GPRPCAVM - Percent of Virtual Memory in Active Use
 XDWMY.E  GPRPCCPU - Percent Total CPU Busy
 XDWMY.E  GPRPCCSW - Percent CPU Busy for Context Switching
 XDWMY.E  GPRPCHIT - Cache Hit Ratio
 XDWMY.E  GPRPCINT - Percent CPU Busy for Interrupt Handling
 XDWMY.E  GPRPCMEM - Percent of Main Memory Used
 XDWMY.E  GPRPCMMS - Percent of Main Memory Used by System
 XDWMY.E  GPRPCMMU - Percent of Main Memory Used by Users
 XDWMY.E  GPRPCNIC - Percent CPU Busy at Nice Priorities
 XDWMY.E  GPRPCNOR - Percent CPU Busy at Normal Priorities
 XDWMY.E  GPRPCRTM - Percent CPU Busy at Real Time Priorities
 XDWMY.E  GPRPCSSC - Percent CPU Busy for System Calls
 XDWMY.E  GPRPCSWS - Percent of Swap Space Used
 XDWMY.E  GPRPCSYS - Percent CPU Busy in System Mode
 XDWMY.E  GPRPCUSR - Percent CPU Busy in User Mode
```

```
XDWMY.E  GPRSCLRT - System Procedure Call Rate
XDWMY.E  GPRSWORT - Swap-Out Rate
XDWMY.E  GPRSWPRT - Swapping Rate
```

5.2.3 AUMGPR Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - HOUR should not be used in MONTHS and YEARS.
   - DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - WEEK should not be used in MONTHS or YEARS.
   - MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.2.4 AUMGPR Retrieval Examples

Plot the use of CPU by system and users.

```
 DATA GPR;
   SET DAYS.AUMGPR01;
   DATE = DATEPART(ENDTS);
   IF 8 < HOUR < 18;
   %GPRDERV;
   LABEL GPRPCUSR = '%CPU Time Charged to Users'
         GPRPCSYS = '%CPU Time System Overhead'
         GPRPCCPU = '%Total CPU Busy';
   FORMAT DATE MMDDYY8.;
 RUN;

 PROC TIMEPLOT DATA=GPR;
   BY SYSID DATE;
   ID HOUR;
     PLOT GPRPCCPU='T' GPRPCUSR='U'  GPRPCSYS='S'
     / OVERLAY HILOC POS=0 AXIS=0 TO 100;
     TITLE "CPU Consumption by System and Users";
   RUN;
```

5.3 UNIX Application Performance File (AUMAPP)

The UNIX Application Performance file contains interval-based measurements useful for analyzing application use. It includes information about CPU use, disk I/Os, memory, transactions, processes, and wait states, and is derived from MeasureWare Application metrics.

The following sections describe the file's organization and list the data elements maintained.

```
  1 - AUMAPP File Organization
  2 - AUMAPP Data Elements List
  3 - AUMAPP Usage Considerations
  4 - AUMAPP Retrieval Examples
```

5.3.1 AUMAPP File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	AUMAPU	YEAR	MONTH
	DAY	HOUR	ENDTS		
DAYS	SYSID	AUMOPSYS	AUMAPU	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	AUMOPSYS	AUMAPU	YEAR	WEEK
	ZONE	HOUR			
MONTHS	SYSID	AUMOPSYS	AUMAPU	YEAR	MONTH
	ZONE				
YEARS	SYSID	AUMOPSYS	AUMAPU	YEAR	ZONE
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-3. AUMAPP Timespan Granularity Chart

5.3.2 AUMAPP Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWMY.E	AUMAPU	- Application Name
XDWMY.E	AUMOPSYS	- Operating System Name
XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year

```
 XDWMY.E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWMY.E  YEAR     - Year of Century
 XDWMY.E  ZONE     - Time Zone

Common Data Elements

 XDWMY.E  AUMAPNUM - Application Number
 XDWMY.E  AUMSAMPL - Number of Data Samples
 XD....E  DAYNAME  - Name of Day of Week
 XDWMY.E  DURATION - Recording Interval Time
 XDWMY.E  ENDTS    - End Time Stamp
 XDWMY.E  INTERVLS - Number of Recording Intervals
 XDWMY.E  STARTTS  - Start Time Stamp
```

```
Retained Data Elements

 X.....E  APPPCSCP - Pct CPU Wait
 X.....E  APPPCSDK - Pct Disk I/O Wait
 X.....E  APPPCSDR - Pct Time Directed to Wait
 X.....E  APPPCSIM - Pct Software Impede Wait
 X.....E  APPPCSIP - Pct Interprocess Communication Wait
 X.....E  APPPCSLN - Pct LAN I/O Wait
 X.....E  APPPCSOT - Pct Non-LAN/DISK/TERM I/O Wait
 X.....E  APPPCSWP - Pct Memory Wait

Accumulated Data Elements

 XDWMY.E  APPAPRCT - Sum of Avg Processes Active
 XDWMY.E  APPCOST  - Processing Charges
 XDWMY.E  APPCPRCT - Number of Processes Completed
 XDWMY.E  APPCPUCM - PRM CPU Cap Mode
 XDWMY.E  APPCPUCP - Total Available CPU Time
 XDWMY.E  APPCPUEN - PRM CPU Entitlement
 XDWMY.E  APPCPUST - PRM CPU State
 XDWMY.E  APPCPUTM - Total CPU Use
 XDWMY.E  APPDBKCT - Block I/Os
 XDWMY.E  APPDBRCT - Block Reads
 XDWMY.E  APPDBWCT - Block Writes
 XDWMY.E  APPDFSCT - Number of File System Reads and Writes
 XDWMY.E  APPDMMCT - Number of Memory Manager Reads and Write
 XDWMY.E  APPDRAIO - Number of Raw Reads and Writes
 XDWMY.E  APPDSKIO - Number of Physical Disk I/Os
 XDWMY.E  APPDSYIO - Number of System Reads and Writes
 XDWMY.E  APPLIOCT - Logical Disk I/Os
 XDWMY.E  APPLOGMD - PRM Logging Mode
 XDWMY.E  APPLRDCT - Logical Disk Reads
 XDWMY.E  APPLWTCT - Logical Disk Writes
 XDWMY.E  APPMEMAV - PRM Available Memory
 XDWMY.E  APPMEMEN - PRM MEM Entitlement
 XDWMY.E  APPMEMPR - Private Resident Memory Size in KBytes
 XDWMY.E  APPMEMRS - Resident Memory Size in KBytes
 XDWMY.E  APPMEMST - PRM MEM State
 XDWMY.E  APPMEMSW - Amount of Swap Space Configured
 XDWMY.E  APPMEMSZ - Amount of Main Memory Configured
 XDWMY.E  APPMEMUP - PRM MEM Upperbound
 XDWMY.E  APPMEMUS - PRM Memory Used by Processes
 XDWMY.E  APPMEMVR - Virtual Memory Size in KBytes
 XDWMY.E  APPNICTM - CPU Use at Nice Priorities
 XDWMY.E  APPNORTM - CPU Use at Normal Priorities
 XDWMY.E  APPPFMAJ - Page Faults to Disk
 XDWMY.E  APPPFMIN - Page Faults to Memory
 XDWMY.E  APPPKBCT - I/O Transfer Count in KBytes
 XDWMY.E  APPPRDCT - Physical Disk Reads
```

```
 XDWMY.E  APPPROCT - Sum of Avg Processes Alive
 XDWMY.E  APPPWTCT - Physical Disk Writes
 XDWMY.E  APPRTMTM - CPU Use at Real Time Priorities
 XDWMY.E  APPRUNTM - Total Run Time of Completing Processes
 XDWMY.E  APPSUSCT - Procs suspended during interval
 XDWMY.E  APPSYSTM - CPU Use for System Processing
 XDWMY.E  APPUSRTM - CPU Use in User Mode

Derived Data Elements

 XDWMY.E  APPAVAPR - Avg Processes Active
 XDWMY.E  APPAVPRO - Avg Processes Alive
 XDWMY.E  APPAVRTM - Avg Run Time of Completing Processes
 XDWMY.E  APPAVSUS - Avg Number of Processes Suspended
 XDWMY.E  APPDFSRT - Rate of File System Reads/Writes (IO/Sec
 XDWMY.E  APPDMMRT - Rate of Memory Mgr. Reads/Writes (IO/Sec
 XDWMY.E  APPDRART - Rate of Raw Reads/Writes (IO/Sec)
 XDWMY.E  APPDSYRT - Rate of System Reads/Writes (IO/Sec)
 XDWMY.E  APPMAJRT - Rate of Page Faults to Disk
 XDWMY.E  APPMINRT - Rate of Page Faults to Memory
 XDWMY.E  APPPCCPU - Percent Total CPU Use
 XDWMY.E  APPPCMPR - Percent Memory Use for Private Resident
 XDWMY.E  APPPCMRS - Percent Memory Use for Resident Memory
 XDWMY.E  APPPCNIC - Percent CPU Use at Nice Priorities
 XDWMY.E  APPPCNOR - Percent CPU Use at Normal Priorities
 XDWMY.E  APPPCRTM - Percent CPU Use at Real Time Priorities
 XDWMY.E  APPPCSYS - Percent CPU Use for System Processing
 XDWMY.E  APPPCUSR - Percent CPU Use in User Mode
 XDWMY.E  APPPKBRT - I/O Transfer Rate in KBytes
 XDWMY.E  APPPSPRD - Physical Disk Read Rate
 XDWMY.E  APPPSPWT - Physical Disk Write Rate
```

5.3.3 AUMAPP Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - HOUR should not be used in MONTHS and YEARS.
   - DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - WEEK should not be used in MONTHS or YEARS.
   - MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.3.4 AUMAPP Retrieval Examples

Print the use of CPU, memory, and swap spaces for the top ten applications on the system.

```
%LET BY = SYSID YEAR MONTH DAY AUMAPU;
%LET BREAK = AUMAPU;
PROC SORT DATA=DAYS.AUMAPP01 OUT=APP;
  BY &BY;
  RUN;
DATA APP;
  SET DAYS.AUMAPP01;
  DATE = DATEPART(ENDTS);
  FORMAT DATE MMDDYY8.;
  SET APP;
  %APPFMT(TS=DAYS,DERV=YES);
  %APPSUM;
RUN;
%LET BY = SYSID DATE;
%LET BREAK = DATE;
PROC SORT; BY &BY DESCENDING APPCPUTM;
DATA APP2 (KEEP=&BY AUMAPU APPPCCPU APPCPUTM APPPCUSR
           APPPCNIC APPPCSYS APPPCRTM
           APPAVAPR RANK);
  SET APP;
  BY &BY;
  RETAIN RANK 0;
  IF FIRST.&BREAK THEN RANK = 0;
  RANK+1;
  IF RANK > 10 THEN RETURN;
  OUTPUT;
  LABEL RANK = 'Rank'
        AUMAPU   = 'Application*Name'
        APPPCCPU = '%CPU Use*Total'
        APPCPUTM = 'Total*CPU Use'
        APPPCUSR = '%CPU Use*User Mode'
        APPPCNIC = '%CPU Use*Nice'
        APPPCSYS = '%CPU Use*System'
        APPPCRTM = '%CPU Use*Real Time'
        APPAVAPR = 'Avg Process*Active'
        ;
RUN;
PROC PRINT SPLIT='*';
  BY &BY;
  PAGEBY &BREAK;
  ID RANK;
  VAR  AUMAPU APPCPUTM APPAVAPR APPPCCPU APPPCUSR APPPCNIC
       APPPCRTM APPPCSYS;
  TITLE "Top 10 Applications by CPU Use";
```

```
RUN;
```

5.4 UNIX Process Activity File (AUMKPS)

The UNIX Process Activity file contains measurements about completed processes and is useful for accounting and process analysis. It includes information about CPU, disk, memory, and transactions, and is derived from MeasureWare Application metrics.

The following sections describe the file's organization and list the data elements maintained.

1 - AUMKPS File Organization
2 - AUMKPS Data Elements List
3 - AUMKPS Usage Considerations
4 - AUMKPS Retrieval Examples

5.4.1 AUMKPS File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	AUMACT1	AUMACT2	AUMACT3
	YEAR	MONTH	DAY	HOUR	ENDTS
DAYS	N/A				
WEEKS	N/A				
MONTHS	SYSID	AUMOPSYS	AUMACT1	AUMACT2	YEAR
	MONTH	ZONE			
YEARS	SYSID	AUMOPSYS	AUMACT1	AUMACT2	YEAR
	ZONE				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-4. AUMKPS Timespan Granularity Chart

5.4.2 AUMKPS Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

X..MY.E	AUMACT1	- DIVISION
X..MY.E	AUMACT2	- USER GROUP
X.....E	AUMACT3	- USER NAME
X..MY.E	AUMOPSYS	- Operating System Name
X.....E	DAY	- Day of Month
X.....E	HOUR	- Hour of Day

```
 X..M..E  MONTH    - Month of Year
 X..MY.E  SYSID    - System Identifier
 X.....E  WEEK     - Week of Year
 X..MY.E  YEAR     - Year of Century
 X..MY.E  ZONE     - Time Zone

Common Data Elements

 X.....E  AUMAPNUM - Application Number
 X.....E  AUMAPU   - Application Name
 X.....E  AUMGRPID - Group Identification Number
 X.....E  AUMLNTTY - Logon TTY Name
 X.....E  AUMPIN   - Process Identification Number
 X.....E  AUMPPID  - Parent Identification Number
 X.....E  AUMPRI   - Dispatch Priority
 X.....E  AUMPROG  - Program Name
 X.....E  AUMUSER  - User Logon Name
 X.....E  DAYNAME  - Name of Day of Week
 X..MY.E  DURATION - Recording Interval Time
 X..MY.E  ENDTS    - End Time Stamp
 X..MY.E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 X..MY.E  KPSCOST  - Processing Charges
 X..MY.E  KPSCPUTM - Total CPU Use
 X..MY.E  KPSDBKCT - Block I/Os
 X..MY.E  KPSDSKIO - Physical Disk I/Os
 X..MY.E  KPSLDKCT - Logical Disk I/Os
 X..MY.E  KPSPKBCT - Total I/O Transfer Count in KBytes
 X..MY.E  KPSRSSKB - Resident Set Size
 X..MY.E  KPSRUNTM - Total Run Time
 X..MY.E  KPSSCPTM - CPU Wait Time
 X..MY.E  KPSSDKTM - Disk I/O Wait Time
 X..MY.E  KPSSDRTM - Directed to Wait Time
 X..MY.E  KPSSIMTM - Software Impede Wait Time
 X..MY.E  KPSSIPTM - IPC Resource Wait Time
 X..MY.E  KPSSLNTM - LAN I/O Wait Time
 X..MY.E  KPSSNFTM - Network File System Wait Time
 X..MY.E  KPSSOITM - Non-LAN/DISK/TERM I/O Wait Time
 X..MY.E  KPSSSYTM - System Wait Time
 X..MY.E  KPSSVMTM - Virtual Memory Wait Time
 X..MY.E  KPSVSSKB - Virtual Memory Regions

Derived Data Elements

 X..MY.E  KPSAVDRT - Physical Disk I/O Rate
 X..MY.E  KPSAVLRT - Logical Disk I/O Rate
 X..MY.E  KPSDBKRT - Block I/O Rate
```

```
X..MY.E  KPSPKBRT - I/O Transfer Rate in KBytes
```

5.4.3 AUMKPS Usage Considerations

1. To populate this file, you must ensure that your organization's MeasureWare parm file specifies the SHORTLIVED threshold setting and omits the NOKILLED threshold setting.

2. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - HOUR should not be used in MONTHS and YEARS.
   - DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - WEEK should not be used in MONTHS or YEARS.
   - MONTH should not be used in YEARS.

3. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.4.4 AUMKPS Retrieval Examples

The following example lists resources consumed by processes that were ended between 9:00 and 9:59 am. Processes are grouped by its associated application on the report.

```
PROC SORT DATA=DETAIL.AUMKPS01 OUT=KPS;
  BY SYSID AUMAPU ENDTS;
RUN;
PROC PRINT DATA=KPS LABEL NOOBS;
  BY SYSID AUMAPU;
  PAGEBY AUMAPU;
  VAR AUMAPNUM AUMPROG AUMUSER AUMPIN AUMPRI
      KPSRUNTM KPSCPUTM KPSDSKIO KPSLDKCT
  ;
  SUM KPSRUNTM KPSCPUTM KPSDSKIO KPSLDKCT
  ;
  WHERE (HOUR=9);
  TITLE "Detail Killed Processes Resource Consumption";
RUN;
```

5.5 UNIX Process Exception File (AUMIPS)

The UNIX Process Exception file contains measurements about interesting processes (processes that exceed thresholds) and is useful for performance and problem analyses and modeling. It includes information about CPU use, disk, memory, and transactions as well as reason codes (defining why the process is interesting). The AUMIPS file is derived from MeasureWare Application metrics.

The following sections describe the file's organization and list the data elements maintained.

1 - AUMIPS File Organization
2 - AUMIPS Data Elements List
3 - AUMIPS Usage Considerations
4 - AUMIPS Retrieval Examples

5.5.1 AUMIPS File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity					
DETAIL	SYSID	AUMOPSYS	YEAR	MONTH	DAY	
	HOUR	ENDTS	AUMUSER	AUMLNTTY	AUMPIN	
	AUMPROG					
DAYS	N/A					
WEEKS	N/A					
MONTHS	N/A					
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-5. AUMIPS Timespan Granularity Chart

5.5.2 AUMIPS Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

X.....E	AUMOPSYS	- Operating System Name
X.....E	AUMPIN	- Process Identification Number
X.....E	DAY	- Day of Month
X.....E	HOUR	- Hour of Day
X.....E	SYSID	- System Identifier

```
 X.....E  WEEK     - Week of Year
 X.....E  YEAR     - Year of Century
 X.....E  ZONE     - Time Zone
Common Data Elements

 X.....E  AUMAPNUM - Application Number
 X.....E  AUMAPU   - Application Name
 X.....E  AUMGRPID - Group Identification Number
 X.....E  AUMLNTTY - Logon TTY Name
 X.....E  AUMPPID  - Parent Identification Number
 X.....E  AUMPRI   - Dispatch Priority
 X.....E  AUMPROG  - Program Name
 X.....E  AUMUSER  - User Logon Name
 X.....E  DAYNAME  - Name of Day of Week
 X.....E  DURATION - Recording Interval Time
 X.....E  ENDTS    - End Time Stamp
 X.....E  MONTH    - Month of Year
 X.....E  STARTTS  - Start Time Stamp
```

```
Retained Data Elements

 X.....E  IPSINTR  - Interest Reason Codes
 X.....E  IPSPRMID - PRM Group Identification Number
 X.....E  IPSSTOPR - Blocked State

Accumulated Data Elements

 X.....E  IPSALITM - Process Alive Time
 X.....E  IPSCPUTM - Total CPU Use
 X.....E  IPSCSWTM - CPU Use for Context Switching
 X.....E  IPSDBKCT - Block I/Os
 X.....E  IPSDBRCT - Block Reads
 X.....E  IPSDBWCT - Block Writes
 X.....E  IPSDFRCT - File System Disk Reads
 X.....E  IPSDFWCT - File System Disk Writes
 X.....E  IPSDMMCT - Virtual Memory I/Os
 X.....E  IPSDSKIO - Physical Disk I/Os
 X.....E  IPSDSYCT - File System Management I/Os
 X.....E  IPSFSDCT - File System Disk I/Os
 X.....E  IPSINTTM - CPU Use for Interrupt Handling
 X.....E  IPSLRDCT - Logical Disk Reads
 X.....E  IPSLWTCT - Logical Disk Writes
 X.....E  IPSNICTM - CPU Use at Nice Priority
 X.....E  IPSNORTM - CPU Use at Normal Priority
 X.....E  IPSPFMAJ - Page Faults to Disk
 X.....E  IPSPFMIN - Page Faults to Memory
 X.....E  IPSPKBCT - I/O Transfer Count in KBytes
 X.....E  IPSRSSKB - Resident Set Size
 X.....E  IPSRTMTM - CPU Use at Real Time Priority
 X.....E  IPSRUNTM - Total Accumulated Run Time
 X.....E  IPSSSCTM - CPU Use for System Calls
 X.....E  IPSSYSTM - CPU Use in System Mode
 X.....E  IPSTHCNT - Total Number of Thread Counts
 X.....E  IPSUSRTM - CPU Use in User Mode
 X.....E  IPSVSSKB - Virtual Memory Regions
```

5.5.3 AUMIPS Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - o HOUR should not be used in MONTHS and YEARS.
   - o DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - o WEEK should not be used in MONTHS or YEARS.
   - o MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.5.4 AUMIPS Retrieval Examples

The following sample code lists processes that became interesting between 9:00-9:59 a.m. on an HP-UX system. The report includes information for the interest reason, CPU use, physical I/Os, transactions, and transaction response time.

```
 PROC SORT DATA=DETAIL.AUMIPS01 OUT=IPS;
   BY SYSID ENDTS;
 RUN;
 PROC PRINT DATA=IPS (WHERE=(HOUR EQ 9)) LABEL;
   BY SYSID;
   PAGEBY SYSID;
   VAR ENDTS AUMPROG AUMUSER AUMPIN AUMPRI AUMAPU IPSINTR
       IPSCPUTM IPSDSKIO
   ;
   TITLE "Interesting Processes Summary Report";
 RUN;
```

5.6 UNIX LAN Activity File (AUMNIF)

The UNIX LAN Activity file contains interval-based measurements useful for capacity analysis. It includes information about LAN packets, errors, and collisions, and is derived from MeasureWare NETIF metrics.

The following sections describe the file's organization and list the data elements maintained.

5.6.1 AUMNIF File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	NIFNAME	YEAR	MONTH
	DAY	HOUR	ENDTS		
DAYS	SYSID	AUMOPSYS	NIFNAME	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	AUMOPSYS	NIFNAME	YEAR	WEEK
	ZONE	HOUR			
MONTHS	SYSID	AUMOPSYS	NIFNAME	YEAR	MONTH
	ZONE				
YEARS	SYSID	AUMOPSYS	NIFNAME	YEAR	ZONE
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-6. AUMNIF Timespan Granularity Chart

5.6.2 AUMNIF Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWMY.E	AUMOPSYS	- Operating System Name
XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWMY.E	NIFNAME	- Device Name for LAN Interface

```
 XDWMY.E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWMY.E  YEAR     - Year of Century
 XDWMY.E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWMY.E  DURATION - Recording Interval Time
 XDWMY.E  ENDTS    - End Time Stamp
 XDWMY.E  INTERVLS - Number of Recording Intervals
 XDWMY.E  STARTTS  - Start Time Stamp

Retained Data Elements

 XDWMY.E  NIFMTUSZ - MTU Size
 XDWMY.E  NIFQUEUE - Outbound Queue Length
 XDWMY.E  NIFSPEED - Interface Speed


Accumulated Data Elements

 XDWMY.E  NIFCOLCT - LAN Collisions
 XDWMY.E  NIFERRCT - LAN Errors
 XDWMY.E  NIFPKICT - Inbound LAN Packets
 XDWMY.E  NIFPKOCT - Outbound LAN Packets

Derived Data Elements

 XDWMY.E  NIFPSCOL - LAN Collision Rate
 XDWMY.E  NIFPSERR - LAN Error Rate
 XDWMY.E  NIFPSPKI - Inbound LAN Packet Rate
 XDWMY.E  NIFPSPKO - Outbound LAN Packet Rate
```

5.6.3 AUMNIF Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - HOUR should not be used in MONTHS and YEARS.
   - DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - WEEK should not be used in MONTHS or YEARS.
   - MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.6.4 AUMNIF Retrieval Examples

The following example provides an overview of LAN activity on your systems, ranked by LAN traffic.

```
%LET BY = SYSID YEAR MONTH DAY NIFNAME;
%LET BREAK = NIFNAME;
PROC SORT DATA=DAYS.AUMNIF01 OUT=NIF;
  BY &BY;
RUN;
%MACRO NEGATE;
  PKIORT = SUM(NIFPSPKI,NIFPSPKO);
%MEND;
DATA NIF;
  SET NIF;
  DATE = DATEPART(ENDTS);
  FORMAT DATE MMDDYY8.;
  %NIFFMT(TS=DAYS,DERV=YES);
  %NIFLBL(DERV=YES);
  %NIFSUM;
RUN;
%LET BY = SYSID DATE;
%LET BREAK = DATE;
PROC SORT; BY &BY DESCENDING PKIORT;
DATA NIF2 (KEEP=&BY NIFNAME RANK      NIFPSPKI NIFPSPKO
           NIFPSERR NIFPSCOL)
          ;
  SET NIF;
  BY &BY;
  RETAIN RANK 0;
  IF FIRST.&BREAK THEN RANK = 0;
  RANK+1;
  OUTPUT;
  LABEL RANK = 'Rank';
RUN;
PROC PRINT LABEL;
  BY &BY;
  PAGEBY &BREAK;
  ID RANK;
  VAR  NIFNAME NIFPSPKI NIFPSPKO NIFPSERR NIFPSCOL;
  TITLE "Daily LAN Activity Ranked by Traffic";
RUN;
```

5.7 UNIX Disk Activity File (AUMDDA)

The UNIX Disk Activity file contains global system measurements useful for capacity analysis. It includes information about logical and physical reads and writes, as well as utilization rates. It is derived from MeasureWare Global metrics.

The following sections describe the file's organization and list the data elements maintained.

5.7.1 AUMDDA File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	DDANAME	YEAR	MONTH
	DAY	HOUR	ENDTS		
DAYS	SYSID	AUMOPSYS	DDANAME	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	AUMOPSYS	DDANAME	YEAR	WEEK
	ZONE	HOUR			
MONTHS	SYSID	AUMOPSYS	DDANAME	YEAR	MONTH
	ZONE				
YEARS	SYSID	AUMOPSYS	DDANAME	YEAR	ZONE
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-7. AUMDDA Timespan Granularity Chart

5.7.2 AUMDDA Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

- X - DETAIL
- D - DAYS
- W - WEEKS
- M - MONTHS
- Y - YEARS
- T - TABLES AREA
- . - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWMY.E	AUMOPSYS	- Operating System Name
XD....E	DAY	- Day of Month
XDWMY.E	DDANAME	- Disk Name
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year

```
 XDWMY.E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWMY.E  YEAR     - Year of Century
 XDWMY.E  ZONE     - Time Zone

Common Data Elements

 XDWMY.E  AUMLDEV  - Logical Device Number
 XD....E  DAYNAME  - Name of Day of Week
 XDWMY.E  DURATION - Recording Interval Time
 XDWMY.E  ENDTS    - End Time Stamp
 XDWMY.E  INTERVLS - Number of Recording Intervals
 XDWMY.E  STARTTS  - Start Time Stamp

Retained Data Elements

 XDWMY.E  DDADIR   - File System Directory
Accumulated Data Elements

 XDWMY.E  DDADDPDR - Time Processing Disk Request
 XDWMY.E  DDADFRCT - File System Reads
 XDWMY.E  DDADFWCT - File System Writes
 XDWMY.E  DDADMMCT - Virtual Memory I/Os
 XDWMY.E  DDADRRCT - Raw Reads
 XDWMY.E  DDADRWCT - Raw Writes
 XDWMY.E  DDADSKIO - Physical I/Os
 XDWMY.E  DDADUTTM - Disk Busy Time
 XDWMY.E  DDALRDCT - Logical Disk Reads
 XDWMY.E  DDALWTCT - Logical Disk Writes
 XDWMY.E  DDAPKBCT - Disk I/O Transfer Count in KBytes
 XDWMY.E  DDAPRDCT - Physical Reads
 XDWMY.E  DDAPWTCT - Physical Writes
 XDWMY.E  DDAQLNSM - Sum of Avg Queue Length
 XDWMY.E  DDARKBCT - KBytes Read
 XDWMY.E  DDASYSCT - File System Management I/Os
 XDWMY.E  DDAWKBCT - KBytes Written
```

```
Derived Data Elements

 XDWMY.E  DDAAVQLN - Avg Queue Length
 XDWMY.E  DDADSKRT - Physical I/O Rate
 XDWMY.E  DDAPCDUT - Percent Disk Utilization
 XDWMY.E  DDAPKBRT - Disk I/O Transfer Rate in KBytes
 XDWMY.E  DDAPSFRD - File System Read Rate
 XDWMY.E  DDAPSFWT - File System Write Rate
 XDWMY.E  DDAPSLRD - Logical Disk Read Rate
 XDWMY.E  DDAPSLWT - Logical Disk Write Rate
 XDWMY.E  DDAPSMEM - Virtual Memory I/O Rate
 XDWMY.E  DDAPSRRD - Raw Read Rate
 XDWMY.E  DDAPSRWT - Raw Write Rate
 XDWMY.E  DDAPSSYS - File System Management I/O Rate
 XDWMY.E  DDARKBRT - Disk Read Transfer Rate in KBytes
 XDWMY.E  DDAWKBRT - Disk Write Transfer Rate in KBytes
```

5.7.3 AUMDDA Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - o HOUR should not be used in MONTHS and YEARS.
   - o DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - o WEEK should not be used in MONTHS or YEARS.
   - o MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.7.4 AUMDDA Retrieval Examples

List disk utilization, physical and logical I/O rate, and average queue length for disk devices on the system. Disk devices on the report are ranked in descending order of how busy a device was.

```
%LET BY = SYSID YEAR MONTH DAY DDANAME;
%LET BREAK = DDANAME;
PROC SORT DATA=DAYS.AUMDDA01 OUT=DDA;
  BY &BY;
RUN;

%MACRO NEGATE;
  PSRAWIO = SUM(DDAPSRWT,DDAPSRRD);
  PSFILEIO = SUM(DDAPSFWT,DDAPSFRD);
  PSLOGIO = SUM(DDAPSLWT,DDAPSLRD);
  LABEL PSRAWIO = 'Raw I/O Rate'
        PSFILEIO = 'File System I/O Rate'
        PSLOGIO = 'Logical I/O Rate';
%MEND;

DATA DDA;
  SET DDA;
  DATE = DATEPART(ENDTS);
  FORMAT DATE MMDDYY8.;
  %DDAFMT(TS=DAYS,DERV=YES);
  %DDALBL(DERV=YES);
  %DDASUM;
RUN;

%LET BY = SYSID DATE;
%LET BREAK = DATE;
PROC SORT; BY &BY DESCENDING DDAPCDUT;
DATA DDA2 (KEEP=&BY DDANAME DURATION DDAPCDUT
           DDADUTTM DDAAVQLN DDAPSMEM DDAPSSYS PSRAWIO
           PSFILEIO PSLOGIO RANK);
  SET DDA;
  BY &BY;
  RETAIN RANK 0;
  IF FIRST.&BREAK THEN RANK = 0;
  RANK+1;
  OUTPUT;
  LABEL RANK = 'Rank';
  FORMAT DDAPSMEM DDAPSSYS PSRAWIO PSFILEIO PSLOGIO 8.2;
RUN;

PROC PRINT LABEL;
```

```
  BY &BY;
  PAGEBY &BREAK;
  ID RANK;
  VAR  DDANAME DURATION DDAPCDUT DDADUTTM DDAAVQLN
       DDAPSMEM DDAPSSYS PSRAWIO PSFILEIO PSLOGIO
       ;
  TITLE "Daily Disk Activity Ranked by Disk Busy";
RUN;
```

5.8 UNIX System and Collector Profile (AUMMCF)

The UNIX System and Collector Profile contains global system measurements useful for problem diagnosis, change tracking, and reporting. It includes information about the UNIX system on which data was collected, and is derived from MeasureWare Configuration metrics.

The following sections describe the file's organization and list the data elements maintained.

1 - AUMMCF File Organization
2 - AUMMCF Data Elements List
3 - AUMMCF Usage Considerations
4 - AUMMCF Retrieval Examples

5.8.1 AUMMCF File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	N/A				
WEEKS	N/A				
MONTHS	SYSID	AUMOPSYS	YEAR	MONTH	ZONE
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-8. AUMMCF Timespan Granularity Chart

5.8.2 AUMMCF Data Elements List

```
The table below identifies data elements contained in this
file.  The entries for each data element are:

TIMESPAN:  Defines the timespans in which the data element
           is supported.  The timespans are indicated by
           the letters &amp;quot;XDWMYT&amp;quot; as follows:

                 X - DETAIL
                 D - DAYS
                 W - WEEKS
                 M - MONTHS
                 Y - YEARS
                 T - TABLES AREA
                 . - File is not supported

 The timespan field also indicates Essential Elements with
 the letter E, if applicable.

 DATA ELEMENT:  The data element name.

 DATA ELEMENT DESCRIPTION:  The data element's long name.

 The timespans in which a data element is supported are
 defined by each installation when CA MICS is installed.
 Therefore, this table has been generated as part of the
 installation process to accurately reflect the CA MICS
 system at your installation.




GENERATION DATE: Tue, May 12, 2009

Note:  Essential data elements are identified by an "E"
       under the Timespan asterisk (*) column.

  Time-    Data      Data Element
  Span *  Element    Description (LABEL)
 -------  --------   ----------------------------------------


Sequence/Summary Data Elements

 X..M..E  AUMOPSYS - Operating System Name
 X.....E  DAY      - Day of Month
 X.....E  HOUR     - Hour of Day
```

```
 X..M..E  MONTH    - Month of Year
 X..M..E  SYSID    - System Identifier
 X.....E  WEEK     - Week of Year
 X..M..E  YEAR     - Year of Century
 X..M..E  ZONE     - Time Zone

Common Data Elements

 X..M..E  AUMCPMDL - System Model Identification
 X..M..E  AUMLGVER - Measurement Interface Version Number
 X..M..E  AUMOPSLC - Operating System License
 X..M..E  AUMOPSVR - Operating System Release Number
 X..M..E  AUMSCOPE - Scope Collector Name and Version Number
 X..M..E  AUMSYSID - Name of Host System
 X.....E  DAYNAME  - Name of Day of Week
 X..M..E  ENDTS    - End Time Stamp
 X.....E  ORGSYSID - Originating System Identification
Retained Data Elements

 X..M..E  MCFCACHE - Size of Buffer Cache Configured
 X..M..E  MCFCPUMN - Threshold, Percent of CPU
 X..M..E  MCFINODE - Entries in Inode Table on System
 X..M..E  MCFIORMN - Threshold, Physical Disk I/O Rate
 X..M..E  MCFKRNSZ - Kernel Word Size
 X..M..E  MCFLCKAV - File/Record Locks Available
 X..M..E  MCFLGTPS - Data Types Logged by Collector
 X..M..E  MCFLOSHR - Flag - Log Short-Running Processes
 X..M..E  MCFMCMOD - CPU Model
 X..M..E  MCFMEMSW - Swap Space Configured
 X..M..E  MCFMEMSZ - Main Memory Configured
 X..M..E  MCFMEMUS - Main Memory Available for Users
 X..M..E  MCFMSGQU - Message Queues Available
 X..M..E  MCFNCPUS - Number of Processors Configured
 X..M..E  MCFNDSKS - Number of Disk Drives Configured
 X..M..E  MCFNLANS - Number of LAN Interfaces Configured
 X..M..E  MCFNOKIL - Flag - No Terminating Processes
 X..M..E  MCFNONEW - Flag - No Newly Created Processes
 X..M..E  MCFNPROC - Value of NPROC Parameter
 X..M..E  MCFOPSYS - Operating System Name
 X..M..E  MCFPRCMM - Threshold, Virtual Memory
 X..M..E  MCFSEMID - Semaphore Identifiers Available
 X..M..E  MCFSHMSG - Table Memory Segments Available
 X..M..E  MCFTBLUK - Entries Used by Kernel
 X..M..E  MCFWCPMN - Threshold, Percent of CPU Wait
 X..M..E  MCFWDKMN - Threshold, Percent of Disk Wait
 X..M..E  MCFWIMMN - Threshold, Percent of Semaphore Wait
 X..M..E  MCFWMEMN - Threshold, Percent of Memory Wait
```

```
Minimum Data Elements

 X..M..E  MCFMNCHC - Minimum Size of Buffer Cache Configured
 X..M..E  MCFMNCPU - Minimum Number of Processors Configured
 X..M..E  MCFMNDSK - Minimum Number of Disk Drives Configured
 X..M..E  MCFMNLAN - Minimum Num of LAN Interfaces Configured
 X..M..E  MCFMNMEM - Minimum Main Memory Configured
 X..M..E  MCFMNMUS - Minimum Main Memory Available for Users
 X..M..E  MCFMNSWS - Minimum Swap Space Configured

Maximum Data Elements

 X..M..E  MCFMXCHC - Maximum Size of Buffer Cache Configured
 X..M..E  MCFMXCPU - Maximum Number of Processors Configured
 X..M..E  MCFMXDSK - Maximum Number of Disk Drives Configured
 X..M..E  MCFMXLAN - Maximum Num of LAN Interfaces Configured
 X..M..E  MCFMXMEM - Maximum Main Memory Configured
 X..M..E  MCFMXMUS - Maximum Main Memory Available for Users
 X..M..E  MCFMXSWS - Maximum Swap Space Configured
```

5.8.3 AUMMCF Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - HOUR should not be used in MONTHS and YEARS.
   - DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - WEEK should not be used in MONTHS or YEARS.
   - MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.8.4 AUMMCF Retrieval Examples

The following program provides an overview of the profile on your UNIX systems and data collector.

```
PROC PRINT DATA=DETAIL.AUMMCF01 LABEL NOOBS;
  ID SYSID ENDTS;
  VAR AUMSYSID AUMOPSYS AUMOPSVR AUMCPMDL
      MCFNCPUS MCFNDSKS MCFNLANS MCFMEMSZ MCFMEMUS MCFCACHE
      MCFMEMSW MCFLGTPS;
  TITLE 'Overview of UNIX System and Collector Profile';
RUN;
```

5.9 UNIX Logical Volume Activity File (AUMVLM)

The UNIX Logical Volume Activity file contains interval-based measurements useful for capacity analyses. It includes information about I/O and space for individual logical volumes. It is derived from MeasureWare Volume metrics, which are available from HP-UX systems.

The following sections describe the file's organization and list the data elements maintained.

5.9.1 AUMVLM File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	AUMOPSYS	VLMNAME	YEAR	MONTH
	DAY	HOUR	ENDTS		
DAYS	SYSID	AUMOPSYS	VLMNAME	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	AUMOPSYS	VLMNAME	YEAR	WEEK
	ZONE	HOUR			
MONTHS	SYSID	AUMOPSYS	VLMNAME	YEAR	MONTH
	ZONE				
YEARS	SYSID	AUMOPSYS	VLMNAME	YEAR	ZONE
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-9. AUMVLM Timespan Granularity Chart

5.9.2 AUMVLM Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWMY.E	AUMOPSYS	- Operating System Name
XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWMY.E	SYSID	- System Identifier

```
 XDWMY.E  VLMNAME  - Logical Volume Group Name
 XDW...E  WEEK     - Week of Year
 XDWMY.E  YEAR     - Year of Century
 XDWMY.E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWMY.E  DURATION - Recording Interval Time
 XDWMY.E  ENDTS    - End Time Stamp
 XDWMY.E  INTERVLS - Number of Recording Intervals
 XDWMY.E  STARTTS  - Start Time Stamp
Retained Data Elements

 XDWMY.E  VLMDIR   - Logical Volume Directory
 XDWMY.E  VLMPTHNM - Mount Point Path Name

Accumulated Data Elements

 XDWMY.E  VLMLRDCT - Logical Disk Reads
 XDWMY.E  VLMLWTCT - Logical Disk Writes
 XDWMY.E  VLMSPUSM - Sum of Avg Disk Space Used

Minimum Data Elements

 XDWMY.E  VLMMNSPU - Minimum Pct Disk Space Used
Maximum Data Elements

 XDWMY.E  VLMMXSPU - Maximum Pct Disk Space Used

Derived Data Elements

 XDWMY.E  VLMPCSPU - Percent Disk Space Used
 XDWMY.E  VLMPSLRD - Logical Disk Read Rate
 XDWMY.E  VLMPSLWT - Logical Disk Write Rate
```

5.9.3 AUMVLM Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   - HOUR should not be used in MONTHS and YEARS.
   - DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   - WEEK should not be used in MONTHS or YEARS.
   - MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

5.9.4 AUMVLM Retrieval Examples

```
List disk space use,  logical disk read rate, and logical
write rate for logical volumes on the system.  Logical
volumes on the report are ranked in descending order based on
how full a volume was.

 %LET BY = SYSID YEAR MONTH DAY VLMGROUP VLMPATH;
 %LET BREAK = VLMGROUP VLMPATH;
 PROC SORT DATA=DAYS.AUMVLM01 OUT=VLM;
   BY &BY;
 RUN;

 DATA VLM;
   SET VLM;
   DATE = DATEPART(ENDTS);
   FORMAT DATE MMDDYY8.;
   %VLMFMT(TS=DAYS,DERV=YES);
   %VLMLBL(DERV=YES);
   %VLMSUM;
 RUN;

 %LET BY = SYSID DATE;
 %LET BREAK = DATE;
 PROC SORT; BY &BY DESCENDING VLMPCSPU;
 DATA VLM2 (KEEP=&BY AUMDIR VLMNAME DURATION VLMPCSPU
            VLMPSLRD VLMPSLWT VLMMXSPU VLMMNSPU RANK);
   SET VLM;
   BY &BY;
   RETAIN RANK 0;
   IF FIRST.&BREAK THEN RANK = 0;
   RANK+1;
   OUTPUT;
   LABEL RANK = 'Rank';
 RUN;

 PROC PRINT LABEL;
   BY &BY;
   PAGEBY &BREAK;
   ID RANK;
   VAR  VLMGROUP VLMPATH AUMDIR DURATION VLMPCSPU VLMMXSPU
        VLMMNSPU VLMPSLRD VLMPSLWT ;
   TITLE1 "Daily Logical Volume Activity";
   TITLE2 "Ranked by Disk Space Used";
 RUN;
```

5.10 UNIX Business Transaction SLO Activity File (AUMTTA)

The UNIX Business Transaction SLO Activity (AUMTTA) file contains measurements useful for managing the service level objectives your business application users require. It includes information about transaction response time and how transactions perform within established SLOs. This file is derived from MeasureWare Transaction metrics.

The following sections describe the file's organization and list the data elements maintained.

5.10.1 AUMTTA File Organization

The table below identifies data elements by which the file is sequenced and summarized in each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity
DETAIL	N/A
DAYS	N/A
WEEKS	N/A
MONTHS	N/A
YEARS	N/A
TABLES	N/A

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-10. AUMTTA Timespan Granularity Chart

5.10.2 AUMTTA Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

- X - DETAIL
- D - DAYS
- W - WEEKS
- M - MONTHS
- Y - YEARS
- T - TABLES AREA
- . - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

......E	AUMOPSYS	- Operating System Name
......E	DAY	- Day of Month
......E	HOUR	- Hour of Day
......E	MONTH	- Month of Year
......E	SYSID	- System Identifier

```
 ......E  TTANAME  - Transaction Name
 ......E  WEEK     - Week of Year
 ......E  YEAR     - Year of Century
 ......E  ZONE     - Time Zone

Common Data Elements

 ......E  DAYNAME  - Name of Day of Week
 ......E  DURATION - Recording Interval Time
 ......E  ENDTS    - End Time Stamp
 ......E  INTERVLS - Number of Recording Intervals
 ......E  STARTTS  - Start Time Stamp
```

```
Retained Data Elements

 ......E  TTAADFMT - Correlator Address Format
 ......E  TTAARMID - ARM Transaction ID
 ......E  TTAARMIF - ARM Transaction Information
 ......E  TTAARMNM - ARM Application Name
 ......E  TTAARMUN - ARM Transaction User Name
 ......E  TTABINCT - Number of Transaction Bins Defined
 ......E  TTACORAD - Correlator Address
 ......E  TTASLOMX - Transaction Service Level Objective
 ......E  TTATFAIL - Number of Failed Transactions
 ......E  TTATRNID - Transaction Class ID
 ......E  TTAUPR01 - Upper Range Response Time for Bin 1
 ......E  TTAUPR02 - Upper Range Response Time for Bin 2
 ......E  TTAUPR03 - Upper Range Response Time for Bin 3
 ......E  TTAUPR04 - Upper Range Response Time for Bin 4
 ......E  TTAUPR05 - Upper Range Response Time for Bin 5
 ......E  TTAUPR06 - Upper Range Response Time for Bin 6
 ......E  TTAUPR07 - Upper Range Response Time for Bin 7
 ......E  TTAUPR08 - Upper Range Response Time for Bin 8
 ......E  TTAUPR09 - Upper Range Response Time for Bin 9
 ......E  TTAUPR10 - Upper Range Response Time for Bin 10

Accumulated Data Elements

 ......E  TTAABORT - Aborted Transaction Count
 ......E  TTAABTTM - Cumulative Aborted Transaction Time
 ......E  TTACPUTM - Total CPU Consumed by Transaction
 ......E  TTADSKIO - Physical Disk I/Os per Transaction
 ......E  TTALGLIO - Logical I/Os per Transaction
 ......E  TTATRANS - Completed Transaction Count
 ......E  TTATRNTM - Cumulative Transaction Response Time
 ......E  TTATRN01 - Completed Transactions in Bin 1
 ......E  TTATRN02 - Completed Transactions in Bin 2
 ......E  TTATRN03 - Completed Transactions in Bin 3
 ......E  TTATRN04 - Completed Transactions in Bin 4
 ......E  TTATRN05 - Completed Transactions in Bin 5
 ......E  TTATRN06 - Completed Transactions in Bin 6
 ......E  TTATRN07 - Completed Transactions in Bin 7
 ......E  TTATRN08 - Completed Transactions in Bin 8
 ......E  TTATRN09 - Completed Transactions in Bin 9
 ......E  TTATRN10 - Completed Transactions in Bin 10
 ......E  TTAVSLCT - Violated SLO Transaction Count
```

```
Derived Data Elements

 ......E  TTAAVATM - Average Time Per Aborted Trans
 ......E  TTAAVTTM - Average Transaction Response Time
 ......E  TTAPCB01 - Percent Transactions in Bin 1
 ......E  TTAPCB02 - Percent Transactions in Bin 2
 ......E  TTAPCB03 - Percent Transactions in Bin 3
 ......E  TTAPCB04 - Percent Transactions in Bin 4
 ......E  TTAPCB05 - Percent Transactions in Bin 5
 ......E  TTAPCB06 - Percent Transactions in Bin 6
 ......E  TTAPCB07 - Percent Transactions in Bin 7
 ......E  TTAPCB08 - Percent Transactions in Bin 8
 ......E  TTAPCB09 - Percent Transactions in Bin 9
 ......E  TTAPCB10 - Percent Transactions in Bin 10
 ......E  TTAPCVSL - Percent Transactions Violated SLO
```

5.10.3 AUMTTA Usage Considerations

1. Exercise care when using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be referenced:

   o HOUR should not be used in MONTHS and YEARS.
   o DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   o WEEK should not be used in MONTHS or YEARS.
   o MONTH should not be used in YEARS.

2. The data elements STARTTS and ENDTS have different meanings when used in the DETAIL timespan from when they are used in the DAYS, WEEKS, MONTHS, and YEARS timespans. The ENDTS and STARTTS, when appearing in the higher timespans, indicate the span of time over which the data has been summarized. STARTTS indicates the beginning of the timespan and ENDTS indicates the end of the timespan.

3. To collect MeasureWare Transaction data, you need to prepare your applications and define service level objectives to the HP Transaction Tracker. Please refer to the HP MeasureWare Agent: Transaction Tracker Handbook for details.

4. The AUMTTA file is turned off by default. After you collect and export transaction data, make sure you turn on the AUMTTA file in AUMGENIN and run AUMCGEN to activate the file.

5.10.4 AUMTTA Retrieval Examples

List the percentage of transactions that meet the service level objective and the distribution of transactions among transaction bins.

```
 %LET BY=SYSID YEAR MONTH DAY HOUR TTANAME;
 %LET BREAK=TTANAME;
 PROC SORT DATA=DAYS.AUMTTA01 OUT=TTA;
  BY &BY;
 RUN;

 DATA TTA;
   SET TTA;
   DATE = DATEPART(ENDTS);
   IF 8 < HOUR < 18;
   %TTAFMT(TS=DAYS,DERV=YES);
   %TTALBL(DERV=YES);
   %TTASUM;
   PCSLO=100-TTAPCVSL;
   LABEL PCSLO='%Transactions Met SLOs';
   FORMAT PCSLO MAPCT.;
 RUN;

 %LET BY=SYSID DATE HOUR;
 %LET BREAK=HOUR;
 PROC PRINT DAT=TTA LABEL;
  BY &BY;
  PAGEBY &BREAK;
  VAR TTANAME PCSLO TTAPCB01 TTAPCB02 TTAPCB03
      TTAPCB04 TTAPCB05 TTAPCB06 TTAPCB07
      TTAPCB08 TTAPCB09 TTAPCB10
      ;
  TITLE "Business Transaction Service Level Activity";
 RUN;
```

Chapter 6: DATA SOURCES

The Analyzer for MeasureWare OS Agents supports the following data sources:

- Hewlett-Packard's MeasureWare for HP-UX Systems, Releases A.09, B.10, and B.11
- Hewlett-Packard's MeasureWare for HP-UX Systems, IBM RISC System/6000 Systems
- Sun Microsystems, SunOS 5.4 - 5.6 and Sun Solaris 2.5, 2.5.1, 2.6, 7, 8, and 9

This section contains the following topics:

6.1 Data Collection Considerations

Hewlett-Packard's MeasureWare includes the following data classes:

- Configuration data class metrics identify the system and collector on which the data was captured, and the response time distributions and process thresholds established, among other measures.
- Global data class metrics report on system activity.
- Application data class metrics capture data by user-defined applications, which are pre-summarized business groups of MeasureWare process data.
- Process data class metrics capture data about each process.
- Disk data class metrics capture data about each disk.
- LVolume data class metrics capture data about each logical volume.
- Transaction data class metrics capture response time about business transactions.
- NETIF data class metrics capture data about the network interface.

MeasureWare retains data in log files, purging it as the log files fill up. MeasureWare enables you to extract data in export format for transport to another system.

The terms "export" and "extract" have specific meanings in MeasureWare. Extract is a program that helps you manage log files. Export is an extract program command that converts MeasureWare log file data into a format easily accessible outside of MeasureWare.

Data from Hewlett-Packard's MeasureWare populates the following Analyzer files:

This MeasureWare data ...	is written to this raw log...	which populates these Analyzer files.
Configuration	logglob	AUMMCF
Global	logglob	AUMGPR, AUMNIF
Application	logappl	AUMAPP
Process	logproc	AUMKPS, AUMIPS
Disk	logdev	AUMDDA
Volume	logdev	AUMVLM
Transaction	logtran	AUMTTA

Preparing to Collect Data

Your UNIX system's MeasureWare parm file controls the data that MeasureWare collects. It also enables your organization to define applications. The application definition from your UNIX system cannot be changed once application data is created.

If you anticipate using application data in the Analyzer, perhaps to charge for UNIX system resources through the Analyzer's interface to CA MICS Accounting and Chargeback, ensure that your UNIX systems programmer is aware of your needs and reflects them in your organization's MeasureWare parm file.

If you anticipate using killed process data (the AUMKPS file) for accounting and chargeback or workload measurements, ensure that your UNIX systems programmer specifies the following in your organization's MeasureWare parm file:

- Shortlived processes are logged by coding the threshold setting SHORTLIVED in the parm file.
- Killed processes are logged, whether or not they exceeded other thresholds, by omitting the threshold setting NOKILLED in the parm file.

If you anticipate using disk data, ensure that your UNIX systems programmer specified the following in your organization's MeasureWare parm file:

```
  o Disk metrics are kept by coding log device=disk in the
    parm file for HP MeasureWare.

Sample MeasureWare Parameter (Parm) File
----------------------------------------

+-----------------------------------------------------------+
| log global application process device=disk,lvm            |
| log transaction                                           |
|                                                           |
| size global=10.0, application=10.0, process=20.0          |
| size device=10.0                                          |
|                                                           |
| threshold cpu = 5.0, disk = 5.0, nonew, shortlived        |
|                                                           |
| application = xwindows                                    |
| file = X*,xload,xclock,xterm,hpterm,grmd,softmsg*,vue     |
|                                                           |
| application = network                                     |
| file = nfs*,biod,automount,inetd,snmp*,rpc*,llbd,netfmt   |
| file = portmap                                            |
| file = rbootd,telnet*,ftp*,*rlogin*,remsh*,rcp,nktl*      |
| file = nvsisr,ttisr                                       |
| file = lcsp,gcsp,strmen,strweld,vtdaemon                  |
|                                                           |
| application = memory_management                           |
| file = swapper,vhand,syncer,pageout,fsflush               |
|                                                           |
| application = other_user_root                             |
| user = root                                               |
+-----------------------------------------------------------+
```

A MeasureWare report file (i.e., script) lists the data you want to export. We provide prepared report files for HP/UX, Sun Solaris, and IBM AIX UNIX platforms. Refer to the tables below to determine the appropriate report file to use based on the release of MeasureWare you are executing. These report files are stored in sharedprefix.MICS.HOLD.PARMS:

HP/UX Report Files

MeasureWare Release	Report File
up to C.02.60	AUMRHP10
C.02.60 and above	AUMRHP12

IBM AIX Report Files

MeasureWare Release	Report File
B.02.19 - C.03.40	AUMRAIX
C.03.40 - C.03.84	AUMRAX12
C.04.5 and above	AUMRAX13

Sun Solaris Report Files

MeasureWare Release	Report File
B.02.04.01 - C.03.45	AUMRSOL
C.03.45 and above	AUMRSO12

You should copy the applicable report file to your UNIX system and use it as your MeasureWare report file, rather than creating your own file.

Some Analyzer files may be empty if your site does not export the data types listed in export report files. (If you do not collect some data types and want to avoid empty files, you can deactivate Analyzer files using standard CA MICS file tailoring procedures.)

For example, if your MeasureWare parm file does not specify log=application, then your AUMAPP (UNIX Application Performance) file will be empty. Consult your UNIX systems programmer to ensure that your site is collecting the data needed to populate the Analyzer's files.

An extract command stream, which runs on your UNIX system, retrieves MeasureWare data using the report file definition.

To collect MeasureWare Transaction data, you need to prepare your applications and define service level objectives to the Transaction Tracker. Please refer to the HP MeasureWare Agent: Transaction Tracker Handbook for details.

Example--Extract Command Stream

An extract command stream to export data using a report file looks like this:

```
extract>
configuration on
global detail
application detail
process on                                  < see 1
disk detail
lvolume detail                              < see 2
netif detail
transaction detail                          < see 3
shift all day
report 'reptfile'                           < see 4
output default,purge                        < see 5
export day -1                               < see 6
exit
```

1: If your site is only interested in killed processes, replace 'process on' with 'process killed'. Specifying 'process killed' extracts only processes that terminated in the measurement interval, reducing the size of the database.
2: Logical volume data is only available for HP-UX systems.
3: If Transaction Tracker data is enabled.
4: Replace 'reptfile' with the name of your report file, such as aumrhp09 or aumrhp10.
5: Default writes the output files to xfrdGLOBAL.bin, xfrdAPPLICATION.bin, xfrdPROCESS.bin, xfrdDISK.bin, xfrdLVOLUME.bin, xfrdNETIF.bin, xfrdTRANSACTION.bin, and

```
    xfrdCONFIGURATION.bin and purge overwrites files if they
    already exist.  Instead of using the default, we
    recommend specifying a specific 'filename,' which creates
    less work when inputting your data sets into DAY089.
    MeasureWare enables you to name the output files to meet
    your site's standards.  Purge overwrites files if they
    already exist.
6:  Day -1 means that the prior day's data is being exported.
```

Another way to export data is by invoking the extract program in shell scripts that look like this:

```
   extract -v -r aumrhp12 -gapkdczn
           -c transaction detail -f d951215,purge
           -xp d-1
```

where -f d951215 writes the output file to d951215.

```
+-----------------------------------------------------------+
|                    IMPORTANT                              |
|                                                           |
| The -v option is required when using scopeux version      |
| B.02.00 under HP-UX 10.0 or 9.0 to circumvent a known     |
| MeasureWare software problem.                             |
+-----------------------------------------------------------+
```

Example--Extract Command Stream With SUMMARY

You can control the granularity of the data in the report file using the optional SUMMARY= statement. For example, SUMMARY=15 means that data is being collected every 15 minutes. MeasureWare supports SUMMARY= values ranging from 5 to 1440 minutes. For the Analyzer, we recommend using values of 5, 10, 15, 20, or 30. The default summary interval is 5 minutes, however process data is always in 1 minute intervals (independent of the summary interval specified).

An extract command stream that includes the SUMMARY= statement and a report file looks like this:

```
    extract>
    configuration on
    global summary
    application summary
    process on                                  < see 1
    disk summary
    lvolume summary                             < see 2
    netif summary
    transaction summary                         < see 3
    shift all day
    report 'reptfile'                           < see 4
    output default,purge                        < see 5
    export day -1                               < see 6
    exit
```

```
1:  Process data is always in 1 minute intervals.  If your
    site is only interested in killed processes, replace
    'process on' with 'process killed'.  Specifying 'process
    killed' extracts only processes that terminated in the
    measurement interval, reducing the size of the database.

2:  Logical volume data is only available for HP-UX systems.
3:  If Transaction Tracker data is enabled.
4:  Replace 'reptfile' with the name of your report file,
    such as aumrhp09 or aumrhp10.
5:  Default writes the output files to xfrsGLOBAL.bin,
    xfrsAPPLICATION.bin, xfrsPROCESS.bin, xfrsDISK.bin,
    xfrsLVOLUME.bin, and xfrdCONFIGURATION.bin.  MeasureWare
    enables you to name the output files to meet your site's
    standards.  Purge overwrites files if they already exist.
6:  Day -1 means that the prior day's data is being exported.


Another way to export data is by invoking the extract program
in shell scripts that look like this:

   extract -v -r aumrhp12 -GApkDcZN
           -c transaction summary -f d951215,purge
           -xp d-1

where -f d951215 writes the output file to d951215.

+-----------------------------------------------------------+
|                    IMPORTANT                              |
|                                                           |
| The -v option is required when using scopeux version      |
| B.02.00 under HP-UX 10.0 or 9.0 to circumvent a known     |
| MeasureWare software problem.                             |
+-----------------------------------------------------------+

Note:  If you are using MeasureWare Desktop Agent,
       application and process data are not supported.
```

```
Transferring Data
-----------------

When the MeasureWare extract program completes, transfer the
data to the MVS system on which CA MICS is installed using a
product like CA's XCOM file transfer software.  Requirements
for transfer are:

  o The data must be transferred in BINARY mode.

  o The data must be in variable length, variable blocked,
    variable block spanned, or undefined length (V, VB, VBS,
    or U) records after being transferred to MVS.

  o The logical record length of the data on MVS must not
    exceed 32760.

Extract Command Stream Warnings
-------------------------------

  o Configuration data is required for Analyzer processing.
    The Analyzer will abend if Configuration data is not
    present in the exported data.

  o Do not use the 'both' option with the global, disk, or
    application commands in an extract command stream.  Using
    'both' can result in MeasureWare placing 5-minute detail
    data with summary data in an exported output file.
    CA MICS abends when it detects this scenario to prevent
    database corruption.
```

6.2 Record Descriptions

The data records used by the Analyzer are described in the following table.

Data Source	Exported Record Type	Characteristics	Analyzer for MeasureWare OS Agents File
Measure-Ware for HP-UX and IBM RISC System/6000 and SunOS/Solaris	Global	System-wide workload measures. Data records are in 5 minute intervals or the interval length you specified for the SUMMARY= statement in your extract command stream.	AUMGPR--UNIX Global Performance AUMNIF--UNIX LAN Activity
	Process	Interesting process measures. Cut every minute.	AUMKPS--UNIX Process Activity AUMIPS--UNIX Process Exception
	Application	User-defined application process measures. Data records are in 5 minute intervals or the interval length you specified for the SUMMARY= statement in your extract command stream.	AUMAPP--UNIX Application Performance
	Configuration	System configuration and parm file information. One record each time the collector program, scopeux, starts, and when the configuration changes. This data is required for the Analyzer's correct operation.	AUMMCF--UNIX System and Configuration Profile
	Disk	Disk utilization measures. Data records are in 5 minute intervals or the interval length you specified for the SUMMARY= statement in your extract command stream.	AUMDDA--UNIX Disk Activity
	Volume	Logical volume measures. Data records are in 5 minute intervals or the interval length you specified for the SUMMARY= statement in your extract command stream.	AUMVLM--UNIX Logical Volume Activity

Figure 6-1. Record Descriptions (Part 1 of 2)

Data Source	Exported Record Type	Characteristics	Analyzer for MeasureWare OS Agents File
	Transaction	Transaction Tracker data. Data records are in 5 minute intervals or the interval length you specified for the SUMMARY= statement in your extract command stream.	AUMTTA--UNIX Business Transaction SLO Activity
	NETIF	Network interface measures. Data records are in 5 minute intervals or the interval length you specified for the SUMMARY= statement in your extract command stream.	AUMNIF--UNIX LAN Activity

Figure 6-1. Record Descriptions (Part 2 of 2)

Chapter 7: PARAMETERS

This chapter describes how to define the parameters that are required for installing the Analyzer. The CA MICS system administrator should use this chapter as a detailed reference in conjunction with the CA MICS Planning, Installation, Operation, and Maintenance (PIOM) Guide.

To define CA MICS parameters, you must gain an understanding of your installation and its needs and translate that understanding into CA MICS parameters.

In particular, this chapter requests that you:

- Arrive at a number of policy decisions.
- Fill out several worksheets.
- Translate the worksheet entries into the corresponding CA MICS parameter library member entries.

These activities represent the major portion of the product installation process.

This chapter focuses on considerations that are unique to the Analyzer for MeasureWare. Chapters 2 and 3 of the CA MICS PIOM Guide document the mechanics of the CA MICS installation process and include checklists that describe each installation step.

If you have a question at any time during your review of the material presented here, please contact the CA MICS Product Support Group.

This section contains the following topics:

7.1 Environmental Considerations

Before coding product parameters, you need to know about the UNIX environment(s) at your installation. Before you specify parameters for the product:

- Review the default options for the parameters to determine their applicability to your site.
- Review reporting requirements to determine whether or not you need to code MICF inquiries to satisfy your reporting needs.
- Review database unit specifications to determine which unit or units should include UNIX data.

7.2 Complex Level Parameters

This section shows you how to specify the complex level parameters that define MW OS Agent Analyzer processing. The following topics are covered:

1 - Analyzer Definition Statements (AUMGENIN)
2 - Account Code Structure (AUMACCT)
3 - Account Code Derivation Routine (AUMACRT)

7.2.1 Analyzer Definition Statements (AUMGENIN)

A generation definition statement member is provided for the Analyzer for MeasureWare in sharedprefix.MICS.GENLIB(AUMGENIN). Chapter 4 of the CA MICS System Modification Guide describes the contents of GENIN members.

Remember that you need to run AUMCGEN (in sharedprefix.MICS.CNTL) after tailoring AUMGENIN.

7.2.2 Account Code Structure (AUMACCT)

In CA MICS, data about UNIX activity is stored by account codes in the UNIX Process Activity (AUMKPS) file.

The parameters you specify in sharedprefix.MICS.PARMS(AUMACCT) define the number of account code fields that will be carried in the AUMKPS file, the length of each field, and the SAS long names that are associated with each field. Note that once you have defined these fields, you must provide a routine that assigns them values (see Section 7.2.3).

Preparing to Define Account Codes

Each installation has its own method for associating its UNIX work with the responsible user, projects, or departments. Before defining account codes, it is important that you investigate your installation's accounting standards to:

- Identify the current organizational coding system (for example, cost center coding system identifying the division, department, project, and employee) and determine how the account codes are specified.

- Identify if, and how, the codes are verified to ensure that they correspond to valid definitions. You should always validate account codes and assign unidentified or invalid account codes to a special installation overhead account code. This approach provides you with two benefits. First, it groups all invalid codes under the same category and therefore requires less DASD space for storing the Analyzer's files. Second, it enables you to easily determine how much of this overhead activity is taking place.

Consider the following suggestions in determining the number of account codes required to meet your installation's reporting and analysis needs:

- Account codes are part of the summarization keys for the files that support them. As such, at least one record is generated for each combination of values. Therefore, the higher the number of account codes, the more DASD space the database will require. But at the same time, a higher number of account codes also supports data analysis at a greater detail.

```
  o If you anticipate needing to expand the account code
    structure in the future, establish an extra account code
    now  to eliminate the need to retrofit the database later
    to add the new account code.

Defining Account Codes
----------------------

Account code fields names are in the form "AUMACTx", where
'x' is the sequential number of the account code field.  If
three fields are defined, they will be AUMACT1, AUMACT2, and
AUMACT3 (in your accounting structure, these might identify
division, department, and project, respectively).  The
sequential number is called the account code field "level"
number.  There is a maximum of nine levels.  A sample account
code structure is provided in
sharedprefix.MICS.PARMS(AUMACCT).

Figure 7-1 provides a worksheet for collecting the data.
Once you have completed this form, code the contents of
sharedprefix.MICS.PARMS(AUMACCT) as follows:

 o  A separate statement is coded for each account code
    level.

 o  Blank statements are permitted.  Comments are coded by
    beginning the statement with an '*'.

 o  Account levels are provided in order, starting with "1".

 o  Up to nine levels are permitted with no gaps between the
    numbers permitted.

 o  The statement format is freeform but positional.  All
    parameters are required.  The statement format is:

    level  length  'descriptive title'

       or

    level  mask  length 'descriptive title'

where:

level =      The level of importance of each account code,
             with level 1 being the most important and the
             highest level number being the least important.
             The levels are defined sequentially starting
```

with 1. You can define up to nine levels. This parameter is required.

mask = An optional parameter that can be used to deactivate the account code in specified time-spans. Specifying a timespan mask requires coding T(.....) as the second parameter in a statement, where each "." represents a file timespan, in the order of DETAIL, DAYS, WEEKS, MONTHS, YEARS, and TABLES. For each timespan, you can specify a Y to indicate that the account code is active or an N to indicate that the account code is inactive.

If this parameter is skipped, it has a default value of T(YYYYYY).

The following rules apply if you code the mask:

- DETAIL must always be Y. Account codes may not be deactivated in this timespan.
- If DAYS is N, then WEEKS, MONTHS, and YEARS must also be N. If the account code is inactive in the DAYS timespan, it cannot be active in higher timespans.
- If MONTHS is N, then YEARS must be N. If the account code is inactive in the MONTHS timespan, it cannot be active in the YEARS timespan.

length = The length of the account code. The length may range from 1 to 30. This parameter is required.

descriptive title = The title that describes the account code. The length of the title is 1 to 40 characters. The title is embedded in quotes ('). This is a required parameter.

A sample AUMACCT member with three levels is illustrated below:

```
1           8 'DIVISION'
2          20 'USER GROUP'
3 T(YYNNNN) 16 'USER NAME'
```

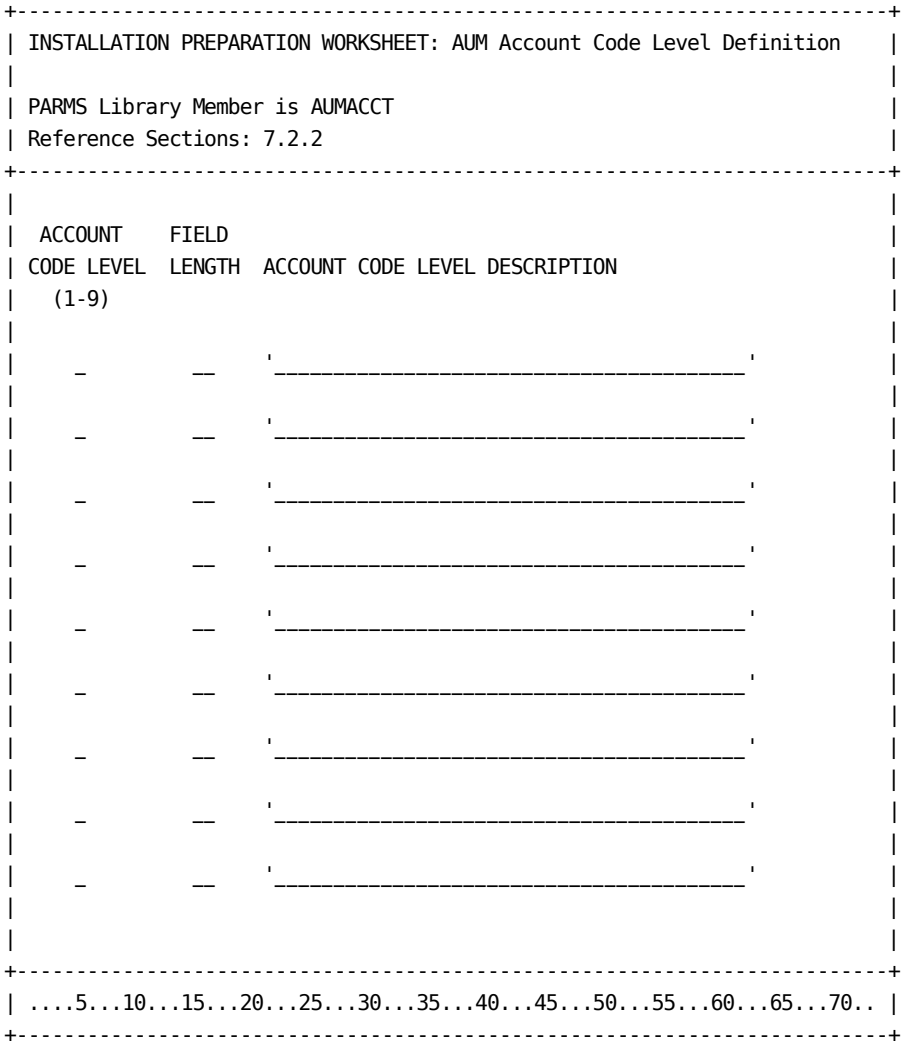


Figure 7-1. Account Code Level Definition Worksheet

7.2.3 Account Code Derivation Routine (AUMACRT)

After you have defined AUMACCT for the number of account codes to be carried in the UNIX Process Activity (AUMKPS) file, your next step is to code the Account Code Derivation Routine (AUMACRT) in sharedprefix.MICS.PARMS. AUMACRT is a SAS routine that derives the account code data elements during the DAY089 step. For example, if you have defined three account codes in AUMACCT, then your AUMACRT exit must contain SAS code to derive the data elements AUMACT1, AUMACT2, and AUMACT3.

You are responsible for testing the accuracy of the exit routine; however, the Analyzer provides a sample exit routine. The worksheet for coding the AUMACRT exit is shown in Figure 7-2.

To limit retention of an AUMACTx element at a particular timespan, your sharedprefix.MICS.PARMS(AUMACCT) member must define that account code with the TIMESPAN mask, T(.....) as described in Section 7.2.2 of this guide.

A sample AUMACRT member is illustrated below:

```
/*********************************************************/
/*                                                       */
/* AUMACRT - ACCOUNT CODE DERIVATION ROUTINE             */
/*                                                       */
/*           This routine is a user coded routine to build */
/*           the account code fields defined by 'AUMACCT'  */
/*           member in sharedprefix.MICS.PARMS. This       */
/*           routine must correctly build each of the      */
/*           defined 'AUMACTX' codes from 1 to n.          */
/*                                                       */
/* SAMPLE CODE:                                          */
/*                                                       */
/*  DIVISION - set to the 1st word in the application name */
/*  USER GROUP - set to the rest of the application name   */
/*  USER NAME  - set to the user id                        */
/*                                                       */
/*  IF APPLICATION NUMBER IS 1, IT IS COUNTED AS OVERHEAD. */
/*                                                       */
/*       IF AUMAPNUM GT 1 THEN DO;                       */
/*         AUMACT1 = SCAN(AUMAPU,1,':-');                */
/*         I = INDEXC(AUMAPU,':-');                      */
/*         IF I GT 0 THEN                                */
/*           AUMACT2 = SUBSTR(AUMAPU,I+1);               */
/*         ELSE                                          */
/*           AUMACT2 = AUMAPU;                           */
/*         AUMACT3 = AUMUSER;                            */
/*       END;                                            */
/*       ELSE DO;                                        */
/*         AUMACT1 = 'OVHD';                             */
/*         AUMACT2 = '****';                             */
/*         AUMACT3 = '****';                             */
/*       END;                                            */
/*                                                       */
/*********************************************************/

/***************************************/
/* SAMPLE ACCOUNT CODE DERIVATION EXIT */
/***************************************/

IF AUMAPNUM GT 1 THEN DO;
  AUMACT1 = '****';
  AUMACT2 = AUMAPU;
END;
ELSE DO;
  AUMACT1 = 'OVHD';
  AUMACT2 = AUMPROG;
```

```
END;
AUMACT3 = AUMUSER;
```

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: AUM Account Code Derivation Routine  |
|                                                                         |
| PARMS Library Member is AUMACRT                                         |
| Reference Sections: 7.2.3                                               |
+-------------------------------------------------------------------------+
|                                                                         |
| * VALIDATE FOR VALID ACCOUNT CODES, WHERE POSSIBLE ;                    |
|                                                                         |
| IF { account data is valid } THEN DO;                                   |
|                                                                         |
| * BUILD ACCOUNT CODE FIELDS AS IN THE WORKSHEET 7-1                     |
|                                                                         |
|     AUMACT1=field source 1 ;                                            |
|     ...                                                                 |
|     ...                                                                 |
|     ...                                                                 |
|     AUMACTx=field source n ;                                            |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|                                                                         |
| END;                                                                    |
| ELSE DO;                                                                |
|                                                                         |
| * ROUTINE TO BUILD INSTALLATION OVERHEAD ACCOUNT CODES ;                |
|                                                                         |
|     AUMACT1='overhead category' ;                                       |
|     ...                                                                 |
|     ...                                                                 |
|     ...                                                                 |
|     AUMACTx='overhead category' ;                                       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|                                                                         |
| END;                                                                    |
|                                                                         |
+-------------------------------------------------------------------------+
| ....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+-------------------------------------------------------------------------+
```

Figure 7-2. Account Code Derivation Routine Worksheet

7.3 Unit Level Parameters

This section shows you how to define the unit level parameters for the Analyzer for MeasureWare. These parameter definitions exist for each CA MICS database unit in which the Analyzer is installed. Some of the parameters are used by the Analyzer parameter generation (AUMPGEN) to generate code that will be executed during the DAY089 step. Other parameters are read directly during DAY089 to determine the derivation of CA MICS data elements and handling of error diagnostics.

The following topics are presented:

1 - Processing Options (AUMOPS)
2 - Input DD Statements (INPUTAUM)
3 - Input Needed to Generate System Code (AUMPGEN)
4 - Application Name Derivation Routine (AUMAURT)
5 - Database Space Modeling (DBMODEL)

7.3.1 Processing Options (AUMOPS)

The AUMOPS member in prefix.MICS.PARMS is used to define the characteristics of the Analyzer for MeasureWare data input into each unit daily update run. In addition, AUMOPS supports various control statements that are specific to the Analyzer and other control statements that control CA MICS common features, such as Internal Step Restart.

Operational statements are stored in the prefix.MICS.PARMS cccOPS member, where ccc is the component identifier, and are incorporated into the CA MICS system by running the prefix.MICS.CNTL(cccPGEN) job.

```
************************************************************
*                                                          *
*  NOTE:  CHANGES to prefix.MICS.PARMS(cccOPS) members     *
*         REQUIRE EXECUTION of prefix.MICS.CNTL(cccPGEN)   *
*         to take effect.                                  *
*                                                          *
*         In addition, any change to parameters that       *
*         impact the DAILY operational job JCL such as,    *
*                                                          *
*         o  changing RESTART NO to RESTART YES,           *
*                                                          *
*         o  WORK parameter changes when RESTART NO is in  *
*            effect,                                       *
*                                                          *
*         o  Specifying TAPEfff (if this product supports  *
*            a DETAIL level TAPE option),                  *
*                                                          *
*         o  or changes to prefix.MICS.PARMS(INPUTccc),    *
*                                                          *
*         will require regeneration of the DAILY job by    *
*         executing prefix.MICS.CNTL(JCLGEND) or by        *
*         specifying DAILY in prefix.MICS.PARMS(JCLGENU)   *
*         and executing prefix.MICS.CNTL(JCLGENU).         *
*                                                          *
*         Refer to the checklist (if provided) for updating *
*         cccOPS parameters and running required generation *
*         jobs.                                            *
************************************************************
```

The AUMOPS member contains the following statements, described in detail below. A worksheet for recording the statement values for AUMOPS is shown in Section 7.3.1.9.

```
Required Statements
-------------------

  OPTIONS and PLATFORM

Optional Statements
-------------------

  COMMON
  GLOBAL FORCE
  VERIFY
  WORK
  MULTWORK|NOMULT
  RESTART
  INCRUPDATE

These statements are described in detail below.
```

7.3.1.1 OPTIONS Statement

```
The OPTIONS statement associates a UNIX system name with an
ORGSYSID and is required for the MeasureWare data from each
UNIX system input to the DAY089 DAILY update step.  Each
OPTIONS statement must be immediately followed by an
PLATFORM statement.

The OPTIONS statement has the following format:

    OPTIONS orgsysid hostname

  where:

    orgsysid  - is the original SYSID used in
    --------    prefix.MICS.PARMS(SYSID) to identify this
                UNIX system.

    hostname  - is the UNIX system name that is used to run
    --------    this UNIX system.  It is specified as a
                character string that does not exceed 40
                characters.  If your hostname contains
                embedded blanks, enclose the hostname in
                quotation marks.  The first 40 characters of
                the UNIX system name in the configuration
                metric GBL_SYSTEM_ID is compared to this
                value during DAY089 processing.

  Sample OPTIONS statements:

    OPTIONS DC01 unixsys1
    OPTIONS NYP1 NEW_YORK_PURCHASING_1
    OPTIONS DC01 "WASHINGTON D.C."
```

7.3.1.2 PLATFORM Statement

A PLATFORM statement is required and must follow each OPTIONS statement. It identifies the platform (HPUX, AIX, or Solaris) of the input data and the JCL reference (ddname) used for the data set name containing the raw data.

The PLATFORM has the following format:

```
--------- required -----  --------- optional --------

PLATFORM orgsysid ddname  FORCE VER scope_rel ERRSKIP
```

where:

```
platform  - identifies the vendor platform that generated
--------    the MeasureWare data. Platform must be one of
            the following:

                 HPUX    - Data from HP-UX systems
                 SOLARIS - Data from Sun SPARC systems
                 AIX     - Data from IBM RS/6000 systems

orgsysid  - is the same original SYSID specified on a
--------    previous OPTIONS statement.


ddname    - is the ddname used to read MeasureWare data
------      from the system.  Specify 'ddname' as '*' if
            you are using a COMMON statement to provide
            the ddname for this data.

FORCE VER - is the argument that enables you to bypass
---------   the scopeux version check built into the
            Analyzer and process data from unknown
            MeasureWare Agent releases.  By default, the
            scopeux version check causes daily update
            step DAY089 to abend if the raw data version
            is not recognized.

            If you use the FORCE VER argument, ensure the
            metrics from the release you are using are
            compatible with the metrics in the releases
            the Analyzer supports.  The FORCE VER
            argument only applies to the particular data
            file associated with each PLATFORM statement.
            Refer to Sections 1.4 and 6.1 of this guide
            for more information about supported
            releases.
```

```
                To use the FORCE VER argument, specify

                  FORCE VER scope_rel

                where

                  scope_rel is a scopeux release.  You must
                  enter this value as it appears in the HP
                  MeasureWare data.  If you encounter an
                  abend due to unrecognized scopeux release,
                  MICSLOG message AUM00070 displays the value
                  you would use for scope_rel.

                The FORCE VER argument is ignored if a GLOBAL
                FORCE statement has been coded for the
                platform associated with this PLATFORM
                statement.  The optional GLOBAL FORCE
                statement is discussed later in this section.

    ERRSKIP   - is the argument that enables you to skip the
    -------     MeasureWare data when input data corruption
                is detected.  DAY089 will continue processing
                data from ddnames associated with PLATFORM
                statements.  Use this option with caution
                because data may be missing from the CA MICS
                database.  Always check MICSLOG messages for
                warnings that some data is not processed due
                to the ERRSKIP option being enabled.  Correct
                the data problem as soon as possible.

                To use the ERRSKIP keyword, specify

                  ERRSKIP

Sample PLATFORM statements:

    HPUX NYP1 AUMMWA02
    AIX SYS1 AUMMWA02
    SOLARIS SYS1 AUMMWA02
    AIX SYS1 AUMMWA02 FORCE VER C.03.58 ERRSKIP
```

7.3.1.3 COMMON Statement

```
Use the COMMON statement to identify the JCL reference
(ddname) and optional parameters to use when concatenating
data sets from multiple UNIX systems.  The COMMON statement
is followed by OPTIONS and PLATFORM statement pairs.

The COMMON statement has the following format:

  -------- required ---------  --------- optional ----------

  COMMON  datasource  ddname   FORCE VER scope_rel ERRSKIP

  where

    datasource - is HPUX, SOLARIS, or AIX.
    ----------

    ddname     - is the ddname used to read MeasureWare data
    ------       from the system.  Specify 'ddname' as '*' if
                 you are using a COMMON statement to provide
                 the ddname for this data.

    FORCE VER - is the argument that enables you to bypass
    ---------   the scopeux version check built into the
                Analyzer and process data from unknown
                MeasureWare Agent releases.  By default, the
                scopeux version check causes daily update
                step DAY089 to abend if the raw data version
                is not recognized.

                If you use the FORCE VER argument, ensure the
                metrics from the release you are using are
                compatible with the metrics in the releases
                the Analyzer supports.  The FORCE VER
                argument only applies to the particular data
                file associated with each PLATFORM statement.
                Refer to Sections 1.4 and 6.1 of this guide
                for more information about supported
                releases.

                To use the FORCE VER argument, specify

                  FORCE VER scope_rel

                where

                  scope_rel is a scopeux release.  You must
                  enter this value as it appears in the HP
```

```
                    MeasureWare data.  If you encounter an
                    abend due to unrecognized scopeux release,
                    MICSLOG message AUM00070 displays the value
                    you would use for scope_rel.

                  The FORCE VER argument is ignored if a GLOBAL
                  FORCE statement has been coded for the
                  platform associated with this PLATFORM
                  statement.  The optional GLOBAL FORCE
                  statement is discussed later.

     ERRSKIP    - is the argument that enables you to skip the
     -------      MeasureWare data when input data corruption
                  is detected.  DAY089 will continue processing
                  data from ddnames associated with PLATFORM
                  statements.  Use this option with caution
                  because data may be missing from the CA MICS
                  database.  Always check MICSLOG messages for
                  warnings that some data is not processed due
                  to the ERRSKIP option being enabled.  Correct
                  the data problem as soon as possible.

                  To use the ERRSKIP keyword, specify

                    ERRSKIP

Sample COMMON statement:

  COMMON AIX  AUMMWA01
  COMMON SOLARIS AUMMWA02 FORCE VER SOLC0381
```

7.3.1.4 GLOBAL FORCE Statement

The GLOBAL FORCE statement allows you to bypass the scopeux version checking built into the Analyzer. By design, the Analyzer abends when raw data is processed from an unrecognized scopeux version. As discussed earlier in this chapter, the COMMON, HPUX, AIX, and SOLARIS statement FORCE VER argument permits you to override the version check for a specific unknown release. The GLOBAL FORCE statement is more generic. It permits you to process data from any unknown scopeux release, based upon platform.

Refer to Sections 1.4 and 6.1 of this guide for more information about supported releases.

The GLOBAL FORCE statement has the following format:

```
    GLOBAL FORCE platform(s)
```

where

platform - identifies the vendor platform that generated the MeasureWare data. Platform can be any combination of:

HPUX AIX SOLARIS

or

ALL

Specifying ALL is equivalent to coding HPUX AIX and SOLARIS.

When you code a GLOBAL FORCE statement, raw data from the platforms specified will bypass the standard release validation. No DAY089 abend will occur for raw data processed from unrecognized scopeux releases, and both an informational (AUM00092) and warning (AUM00062) message will be output to MICSLOG.

Sample GLOBAL FORCE statements:

```
    GLOBAL FORCE AIX
    GLOBAL FORCE HPUX AIX
    GLOBAL FORCE HPUX SOLARIS
    GLOBAL FORCE ALL
```

7.3.1.5 VERIFY Statement

The VERIFY statement determines what action to take when data from an input ddname, specified on an AUM statement, comes from a system not named on the associated OPTIONS statement for the ORGSYSID during DAY089 processing.

The VERIFY statement has the following format:

```
    VERIFY action
```

where

action - possible keywords are ABORT, NOABORT, or EXCLUDE. If the VERIFY statement is omitted, the default is ABORT.

When ABORT is coded and the system name in the data does not match any of the hostnames on the OPTIONS statements, a U998 ABEND stops DAY089 processing.

When EXCLUDE is coded and the system name in the data does not match any of the hostnames on the OPTIONS statements, the data from the specific system is discarded.

If the data is from a ddname specified on a COMMON statement, the VERIFY statement has no effect.

Sample VERIFY statement:

```
    VERIFY ABORT
```

7.3.1.6 WORK, MULTWORK, and NOMULT Statements

```
WORK
----

This statement is optional.  It enables sites experiencing
either SAS WORK space allocation problems or out of work
space conditions during DAYnnn or INCRnnn (where nnn is the
job step number), daily or incremental update processing, to
allocate multiple WORK files.

You can allocate multiple WORK files for use during the daily
and/or incremental update job step.  The maximum number of
WORK files you can allocate varies by product.  These
additional work files are used in conjunction with the single
work data set allocated by default using the JCLDEF
parameters WORKUNIT and WORKSPACE.

Because the individual space allocation requirement for each
WORK file is typically much smaller, it is more likely to be
satisfied.

To take advantage of multiple WORK files support, edit
prefix.MICS.PARMS(cccOPS) and insert a WORK statement as
shown below:

WORK n data_set_allocation_parameters

where n is the number of WORK data sets


        NOTE:  The default is zero (0).
               The maximum is nine (9).

        data_set_allocation_parameters is one or more data
        set allocation parameters (for example, STORCLAS or
        SPACE) separated by spaces.

You can also specify the WORK parameter as the following:

WORK n XXX pppp ssss

where:

  n    is the number of WORK data sets
  XXX  is TRK or CYL
  pppp is the primary allocation
  ssss is the secondary allocation
```

```
Note:  When allocating any number of SAS WORK data sets, be
aware that one additional SAS WORK data set is automatically
allocated to facilitate sorting.  For example, if you
allocate six SAS WORK data sets, you will actually get seven.

If you omit the data_set_allocation_parameters or the WORK
parameter, the work data sets are allocated according to the
values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Use the
data_set_allocation_parameters to override this default,
either to alter the space allocation or to use System Managed
Storage (SMS) parameters to control data set placement and
characteristics.

Note:  If you allocate insufficient space for the WORK data
sets, DAYnnn and/or INCRnnn processing will fail and can only
be restarted from the beginning.

Note:  If internal step restart is active, you can override
the WORK data set allocation parameters at execution-time
using the //PARMOVRD facility.  For more information about
execution-time override of dynamic data set allocation
parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the WORK keyword on the continuation
line.

WORK accepts the engine/host options documented in the SAS
Companion for the z/OS environment, including STORCLAS, UNIT,
SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  Do not specify the DISP parameter.

Example 1:

WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss),RLSE)

where:

  n        - is the number of WORK data sets.
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to 8 characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
```

```
  ssss     - is the secondary allocation.
  RLSE     - specifies that free-space should be released
             when the data set is closed.

Example 2:

WORK n XXX pppp ssss

where:

  n        - is the number of WORK data sets.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.

Example 3 (multiple lines):

WORK n STORCLAS=MICSTEMP UNIT=SYSDA
WORK   SPACE=(xxxx,(pppp,ssss),,,ROUND))

where:

  n        - is the number of WORK data sets.
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.
  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.

Note:  Since there is some performance impact when using
multiple WORK files, you should specify the minimum number of
WORK data sets to meet your work space requirements.  As a
start, try incrementing the number gradually beginning from
the default.


WORK Considerations
--------------------

How Much Space Should You Allocate?

o  First Time Implementation of Multiple Work Files

   If this is the first time you are implementing multiple
   work files for this product in this unit, review
```

prefix.MICS.PARMS(JCLDEF) and find the WORKSPACE parameter. It will resemble this sample statement:

```
WORKSPACE      TRK 500 250
```

The value shows the current SAS WORK space allocation for the unit as a single data set. It also serves as the default value used in the unit's DAYnnn daily update (and/or INCRnnn incremental update) step unless you provide a WORK parameter.

To achieve the equivalent work space allocation of WORKSPACE TRK 500 250 using multiple WORK data sets that will collectively share the work space requirements of the daily and/or incremental update step, you could code either one of these:

```
WORK 2 SPACE=(TRK,(250,125))
```

```
WORK 5 SPACE=(TRK,(100,50))
```

To determine the total work space, multiply the number of WORK files (n) by the primary (pppp) and secondary (ssss) values specified.

Note: To simplify the example, only the SPACE parameter is shown above. You can follow either with data set allocation parameters like UNIT or STORCLAS as required for your site.

o Adjusting Allocation for Existing Multiple WORK Files

If you have previously implemented multiple WORK file support for this product in this unit, and you want to change either the number of WORK files or the space allocations, examine prefix.MICS.PARMS(cccOPS) and find the existing WORK statement.

- If the existing WORK statement only specifies the number of WORK files but does not contain space allocation information as shown below:

  ```
  WORK 5
  ```

  Then each of the multiple WORK files is allocated using the values from the WORKSPACE parameter of prefix.MICS.PARMS(JCLDEF), as described earlier under First Time Implementation of Multiple Work Files.

To increase workspace, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation in the WORKSPACE parameter, or do both.

To decrease workspace, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation in the WORKSPACE parameter, or do both.

You can also elect to explicitly specify the multiple WORK file space allocation by adding the space allocation values directly to the WORK statement. This will remove the link to the prefix.MICS.PARMS(JCLDEF) WORKSPACE parameter for multiple WORK file space allocation. This is recommended as it serves to clearly document, in one place, how multiple WORK files are allocated.

- If the existing WORK statement does include space allocation as shown in the examples below:

  WORK 5 TRK 200 100

  or

  WORK 5 SPACE=(TRK,(200,100)) STORCLAS=MICSTEMP

  Simply change the values to meet your needs.

  If you need more work space, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation (for example, change TRK 200 100 to TRK 250 120), or do both.

  To decrease work space, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation (for example, change TRK 200 100 to TRK 150 80), or do both.

Note: If internal step restart is NOT active (RESTART NO) and you change the WORK parameter, you must:

- Run cccPGEN
- Run JCLGENU for DAILY (to regenerate DAILY) and, if incremental update is enabled, INCRccc

When internal step restart is active, (RESTART YES), then,

```
when you change WORK and run cccPGEN, changes take effect
immediately.  There is no need to run JCLGENU.


SASWORK
-------

This statement is optional.

The WORK DD statement in the CA MICS procedures allocates
a temporary data set where SAS keeps its temporary data
files and other items that SAS uses during processing of
the current job.

By default, the space allocated is defined in the member
prefix.MICS.PARMS(JCLDEF) with the WORKSPACE and WORKUNIT
parameters, then generated into all the JCL procedures for
a given unit.

With the SASWORK statement you have the option to override
this unit-wide definition to specify the space allocation
individually for the current step.

The format of the SASWORK statement is:

SASWORK data_set_allocation_parameters

where data_set_allocation_parameters is one or more data set
allocation parameters (for example, STORCLAS or SPACE)
separated by spaces.

You can also specify the SASWORK parameter as the following:

SASWORK XXX pppp ssss

where:

  XXX  is TRK or CYL
  pppp is the primary allocation
  ssss is the secondary allocation

If you omit the data_set_allocation_parameters or the SASWORK
statement, the WORK data set is allocated according to the
values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Use the
data_set_allocation_parameters to override this default,
either to alter the space allocation or to use System Managed
Storage (SMS) parameters to control data set placement and
characteristics.
```

```
Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the SASWORK keyword on the
continuation line.

Example:

SASWORK STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to 8 characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.


Note:  If you change the SASWORK parameter, you must:

o  Run cccPGEN
o  Run JCLGENU for DAILY (to regenerate DAILY) and, if
   incremental update is enabled, INCRccc



MULTWORK|NOMULT fff fff ... fff
-------------------------------

Since multiple work files usage impacts performance, this
product provides these optional parameters so you can
restrict multiple work files usage to only those files having
excessive space requirements.

Note:  You can only use one of these optional parameters with
the WORK statement, NOT both.

The MULTWORK parameter restricts the use of multiple WORK
files to ONLY those listed after the MULTWORK keyword.

MULTWORK fff fff ... fff

where fff is the unique three character identifier

If you need multiple lines, repeat the MULTWORK on the
continuation line.
```

```
The NOMULT parameter forces the use of multiple WORK files
for all files EXCEPT those specified after the NOMULT
keyword.

NOMULT fff fff ... fff

where fff is the unique three character identifier

If you need multiple lines, repeat the NOMULT on the
continuation line.



The default is MULTWORK IPS KPS if neither MULTWORK nor
NOMULT parameters are specified.

The following files are eligible for multiple WORK support:

AUM MeasureWare Files

  IPS    UNIX Process Exception File
  KPS    UNIX Process Activity File

The following section discusses changing the WORK option:

    1 - Change the Number of Work Files
```

7.3.1.6.1 Change the Number of Work Files

```
To change the number of work files used in CA MICS Analyzer
for MeasureWare processing in Step DAY089, follow the
checklist provided below for each unit.

   ************************************************
   *                                              *
   *           CHANGE NUMBER OF WORK FILES        *
   *                                              *
   ************************************************

___ 1.  Update the WORK statement in
        prefix.MICS.PARMS(cccOPS), where (ccc) is the
        component identifier, to specify the number of work
        data sets required.  Below is an example:

        WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))

        where:

        n        - is the number of WORK data sets.
        STORCLAS - specifies a storage class for a new data
                   set.  The name can have up to eight
                   characters.
        SPACE    - specifies how much disk space to provide
                   for a new data set being allocated.
        XXX      - is TRK or CYL.
        pppp     - is the primary allocation.
        ssss     - is the secondary allocation.

        You should specify the minimum number of WORK data
        sets to meet your work space requirements.  As a
        start, try incrementing the number gradually
        beginning from the default.

___ 2.  If this is the first time you are implementing
        multiple work files for this product, then continue
        with Step 2.  If you are just changing the number
        currently in use, or simply the space definitions,
        then proceed to Step 3 of this checklist.

        Browse sharedprefix.MICS.PROTOLIB(DYcccnnn) and
        sharedprefix.MICS.PROTOLIB(cccINCR), where (nnn) is
        the job step number and (ccc) is the product ID for
        this product, checking for the presence of the WORK
        symbolic on the EXEC statement to determine if you
        have previously modified this product to increase the
        allocation of SAS WORK space.
```

```
___ 2a. If you find a WORK symbolic, simply divide the
        primary and secondary allocation values from the WORK
        symbolic by the number of work files specified above
        (value of n on the WORK statement coded in Step 1).

        Coding the resulting values will yield the same
        aggregate space allocation you have been using with a
        single WORK file.  To double your available WORK
        space, carry out the division, double the results and
        use the values in the WORK definition above.

___ 2b. If you did not find a WORK symbolic in PROTOLIB,
        examine prefix.MICS.PARMS(JCLDEF) for each CA MICS
        unit containing this product.  Find the WORKSPACE
        keyword.  The space allocation specified is used for
        a single SAS WORK file.  Perform the same division as
        described in the previous paragraph to determine the
        quantity that will yield equivalent total allocation
        with multiple WORK files.  Then adjust the values
        upward to meet your needs.

___ 3.  Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 4.  If you specified RESTART YES in the product's cccOPS,
        you are done.  Otherwise, you must do Steps 5, 6, and
        7.

___ 5.  Edit prefix.MICS.PARMS(JCLGENU) so that it contains a
        single line that reads:

        DAILY

        or, if incremental update is enabled for this product
        in this unit database, specify:

        DAILY INCRccc

        where ccc is the product ID.

___ 6.  Submit the job in prefix.MICS.CNTL(JCLGENU).  Ensure
        that there are no error messages in MICSLOG or
        SYSTSPRT, that the MICSLOG contains the normal
        termination message, BAS10999I, and that the job
        completes with a condition code of zero.

___ 7.  The following operational job(s) have changed:

        DAILY
```

INCRccc (if incremental update is enabled)

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling product's administrator for the exact processes involved in updating that product's representation of the CA MICS jobs.

7.3.1.7 Internal Step Restart Statements

```
RESTART YES/NO
--------------

This statement is optional.  Specify this to activate
internal step restart for this product's DAILY and/or INCRccc
database update job steps:

RESTART YES


If you do not specify or enable the RESTART parameter, then
this option defaults to the following and internal step
restart is disabled:

RESTART NO


************************************************************
*                                                          *
*  Note:  Changing the RESTART parameter (either from NO   *
*         to YES or from YES to NO) requires regeneration  *
*         of the DAILY operational job by executing        *
*         prefix.MICS.CNTL(JCLGEND) or by specifying       *
*         DAILY in prefix.MICS.PARMS(JCLGENU) and          *
*         executing prefix.MICS.CNTL(JCLGENU).             *
*                                                          *
*         If incremental update is active for this product, *
*         you must also regenerate the INCRccc job.        *
*                                                          *
************************************************************

Internal step restart can significantly reduce time and
resource usage to recover from daily and/or incremental
update processing failures.  CA MICS uses a
checkpoint/restart technique.

o  When internal step restart is activated, the database
   update job step "checkpoints" (or saves) intermediate
   results (work file contents) and the operational
   environment at the end of each processing phase.

o  Then, if required, the database update step can resume
   execution at the beginning of the processing phase in
   which the failure occurred.

o  Restart is accomplished by restoring the operational
```

```
   environment from the last checkpoint, bypassing completed
   processing phases, and resuming execution using
   intermediate results (work files) from the last
   checkpoint.

Note:  When you activate internal step restart (RESTART YES),
       the following optional restart parameters are enabled.
       These parameters have no effect if restart is disabled
       (RESTART NO).  For more details, see the individual
       parameter descriptions later in this section.

       o  RESTARTCKPT data_set_allocation_parameters

       o  RESTARTWORK data_set_allocation_parameters

       o  DYNAMWAIT minutes


Processing Phases:
------------------

This product employs two database update processing phases
followed by the two common roll-up phases.

       Phase                    Description
    -------------  ----------------------------------------

    FORMAT         Read raw input data, convert to SAS
                   format, and output to intermediate work
                   files.

    DBUPDATE       Sort intermediate work file contents,
                   eliminate duplicate input data, prepare
                   for DETAIL cycle creation, merge data
                   across optional multiple work files,
                   enhance data content, and create the new
                   DETAIL cycle.

    DYSUM          Summarize DETAIL data to create new DAYS
                   cycles and to update current week-to-date
                   and month-to-date cycles.

    DYAGE          Cutover new database cycles to production
                   and "age" existing cycles.

RESTART Considerations
----------------------

  o Overhead
```

Enabling internal step restart adds some overhead to the database update job step -- the cost of taking checkpoints and managing saved materials. Since this overhead is relatively constant and independent of input data volume, you may find that costs outweigh potential savings when input data volume is low, for example in a test unit. For high volume, production units, internal step restart support overhead should be a minor portion of total resource usage.

- Cataloged Work Files

  When internal step restart is enabled, the SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged with permanent dataset names so they will be retained for use in restart if the step abends. These data sets are deleted when the step completes successfully.

  Prior to enabling internal step restart support, these data sets were probably allocated on system "scratch" space with a temporary, system assigned data set names. If your installation standards do not allow "permanent" data sets on DASD volumes used for temporary work space, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct the internal step restart data sets to a generic unit or storage class that allows cataloged data sets.

- Dynamic Allocation

  When internal step restart is active, dynamic allocation is employed for the work data sets. If your installation restricts dynamic allocation of large, cataloged data sets, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct work data set allocation to a generic unit or storage class where dynamic allocation is allowed.

- Data Set Names

  The SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged according to the standard CA MICS unit database data set name conventions. The default DDNAME and data set names are:

  - SAS work data set,

```
            //cccXWORK DD DSN=prefix.MICS.cccXWORK,.....

      o Internal step restart control data set,
            //cccXCKPT DD DSN=prefix.MICS.cccXCKPT,.....

      o Multiple work file data sets,
            //WORKnn   DD DSN=prefix.MICS.cccWRKnn,.....

    Since these data sets conform to the same data set name
    conventions as your existing CA MICS data sets, there
    should be few, if any, data set name related allocation
    issues.  However, it is possible to override the data set
    names if required.  Please contact CA MICS Product
    Support for assistance if you must alter data set names.



RESTARTCKPT
-----------

This statement is optional.  Specify the following to
override default data set allocation parameters for the
internal step restart checkpoint data set:

RESTARTCKPT   data_set_allocation_parameters

Note:  RESTARTCKPT is ignored when you specify RESTART NO.

The internal step restart checkpoint data set (or cccXCKPT
data set) contains processing status, control, and SAS
environmental information for internal step restart
processing checkpoints.  This includes a copy of the SAS WORK
format and macro catalogs, current macro variable values, and
a description of work files that may be needed to restart
DAYnnn processing.

By default, the cccXCKPT data set is allocated according to
the values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Specify RESTARTCKPT
to override this default, either to alter the space
allocation or to use System Managed Storage (SMS) parameters
to control data set placement and characteristics.

Note:  If you allocate insufficient space for the cccXCKPT
data set, DAYnnn processing will fail and can only be
restarted from the beginning.

Note:  You can override the RESTARTCKPT data set allocation
parameters at execution-time using the //PARMOVRD facility.
```

```
For more information about execution-time override of dynamic
data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the RESTARTCKPT keyword on the
continuation line.

RESTARTCKPT accepts the engine/host options documented in the
SAS Companion for the z/OS Environment, including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

RESTARTCKPT  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp is the primary allocation
             ss is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

RESTARTCKPT  STORCLAS=MICSTEMP UNIT=SYSDA
RESTARTCKPT  SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
```

a new data set being allocated.

```
RESTARTWORK
-----------

This statement is optional.  Specify the following to
override default data set allocation parameters for the
internal step restart WORK data set:

RESTARTWORK   data_set_allocation_parameters

Note:  RESTARTWORK is ignored when you specify RESTART NO.

The internal step restart WORK data set (or cccXWORK data
set) contains the intermediate work files that are not
enabled to multiple work file support, including those files
you may have specified on the optional NOMULT statement.

By default, the cccXWORK data set is allocated according to
the values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Specify RESTARTWORK
to override this default, either to alter the space
allocation or to use System Managed Storage (SMS) parameters
to control data set placement and characteristics.

Note:  If you allocate insufficient space for the cccXWORK
data set, DAYnnn processing will fail and can only be
restarted from the beginning.

Note:  You can override the RESTARTWORK data set allocation
parameters at execution-time using the //PARMOVRD facility.
For more information about execution-time override of dynamic
data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the RESTARTWORK keyword on the
continuation line.

RESTARTWORK accepts the engine/host options documented in
"SAS Companion for the z/OS Environment", including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

  RESTARTWORK  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)
```

```
where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp is the primary allocation
             ss is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

  RESTARTWORK  STORCLAS=MICSTEMP UNIT=SYSDA
  RESTARTWORK  SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to 8 characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.



The following section discusses enabling this option:

    1 - Enable Internal Step Restart
```

7.3.1.7.1 Enable Internal Step Restart

To enable the internal step restart in the CA MICS Analyzer for MeasureWare, follow the checklist provided below for each unit:

```
   ************************************************
   *                                              *
   *          ENABLE INTERNAL STEP RESTART        *
   *                                              *
   ************************************************
```

___ 1. Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the component identifier, and specify:

RESTART YES

For additional information on related topic, review the documentation for this product on WORK, RESTARTWORK, and RESTARTCKPT parameters to override default data set allocation parameters.

___ 2. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it contains a single line that reads:

DAILY

or, if incremental update is enabled for this product in this unit database, specify:

DAILY INCRccc

where ccc is the product ID.

___ 4. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 5. The following operational job(s) have changed:

DAILY

INCRccc (if incremental update is enabled)

If your site has implemented the operational CA MICS

```
processes in a scheduling product, the JCL may have
to be refreshed in that product.  See the scheduling
product's administrator for the exact processes
involved in updating that product's representation of
the CA MICS jobs.
```

7.3.1.8 Incremental Update Statements

```
INCRUPDATE
----------

This statement is optional.  Specify this to enable
incremental update for this product:

INCRUPDATE YES

If you do not specify or enable the INCRUPDATE parameter,
then this option defaults to this and incremental update is
disabled:

INCRUPDATE NO

************************************************************
*                                                          *
*  Note:  Changing the INCRUPDATE parameter (either from NO *
*         to YES or from YES to NO) requires regeneration   *
*         of the DAILY operational job by executing         *
*         prefix.MICS.CNTL(JCLGEND) or by specifying        *
*         DAILY in prefix.MICS.PARMS(JCLGENU) and           *
*         executing prefix.MICS.CNTL(JCLGENU).              *
*                                                          *
*         If you specify INCRUPDATE YES, you must also      *
*         generate the INCRccc, cccIUALC, and cccIUGDG jobs *
*         (where ccc is the 3 character product ID).        *
*         Depending on the options you select, you may also *
*         need to execute the cccIUALC and/or cccIUGDG      *
*         jobs.                                             *
*                                                          *
************************************************************

Incremental update can significantly reduce time and resource
usage in the DAILY job by letting you split out a major
portion of daily database update processing into multiple,
smaller, incremental updates executed throughout the day.

o  Standard CA MICS database update processing involves (1)
   reading and processing raw input data to generate DETAIL
   and DAYS level CA MICS database files, followed by (2)
   summarization of DETAIL/DAYS level data to update
   week-to-date and month-to-date database files.

o  When you activate incremental update:

   -  You can execute the first-stage processing (raw data
      input to create DETAIL/DAYS files) multiple times
```

```
      throughout the day, each time processing a subset of
      the total day's input data.

   -  Then, during the final update of the day (in the
      DAILY job), the incremental DETAIL/DAYS files are
      "rolled-up" to the database DETAIL and DAYS
      timespans, and then summarized to update the
      week-to-date and month-to-date files.

o  Incremental update is independent of your internal step
   restart or DBSPLIT specifications.  You have the option
   to perform incremental updates with or without internal
   step restart support.

o  Incremental update is activated and operates
   independently by product.  The incremental update job
   for this product, INCRccc (where ccc is the product ID),
   can execute concurrently with the incremental update job
   for another product in the same unit database.

o  The CA MICS database remains available for reporting and
   analysis during INCRccc job execution.

************************************************************
*                                                          *
*  Note:  CA MICS is a highly configurable system          *
*         supporting up to 36 unit databases, each of which *
*         can be configured and updated independently.     *
*         Incremental update is just one of the options you *
*         can use to configure your CA MICS complex.       *
*                                                          *
*         All efforts should be made to employ CA MICS     *
*         configuration capabilities to minimize issues    *
*         prior to activating incremental update.  For     *
*         example:                                         *
*                                                          *
*         o  Splitting work to multiple units is an        *
*            effective way to enable parallel database     *
*            update processing                             *
*                                                          *
*         o  Adjusting account code definitions to ensure  *
*            adequate data granularity while minimizing    *
*            total database space and processing time      *
*                                                          *
*         o  Tailoring the database to drop measurements   *
*            and metrics of lesser value to your           *
*            data center, thereby reducing database update *
*            processing and resource consumption           *
*                                                          *
```

```
*         While incremental update is intended to reduce    *
*         DAILY job elapsed time, total resource usage of   *
*         the combined INCRccc and DAILY jobs steps can     *
*         increase due to the additional processing         *
*         required to maintain the incremental update       *
*         "to-date" files and for roll-up to the unit       *
*         database.  The increased total resource usage     *
*         will be more noticeable with small data volumes,  *
*         where processing code compile time is a greater   *
*         percentage of total processing cost.              *
*                                                           *
*************************************************************
```

Note: When you activate incremental update (INCRUPDATE YES), the following optional incremental update parameters are enabled. These parameters have no effect if incremental update is disabled (INCRUPDATE NO). For more details, see the individual parameter descriptions later in this section.

o INCRDB   PERM/TAPE/DYNAM

o INCRDETAIL data_set_allocation_parameters

o INCRDAYS   data_set_allocation_parameters

o INCRCKPT   data_set_allocation_parameters

o INCRSPLIT USE/IGNORE data_set_allocation_parameters

Incremental update processing reads and processes raw measurement data to create and maintain DETAIL and DAYS level "to-date" files for the current day.

- These incremental update database files are maintained on unique z/OS data sets, independent of the standard CA MICS database files, and independent of any other product's incremental update database files. There is one data set each for DETAIL and DAYS level "to-date" data and a single incremental update checkpoint data set for this product in this unit.

- The incremental update DETAIL and DAYS files can be permanent DASD data sets, or they can be allocated dynamically as needed and deleted after DAILY job processing completes. Optionally, you can keep the incremental update DETAIL and DAYS files on tape, with the data being loaded onto temporary DASD space as needed for incremental update or DAILY job processing. See the INCRDB PERM/TAPE/DYNAM option for more

information.

After activating incremental update, you will use three incremental update facility jobs found in prefix.MICS.CNTL (Note that ccc is the product ID):

o cccIUALC

You execute this job to allocate and initialize the incremental update checkpoint file, and optionally the incremental update DETAIL and DAYS database files. cccIUALC is generally executed just ONE time.

o cccIUGDG

You execute this job to add generation data group (GDG) index definitions to your system catalog in support of the INCRDB TAPE option. cccIUGDG is generally executed just ONE time.

o INCRccc

This is the job you execute for each incremental update. You will integrate this job into your database update procedures for execution one or more times per day to process portions of the total day's measurement data.

Note: The DAILY job is run once at the end of the day. It will perform the final incremental update for the day's data, and then roll-up the incremental DETAIL/DAYS files to the database DETAIL and DAYS timespans and update the week-to-date and month-to-date files.

INCRUPDATE Considerations
---

o Overhead

Incremental update is intended to reduce DAILY job resource consumption and elapsed time by offloading a major portion of database update processing to one or more executions of the INCRccc job. In meeting this objective, incremental update adds processing in the INCRccc and DAILY jobs to accumulate data from each incremental update execution into the composite "to-date" DETAIL and DAYS incremental update files, and also adds processing in the DAILY job to copy the incremental update files to the unit database DETAIL and DAYS

timespans. The amount of this overhead and the savings in the DAILY job are site-dependent, and will vary based on input data volume and on the number of times INCRccc is executed each day.

In addition, activating incremental update will cause additional compile-based CPU time to be consumed in the DAYnnn DAILY job step. The increase in compile time is due to additional code included for each file structure in support of the feature. This increase should be static based on the scope of the CA MICS data integration product in terms of files. This compile-time increase does not imply an increase in elapsed or execution time. Incremental update allows I/O bound, intensive processing (raw data inputting, initial CA MICS transformation, etc.) to be distributed outside of the DAILY job. I/O processing is the largest contributor to elapsed time in large volume applications. Thus, the expected overall impact is a decrease in the actual runtime of the DAYnnn job step.

- Increased "Prime Time" Workload

  By offloading work from the DAILY job to one or more INCRccc executions throughout the day, you are potentially moving system workload and DASD work space usage from the "off-hours," (when the DAILY job is normally executed) to periods of the day where your system resources are in highest demand. You should schedule INCRccc executions carefully to avoid adverse impact to batch or online workloads. For example, if your site's "prime shift" is 8:00 AM to 5:00 PM, you might choose to schedule incremental updates for 7:00 AM (just before "prime shift") and 6:00 PM (just after "prime shift"), with the DAILY job executing just after midnight.

- Increased DASD Usage

  The DASD space required for the incremental update DETAIL and DAYS database files is in addition to the DASD space already reserved for the CA MICS database. By default, the incremental update database files are permanently allocated, making this DASD space unavailable for other applications. In general, you can assume that the incremental update database files will require space equivalent to two cycles of this product's DETAIL and DAYS timespan files.

  Alternatively, the incremental update database files can

be allocated in the first incremental update of the day and deleted by the DAILY job (see the INCRDB DYNAM option later in this section). This approach reduces the amount of time that the DASD space is dedicated to incremental update, and lets the amount of DASD space consumed increase through the day as you execute each incremental update.

A third option is to store the incremental update database files on tape (see the INCRDB TAPE option). With this approach, the DASD space is required just for the time that each incremental update or DAILY job step is executing. Note that while this alternative reduces the "permanent" DASD space requirement, the total amount of DASD space required while the incremental update or DAILY jobs are executing is unchanged. In addition, the TAPE option adds processing to copy the incremental update files to tape, and to reload the files from tape to disk.

Note: The incremental update checkpoint file is always a permanently allocated disk data set. This is a small data set and should not be an issue.

- Operational Complexity

  Incremental update expands your measurement data management and job scheduling issues. You must ensure that each incremental update and the DAILY job processes your measurement data chronologically; that is, each job must see data that is newer than the data processed by the prior job. By incrementally updating the database, you have more opportunities to miss a log file, or to process a log out of order.

- Interval End Effects

  Each incremental update processes a subset of the day's measurement data, taking advantage of early availability of some of the day's data, for example, when a measurement log fills and switches to a new volume. This can cause a problem if the measurement log split occurs while the data source is logging records for the end of a measurement interval, thus splitting the data for a single measurement interval across two log files. When an incremental update processes the first log file, the checkpoint high end timestamp is set to indicate that this split measurement interval has been processed. Then, when the rest of the measurement interval's data is

encountered in a later update, it can be dropped as duplicate data (because data for this measurement interval end timestamp has already been processed).

Appropriate scheduling of log dumps and incremental updates can avoid this problem. For example, if you plan to run incremental updates at 7:00 AM and 6:00 PM, you could force a log dump in the middle of the measurement interval just prior to the scheduled incremental update executions. This is an extension of the procedure you may already be using for end-of-day measurement log processing. The objective is to ensure that all records for each monitor interval are processed in the same incremental update.

- Dynamic Allocation

  When you activate incremental update and specify TAPE or DYNAM for the INCRDB parameter, dynamic allocation is employed for the incremental update database files. If your site restricts dynamic allocation of large, cataloged data sets, you must use the INCRDETAIL and INCRDAYS parameters to direct incremental update data set allocation to a generic unit or storage class where dynamic allocation is allowed.

- Data Set Names

  The incremental update database files are allocated and cataloged according to standard CA MICS unit database data set name conventions. The DDNAME and default data set names are (where ccc is the product ID):

  - Incremental update checkpoint file,
    ```
    //IUCKPT   DD DSN=prefix.MICS.ccc.IUCKPT,.....
    ```
  - Incremental update DETAIL
    ```
    //IUDETAIL DD DSN=prefix.MICS.ccc.IUDETAIL,.....
    ```
  - Incremental update DAYS
    ```
    //IUDAYS   DD DSN=prefix.MICS.ccc.IUDAYS,....
    ```

  Since these data sets conform to the same data set name conventions as your existing CA MICS data sets, there should be few, if any, data-set-name-related allocation issues. However, it is possible to override the data set names if required. Contact Technical Support at http://ca.com/support for assistance if you must change data set names.

```
INCRDB
------

This statement is optional.  The default is this:

INCRDB PERM

Note:  INCRDB is ignored when you specify INCRUPDATE NO.

Specify this statement or take the default, to keep the incremental
update database DETAIL and DAYS files on permanently
allocated DASD data sets:

INCRDB PERM

Execute the prefix.MICS.CNTL(cccIUALC) job to allocate the
incremental update database files.

************************************************************
*                                                          *
*  Note:  The incremental update checkpoint file is always  *
*         a permanently allocated DASD data set.           *
*                                                          *
************************************************************


Specify this to offload the incremental update DETAIL and
DAYS files to tape between incremental update executions:

INCRDB TAPE #gdgs UNIT=name

With the TAPE option, the incremental update DETAIL and DAYS
DASD data sets are dynamically allocated at the beginning of
the incremental update job or DAILY job step, and then are
deleted after the job step completes.

o  The first incremental update job of the day allocates
   and initializes the incremental update database files.
   At the end of the job, the DETAIL and DAYS files are
   copied to a new (+1) generation of the incremental
   update tape data sets.  Then the DASD files are deleted.

o  Subsequent incremental update jobs restore the DASD
   incremental update database files from the current, (0)
   generation, incremental update tape data sets before
   processing the input measurement data.  At the end of
```

the job, the DETAIL and DAYS files are copied to a new (+1) generation of the incremental update tape data sets. Then the DASD files are deleted.

- The DAILY job step also restores the DASD incremental update database files from the (0) generation tape files before processing the input data, but does NOT copy the incremental update database files to tape. Thus, the DAILY job actually creates a new, null (+1) generation.

- Use the #gdgs parameter to specify the maximum number of incremental update tape generations. The minimum is 2 and the maximum is 99, with a default of 5.
  Set the number of generations equal to or greater than the number of incremental updates, including the DAILY job you plan to execute each day. This facilitates restart and recovery if you encounter problems requiring you to reprocess portions of the daily measurement data.

- Use the optional UNIT=name parameter to specify a tape unit name for the incremental update database output tapes. The default is to use the same tape unit as the input tapes.

- A special index must be created in your system catalog for each of the incremental update tape data set generation data groups. The prefix.MICS.CNTL(cccIUGDG) job will generate the statements to create the incremental update GDG index definitions.

  - Before each index is built, it is deleted. These DLTX (or DELETE) statements causes an error message if no entry exists. This is done so that you can change the number of entries without having to delete each of the index entries.

  - DLTX and BLDG (or DELETE and DEFINE) fail if there is a cataloged data set with the same index. IDCAMS (or IEHPROGM) issues a message and gives a return code of 8. This issue is not a problem for non-GDG entries or if the GDG already has the desired number of entries.

  - If you want to change the number of entries kept in a GDG with cataloged data sets, do the following:

    1. Uncatalog any existing entries in the GDG.
    2. Delete the index with a DLTX (or DELETE).

```
      3. Create the index with a BLDG (or DEFINE).
      4. Catalog any entries that are uncataloged in step 1.

o  The incremental update tape data set names are as follows,
   where ccc is the product ID:

   -  Incremental update tape DETAIL file
         tapeprefix.MICS.ccc.IUXTAPE.GnnnnV00

   -  Incremental update tape DAYS file
         tapeprefix.MICS.ccc.IUDTAPE.GnnnnV00

************************************************************
*                                                          *
*  Note:  The INCRDETAIL and INCRDAYS parameters are       *
*         required when you specify INCRDB TAPE.           *
*                                                          *
************************************************************


Specify this parameter to allocate dynamically the
incremental update  DETAIL and DAYS DASD data sets in the first
incremental update of the day, and then delete these data sets
at the end of the DAILY job step:

INCRDB DYNAM


o  With this option, no space is used for the incremental
   update database files during the time between the end of
   the DAILY job step and the beginning of the next day's
   first incremental update.

o  With this approach, you can set the data set allocation
   parameters so that the incremental update DETAIL and DAYS
   data sets start out with a minimum allocation and then
   grow through secondary allocations as more space is
   required for subsequent incremental updates. For
   example, enough space for one incremental update.

************************************************************
*                                                          *
*  Note:  The INCRDETAIL and INCRDAYS parameters are       *
*         required when you specify INCRDB DYNAM.          *
*                                                          *
************************************************************
```

```
INCRDETAIL
----------

This statement is required if you specify either of these:

INCRDB TAPE

INCRDB DYNAM

Otherwise, this statement is optional.  There is no default.


Specify this to define data set allocation parameters for the
incremental update DETAIL data set (IUDETAIL):

INCRDETAIL    data_set_allocation_parameters

Note:  INCRDETAIL is ignored when you specify INCRUPDATE NO.

The incremental update DETAIL data set (IUDETAIL) contains
the current incremental update detail-level database files,
and the DETAIL "to-date" data for the current daily update
cycle.  You should allocate DASD space equivalent to two
cycles of this product's DETAIL timespan data.

If you specified INCRDB PERM (the default), your INCRDETAIL
parameter specifications are used in generating the cccIUALC
job (where ccc is the product ID).

o  You will execute the cccIUALC job to allocate and
   initialize the incremental update database and checkpoint
   files.

o  Omit the INCRDETAIL parameter if you prefer to specify
   data set allocation parameters directly in the generated
   prefix.MICS.CNTL(cccIUALC) job.

If you specified INCRDB TAPE or INCRDB DYNAM, your INCRDETAIL
parameter specifications are used in incremental update
DETAIL data set dynamic allocation during incremental update
or DAILY job step execution.

o  The INCRDETAIL parameter is required for the TAPE or
   DYNAM option.

o  Specify data set allocation parameters, separated by
   blanks, according to SAS LIBNAME statement syntax.  If
   you need multiple lines, repeat the INCRDETAIL keyword
   on the continuation line.
```

```
o  INCRDETAIL accepts the engine/host options documented in
   the SAS Companion for the z/OS Environment, including
   STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and
   VOLSER.

   Important!  DO NOT SPECIFY THE DISP PARAMETER.

o  You can override the INCRDETAIL data set allocation
   parameters at execution-time using the //PARMOVRD
   facility.  For more information about execution-time
   override of dynamic data set allocation parameters, see
   the PIOM, section 2.3.6.

Example 1:

INCRDETAIL   STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

INCRDETAIL   STORCLAS=MICSTEMP UNIT=SYSDA
INCRDETAIL   SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
```

a new data set being allocated.

INCRDAYS

This statement is required if you specify either of these:

INCRDB TAPE

INCRDB DYNAM

Otherwise, this statement is optional. There is no default.

Specify this to define data set allocation parameters for the incremental update DAYS data set (IUDAYS):

INCRDAYS data_set_allocation_parameters

Note: INCRDAYS is ignored when you specify INCRUPDATE NO.

The incremental update DAYS data set (IUDAYS) contains the current incremental update days-level database files, and the DAYS "to-date" data for the current daily update cycle. You should allocate DASD space equivalent to two cycles of this product's DAYS timespan data.

If you specified INCRDB PERM (the default), your INCRDAYS parameter specifications are used in generating the cccIUALC job (where ccc is the product ID).

- You will execute the cccIUALC job to allocate and initialize the incremental update database and checkpoint files.
- Omit the INCRDAYS parameter if you prefer to specify data set allocation parameters directly in the generated prefix.MICS.CNTL(cccIUALC) job.

If you specified INCRDB TAPE or INCRDB DYNAM, your INCRDAYS parameter specifications are used in incremental update DAYS data set dynamic allocation during incremental update or DAILY job step execution.

- The INCRDAYS parameter is required for the TAPE or DYNAM option.
- Specify data set allocation parameters, separated by

```
   blanks, according to SAS LIBNAME statement syntax.  If
   you need multiple lines, repeat the INCRDAYS keyword on
   the continuation line.

o  INCRDAYS accepts the engine/host options documented in the
   SAS Companion for the z/OS Environment, including
   STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and
   VOLSER.

   Important!  DO NOT SPECIFY THE DISP PARAMETER.

o  You can override the INCRDAYS data set allocation
   parameters at execution-time using the //PARMOVRD
   facility.  For more information about execution-time
   override of dynamic data set allocation parameters, see
   the PIOM, Section 2.3.6.

Example 1:

INCRDAYS     STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

INCRDAYS     STORCLAS=MICSTEMP UNIT=SYSDA
INCRDAYS     SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
```

```
            The name can have up to eight characters.

 SPACE    - specifies how much disk space to provide for
            a new data set being allocated.
```

INCRCKPT

This statement is optional. Specify this to override default data set allocation parameters for the incremental update checkpoint data set:

```
INCRCKPT      data_set_allocation_parameters
```

Note: INCRCKPT is ignored when you specify INCRUPDATE NO.

The incremental update checkpoint data set tracks incremental update job status and the data that has been processed during the current daily update cycle. The incremental update checkpoint is used to detect and block the input of duplicate data during incremental update processing. This data set will be exactly the same size as prefix.MICS.CHECKPT.DATA (the unit checkpoint data set), usually 20K to 200K depending on the prefix.MICS.PARMS(SITE) CKPTCNT parameter (100-9999).

Your INCRCKPT parameter specifications are used in generating the cccIUALC job (where ccc is the product ID).

- You will execute the cccIUALC job to allocate and initialize the incremental update checkpoint file. If you specified INCRDB PERM, then the cccIUALC job will also allocate the incremental update DETAIL and DAYS database files.

- By default the incremental update checkpoint data set is allocated as SPACE=(TRK,(5,2)) using the value you specified for the prefix.MICS.PARMS(JCLDEF) DASDUNIT parameter.

- Omit the INCRCKPT parameter if you prefer to override data set allocation parameters directly in the generated prefix.MICS.CNTL(cccIUALC) job.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the INCRCKPT keyword on the

```
continuation line.

INCRCKPT accepts the engine/host options documented in the
SAS Companion for the MVS Environment, including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.


Example 1:

INCRCKPT     STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.


Example 2 (multiple lines):

INCRCKPT     STORCLAS=MICSTEMP UNIT=SYSDA
INCRCKPT     SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
```

```
INCRSPLIT
---------

This statement is optional and defaults to this:

INCRSPLIT IGNORE

Specify the following if you want the incremental update job
for this product to get input measurement data from the
output of the SPLITSMF job.  The optional
data_set_allocation_parameters are used by the SPLITSMF job
when creating the measurement data file for this product.

INCRSPLIT  USE  data_set_allocation_parameters

Note:  INCRSPLIT is ignored when you specify INCRUPDATE NO.

This option would be used when multiple products in a
single unit database are enabled to incremental update.  The
SPLITSMF job performs the same function for incremental
update jobs as the DAILY job DAYSMF step performs for the
DAYnnn database update steps.

o  The SPLITSMF job dynamically allocates, catalogs, and
   populates prefix.MICS.ccc.IUSPLTDS data sets for each
   product in the unit database for which you specified both
   the INCRUPDATE YES and INCRSPLIT USE parameters.  These
   data sets are then deleted after processing by the
   appropriate INCRccc job.

o  Specify data set allocation parameters, separated by
   blanks, according to SAS LIBNAME statement syntax.  If you
   need multiple lines, repeat the INCRSPLIT keyword on each
   continuation line.

o  INCRSPLIT accepts the engine/host options documented in
   the SAS Companion for the MVS Environment, including
   STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and
   VOLSER.

   Important!  DO NOT SPECIFY THE DISP PARAMETER.


Specify the following or accept the default if you want the
incremental update jobs for this product to get their input
measurement data from the data sets specified in the INPUTccc
(or INPUTSMF) member of prefix.MICS.PARMS:
```

```
INCRSPLIT  IGNORE

When you specify INCRSPLIT IGNORE, this product will NOT
participate in SPLITSMF job processing.


Example 1:

INCRSPLIT USE  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.


Example 2 (multiple lines):

INCRSPLIT  USE  STORCLAS=MICSTEMP UNIT=SYSDA
INCRSPLIT       SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.


DYNAMWAIT
```

```
---------

This statement is optional.  Specify the following:

     DYNAMWAIT   minutes

to override the default amount of time, in minutes, the DAILY
and/or INCRccc job will wait for an unavailable data set.

Note:  This optional parameter is not normally specified.
       The system default is adequate for most data centers.

Internal Step Restart and Incremental Update facilities use
z/OS dynamic allocation services to create new data sets and
to access existing data sets.  Data set naming conventions
and internal program structure are designed to minimize data
set contention.  However, if data set allocation does fail
because another batch job or online user is already using a
data set, DAILY and/or INCRccc processing will wait 15
seconds and then try the allocation again.  By default, the
allocation will be attempted every 15 seconds for up to 15
minutes.  After 15 minutes, the DAILY or INCRccc job will
abort.

If data set contention in your data center does cause
frequent DAILY or INCRccc job failures, and you are unable to
resolve the contention through scheduling changes, you may
want to use the DYNAMWAIT parameter to increase the maximum
number of minutes the DAILY and/or INCRccc jobs will wait for
the data set to become available.

On the other hand, if your data center standards require
that the DAILY and/or INCRccc jobs fail immediately if
required data sets are unavailable, specify the following:

     DYNAMWAIT 0

Note:  You can override the DYNAMWAIT parameter at
       execution-time using the //PARMOVRD facility.  For
       more information about execution-time override of
       dynamic data set allocation parameters, see the PIOM,
       section 2.3.6.

The following section discusses enabling this option:

    1 - Implement Incremental Update
```

7.3.1.8.1 Implement Incremental Update

```
To implement incremental update in the CA MICS Analyzer for
MeasureWare, follow the checklist provided below:



   ***************************************************
   *                                                 *
   *           IMPLEMENT INCREMENTAL UPDATE          *
   *                                                 *
   ***************************************************

___ 1.  Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the
        component identifier:

        o  Specify the following:

           INCRUPDATE  YES

        o  If you want to store the incremental update
           database files on tape between incremental
           updates, specify this:

           INCRDB  TAPE  #gdgs

        o  If you want to allocate the incremental update
           database files during the first incremental update
           of the day and delete these data sets at the end
           of the DAILY job step, specify this:

           INCRDB  DYNAM

        o  If you specified INCRDB TAPE or INCRDB DYNAM, then
           you must also specify this:

           INCRDETAIL  data_set_allocation_parameters
           INCRDAYS    data_set_allocation_parameters

        o  If you want the incremental update job for this
           product to get input measurement data from the
           output of the SPLITSMF job, specify this:

           INCRSPLIT  USE  data_set_allocation_parameters

        o  For additional information on related topic,
           review the documentation for this product on
           INCRCKPT, INCRDETAIL, INCRDAYS, or INCRSPLIT
           parameters to override default data set allocation
```

parameters.

___ 2. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it contains two or more lines reading:

```
DAILY
INCRccc cccIUALC cccIUGDG
```

___ 4. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 5. Edit the job in prefix.MICS.CNTL(cccIUALC).

- Inspect and/or specify data set allocation parameters for the incremental update database and checkpoint files. If you specified INCRDB TAPE or INCRDB DYNAM, the cccIUALC job will only allocate the incremental update checkpoint data set.
- Submit the job. Ensure that there are no error messages in MICSLOG or SASLOG, and that the job completes with a condition code of zero.

___ 6. If you specified INCRDB TAPE, submit the job in prefix.MICS.CNTL(cccIUGDG) to define generation group indexes for the incremental update DETAIL and DAYS tape data sets. Examine SASLOG, MICSLOG, and SYSPRINT to verify that the generation group indexes were correctly defined.

Note: You may see error messages for the DLTX (or DELETE) statements. This is not a problem. cccIUGDG deletes each index prior to defining it, and an error message is issued if the index does not yet exist (e.g., if this is the first time you ran the cccIUGDG job).

___ 7. The following operational job(s) have changed:

```
DAILY  INCRccc
```

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling

product's administrator for the exact processes involved in updating that product's representation of the CA MICS jobs.

___ 8. Implement operational procedures for gathering input measurement data and executing incremental updates (INCRccc) during the day.

You may also need to modify operational procedures for the DAILY job to ensure that processing is limited to input measurement data that has not been input to one of the day's incremental update executions.

7.3.1.9 Sample AUMOPS and Examples

Following is a sample of required and optional statements
that may be coded in prefix.MICS.PARMS(SNTOPS).

```
* NO COMMON STATEMENT IN USE
* DEFINE ONE OPTIONS STATEMENT FOR EACH UNIX SYSTEM

 VERIFY ABORT
 GLOBAL FORCE AIX

 OPTIONS       CHID CHICAGO_DEMO
   HPUX        CHID AUMMWA01

 OPTIONS       CHIP CHICAGO_PRODUCTION
   HPUX        CHIP AUMMWA02

 OPTIONS       TRP1 KIPLING
   AIX         TRP1 AUMAIX03


* NO COMMON STATEMENT IN USE
* USING THE FORCE VER KEYWORD

 OPTIONS       CHIP CHICAGO_PRODUCTION
   HPUX        CHIP AUMMWA02  FORCE VER C.03.7


* COMMON STATEMENT IN USE
* DEFINE ONE OPTIONS STATEMENT FOR EACH UNIX SYSTEM

 VERIFY ABORT
 COMMON HPUX   AUMMWA01

 OPTIONS       CHID CHICAGO_DEMO
   HPUX        CHID AUMMWA02

                                      -----+
 OPTIONS       NYP1 NEW_YORK_PURCHASING_1  |
   HPUX        NYP1 *                      | THESE OPTIONS
                                           | ARE ASSOCIATED
 OPTIONS       NYP2 NEW_YORK_PURCHASING_2  | WITH THE COMMON
   HPUX        NYP2 *                      | STATEMENT
                                      -----+
 OPTIONS       CHIP CHICAGO_PRODUCTION
   HPUX        CHIP AUMMWA03
```

```
* COMMON STATEMENT IN USE
* USING BOTH FORCE VER & ERRSKIP KEYWORDS

 COMMON HPUX   AUMMWA01  FORCE VER C.03.7  ERRSKIP

                                        -----+
 OPTIONS       NYP1 NEW_YORK_PURCHASING_1  |
   HPUX        NYP1 *                     | THESE OPTIONS
                                          | ARE ASSOCIATED
 OPTIONS       NYP2 NEW_YORK_PURCHASING_2  | WITH THE COMMON
   HPUX        NYP2 *                     | STATEMENT
                                        -----+
 OPTIONS       CHIP CHICAGO_PRODUCTION
   HPUX        CHIP AUMMWA03
```

Figure 7-3 provides a worksheet for collecting the data.

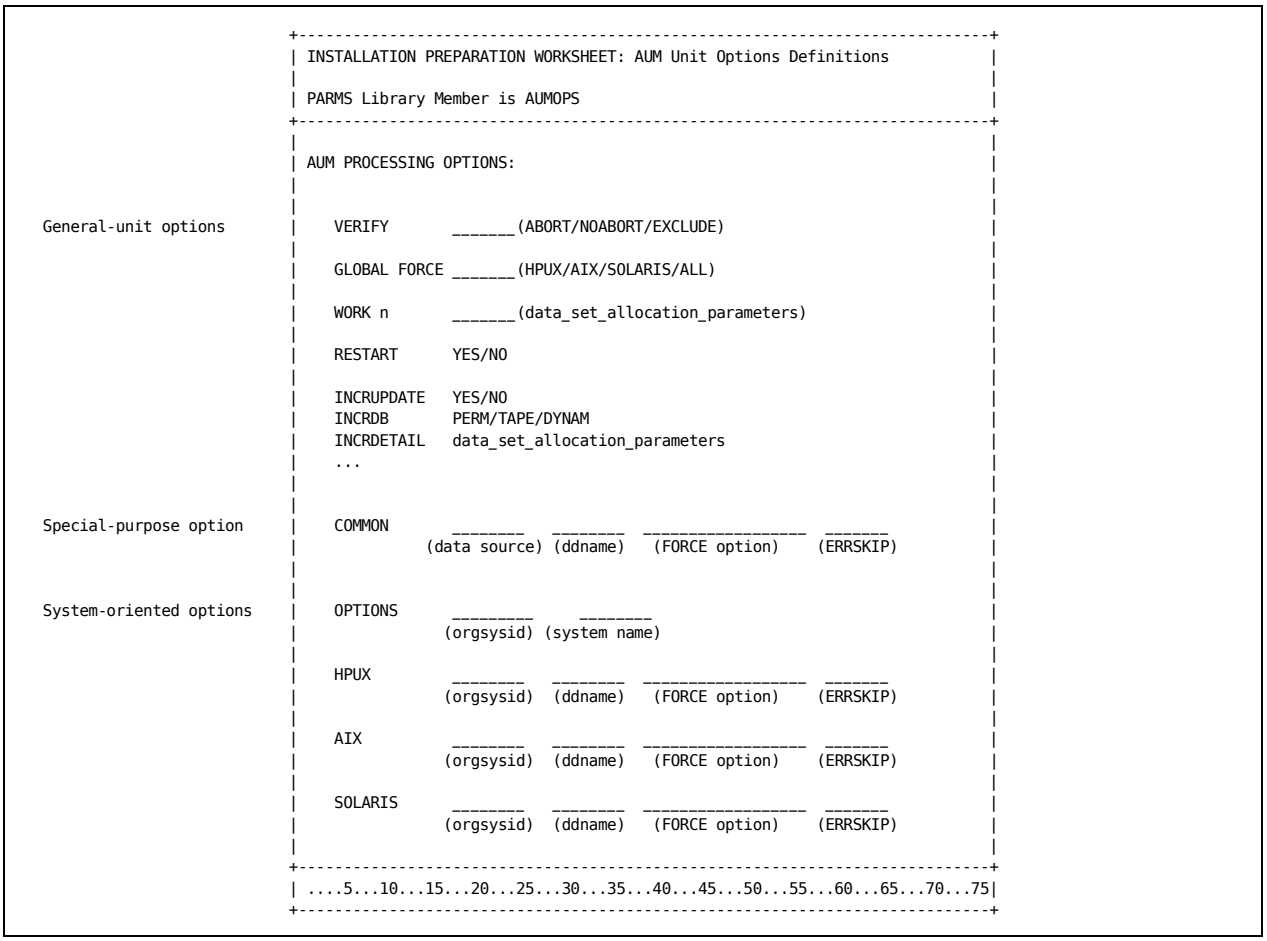


Figure 7-3. AUMOPS Options Definition Worksheet

7.3.2 Input DD Statements (INPUTAUM)

The Analyzer for MeasureWare processes input files from MeasureWare platform data. You must move the data from your UNIX system to the MVS system that runs CA MICS.

You supply the input DD statements that define the UNIX input files in prefix.MICS.PARMS(INPUTAUM). The DD statements are referenced by the MWA/HPUX and COMMON statements of AUMOPS.

There must be one DD statement in the INPUTAUM member for each ddname identified in prefix.MICS.PARMS(AUMOPS).

Remember that ddnames are defined in the AUMOPS member in prefix.MICS.PARMS and that the DCB characteristics for transferred data are required only for nonlabelled tapes. DCB characteristics are included in "Transferring Data" in Section 6.1 of this guide.

The INPUTAUM format is

```
  //ddname   DD DISP=SHR,DSN=your.dataset.name
```

where

ddname is a ddname specified on the MWA/HPUX or COMMON statements in prefix.MICS.PARMS(AUMOPS).

your.dataset.name is the name of the data set that contains the input data.

Sample INPUTAUM statements:

```
  //AUMMWA01 DD DISP=SHR,DSN=PREFIX.MWA-HPUX.CHICAGO1
  //AUMMWA02 DD DISP=SHR,DSN=PREFIX.MWA-HPUX.CHICAGO2
```

Providing Data to CA MICS

The CA MICS system administrator is responsible for getting the data to be processed each day into the MVS data sets you specify here. The preferred method is using some form of file transmission such as our XCOM software or some similar facility that allows you to transfer files between your UNIX systems and your MVS systems.

A worksheet for coding INPUTAUM is shown in Figure 7-4.

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: INPUTAUM JCL Definitions             |
|                                                                         |
| PARMS Library Member is INPUTAUM                                        |
| Reference Section:  7.3.2, CA MICS Analyzer for MeasureWare Guide       |
+-------------------------------------------------------------------------+
|                                                                         |
|                                                                         |
| This definition is required to specify the DD statements for UNIX       |
| data that will be read by the CA MICS DAILY job.                        |
|                                                                         |
|      //@ SAMPLE INPUTAUM                                                |
|      //@                                                                |
|      //@                                                                |
|      //________ DD DISP=SHR,DSN=_____________________________________   |
|      //________ DD DISP=SHR,DSN=_____________________________________   |
|      //________ DD DISP=SHR,DSN=_____________________________________   |
|      //@                                                                |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
```

NOTE: Because of the text substitution process used by JCLGEN, to produce '//*', '/*', and '&' in the JCL produced by JCLGEN, the following symbols must be used instead:

//@	produces	//*
/@	produces	/*
?	produces	&

Figure 7-4. INPUTAUM JCL Definitions Worksheet

7.3.3 Input Needed to Generate System Code (AUMPGEN)

Some CA MICS code for this CA MICS Analyzer is generated at the unit level through the AUMPGEN job. The prefix.MICS.PARMS members that must be completed prior to AUMPGEN execution are:

- SYSID (Computing system parameters); remember to execute BASPGEN as described in Section 7.4 of this guide.
- AUMOPS (Processing options definition)
- INPUTAUM (Input DD statements)

Figure 7-5 identifies the prefix.MICS.PARMS input members, output members, and SAS macro names used for the unit-level code generation process. A member may contain the definition of more than one SAS macro. The output libraries are at the database unit level (prefix).

prefix.MICS.PARMS Input Member	prefix.MICS.MUOLIB Input Format	USER.SOURCE Output Members and SAS Macro Names
AUMOPS, INPUTAUM	$SYSID $AUMSYS	$AUMMSTR %AUMMWAIN

7.3.4 Application Name Derivation Routine (AUMAURT)

The Analyzer's application name derivation routine assigns a value to the Application Name data element, AUMAPU. By default, AUMAPU is set to the application name defined in your MeasureWare parm file. Most installations do not need to code AUMAURT.

This user-written SAS routine is stored in prefix.MICS.PARMS(AUMAURT) and is invoked for each application processed in the AUMAPP file. The AUMAPU element in the AUMKPS and AUMIPS files obtains its value from the AUMAPP file by matching application numbers (AUMAPNUM).

You are responsible for ensuring the accuracy of the exit. A worksheet for coding the UNIX Application Name Derivation Routine is shown in Figure 7-6. For example, you can use the AUMAPU data element to make your application names more explicit for reporting purposes.

Coding Considerations

Follow these guidelines for coding this CA MICS exit routine:

1. Ensure that all of the fields that you require are available for application name construction.

2. Refer to the discussion of exit coding in Section 2.3.1.5, Notes on Coding CA MICS Parameters, in the CA MICS Planning, Installation, Operation, and Maintenance Guide.

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  AUM Application Name Derivation     |
|                                      Routine Definition                 |
| PARMS Library Member is AUMAURT                                         |
| Reference Sections:  7.3.4, CA MICS Analyzer for MeasureWare Guide      |
+-------------------------------------------------------------------------+
|                                                                         |
| * VALIDATE FOR VALID APPLICATION UNITS, WHERE POSSIBLE ;                |
|     IF application data is not valid GOTO AURTOVHD ;                    |
| _______________________________________________________________________ |
|                                                                         |
| _______________________________________________________________________ |
|                                                                         |
| _______________________________________________________________________ |
```

```
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| * BUILD APPL. UNIT FIELDS;                                                   |
|     AUMAPU=field source 1 ||                                                 |
|             field source n ;                                                 |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|     GOTO AURTRTEX ;                                                          |
| * LINKED ROUTINE TO BUILD INSTALLATION OVERHEAD APPLICATION UNITS;           |
| AURTOVHD:                                                                    |
|     AUMAPU='overhead category' ;                                             |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
|                                                                              |
| ____________________________________________________________________________ |
| AURTRTEX:                                                                    |
+------------------------------------------------------------------------------+
| ....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+------------------------------------------------------------------------------+
```

Figure 7-6. Application Name Derivation Routine Worksheet

7.3.5 Database Space Modeling (DBMODEL)

This section describes the information required to define the Analyzer to the Database Space Modeling Facility. Specifically, the user must provide values for the cycle (data retention) definitions. The special considerations for defining the FILE input statements to the Database Space Modeling facility are discussed.

Section 2.3.4 of the PIOM, Database Space Modeling Facility, explains how these values are used in estimating the DASD requirements of the database, and how the user can input these values to the modeling facility.

This section covers the following topics:

1 - Data Retention Specifications (FILE Statements)

2 - DBMODEL Input Statements

7.3.5.1 Data Retention Specifications (FILE Statements)

Figure 7-7 provides a worksheet to define the different retention limits for the online and archive database files. The numbers shown on the worksheet reflect the default retention values in prefix.MICS.PARMS(DBMODEL).

Use the worksheet to define your retention specifications, which, in turn, will allow you to determine the appropriate values for the modeling process.

Note that the DBMODEL worksheet shown here contains values for this product only. See Section 2.3.4.1, Preparing the Modeling Input, in the PIOM for additional information.

The worksheet is organized by information area. Each file in the area is listed by name. For each file, a line is formatted to allow six definitions in the online database and two in the archive database:

- The online database files quantify the number of cycles of data that is maintained in the DETAIL, DAYS, WEEKS, MONTHS, and YEARS timespans and the TABLES data area.

- The two definitions for the archive database files quantify the number of cycles of data to be retained, up to the cutoff limit defined. The archive definitions have no impact on the size of the database and can be specified whethert the weekly and/or monthly archive history files have actually been activated (see Section 2.3.3, CA MICS JCL Planning and Parameters, of the PIOM).

The worksheet formats provide an underscored area for the user's definition, followed by the recommended value, shown within parentheses. If the underscored area contains a value of 00, the file is not supported for the indicated timespan. To add support, perform database tailoring as described in Section 6.2, Tailoring the Database, of the System Modification Guide (SMG).

When specifying a retention limit, remember that the number may never be zero if the file has been defined to be active in the timespan.

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: Database Data Retention Definitions  |
|                                                                         |
| PARMS Library Member is DBMODEL                                         |
| Reference Sections:  7.3.5.1, CA MICS Analyzer for MeasureWare Guide    |
```

```
+------+-------------------------------------------+------------------+
|      |          Online Database Retention        |  Archive Cut-Off |
| File |DETAIL    DAYS   WEEKS   MONTHS  YEARS  TABLES | WEEKS    MONTHS  |
| Name | __(NA)  __(NA)  __(NA)  __(NA)  _(NA)  __(NA) |___ (NA)  ___ (NA) |
+------+-------------------------------------------+------------------+
|AUMGPR| __(03)  __(07)  __(13)  __(06)  _(05)  00(00) |___ (053) ___ (036)|
|AUMAPP| __(10)  __(07)  __(13)  __(06)  _(05)  00(00) |___ (053) ___ (036)|
|AUMDDA| __(03)  __(07)  __(13)  __(06)  _(05)  00(00) |___ (053) ___ (036)|
|AUMNIF| __(03)  __(07)  __(13)  __(06)  _(00)  00(00) |___ (053) ___ (036)|
|AUMKPS| __(10)  __(00)  __(00)  __(06)  _(05)  00(00) |___ (000) ___ (036)|
|AUMIPS| __(10)  __(00)  __(00)  __(00)  _(00)  00(00) |___ (000) ___ (000)|
|AUMMCF| __(10)  __(14)  __(53)  __(24)  _(00)  00(00) |___ (053) ___ (036)|
|AUMVLM| __(03)  __(07)  __(13)  __(06)  _(05)  00(00) |___ (053) ___ (036)|
|AUMTTA| __(03)  __(07)  __(13)  __(06)  _(05)  00(00) |___ (053) ___ (036)|
+------+-------------------------------------------+------------------+
| ....5...10...15...20...25...30...35...40...45...50...55...60...65...70...|
+-----------------------------------------------------------------------------+
```

Figure 7-7. Database Data Retention Definitions Worksheet

7.3.5.2 DBMODEL Input Statements

The DBMODEL member of prefix.MICS.PARMS provides the input to the Database Space Modeling Facility.

Update the DBMODEL member using the information collected on the worksheet in Figure 7-7. To actually perform the space modeling, submit the jobs as described in Section 2.3.4.2 of the PIOM.

7.4 Other Related Parameters

This section contains information about other parameters related to the operation and use of the Analyzer for MeasureWare.

Remember to update the following parameters when configuring this Analyzer:

- Computing System Parameters (SYSID)
- Performance Group Names (PRFGP)

Computing System Parameters (SYSID)

Data in the CA MICS database is associated with and summarized according to the computing system that produced the raw data processed by CA MICS. Each computing system is identified by its SYSID.

Information about the SYSIDs used at your installation is coded in prefix.MICS.PARMS(SYSID). Changing this information after CA MICS is in use is a two-step process: first, change the SYSID member in prefix.MICS.PARMS; then execute the job BASPGEN in the prefix.MICS.CNTL library.

CA MICS terminates with a user abend if input data comes from a SYSID that is not defined in the PARMS library.

The following text summarizes how to code parameters for prefix.MICS.PARMS(SYSID). Section 2.3.2.2 of the CA MICS Planning, Installation, Operation, and Maintenance Guide contains more information about coding prefix.MICS.PARMS(SYSID).

- The format of the statements is free-form but positional, as follows:
  - ORGSYSID (should match AUMOPS definitions)
  - Logical SYSID (can match ORGSYSID or can be a more meaningful name)
  - CPU Model (enclosed in quotes)
  - SCP (set to UNIX)

```
    -  RMF CPU Conversion Factor (set to 0)

    -  MIPS Rate (set to 0)

    -  System Name (1 to 30 character name enclosed in
       quotes)

 o  A sample entry in SYSID:

       AUM1 AUM1 'XX/XXX' UNIX 0 0 'CHICAGO DEMO SYSTEM'

Performance Group Names (PRFGP)
-------------------------------

If this Analyzer is in its own database unit or in a unit
with analyzers that do not require PRFGP, you do not need to
code prefix.MICS.PARMS(PRFGP).  (You must leave the module,
which contains comments, in the unit's library.)

If this Analyzer is in a database unit with analyzers that
require PRFGP, you must ensure that the SYSIDs containing
UNIX data are coded in PRFGP.  Refer to Section 2.3.2 of the
CA MICS Planning, Installation, Operation, and Maintenance
Guide for more information about coding
prefix.MICS.PARMS(PRFGP).

For example, if your prefix.MICS.PARMS(AUMOPS) OPTIONS
statement is

  OPTIONS AUM1 CHICAGO_DEMO

and your prefix.MICS.PARMS(SYSID) statement is

  AUM1 AUM1 'XX/XXX' UNIX 0 0 'CHICAGO DEMO SYSTEM'

then your prefix.MICS.PARMS(PRFGP) should contain the line

  AUM1

so this Analyzer's SYSID is included in the PRFGP table.
```

Chapter 8: MW OS AGENT ANALYZER INSTALLATION

Be sure to review Chapters 6 and 7 of this guide before proceeding to the installation checklists in the CA MICS Planning, Installation, Operation, and Maintenance (PIOM) Guide. These chapters provide helpful information about the data sources and the input parameters you will need to supply for proper operation of the MW OS Agent Analyzer.

Section 6.1 of this guide provides MW OS Agent report files and export scripts that enable you to collect and export data from MeasureWare, which you then need to transfer to the MVS system running CA MICS.

You install the MW OS Agent Analyzer using the checklists in Section 3.8 of the CA MICS PIOM Guide, which refers you to the parameters documented in Chapter 7 of this guide.

Chapter 9: MW OS AGENT ANALYZER PROCESSING

Creating and maintaining a large database system such as CA MICS requires closely monitoring its periodic updating processes.

It is vital to the system's effectiveness that the database be updated daily to build the required daily, week-to-date, month-to-date, and year-to-date files accurately. This data collection process for the MW OS Agent Analyzer is vital to the proper operation of this product.

The processing flow of the MW OS Agent Analyzer is described in the following sections:

1 - Processing Considerations
2 - Daily Update Processing Flow
3 - MICSLOG Excerpt from DAY089
4 - Change the Number of Work Files for DAY089
5 - Enable Internal Step Restart

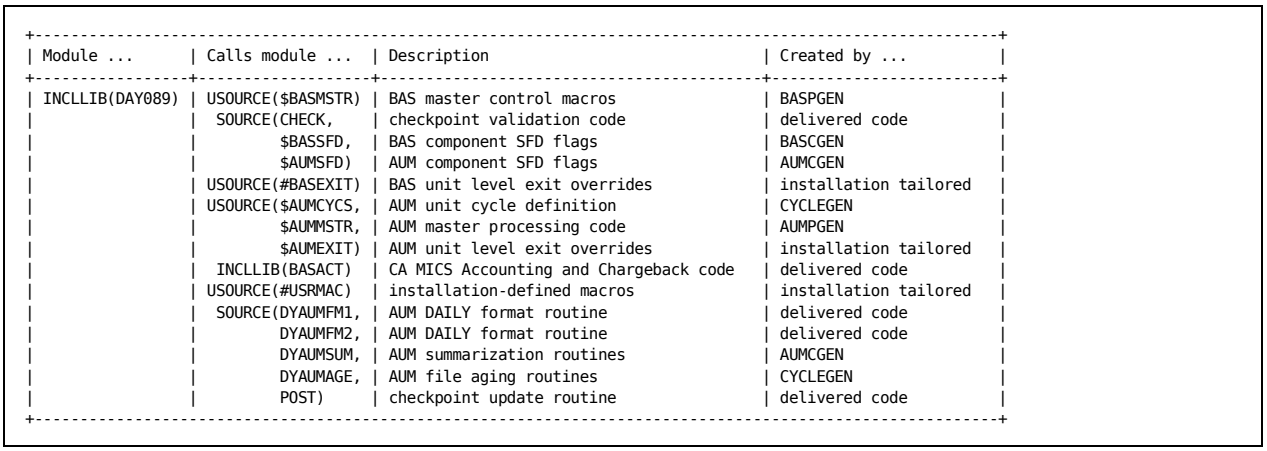
9.1 Processing Considerations

The DAY089 step of the DAILY update job is the step that processes MeasureWare data and presents it to the MW OS Agent Analyzer for processing.

Section 6.1 of this guide describes how to obtain data for processing. Before CA MICS can process the data, it must be transported to the MVS system on which CA MICS is running, meeting the requirements noted in that section's "Transferring Data" discussion.

9.2 Daily Update Processing Flow

The structure of the DAY089 step of the CA MICS DAILY job is illustrated below:



Module ...	Calls module ...	Description	Created by ...
INCLLIB(DAY089)	USOURCE($BASMSTR)	BAS master control macros	BASPGEN
	SOURCE(CHECK,	checkpoint validation code	delivered code
	$BASSFD,	BAS component SFD flags	BASCGEN
	$AUMSFD)	AUM component SFD flags	AUMCGEN
	USOURCE(#BASEXIT)	BAS unit level exit overrides	installation tailored
	USOURCE($AUMCYCS,	AUM unit cycle definition	CYCLEGEN
	$AUMMSTR,	AUM master processing code	AUMPGEN
	$AUMEXIT)	AUM unit level exit overrides	installation tailored
	INCLLIB(BASACT)	CA MICS Accounting and Chargeback code	delivered code
	USOURCE(#USRMAC)	installation-defined macros	installation tailored
	SOURCE(DYAUMFM1,	AUM DAILY format routine	delivered code
	DYAUMFM2,	AUM DAILY format routine	delivered code
	DYAUMSUM,	AUM summarization routines	AUMCGEN
	DYAUMAGE,	AUM file aging routines	CYCLEGEN
	POST)	checkpoint update routine	delivered code

The functions performed during the DAY089 step are:

- Input Raw Data
- Information Area Processing
- Database TimeSpan Processing
- File Aging

and are described below. This discussion presumes that data has been moved to the MVS system following the guidance provided in Section 6.1 of this guide.

Input Raw Data

In this phase, the exported data is read and organized by an INFILE exit that is called by the %AUMMWAIN macro in prefix.MICS.USER.SOURCE($AUMMSTR).

The INFILE exit, which resides in sharedprefix.MICS.LOAD(AUMAIFUE), inspects the header records provided in the exported data, requests the SAS variable locations for the metrics that are collected and have an associated CA MICS element name in sharedprefix.MICS.SOURCE(AUMMWAV), and stores the information internally.

User Exits: during this phase, the USRSEL exit is invoked. This exit is described in Chapter 10 of this guide.

Information Area Processing

The DYAUMFM1 and DYAUMFM2 modules in sharedprefix.MICS.SOURCE use the internal information stored by the INFILE exit to create the DETAIL timespan files.

The nature of the MeasureWare data requires that the Analyzer reverse-calculate some elements at the DETAIL timespan. This occurs because the MeasureWare data is less granular than CA MICS needs it to be. The CA MICS data dictionary entries for such elements will show that, at the DETAIL timespan, the element is derived from raw MeasureWare metrics while at the higher timespans, the elements are derived from CA MICS elements. For example, GPRCPQTM (CPU Queue Wait Time) at the DETAIL timespan is calculated by CPU_QUEUE*INTERVAL.

```
User Exits:  during this phase, the USRSfff (file selection)
and USRAfff (accounting) exits are invoked.  These exits are
described in Chapter 10 of this guide.

Database Timespan Processing
----------------------------

Using the newly created DETAIL files, the DAYS, WEEKS, and
MONTHS timespans are updated to retain the latest day,
week-to-date, and month-to-date data.

There are no exits provided in this phase.

File Aging
----------

The files are aged to delete the oldest cycle and rename the
work files to be the current cycle.

There are no exits provided in this phase.
```

9.3 MICSLOG Excerpt from DAY089

Messages are written to the MICSLOG during DAY089 processing. An extract from the MICSLOG follows. As you review it, notice that the AUM00064I message can include negative values.

Negative values occur for the following reasons:

- The record is either a title, header, or configuration data record because they contain invalid time stamps
- Unrecognized records are input
- Records are dropped by the USRSEL exit
- Records are dropped because VERIFY EXCLUDE is enabled in prefix.MICS.PARMS(AUMOPS) and the UNIX system identifier does not match with any of those defined in AUMOPS.

Under these circumstances, the record is not processed through the CA MICS checkpoint processor.

To ensure that the MW OS Agent Analyzer's total record input count can be reconciled with the CA MICS Platform's BAS00326, BAS00331, and BAS00337 message record counts, the MW OS Agent Analyzer subtracts (using the negative values) the unprocessed records from its total record count. The result, called the Net Total, matches the record counts in the BAS messages.

```
Tuesday, 2 January 1996----------------------------------- MICSLOG ----------------------------------------------------------
15.28.11 BAS00119I AT CHECKPOINT FOR STEP "DAY089" IN JOB "MICSPROD" FOR DATA BASE "UNIX".
15.28.11 BAS00122I REQUIRED PREDECESSOR STEP IS:
15.28.11 BAS00122I          PROCESS=DAY
15.28.11 BAS00122I          STEP   =088
15.28.11 BAS00125I CHECKPOINT STEPS: D_STEP=088 W_STEP=900 M_STEP=900 Y_STEP=900 B_STEP=900 R_STEP=900
15.28.11 BAS00125I

15.29.40 BAS00318I ORGSYSID/COMPONENT CHECKPOINT INFORMATION BEFORE PROCESSING
15.29.40 BAS00318I

15.29.41 AUM00051I START OF INPUT FROM AUMMWA02 = MWA.HP10.D951214.DATA

15.29.41 AUM00054I    TITLE: @MICS-AUM0000-HPUX10  Export 12/14/95 Logfile: /var/opt/perf/datafiles/logglob
15.29.41 AUM00054I    ORGSYSID: CS02    HOST NAME: lgntcs2
15.29.41 AUM00054I    COLLECTOR: SCOPE/UX B.02.00    EXPORT TIME:  14DEC1995:15:55:49
15.29.41 AUM00055I    DATA TYPE: GLOB    TIME:  14DEC1995:10:00:03
15.29.41 AUM00055I    DATA TYPE: APPL    TIME:  14DEC1995:10:00:03
15.29.41 AUM00055I    DATA TYPE: PROC    TIME:  14DEC1995:10:00:03
15.29.45 AUM00055I    DATA TYPE: CONF    TIME:  13DEC1995:14:34:30
15.29.45 AUM00055I    DATA TYPE: DISK    TIME:  14DEC1995:10:00:03
15.29.45 AUM00055I    DATA TYPE: LVOL    TIME:  14DEC1995:10:00:03
15.29.46 AUM00055I    DATA TYPE: NETS    TIME:  14DEC1995:10:00:03

15.29.46 AUM00063I MWA/HPUX     DATA RECORDS READ FROM DDNAME: AUMMWA02
15.29.46 AUM00064I
15.29.46 AUM00064I    HP MeasureWare Data Type                    Count
15.29.46 AUM00064I    ---------------------------------------     -----
15.29.46 AUM00064I    Configuration
15.29.46 AUM00064I         Title ............................         1
15.29.46 AUM00064I         Header 1 .........................         1
15.29.46 AUM00064I         Header 2 .........................         1
15.29.46 AUM00064I         Data .............................         3
15.29.46 AUM00064I         Total Records ....................         6
15.29.46 AUM00064I
15.29.46 AUM00064I    Global
15.29.46 AUM00064I         Title ............................         1
15.29.46 AUM00064I         Header 1 .........................         1
15.29.46 AUM00064I         Header 2 .........................         1
15.29.46 AUM00064I         Data .............................         6
15.29.46 AUM00064I         Total Records ....................         9
15.29.46 AUM00064I
```

Figure 9-1. MICSLOG Extract from DAY089 for an HP-UX System at B.10 (Part 1 of 3)

```
15.29.46 AUM00064I    Application
15.29.46 AUM00064I         Title ............................          1
15.29.46 AUM00064I         Header 1 .........................          1
15.29.46 AUM00064I         Header 2 .........................          1
15.29.46 AUM00064I         Data .............................         18
15.29.46 AUM00064I         Total Records ....................         21
15.29.46 AUM00064I
15.29.46 AUM00064I    Process
15.29.46 AUM00064I         Title ............................          1
15.29.46 AUM00064I         Header 1 .........................          1
15.29.46 AUM00064I         Header 2 .........................          1
15.29.46 AUM00064I         Data .............................        765
15.29.46 AUM00064I         Total Records ....................        768
15.29.46 AUM00064I
15.29.46 AUM00064I    Network Interface
15.29.46 AUM00064I         Title ............................          1
15.29.46 AUM00064I         Header 1 .........................          1
15.29.46 AUM00064I         Header 2 .........................          1
15.29.46 AUM00064I         Data .............................          6
15.29.46 AUM00064I         Total Records ....................          9
15.29.46 AUM00064I
15.29.46 AUM00064I    Disk
15.29.46 AUM00064I         Title ............................          1

15.29.46 AUM00064I         Header 1 .........................          1
15.29.46 AUM00064I         Header 2 .........................          1
15.29.46 AUM00064I         Data .............................          6
15.29.46 AUM00064I         Total Records ....................          9
15.29.46 AUM00064I
15.29.46 AUM00064I    Logical Volume
15.29.46 AUM00064I         Title ............................          1
15.29.46 AUM00064I         Header 1 .........................          1
15.29.46 AUM00064I         Header 2 .........................          1
15.29.46 AUM00064I         Data .............................         24
15.29.46 AUM00064I         Total Records ....................         27
15.29.46 AUM00064I
15.29.46 AUM00064I    Transaction
15.29.46 AUM00064I         Title ............................          0
15.29.46 AUM00064I         Header 1 .........................          0
15.29.46 AUM00064I         Header 2 .........................          0
15.29.46 AUM00064I         Data .............................          0
15.29.46 AUM00064I         Total Records ....................          0
15.29.46 AUM00064I
15.29.46 AUM00064I    Unrecognized Data Records ............          0
15.29.46 AUM00064I
15.29.46 AUM00064I    Records Dropped by _USRSEL ...........          0
15.29.46 AUM00064I
15.29.46 AUM00064I    Records Dropped for VERIFY EXCLUDE ....          0
15.29.46 AUM00064I
```

Figure 9-1. MICSLOG Extract from DAY089 for an HP-UX System at B.10 (Part 2 of 3)

```
15.29.46 AUM00064I    Total
15.29.46 AUM00064I         Overall ..........................        849
15.29.46 AUM00064I        (Title and Header Records) ........        -21
15.29.46 AUM00064I        (Configuration Data Records) ......         -3
15.29.46 AUM00064I        (Unrecognized Records) ............          0
15.29.46 AUM00064I        (Records Dropped by _USRSEL) ......          0
15.29.46 AUM00064I        (Records Dropped - VERIFY EXCLUDE).          0
15.29.46 AUM00064I         Net Total .......................        825
15.29.46 AUM00064I
15.29.49 AUM00064I

15.29.49 AUM00060I DYAUMFMT INPUT PROCESS HAS COMPLETED.
15.29.49 BAS00326I INPUT FILE(S) CONTAINED 1566 RECORDS FROM 07DEC1995:13:01:01.00 THRU 14DEC1995:10:29:03.00
15.29.49 BAS00326I
15.29.49 BAS00326I
15.29.49 BAS00331I DATA SELECTION STATISTICS BY SYSTEM/COMPONENT
15.29.49 BAS00331I
15.29.49 BAS00331I                                      - - - - - - - - - - - - DELETED - - - -
15.29.49 BAS00331I   SYSTEM COMPONENT        INPUT    DATE RANGE     SHORT RECORDS   OPTION       KEPT
15.29.49 BAS00331I
15.29.49 BAS00343I    CS02  AUM                 825             0              0             0            825

15.29.49 BAS00337I   TOTAL RECORDS KEPT = 825
```

Figure 9-1. MICSLOG Extract from DAY089 for an HP-UX System at B.10 (Part 3 of 3)

Chapter 10: MODIFICATION

The CA MICS Analyzer for MeasureWare is tailored primarily using options and parameters and secondarily using exits. Most of the customization is done by following the standard procedures defined by the CA MICS System Modification Guide (SMG). This chapter describes the Analyzer's exits that are available during daily update processing.

The following section is provided:

1 - Standard User Exits

This section contains the following topics:

10.1 Standard User Exits

Before implementing an exit, determine whether the required modification can be accomplished by parameter modification or file tailoring.

At times, additional system customization is needed to tailor CA MICS to meet your installation's needs. There are many user exit points provided within CA MICS. Each of these points corresponds to a position in the CA MICS logic where user modification:

- Is likely to occur, based on our experience
- Presents only a slight possibility of compromising the CA MICS database or operational integrity
- Is relatively easy to document and understand

Generally, you have four methods with which to augment, change, and enhance CA MICS.

- CA MICS standard option and parameter definitions

  CA MICS complex- and unit-level parameters provide most users with adequate provisions for customizing CA MICS.

- Modification through user exits

  If you have installation-dependent requirements that are not adequately addressed through the standard options and parameters, one or more of the user exits provided with CA MICS may be used to insert user-written routines that satisfy the requirements.

  Using the CA MICS exit facilities to augment CA MICS processing logic is the safest method of system modification.

- Extension through user-written components

  Although most users do not initially consider this a way of modifying a standard CA MICS product, developing a user-written component may be prudent. For example, it may be better to write a user component to handle additional data than to attempt to modify the logic of the CA MICS Analyzer for MeasureWare.

- System code modification

Finally, if all else fails, you may be able to satisfy your installation's requirements by implementing a source code change.

Source code changes should only be implemented as a last resort, and after having discussed them with CA MICS Product Support.

General Exit Considerations

You should carefully explore whether or not it is necessary to develop a user exit routine. You can facilitate this process by discussing the requirement with CA MICS Product Support.

Designing, coding, testing, and implementing CA MICS user exit routines should be done carefully, since any resulting errors may corrupt the data. You should be meticulous in defining and validating exit routines to ensure that system integrity and performance are not adversely affected.

If an exit must be used, refer to Chapter 9 of this guide for a description of the location of the exit in the DAILY update. For a better understanding of CA MICS user exits, see Section 4.3 of the System Modification Guide.

Types of Exits

There are two types of user exits that you can use to modify CA MICS logic: general exits and product exits.

The general exits are used by all installed products. They allow the insertion of user exit routines that extend CA MICS logic.

Product exits apply only to the product for which they are provided. They are classified as to their purpose and are comprised of input, output, parameter-related, and special exits.

- Input exits are used during the input phase of the product update process. They are invoked as the raw input records are read.

  This Analyzer provides the input exit _USRSEL. You can

```
    use this exit to select or exclude input data that meets
    special installation-defined criteria, add data elements,
    or modify record fields as they are read.

  o Parameter-related exits are defined as part of the
    standard CA MICS installation process and are normally
    associated with other parameters or options.

    AUMACRT and AUMAURT are parameter-driven exits that are
    identified in this chapter and documented in Chapter 7 of
    this guide.

  o Output exits are used when records are being written to
    the CA MICS database. They are invoked just before
    CA MICS writes an observation to the CA MICS database.

    This Analyzer provides one output exit routine for each
    product file.  You can use this output exit routine to
    selectively block the writing of specified records, alter
    data elements in the records, or produce additional
    records for the target file or a user-defined file.

The user exits for the CA MICS Analyzer for MeasureWare are
identified below.

General Exits
-------------

USRIHL - Checkpoint File Inspection

         This exit is documented in Section 4.3.2.1 of the
         CA MICS System Modification Guide.

Product Input Exits
-------------------

USRSEL - File Processing Selection


Product Parameter-Related Exits
-------------------------------

AUMACRT - Account Code Derivation Routine
AUMAURT - Application Name Derivation Routine

Product Output Exits
--------------------

USRSGPR - UNIX Global Performance File Exit
```

```
USRSAPP - UNIX Application Performance File Exit
USRSDDA - UNIX Disk Activity File Exit
USRSNIF - UNIX LAN Activity File Exit
USRSKPS - UNIX Process Activity File Exit
USRSIPS - UNIX Process Exception File Exit
USRSMCF - UNIX System & Collector Configuration Profile Exit
USRSVLM - UNIX Logical Volume Activity File Exit
USRSTTA - UNIX Business Transaction SLO Activity File Exit

The following sections provide detailed information:

    1 - Input Exits
    2 - Parameter-Related Exits
    3 - Output Exits
```

10.1.1 Input Exits

```
This section describes the USRSEL exit, which is shared by
the MW OS Agent Analyzer with the other installed CA MICS
products.

+-------------+
| USRSEL      |  Input Record Selection Exit (USRSEL)
+-------------+

DESCRIPTION:  The _USRSEL exit enables you to reject records
from processing during the Analyzer's input format routine
(DYAUMFMT).  It can be defined at the complex level in
sharedprefix.MICS.SOURCE(#BASEXIT) or at the unit level in
prefix.MICS.SOURCE(#BASEXIT).

INVOCATION:  For this Analyzer, the _USRSEL exit gains
control during the input format routine DYAUMFMT in the
DAY089 step of the CA MICS DAILY job.

ACCOUNTING INTERFACE:  No interface is provided.

USES:  Use this exit to exclude records from processing
during the Analyzer's daily input step.  To exclude a record,
set SKIP_REC to one.  For example, you can code the following
to skip records that contain the system ID "TEST":

   MACRO _USRSEL;
     IF ROUTINE EQ 'DYAUMFMT' THEN DO;
      IF ORGSYSID EQ 'TEST' THEN SKIP_REC=1;
     END;
   %

The Analyzer for MeasureWare provides the appropriate logic
to delete the record based on the value of SKIP_REC after the
_USRSEL exit is invoked.

ELEMENTS AVAILABLE:  ORGSYSID - Original System ID

CODING RESTRICTIONS:  For additional coding restrictions,
refer to the System Modification Guide, Section 4.3.2.1.
```

10.1.2 Parameter-Related Exits

This section identifies the parameter-related exits you define at product installation. Detailed descriptions of these exits are presented in Chapter 7 of this guide.

```
+---------------+
| AUMACRT       |  Account Code Derivation Routine
+---------------+
```

DESCRIPTION: The AUMACRT exit derives the value of the account code elements defined in sharedprefix.MICS.PARMS(AUMACCT). It is a complex-level exit, so its definition applies to all database units in which the Analyzer for MeasureWare is installed.

INVOCATION: The AUMACRT exit gains control during the input format routine (DYAUMFMT) of the daily update processing step DAY089. It is invoked once for each killed process record in the AUMKPS file.

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit sets the value of the AUMACTx variables.

ELEMENTS AVAILABLE: All DETAIL timespan elements of the AUMKPS file are available.

CODING RESTRICTIONS: Refer to Section 7.2.3 of this guide.

SPECIAL NOTES: The exit code is contained in sharedprefix.MICS.PARMS(AUMACRT).

SAMPLE USER EXIT: See Section 7.1 for a sample exit.

```
+---------------+
| AUMAURT       |  Application Name Derivation Exit
+---------------+
```

DESCRIPTION: The AUMAURT exit derives the value of the UNIX application name (AUMAPU). Because MWA data provides the application name, this exit does not normally need to be coded.

INVOCATION: The AUMAURT exit gains control during the input format routine (DYAUMFMT) of the daily update processing step DAY089. It is invoked once for each application data record

processed by the Analyzer for MeasureWare.

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit sets the value of the AUMAPU data element.

ELEMENTS AVAILABLE: All DETAIL timespan elements of the files are available.

CODING RESTRICTIONS: Refer to Section 7.3.4 of this guide.

SPECIAL NOTES: The exit code is contained in sharedprefix.MICS.PARMS(AUMAURT).

10.1.3 Output Exits

Output exits are invoked just prior to adding the observation to the DETAIL timespan of the file. You can use these exits to modify the value of elements or to prevent selected observations from being added.

```
+----------------+
|  USRSfff       |  UNIX File Selection Exit
+----------------+
```

DESCRIPTION: The USRSfff exit enables you to modify or select observations immediately prior to output. The files available (fff) are GPR, APP, KPS, IPS, NIF, DDA, MCF, VLM, and TTA.

INVOCATION: These exits are invoked in the information area processing phase of the DYAUMFMT routine, immediately before the file is written.

ACCOUNTING INTERFACE: No interface is provided.

USES: The exit allows elements to be modified and observations to be selected from processing.

ELEMENTS AVAILABLE: All elements in the file are available.

CODING RESTRICTIONS: Refer to the System Modification Guide, Section 4.3.1.2.

Appendix A: MESSAGES

Messages

This appendix documents the messages generated by the CA MICS Analyzer for MeasureWare.

Message Number Range	Produced During	Written to
AUM00001 - AUM01999	Operational processing	MICSLOG
AUM02000 - AUM02999	MICF reporting	MICSLOG
AUM03000 - AUM03999	Infile exit processing	SAS log

The messages are listed in ascending numerical sequence and include the full text of the message, the type (explained in the following table), the reason for the message, appropriate user action, and applicable documentation references.

Message Type	Explanation
Information	An Analyzer option or potentially important feature in the data.
Warning	A condition of either the data or the control statements that does not affect the Analyzer's operation but may lead to unexpected results.
Error	A problem encountered with a control statement that prevents the successful completion of the Analyzer's processing. Execution stopped after all control statements are processed.

```
+------------+
|  AUM00001  |
+------------+

   TEXT:  AUMPGEN INPUT: DSN=%PDSMEM

   TYPE:  Information

   REASON:  An input data set is processed.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00002  |
+------------+

   TEXT:  >ERR> ORGSYSID GREATER THAN 4 CHARACTERS IN
            LENGTH: %KEYWORD2.

   TYPE:  Error

   REASON:  The value coded for the original SYSID in AUMOPS
            must be 4 or fewer characters.

   ACTION:  Correct the ORGSYSID on the OPTIONS statement in
            prefix.MICS.PARMS(AUMOPS) and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00003  |
+------------+

   TEXT:  >ERR> REQUIRED PARAMETERS NOT FOUND ON %KEYWORD1
            STATEMENT.

   TYPE:  Error

   REASON:  A parameter is missing from the statement
            %KEYWORD1.

   ACTION:  Review the parameters listed for the %KEYWORD1
            statement and ensure that all of the required
            parameters are coded in
```

```
            prefix.MICS.PARMS(AUMOPS).  Rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00004  |
+------------+

   TEXT:  >ERR> REQUIRED UNIX SYSTEM NAME NOT FOUND ON
            OPTIONS STATEMENT.

   TYPE:  Error

   REASON:  The OPTIONS statement must include the UNIX
            system name.

   ACTION:  Code the UNIX system name on the OPTIONS
            statement in prefix.MICS.PARMS(AUMOPS) and rerun
            AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00005  |
+------------+

   TEXT:  SCP SPECIFIED IN PARMS(SYSID) FOR ORGSYSID
            %KEYWORD2
          IS NOT A UNIX SYSTEM.  VALID VALUE IS UNIX.

   TYPE:  Warning

   REASON:  prefix.MICS.PARMS(SYSID) SCP keyword must be UNIX
            for this unit.

   ACTION:  Change the SCP keyword in the SYSID parameter to
            UNIX and rerun BASPGEN and AUMPGEN.

   REFERENCES:  Planning, Installation, Operation, and
                Maintenance Guide, Section 2.3.2.2

+------------+
|  AUM00006  |
+------------+

   TEXT:  >ERR> REQUIRED DDNAME FOR ORGSYSID %KEYWORD2 NOT
            FOUND ON %KEYWORD1 STATEMENT.
```

```
   TYPE:  Error

   REASON:  The name of the input data set is missing from
            the MWA statement in prefix.MICS.PARMS(AUMOPS).

   ACTION:  Code the correct ddname on the MWA statement and
            rerun AUMPGEN.  The ddname must also be defined
            in INPUTAUM.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00007  |
+------------+

   TEXT:  >ERR> OPTIONS ENTRY FOR ORGSYSID %SYSNAME HAS BEEN
            DEFINED MORE THAN ONCE.

   TYPE:  Error

   REASON:  More than one OPTIONS statement for the original
            system identifier %SYSNAME was coded in AUMOPS.

   ACTION:  Correct the OPTIONS statement in AUMOPS and rerun
            AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00008  |
+------------+

   TEXT:  >ERR> SYSID %KEYWORD2 NOT DEFINED IN PARMS(SYSID)

   TYPE:  Error

   REASON:  The original system identifier specified in
            AUMOPS was not defined in
            prefix.MICS.PARMS(SYSID).

   ACTION:  Either add this system identifier to
            prefix.MICS.PARMS(SYSID), run BASPGEN, then run
            AUMPGEN; or correct the original system
            identifier in AUMOPS and run AUMPGEN.

   REFERENCES:  Sections 7.3.1 and 7.3.2 in this guide
```

```
+------------+
|  AUM00009  |
+------------+

   TEXT:  >ERR> ORGSYSID %KEYWORD2 ON %KEYWORD1 STATEMENT
          IS NOT THE SAME AS THE ONE ON THE ADJACENT
            OPTIONS STATEMENT.

   TYPE:  Error

   REASON:  The original system identifier specified on the
            adjacent OPTIONS and MWA statements in AUMOPS
            must be the same.

   ACTION:  Change the original system identifier on the
            OPTIONS or MWA statements and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00010  |
+------------+

   TEXT:  >ERR> INVALID KEYWORD %KEYWORD4 ON %KEYWORD1
            STATEMENT.
          VALID KEYWORD: FORCE <OPTIONS> OR ERRSKIP

   TYPE:  Error

   REASON:  A value other than FORCE or ERRSKIP was specified
            on the %KEYWORD1 statement.

   ACTION:  Correct the value on the %KEYWORD1 statement and
            rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00011  |
+------------+

   TEXT:  >ERR> PREVIOUS OPTIONS ENTRY IS A DANGLING
            STATEMENT.
          NO MWA STATEMENT ASSOCIATES WITH IT.
```

```
   TYPE:  Error

   REASON:  A system is defined on an AUMOPS OPTIONS
            statement, but that system is not associated with
            MWA data in a MWA/datasource statement.

   ACTION:  Either delete the extraneous OPTIONS statement or
            add an MWA/datasource statement using the system.
            Then rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00012  |
+------------+

   TEXT:  >ERR> SUBPARAMETER "%KEYWORD2" IS NOT VALID ON A
            %KEYWORD1 STATEMENT.

   TYPE:  Error

   REASON:  A value other than ABORT, NOABORT, or EXCLUDE was
            specified on the %KEYWORD1 statement.

   ACTION:  Correct the value on the %KEYWORD1 statement and
            rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00013  |
+------------+

   TEXT:  >ERR> MORE THAN ONE MWA STATEMENT DEFINED.
          OPTIONS AND MWA STATEMENTS MUST BE USED IN
            PAIRS.

   TYPE:  Error

   REASON:  Each OPTIONS statement has an MWA statement.
            There is an MWA statement in AUMOPS that does not
            have an associated OPTIONS statement.

   ACTION:  Either delete the extraneous MWA statement or add
            an OPTIONS statement for the MWA statement.  Then
            rerun AUMPGEN.
```

```
   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00014  |
+------------+

   TEXT:  >ERR> COMMON INPUT DD FOR %DTYPE HAS BEEN DEFINED
            MORE THAN ONCE.

   TYPE:  Error

   REASON:  A COMMON statement for the named data source was
            defined more than once.

   ACTION:  Delete the extraneous COMMON statement and rerun
            AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00015  |
+------------+

   TEXT:  >ERR> INPUTAUM DDNAME IS LONGER THAN 8 CHARACTERS:
            %X

   TYPE:  Error

   REASON:  The ddname of this input data set in INPUTAUM is
            too long.

   ACTION:  Correct the name in INPUTAUM and rerun AUMPGEN.

   REFERENCES:  Section 7.3.2 in this guide


+------------+
|  AUM00016  |
+------------+

   TEXT:  >ERR> KEYWORD "%KEYWORD1" IS NOT RECOGNIZED -
            INVALID STATEMENT.

   TYPE:  Error

   REASON:  An invalid keyword, %KEYWORD1, was specified in
            AUMOPS.
```

```
   ACTION:  Verify and correct the statement specified in
            AUMOPS and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00017  |
+------------+

   TEXT:  END OF MEMBER %PMEM INPUT.

   TYPE:  Information

   REASON:  The member, %PMEM, was processed.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00018  |
+------------+

   TEXT:  >ERR> REQUIRED STATEMENT MISSING: %STR

   TYPE:  Error

   REASON:  The statement, %STR, is missing from AUMOPS.

   ACTION:  Add the statement and its specifications to
            AUMOPS and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00019  |
+------------+

   TEXT:  ERROR(S) ENCOUNTERED IN AUM UNIT PARAMETER
            DEFINITIONS; MACRO GENERATION ABORTED.
          CORRECT THE ERROR(S), AND RE-EXECUTE AUMPGEN.

   TYPE:  Error

   REASON:  Messages earlier in the MICSLOG specify the
```

```
            problems encountered while processing the input
            data.

   ACTION:  Correct the problems and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00020  |
+------------+

   TEXT:  >ERR> DUPLICATE DDNAMES NOT ALLOWED: %DDNAME

   TYPE:  Error

   REASON:  The ddname on the MWA statement in AUMOPS was
            also specified on the COMMON statement or another
            MWA statement.

   ACTION:  Correct the ddname on either the MWA or COMMON
            statements and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00021  |
+------------+

   TEXT:  >ERR> SPECIFIED DDNAME: %KEYWORD3 IS GREATER THAN
            8 CHARACTERS IN LENGTH.

   TYPE:  Error

   REASON:  The ddname specified in AUMOPS must be 8 or fewer
            characters long.

   ACTION:  Change the ddname in AUMOPS, verify that it
            matches the ddname specified in INPUTAUM, and
            rerun AUMPGEN.

   REFERENCES:  Sections 7.3.1 and 7.3.2 in this guide


+------------+
|  AUM00022  |
+------------+
```

TEXT: >ERR> REQUIRED OPTIONS STATEMENT NOT FOUND

TYPE: Error

REASON: An OPTIONS statement was not coded prior to the MWA statement.

ACTION: Correct AUMOPS and rerun AUMPGEN.

REFERENCES: Section 7.3.1 in this guide

```
+------------+
|  AUM00023  |
+------------+
```

TEXT: >ERR> MEMBER %PMEM IS EMPTY OR CONTAINS NO DD STATEMENTS.

TYPE: Error

REASON: INPUTAUM was not defined.

ACTION: Specify a ddname in INPUTAUM and rerun AUMPGEN.

REFERENCES: Section 7.3.2 in this guide

```
+------------+
|  AUM00024  |
+------------+
```

TEXT: >ERR> DDNAME %DDNAME NOT FOUND IN INPUTAUM

TYPE: Error

REASON: The ddname specified on the MWA statement in AUMOPS does not match any ddname in INPUTAUM.

ACTION: Correct the MWA statement or INPUTAUM and rerun AUMPGEN.

REFERENCES: Sections 7.3.1 and 7.3.2 in this guide

```
+------------+
|  AUM00025  |
+------------+
```

TEXT: INPUTAUM DDNAME: %DDNAME NOT REFERENCED IN AUMOPS

TYPE: Warning

REASON: INPUTAUM includes ddnames not specified on the MWA statement in AUMOPS.

ACTION: None required. This is a consistency check only. Verify that all data you want processed by CA MICS is referenced in AUMOPS. Then, rerun AUMPGEN if changes to AUMOPS or INPUTAUM are made.

REFERENCES: Sections 7.3.1 and 7.3.2 in this guide

| AUM00026 |

TEXT: >ERR> INVALID COMMON %KEYWORD2 DDNAME: %KEYWORD3

TYPE: Error

REASON: %KEYWORD3 cannot be specified as a ddname on the COMMON %KEYWORD2 statement.

ACTION: Correct the COMMON statement in AUMOPS and rerun AUMPGEN.

REFERENCES: Section 7.3.1 in this guide

| AUM00027 |

TEXT: EXTRANEOUS STATEMENT: %STR

TYPE: Warning

REASON: A statement is coded in AUMOPS that is not being used because it is not referenced.

ACTION: None required. To avoid confusion later, delete the extra statements.

REFERENCES: Section 7.3.1 in this guide

```
+------------+
|  AUM00029  |
+------------+

   TEXT:  >ERR> INVALID FORCE OPTION KEYWORD: %STR

   TYPE:  Error

   REASON:  The FORCE keyword in AUMOPS specifies an
            invalid option.

   ACTION:  Replace the incorrect option with a valid one.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00030  |
+------------+

   TEXT:  >ERR> MISSING VALUE ASSOCIATED WITH THE FORCE
            OPTION: %STR

   TYPE:  Error

   REASON:  The FORCE keyword in AUMOPS is missing an option
            that is required.

   ACTION:  Add an option to the FORCE keyword.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00031  |
+------------+

   TEXT:  >ERR> MISSING A FORCE OPTION AND ITS ASSOCIATED
            VALUE

   TYPE:  Error

   REASON:  The FORCE keyword is specified in AUMOPS, but a
            required option is missing.

   ACTION:  Add an option to the FORCE keyword.

   REFERENCES:  Section 7.3.1 in this guide
```

```
+------------+
|  AUM00032  |
+------------+

   TEXT:  >ERR> MISSING A CLOSING QUOTATION MARK

   TYPE:  Error

   REASON:  The hostname on the OPTIONS statement in
            prefix.MICS.PARMS(AUMOPS) is missing a closing
            quotation mark.

   ACTION:  Correct AUMOPS and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00033  |
+------------+

   TEXT:  >ERR> UNRECOGNIZED KEYWORD: %STR

   TYPE:  Error

   REASON:  The keyword %STR follows the hostname on the
            OPTIONS statement in AUMOPS.  Additional keywords
            are not supported.

   ACTION:  Remove the text following the hostname on the
            OPTIONS statement and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00034  |
+------------+

   TEXT:  >ERR> SPECIFIED UNIX SYSTEM ID IS LONGER THAN 40
            CHARACTERS

   TYPE:  Error

   REASON:  The hostname on the OPTIONS statement in AUMOPS
            can only be 40 characters long.
```

```
   ACTION:  Correct the hostname in AUMOPS and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00035  |
+------------+

   TEXT:  >ERR> Only one GLOBAL statement allowed
          Two or more GLOBAL statements detected'

   TYPE:  Error

   REASON:  The GLOBAL FORCE statement can only be specified
            once in AUMOPS.

   ACTION:  Retain one GLOBAL FORCE statement in AUMOPS and
            rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00036  |
+------------+

   TEXT:  >ERR> The FORCE keyword must immediately follow the
            GLOBAL statement

   TYPE:  Error

   REASON:  You must specify the FORCE keyword after the
            GLOBAL statement in AUMOPS.

   ACTION:  After the GLOBAL statement in AUMOPS, specify the
            FORCE keyword, and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00037  |
+------------+

   TEXT:  >ERR> GLOBAL FORCE must be followed by AIX, HPUX,
            SOLARIS, and/or ALL
          First 8 characters of argument coded as: %GFARG
```

```
   TYPE:  Error

   REASON:  You have specified an unsupported argument for
            the GLOBAL FORCE statement in AUMOPS.  Supported
            arguments are AIX, HPUX, SOLARIS, and/or ALL.
            The first 8 characters of the invalid argument
            are output.

   ACTION:  Specify a valid argument for the GLOBAL FORCE
            statement in AUMOPS and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00038  |
+------------+

   TEXT:  >ERR> GLOBAL FORCE detected with no arguments
          Must be followed by AIX, HPUX, SOLARIS, and/or ALL

   TYPE:  Error

   REASON:  You have specified GLOBAL FORCE, but have not
            selected any supporting arguments.

   ACTION:  Specify one or more valid arguments after GLOBAL
            FORCE in AUMOPS and rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00039  |
+------------+

   TEXT:  >ERR> GLOBAL record not output from parsing
          Please contact CA MICS Product Support

   TYPE:  Error

   REASON:  A GLOBAL record has not been output.

   ACTION:  GLOBAL record has not been processed.

   REFERENCES:  Contact CA Technical Support.


+------------+
```

```
|  AUM00051  |
+------------+

   TEXT:  START OF INPUT FROM %DDNAME = %DSNAME

   TYPE:  Information

   REASON:  Record the name of the input data set.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00052  |
+------------+

   TEXT:  >ERR> INPUT PROCESSING ERROR FOR %UNXDTYPE
                %INFXIT RETURN CODE = %ERR_CODE
          PLEASE SEE SASLOG FOR DETAIL MESSAGE

   TYPE:  Error

   REASON:  An error was detected in the infile exit.

   ACTION:  Messages in the SAS log specify problems
            encountered during processing.

   REFERENCES:  Chapter 6 in this guide


+------------+
|  AUM00053  |
+------------+

   TEXT:  >ERR> INCORRECT %UNXDTYPE DATA FORMAT
          CURRENT INPUT DATA DOES NOT START WITH TITLE
            RECORD
          FIRST RECORD ID: %MWA_RID

   TYPE:  Error

   REASON:  The input data must begin with a title record.
            Processing is aborted.

   ACTION:  Review the logs of data collection and transfer
            to ensure completeness.  Correct errors and
            restart the DAY089 step.
```

```
   REFERENCES: Chapter 6 in this guide


+------------+
|  AUM00054  |
+------------+

   TEXT:  TITLE: %WRK_TTL
          ORGSYSID: %ORGSYSID    HOST NAME: %AUMSYSID
          COLLECTOR: %COLLECTR    EXPORT TIME: %TS

   TYPE:  Information

   REASON:  Record the characteristics of the data being
            processed.  This message is issued for each title
            record encountered.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00055  |
+------------+

   TEXT:  DATA TYPE: %REC_ID    TIME: %TS

   TYPE:  Information

   REASON:  Record the type and time of the first data record
            immediately after the title record being
            processed.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00056  |
+------------+

   TEXT:  UNSUPPORTED RECORD ID: %MWA_RID (%REC_ID)

   TYPE:  Warning

   REASON:  An unsupported record has been input.
```

```
   ACTION:  The data from the unsupported record is not
            processed.

   REFERENCES:  None


+------------+
|  AUM00057  |
+------------+

   TEXT:  INFILE EXIT RETURNED AN INVALID RECORD TYPE:
            %REC_ID  (%MWA_RID)

   TYPE:  Warning

   REASON:  Data from an unsupported record type was
            presented for processing.

   ACTION:  The data is not processed.

   REFERENCES:  Contact CA Technical Support.


+------------+
|  AUM00058  |
+------------+

   TEXT:  INPUT DATA ORIGINATED FROM INVALID OPERATING
            SYSTEM: %AUMOPSYS
          FORCE OPTION SPECIFIED IN AUMOPS.  PROCESSING
            WILL CONTINUE...

   TYPE:  Warning

   REASON:  %AUMOPSYS is an unsupported operating system.

   ACTION:  Verify the name of the UNIX system from which the
            data came.  DYAUMFMT will continue processing,
            because FORCE is specified in
            prefix.MICS.PARMS(AUMOPS).

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00059  |
+------------+
```

TEXT: >ERR> Unix system name found in MWA data is
%UNXSYSID This name does not match the system
name(s) specified in AUMOPS for DDNAME: %DDNAME
VERIFY ABORT specified in AUMOPS.

TYPE: Error

REASON: The UNIX system name specified on the OPTIONS
statement in AUMOPS does not match the name in
the data. DYAUMFM1 terminates because VERIFY
ABORT was specified in AUMOPS.

ACTION: Verify the name of the UNIX system from which the
data came; make corrections in AUMOPS and rerun
AUMPGEN. Then restart the DAY089 step.

REFERENCES: Section 7.3.1 in this guide

+------------+
| AUM00060 |
+------------+

TEXT: %ROUTINE INPUT PROCESS HAS COMPLETED.

TYPE: Information

REASON: The input process, %ROUTINE, completed
successfully.

ACTION: None required.

REFERENCES: None

+------------+
| AUM00061 |
+------------+

TEXT: %SYSID: DATA TRUNCATION DETECTED AT THE CURRENT
INPUT DATA SET
SHORT RECORD OCCURRED AT %MWA_ROW:%MWA_COL
LAST GOOD RECORD TYPE: %REC_ID LENGTH: %LRECL

TYPE: Warning

REASON: The input data set contains an incomplete record.

ACTION: Check if the data set ran out of space during the

```
            data transfer process.  Allocate more data space
            if required.  The short record is not processed
            because it is incomplete.

   REFERENCES:  None


+------------+
|  AUM00062  |
+------------+

   TEXT:  UNSUPPORTED %UNXDTYPE/%UNIXOS VERSION: %SCOPEUX
          SUPPORTED VERSION(S): %SCOPELVL
          %FRCTXT OPTION SPECIFIED IN AUMOPS.  PROCESSING
            WILL CONTINUE...

   TYPE:  Warning

   REASON:  The version of the performance data collector is
            not supported.

   ACTION:  Verify the collector's version.  Processing
            continues because FORCE or GLOBAL FORCE is
            specified in prefix.MICS.PARMS(AUMOPS).

   REFERENCES:  None


+------------+
|  AUM00063  |
+------------+

   TEXT:  %UNXDTYPE/%UNIXOS DATA RECORDS READ FROM DDNAME:
            %DDNAME

   TYPE:  Information

   REASON:  Identify the ddname that the following AUM00064
            messages are for.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00064  |
+------------+
```

```
   TEXT:  %MLINE

   TYPE:  Information

   REASON:  Prints a line in the MICSLOG.  It contains the
            input record count.

   ACTION:  None required.

   REFERENCES:  Section 9.3 in this guide


+------------+
|  AUM00065  |
+------------+

   TEXT:  NUMBER OF RECORDS DROPPED BY _USRSEL: %NSKIPS

   TYPE:  Information

   REASON:  Record the number of records dropped due to the
            specifications in your site's USRSEL exit.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00066  |
+------------+

   TEXT:  UNIX SYSTEM NAME SPECIFIED IN PARMS(AUMOPS) DOES
            NOT MATCH THE ONE IN %UNXDTYPE DATA.
          UNIX SYSTEM NAME IN DATA: %UNXSYSID
          VERIFY NOABORT SPECIFIED IN PARMS(AUMOPS).
            PROCESSING WILL CONTINUE...

   TYPE:  Warning

   REASON:  The UNIX system name specified on the OPTIONS
            statement in AUMOPS does not match the name in
            the data.

   ACTION:  Verify the name of the UNIX system from which the
            data came.  Processing continues because VERIFY
            NOABORT was specified in AUMOPS.

   REFERENCES:  Section 7.3.1 in this guide
```

```
+------------+
|  AUM00067  |
+------------+

   TEXT:  >ERR> UNIX SYSTEM NAME IN %UNXDTYPE DATA DOES
            NOT MATCH WITH SYSTEM NAMES DEFINED IN AUMOPS
          UNIX SYSTEM NAME FROM THE COMMON INPUT DD
            %DDNAME: %UNXSYSID

   TYPE:  Error

   REASON:  The UNIX system name in the data does not match
            any of the systems specified in AUMOPS for the
            COMMON ddname.

   ACTION:  Verify the name of the UNIX system from which the
            data came.  Correct AUMOPS if necessary.  CA MICS
            user abend 310 accompanies this message.

   REFERENCES:  Section 7.3.1 in this guide
                Section 4.3.11 in the CA MICS Planning,
                  Installation, Operation, and Maintenance
                  Guide


+------------+
|  AUM00068  |
+------------+

   TEXT:  >ERR> %SYSID:  MISSING CONFIGURATION DATA!
          CONFIGURATION DATA ENSURES THE INTEGRITY OF THE
            DATA BASE
          PROCESSING ABORTED.

   TYPE:  Error

   REASON:  Data collection or transfer did not include some
            of the configuration data required for a complete
            CA MICS database.

   ACTION:  Collect the data required for the Analyzer for
            MeasureWare processing.

   REFERENCES:  Chapter 6 in this guide


+------------+
```

```
|  AUM00069  |
+------------+

   TEXT:  >ERR> INPUT DATA ORIGINATED FROM INVALID OPERATING
            SYSTEM: %AUMOPSYS
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  %AUMOPSYS is an unsupported operating system.

   ACTION:  Verify the name of the UNIX system from which the
            data came.  If necessary, use the FORCE option in
            AUMOPS to let data bypass this check.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00070  |
+------------+

   TEXT:  >ERR> UNSUPPORTED %UNXDTYPE/%UNIXOS VERSION:
            %SCOPEUX
          SUPPORTED VERSION(S): %SCOPELVL
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The version of the performance data collector
            is not supported.

   ACTION:  Verify the collector's version.  If necessary,
            you can bypass the version by specifying the
            FORCE VER argument in prefix.MICS.PARMS(AUMOPS).
            Use caution when specifying FORCE VER, as
            described in the referenced AUMOPS section.  If
            you change AUMOPS, rerun AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00071  |
+------------+

   TEXT:  UNRECOGNIZED DATA COLLECTOR: %SCOPENM
          FORCE OPTION SPECIFIED IN AUMOPS.  PROCESSING
            WILL CONTINUE...
```

```
   TYPE:  Warning

   REASON:  The data collector is not supported.

   ACTION:  Verify the data collector name.  Processing
            continues because the FORCE option was specified
            in prefix.MICS.PARMS(AUMOPS).

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00072  |
+------------+

   TEXT:  >ERR> UNRECOGNIZED DATA COLLECTOR: %SCOPENM
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The data collector is not supported.

   ACTION:  Verify the data collector name.  You can bypass
            the abend by specifying the FORCE VER argument in
            prefix.MICS.PARMS(AUMOPS).

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00073  |
+------------+

   TEXT:  >ERR> INPUT TO %WRKNAME FILE MAY HAVE CONTAINED
            BOTH DETAIL AND SUMMARY DATA FOR THE SAME TIME
            PERIOD
          TIME STAMP: %TS
          DURATION OF THE RECORD:  CURRENT=%DURATION
            LAST=%PREVDUR (SECONDS)
          TO PREVENT DATA BASE CORRUPTION, PROCESSING
            ABORTED.

   TYPE:  Error

   REASON:  Both detail data and summary data were exported
            together to the same file for the same period of
            time.
```

```
   ACTION:  Choose to export either detail or summary data,
            but not both.  Define the level of data to be
            exported in the data collector's extract command
            stream.

   REFERENCES:  Section 6.1 of this guide


+------------+
|  AUM00074  |
+------------+

   TEXT:  NEGATIVE VALUE(S) DETECTED IN THE INPUT DATA (TIME
            = %TS)
          SEE SASLOG FOR MORE DETAILS
          AFFECTED VARIABLE(S) WILL BE SET TO SAS MISSING
            VALUE

   TYPE:  Warning

   REASON:  The input data from the time stamp noted contains
            negative values, which are not typical in MWA
            data.

   ACTION:  Ensure that you are running the scopeux and
            extract programs at the maintenance levels noted
            in the referenced section.

   REFERENCES:  Section 1.4 of this guide


+------------+
|  AUM00075  |
+------------+

   TEXT:  >ERR> UNSUPPORTED %UNXDTYPE/%UNIXOS VERSION:
            %SCOPEUX
          VERSION DOES NOT MATCH WITH THE FORCED VERSION
            SPECIFIED IN AUMOPS: %FRC_VER
          SUPPORTED VERSION(S): %SCOPELVL
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The scopeux collector version does not match the
            version coded in prefix.MICS.PARMS(AUMOPS).

   ACTION:  Verify that your scopeux collector version is
            compatible with one of the supported versions
```

```
            listed in Section 1.4 of this guide.  You can
            bypass the version by specifying the FORCE VER
            argument in prefix.MICS.PARMS(AUMOPS).  Use
            caution when specifying FORCE VER, as described
            in the referenced AUMOPS section.  If you change
            AUMOPS, rerun AUMPGEN and then restart the DAY089
            step.

   REFERENCES:  Sections 1.4 and 7.3.1 of this guide


+------------+
|  AUM00076  |
+------------+

   TEXT:  >ERR> UNRECOGNIZED DATA COLLECTOR: %SCOPENM
          COLLECTOR NAME DOES NOT MATCH WITH THE ONE
            SPECIFIED ON THE FORCE OPTION IN AUMOPS:
            %FRC_CLL
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The input data is from an unsupported version of
            the scopeux collector.  The collector version
            specified on the FORCE VER argument in
            prefix.MICS.PARMS(AUMOPS) does not match the
            collector version in the data.

   ACTION:  Verify that your scopeux collector version is
            compatible with one of the supported versions
            listed in Section 1.4 of this guide.  You can
            bypass the version by specifying the FORCE VER
            argument in prefix.MICS.PARMS(AUMOPS).  Use
            caution when specifying FORCE VER, as described
            in the referenced AUMOPS section.  If you change
            AUMOPS, rerun AUMPGEN and then restart the DAY089
            step.

   REFERENCES:  Sections 1.4 and 7.3.1 in this guide


+------------+
|  AUM00077  |
+------------+

   TEXT:  >ERR> INPUT DATA ORIGINATED FROM INVALID OPERATING
            SYSTEM: %AUMOPSYS
          OS NAME DOES NOT MATCH WITH THE ONE SPECIFIED
```

```
          ON THE FORCE OPTION IN AUMOPS: %FRC_OS
        %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The operating system specified on the FORCE VER
            argument in prefix.MICS.PARMS(AUMOPS) does not
            match the operating system present in the data.

   ACTION:  Verify that you are processing data from an
            operating system that is compatible with one of
            the supported operating systems listed in Section
            1.4 of this guide.  You can bypass the version by
            specifying the FORCE VER argument in
            prefix.MICS.PARMS(AUMOPS).  Use caution when
            specifying FORCE VER, as described in the
            referenced AUMOPS section.  If you change AUMOPS,
            rerun AUMPGEN and then restart the DAY089 step.

   REFERENCES:  Sections 1.4 and 7.3.1 in this guide.


+------------+
|  AUM00078  |
+------------+

   TEXT:  >CA MICS INTERNAL ERROR> UNRECOGNIZED OPERATING
            SYSTEM: %UNIXOS
          PLEASE CONTACT CA MICS PRODUCT SUPPORT

   TYPE:  Error

   REASON:  The operating system information from AUMPGEN
            does not correspond to an operating system that
            can be processed by the Analyzer.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+------------+
|  AUM00079  |
+------------+

   TEXT:  THE FOLLOWING PROCESS RECORD WAS NOT CAPTURED IN
            APPLICATION DATA:
          SYSID: %SYSID   AUMAPNUM: %AUMAPNUM   ENDTS:
            %TS   USER: %AUMUSER   PROGRAM: %AUMPROG
```

```
          AUMAPU SET TO VALUE "OTHER"

   TYPE:  Warning

   REASON: There is no matching application record for the
           named process record.

   ACTION:  Contact CA Technical Support.

   REFERENCES: None


+------------+
|  AUM00080  |
+------------+

   TEXT:  THE FOLLOWING PROCESS RECORD WAS NOT CAPTURED IN
            APPLICATION DATA:
          SYSID: %SYSID   AUMAPNUM: %AUMAPNUM   ENDTS:
            %TS   USER: %AUMUSER   PROGRAM: %AUMPROG
          AUMAPU IS SET TO VALUE MISSING

   TYPE:  Warning

   REASON:  There is no matching application record for the
            named process record.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+------------+
|  AUM00081  |
+------------+

   TEXT:  OS NAME IN DATA (%AUMOPSYS) DOES NOT MATCH WITH
            THE MWA TYPE IN AUMOPS: %UNIXOS
          FORCE OS OPTION SPECIFIED IN AUMOPS.
            PROCESSING WILL CONTINUE...

   TYPE:  Warning

   REASON:  It appears that the data was not produced on the
            operating system defined in AUMOPS.

   ACTION:  None required.  The FORCE VER argument was
            specified in AUMOPS, so the data is being
            processed.
```

```
   REFERENCES:  Section 7.3.1 in this guide.


+------------+
|  AUM00082  |
+------------+

   TEXT:  >ERR> OS NAME IN DATA (%AUMOPSYS) DOES NOT MATCH
            WITH THE MWA TYPE IN AUMOPS: %UNIXOS
          FORCE OS OPTION (%FRC_OS) DOES NOT MATCH THE OS
            NAME IN MWA DATA
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The operating system name specified on the FORCE
            VER argument on the MWA statement in AUMOPS does
            not match the operating system name present on
            the data.

   ACTION:  Correct the FORCE VER argument and rerun AUMOPS.
            Then rerun the DAY089 step.

   REFERENCES:  Sections 1.4 and 7.3.1 in this guide.


+------------+
|  AUM00083  |
+------------+

   TEXT:  >ERR> OS NAME IN DATA (%AUMOPSYS) DOES NOT MATCH
            WITH THE MWA TYPE IN AUMOPS: %UNIXOS
          %ROUTINE PROCESSING ABORTED.

   TYPE:  Error

   REASON:  The data presented for processing did not come
            from the operating system defined on the MWA
            statement in AUMOPS.

   ACTION:  Correct the OPTIONS and MWA statements in AUMOPS
            and rerun AUMPGEN. Then rerun the DAY089 step.

   REFERENCES:  Sections 1.4 and 7.3.1 in this guide.


+------------+
|  AUM00084  |
```

```
+------------+

   TEXT:  WILL STOP PROCESSING DATASETS AT CURRENT DD DUE TO
            A DATA PROBLEM
          DATA RECORDS INPUT FROM THE CURRENT DD WILL BE
            DROPPED
          INPUT PROCESSING WILL RESUME FROM NEXT DD DUE TO
            "ERRSKIP" SPECIFIED

   TYPE:  Warning

   REASON:  The data presented for processing has a problem.

   ACTION:  All the data records read from the current ddname
            are dropped from the database.  DYAUMFMT will
            continue processing because ERRSKIP is specified
            in prefix.MICS.PARMS(AUMOPS).  Review and correct
            the data problem.  Then input the data to the
            DAY089 step again.

   REFERENCES:  Sections 7.3.1 in this guide.


+------------+
|  AUM00085  |
+------------+

   TEXT:  PROCESSING ABNORMALLY TERMINATED.

   TYPE:  Error

   REASON:  Input processing terminated prematurely due to an
            error detected by infile exit.

   ACTION:  Messages in the SAS log specify problems
            encountered during processing.  Correct the
            problem and restart the DAY089 step.

   REFERENCES:  Chapter 6 in this guide.


+------------+
|  AUM00086  |
+------------+

   TEXT:  DATA RECORDS FROM THE FOLLOWING SYSID(S) WILL BE
            DROPPED: (DDNAME=%DDNAME)

   TYPE:  Warning
```

```
   REASON:  Input data from %DDNAME contains an error.  Data
            records from the SYSIDs on the following AUM00087
            messages are deleted from the processing because
            ERRSKIP is specified in
            prefix.MICS.PARMS(AUMOPS).

   ACTION:  None required.

   REFERENCES:  Section 7.3.1 in this guide.


+------------+
|  AUM00087  |
+------------+

   TEXT:  ---- %SYSID

   TYPE:  Warning

   REASON:  Identify the system ID whose data records are to
            be deleted.  This message is issued with the
            AUM00086 message.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00088  |
+------------+

   TEXT:  >ERR> NO DATA RECORDS ARE KEPT IN THE DATA BASE
          USER ABEND 998 IS BEING ISSUED

   TYPE:  Error

   REASON:  Zero records are kept in the database.

   ACTION:  Review and correct errors listed in the prior
            messages.  Restart DAY089.

   REFERENCES:  None


+------------+
|  AUM00089  |
+------------+
```

```
   TEXT:  UNIX SYSTEM NAME SPECIFIED IN PARMS(AUMOPS) DOES
            NOT MATCH THE ONE IN %UNXDTYPE DATA.
          UNIX SYSTEM NAME IN DATA: %UNXSYSID
          DATA WILL BE EXCLUDED FROM PROCESSING DUE TO
            "VERIFY EXCLUDE" SPECIFIED IN AUMOPS.

   TYPE:  Error

   REASON:  The UNIX system name specified on the OPTIONS
            statement in AUMOPS does not match the name in
            the data.  The input data from the noted UNIX
            system are discarded.  DYAUMFMT processing
            continues because VERIFY EXCLUDE was specified in
            AUMOPS.

   ACTION:  Verify the name of the UNIX system from which the
            data came; make corrections in AUMOPS and rerun
            AUMPGEN.

   REFERENCES:  Section 7.3.1 in this guide


+------------+
|  AUM00090  |
+------------+

   TEXT:  >CA MICS INTERNAL ERROR> UNRECOGNIZED VFYABORT
            VALUE:  %VFYABNT
          PLEASE CONTACT CA MICS PRODUCT SUPPORT

   TYPE:  Error

   REASON:  CA MICS internal error.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+------------+
|  AUM00091  |
+------------+

   TEXT:  Obsolete %UNIXOS script detected for ORGSYSID %OR,
          GSYSID
          UPGRADE REQUIRED FOR TECHNICAL CURRENCY
          Begin using the AUMRHP12 script
```

```
   TYPE:  Warning

   REASON:  An old version of the script has been detected.
            In order to take advantage of technical currency,
            including the obsoletion and addition of many
            metrics, you are strongly urged to upgrade to the
            new script level detailed in this message.

   ACTION:  Upgrade your scripts for all platforms and
            ORGSYSIDs that are noted in this MICSLOG message.

   REFERENCES:  None


+------------+
|  AUM00092  |
+------------+

   TEXT:  The GLOBAL FORCE option has been specified.
          Release validation will not occur for:

   TYPE:  Informational

   REASON:  The GLOBAL FORCE option has been specified in
            prefix.MICS.PARMS(AUMPGEN).  This parameter will
            bypass release validation for this product.

   ACTION:  None

   REFERENCES:  None


+------------+
|  AUM00093  |
+------------+

   TEXT:  %GFMSGTXT

   TYPE:  Informational

   REASON:  No release validation will occur for HP-UX, Sun
            Solaris, and/or IBM AIX data.

   ACTION:  None

   REFERENCES:  None


+------------+
```

```
|  AUM00098  |
+------------+

   TEXT:  >>> %PROCESS HAS COMPLETED.

   TYPE:  Information

   REASON:  The job, %PROCESS, completed successfully.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM00099  |
+------------+

   TEXT:  %LINE

   TYPE:  Information

   REASON:  Prints a line in the MICSLOG.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM02001  |
+------------+

   TEXT:  NO DATA HAS PASSED THROUGH INITIAL SELECTION.
          CHECK FILE AND SELECTION CRITERIA VALIDITY.
          RUN TERMINATES WITH A USER 998 CONDITION CODE.

   TYPE:  Error

   REASON:  The selection criteria specified for this MICF
            inquiry excluded all data.

   ACTION:  Review data selection criteria; rerun inquiry.

   REFERENCES:  None


+------------+
|  AUM02002  |
```

```
+------------+

   TEXT:  A REQUIRED FILE WAS NOT FOUND IN ANY UNIT OF THE
            SPECIFIED/DEFAULT UNIT DATA BASE ID LIST.
          DBID LIST: %ICFRPDBL / RETURN CODE: %RC.
          REPORT EXECUTION IS TERMINATED.

   TYPE:  Error

   REASON:  The unit database from which this report is being
            generated does not contain the Analyzer file
            needed for this report.

   ACTION:  Either specify a unit database that contains the
            Analyzer file and re-execute the report, or
            choose a different report.

   REFERENCES:  Chapter 3 in this guide


+------------+
|  AUM02003  |
+------------+

   TEXT:  THE SPECIFIED/DEFAULT UNIT DATA BASE ID LIST DOES
            NOT CONTAIN ALL REQUIRED FILES FOR THIS REPORT.
          AN ATTEMPT WILL BE MADE TO CONSTRUCT A NEW UNIT
            LIST USING ALL VALID UNITS IN THIS COMPLEX.
          REPORT EXECUTION CONTINUES.

   TYPE:  Warning

   REASON:  The unit database specified did not contain the
            Analyzer files needed to build this report.

   ACTION:  None required.  CA MICS attempts to locate the
            required files in another unit in this complex.

   REFERENCES:  None


+------------+
|  AUM02004  |
+------------+

   TEXT:  UNEXPECTED ERROR DETECTED BY THE MICF DBID
            VALIDATION ROUTINE.  RETURN CODE IS %AUMWORK1.
          EXAMINE THE UNIT DATA BASE ID LIST SPECIFIED OR
            DEFAULTED FOR THIS REPORT.
```

```
          REPORT EXECUTION IS TERMINATED.

   TYPE:  Error

   REASON:  The MICF validation routine for database
            identifiers detected a problem with the unit
            specified for this report.

   ACTION:  Review the CA MICS log and respecify the unit
            database identifier.

   REFERENCES:  None


+------------+
|  AUM02005  |
+------------+

   TEXT:  THE FOLLOWING UNIT DATA BASE ID LIST VALUES
            CONTAIN NONE OF THE FILES USED BY THIS REPORT:
            %MALMSUID.
          THE SPECIFIED VALUES WILL BE IGNORED.
          REPORT EXECUTION CONTINUES.

   TYPE:  Warning

   REASON:  The unit database you chose to use for this
            report does not contain the Analyzer files
            needed.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM02006  |
+------------+

   TEXT:  THE FOLLOWING REQUIRED FILES WERE NOT FOUND IN ANY
            OF THE DEFAULT/SPECIFIED UNITS: %MALMSFID.
          CORRECT THE UNIT DATA BASE ID LIST TO INCLUDE
            AT LEAST ONE UNIT CONTAINING THE SPECIFIED
            FILES.
          REPORT EXECUTION IS TERMINATED.

   TYPE:  Error

   REASON:  The unit database you chose to use for this
```

```
            report does not contain the Analyzer files
            needed.

   ACTION:  Specify a unit that contains the required files.

   REFERENCES:  Chapter 3 in this guide


+------------+
|  AUM02007  |
+------------+

   TEXT:  NO CYCLE VALUES HAVE BEEN SPECIFIED FOR THIS
            REPORT.
          SPECIFY AT LEAST ONE VALID CYCLE VALUE WHEN
            SELECTING THIS REPORT FOR EXECUTION.
          REPORT EXECUTION IS TERMINATED.

   TYPE:  Error

   REASON:  You must specify the cycles of data on which you
            want to report.

   ACTION:  Specify a cycle value or range of cycles; then
            rerun the report.

   REFERENCES:  Chapter 3 in this guide


+------------+
|  AUM02008  |
+------------+

   TEXT:  NOTE:  SOME MEASUREMENTS REPORTED BY THIS INQUIRY
            ARE NOT AVAILABLE IN THE FOLLOWING
          OPERATING SYSTEM(S): %OS
          TEXT4

   TYPE:  Information

   REASON:  The metrics supported vary by operating system.
            The documentation for each report lists the
            CA MICS elements used, and notes if an element is
            not available from an operating system's data.

   ACTION:  None required.

   REFERENCES:  Chapter 3 in this guide.
```

```
+------------+
|  AUM02009  |
+------------+

   TEXT:  NOTE:  THIS REPORT IS NOT APPLICABLE TO THE
            FOLLOWING OPERATING SYSTEM(S):
          %OS

   TYPE:  Information

   REASON:  The metrics supported vary by operating system.
            The documentation for each report lists the
            CA MICS elements used, and notes if a report is
            not available from an operating system's data.

   ACTION:  None required.

   REFERENCES:  None


+------------+
|  AUM02010  |
+------------+

   TEXT:  THE LINES PER PAGE WAS SET TO LESS THAN 30. THIS
            REPORT REQUIRES A MINIMUM
          PAGE SIZE OF 30. PAGE SIZE SET TO 30

   TYPE:  Information

   REASON:  To correctly format this report, the page size
            must be at least 30. The page size was
            automatically reset.

   ACTION:  None required.

   REFERENCES:  None


+----------+
| AUM03001 |
+----------+

   TEXT:  Unknown function request type.

   TYPE:  Error

   REASON:  The infile exit detects an unsupported function
```

```
            request type.  Processing aborted.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03002 |
+----------+

   TEXT:  File output is not supported.

   TYPE:  Error

   REASON:  This infile exit does not support write
            operation.  Processing aborted.

   ACTION:  Do not use the infile exit for output.

   REFERENCES:  None


+----------+
| AUM03003 |
+----------+

   TEXT:  Opening DDName &1 ...

   TYPE:  Information

   REASON:  Record the name of the data set opened.

   ACTION:  None required.

   REFERENCES:  None


+----------+
| AUM03004 |
+----------+

   TEXT:  Variable &1 size is different from defined: &2.

   TYPE:  Warning

   REASON:  The SAS variable, &1, is different from what it
            should be, based on the header record.  Its value
            may be truncated if shorter.
```

```
   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03005 |
+----------+

   TEXT:  Mismatched Type or Internal/External: &1.

   TYPE:  Warning

   REASON:  The data type of the SAS variable was defined as
            numeric but the data header indicated that it
            should be character, or vice versa.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03006 |
+----------+

   TEXT:  DDName &1 closed ...

   TYPE:  Information

   REASON:  Record the name of the data set.

   ACTION:  None required.

   REFERENCES:  None


+----------+
| AUM03007 |
+----------+

   TEXT:  Logical record length exceeds &1 bytes.

   TYPE:  Error

   REASON:  The logical record length of the data presented
            for processing exceeds &1 bytes, the internal
            buffer size for holding the data.  Processing
```

```
          aborted.

   ACTION:  Verify the data export/transfer process.  This
            may be caused by the data being shifted, or
            invalid record format.

   REFERENCES:  None


+----------+
| AUM03008 |
+----------+

   TEXT:  Fail to open the variable table: &1.

   TYPE:  Error

   REASON:  The variable table &1 either was not found or
            could not be opened for read.

   ACTION:  Verify that the variable table exists in the
            complex and there is no contention for the table.

   REFERENCES:  None


+----------+
| AUM03009 |
+----------+

   TEXT:  Attempt to write over an unprocessed record.

   TYPE:  Error

   REASON:  The system attempted to copy a record to the
            input buffer, but doing so would overwrite an
            unprocessed record.  Processing terminates.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03010 |
+----------+

   TEXT:  Unsupported Data Type: &1.
```

```
   TYPE:  Warning

   REASON:  The data type &1 is not supported.

   ACTION:  None required.

   REFERENCES:  None


+----------+
| AUM03011 |
+----------+

   TEXT:  Scale factor for item &1 contains a negative value
            (&2).  Please report this message to CA MICS
            Product Support.

   TYPE:  Error

   REASON:  The MeasureWare data header contains a negative
            value for item &1.  Processing terminated.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03012 |
+----------+

   TEXT:  Invalid negative value(s) in the MWA record #&1 at
            &2:&3 (row:column)

   TYPE:  Warning

   REASON:  Negative values are not normal in MeasureWare
            data.

   ACTION:  Contact HP MeasureWare Product Support

   REFERENCES:  A record dump follows this message.


+----------+
| AUM03013 |
+----------+

   TEXT:  Unrecognized SAS data type: &1.
```

```
   TYPE:  Error

   REASON:  The data type &1 is neither numeric nor
            character.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03014 |
+----------+

   TEXT:  Invalid option: &1 in the INFILE statement.

   TYPE:  Error

   REASON:  While parsing the INFILE statement, an invalid
            option, &1, was found.

   ACTION:  Correct the INFILE statement.

   REFERENCES:  None


+----------+
| AUM03015 |
+----------+

   TEXT:  Message count for &1 exceeded.  Further messages
            will be suppressed.

   TYPE:  Information

   REASON:  The number of messages exceeds the threshold set.

   ACTION:  None required.

   REFERENCES:  None


+----------+
| AUM03016 |
+----------+

   TEXT:  &1 = &2/&3 (input from MWA record #&6, columns
            &4-&5)
```

```
   TYPE:  Error

   REASON:  Message 3012 noted that a negative value was
            detected.  This message names the CA MICS element
            (&1), its input value (&2), and the scale factor
            (&3).

   ACTION:  Verify that you are processing data from an
            operating system that is compatible with one of
            the supported operating systems listed in Section
            1.4 of this guide.  If there is a mismatch
            between the scopeux, utility, and extract
            versions on your system, bring them to the same
            level.  If the versions match those listed in
            Section 1.4, contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03017 |
+----------+

   TEXT:  Work area with size &1 not allocated.

   TYPE:  Error

   REASON:  The required amount of work space was not
            allocated by SAS.  This could be caused by system
            memory shortage.

   ACTION:  Try again later.

   REFERENCES:  None


+----------+
| AUM03018 |
+----------+

   TEXT:  The following element(s) holds SAS missing value
            due to its input field containing negative value:

   TYPE:  Warning

   REASON:  At least one negative value was detected during
            the input process.  This message lists the
            CA MICS element whose input value is negative.
```

```
   ACTION:  See AUM03016

   REFERENCES:  None


+----------+
| AUM03019 |
+----------+

   TEXT:  Fail to load the variable table: &1.  Metric number
            is out of range: &2.

   TYPE:  Error

   REASON:  An invalid metric number (&2) in the variable
            table &1 is detected.

   ACTION:  Verify that the variable table is not modified.
            Correct the variable table and try again.

   REFERENCES:  None


+----------+
| AUM03020 |
+----------+

   TEXT:  Input record size is bigger than buffersize: &1.

   TYPE:  Error

   REASON:  The record being read exceeds the size of the
            input buffer.  Processing aborted.

   ACTION:  Verify the data transfer process.  The record
            size for the MVS data set must be smaller than
            &1.

   REFERENCES:  None


+----------+
| AUM03021 |
+----------+

   TEXT:  Record type: &1 is expected, but instead &2 is
            found.
```

```
   TYPE:  Error

   REASON:  The input data's integrity is questionable.
            Processing aborted.

   ACTION:  Verify the data export/transfer process.

   REFERENCES:  None


+----------+
| AUM03022 |
+----------+

   TEXT:  &1 contains invalid information: &2

   TYPE:  Error

   REASON:  Some record in the variable table &1 contains
            invalid data.

   ACTION:  Correct the record in the variable table.

   REFERENCES:  None


+----------+
| AUM03023 |
+----------+

   TEXT:  Maximum LAN devices supported (&1) exceeded: &2

   TYPE:  Error

   REASON:  The number of LAN devices supported is &1; the
            number of LAN devices noted in the data is &2.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03024 |
+----------+

   TEXT:  Metrics array capacity exceeded.  Data type &1 is
            not supported.
```

```
   TYPE:  Error

   REASON:  Verify that no user modifications were made to
            your sharedprefix.MICS.SOURCE(AUMMWAV).

   ACTION:  If user modifications are found, remove them from
            AUMMWAV. The data type is not supported by the
            Analyzer.  Restart processing after removing
            the user modifications.

            If user modifications were not found, contact
            CA Technical Support.

   REFERENCES:  None


+----------+
| AUM03025 |
+----------+

   TEXT:  Invalid record length: &1

   TYPE:  Error

   REASON:  The input data contains a record with an invalid
            record length &1.  Input data's integrity is in
            doubt.

   ACTION:  Verify the data export/transfer process.

   REFERENCES:  None


+----------+
| AUM03026 |
+----------+

   TEXT:  Invalid metric number in the header record: &1

   TYPE:  Error

   REASON:  The header record contains an invalid metric
            number.

   ACTION:  Contact CA Technical Support.

   REFERENCES:  None
```

```
+----------+
| AUM03027 |
+----------+

   TEXT:  Error in Loading MWA table

   TYPE:  Error

   REASON:  Errors encountered when the infile exit attempts
            to load MWA table.

   ACTION:  See prior messages for details.

   REFERENCES:  None


+----------+
| AUM03028 |
+----------+

   TEXT:  Error occurs when processing input data

   TYPE:  Error

   REASON:  Errors encountered when the infile exit attempts
            to read the input data.

   ACTION:  See prior messages for details.

   REFERENCES:  None


+----------+
| AUM03029 |
+----------+

   TEXT:  Total number of metrics exceeds maximum: &1
            AUM will not process the rest of metrics.

   TYPE:  Error

   REASON:  Header record processing uncovers that the number
            of metrics is beyond the capacity supported by
            the infile exit.

   ACTION:  See prior messages for details.

   REFERENCES:  None
```

```
+----------+
| AUM03099 |
+----------+
```

TEXT: &1

TYPE: Information

REASON: Infile exit prints a line in SASLOG.

ACTION: None required.

REFERENCES: None

Appendix B: DATA DICTIONARY

The Data Dictionary is only available at your site, where it has been customized to your configuration and your product change level.

To see the Data Dictionary at your site, follow the instructions under Document Browse in the Document Access guide.