

# CA Mainframe Network Management

## ReportCenter Guide

Release 12.1



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## CA Technologies Product References

This document references the following CA Technologies products:

- CA NetMaster<sup>®</sup> Network Management for TCP/IP (CA NetMaster NM for TCP/IP)
- CA NetMaster<sup>®</sup> File Transfer Management (CA NetMaster FTM)
- CA SOLVE:Operations<sup>®</sup> Automation (CA SOLVE:Operations Automation)
- CA Datacom<sup>®</sup> /AD (CA Datacom/AD)
- CA Datacom<sup>®</sup> Server (CA Datacom Server)
- CA Common Services<sup>™</sup> for z/OS (CA Common Services for z/OS)
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# Chapter 1: Introduction

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- [ReportCenter Reports](#) (see page 16)
- [Report Scheduling](#) (see page 17)
- [On-demand Reports](#) (see page 17)
- [Report Accessibility](#) (see page 17)
- [Data Consolidation from Multiple Regions](#) (see page 17)
- [Mainframe Installation and Web Hosting](#) (see page 17)
- [ReportCenter Components](#) (see page 18)

## About ReportCenter

ReportCenter provides web-based historical and trend reporting of data collected from the TCP/IP host, and file transfer activities on your z/OS systems. It combines the familiarity and stability of the mainframe environment with the usability of the web, providing integrated mainframe-to-browser reporting on your most important resources.

ReportCenter is a z/OS UNIX System Services (USS) Java application.

ReportCenter stores performance data collected by CA NetMaster in a z/OS mainframe structured query language (SQL) database. You can then use The CA NetMaster WebCenter interface to generate web-based graphical historical and trend reports from this data.

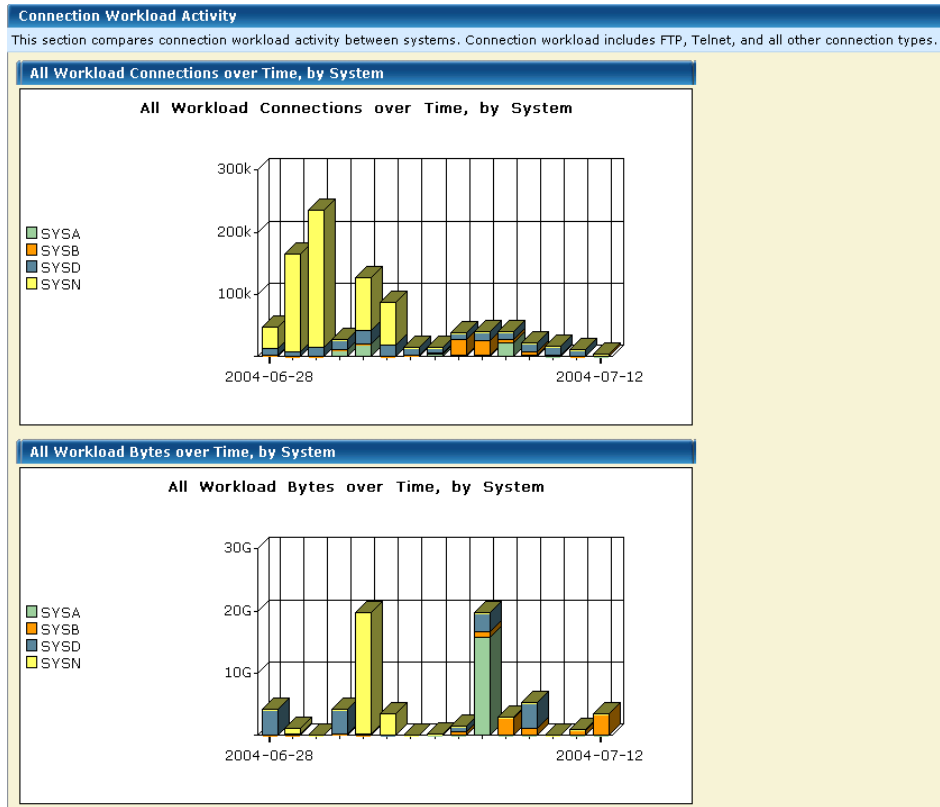
ReportCenter is an optional feature that you can implement with the following products:

- CA NetMaster NM for TCP/IP
- CA NetMaster FTM

## ReportCenter Reports

Predefined reports containing graphs are provided with ReportCenter. A report can cover many attributes, and contain multiple charts and tables.

### Example: ReportCenter Reports



The reports are produced from the following data:

- Mainframe host, TCP/IP stack and device performance-collected by CA NetMaster NM for TCP/IP
- File transfer activity-collected by CA NetMaster FTM

You collect live data from your own systems, run the predefined reports, and then display the results from a web browser. Any user can view these reports.

**Note:** The Report Examples is a collection of pregenerated examples of ReportCenter output. You can look at the examples from any CA NetMaster region that has its web interface enabled, even if it does not include ReportCenter. Simply click the Report Examples link on the WebCenter login page.



## Report Scheduling

ReportCenter provides an integrated and flexible report scheduler service that allows automatic queuing of report requests at daily, weekly, monthly, or quarterly intervals. You can schedule the same report to run over different time frames at different intervals, according to your specific requirements. Many time frames are supported, including yesterday, last seven days, and last quarter.

## On-demand Reports

You can request a report at any time.

## Report Accessibility

You can view reports using CA NetMaster WebCenter, or any other mainframe web server product. You can publish report URLs to a portal or link to them from your intranet pages.

ReportCenter stores its generated report output as MVS HFS (hierarchical file system) files. Report output is HTML and PNG graphics files.

You can save report chart files, and use them in word processing or other documents.

## Data Consolidation from Multiple Regions

You can send data collected from many CA NetMaster regions on different systems into one central database. Many reports compare the activity between systems.

You choose one CA NetMaster region to control ReportCenter activity on behalf of all regions. This region is known as the ReportCenter control region.

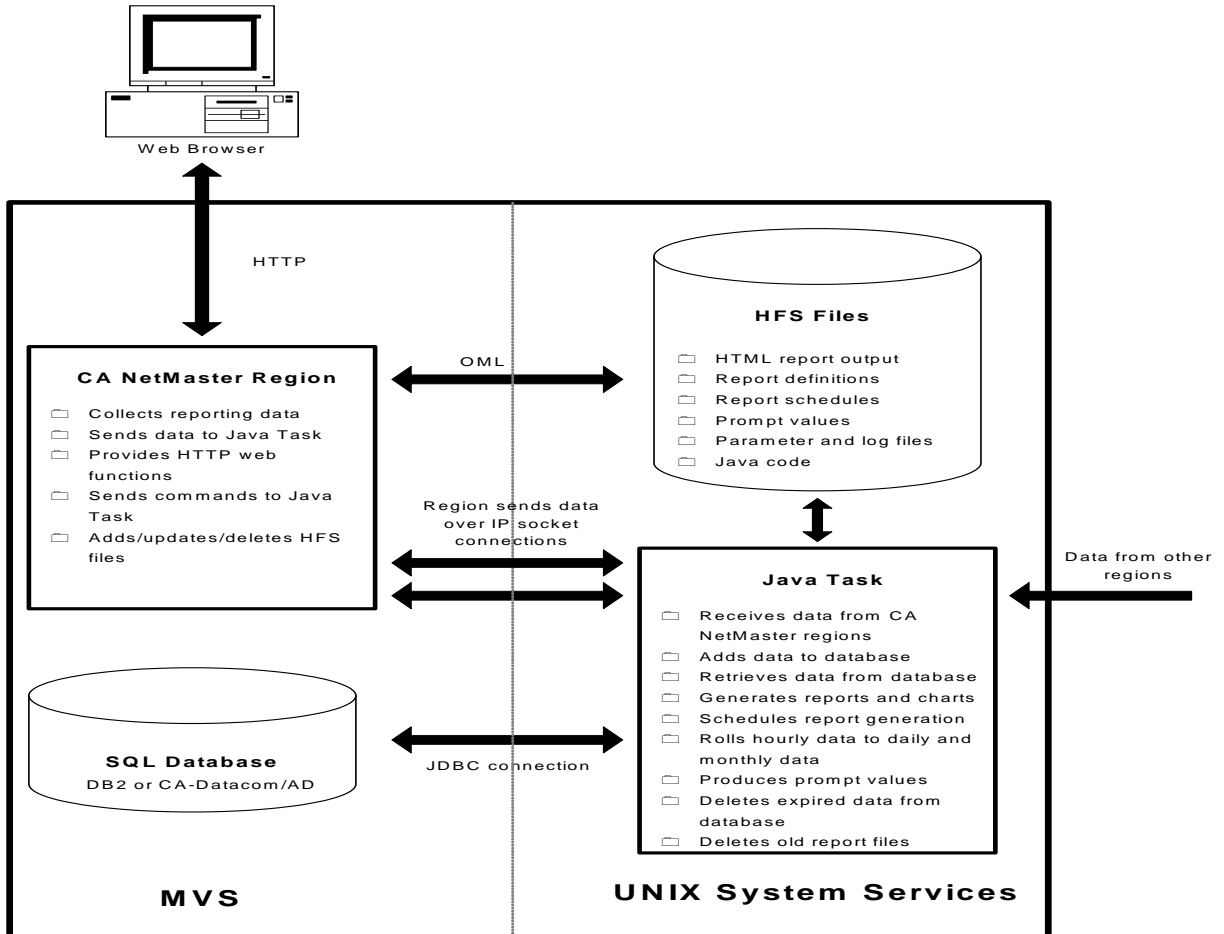
## Mainframe Installation and Web Hosting

All ReportCenter components are z/OS-hosted. No PC server or client application installation is required. The only PC component required to use ReportCenter is a recent web browser.

The CA NetMaster WebCenter interface provides web access for ReportCenter and CA NetMaster features. CA NetMaster has an internal HTTP server, and does not need IBM's WebSphere or any other third-party web server.

## ReportCenter Components

The following diagram shows the ReportCenter basic components.



The implementation requires the following components on the same system (LPAR):

**Structured Query Language (SQL)-accessible Relational Database**

Stores the data for the reports. All database access uses the Java Database Connectivity (JDBC) API.

**ReportCenter Java Task**

Provides the services to manage data and generate reports; it runs as a started task under the UNIX System Services Java Virtual Machine (JVM) environment. The Java Task receives data collected by local and remote regions, stores it in the database, and retrieves it to produce reports.

**CA NetMaster Region**

Designated and configured as the ReportCenter control region. The ReportCenter control region interfaces with UNIX System Services and the ReportCenter Java Task.



# Chapter 2: Implementation Overview

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This section contains the following topics:

[ReportCenter Software Components](#) (see page 21)

[Required Implementation Skills](#) (see page 22)

[Disk Space Required](#) (see page 24)

[Software Products Required](#) (see page 24)

[Implementation Flowchart](#) (see page 26)

[How to Implement ReportCenter](#) (see page 27)

## ReportCenter Software Components

ReportCenter uses the following software components:

### CA NetMaster Regions

Collect performance data and send it to ReportCenter. One region is designated as the ReportCenter control region. This region performs all report administration tasks.

The CA NetMaster WebCenter interface on the control region is used for all report viewing and report administration tasks.

The 3270 interface is used to set up and verify the data collection for all data regions.

### HFS File System

Contains the ReportCenter SMP/E target libraries, which supply the Java code, report definitions, and so on. After you implement ReportCenter, they also contain user data such as the finished report HTML output and the report schedule details.

HFS format files are standard for Java and UNIX System Services. They are physically stored in VSAM files, which are mounted to correspond to a certain directory path.

**Note:** There are three file systems supported by UNIX System Services: the original Hierarchical File System (HFS), the z/OS File System (zFS), which provides improved performance and reliability, and the Network File System (NFS), which supports sharing files across a network. ReportCenter can use any of these. This guide uses HFS as a generic term to refer to any of these file systems.

### Mainframe Java

Provides facilities such as database access and graphics generation. Mainframe Java programs (unlike mainframe C/C++ programs) always run in the USS environment.

### Mainframe IP Stack

Supports IP socket connections between the data regions and the Java code (to feed data) and between the control region and the Java code (to request reports).

### **UNIX System Services**

A sub-environment of z/OS where things look like UNIX, but are implemented with z/OS mechanisms. See the IBM website for an introduction.

### **DB2**

An SQL database management system (DBMS) that stores ReportCenter's accumulated performance data.

### **DB2 JDBC**

A DB2 component, resident in USS, that allows Java programs to make DB2 SQL requests.

### **RRS**

A component used by DB2 JDBC for resource serialization.

### **CA Datacom/AD**

Alternative to DB2.

### **CA Datacom Server**

Alternative to DB2 JDBC.

### **CA Common Services for z/OS**

Prerequisite base components for CA Datacom.

## Required Implementation Skills

ReportCenter uses technologies external to CA NetMaster, such as Java and SQL Data Warehousing.

ReportCenter implementation can involve installation and setup of multiple program products from different vendors.

Successful ReportCenter implementation requires various skills and is a team effort. ReportCenter is unlike traditional CA NetMaster in that it requires technical expertise in many areas that CA NetMaster does not otherwise use.

Do not attempt to implement ReportCenter until you have arranged access to people with the following skills:

- z/OS UNIX System Services and the Hierarchical File System (HFS)-to set up a functional HFS and UNIX environment
- Communications Server (TCP/IP) or equivalent-to configure connectivity between CA NetMaster regions and the ReportCenter Java task

- Security Server (for example, CA ACF2 for z/OS, CA Top Secret for z/OS, or RACF), or the security product you use to authenticate the ReportCenter Java task to USS, and authorize access to resources
- SMP/E and JCL to install the ReportCenter feature
- Java for z/OS
- CA NetMaster to set up regions, collect report data, and administer reports
- DB2 and JDBC to define, authorize, tune the ReportCenter database, and implement the DB2 JDBC component
- Resource recovery services (RRS) to implement resource recovery services as required by DB2
- Optionally, CA Datacom/AD and CA Common Services for z/OS

## Planning for DB2 DBAs

ReportCenter is a DB2 application with the following characteristics:

- Database access is through JDBC.
- Typically, it uses only a single, persistent JDBC connection.
- A star schema data warehouse with large central fact tables is used.
- Queries involve sorting and joining, and need supporting DB2 resources such as sort work tables.
- All queries are dynamic SQL.
- 'uncommitted read' transaction isolation level is used.
- A combination of transaction-like and batch-like accesses are used.
- New data is added to the database continuously—typically around 100,000 rows per day. Periodically, old data is deleted, keeping the database size roughly constant.

To implement ReportCenter, perform the following DB2-related tasks:

- Define the ReportCenter DB2 database and its authority grants.
- Implement DB2 JDBC access to this database.

### More information:

[DB2 Administration](#) (see page 225)

## Planning for Security Administrators

To implement ReportCenter, you must grant security rights to a ReportCenter user ID in the following areas:

- DB2 SYSGRANT access to ReportCenter database and tables
- DB2 SYSGRANT access to JDBC plan
- Security access to RRS
- Security access to USS/OMVS
- Security access to started tasks
- USS access to HFS files

The implementation task descriptions contain additional details.

## Disk Space Required

Ensure that you have sufficient disk space for the installation. On a 3390 DASD, the following space is required:

- Installation = 8 cylinders
- SMP/E temporary libraries = 8 cylinders
- HFS space = 25 cylinders

You must also ensure that you have sufficient disk space for your database, CA Datacom/AD or DB2.

## Software Products Required

You must have the following software to use ReportCenter:

- *One* of the following CA NetMaster products:
  - CA NetMaster NM for TCP/IP
  - CA NetMaster FTM
- A current z/OS mainframe Java environment:
  - IBM SDK for z/OS, Java 2 Technology Edition, Version 1.4
  - IBM 64-bit SDK for z/OS, Java 2 Technology Edition, Version 5 or later
  - IBM 31-bit SDK for z/OS, Java 2 Technology Edition, Version 5 or later



- *One* of the following SQL-accessible mainframe DBMS:

- IBM DB2 for z/OS and OS/390, Version 7
- IBM DB2 for z/OS, Version 8
- IBM DB2 for z/OS, Version 9
- CA Datacom/AD, Version 10.0 SP04
- CA Datacom/DB, Version 10.0 SP04
- CA Datacom/AD r11 SP02 or later
- CA Datacom/DB r11 SP02 or later

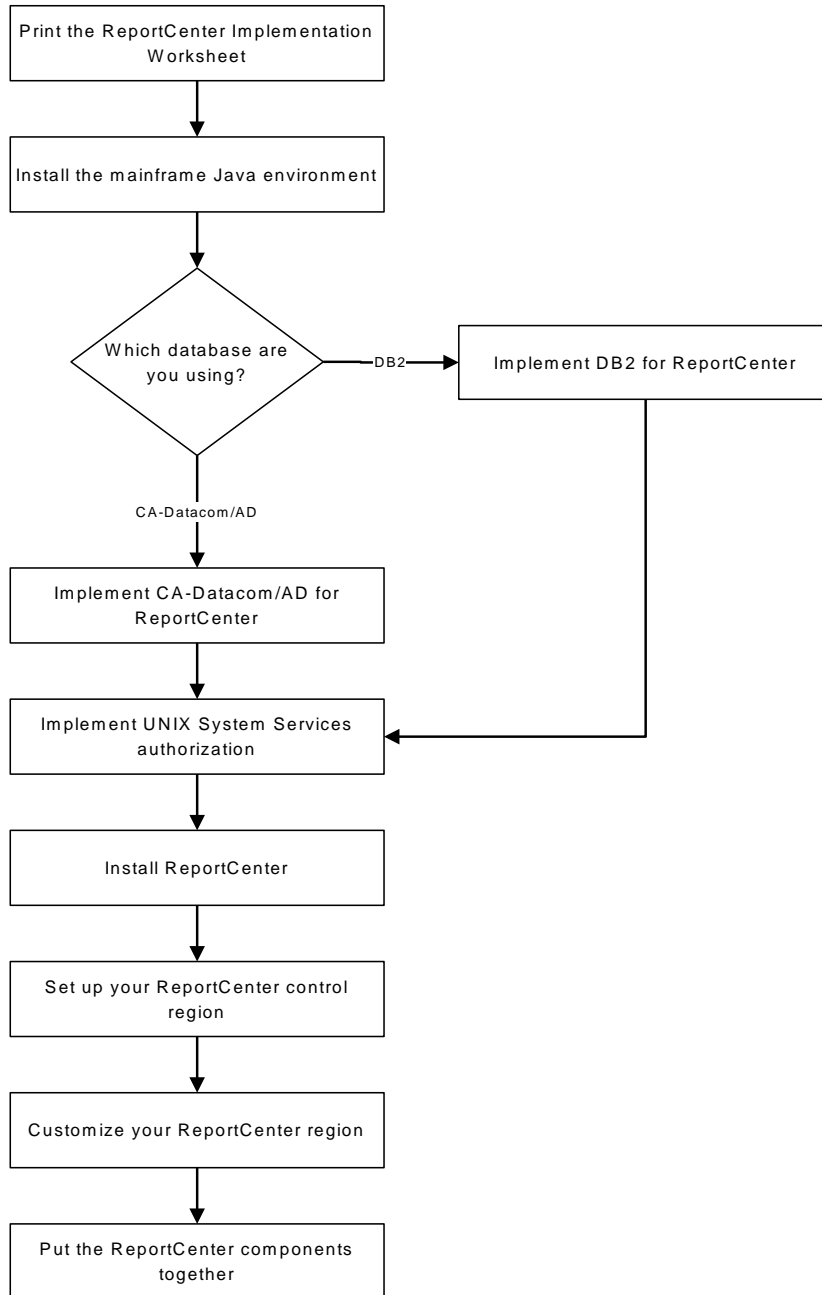
- A JDBC driver for the DBMS

JDBC is a Java application programming interface (API) that Java applications use to access a relational database. Each DBMS is distributed with its own driver:

- The DB2 JDBC/SQLJ component (component 5740XYR02)
- CA Datacom Server 5.0 SP1 or 5.0 SP2

## Implementation Flowchart

To implement ReportCenter, perform the steps in the following flowchart:



## How to Implement ReportCenter

**Important!** The steps to [migrate](#) (see page 213) ReportCenter differ slightly from a new installation.

Before you start, you must install your CA NetMaster product.

To implement ReportCenter, follow these steps:

1. Print the [ReportCenter implementation worksheet](#) (see page 167).  
As you progress through the implementation steps, fill in the items in the worksheet. You need these items when you customize your ReportCenter control region.
2. [Install the mainframe Java environment](#) (see page 29).  
This process requires IBM program material and documentation.
3. Implement one of the following ReportCenter databases:
  - [CA Datacom/AD](#) (see page 47)  
This requires CA program material and documentation.
  - [DB2](#) (see page 31)  
This requires IBM program material and documentation.
4. [Implement UNIX System Services Authorization](#) (see page 63).
5. Install ReportCenter.  
Before you start installing, you must have an HFS file system ready. Use the CA NetMaster installation facility to generate the JCL to perform the SMP/E installation of ReportCenter. Submit each job, and verify its completion.
6. Add ReportCenter to the required CA NetMaster region by repeating the setup for the region.  
Use the installation facility to generate the JCL to set up the region. Submit each job, and verify its completion.  
**Note:** A region does not have to use ReportCenter immediately. ReportCenter can remain disabled until the region is working, you are familiar with its operation, and the other ReportCenter components are ready.
7. [Customize your ReportCenter control and data regions](#) (see page 79).
8. [Complete your ReportCenter implementation](#) (see page 85).



# Chapter 3: Implementing z/OS Mainframe Java

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This section contains the following topics:

[IBM Mainframe Java Products](#) (see page 29)

[ReportCenter Java Requirements](#) (see page 30)

## IBM Mainframe Java Products

IBM produces a number of z/OS mainframe Java products. ReportCenter requires a Java runtime environment at version 1.4.2 or higher. SDK Version 1.4.2 or Version 5 is available by installing IBM SDK for z/OS™ Java™ 2 Technology Edition Version 1.4 or Version 5.

See the IBM website for service level and prerequisite information and ensure that you have installed all these prerequisites. They may be for components other than Java, such as Language Environment for z/OS.

This product is available from IBM in SMP/E and non-SMP/E formats through normal ordering channels, or by downloading the product from the web. For more information about how to obtain and install this product, see the IBM website.

You may already have one or more mainframe Java products installed. Java products may be installed automatically with some CBIPO configurations, or with products such as IBM's WebSphere. The version and maintenance level of Java depends on the operating system or product level involved.

If this Java product is at a recent maintenance level of SDK Version 1.4.2, SDK Version 5 or later, it can also be used for ReportCenter. IBM provides regular service updates to the mainframe Java products. Ensure that you have installed the latest maintenance level for your Java product.

You can execute IBM JVM processing cycles on a zAAP (IBM System z Application Assist Processor) specialty engine if it is configured. This may help to reduce z/OS Java application capacity requirements.

**Note:** For more information, see the IBM zAAP documentation.

## ReportCenter Java Requirements

The mainframe Java environment must be at a recent build level of SDK 1.4.2 or later.

If you do not have a mainframe Java product, or a Java product at an earlier SDK level, you must install or upgrade to a suitable level. Follow the appropriate IBM installation instructions.

You should run with the Java 'JIT' compiler enabled. By default, this compiler is enabled and IBM recommends that it remains enabled. If you choose to disable it, there are performance implications for ReportCenter and all other Java applications.

## Other Java Products

Other Java products include IBM Developer Kit for OS/390, Java™ 2 Technology Edition, which is compliant with the Sun SDK 1.3.1 APIs. This product was usable with earlier versions of ReportCenter, but cannot be used with ReportCenter r11.7 because ReportCenter r11.7 exploits features that are not present in this level of Java.

There is an older mainframe Java product called Java for OS/390, which provided SDK 1.1.8. IBM no longer supports this product and ReportCenter cannot use it.

The HPC (High Performance Compiler) for Java product is also unsuitable for ReportCenter.

Many different SDK versions can coexist on the same system. If you have a product that has different SDK requirements to ReportCenter, you can install both SDKs.

## Display Your Version of Java

To display and check your version and maintenance level of Java, enter the following command in OMVS from the .../bin directory of your installed Java product:

```
java -version
```

## Java SDK Command Directory

Note the HFS path name of your mainframe Java SDK command directory, for example, /usr/lpp/java/IBM/J1.5/bin.

Enter this directory name on your ReportCenter implementation worksheet. You will refer to it later when you configure your ReportCenter control region.

# Chapter 4: Implementing DB2 with ReportCenter

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**Important!** You must complete the installation of your CA NetMaster products before performing any tasks in this section. This is because the sample JCL files referenced in this section are installed with your products. For more information, see the *Installation Guide*.

**Note:** You need only perform the steps in this section if you are implementing DB2. If you are implementing CA Datacom/AD, see *Implementing CA Datacom/AD with ReportCenter*.

This section contains the following topics:

- [DB2 Requirements](#) (see page 31)
- [DB2 and JDBC](#) (see page 32)
- [How to Implement DB2 with ReportCenter](#) (see page 33)
- [DB2 Versions and JDBC Drivers](#) (see page 41)
- [Multiple DB2 JDBC Applications](#) (see page 41)
- [Security Definitions for RRS and DB2](#) (see page 42)
- [DB2 Database Sizes](#) (see page 43)

## DB2 Requirements

ReportCenter stores its reporting data in a z/OS mainframe SQL-accessible database.

ReportCenter supports the following versions of DB2:

- DB2 UDB for z/OS and OS/390 Version 7
- DB2 UDB for z/OS Version 8
- DB2 UDB for z/OS Version 9

The ReportCenter control region and the ReportCenter Java Task can run on the same LPAR as their associated DB2 subsystem, or can access a remote DB2 subsystem on a remote LPAR.

If you have a specific DB2 question or problem, contact IBM according to the terms of your support agreement.

## DB2 and JDBC

The ReportCenter database is accessed from the ReportCenter Java Task, using JDBC. JDBC is a Java application programming interface (API) that Java applications use to access any relational database.

JDBC support for DB2 is supplied as part of the DB2 for z/OS JDBC/SQLJ component.

IBM supplies the following DB2 for z/OS JDBC drivers:

### Legacy JDBC Driver

This is an older, CLI-based driver supported for backward compatibility.

IBM has the following constraints on the use of the Legacy JDBC driver:

- The driver works with DB2 V7 and V8, but only with SDK 1.4.x
- The driver does not work with DB2 V9

### Universal JDBC Driver

This is the current DRDA-based driver. The driver provides Type 2 Connectivity and Type 4 Connectivity.

IBM has the following constraints on the use of the Universal JDBC driver:

- It is the only driver supported by DB2 Version 9. If you have DB2 V9 you must use the Universal driver.
- It is the only driver supported by the SDK V5 or later. If you use SDK V5, you must use the Universal Driver. If you use SDK 1.4.x, you can use either driver (subject to the other restrictions).
- It is the only driver supported by a 64-bit SDK (1.4.x or V5). If you use a 64-bit SDK (and IBM recommends V5), you must use the Universal Driver.

ReportCenter supports the Legacy and Universal JDBC drivers. ReportCenter can use Type 2 Connectivity or Type 4 Connectivity with the Universal JDBC Driver. Generally, IBM recommends Type 2 Connectivity when the application and DB2 run on the same LPAR. Type 4 Connectivity is required when the application has to access DB2 on a remote LPAR.

The JDBC URL determines the connectivity type.

DB2 for z/OS JDBC Driver variations can be a confusing area of implementation. For more information about implementation, see the *Application Programming Guide and Reference for Java™* for your version of DB2, and the README file located in the jcc directory of your DB2 file system. For general information and explanations about z/OS DB2 JDBC drivers, we recommend that you use a search engine to find related articles and publications on the IBM web sites.



## How to Implement DB2 with ReportCenter

You must complete the following tasks to implement a DB2/ReportCenter environment. The tasks can be completed in any order.

- [Create the DB2 ReportCenter Database](#) (see page 33)

All new users of ReportCenter must perform this task. This task uses JCL and data supplied and automatically installed with your CA NetMaster product.

- [Install and Set up the DB2 JDBC Environment](#) (see page 35)

If you have not installed the DB2 JDBC component software, you must perform this task. This task uses IBM program material, which is supplied and optionally installed with DB2.

If you have already installed the DB2 JDBC software component, then you do not need to re-install it; however, you must review the remaining steps to ensure that your current DB2 JDBC environment is suitable for ReportCenter.

Implementation requires the support of the following personnel in your organization:

- Systems programmer
- DB2 database administrator
- OMVS UNIX administrator
- Security administrator

**Note:** DB2 SYSADM authority and OMVS superuser authority are required.

### Create the DB2 ReportCenter Database

The JCL required to define the ReportCenter database to DB2 is supplied with your CA NetMaster product. If you are using ReportCenter for the first time, you must create this database.

**Important!** When you create the database, you need to customize some WRDB2\* members. Do not edit them directly. These members are maintained by SMP/E; therefore, future maintenance overwrites your changes. Copy these members to another data set before editing.

## Create the Database

The database is empty to start, ready to store the reporting data that you collect from your ReportCenter data regions. You can run reports against the database by using the ReportCenter Reports option in WebCenter.

The database table qualifier can be any valid value, though many users use the database schema name. ReportCenter uses only the database table qualifier: it does not know or need to know the schema name.

### To create the ReportCenter DB2 database

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDB2CRE)* data set member. This job executes the DB2 batch plan (DSNTIAX1), which creates the tables and indexes, and primes the Keyrange table with initial values.
2. Edit your copy of WRDB2CRE, as instructed at the top of the member.
3. Use your ReportCenter implementation worksheet to record your database table qualifier. You need this when you customize your ReportCenter control region.
4. Submit the job. The expected return code is 0.

## Grant Access to the Database

The ReportCenter Java Task accesses the databases. The database user is the CA ACF2, CA Top Secret, or RACF user ID that owns the ReportCenter Java Task.

### To grant database access to the ReportCenter applications

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDB2GRA)* data set member.
2. Review the security requirements and sample GRANT commands in this member.

**Note:** Security for DB2 is complex. The sample GRANT statements are intended only as a guide. You must get them reviewed and approved, or modified by your DBA or DB2 security specialist because they may have their own way of implementing the ReportCenter security requirements. Ensure that you do not violate any of the authorization standards at your installation.

3. Edit your copy of WRDB2GRA to conform to your authorization standards.
4. Use the SPUFI facility or an equivalent utility to run the commands in your WRDB2GRA member.

All steps should complete with Condition Code 0; however, it depends on whether users already have permissions for the same plans and tables.

**Note:** You must have SYSADM authority to issue some GRANT commands.

## Verify Connectivity to a Remote Database

If ReportCenter needs to access a remote DB2 database (that is, a DB2 subsystem that runs in a different LPAR to the ReportCenter Java Task), that remote DB2 must be configured to accept TCP/IP requests from clients. This is done using the Distributed Data Facility (DDF) of DB2 for z/OS.

The TCP/IP hostname and port used by DDF is written to the joblog and the MVS console at startup. Look for a message similar to the following:

```
DSNL519I  D81A DSNLIRSY TCP/IP SERVICES AVAILABLE  
          FOR DOMAIN yourhost.yourname.com AND PORT 5142
```

The values of the IP hostname, port, and DB2 subsystem location name are needed to construct the URL required for Universal Driver Type 4 Connectivity. You enter this URL when you customize your ReportCenter regions.

## Install and Set Up JDBC for DB2

The DB2 JDBC environment is installed separately from the CA NetMaster product installation and setup steps. JDBC support for DB2 is supplied as an optional component of DB2 UDB. This component may already be installed on your system:

```
Component Name: 'DB2 ODBC/JDBC/SQL'  
Component: 5740XYR02  
Versions: 710, 810, and 910
```

To perform the installation steps, see the IBM publication, *Application Programming Guide and Reference for Java* for your version of DB2 UDB.

### Notes:

- Not all of the implementation information in the *Application Programming Guide and Reference for Java* is relevant to, or required by ReportCenter. Follow the steps in this chapter and use them as a guide to the IBM documentation.
- Ignore all reference to WebSphere, CICS DB2 applications, and VisualAge for Java because ReportCenter does not use these products. ReportCenter does not use SQLJ, but support for it is provided by the same component that provides JDBC support.

**Important!** To successfully implement JDBC for DB2, you must install the JDBC software and then perform all of the other required configuration steps. Installing the JDBC software alone is not sufficient.

## How to Implement DB2 JDBC

To implement DB2 JDBC for ReportCenter, you must do the following:

- Install the JDBC and SQLJ libraries
- Note environment variable values
- (optional) Customize parameters in the SQLJ/JDBC run-time properties file
- Set up RRS security definitions for DB2
- Perform other steps, as required, by the Legacy or Universal JDBC driver.

Implementation procedures differ between the Legacy JDBC Driver and the Universal JDBC Driver. With the Universal Driver, different steps may be required to support Type 2 Connectivity, and Type 4 Connectivity to remote subsystems. Follow the correct IBM documentation for your version of DB2 and choice of driver carefully.

## Install the JDBC and SQLJ Libraries

**Note:** For information about loading the JDBC and SQLJ libraries, see IBM's *Application Programming Guide and Reference for Java*.

This step performs the SMP/E installation of the DB2 JDBC/SQLJ component. This component comprises HFS and SMP/E target libraries. Use your ReportCenter implementation worksheet to record the names of the target library HFS path names and data sets. You need them in later steps.

If the DB2 JDBC/SQLJ component is installed, you do not need to install it again; however, you should carefully review the following steps to ensure that your existing DB2 JDBC environment will work with ReportCenter.

Use your ReportCenter implementation worksheet to record the full path of the following file:

- For Legacy JDBC Driver users, *db2j2classes.zip*
- For Universal JDBC Driver users, *db2jcc.jar*

You must enter this path when you enable ReportCenter on your ReportCenter control region for the first time.

It is not necessary to set the program control extended attribute for ReportCenter.

## Note Environment Variable Values

Environment variables are used to communicate site-specific information about your system setup, such as search paths and file names, to processes that run in the UNIX System Services environment, such as the ReportCenter Java Task.

Ask your DBA and systems programmer for the values to use for the JDBC environment variables required by ReportCenter.

**Important!** Most ReportCenter Java Task operational problems are due to the omitted, incomplete, or inexact setting of USS environmental variables. Care taken with this step can avoid many problems later.

For information about the USS environmental variables that must be set for DB2 JDBC access, see IBM's *Application Programming Guide and Reference for Java*.

The JDBC drivers require the following environment variables to be set correctly. Obtain these values from your systems programmer or DBA and note them in your ReportCenter implementation worksheet because you need them when you customize your ReportCenter control region.

### CLASSPATH

Specifies where to find Java classes. Must include the full path name of the JDBC classes file, for example:

#### Legacy Driver

```
/usr/lpp/db2/db2810/classes/db2j2classes.zip
```

#### Universal Driver

```
/usr/lpp/db2910_jdbc/classes/db2jcc.jar: \  
/usr/lpp/db2910_jdbc/classes/db2jcc_javax.jar: \  
/usr/lpp/db2910_jdbc/classes/sqlj.zip: \  
/usr/lpp/db2910_jdbc/classes/db2jcc_license_cisuz.jar
```

### PATH

Specifies where to find commands. Must include the Java command directory, for example:

```
/usr/lpp/java/J1.4/bin
```

### LIBPATH

Specifies where to find DLLs. Must include JDBC DLL directory, for example:

```
/usr/lpp/db2/db2810/lib
```

### LD\_LIBRARY\_PATH

Specifies where to find files required by the dynamic linker and loader. Must include JDBC DLL directory, which also contains linker and loader files, for example:

```
/usr/lpp/db2/db2810/lib
```

### **DB2SQLJPROPERTIES**

Specifies where to find the JDBC run-time properties. Must be set to full path name of JDBC run-time properties file, for example:

```
/usr/lpp/db2/db2810/classes/db2sqljdbc.properties
```

or

```
/usr/lpp/db2/db2910/classes/DB2JccConfiguration.properties
```

**Note:** The name of the properties file may need to follow a pattern. For more information, see your IBM documentation.

### **STEPLIB**

Specifies where to find DB2 load modules. Must be a concatenation of the DB2 SDSNEXIT, SDSNLOAD, and SDSNLOAD2 load library data set names.

After you customize your ReportCenter control region, it generates a .bat file that invokes the ReportCenter Java Task. This file sets the values of these variables for the Java Task.

## Customize Parameters in the SQLJ/JDBC Run-time Properties File

The universal driver properties file is a flat text file that is defined to a ReportCenter Java Task using its DB2SQLJPROPERTIES variable in Adaptor.bat. The properties defined in the file affect any use of the universal driver by ReportCenter. This properties file is not required, but is recommended by IBM because it can be used to override DB2 default values.

**Note:** For information about customizing parameters in the SQLJ/JDBC run-time properties, see IBM's *Application Programming Guide and Reference for Java*, which describes the parameters that can be set in this file.

ReportCenter requires the following parameters:

```
DB2SQLJSSID=?db2-subsystem-name
DB2SQLJMULTICONTEXT=YES
DB2SQLATTACHTYPE=RRSAF
DB2SQLJDBRMLIB=?dbrm-data-set
```

Review the remaining parameters, as applicable to your environment.

For the Legacy JDBC driver, the default path name for the SQLJ/JDBC run-time properties file looks similar to the following:

```
/usr/lpp/db2/db2810/classes/db2sqljjdbc.properties
```

If you use a new path name for your customized run-time properties file, you must specify that file name in the ReportCenter Customizer parameter group. The Customizer uses it to set the DB2SQLJPROPERTIES environment variable.

For the Universal JDBC Driver, a properties file is optional.

### DB2SQLJSSID Parameter

If you use the Universal JDBC driver and do not specify a properties file, be aware of where the default processing sets the SSID property from. SSID specifies the DB2 subsystem identifier (not location name) that the Universal JDBC driver uses.

In some cases, if this is not explicitly specified, the driver may use the subsystem identifier specified in the DSNDECP load module. For this reason, if you use Type 4 Connectivity to access a remote DB2 on another LPAR, you need a properties file that specifies the DB2SQLJSSID name on the other LPAR.

Unspecified, defaulted and incorrect SSID values are the cause of many implementation problems with ReportCenter and the Universal JDBC Driver. For more information, see the IBM Universal JDBC Driver documentation.

## DB2SQLJDBRMLIB Parameter

The library name that you enter here is obtained from your Database Administrator. When the SQLJ/JDBC profile is customized in the following step, it writes four Database Request Modules (DBRMs) to the file you specify here.

These DBRMs are then bound by the DBA using a DB2 batch job supplied by IBM. The plan name DSNJDBC is created by this batch job. This plan must be given EXECUTE access to PUBLIC by the DBA.

**Note:** This library is required only if you are generating a LEGACY driver. For the UNIVERSAL driver, it is not necessary to bind your JDBC packages into a plan.

## DB2SQLATTACHTYPE Parameter

ReportCenter uses only an ATTACHTYPE of RRSAF. Alternate attach mechanisms, such as the Call Attach Facility (CAF) or CLI do not support the multithreading requirements of ReportCenter.

The Resource Recovery Manager Services and the z/OS System Logger must be configured to enable the JDBC driver to use the underlying Resource Recovery Services Attachment Facility (RRSAF).

For more information about configuring the Resource Recovery Manager Services Attachment Facility, see the *Application Programming and SQL Guide* for your version of DB2 for z/OS.

**Note:** ReportCenter does not require customization of the cursor properties file.

## Set Up RRS Security Definitions

Check your operational procedures to ensure that the started task Resource Recovery Services (RRS) is always active, in addition to your DB2 subsystem.

ReportCenter works with DB2 subsystems in local or sysplex mode. DB2 JDBC support requires RRS with at least a monoplex defined, that is, a sysplex configuration of monoplex or multisystem. An RRS configuration of xcflocal does not support JDBC for DB2.

Your Security Administrator must define the resources and permissions required for your DB2 subsystem to use RRS, if these have not been defined already.

### **More information:**

[Security Definitions for RRS and DB2](#) (see page 42)



## Perform Other Driver-Specific Steps

Perform other tasks as directed by the specific IBM documentation about implementing the Legacy or Universal JDBC drivers.

These may include tasks such as generating JDBC profile files, binding DBRMs, and so on.

For the same tasks, different OMVS utilities may be invoked by the Legacy (Db2JDBCgen) and Universal (DB2Binder) drivers.

**Note:** If you are implementing the Universal Driver, different steps may be required for Type 2 Connectivity and Type 4 Connectivity. Follow the ones appropriate to what your database administrator has chosen.

## Grant Access to DB2 JDBC

After you successfully complete the steps above, your Database Administrator must grant access to DB2 JDBC functions, by issuing the following command:

```
GRANT EXECUTE ON PLAN DSNJDBC TO PUBLIC;
```

## DB2 Versions and JDBC Drivers

DB2 Version 7 is supplied with the Legacy JDBC driver, but Universal Driver support can be added.

DB2 Version 8 is supplied with both the Legacy and Universal (Type 2 and Type 4 Connectivity) drivers.

DB2 Version 9 is supplied with only the Universal (Type 2 and Type 4 Connectivity) driver.

ReportCenter supports the Legacy driver, and the Universal driver using Type 2 Connectivity and Type 4 Connectivity.

## Multiple DB2 JDBC Applications

If you have DB2 JDBC applications and ReportCenter, each application may need access to different DB2 subsystems, DBRM libraries, and different and perhaps mutually exclusive runtime JDBC properties. To do this:

- Have a separate JDBC runtime properties file for each application. Each file contains the DB2 subsystem name, DBRM library, and JDBC parameters required by that specific application.
- Customize the JDBC profile and bind the DBRMs separately for each application.

- For ReportCenter, [specify its JDBC properties](#) (see page 82) file in the REPORTCENTER parameter group.
- For each of the other applications, use a separate \$HOME/.profile file. This file points to an application's separate JDBC properties file.

## Security Definitions for RRS and DB2

The following variables are used in the examples:

***ssnm***

Is your DB2 subsystem name.

***uidname***

Is the CA ACF2 specific user key.

***userid***

Is your normal user ID.

**Example: CA ACF2 for z/OS**

```
ACF
SET RESOURCE(SAF)
COMPILE
$KEY(ssnm.BATCH) TYPE(SAF)
UID(uidname) ALLOW
```

```
STORE
COMPILE
$KEY(ssnm.RRSAF) TYPE(SAF)
UID(uidname) ALLOW
```

```
STORE
END
```

**Note:** The blank lines are used to terminate the compile of the rule.

To action the new rules, use the following operator command:

```
F ACF2,REBUILD(SAF)
```

**Example: CA Top Secret for z/OS**

```
TSS ADD(ALL) DB2(DSNR.ssnm.BATCH)
TSS ADD(ALL) DB2(DSNR.ssnm.RRSF)
```

```
TSS PER(userid) DB2(DSNR.ssnm.BATCH)
```

```
TSS PER(userid) DB2(DSNR.ssnm.RRSF)
```

**Example: RACF**

```
RDEFINE DSNR(ssnm.BATCH) UACC(NONE)
RDEFINE DSNR(ssnm.RRSF) UACC(NONE)
PERMIT ssnm.BATCH CLASS(DSNR) ID(userid) ACCESS(READ)
PERMIT ssnm.RRSF CLASS(DSNR) ID(userid) ACCESS(READ)
```

## DB2 Database Sizes

When you define your DB2 ReportCenter databases, you specify how much space to allocate for each separate database table. Space is physically allocated in DASD units, but database size more usefully refers to the logical number of table rows.

## ReportCenter Data Model

ReportCenter uses a very simple data warehousing *star* schema. Star refers to data model designs where multiple *dimension* tables (in ReportCenter's case, Resource, Attribute, and Period) revolve around large central *fact* tables (NumericFact and EnumeratedFact).

Details of each different resource, report attribute, and time period are stored in the database once only-in a row in their dimension table. When a data observation arrives for a specific resource, attribute, and period, the value is stored in a row in one of the fact tables, with *pointers* to the associated resource, attribute, and period dimension table rows.

## Table Sizes

It is the fact tables, NumericFact and EnumeratedFact, that vary most in size between ReportCenter implementations.

Typical NumericFact table sizes may range from less than one million to tens of millions of rows.

EnumeratedFact table sizes are generally 20% - 30% of the number of rows of the NumericFact table, although this varies greatly depending on the specific data collected. For the same interval, EnumeratedFact data takes more physical space than NumericFact data.

ReportCenter dimension and internal-use tables are reasonably constant in size between implementations.

## Database Growth

After you have defined most of your essential data collection, ReportCenter data regions send data to the database at a more-or-less constant rate. However, the database does not grow at a constant rate, for the following reasons:

- Most dimension table entries are added the first time data arrives for them. At the beginning, when everything is new, dimension table entries need to be added quickly. After a while, few new entries are required except for new days and newly added resources.
- The ReportCenter *expiry* service deletes old rows from the database. You can change these retention periods; however, by default, hourly data is deleted after four days, daily data after 3-12 months, and monthly data after two years. Your database grows unabated until data is old enough to be deleted.
- With the default retention periods, after a three-month interval, when most data collection is defined and the expiry service is running regularly, your rate of database growth will decrease. After two years, the size becomes stable.

You should run the DB2 reporting utilities regularly to monitor the growth of each table.

## Specify Database Size

Example database space allocations for the ReportCenter database are specified in the distributed *dsnpref.NMC1.CC2DSAMP(WRDB2CRE)* sample JCL member. Review the comments in this member carefully.

Member WRDB2CRE contains an example of row, cylinder, and block requirements for a database that should be adequate for most organizations. For all tables, a secondary extent is specified with 10% of the primary value.

If you have a small or medium scale CA NetMaster implementation, we recommend that you use the default primary space allocations. However, you should review and, if possible, remove the secondary allocations on the NumericFact and EnumeratedFact tables.

## VSAM Extents

DB2 tables are physically stored as VSAM files. A large number of VSAM extents can badly impact SQL performance and CPU consumption required for Input/Output. Review your organization standards and, if possible, specify no secondary extents on at least the fact tables.

You may get errors sooner, when or if the primary extent fills, but you will avoid situations such as enormous tables spread over 120+ extents and multiple devices. This applies equally to index space allocations.

## Estimate Numeric Fact Rows

You only need to estimate the number of rows in the NumericFact table. The EnumeratedFact table generally has one quarter to one third of the number of NumericFact rows. Most report data is numeric.

The number of rows for the remaining six tables does not vary as widely and the sample allocations should be adequate.

The number of NumericFact rows depends on how much data you collect and the length of time you keep it. In practice, it is not easy or necessary to predict exactly when a table will reach a given size. You should aim to have a primary extent large enough to hold all the NumericFact rows you are likely to need. Regular monitoring gives an indication of the growth of the fact table.

**Example: Estimate Numeric Fact Rows**

Use the following as a *very* rough guideline. If you have data feeding in from a region that is sending all possible report data from a single stack and a small number of each other resource type, you need approximately 500,000 rows after six months, after which the rate of increase should slow down. This is an indication only—individual regions can monitor more than this. This example uses the default retention periods.

## Minimize the Space Required

To minimize the space required, send to ReportCenter only the data on which you want to report. Try to prevent your database filling up with data you do not want and do not know is there.

The following are ways that you can minimize the space required:

- If you are not interested in a particular device attribute, do not monitor it. Some IP devices have many default attributes, not all of which are of value to all customers.
- Send to ReportCenter settings in IP Node Monitor groups apply to all nodes in that group. If you only want to report on a small number of nodes in a group, do not send data for them all. Set up a separate group specifically for reported nodes.
- Enumerated attributes stored for long periods take large amounts of space, which is out of proportion to their probable reporting value. Do not collect enumerated attributes that you do not understand or want to report on.
- Consider revising the retention rules. For example, if you want to run only daily hourly interval reports over today and yesterday, you do not need to keep hourly data for four days. You may want to keep daily data for certain classes for only one month instead of three months, and so on.
- You may sometimes need to delete data from your database without waiting for the Expiry Service to do it. For examples of how to do this, see the WRDB2SQE member.

Data is added to and deleted from your ReportCenter live database every day. Regular database reorganizations are essential to reuse and reclaim space.

# Chapter 5: Implementing CA Datacom/AD with ReportCenter

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**Important!** You must complete the installation of your CA NetMaster products before performing any tasks in this section. This is because the sample JCL files referenced in this section are installed with your products. For more information, see the *Installation Guide*.

**Note:** You need only perform the steps in this chapter if you are implementing CA Datacom/AD. If you are implementing DB2, see Implementing DB2 with ReportCenter.

This section contains the following topics:

[CA Datacom/AD](#) (see page 48)

[Customize CA Datacom/AD](#) (see page 48)

[How to Implement a New CA Datacom/AD Environment](#) (see page 49)

[How to Migrate an Existing Database](#) (see page 60)

[CA Datacom Management](#) (see page 61)

[CA Datacom/AD Space Sizing Considerations](#) (see page 62)

## CA Datacom/AD

ReportCenter stores reporting data in an z/OS mainframe SQL-accessible database. The database product, CA Datacom/AD, is available at no charge for use with ReportCenter, if necessary.

The ReportCenter Java Task accesses the database using JDBC. JDBC is a Java application programming interface (API) that Java applications use to access any relational database. If you use CA Datacom/AD as your data warehouse, use the JDBC interface provided (known as CA Datacom Server).

ReportCenter requires CA Datacom/AD Version 10.0 or r11, and CA Datacom Server 5.0 (or higher). If you already have CA Datacom/AD 10.0 or CA Datacom/DB 10.0 installed, you can use this previously installed environment with ReportCenter or install a new CA Datacom/AD environment.

If you are going to install a new CA Datacom r11 environment as part of your ReportCenter implementation, install and set up CA Datacom/AD and its requisite products.

We recommend that you install a dedicated CA Datacom/AD environment for ReportCenter. If you add ReportCenter to an existing CA Datacom MUF, be aware that it can have different performance characteristics than your existing CA Datacom applications, and can require system parameter and other revisions.

If you have a specific CA Datacom/AD question or problem, contact Technical Support and indicate that you are running a CA Datacom/AD environment in support of ReportCenter.

## Customize CA Datacom/AD

The CA Datacom/AD documentation is intended for use by many different products; therefore, it does not contain any CA NetMaster-specific information. The information required to customize CA Datacom/AD (after it is installed) for ReportCenter is provided as part of the CA NetMaster product. You must complete the installation of CA NetMaster and CA Datacom/AD before you customize CA Datacom/AD.

**Note:** CA Datacom/AD is a powerful and fully functional SQL DBMS. Like all products of that type, it uses many external components and operating system interfaces. You must allow adequate time for this CA Datacom/AD implementation.



## How to Implement a New CA Datacom/AD Environment

To implement ReportCenter with a new CA Datacom/AD environment, perform the following steps:

1. Install the CA Common Services for z/OS components required by CA Datacom/AD.

**Note:** If the CA Common Services for z/OS components are already installed, you do not have to reinstall them. You should run CA Common Services for z/OS r11 with SP6 applied as the minimum.

2. Install the CA Datacom/AD environment.
3. You have installed the base CA Datacom/AD product and performed verification steps to assure that it is working properly. The base environment does not have any application databases defined to it. You are ready to customize the environment for use with ReportCenter.
4. Customize CA Datacom/AD for use by ReportCenter.
5. After this step, your CA Datacom/AD CA NetMaster database is ready for use. You have a production database, which is empty and ready to store your own reporting data. You are ready to set up JDBC access to your CA NetMaster database, so that the ReportCenter Java code can access it.
6. Customize CA Datacom Server for use by ReportCenter.

After this step, your complete CA Datacom/AD environment is customized and ready for use with ReportCenter.

**Important!** During these steps, you may need to customize some WRDCM\* members. Do not edit them directly. These members are maintained by SMP/E; therefore, future maintenance will overwrite your changes. Copy these members to another data set before editing.

### Install the CA Common Services for z/OS Components

CA Common Services for z/OS is a collection of MVS utilities that provides common system functions to CA mainframe products.

Different products can require different CA Common Services for z/OS components. After you install a Common Services component for use by one CA product, you do not have to reinstall it for another product.

CA Datacom/AD and CA Datacom Server require the following components:

**CAIRIM**

The Resource Initialization Manager. Also required by CA NetMaster products.

**CAIENF**

The Event Notification Facility.

**CAICCI**

The Common Communications Interface.

**CA C Runtime**

The Common Language Runtime Facility.

**CAIVPE**

The Virtual Processing Environment.

**Notes:**

- Run CA Common Services for z/OS r11 with SP6 applied as the minimum.
- For more information about the function of each component, see the *CA Datacom/AD Installation and Maintenance Guide*.

You may already have all or some of these components installed. To find out which components are installed on your system, run an SMP/E QUERY against the CSI where you installed CA Common Services for z/OS. You can run the query using online facilities or a job similar to the following:

```
//jobname JOB .....
//*
//APPLY EXEC PGM=GIMSMP,REGION=0M,PARM='DATE=U'
//SMPCSI DD DISP=SHR,DSN=?prefix.SMPCSI.CSI
//SMPHOLD DD DUMMY
//SMPLOG DD DUMMY
//*
//SMPCNTL DD *
SET BDY(GLOBAL).
LIST GLOBALZONE. /* LIST INSTALLED FMIDS */
/*
```

Compare the FMIDs listed in the CA Common Services for z/OS documentation with the installed FMIDs listed by your query. If you have installed all the CA Common Services for z/OS components in the table, you are ready to [install the CA Datacom/AD environment](#) (see page 51).

**Note:** Ensure that you enter the CCI system ID in the ReportCenter implementation worksheet.

If there are any required CA Common Services for z/OS components that are not installed, install these missing components. These components are supplied on the CA Common Services installation tape—they are not supplied with CA NetMaster or CA Datacom/AD.

**Note:** For more information about installing the missing components, see your CA Common Services documentation.

Some details from your CA Common Services for z/OS installations, including data set names and parameters, are required during the ReportCenter CA Datacom/AD implementation.

## How to Install the CA Datacom/AD Environment

The CA Datacom/AD environment is installed separately from the ReportCenter installation and setup steps. The CA Datacom/AD environment uses its own installation tape.

The JDBC interface CA Datacom Server is automatically installed when you install the CA Datacom/AD environment.

**Note:** For information about installing the CA Datacom/AD environment, the CA Datacom tape contents, tailoring the CA Datacom products, maintenance procedures, and troubleshooting, see the *CA Datacom/AD Installation and Maintenance Guide*. Not all this information is relevant to ReportCenter. All information that is required to tailor CA Datacom/AD for use by ReportCenter is contained in this guide.

To install the CA Datacom/AD environment, perform the following steps:

1. Review the *CA Datacom/AD Installation and Maintenance Guide*.
2. Install CA Datacom/AD.

**Important!** Run the installation jobs AX22MKD and AX23CSIU to set the path where the HFS modules are installed. Also, install jobs AAX3REC, AAX4APP, and AAX5ACC are supplied with an END OF JOB statement `'//'` placed between the non-HFS SMP/E JCL and the HFS SMP/E JCL. Ensure that you remove this card when running the jobs to facilitate HFS installation.

3. Set up your CA Datacom/AD production jobs.

## Review the CA Datacom/AD Installation and Maintenance Guide

Review the information provided in the *CA Datacom/AD Installation and Maintenance Guide*. The CA Datacom/AD documentation refers to the region executing the CA Datacom environment as a *Multi-User Facility* or *MUF*.

The following are of particular importance:

### **JCL Editing**

Review the information about the use of the IBM CBIPO program. Most sites have this utility available and use it to perform the JCL changes to reduce installation time and JCL editing requirements. There can be up to 18 separate jobs involved in this installation, so it is worth the time to use this utility.

### **Special Installation Considerations**

Review the information about the CA Datacom/AD SVC. The CAIRIM installation of the CA Datacom SVC is required unless you have CA Datacom/AD r11 installed on the system on which you are going to install your new CA Datacom/AD environment. One CA Datacom SVC can support up to 256 environments. Contact Technical Support for advice about sharing a single CA Datacom SVC.

### **Software Requirements**

References to requirements for CA Datacom on the use of CICS can be ignored.

## Install CA Datacom/AD

Install CA Datacom/AD on the system where you run the ReportCenter Java Task and the ReportCenter control region.

**Note:** If the image is in the same sysplex, you can run the AD environment on a different z/OS image (from the ReportCenter control region). This setup is more complex. If you must implement this environment, contact Technical Support.

For information about installing the CA Datacom/AD environment, see the *CA Datacom/AD Installation and Maintenance Guide*.

Because many products can use the CA Datacom/AD environment, the installation is separated into the following sections:

- Steps for all installations—installation of the SMP/E libraries
- Steps for new installations—installation of a new database environment
- Steps for upgrade installations—steps for users who want to upgrade their CA Datacom/AD environment to a new version level

To install CA Datacom/AD for use with ReportCenter, complete the procedures described in the following sections:

- Steps for all installations—do all steps.
- Steps for new installations—do all steps.

The sections in the *CA Datacom/AD Installation and Maintenance Guide* describe the jobs required to load the CA Datacom/AD code from tape, perform SMP/E functions, add the CA Datacom/AD SVC, and perform essential internal DBMS setup functions. Run these jobs as directed.

## Install Product Maintenance

Review the maintenance level required for CA Datacom/AD. If the service pack level of the installed product does not include the required maintenance, you must install the maintenance separately. You can obtain the required maintenance from Technical Support.

### To install the maintenance

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCMSMP)* data set member.
2. Edit your copy of WRDCMSMP, as instructed at the top of the member.
3. Save your changes, and submit the job. Check the SMP/E output.

## Verify the Installation

The *CA Datacom/AD Installation and Maintenance Guide* includes several batch jobs that you can run to verify that the AD installation is operational before customizing the environment for ReportCenter.

ReportCenter does not use the COBOL utilities used by these jobs; you should run all of these verification steps because they uncover any problems with the basic DBMS installation.

## Set Up Your CA Datacom/AD Production Jobs

To create site-standard jobs for starting, stopping, and backing up the CA Datacom/AD environment, see the recommended steps in the *CA Datacom/AD Installation and Maintenance Guide*.

The sample database startup is provided as a long running job, but this can be made a started task if this is more suitable for your site. If you plan to use a batch job to start the database, ensure that the TIME=1440 parameter is set on the execute DBMUFPR step.

## Install the ReportCenter Database

ReportCenter uses a database that is installed into the CA Datacom/AD environment. The database is used to store reporting data collected by your ReportCenter regions. This database is empty until you begin your own data collection.

**Important!** The CA Datacom/AD environment must be installed before you install the ReportCenter database. This is because the installation tasks require an active CA Datacom/AD environment.

## Start the CA Datacom/AD Environment

During the CA Datacom/AD installation tasks, you edited and saved the JCL member ADnSTRT, where *n* is the release number of CA Datacom/AD that you are using. This member starts the CA Datacom/AD environment. The environment must be running before you run any ReportCenter database installation jobs.

**Important!** You must start the MUF before performing these tasks.

## Create the ReportCenter Schema

Each database accessed by SQL in CA Datacom/AD has an SQL schema name.

To ensure that the table names used by CA NetMaster are not duplicates of any other tables, create a specific schema for ReportCenter.

### To create the ReportCenter schema in the CA Datacom/AD environment

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCM\$01)* data set member.  
This job creates the ReportCenter database schema (PRODRPTS).
2. Edit your copy of WRDCM\$01, as instructed at the top of the member.
3. Save your changes and submit the job. The expected return code is 0.

**Note:** After the ReportCenter schema is defined, you never have to add it to this AD environment again. If you run this step a second time, you receive an SQLCODE of -118 with a DSF return code of NAAE (already exists).

## Define the ReportCenter Database and Tables

The ReportCenter database is defined to the CA Datacom/AD environment by using a batch utility program that is provided with the environment. The batch utility defines the ReportCenter database (with the schema name of PRODRPTS), and the tables needed to support ReportCenter.

### To define the ReportCenter database and tables to the CA Datacom/AD environment

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCM\$02)* data set member.  
This job executes the CA Datacom/AD DDUPDATE batch utility.
2. Edit your copy of WRDCM\$02, as instructed at the top of the member.
3. Save your changes and submit the job. The expected return code is 0.

**Note:** This job may be resubmitted, as required, until it completes successfully.

After the database is defined, you should not need to define it to the environment again. You can redefine the database definition, if needed; however, this should be done only under instructions from Technical Support.

## Catalog the ReportCenter Database and Tables

When the ReportCenter database is defined, you must catalog the database definition, using the DDRTVCAT batch utility provided by the CA Datacom/AD environment. This utility validates the database definition to make sure it matches the current ReportCenter database model, and then catalogs it to the environment. After it is cataloged, the database is available for processing under the CA Datacom/AD environment.

### To catalog the ReportCenter databases and tables

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCM\$03)* data set member.  
This job executes the CA Datacom/AD DDRTVCAT batch utility.
2. Edit your copy of WRDCM\$03, as instructed in the member.
3. Save your changes and submit the job. The expected return code is 0.

**Note:** This job may be resubmitted, as required, until it completes successfully.

After the database is cataloged, you should not need to catalog it to the environment again. You can recatalog the database definition, if needed; however, this should be done only under instructions from Technical Support. Rerunning the catalog of an active database definition can cause existing data in that database's tables to be marked unusable and result in a loss of existing data.

## Allocate the ReportCenter Database Data Sets

When you have defined and cataloged the database, you must allocate a set of data sets to hold the data (and indexes) for the ReportCenter tables.

### To allocate the database data sets

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCM\$04)* data set member.  
This job executes the IBM IEFBR14 batch utility.
2. Edit your copy of WRDCM\$04, as instructed at the top of the member.

**Note:** This job contains the space allocations for all the database table files. The defaults should be sufficient for all but the largest sites. For more information, see CA Datacom/AD Space Sizing Considerations.

3. Save your changes and submit the job. The expected return code is 0.

**Note:** This job may be resubmitted, as required, until it completes successfully.



## Initialize the Data Areas and Prepare the ReportCenter Database Tables

When you have allocated the data sets, you must format them ready for use as database tables.

### To initialize the data areas and prepare the ReportCenter tables

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCM\$05)* data set member.  
This job executes the CA Datacom/AD DBUTLTY batch utility. This utility formats (INIT) each of the data sets and marks them *null* loaded (loaded with no rows).
2. Edit your copy of WRDCM\$05, as instructed in the member.
3. Save your changes and submit the job. The expected return code is 0.

**Note:** This job may be resubmitted, as required, until it completes successfully.

## Add the ReportCenter Database Constraints

Database constraints include, for example, foreign key and check constraints. These constraints function as rules that the database management system enforces to ensure the integrity of the data.

### To add the ReportCenter database constraints

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCM\$06)* data set member.  
This job executes the DBSQLPR dynamic SQL program that processes the SQL commands that add the constraints to the production and sample databases. It also primes the production database KEYRANGE table with zero values and loads the TIMEFRAME table with all the necessary valid time ranges used in report generation.
2. Edit your copy of WRDCM\$06, as instructed at the top of the member.
3. Save your changes and submit the job. The expected return code is zero.

**Note:** This job can be resubmitted, as required, until it successfully completes. When this job completes, the constraints remain in place until the table is dropped. Any attempt to add these constraints fail with an SQLCODE of -118 with a DSF Return Code of NAAE (already exists).

## Back Up the CA Datacom/AD Environment

During the CA Datacom/AD installation, you are instructed to run the database backup job. This job creates backups of the CA Datacom/AD environment, which includes everything except the data stored in the ReportCenter database. Following the successful implementation of the ReportCenter database, you must re-execute this database backup job.

**Note:** To back up the ReportCenter database, use the supplied job WRDCMUNL. To restore the ReportCenter database, use the supplied job WRDCMREL.

In addition, these jobs must be standardized for your environment and added to the regularly scheduled system backups. These backups are needed in case the system fails or you accidentally delete one of the data sets. If this occurs, contact Technical Support for assistance in restoring the required data sets.

## Set Up CA Datacom Server

The CA Datacom Server is positioned between the ReportCenter Java Task and the CA Datacom/AD environment, and provides CA NetMaster with access to its databases. A ReportCenter Java Task service sends an SQL request to CA Datacom Server. The server passes the request to CA Datacom/AD and then passes the results back to the ReportCenter Java Task.

CA Datacom Server has the following components:

### **Mainframe Server**

Runs as a job or started task. The code is installed automatically with CA Datacom/AD.

### **UNIX Systems Services Client**

Is Java and C code that the ReportCenter Java Task invokes. The code is stored as HFS files and runs in the USS environment. This code is installed with your CA Datacom/AD installation.

## Set Up Your CA Datacom Server Production Jobs

### To set up your CA Datacom Server production jobs

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDCMSVS)* data set member.  
This runs the CA Datacom Server mainframe server component.
2. Edit your copy of *WRDCMSVS*, as instructed at the top of the member. This sample is provided as a long-running job, but you can make it a started task if this is more suitable for your site.  
If you plan to use a batch job to start the server, you must ensure that the *TIME=1440* parameter is set on the execute step.
3. Save your changes.
4. Repeat the steps for the *dsnpref.NMC1.CC2DSAMP(WRDCMSVE)* data set member, which stops the server.

## Start Your CA Datacom Server

**Note:** Started task ENF must be running because this supplies all of the CCI modules required to enable the server to connect to the database.

### To start the CA Datacom Server

1. Submit the customized *WRDCMSVS* job or start the task.
2. In the *SYSPRINT*, ensure that you receive the following message:  

```
DSV00049I-CA Datacom Server Option 5.0 0000 INITIALIZED - NETMASTER
```

  
If this job does not start or initialize correctly, contact Technical Support.  
If the job fails with *CC=16*, ensure that your CA Datacom/AD job is active and has completed initialization.

## How to Migrate an Existing Database

If you are upgrading either CA Datacom/AD or ReportCenter, or both, you can use the following process to migrate your existing CA Datacom database:

1. Stop ReportCenter, the CA Datacom/AD MUF, and the CA Datacom Server.
2. Run the CA Datacom DBUTLTY EXTRACT utility to offload the data.
3. Re-initialize the CA Datacom database that ReportCenter uses.
4. Upgrade the product components using the instructions that came with the components.
5. Reload the database.
6. Restart the CA Datacom Server, the CA Datacom/AD MUF, and ReportCenter.

If constraints prevent you from carrying out the extract-reload process, you can use the following alternative method. This method is to confirm the ReportCenter tables in the existing database.

1. Stop ReportCenter, the CA Datacom/AD MUF, and the CA Datacom Server.
2. Upgrade the product components using the instructions that came with the components.
3. Run the CA Datacom DBUTLTY CONFIRM utility on the database to confirm the following table names:

```
AREA NAME REFERENCE CHART
/* -----
/* N01 = ATTRIBUTE TABLE      ATT
/* N02 = ENUMERATEDFACT TABLE  ENU
/* N03 = KEYPAGE TABLE        KEY
/* N04 = NUMERICFACT TABLE     NUM
/* N05 = PERFORMANCEAGENT TABLE PER
/* N06 = PERIOD TABLE          B22
/* N07 = RESOURCE TABLE        RES
/* N08 = TIMEFRAME TABLE       TIM
```

4. Restart the CA Datacom Server, CA Datacom/AD MUF, and ReportCenter.

**Note:** Stopping the CA Datacom Server is not always necessary. If you cannot stop the CA Datacom Server readily, contact Technical Support to see whether it is necessary in your situation.

**Note:** For information about the CA Datacom DBUTLTY utilities, see the CA Datacom DBUTLTY *Reference Guide*.

## CA Datacom Management

Before you start the ReportCenter Java Task, the MUF, and the Server jobs or started tasks must be active

Started task ENF must be active before you can make any database connections. Started task CCITCP (spawned by ENF) must also be active.

### Start CA Datacom/ AD MUF

To start the CA Datacom/AD MUF, submit the job AD $n$ STRT (or your site equivalent), where  $n$  is the the release number of CA Datacom/AD that you are using.

### Stop CA Datacom/ AD MUF

To stop the CA Datacom/AD MUF, submit the job AD $n$ STOP (or your site equivalent), or issue the MVS console command, F AD $n$ STRT, EOJ, where  $n$  is the release number of CA Datacom/AD that you are using.

### Start CA Datacom Server

To start CA Datacom Server, submit the job WRDCMSVS, or your site equivalent. This job fails if the MUF is not active or not fully initialized.

### Stop CA Datacom Server

To stop CA Datacom Server, submit the job WRDCMSVE, or your site equivalent.

If necessary, you can cancel the MUF and Server jobs from the system console.

If the CA Datacom Server or CA Datacom/AD is restarted, you must restart the ReportCenter Java Task to recover the database connections.

If you have CA SOLVE:Operations Automation, you can automate the management of these jobs.

## CA Datacom/AD Space Sizing Considerations

The CA Datacom/AD database files are sequential files allocated in install job WRDCM\$04. The database tables are in eight files. Each table has an associated table ID that CA Datacom/AD uses to reference it. The following tables show the allocations supplied in cylinders for the production (500) database. Also, there is an approximation of how many rows each table holds when fully extended, based on these allocations. Job WRDCM\$04 allocates the files with the following space allocations:

| Table ID (Name)      | Primary | Secondary | Rows          |
|----------------------|---------|-----------|---------------|
| NO 7 (RESOURCE)      | 20      | 20        | About 14000   |
| NO4 (NUMERICFACT)    | 240     | 40        | About 8000000 |
| NO2 (ENUMERATEDFACT) | 30      | 5         | About 112500  |
| NO6 (PERIOD)         | 5       | 1         | About 105000  |

**Note:** The tables above will grow and extend in your database.

| Table ID (Name)        | Primary | Secondary | Rows      |
|------------------------|---------|-----------|-----------|
| NO 1 (ATTRIBUTE)       | 1       | 1         | About 320 |
| NO8 (TIMEFRAME)        | 1       | 1         | About 25  |
| NO5 (PERFORMANCEAGENT) | 1       | 1         | About 6   |
| NO3 (KEYRANGE)         | 1       | 1         | About 4   |

**Note:** The tables will not grow beyond the supplied values in your database.

The NUMERICFACT table will expand the most. The supplied PRIMARY allocation of 240 cylinders and the SECONDARY allocation of 40 cylinders will allow this table to hold approx. 8,000,000 records when the file has expanded to its allowable 16 extents. This is based on the following formula:

240 3390 cylinders = approx. 2250000 records

40 3390 cylinders = approx. 375000 records

You can increase the PRIMARY and SECONDARY allocations for the NUMERICFACT table to suit your requirements.

# Chapter 6: Implementing USS Authorization

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This section contains the following topics:

[Implement UNIX System Services](#) (see page 63)

[Choose Your Started Task Names and User IDs](#) (see page 64)

[How to Define User IDs to UNIX System Services](#) (see page 64)

[Set HFS File Permissions](#) (see page 66)

## Implement UNIX System Services

You must implement UNIX System Services (USS) authorization for the ReportCenter Java Task, and the ReportCenter control region. This authorization controls access to HFS files and directories.

You must define the following user IDs to USS:

- The user ID associated with the ReportCenter control region
- The user ID associated with the ReportCenter Java Task

These user IDs must have the appropriate access to the following directories:

- `.../nm/reporter/wr76/...`-contains the ReportCenter SMP/E target libraries created when ReportCenter was installed; read and execute access required.
- `.../nm/reporter/usr/...`-contains the ReportCenter user files, created when your region was configured; read, write, and execute access required.
- `.../bin` and `.../lib` directories of the mainframe Java product; read and execute access required.
- Directory that contains the JDBC/SQLJ support, for example, `.../usr/lpp/db2/db2810`; read and execute access required.
- If `BPX.DAEMON` is defined, these user IDs must also have read access to the `BPX.DAEMON.HFSCCTL` facility.

Under normal operation, you do not need to define end users who want to view reports or perform report administration tasks to USS. Individual end users all assume the USS authorization of the ReportCenter control region. The two user IDs described previously perform all USS access on their behalf.

**Note:** The Security Administrator and your OMVS UNIX Administrator must perform tasks in this section.

## Choose Your Started Task Names and User IDs

You need to choose a name for the ReportCenter Java Task and determine which CA NetMaster region you want to become the ReportCenter control region.

### Java Task

You create this task in later implementation steps. It runs the ReportCenter Java code. Choose a name for this started task so you can prepare the correct security for it. Note the following:

- The name in the ReportCenter worksheet
- The CA ACF2 or RACF user ID under which this started task will run

### Control Region

You can create a region or use an existing region as the control region to perform ReportCenter control functions, including servicing requests to view reports, issuing status and report generation requests to the ReportCenter Java Task, and accessing HFS files.

**Note:** The control region must be on the same system as the database.

If you create a region, choose a name for its started task so you can prepare the correct security for it. You set up the region in later steps.

Note the RACF or CA ACF2 user ID under which this started task will run.

## How to Define User IDs to UNIX System Services

To define User IDs to USS, perform the following tasks:

1. Assign an OMVS UID.
2. Define the OMVS segment.
3. Create the home directory.

**Note:** For more information about how to define UNIX users, see IBM's *UNIX System Services Planning* guide.



## Assign an OMVS UID

Choose an OMVS UID number to associate with the user ID. Your organization may have a policy for assigning OMVS UID numbers. If not, use a unique number, for example, 123.

**Note:** See IBM's *UNIX System Services Planning* for more information about OMVS UID numbers.

## Define the OMVS Segment

The following sections show you how to define the OMVS segment to your security system for a user ID *uuuuuu* and UID number *nnn*.

*/u/user-name* is the home directory to associate with the user ID.

**Note:** For the ReportCenter user IDs, the home directory can be any directory that meets your organization's standards for home directories. It does not have to be one of the ReportCenter directories. ReportCenter uses absolute path names at all times and does not use the home directory settings.

### Define the OMVS Segment to a CA ACF2 Security Subsystem

To define the OMVS Segment to a CA ACF2 Security Subsystem, enter the following:

```
SET PROFILE(USER) DIV(OMVS)
INSERT uuuuuu UID(nnn) HOME(/u/user-name) PROGRAM(/bin/sh)
```

After the segment is secured, enter the following to confirm its contents:

```
SET PROFILE(USER) DIV(OMVS)
LIST uuuuuu
```

### Define the OMVS Segment to a CA Top Secret Security Subsystem

To define the OMVS Segment to a CA Top Secret Security Subsystem, enter the following:

```
TSS ADD(uuuuuu) HOME(/u/user-name) OMVSPGM(/bin/sh) UID(nnn) GROUP(OMVSGRP)
```

After the segment is secured, enter the following to confirm its contents:

```
TSS LIS(uuuuuu) DATA(ALL)
```

## Define the OMVS Segment to a RACF Security Subsystem

Define the OMVS Segment to a RACF Security Subsystem, enter the following:

```
ALU uuuuuu OMVS(UID(nnn) HOME(/u/user-name) PROGRAM(/bin/sh))
```

After the segment is secured, enter the following to confirm its contents:

```
LISTUSER uuuuuu OMVS NORACF
```

## Create the Home Directory

Create the `/u/user-name` home directory. Ensure that the UID has the appropriate access to it. Generally, users require write access to their home directories.

### Example: Create Home Directory

To set up a directory called `/u/user01` for the user ID 123, issue the following commands:

```
mkdir /u/user01  
chown 123 /u/user01  
chmod 0777 /u/user01
```

You can then confirm the owner and access to the directory by using the following command:

```
ls -l -d /u/user01
```

## Set HFS File Permissions

The HFS permissions with which the ReportCenter directories and files are installed and created are intended to allow immediate and unrestricted use of the product. Do not alter any ReportCenter file permissions until the product has been operational for some time to understand its access requirements. In many organizations, changes to the default permissions is not required.

The HFSSECURITY Customizer parameter group can be updated to enable HFS user security. User security means that the security settings of an individual ReportCenter user's user ID, instead of the common task user IDs, are used for HFS access.

Enabling user security lets you implement specific authorization for individual users. You must do this for all users (although the authorization can be different for different users). You must set up appropriate access permissions for all ReportCenter files and OMVS definitions for all ReportCenter users. Do not consider using user security unless you have established a genuine need for this feature.

**Important!** Before you implement user-level security, you must have a high level of expertise in specifying UNIX file permissions, and a full understanding of ReportCenter operation and the ReportCenter HFS structure. HFS file permission settings affect whether a user can perform functions such as viewing, scheduling, and deleting reports.

You can also restrict access to certain reports to certain users through web portal software-workgroup implementations.



# Chapter 7: Installing ReportCenter

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This section contains the following topics:

[HFS Code](#) (see page 69)

[Install the CA NetMaster Product and Set Up the Control Region](#) (see page 69)

[Apply CA NetMaster Product Maintenance](#) (see page 70)

[Provide an HFS directory for ReportCenter Use](#) (see page 70)

[Verify UNIX System Services Security Requirements](#) (see page 70)

[Installation Overview](#) (see page 71)

[Generate the ReportCenter Installation JCL](#) (see page 71)

[Submit the ReportCenter Installation JCL](#) (see page 72)

[Verify the ReportCenter Installation](#) (see page 73)

## HFS Code

ReportCenter code resides in the following locations:

### **PDS and VSAM data sets**

The ReportCenter control region and data regions use this code. It is installed when you install your CA NetMaster product, and is available to all product regions.

### **USS HFS directories**

This code includes executable Java code, report definitions, and control files. The ReportCenter control region and the ReportCenter Java Task use this code.

Installing the ReportCenter HFS code follows a similar process to installing your CA NetMaster product. You use the same CA Install Utility. The Install Products option of this utility collects your site-specific values such as the HFS directory path name. It then uses these values to generate the jobs that install the ReportCenter HFS code.

## Install the CA NetMaster Product and Set Up the Control Region

Before installing the ReportCenter HFS code, you must do the following:

- Complete the CA NetMaster product installation
- Decide which CA NetMaster region to use as the ReportCenter control region
- Complete setup and customization of that region

See the *Installation Guide* and ensure that you have completed the tasks in that guide.

## Apply CA NetMaster Product Maintenance

You install ReportCenter from the same product tapes as your CA NetMaster product so that ReportCenter and your product are at the same service pack maintenance level.

If you plan to use more recent product tapes, at a later service pack maintenance level, for the ReportCenter installation, you must apply all maintenance from those tapes to your products before installing ReportCenter.

**Note:** For more information about applying maintenance, see the *Installation Guide*.

## Provide an HFS directory for ReportCenter Use

ReportCenter requires space in an HFS. During installation, you must specify the name of an HFS path. This path is where SMP/E installs the ReportCenter code. In addition, ReportCenter stores runtime and user files in the HFS.

Depending on your organization's requirements, you may install the ReportCenter code into an existing HFS or a new HFS. The HFS path name must not include quotes or spaces.

If you do not have ready access to a suitable HFS, ask your UNIX System Services administrator to implement one for ReportCenter.

**More information:**

[HFS Directory Structure](#) (see page 177)

[Hierarchical File System Considerations](#) (see page 171)

## Verify UNIX System Services Security Requirements

The user ID installing ReportCenter must have authorization to use UNIX System Services. The installation process includes creating and populating HFS directories.

Ask your security administrator to define UNIX System Services authorization for the SMP/E program name and the TSO user ID of the user who will submit the installation JCL.

**More information:**

[Hierarchical File System Considerations](#) (see page 171)

---

## Installation Overview

The installation process is done with *one* of the following:

### CA Mainframe Software Manager CA MSM

This manager provides a web interface that simplifies and unifies the management of CA mainframe products on z/OS systems. As other CA products adopt this level of standardization, you can acquire, install, and maintain them in a common way.

If you choose to use this method, complete the required tasks in the *CA Mainframe Software Manager Product Guide* and then continue with the section [Setting Up Your ReportCenter Control Region](#) (see page 75).

### Install Utility

This utility installs the product into an IBM System Modification Program Extended (SMP/E) environment. The utility collects your site-specific values such as data set prefixes, DASD volume serial numbers, and JCL parameter values. It then uses these values to generate the jobs necessary to perform the installation of your product.

If you choose to use this method, see the section [Generate the ReportCenter Installation JCL](#) (see page 71).

## Generate the ReportCenter Installation JCL

To install ReportCenter, provide the HFS directory path name. The Install Utility uses this information to generate the ReportCenter installation JCL.

### Follow these steps:

1. At the ISPF/PDF TSO command prompt, execute the following command:

```
EXEC 'dsnpref.NMC1.CC2DJCL(INSTALL)'
```

*dsnpref.NMC1.CC2DJCL* is the utility that you used to install your CA Mainframe Network Management product.

The Install Utility panel appears.

2. Press Enter.

The Install Utility Primary Menu panel appears.

3. Enter **2** (Install Products).

The INSTALLATION Primary Menu panel appears.

4. Enter **1** (Select Products to Install).

The INSTALLATION Product Selection panel appears.

5. Enter **S** next to ReportCenter, and press Enter.

The INSTALLATION Product Confirmation panel appears to confirm your selections.

6. Press Enter, and complete each of the INSTALLATION panels as they are displayed.

The various INSTALLATION panels ask you for the following information, among other things:

- An HFS path name for the ReportCenter directory on the INSTALLATION ReportCenter HFS Information panel. This directory is used as the SMP/E target library for ReportCenter.
- A name for the Installation JCL data set on the INSTALLATION JCL Library Creation panel. The generated installation jobs are placed in this data set. The default name is *dsnpref.NMC1.INSTALL.JCL*. To ensure that ReportCenter has its own dedicated installation JCL data set, change this name to another name, such as *dsnpref.NMC1.INSTALL.JCL.WR*. Note the name.

**Note:** For information about the fields, press F1 (Help).

7. When the INSTALLATION JCL Generation - Confirmation panel appears, press Enter. The JCL is generated.

## Submit the ReportCenter Installation JCL

**Important!** Do not proceed with this step until ReportCenter's HFS directory is implemented and permanently mounted. If it is not, your installation jobs fails. Run the installation jobs on a system that has this HFS mounted for read/write access.

### To submit the ReportCenter Installation JCL

1. Run the ReportCenter jobs from the ReportCenter Installation JCL data set in the following order:

**Note:** Do not proceed with any job until the previous job completes successfully. Each job should return condition code 0 unless otherwise indicated.

#### I21ALLWR

The SMP/E data sets are allocated.

#### I22INIWR

The SMP/E data sets are initialized with ReportCenter's SYSMOD details, DDDEFs, paths, and so on.

#### I23RECWR

ReportCenter is SMP/E received. This job requires tape processing if installing from tape.

#### I26APPWR

ReportCenter is SMP/E applied. This job populates the HFS target library (TLIB).



**I27ACCWR**

ReportCenter is SMP/E accepted. The SMP/E distribution library (DLIB) for the HFS target library is a z/OS data set.

2. Press F3.

The Install Utility Primary Menu appears.

## Verify the ReportCenter Installation

After successful installation, you can look at the installed files in the ReportCenter HFS directory. Use the standard TSO OMVS commands to list the directory contents. It should contain files as described in HFS Directory Structure.



# Chapter 8: Setting Up Your ReportCenter Control Region

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This section contains the following topics:

[ReportCenter Control Region](#) (see page 75)

[Generate the ReportCenter Control Region Setup JCL](#) (see page 75)

[Submit the ReportCenter Control Region Setup JCL](#) (see page 77)

[Verify the ReportCenter Control Region Setup](#) (see page 78)

## ReportCenter Control Region

After you install the ReportCenter HFS code, make it accessible to the ReportCenter control region.

Setting up your ReportCenter control region follows a similar process to setting up the region for the first time. You use the same Install Utility. The Setup a Product Region option of this utility collects region-specific values. The option uses these values to generate the jobs that add the ReportCenter feature to the existing region, and identify the ReportCenter HFS directory to the region.

You can set up a region that includes any of the following products as a ReportCenter control region:

- CA NetMaster NM for TCP/IP
- CA NetMaster FTM

If you are not using IBM's Type 4 JDBC Universal driver, the ReportCenter control region must be on the same system as the ReportCenter database.

## Generate the ReportCenter Control Region Setup JCL

**Note:** If you use CA MSM to deploy the software on different systems before you perform the setup, you must use the Install Utility on a target system to perform the setup on that system.

**Follow these steps:**

1. At the ISPF/PDF TSO command prompt, execute the following command:

```
EXEC 'dsnpref.NMC1.CC2DJCL(INSTALL)'
```

The Install Utility panel appears.

2. Press Enter.

The Install Utility Primary Menu panel appears.

3. (Optional) If you have installed the product using CA MSM, perform the following steps:

- a. Enter **1**.

The Software Delivery Method panel appears.

- b. Complete the panel:

- Enter **S** next to CA MSM.
- Specify the name of the CSI data set that is used during product installation in the SMP/E CSI Used field.

- c. Press Enter.

4. Complete each of the panels as they open. Press Enter at the completion of each panel. Complete all panels. You can take the default options or can specify site-specific values.

5. From the Install Utility Primary Menu panel, enter **5** (Setup a Product Region).

The SETUP Product Region Primary Menu panel appears.

6. Enter **4** (Add products and/or additional features to a region).

The SETUP Specify Product Region Source panel appears.

7. Enter **S** next to the region you want to make a ReportCenter control region.

8. From the SETUP Additional Products Selection panel, enter **S** next to ReportCenter.

**Important!** Do not set up any other products or features at the same time as ReportCenter; do these setups separately.

9. Complete each of the SETUP panels as they are displayed.

The SETUP JCL Library Creation panel asks you for a name for the Setup JCL data set.

The installation process places the generated setup jobs in this data set. If you installed from tape or with ESD, the default name is *dsnpref.NMC1.rname.JCL*, where *rname* is the region name. If you installed with CA MSM, the default name is *dsnpref.rname.JCL*. To ensure that ReportCenter has its own dedicated setup JCL data set, change this name to another name, such as *dsnpref.NMC1.rname.JCL.WR*. Note the name.

**Note:** For more information about the fields, press F1 (Help).

10. When the SETUP JCL Library Generation panel appears, press Enter.

The JCL is generated.

## Submit the ReportCenter Control Region Setup JCL

Your setup JCL data set contains the following jobs:

### **S01LCALC**

Allocates the region-specific (local) data sets.

### **S02SHALC**

Allocates the shared runtime data sets.

### **S03LDVIP**

Loads the shared runtime data sets.

### **S04LDVSM**

Loads the local VSAM data sets from the product-specific sequential data sets.

### **S05LDPDS**

Copies the PDS members to *dsnpref.rname*.TESTEXEC and *dsnpref*.PARMLIB for use by the product region.

**Note:** The member name for IIPARMS includes the domain ID, so appears as *IAdmid*.

### **S06MIGRT**

Copies any site-specific VSAM data from an earlier release.

Setting up the ReportCenter control region differs to setting up this region for the first time because instead of creating a new region, you are adding to an existing one. ReportCenter requires no additional local or runtime data sets, or VSAM data; therefore, although the setup software has generated the jobs, most of them are dummy jobs and do not need to be run.

### **To submit the jobs**

1. Submit and run only the S05LDPDS job. It should complete with a condition code of 0.

**Important!** The job copies the PDS members to the *dsnpref.rname*.TESTEXEC and *dsnpref*.PARMLIB data sets for use by the product region. Because you are adding this feature to an existing region, the RUNSYSIN and IIPARMS members are overwritten.

2. Press F3.
3. Enter **X** to exit the Install Utility.

## Verify the ReportCenter Control Region Setup

### To verify the ReportCenter control region setup

1. (Optional) If you moved the RUNSYSIN member to a more secure data set when you first set up your product region, move the new RUNSYSIN member to that secure data set.
2. Start or restart the region.
3. Log on to the region.
4. Enter **CMD** to display the Command Entry panel.
5. Enter the **ST** command. Verify that the N11414 message is returned.
6. Enter **REPTEST CHK**. Verify that the following message is returned:  
WRST0000 ReportCenter Function Test on *rname* (Dormant Control Region)

# Chapter 9: Customizing ReportCenter Regions

---

This section contains the following topics:

[ReportCenter Regions](#) (see page 79)

[ReportCenter Communication and Connections](#) (see page 81)

[ReportCenter and the Sockets Interface](#) (see page 81)

[Customize the ReportCenter Control Region](#) (see page 82)

[Customize a ReportCenter Data Region](#) (see page 83)

[Customize the Web Interface Port](#) (see page 83)

[ReportCenter Processing Overview](#) (see page 84)

## ReportCenter Regions

ReportCenter uses the following CA NetMaster regions:

- A ReportCenter control region
- One or more data regions

The ReportCenter control region and Java Task must be on the same system. If you are not using IBM's Type 4 JDBC Universal driver, the database must also be on the same system.

The simplest configuration is a single CA NetMaster region that acts as both the ReportCenter control region and the data region.

## ReportCenter Control Region

The ReportCenter control region is the CA NetMaster region that performs all ReportCenter external functions. These functions include servicing requests to view reports, issuing status and report generation requests to the ReportCenter Java Task, and accessing HFS files. This ReportCenter control region must be on the same system as the database.

The ReportCenter control region does not access the database directly; only the ReportCenter Java Task does. The control region requests and controls the database activity performed by the ReportCenter Java Task.

If your organization runs, for example, physically separate testing and production environments, with a database on each, then you require two ReportCenter control regions—one for the production environment and one for the testing environment.

ReportCenter uses only one set of HFS directories, accessed by the control region and the Java Task. The data regions do not access them.

## Data Regions

A data region is a CA NetMaster region that collects and sends data to the ReportCenter Java Task. How and what data is collected depends on the products running in the region, and what data you choose to send.

Data collection regions can be on the same system as the ReportCenter control region or on a different system. Data regions do not need to link to each other or to the control region. A data region establishes a TCP/IP socket connection for sending data to the ReportCenter Java Task. When this connection is established, collected data is sent directly from the data region to the Java application.

The ReportCenter control region can and usually does function as a data region.

**Important!** If you have more than one data region on the same system, ensure that they are not collecting data for the same devices.



## ReportCenter Communication and Connections

ReportCenter does not require or use any existing CA NetMaster inter-region multisystem links.

ReportCenter works independently of any CA NetMaster multisystem configuration, and does not need any multisystem configuration.

The ReportCenter control region can be a focal, subordinate, or unlinked standalone region.

The ReportCenter control and data collection regions do not need to be linked and synchronized.

Communication between the ReportCenter control region, data regions, and the ReportCenter Java Task is done using dedicated TCP/IP socket connections.

## ReportCenter and the Sockets Interface

Report Center requires that the region's TCP/IP sockets interface is active. This is set in the \$NM SOCKETS Customizer parameter group (**/PARMS**). This parameter group should have been completed and actioned as part of the region implementation.

ReportCenter uses TCP/IP socket connections between the NM RC Control Region and the Java Task to establish connections for transferring information. If there is no connection through TCP/IP, error messages appear in the NetMaster Activity Log, and the Java Task may appear not to be working, or may actually stop.

Use the OCS SELFTEST command to check the sockets interface.

## Coexistence with TCP/IP Version 6

CA NetMaster NM for TCP/IP monitors IPv6 network activity, sends IPv6 performance data to ReportCenter, and uses an IPv6 network to perform management functions when necessary. Some internal functions in CA NetMaster NM for TCP/IP, such as the socket connection between the ReportCenter Java Task and ReportCenter regions, continue to use IPv4.

## Customize the ReportCenter Control Region

Use the REPORTCENTER Customizer parameter group in the CA NetMaster region to generate the ReportCenter Java Task parameters and JCL procedures, create the ReportCenter HFS user directories, and set up the interface to allow communication between the data regions and the Java Task.

### To configure the ReportCenter control region

1. In the CA NetMaster region, enter **/PARMS** to list the parameter groups.  
The Customizer : Parameter Groups panel appears.
2. Enter **U** beside the REPORTCENTER Customizer parameter group.
3. Complete the fields. Press F8 (Forward) to scroll through the panels. Press F1 (Help) for more information.

**Note:** Refer to the items in your ReportCenter implementation worksheet to complete the panels.

4. Specify when you want the ReportCenter housekeeping and expiry services to run.

**Note:** These services use the database; do not schedule them when the database is likely to be unavailable due to maintenance.

5. Enter the type of database, DATACOM or DB2, you are running in the Mainframe SQL Database Type field.
6. Complete the details for the specified database. Press F1 (Help) for more information.

When you finish customizing the parameter group, press F6 (Action) to set the parameters immediately, and then press F3 (File) to save your changes. The group should initialize with no errors.

#### Notes:

- The first time you action this group on the control region, it creates and customizes the ReportCenter HFS directories and files. Most errors at this stage result from file permission problems. Other common errors are invalid Java or JDBC directory or file names. The file system must be mounted permanently and accessible on the system.
- HFS files Adaptor.ini and Adaptor.bat may be overwritten or updated when you action the \$WR REPORTCENTER Customizer parameter. If you have made any manual changes to these files, you will have to redo them. Generally, you should not edit these files unless instructed to do so by Technical Support.

7. Enter **U** beside the WEBCENTER parameter group.
8. Review the field values.
9. Press F6 (Action) to register ReportCenter to WebCenter, and then press F3 (File) to save any changes you made.

**More information:**

[ReportCenter Path Names](#) (see page 177)

## Customize a ReportCenter Data Region

**To customize a ReportCenter data region**

1. In the CA NetMaster region, enter **/PARMS** to list the parameter groups.  
The Customizer : Parameter Groups panel appears.
2. Enter **U** beside the REPORTDATA parameter group.  
Enter the IP host name or address of the ReportCenter Java Task in the ReportCenter Data Feed Destination fields. **Note:** Press F1 (Help) for more information.
3. When you have finished customizing the parameter group, press F6 (Action) to set the parameters immediately, and then press F3 (File) to save your changes.

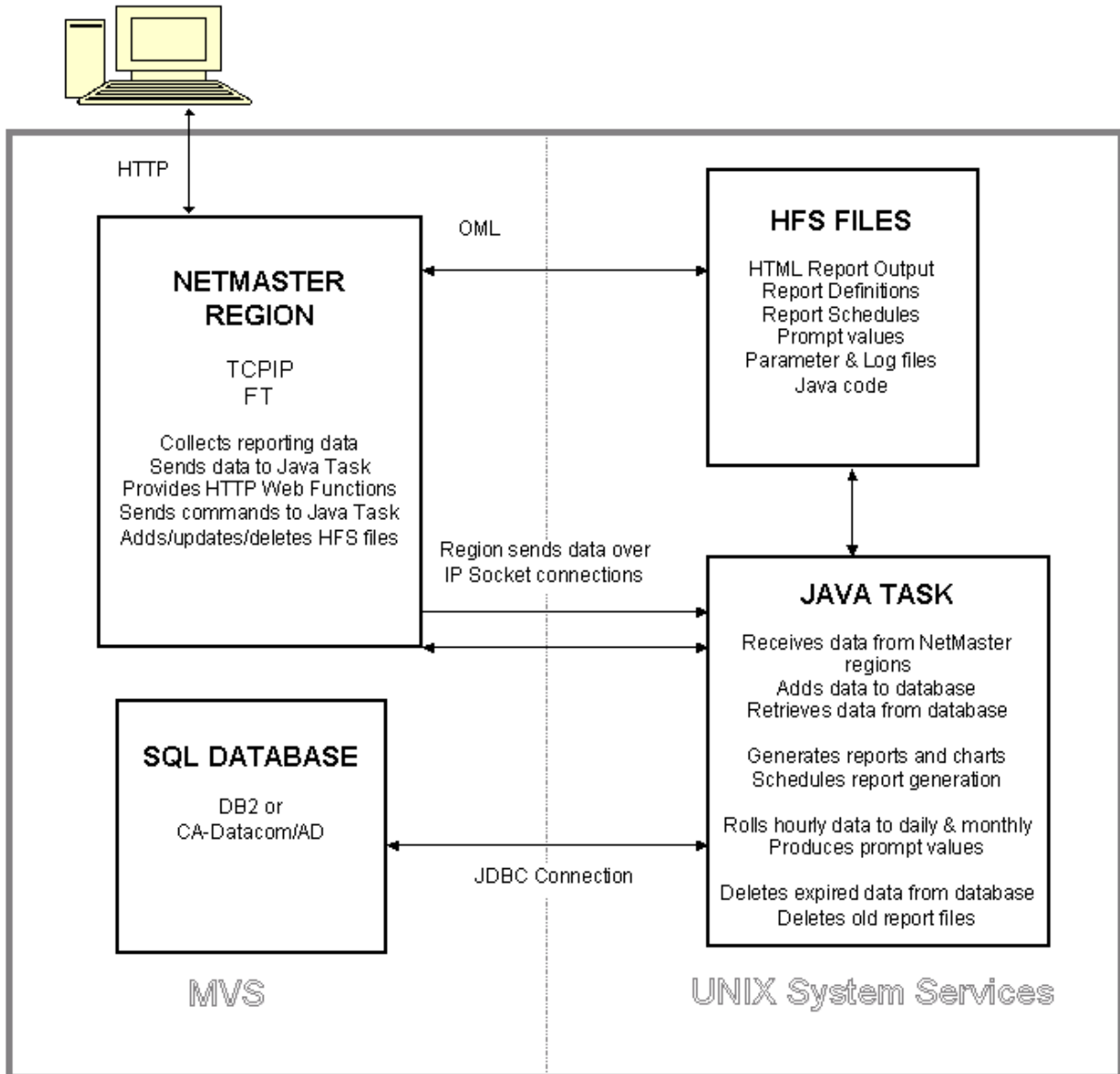
**Important!** Before you can run reports against your data, you must set up your regions to [collect and send the data you want to ReportCenter](#) (see page 110).

## Customize the Web Interface Port

Users access ReportCenter through the WebCenter web server running on the ReportCenter control region, using a web browser. You must ensure WebCenter is active by implementing a port in each region that you want to use as an access point. Review the WEBCENTER parameter group (\$NM WEBCENTER) in a region to ensure that the port is implemented. The Access URL field shows the uniform resource locator (URL) for web access. Communicate this URL to the users.

## ReportCenter Processing Overview

The following diagram shows a typical configuration:



# Chapter 10: Running the ReportCenter Java Task

---

**Important!** Do not commence this chapter until you have successfully completed all of the tasks in the previous chapters.

This section contains the following topics:

[How to Activate and Verify ReportCenter Operation](#) (see page 85)

[Start the ReportCenter CA Datacom Database](#) (see page 86)

[Start the ReportCenter DB2 Database](#) (see page 87)

[Start the ReportCenter Control Region](#) (see page 87)

[Save the ReportCenter Java Task JCL](#) (see page 90)

[Start the ReportCenter Java Task](#) (see page 90)

[Check the Timeframe and Prompt Generator Services](#) (see page 97)

## How to Activate and Verify ReportCenter Operation

The interaction of the control region, the ReportCenter Java Task, and the database forms the core of ReportCenter processing.

**Important!** Do not proceed with the next step until the previous step has succeeded.

To activate and verify ReportCenter operation, perform the following steps:

1. Start the database.
2. Start the control region, and check its initialization.
3. Save the ReportCenter Java Task JCL.
4. Start the ReportCenter Java Task, and check its initialization.
  - Check socket communication between the control region and the ReportCenter Java Task.
  - Check JDBC communication between the ReportCenter Java Task and the database.
5. Check the Timeframe and Prompt Generator services.

**Note:** You may need OMVS access to HFS files for some of these steps.

## Start the ReportCenter CA Datacom Database

Ensure that all the associated started tasks and long-running jobs are active for the following:

- CA Common Services ENF
- CA Common Services CCI (spawned by the ENF started task)
- CA Datacom MUF
- CA Datacom Server

**Note:** Ensure that the MUF is active and completely initialized before the Server job is submitted; otherwise, it fails.

### What to Look For

You should see JOBLLOG messages similar to the following for the MUF:

```
DB00201I - MULTI-USER ENABLED, CXX=AD11CXX MUFNAME=MUFLSTRT SVC=nnn AD
DB00212I - SQL ENVIRONMENT ESTABLISHED
DB00215I - CA Datacom/DB Database r11 at service pack: SP04
```

You should see JOBLLOG messages similar to the following for the server:

```
DSV00049I-CA-Datacom Server 5.0 SP01 INITIALIZED -NETMASTEX
```

### Common Problems

Ensure that the MUF and the server jobs remain active. A frequent situation is an undetected server job failure, usually with condition code 16. This occurs if you submit this job before the MUF job is completely initialized. Allow enough time between submitting each job.

If either of these jobs do not run or remain active, ensure that you have completed the CA Datacom/AD implementation steps correctly.

Incorrect implementation of the CA Datacom SVC can result in abends when the MUF job is started.

The MUF job must have an adequate region size. The default region size of CA Datacom/AD of 6144 KB is suitable when CA Datacom/AD is used only as a hierarchical database. ReportCenter uses the CA Datacom/AD relational database features, and the default region size is not adequate. You may need to increase it to approximately 50 MB.

## Start the ReportCenter DB2 Database

Ensure that all the associated started tasks and long-running jobs are active for the following:

- DB2 subsystem where the ReportCenter database is defined
- RRS

To verify that the DB2 subsystem is ready for use, contact your DB2 database administrator. If any problems occur, ensure that you completed the DB2 implementation steps correctly.

## Start the ReportCenter Control Region

If the control region is not active, start it. Verify that the REPORTCENTER parameter group, which you updated and saved when you customized the ReportCenter region, initialized with no errors.

### To start the ReportCenter control region

1. Enter **/PARMS** at the prompt.

The Customizer : Parameter Groups panel appears.

2. Enter **L (Log)** beside the REPORTCENTER parameter group.

The Customizer : Initialization Log for the REPORTCENTER group appears.

**Note:** Initialization log messages are also written to the activity log of the region.

If the REPORTCENTER parameter group initialization fails, correct the errors, updating the parameter group if necessary, and apply the parameter group again.

**Important!** Do not proceed further until this group initializes successfully.

## What to Look For

You should see the following message at the end of the initialization log:

```
IAIN0178 Processing for parameter group $WR REPORTCENTER ended, status is COMPLETED
```

Successful REPORTCENTER parameter group processing creates or updates the following:

- User directory and subdirectories, if they do not already exist.
- Adaptor.ini file. This contains the parameters for the ReportCenter Java Task.
- NMJAVA.JCL file. This contains the JCL to run the ReportCenter Java Task.

- Adaptor.bat file. This invokes the ReportCenter Java code
- Prompts.ini file. This contains the SQL statements required to generate prompt files from your database.

## Common Problems

The REPORTCENTER parameter group values come from many disparate sources, and the group does considerable processing.

Review the help for all failure messages in the initialization log, and check the activity log for additional error details. The most frequent problem areas are described here.

### SMP/E Target Library HFS Directory Path Name

You cannot update this path name through the REPORTCENTER parameter group. The name is passed to ReportCenter from the *dsnpref.PARMLIB*(IIAPARMS) member, parameter WRHFS1.

By default, this is the library that ReportCenter runs from, and it is the library into which SMP/E maintenance is installed.

Consider the following:

- Ensure that the file system supporting this directory is mounted on this system.
- Ensure that the user ID associated with this region has USS access and read/execute permissions to this directory and its contents.
- Check the directory and file permissions, and the USS authorization of the user ID associated with this region.
- Ensure that you completed all the ReportCenter installation tasks successfully. This directory is created during installation.
- Ensure that you completed all the ReportCenter control region set up tasks successfully. This directory path name is passed to the REPORTCENTER parameter group during setup.
- Check the *dsnpref.PARMLIB*(IIAPARMS) member.



## User Code HFS Directory Path Names

Consider the following:

- Ensure that the file systems supporting these directories are mounted for read/write on this system.
- Ensure that the user ID associated with this region has USS access and read/write/execute permissions to these directories. The REPORTCENTER parameter group creates many subdirectories and files in these directories.
- Check the directory permissions and the USS authorization of the user ID associated with this region.

## Java Command Directory Path Name

Consider the following:

- Ensure that the file system supporting this directory is mounted on this system.
- Ensure that you completed all of the z/OS mainframe Java implementation tasks successfully.
- Contact your systems programmer and verify the path name.

## DB2 JDBC Environment Variables

These variables contain the following:

- DB2 JDBC DLL directory path name
- DB2 JDBC link and load directory path name
- DB2 JDBC class file or directory path name
- DB2 JDBC STEPLIB load library data set names
- DB2 JDBC properties file path name

Consider the following:

- Ensure that these directories and files are mounted on this system.
- Ensure that you completed all of the DB2 implementation tasks successfully.
- Contact your DB2 database administrator and verify these path and data set names.

## CA Datacom JDBC Environment Variables

These variables contain the following:

- CA Datacom JDBC DLL and shared object directory path name
- CA Datacom JDBC class file path name

Ensure that you completed all of the ReportCenter installation tasks.

## Save the ReportCenter Java Task JCL

When the REPORTCENTER parameter group initializes successfully, it creates the JCL procedure that runs the ReportCenter Java Task MVS started task.

The JCL is written to *?iia\_prefix/nm/reporter/usr/adaptor/nmjava.JCL*, where *nmjava* is the task name you specified in the REPORTCENTER parameter group. The JCL is also written to the activity log.

To save the ReportCenter Java Task, cut and paste the JCL from the file or activity log and save it as the *nmjava* member in your MVS PROCLIB data set.

The user ID that owns the ReportCenter Java Task must have the following privileges:

- Appropriate DB2 authority levels
- At least recursive read and execute permissions to the SMP/E target library directory
- Recursive read, write, and execute permissions to all the user directories

The *nmjava* JCL executes the USS BPXBATCH utility, which runs the generated Adaptor.bat file to invoke the ReportCenter Java code. Typical JCL looks similar to the following:

```
//PROD44JV PROC
//*-----
//* NetMaster ReportCenter Java Task PROD44JV on XE44
//* JCL generated by NetMaster region A44DEN44 on 04-AUG-2008 22.37.32
//*-----
//NMJAVA EXEC PGM=BPXBATCH,REGION=0M
//STDIN DD PATHOPTS=(ORDONLY),
// PATH='/u/users/prod/prod44/nm/reporter/usr/adaptor/Adaptor.bat'
//STDOUT DD PATHOPTS=(OWRONLY,OCREAT,OTRUNC),
// PATHMODE=(SIRWXU,SIRWXG,SIRWXO),
// PATH='/u/users/prod/prod44/nm/reporter/usr/adaptor/stdout.txt'
//STDERR DD PATHOPTS=(OWRONLY,OCREAT,OTRUNC),
// PATHMODE=(SIRWXU,SIRWXG,SIRWXO),
// PATH='/u/users/prod/prod44/nm/reporter/usr/adaptor/stderr.txt'
//*----- END OF GENERATED JCL -----
```

## Start the ReportCenter Java Task

Start the ReportCenter Java Task from the MVS console. Be aware that this started task runs in the USS environment and may generate several spawned tasks.

## What to Look For

Consider the following:

- The task must remain active, that is, it does not fail with a JCL error or terminate itself after a few minutes.
- If the task remains active, you must also ensure that it initialized correctly and connected to the database. To do this, enter the **REPTEST** command from OCS in the ReportCenter control region. This runs tests on a variety of ReportCenter components.

Successful tests indicate the following:

- The ReportCenter Java Task initialized successfully.
- The ReportCenter Java Task is communicating with the ReportCenter control region.
- The JDBC connection between the ReportCenter Java Task and the ReportCenter database is active. If a test produces errors, then you must investigate and correct the causes. You may need to update and reapply the REPORTCENTER parameter group, and make changes to external components such as databases, HFS directories and permissions, or security.

The REPTTEST error messages provide more help. Place your cursor on an error message and press F1 (Help).

**Note:** The tests may produce large numbers of Java Task error messages at this initial stage. Common implementation problems can cause many errors to result from a single simple cause.

Do not proceed with any additional tasks until all tests complete successfully.

## Common Problems

For most ReportCenter Java Task problems, you need to look for further error details. Depending on the nature of the problem, error messages can appear in some or all the following locations:

- The ReportCenter Java Task UNIX STDOUT and STDERR HFS files

Use the **REPTTEST JAVAFW** OCS command or browse the following files:

```
?prefix2/nm/reporter/usr/adaptor/stderr.txt  
?prefix2/nm/reporter/usr/adaptor/stdout.txt
```

- The ReportCenter Java Task log HFS file  
Browse the *?prefix2/nm/reporter/usr/Adaptor<sup>nnn</sup>.log* file, but be aware that if the failure is early, this file may not be created or updated yet.
- The SDSF system console log
- The ReportCenter Java Task SDSF job log

**Note:** The activity log of the region does not contain any information from the ReportCenter Java Task. The region and the task are in separate address spaces.

## Task Fails with JCL Error

The most frequent causes of JCL errors are the following:

- At least one of the path names specified in the JCL does not exist on the system on which the task started. Verify that the path names are correct, mount the file system if necessary, and start the task on the correct system.
- The Java command cannot be invoked, as indicated by the following STDERR message:

```
FSUMnnnn java not found
```

Review and correct the specification of the Java command directory path name. From this directory, enter **java -version**.

## Task Fails with MVS Abend

This happens very infrequently, usually caused by underlying error conditions in the MVS software components such as LE, JVM, USS, DBMS, or security system.

## Task Terminates with No External Error

The most frequent causes of the ReportCenter Java Task failing include the following. These are usually indicated in the ReportCenter Java Task log.

### **Class not found**

Review the specification of the SMP/E target library directory, the database JDBC directory, and all class file names. ReportCenter specifies its Java class path explicitly at runtime with the `-cp` option. It does not set or use the `CLASSPATH` environment variable. To see the directories and files in the class path, browse the generated `Adaptor.bat` file.

System class not found may indicate an error with the JVM implementation. Verify the correct installation and implementation of your mainframe Java product.

`ClassNotFoundException` indicates that the class is not found at runtime.

`NoClassDefFoundError` indicates that the class is found at runtime; however, the class imports another class, which, while present at compile time, is not found at runtime.

### **User ID not authorized**

If the associated user ID is not defined correctly to your security system, errors or other failures can result.

### **Unknown host exception error**

A Java `getLocalHost` function fails to return the IP address of the local host, as indicated by a message similar to the following in the ReportCenter Java Task log:

```
Adaptor initialisation failed with exception java.net.UnknownHostException  
?hostname
```

This often indicates problems with the name server setup. Creating or updating the `/etc/hosts` file with the IP address and name of the local host usually corrects this problem.

### ReportCenter Java Task terminates

Indicated by a message similar to the following in the ReportCenter Java Task log:

```
*****  
Java framework terminating due to error: error details  
Please correct the condition and restart.  
*****
```

The ReportCenter Java Task terminates when it detects a fatal condition that stops it doing any useful processing. Usually, these are database-related conditions. ReportCenter terminates to avoid wasting resources on repeated and unsuccessful database connection attempts. Following are some common terminal conditions. Rectify the condition, and start the task again.

- DBMS (DB2 subsystem or CA Datacom MUF) is not active.
- ReportCenter database is not defined correctly or accessible.
- Required component such as RRS or CA Datacom Server is not active.
- User ID is not permitted to access database. Look for SQL -551 errors.
- RRS security setup errors are encountered-'RRSAF not authorized.'
- Serious JDBC errors are encountered.
- IP Sockets interface is unavailable or is experiencing problems.

## USS Commands

A few of the most useful commands for ReportCenter problem diagnosis are described here.

Most UNIX shell commands are accepted. Useful commands include the following:

- `cd` and `pwd` (changes directory and displays current directory)
- `obrowse` and `oedit` (browses and edits file)
- `ls` and `ls -l` (lists directories and files)
- `grep`, `egrep`, and `fgrep` (finds text in a file)
- `chmod` (changes the access permissions of a file)
- `df -P directory-mount-point` (shows the percentage space used and available in the HFS file system)

**Note:** You may need changes to your TSO user ID or profile to access these commands; if so, contact your systems programmer.

## obrowse Command

Use this command to browse an HFS file.

This command has the following format:

```
obrowse pathname/file
```

### Example: obrowse Command

```
obrowse ?ics_prefix2/nm/reporter/wr76/usr/adaptor/Adaptor.ini
```

## ishell Command

Use this command to display a selection list of the objects in a directory. You can enter Browse, Edit, List, and other commands next to an object.

This command has the following format:

```
ishell directory-pathname
```

### Example: ishell Command

To see how many logs files there are and select one for browsing, enter the following command:

```
ishell /u/users/ca/nm/reporter/wr76/usr/logs
```

### Example: ishell Command

To see the Java Task control and output files, enter this command:

```
ishell /u/users/ca/nm/reporter/wr76/usr/adaptor
```

## omvs Command

Use this command to invoke the shell command line interface.

This command has the following format:

```
omvs
```

## Browse the ReportCenter Java Task Log

You can browse the log by using WebCenter or USS.

To browse the Log using WebCenter, select ReportCenter, Java Task Log from the WebCenter Menu. For space reasons, this shows only the most recent entries in the log.

To browse the log using USS, enter the following command from TSO or OMVS:

```
obrowse /?ics_prefix3/nm/reporter/wr76/usr/logs/Adaptor001.log
```

*obrowse* has the advantage of displaying the entire log file, and being more easily searchable.

### Notes:

- For information about z/OS UNIX Interactive Interfaces and z/OS UNIX File Systems, see IBM's *Introduction to the New Mainframe: z/OS Basics*.
- For more information about UNIX System Services, see IBM's *UNIX System Services Command Reference* and *UNIX System Services User Guide*.



## Check the Timeframe and Prompt Generator Services

When the ReportCenter Java Task starts, a timer is set a few minutes after initialization to start the Timeframe and Prompt Generator services.

- The Timeframe service updates the database time frame table with the correct relative day numbers.
- The Prompt Generator service reads your database tables and generates HFS prompt files reflecting the resources in there.

Although you do not need these services until you have collected enough data to report on, verify their successful completion the first time you start the task.

Successful completion indicates that the setup (including database read and update permissions, and directory and file permissions) is correct. If they failed, you have an opportunity to correct these things.

After the task is active a few minutes, review the log.

When the task is initialized and ready for work, the following appears:

```
*****  
Adaptor initialisation complete.  
*****  
Server socket for port nnnn opened
```

When the Timeframe service runs, the following appears:

```
Timeframe table update beginning  
Updating 'TODAY': Sday=nnnnn Eday=nnnnn  
...  
Updating 'ALL MONTHS IN DATABASE': Sday=nnnnn Eday=nnnnn  
Timeframe table update finished
```

When the Prompt Generator service runs, the following appears:

```
Prompt generator starting  
Generating prompt name1 using SQL:  
...  
Generating prompt nameN using SQL:  
Prompt generator finished
```

Investigate any run-time and SQL errors. Most problems at this stage are caused by database setup errors and insufficient database or HFS security. After you correct the errors, stop and restart the task.



# Chapter 11: A Tour for Report Administrators

---

This section contains the following topics:

[ReportCenter Home Page](#) (see page 99)

[About This Tour](#) (see page 100)

[Collect Data](#) (see page 100)

[Check the Data Feed](#) (see page 103)

[Run a Report](#) (see page 103)

[Show Off Your Report Output](#) (see page 104)

[Examine ReportCenter Java Task Activity](#) (see page 104)

## ReportCenter Home Page

The ReportCenter home page is a public web page hosted by the ReportCenter control region. The page lets users view completed report runs without logging on to a region. Most ReportCenter users do not need to do anything except view reports from the home page.

Producing the reports that appear on the home page involves many behind the scenes tasks. These include collecting the required data, getting it sent to the ReportCenter database, running the reports, and tending to the ReportCenter Java Task. To do these things, you log on to the control or data region with a valid user ID. A Report Administrator usually performs these tasks.

## About This Tour

This tour describes a typical sequence of report administration tasks. As you go through the tour, perform these tasks yourself using your active ReportCenter control region that you have implemented in Implementing the ReportCenter Java Task.

The tour takes you through complete end-to-end ReportCenter operation, from collecting the raw data to viewing the final resulting report.

The following tasks are described:

- Collecting stack workload or file transfer report data
- Checking the data feed
- Running an on demand Stack Overview or File Transfer Overview report
- Viewing the report output
- Examining the activity of the Report Generator

This tour uses the ReportCenter control region to collect the data. When you are familiar with these tasks, you can implement data regions on every system (LPAR) where you want to collect data.

## Collect Data

By default, no data collected by any ReportCenter control or data region is sent to the ReportCenter database.

In this tour, you collect one or both of the following types of data:

- Workload, IP/TCP/UDP, and stack network interface data for the stacks on the system if your ReportCenter control region includes CA NetMaster NM for TCP/IP
- File transfer event rate data if your ReportCenter control region includes CA NetMaster FTM

**More information:**

[Collecting Data for Reports](#) (see page 105)

---

## Collect Data from CA NetMaster NM for TCP/IP

### To collect data from CA NetMaster NM for TCP/IP

1. Locate the monitored stacks.

From your region's 3270 interface, enter the **/IPMON** shortcut to display the IP Resources monitor.

The discovery done when you implement the region should have found all of the TCP/IP stacks on this system. They appear on the monitor as resources of the STACK class.

2. Update the performance monitoring definition of the stacks.
  - a. Enter the **UM** command beside the stack name. The Monitoring Definition panel appears.
  - b. If they are not already active, enter **A** to activate the following types of monitoring:
    - Connection Workload Monitoring
    - FTP Workload Monitoring
    - Telnet Workload Monitoring
    - Network Interface Monitoring
    - IP, TCP, and UDP Monitoring
  - c. Enter **YES** in the Send to ReportCenter field for each of the above types of monitoring.

In production use, you can also vary the monitor rate, add or delete attributes, and set alerting criteria. For now, keep the default settings.
  - d. Press F3 to save these changes and return to the IP Resources monitor.
  - e. Repeat these steps for every stack on this system.
  - f. Ensure that there are some varied workload connection activities, including FTP and Telnet, involving the stacks.
3. Look at the values being collected.
  - a. Wait until at least an hour has passed. This lets a few regular samples be taken and lets these samples be summarized when the change in hour occurs.
  - b. Enter the following commands beside the stack name: **WC**, **WF**, **WT**, **WI**, and **IP**.

For each command, a matching performance history panel appears. You should see the attribute names that are being monitored, and the times and values of the latest sample.
  - c. Enter **S** (Summary) beside an attribute name.

The Hourly Summary Graph panel appears. This shows the hourly summary values for this attribute for every hour. Hourly summaries are aggregates of all of the individual samples taken during that hour. These hourly summary values are sent to ReportCenter. They are the raw data for ReportCenter.

After you have been collecting data for a few days, you can also use the 3270 **/PERF** shortcut to display the performance history.

**Note:** While you can only update the monitoring definition from the 3270 interface, you can look at the monitored values from the 3270 IP Resource Monitor and WebCenter.

From the WebCenter Menu, select Monitoring, IP Resources. From the displayed WebCenter IP Resource Monitor, you can also enter commands and view the resource performance information.

From the WebCenter Menu, select Performance. From the Performance pages, you can view the resource performance information.

## Collect Data from CA NetMaster FTM

### To collect data from CA NetMaster FTM

1. From your region's 3270 interface, enter **/PARMS**.
2. Enter **S** beside the \$RF EVENTLOG parameter group in the Files category.
3. Enter **YES** in the Send Event Rate Data to ReportCenter? field on the second page.
4. Press F6 to apply the group, and then F3 to save the update.

This starts the file transfer data feed processing. Look for the following message in the initialization log:

```
RFINWI40 File Transfer ReportCenter data feed has been enabled
```

5. Ensure that there are some file transfer activities on the system.

## Check the Data Feed

Data is sent over an IP socket connection between the ReportCenter control region and the ReportCenter Java Task. To see what the region thinks is happening with the data feed, check the data feed destination.

To check the data feed, enter **/DWS** from the 3270 interface.

The ReportCenter Data Feed Destinations panel appears, for example:

```

PROD----- ReportCenter Data Feed Destinations -----
Command ==>                                         Scroll ==> PAGE

S/B=Browse A=Activate I=Inact CHK=Check RCY=Recycle U=Update C=Copy D=Delete
Port
Destination Name      IP Address           Number Lock Key Status
RC$JAVATASK1         192.168.66.31       9931  255 255 ACTIVE
**END**

```

If RC\$JAVATASK1 appears in green, it indicates that the data feed is active and healthy. Pressing F11 shows you many things about the feed, including how many documents and KB have already been sent to the ReportCenter Java Task, and how many are waiting to be sent. (Performance data is sent as XML documents.)

If this information is yellow or red, it indicates a problem with the data feed. Use the F11 key to scroll to the right to read the error message; review the activity log. Socket or network problems are the most common causes of data feed interruptions. At the ReportCenter Java Task, adding this data is the first time that the task tries to update many of the database tables. If these tables are not implemented correctly, errors appear in the ReportCenter Java Task log.

## Run a Report

Reports can be run from WebCenter only. From the WebCenter Menu, select ReportCenter, Reports, navigate to the report you want to run, and select the Run Report On Demand tab.

**Note:** Consider selecting the following report as the first to run: Stack Overview (for CA NetMaster NM for TCP/IP) or the File Transfer Overview (for CA NetMaster FTM). Because they report on the most collectable attributes, these reports tend to have some data to present after data collection has started.

## Show Off Your Report Output

Links to all generated reports are available from the following:

- **ReportCenter Home Page**—does not require login
- **WebCenter ReportCenter option**—requires login

Click the report you want to view and use the Report Runs tab.

**Note:** For more information about how to run a report, see the WebCenter Help.

## Examine ReportCenter Java Task Activity

If you are waiting for an on demand report and want to know what the ReportCenter Java Task is doing, there are things you can do to find out. It could be generating other reports that are queued ahead of yours, or running another service and doing other database work.

- From the WebCenter Menu, select ReportCenter, Report Activity Status to see what reports are queued to be generated and how many have already been generated.
- From the WebCenter Menu, select ReportCenter, Java Task Status, and select the Tasks tab to see what tasks are running. If no tasks are listed, ReportCenter is receiving data and waiting for other work.
- The ReportCenter Java Task log contains messages about when the generation of a report starts and ends. From the WebCenter Menu, select ReportCenter, Java Task Log.

In typical operation, you probably will not wait and watch for on demand reports to run. Most production reports are scheduled to run overnight so they are ready to view the next day.



# Chapter 12: Collecting Data for Reports

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This section contains the following topics:

[ReportCenter Data Regions](#) (see page 105)

[ReportCenter Data Types](#) (see page 106)

[ReportCenter Data Life Cycle](#) (see page 107)

[How to Collect Data](#) (see page 110)

[Implement A Data Feed Region](#) (see page 111)

[Collect Data for Stack Reports](#) (see page 112)

[Collect Data for Reports](#) (see page 116)

[Collect Data for VIPA Reports](#) (see page 119)

[Collect Data for IP Node Reports](#) (see page 120)

[How to Collect Data for MIB Attribute Reports](#) (see page 120)

[Collect Data for File Transfer Reports](#) (see page 123)

[Check Data Is Collected](#) (see page 124)

[Empty Chart or Table](#) (see page 126)

[What Data Does This Report Need?](#) (see page 127)

## ReportCenter Data Regions

Before you can run reports against your data, configure your ReportCenter data regions to collect the data you want and send it to ReportCenter to add to the database.

By default, a data region sends no data to ReportCenter, even if it collects the data for other purposes such as its own monitoring and alerting. You must explicitly specify that the data be sent to ReportCenter.

CA NetMaster NM for TCP/IP regions can send ReportCenter the hourly summaries of the data sampled by the various IP performance monitors.

CA NetMaster FTM regions can send ReportCenter the hourly activity rates aggregated from the individual file transfer events.

A data region can contain one or both of these products. The control region can also function as a data region.

All data collection set up tasks are performed from CA NetMaster's 3270 interface.

**Important!** To avoid the space and performance overhead of storing unknown and unwanted data in your database, send ReportCenter only the data on which you want to report. To evaluate which reports are relevant to your site, view the report examples.

## ReportCenter Data Types

The following types of long term summary data are handled by ReportCenter:

- TCP/IP data
- File Transfer data

### Long Term Data

ReportCenter is a long term, historical and trend reporting tool. It receives and reports on time series data that is concerned with matters like the following:

- How many times a thing happened in a certain hour, day, or month?
- What was the total number of things in that time interval?
- What was the average number of things in that time interval?

Numeric and enumerated data is stored.

### Summary Data

ReportCenter has no knowledge of the individual events that make up the total values. ReportCenter knows what your average response time was yesterday and how many bytes you transferred yesterday. It does not know what your response time was at 13:05 yesterday or that those bytes came from a transfer you did at 09:00.

### TCP/IP Data

CA NetMaster NM for TCP/IP does not produce data specifically for ReportCenter. ReportCenter uses the same performance history data that is collected by the IP Resource Monitor and the IP Node Monitor.

Without ReportCenter, this data can be viewed in a limited manner on the CA NetMaster region that collects it. When ReportCenter is implemented, the data can be retained for longer periods, be amalgamated from different systems and sysplexes, and be presented in a wide variety of web-based graphical reports.

ReportCenter receives only the aggregated hourly summaries of monitored attributes. It does not receive individual samples and events. ReportCenter deals with rates and total values, not individual details.

## File Transfer Data

CA NetMaster FTM aggregates the file transfer events into hourly summaries for ReportCenter.

## ReportCenter Data Life Cycle

The following describes the ReportCenter data life cycle. The ConTotalConnects attribute is used to track what happens to the one hourly summary values sent to ReportCenter. This attribute indicates how many connections are made to a certain stack.

### Single Event Aggregation

As an IP connection is made, it is accumulated into ConTotalConnects for the associated IP stack. You can access and view these individual connection events from your product region's History Data menu (/IPHIST shortcut).

### Hourly Summaries Available

When an hour passes, hourly aggregates of all the connection workload attributes are available for viewing (WC command from the IP Resource Monitor).

Because the Send to ReportCenter flag is set to YES for connection workload monitoring for this stack, these hourly summaries are passed to a ReportCenter procedure.

### Transformed to XML Document

The ReportCenter procedure transforms the attributes and values to an XML document.

### Sent to Java Task

The region sends the XML document over the socket connection to the ReportCenter Java Task.

The ReportCenter Java Task passes the XML document to its Data Warehouse service.

### Parsed and Analyzed

The Data Warehouse service parses the XML and produces the SQL INSERT and UPDATE statements for the attributes and their values.

### Added to the Database

The Data Warehouse service calls the JDBC interface with the SQL statements required to add the data to the database. The service then processes or waits for the next XML document. This service can get busy.

Hourly values for ConTotalConnects for this stack for the last hour are now in the database. To see these values, run a related report, such as Stack Connection Analysis, for a time frame of TODAY. This reports on the hourly intervals for today.

### Hourly to Daily Aggregation

At the daily housekeeping time, the Java Task starts the Aggregation service. This service aggregates every hourly attribute value in the database into a daily value. Daily values for ConTotalConnects for this stack for yesterday are now in the database. To see these values, run a related report for an appropriate time frame (for example, LAST 7 DAYS, LAST 14 DAYS, and so on). This reports on the daily intervals.

### Daily to Monthly Aggregation

The first time that the Aggregation service runs in a new calendar month, it also aggregates every daily attribute value in the database into a monthly value. Monthly values for ConTotalConnects for this stack for the last month are now in the database. To see these values, run a related report for quarterly or yearly time frames. This reports on the monthly intervals.

### Expired Data Deleted

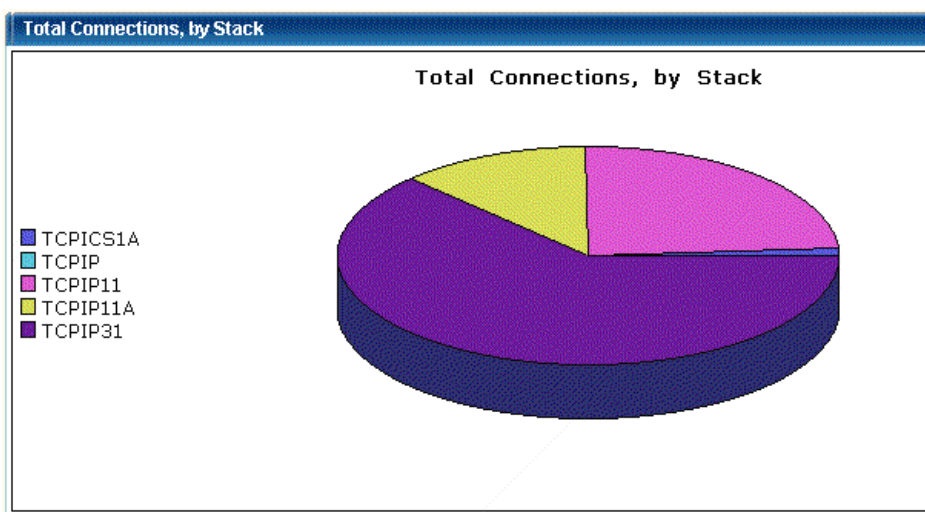
Once a week, the Java Task starts the Expiry service. This service deletes stale data from the database. You can customize the rules that control how long data from different monitoring applications is retained.

## Attribute Presentation Examples

Key attributes such as ConTotalConnects can appear in many reports. The following examples show the different ways ReportCenter can present this single attribute.

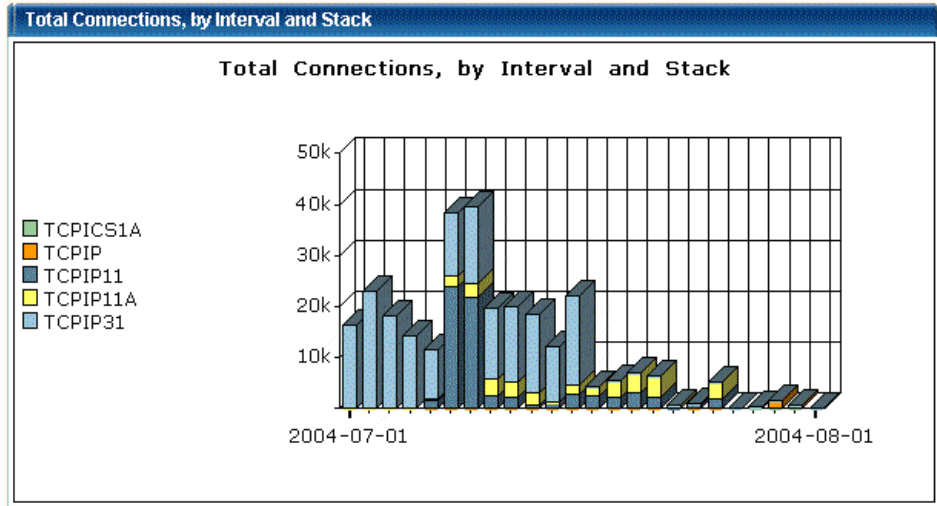
### Example: Total Connections by Stack

The Connection Stack Overview report includes, for every stack, the total ConTotalConnects value for the specified time frame. Use this report section to see which stack had the most connection traffic overall.



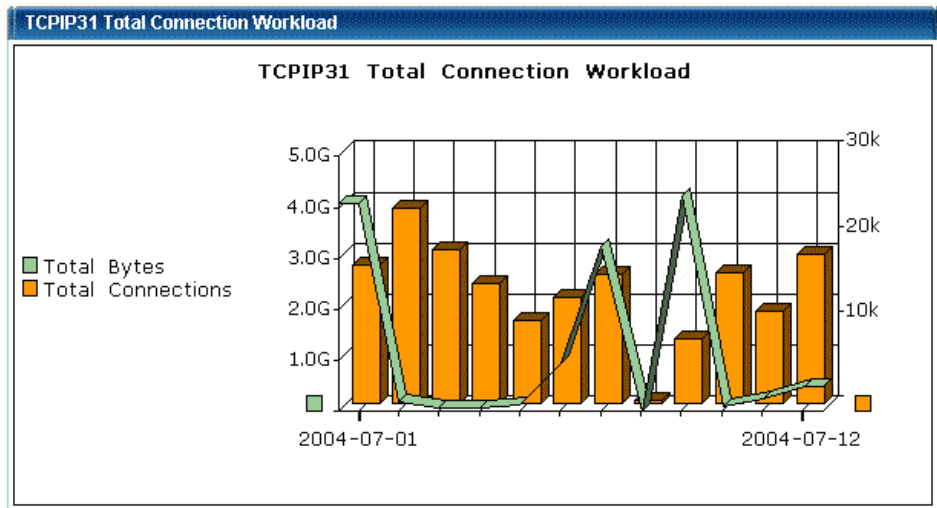
**Example: Total Connections by Interval and Stack**

The Connection Stack Overview report also includes the ConTotalConnects value per interval by stack. Use this report section to see which were the busiest intervals overall for connection activity and the contribution of each individual stack to the total activity.



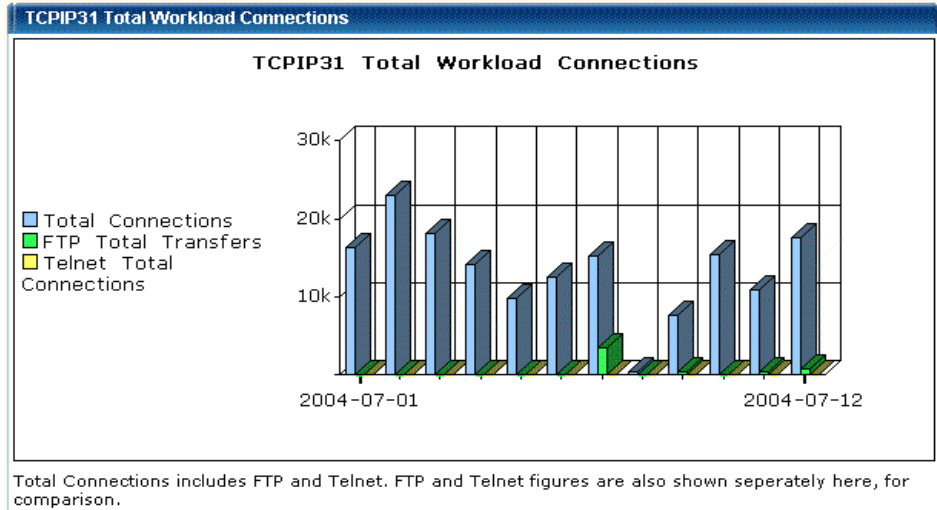
**Example: Total Connection Workload**

The Connection Stack Analysis report includes, for one stack, the ConTotalConnects and ConTotalBytes values per interval. Use this report section to see when this stack had the most connection activity.



### Example: Total Workload Connections

The Stack Workload Analysis report includes, for one stack, the ConTotalConnects value per interval compared with the FTPTotalXfers and TelTotalCconnects values for the same interval. Use this report section to compare the levels of FTP, Telnet, and connection activity.



## Available Reports

The available reports appear under the expanded ReportCenter, Reports option on the WebCenter Menu. Place your mouse over a report name for a description of the report. In general, Overview reports compare all monitored resources of the same type, while Analysis reports examine one specific resource.

Reports are updated in response to customer feedback. New and enhanced reports are distributed by product Authorized Program Analysis Reports (APARs). We welcome any comments and suggestions about reports. Contact Technical Support with any report-related suggestions. They will pass your comments to the CA NetMaster development team.

## How to Collect Data

To collect data, perform the following steps:

1. [Enable your data feed regions](#) (see page 111).

You need only do this once on each data feed region. When the region restarts, it remembers the changes.

2. View the WebCenter report examples and choose the report that you want.

3. [Determine the type of report data you need](#) (see page 127) to collect to generate this report.
4. Read the appropriate section for the type of data you want to collect, and perform the steps on all data feed regions.
5. Wait at least a few hours. On each data feed region, [check that the data you specified is being correctly collected](#) (see page 124).
6. After about a day, run the report with a near-time hourly interval timeframe, TODAY or YESTERDAY  
  
**Note:** For Analysis reports, the PromptGenerator service must run before newly-monitored resource names appear in the criteria. This service runs at your daily housekeeping time. In general, overview reports do not use the prompts, and a new resource should show in a related Overview report as soon as the hourly data arrives.
7. (Optional) Determine why a report has [all or some data missing](#) (see page 126).
8. Schedule the report to run with the criteria and timeframe that you want.
9. Repeat steps 2-8 for of all the reports that you want.

## Implement A Data Feed Region

To [set up a data feed socket connection from a data region](#) (see page 83), update the REPORTDATA parameter group (shortcut **/PARMS**).

If you do not do this, you will not be able to set the Send to ReportCenter? Flag to YES.

## Check the Data Feed Socket Connection

### To check the data feed socket connection

1. From any data region, enter **/DWS** at the prompt.  
  
The details of the socket connection between this region and the ReportCenter Java Task appear.
2. Press **F11** (Right) to display the number of data documents sent across this connection, and queued to send.  
  
The 3270 OCS REPTTEST command can also be used on a data region, to check its status.

## Collect Data for Stack Reports

To produce stack reports, you must configure the correct type of monitoring to collect the type of data that you want. Configure the following type of monitoring for each type of data:

### **Stack Connection Workload Data**

Configure Connection Workload Monitoring.

### **Stack FTP Workload Data**

Configure FTP Workload Monitoring.

### **Stack Telnet Workload Data**

Configure Telnet Workload Monitoring.

### **Stack IP, TCP, and UDP Activity Data**

Configure IP, TCP, and UDP Monitoring.

### **Stack Network Interfaces Data**

Configure Network Interface Monitoring.

### **Stack Address Space Data**

Configure Address Space Monitoring.



## Access the Stack Monitoring Definition

To access the stack monitoring definition

1. Enter **/IPMON**.

The IP Resource Monitor appears.

```
NETM01----- Status Monitor : IP Resources -----SYS1-0001
Command ==> Scroll ==> CSR

                D=Display H=History AL=Alerts L=Transient Log ?=List Cnds
Resource      Class  System  Actual  Status  Monitor Alert Max Last  Next
UM  STACK01    STACK  SYS1    ACTIVE  Ok      0    -  19:32 19:42
    STACK01A   STACK  SYS1    ACTIVE  Ok      0    -  19:32 19:37
```

2. Enter **UM** next to a STACK resource.

The Stack Monitoring Definition panel appears.

```
NETM01----- ResourceView : STACK STACK01 Monitoring Definition -----SYS1-0001
Command ==>

                A=Activate Type I=Inactivate Type S/U=Update
                Monitor Rate Send to
Type of Monitoring      Status      Rate      ReportCenter
U  Address Space Monitoring  ACTIVE      15        YES
  Connection Workload Monitoring  ACTIVE      10        YES
  FTP Workload Monitoring      ACTIVE      10        YES
  Interface Monitoring         ACTIVE      60        YES
  IP Performance Monitoring     ACTIVE      60        YES
  MIB Attribute Monitoring     ACTIVE      05        YES
  Telnet Workload Monitoring    ACTIVE      10        YES

Ports for Address Space Monitoring
TCP Port(s) ..... 23,1024,1123,2023,3123
UDP Port(s) .....
```

## Select the Type of Stack Monitoring

### To select the type of stack monitoring

1. Enter **A** next to the Type Of Monitoring that you want.
2. Enter **YES** in the Send to ReportCenter field.
3. Enter **U** to examine the individual attributes to monitor.

The Monitoring Definition attribute list panel appears.

```
NETM01----- STACK STACK01 Monitoring Definition -----SYS1-0001
Command ==>                               Scroll ==> CSR
                                           S/U=Update R=Remove

Attribute          Alert Summary
ConActive
ConBytes
ConConnects
ConTotalBytes
ConTotalConnects
**END**

F1=Help      F2=Split    F3=Ok       F4=Add      F5=Find     F6=Refresh
F7=Backward  F8=Forward  F9=Swap     F11=Right   F12=Cancel
```

## Add Monitored Attributes

The Stack Monitoring Definition panel lists the attributes that will be monitored. Initially, only the attributes that are monitored by default are listed. You can add more attributes to the list.

**Note:** When you get to know what attributes are useful to you, and their typical values, you can return to this panel and enter U (Update) next to an attribute. This lets you set up alerts based on that attribute.

### To add monitored attributes

1. Press F4 (Add).

The Selectable Attributes List panel appears. It shows all possible stack attributes that can be monitored by this monitoring type.

```
NETM01----- Automation Services: Selectable Attributes List -----
Command ==>                                     Scroll ==> CSR
                                                    S=Select

Attribute      Description
ConActiveByIF  Active Connections for interface
S ConActiveByNet Active Connections for network
ConBytesByIF   Bytes transferred for interface (B/hour)
S ConBytesByNet Bytes transferred for network (B/hour)
ConConnectsByIF Connections for interface (No./hour)
S ConConnectsByNet Connections for network (No./hour)
ConPackets     Packets transferred for application (P/hour)
ConPacketsByIF Packets transferred for interface (P/hour)
ConPacketsByNet Packets transferred for network (P/hour)
ConTotalActive Active Connections for stack
ConTotalPackets Packets transferred for stack
**END**
```

2. Enter S next to the attributes that you want to add to the stack monitoring.
3. Press F3 (OK) repeatedly to save and start monitoring of these new attributes.

## Names Associated with Stack Data

The names associated with stack data vary depending on the type of data.

### FTP and Telnet Workload

Stack FTP or Telnet workload data is qualified with the names of the FTP users or Telnet applications used by the connections, and these names cannot be changed.

## Connection Workload

Unlike stack FTP or Telnet workload data, Stack connection workload data is qualified with the names of your business applications and these can be changed.

Business applications are logical groupings of connections that correspond with your site's usage and requirements. For example, you can associate all connections to Port 4440 with the NET4440 business application name.

You control how you want to map your connections to business application names by using the 3270 Maintain Application Name Definitions option (**/IPADMIN**).

By default, business application names correspond with the address space names.

## Stack Address Space Ports

For Stack Address Space Monitoring, enter and confirm the listener port numbers for this stack on the Stack Monitoring Definition panel.

## Collect Data for Reports

This section describes how to collect data for the the following resource types:

- Open Systems Adapter (OSA)
- Channel Interface Processor (CIP)
- Enterprise Extender (EE)
- Address Space (ASMON)
- Communications Storage Manager (CSM)

Address spaces are shown in this example; but the process is the same for all types.

## Access the Resource Monitoring Definition

To access the resource monitoring definition

1. Enter **/IPMON**.

The IP Resource Monitor appears.

```
NETM01----- Status Monitor : IP Resources -----SYS1-0001
Command ==> Scroll ==> CSR

                D=Display H=History AL=Alerts L=Transient Log ?=List Cnds
Resource      Class  System  Actual  Status  Count  Sev  Samp  Samp  Ovr
FTP SERV     ASMON  CALL   ACTIVE  Ok      0     -   20:42 20:47
UM PRODCICS   ASMON  CALL   ACTIVE  Ok      0     -   20:42 20:47
STACK01     ASMON  CALL   ACTIVE  Ok      0     -   20:42 20:47
```

2. Enter **UM** next to the resource that you want.

The Monitoring Definition panel appears. The following example uses ASMON.

```
NETM01----- ASMON PRODCICS Monitoring Definition -----SYS1-0001
Command ==>

Monitor Rate ..... 15      Minutes (5-60)
Send to ReportCenter? ..... YES (Yes or No)
TCP Port(s) ..... 2817,8817
UDP Port(s) .....
Associated STACK Jobname .+ TCPIP11

Attribute          Alert Summary
AsActiveByPort
AsBytesInByPort
AsBytesOutByPort
AsConnectsByPort
PortStatus         Sev:2 UNKNOWN Reset: -UNKNOWN

F1=Help    F2=Split    F3=File    F4=Save
F7=Backward F8=Forward  F9=Swap    F10=EditLst F11=Panels F12=Cancel
```

## Update the Resource Monitoring Definition

### To update the resource monitoring definition

1. Enter **YES** in the Send to ReportCenter field.
2. Complete any other fields, such as Ports and Stack
3. Confirm that all of the attributes that you need are listed. Initially, only the attributes that are monitored by default are listed.
4. Press F10 (EditLst) to monitor more attributes.

The Monitoring Definition attribute list panel appears

## Add Monitored Attributes

The Monitoring Definition panel lists the attributes that are monitored. Initially, only the attributes that are monitored by default are listed. You can add more attributes to the list.

**Note:** When you get to know what attributes are useful to you, and their typical values, you can return to this panel and enter U (Update) next to an attribute. You can set up alerts based on that attribute.

### To add monitored attributes

1. Press F4 (Add).

The Selectable Attributes List panel appears. The list shows all possible attributes this monitoring type monitors.

2. Enter **S** next to the attributes that you want to add to the monitoring.
3. Press F3 (OK) repeatedly to save and start monitoring of these new attributes.

## CIP Data Considerations

The CIP Monitoring definition panel displays the following types of monitoring:

### Cisco Channel Card Monitoring

Use for Cisco channel card data.

### Telnet Workload Monitoring

Use for Telnet workload data.

## Collect Data for VIPA Reports

Because VIPA resources are dynamic, the procedure to collect report data for VIPAs differs to that for other resource types.

To collect data for VIPA reports, you must update the VIPA resource template. Updating the template ensures that VIPA data is collected when the VIPA switches to different physical devices.

### To collect data for VIPA reports

1. Enter **=A.R.T.R** at the prompt.  
The Resource Template Definition panel appears.
2. Enter **S** beside the VIPA resource class.
3. Enter **U** beside the VIPA template for which you want to collect data.  
The Panel Display List appears.
4. Enter **S** beside the VIPA Monitoring Definition.  
The Monitoring Definition panel appears.
5. Enter **YES** in the Send to ReportCenter? field.
6. Press **F3** (File) to save the settings.

## Collect VIPA Data Temporarily

### To collect data for VIPA reports temporarily

1. Enter **/IPMON** at the prompt.  
The IP resource monitor appears.
2. Enter **UM** beside the VIPA resource for which you want to collect data.  
The Monitoring Definition panel appears.
3. Enter **YES** in the Send to ReportCenter? field.
4. Press **F3** (File) to save the settings.

This temporary data collection is effective until the CA NetMaster region is restarted, or the VIPA is switched, whichever happens first. Temporary data collection may be useful for testing purposes, but in a production environment, you must enable the collection of VIPA data permanently.

## Collect Data for IP Node Reports

### To collect data for IP node reports

1. Enter **/IPADMIN.N** at the prompt.  
The IP Node Monitor Group List appears.
2. Enter **U** beside the IP node monitor group for which you want to collect data.  
The Monitor Group Details panel appears.
3. Enter **YES** in the Send to ReportCenter? field.
4. Press **F3** (File) to save the settings.

**Note:** This collects data for all IP nodes in the monitor group. You may want to set up separate IP node monitor groups for the IP nodes on which you want to report. For more information, see the *Implementation Guide*.

## How to Collect Data for MIB Attribute Reports

The MIB attributes are available to IP node, stack, and CIP resources. To extract the maximum value of this feature, you should have a good knowledge of SNMP, MIBs, and attributes. The following process shows you how to collect data for MIB attribute reports:

1. By default, monitored resources collect data for some attributes. However, you can add other attributes. Review the existing attributes for a resource, and add other attributes for which you want to collect data for that resource class.
2. After the attributes are added, you can collect data on those attributes for a specific resource.

## Identify and Add MIB Attributes

Before you can collect data on a MIB attribute for a resource, the attribute must be in the list of monitoring attributes. If your required attribute is not in the list, you can add the attribute to the list.



**To identify and add a MIB attribute**

1. If you do not know the attribute you want to add, browse the supplied MIBs to identify the attribute:
  - a. Access the monitor, and enter **MIB** next to the resource.  
The user security settings for your MIBinsight browser appear.
  - b. Press F3.  
A list of MIBs appears.
  - c. Press F3.  
The MIB attributes relevant to the resource are listed.  
**Note:** If you know the MIB you want to browse, you can select the MIB first.
  - d. Press F6 to browse through the attributes to identify the attribute you want.
  - e. Enter **S** next to the attribute, and note the owning MIB.  
You have identified an attribute with the owning MIB.
2. Add the attribute to the list of monitoring attributes:
  - a. Enter the **/MONATTR** panel shortcut.  
The list of monitoring attributes appears.
  - b. Press F4.  
The attribute definition panel appears.
  - c. Press F10.  
A list of MIBs appears.
  - d. Locate the required MIB, and enter **S** next to the MIB.  
The attributes in the MIB are listed.
  - e. Locate the required attribute, and enter **S** next to the attribute.  
The attribute definition panel is populated with the attribute information.
  - f. Complete the Type field, and specify **YES** in the Send to ReportCenter field.  
Complete other fields if necessary.
  - g. Press F5, and select the classes of resources to which the attribute is available.
  - h. Press F3.  
The attribute is added to the list of monitoring attributes and becomes available to the selected classes of resources.

## Collect MIB Data for IP Nodes

You can collect data on MIB attributes you make available to the IPNODE resource class.

IP node attributes are included in monitor groups. One IP node monitor group includes attributes that are monitored for many IP nodes. If you only want to collect data on the attributes you added for specific nodes, consider creating a group and include the attributes in that group. You can then attach the node or range of nodes for which you want to collect the MIB attribute data to the new group.

### To collect MIB data for IP nodes

1. Include the required attributes in the IP node monitor group:
  - a. Enter **/IPADMIN.N** at the prompt.  
The IP Node Monitor Group List appears.
  - b. Enter **U** next to the IP node monitor group for which you want to collect MIB data.  
The Monitor Group Details panel appears.
  - c. Press F4 (Add).  
The available attributes are listed.
  - d. Type **S** next to the attributes for which you want to collect data, and press Enter.  
The attributes are added to the group.
  - e. (Optional) Update the attributes for alerting requirements.
  - f. Press F3.  
The settings are saved.
2. Enable data collection:
  - a. Enter **/IPNODE**.  
The IP Node Monitor appears.
  - b. Enter **CHK** next to the IP nodes in the group.  
Data collection starts for the added attributes, and ReportCenter receives the data.
  - c. (Optional) Wait for a minute or two, then enter **H** next to the nodes.  
The monitored attributes are listed, showing that data are being collected.

## Collect MIB Data for Stack and CIP Resources

You can collect data on MIB attributes you make available to the STACK and CIP resource classes.

### To collect MIB data for stack and CIP resources

1. Enter **/IPMON** at the prompt.  
The IP Resource Monitor appears.
2. Enter **UM** next to the stack or CIP resource for which you want to collect MIB data.  
The Monitoring Definition panel appears.
3. Enter **A** next to MIB Attribute Monitoring, specify the monitoring rate, and enable the collected data to be sent to ReportCenter.
4. (Optional) Enter **U** next to MIB Attribute Monitoring, and update the attributes for alerting requirements.
5. Enter **CHK** next to the updated resource.  
Data collection starts for the added attributes, and ReportCenter receives the data.
6. (Optional) Wait for a minute or two, then enter **H** next to the resource.  
The monitored attributes are listed, showing that data is being collected.

## Collect Data for File Transfer Reports

### To collect data for file transfer reports

1. Enter **/PARMS** at the prompt.  
The Customizer : Parameter Groups panel is displayed.
2. Enter **U** beside the \$RF EVENTLOG parameter group.  
The Customizer : Parameter Group panel is displayed.
3. Press **F8** (Forward) to go to the next page.
4. Enter **YES** in the Send Event Rate Data to ReportCenter? field.
5. Press **F6** (Action) to action the settings.
6. Press **F3** (File) to save the settings.

**Note:** You must also define the receiver IDs and transfer IDs that CA NetMaster FTM needs to generate events, and the file transfer monitor resources to report on transfer product availability. For more information, see the *Installation Guide*.

## Check Data Is Collected

In CA NetMaster NM for TCP/IP regions, you can display the most recent hourly summary values using the 3270 IP Resource Monitor or IP Node Monitor. Display these values after a few hours of data collection.

Always do this check after activating new performance monitoring and adding more monitored attributes.

Displaying these values on the data region verifies that the data is correctly monitored and collected at the source.

This check is useful when troubleshooting; it can help isolate the cause of missing data problems.

### Follow these steps:

1. Use *one* of the following monitors:
  - For IP Nodes, enter **/IPNODE**.  
The IP Node Monitor appears.
  - For all resources other than IP Nodes, enter **/IPMON**.  
The IP Resource Monitor appears.
2. Take *one* of the following actions:
  - For all resources other than stacks, enter **H** (Performance History).
  - For stack workload connection data, enter **WC**.
  - For stack workload FTP data, enter **WF**.
  - For stack workload Telnet data, enter **WT**.
  - For stack IP, TCP, and UDP data, enter **IP**.
  - For stack network interface data, enter **WI**.The History panel appears.

This list shows all attributes currently being monitored for this resource and type of monitoring. Verify that all the attributes you think you are monitoring appear on the list.

```
NETM01----- TCP/IP : Connection Workload History -----
Command ==>                                     Scroll ==> CSR

Resource ID ..... TCPIP11
Description ..... TCP/IP Communications Server
Current Alerts ..... 0
  .=Expand-Collapse D=Samples S/=Summary H=Hours DL=Days W=Weeks UA=UpdAlrt

Qualifier/Attribute      Alerts      Last
                        Open   Total Samples Sample      Value Type
-----
| (no qualifier)         |         |         |         |         |
|-----|                |         |         |         |
| ConTotalBytes          |         |         |         | 16770316 TOTAL
|-----|                |         |         |         |
| ConTotalConnects      |         |         |         | 1440 TOTAL
|-----|                |         |         |         |
| ftpd111                |         |         |         |
|-----|                |         |         |         |
| ConActive              |         |         |         | 1 GAUGE
|-----|                |         |         |         |
| ConBytes               |         |         |         | 2000 COUNT
|-----|                |         |         |         |
| ConConnects            |         |         |         | 0 COUNT
|-----|                |         |         |         |
| port9320               |         |         |         |
|-----|                |         |         |         |
```

## Display the Hourly Summary Graph

To display the hourly summary graph, enter **S** next to an attribute name. This displays the hourly summary values for that attribute.

These hourly summary values are ReportCenter's raw data. These are the same values that the region sends to the ReportCenter Java Task. They are added to the ReportCenter database, as hourly facts.

```
NETM01----- TCP/IP : Hourly Summary Graph -----
Command ==>                                     Scroll ==> CSR

Resource ID ..... TCPIP11
Description ..... TCP/IP Communications Server
Attribute ID (Type)   ConTotalBytes (TOTAL)
Description ..... Bytes transferred for stack
Total Alert Count ... 0
Period ..... 6hrs 0mins : 20-May-2012 19:00 to 21-May-2012 01:00

Axis range is 1 to 270M each point is 5M
Start Time   Value
-----
Daily baseline ----->
Monday baseline ----->
00:00        27M  ■■■■■
Sunday baseline ----->
21:00        49M  ■■■■■
20:00        55M  ■■■■■
19:00         0    ◆
**END**
```

If the values look healthy, then the data is being correctly collected.

If not, check the individual samples (F4 (Samples)) or the Attribute List, for data sampling error messages. Incorrect SNMP setup is a common cause of errors.

## Empty Chart or Table

If a chart or table contains no data, the reasons vary depending upon the product you are using.

### Empty CA NetMaster NM for TCP/IP Chart or Table

If you generate a report and a chart or table contains no data, check the following on each data feed region:

- Are you collecting the [right type of data for this report](#) (see page 127)?
- Are you collecting the data for the right resource name?  
Ensure that you have set the Send to ReportCenter field to YES for the resource.
- Are you collecting all the attributes that this chart or table needs?  
**Note:** For more information, see the technical document, Collecting ReportCenter Data, in the CA Support Online knowledge base.
- Can you [see the actual hourly summary data values](#) (see page 125) on the data feed regions?

If the hourly summary data values do not appear on the data feed regions, do the following:

- Check any data sampling errors with this resource. Check if it is in a DEGRADED status on the IP Resource Monitor or IP Node Monitor.
- Look at the Transient Log for any error details, such as SNMP errors.
- Run a SELFTEST on the data region.
- Try any available display or diagnostic commands for the resource.

If the hourly summary data values look healthy, then the data is being collected and the problem is elsewhere, either with ReportCenter, or between the data feed region and ReportCenter.

### Empty CA NetMaster FTM Chart or Table

If you generate a report and a chart or table contains no data, check the Activity Log and ILOG of RFEVENTS group.

## Problems with the Data Feed

**Note:** These instructions apply to both the CA NetMaster NM for TCP/IP and CA NetMaster FTM regions after you have established that there are no errors in those regions.

If there are problems with the data feed, do the following:

- Check the data feed between the CA NetMaster region and the ReportCenter Java Task. In the data feed region, enter **/DWS** and verify that the link is active, and any queued data is being sent.
- Run a **REPTEST** command from OCS on the ReportCenter control region, and verify that the Java Task is connected to the database.
- Review the Java Task log for error messages from the Data Warehouse Service, and any evidence of socket errors between the Java Task and this data region, or database errors.

## What Data Does This Report Need?

The following table summarizes the type of report data to collect for each type of report.

**Note:** A detailed cross-reference of every attribute used by every chart and table in every report is produced for each release of ReportCenter, and updated when required. See the technical document, *Collecting ReportCenter Data*, in the CA Support Online knowledge base.

| Report                   | Type of Report Data       |
|--------------------------|---------------------------|
| Stack Overview           | Stack Connection Workload |
| Stack Analysis           | Stack FTP Workload        |
|                          | Stack Telnet Workload     |
|                          | Stack Interfaces          |
|                          | Stack IP Performance      |
|                          | Stack Address Space       |
| Stack Workload Overview  | Stack Connection Workload |
| Stack Workload Analysis  | Stack FTP Workload        |
| System Workload Overview | Stack Telnet Workload     |
| System Workload Analysis |                           |

| Report                          | Type of Report Data   |
|---------------------------------|---|
| Network Workload Overview       | Stack Connection Workload   |
| Network Workload Analysis       | Stack FTP Workload<br>Stack Telnet Workload<br><b>Note:</b> Add the CON*BYNET attributes  |
| Connection Stack Overview       | Stack Connection Workload   |
| Connection Stack Analysis       | <b>Note:</b> Add the CON*BYIF and CON*BYNET attributes.   |
| Connection Application Overview |   |
| Connection Application Analysis |   |
| Connection Interface Overview   |   |
| Connection Interface Analysis   |   |
| FTP Stack Overview              | Stack FTP Workload  |
| FTP User Analysis               |   |
| FTP Stack Analysis              | Stack FTP Workload<br>Stack Connection Workload   |
| Telnet Stack Overview           | Stack Telnet Workload   |
| Telnet Stack Analysis           |   |
| Telnet Application Analysis     |   |
| Stack IP Performance Overview   | Stack IP Performance  |
| Stack IP Performance Analysis   | <b>Note:</b> CA NetMaster gets this data from MIBs. You do not need to set this using MIBInsight. Use MIBInsight only if you want to monitor additional MIB attributes. |
| Stack Interface Overview        | Stack Interfaces  |
| Stack Interface Analysis        |   |
| Stack MIB Attribute             | Stack MIBInsight  |
| Stack MIB Gauge Attribute       |   |
| Stack MIB Enumerated Attribute  |   |
| IP Node Overview                | IP Node   |
| IP Node Analysis                |   |
| IP Node Cisco Analysis          |   |
| IP Node MIB Attribute           | IP Node MIBInsight  |
| IP Node MIB Gauge Attribute     |   |
| IP Node MIB                     |   |



| <b>Report</b>                  | <b>Type of Report Data</b> |
|--------------------------------|----------------------------|
| Address Space Overview         | Address Space              |
| Address Space Analysis         | Stack Address Space        |
| Generic Address Space Analysis |                            |
| Port Overview                  |                            |
| Port Analysis                  |                            |
| System Port Traffic Analysis   |                            |
| Stack Port Traffic Overview    |                            |
| CIP Overview                   | CIP                        |
| CIP Analysis                   |                            |
| CIP CLAW Analysis              |                            |
| CIP Interface Analysis         |                            |
| CIP TN3270 Analysis            |                            |
| CIP MIB Attribute              | CIP MIBinsight             |
| CIP MIB Gauge Attribute        |                            |
| CIP MIB Enumerated Attribute   |                            |
| CSM Overview                   | CSM                        |
| CSM Analysis                   |                            |
| FT Overview                    | File Transfer              |
| FT System Overview             |                            |
| FT System Analysis             |                            |
| FT Product Overview            |                            |
| FT Product Analysis            |                            |
| FT CA XCOM Analysis            |                            |
| FT CONNECT:Direct Analysis     |                            |
| FT CONNECT:Mailbox Analysis    |                            |
| FT Address Overview            |                            |
| FT Address Analysis            |                            |
| FT Address Pair Analysis       |                            |
| FT User Overview               |                            |
| FT User Analysis               |                            |
| OSA Overview                   | OSA                        |
| OSA Analysis (all)             |                            |
| EE Overview                    | EE                         |
| EE Analysis                    |                            |

| <b>Report</b>                  | <b>Type of Report Data</b> |
|--------------------------------|----------------------------|
| VIPA Overview                  | VIPA                       |
| VIPA Analysis                  |                            |
| VIPA Distributed Analysis      |                            |
| Data Warehouse Resource Status | Any                        |
| Data Warehouse Fact Status     |                            |

# Chapter 13: Managing the ReportCenter Java Task

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This section contains the following topics:

[How the ReportCenter Java Task Works](#) (see page 131)

[Stop the ReportCenter Java Task](#) (see page 132)

[Start the ReportCenter Java Task](#) (see page 132)

[Restart the ReportCenter Java Task](#) (see page 132)

[Monitor the ReportCenter Java Task](#) (see page 133)

[Monitor the Scheduled Services](#) (see page 134)

[Test the Communication to the ReportCenter Java Task](#) (see page 135)

[ReportCenter Java Task Termination](#) (see page 136)

[Database Scheduled Maintenance Times](#) (see page 137)

[When the Task is Not Running](#) (see page 138)

[Change Report Logo and Heading Text](#) (see page 139)

## How the ReportCenter Java Task Works

The ReportCenter Java Task started task executes BPXBATCH and runs under the control of the UNIX System Services environment. It may spawn several address spaces.

The ReportCenter Java Task establishes JDBC connections with the database, and IP socket connections with the ReportCenter control region and data regions. While the data regions collect and send the report data, and the control region provides presentation and control function, the following core ReportCenter work is performed by the Java task:

- Adding data to the database
- Retrieving data for chart and tables
- Generating report output
- Aggregating data over time
- Running scheduled reports
- Deleting expired data, reports, and schedules

## Stop the ReportCenter Java Task

You should stop the ReportCenter Java Task when you perform backups, reorganizations, or other work on the database. This prevents unsuccessful database connection attempts from the ReportCenter Java Task being repeated. Restart the task as soon as the database is functional again.

To stop the ReportCenter Java Task, issue the following command from the MVS system console:

```
P NMJAVA
```

This stops the task. You can also set up operations automation software to issue this stop command.

**Note:** You can issue the OCS JFSTOP command from the ReportCenter Control Region; however, this is not the recommended method.

Occasionally, when it detects an error condition from which it cannot recover, the Java Task may stop itself. Often these are external problems with the DBMS, sockets interface, and so on.

## Start the ReportCenter Java Task

You can start the ReportCenter Java Task from any console by using the MVS START command.

After you start the task, you should leave it running, as long as the database is active.

It is not necessary to stop this task when the ReportCenter control region or any data region is restarted. The IP socket connections are re-established automatically between this task and a restarted region.

**Note:** This task needs adequate virtual storage; use of 300-400 MB is not uncommon.

## Restart the ReportCenter Java Task

If your database is restarted, you should restart the ReportCenter Java Task to ensure that all database connections are reestablished without delay. The task can do nothing without a database connection.

## Monitor the ReportCenter Java Task

In the ReportCenter control region, a timer runs a procedure regularly to test contact with the ReportCenter Java Task.

A successful test confirms the following:

- The ReportCenter Java Task is active.
- Command and response communication succeeded between the control region and the Java Task.
- The Java Task has an active JDBC connection with the database.

This produces an informational message in the activity log similar to the following:

```
WRCALL23 ReportCenter STC NMJAVA active, connected to DB2/NMJAVADB DB2 DSN08015 IBM
DB2 JDBC Universal Driver Architecture 2.10.84 jdbc:db2:D81APTIB
```

If the test fails, an alert is raised for the following conditions:

- Task is not active, for example:

```
ReportCenter started task "task-name" is not active on system-id
```

If you have deliberately left the Java Task inactive because the database is unavailable, you can disregard this alert. Occasionally, the Java Task may terminate itself.

- Task terminates, for example:

```
ReportCenter started task "task-name" terminated on system-id
```

- Task is active, but did not respond to commands, for example:

```
ReportCenter started task "task-name" not responding on system-id
```

These alerts are cleared automatically when a following test succeeds.

## Monitor the Scheduled Services

Alerts are also raised when CA NetMaster detects that one of the following scheduled services has failed:

- AGGREGATION
- TIMEFRAME
- PROMPTGENERATOR
- SCHEDULER
- REPORTEXPIRY
- EXPIRY

For more information about the failure, see the alert text.

These alerts are cleared automatically when a following test succeeds.

## Test the Communication to the ReportCenter Java Task

The **REPTEST STC** OCS command sends a variety of status query commands to the ReportCenter Java Task. Typical output may resemble the following:

```

WRST0000 ReportCenter Function Test on PROD17 (Active Control Region)
WRSTJF00 Checking ReportCenter Java Task status and environment
WRSTJF14 Started task name PRODX2JV is active on CM31, ASID=01BE
WRSTJF03 Job PRODX2JV produced the following STDOUT output:
WRSTJF03 * PRODX2JV NetMaster ReportCenter USS Environment Variables:
WRSTJF03 * PRODX2JV PATH set to /bin:/sys/javatm2/v1r4m0/usr/lpp/java/J1.4/b
WRSTJF03 * PRODX2JV LIBPATH set to /lib:/sys/usr/lpp/db2/db2710/lib
WRSTJF03 * PRODX2JV STEPLIB set to M71A.PRIVATE.SDSNEXIT:DB2.DB2710.SDSNLOAD
WRSTJF03 * PRODX2JV DB2SQLJPROPERTIES set to /sys/usr/lpp/db2/db2710/classes
WRSTJF03 * PRODX2JV LD_LIBRARY_PATH set to /sys/usr/lpp/db2/db2710/lib
WRSTJF13 Job PRODX2JV produced the following STDERR output:
WRSTJF13 * java version "1.4.1"
WRSTJF13 * Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.1)
WRSTJF13 * Classic VM (build 1.4.1, J2RE 1.4.1 IBM z/OS Persistent Reusable
WRSTJF01 Java Task intialized on CM31 at 2006-Aug-04 20:36:53.426
WRSTJF01 ReportCenter current time: WED 04-AUG-2006 21:35:19.87
WRSTJF01 Java Task CONTROL service is active
WRSTJF01 Java Task WAREHOUSE service is active
WRSTJF01 Java Task TIMEFRAME service is active
WRSTJF01 Java Task AGGREGATE service is active
WRSTJF01 Java Task EXPIRE service is active
WRSTJF01 Java Task PROMPTGENERATOR service is active
WRSTJF01 Java Task REPORTEXPYRY service is active
WRSTJF01 Java Task REPORTS service is active
WRSTJF01 Java Task SCHEDULER service is active
WRSTJF15 timer1 next scheduled at Thu 05-Aug-2006 00:01:00
WRSTJF15 timer1 will run TIMEFRAME
WRSTJF15 timer2 next scheduled at Thu 05-Aug-2006 02:00:00
WRSTJF15 timer2 will run AGGREGATE,PROMPTGENERATOR,SCHEDULER,REPORTEXPIRY
WRSTJF15 timer4 next scheduled at Thu 05-Aug-2006 20:38:15
WRSTJF15 timer4 will run TIMEFRAME,PROMPTGENERATOR
WRSTJF15 Region A44DEN44 192.168.66.44:1626 is connected to send data
WRSTJF15 Region PROD17 192.168.66.31:2047 is connected to send data
WRSTJF15 Region PROD18 192.168.66.11:1617 is connected to send data
WRSTJF15 Region PROD5 192.168.66.6:1038 is connected to send data
WRSTJF15 Region A04SOLVD 192.168.66.4:2225 is connected to send data
WRSTJF15 Region PROD17 192.168.66.31:2095 is connected to send commands
WRSTJF16 JVM Total Memory: 44038656 bytes, Free Memory 25343656 bytes
WRST0098 ReportCenter Function Test completed with no errors or warnings.
** END OF DELIVERED MESSAGES **

```

You can also invoke this command from WebCenter. From the WebCenter Menu, select ReportCenter, Java Task Status, click the Run Function Tests tab, and then click Execute.

Do not perform this test repeatedly at short intervals. Like any application, if the Java Task is busy responding to repeated status commands, it will have less resources for its normal processing.

## ReportCenter Java Task Termination

The ReportCenter Java Task terminates when it detects a known, fatal condition that prevents it from processing. Usually, these are database or system-related conditions. ReportCenter terminates to avoid wasting resources on repeated and unsuccessful database connection attempts.

Following are some commonly detected conditions. Rectify the condition, and start the task again.

- DBMS (DB2 subsystem or CA Datacom MUF) is not active.
- ReportCenter database is not defined correctly or is inaccessible.
- Insufficient DBMS system resources, such as buffers, are available.
- Required component such as RRS or the CA Datacom Server is not active.
- User ID is not permitted to access database.
- RRS security setup errors are encountered.
- JDBC driver setup errors are encountered.

## Define the ReportCenter Java Task to Operations Management

You can consider defining the dependencies between the ReportCenter Java Task and its database and associated tasks to your operations management software.



## Database Scheduled Maintenance Times

You need to know your database scheduled maintenance times. Do not schedule ReportCenter reports to be produced during these times.

If the database is not available and reports or other services are attempted, errors may appear in the Adaptor001.log and NetMaster Activity log. ReportCenter tries every 10 or 15 minutes to establish the connections, and eventually the Java task may terminate. Similar errors may occur if there are any service interruptions to the sockets interface, such as a restart of the z/OS TCP/IP stack.

We recommend the following:

- Do not schedule reports or services to be produced during database maintenance times. Be aware of this when completing the REPORTCENTER Customizer parameter group (/PARMS) for daily housekeeping, and weekly expiry run times.
- If database maintenance is going to take some extended time, shut down the ReportCenter Java Task. Bring them both back up at the same time (the database first), using operations automation software to accomplish this.

## When the Task is Not Running

When the ReportCenter Java Task is not running, the following occurs:

- Viewing report output is unaffected.

You can view reports that have run by the usual methods. Report viewing is processed by the ReportCenter control region reading the HFS files and does not involve the task.

- No reports are run.

This applies to on demand and scheduled report runs. Report runs queued when the task was stopped are not run. They have a status of *stopped* or *terminated*.

- Services do not run.

If the task is not active at the specified time, any service scheduled to run through a timer does not run. This includes the Scheduler service.

- Collected data is queued by data regions.

If data cannot be sent to its destination, a data region queues the data to send later when the connection to the task recovers. To find out the queue depth, enter **/DWS** in the region.

Data regions store queued ReportCenter data in the VFS VSAM file. Usually, the file can store up to 99999 hourly summary observations. Ensure that your VFS file has plenty of space in the primary extent.

Do not leave the task inactive for an extended period, unless this is unavoidable due to database outage. You do not lose data simply because the ReportCenter Java Task is down; but if it is down for too long, you lose data.

## Change Report Logo and Heading Text

When you run a report, the report has the following heading text:



If you want, you can change the report logo and heading text.

### To change the report logo and heading text

1. From your browser home page, select Tools, Internet Options.  
The Internet Options dialog appears.
2. Click Delete Files.  
The Delete Files dialog appears.
3. Select Delete all Offline Content, and click OK.
4. [Stop your ReportCenter Java Task](#) (see page 132).
5. To change the heading text, create a file named `usr_heading.txt` and enter your heading text.
6. To change the report logo, create a file named `usr_logo` and insert the report logo that you want to use.  
**Note:** The file must be in .png, .gif, or .jpg format. The default report logo size is 57 x 38 pixels. We recommend a size close to the default.
7. FTP the files that you have created to the `...\usr\adaptor` directory. Transfer the heading text in ASCII format and the logo in BINARY format.
8. [Start your ReportCenter Java Task](#) (see page 132).
9. [Run a report](#) (see page 103) to verify that your new heading text and report logo appear.

### Notes:

- When you change the report logo, it appears on all reports, even those run previously with another logo.
- When you change the heading text, it appears on all reports created after the change. Reports created previously retain the old heading text.
- If you disable the `usr_logo` function and then view the report that you generated when the `usr_logo` function was in use, a red icon appears indicating that the logo cannot be found. The logo does not default to the supplied CA logo.

## Change Font Appearance

If you want to change the appearance of the heading text, you can use standard html tags.

### Example: Change Font Appearance

This example shows the heading text, Happy Holidays in Comic Sans MS font, in purple:



To produce this heading, enter the following in the `usr_heading.txt` file:

```
<p class=MsoNormal>
  <b style='mso-bidi-font-weight:normal'>
    <span style='font-size:72.0pt;font-family:Comic Sans MS;color:#993366'> Happy
Holidays</span>
  </b>
</p>
```

**Note:** If you use a font that is not installed on a client PC or browser, a default font is used.

## Display Default Logo and Heading

If you change the default logo and heading, and want to revert to the standard logo and heading, rename or delete the `usr_logo` and `usr_heading.txt` files.

### To display the default logo and heading

1. From your browser home page, select Tools, Internet Options.  
The Internet Options dialog appears.
2. Click Delete Files.  
The Delete Files dialog appears.
3. Select Delete all Offline Content, and click OK.
4. [Stop your java started task](#) (see page 132).
5. (Optional) Delete or rename the `usr_heading.txt` file.
6. (Optional) Delete or rename the `usr_logo` file.
7. [Start your java started task](#) (see page 132).
8. [Run a report](#) (see page 103) to verify that the default text and logo appear.

#### Notes:

- When you change the logo, it appears on all reports, even those run previously with another logo.
- When you change the heading text, it appears on all reports created after the change. Reports created previously retain the old heading text.



# Chapter 14: Troubleshooting

---

This section contains the following topics:

- [Diagnose Java Task Problems](#) (see page 143)
- [Diagnose Report Failures](#) (see page 147)
- [Diagnose Missing Data](#) (see page 149)
- [Diagnose Resource Usage Problems](#) (see page 151)
- [Diagnose DB2 Problems](#) (see page 152)
- [Diagnose CA Datacom/AD Problems](#) (see page 155)
- [Diagnose Miscellaneous Problems](#) (see page 157)
- [Information to Provide to Technical Support](#) (see page 160)
- [How To Collect Diagnostic Data](#) (see page 161)

## Diagnose Java Task Problems

This section describes problems that you may encounter with the Java task.

### Does Not Start, JCL Error

#### Symptoms

- Started task does not become active.
- SYSLOG or JOBLOG contain JCL error.

#### Possible Causes

- Incomplete ReportCenter implementation.
- REPORTCENTER Customizer parameter group has not been actioned, or failed when it was last actioned.
- HFS problems including filesystem not defined, full, not mounted, or insufficient file permissions.

#### Action

- Check the REPORTCENTER Customizer Ilog. This Customizer parameter group generates the JCL, batch, and parameter files.  
Ensure that this group is actioned before you start the Java Task. For more information about actioning this parameter group, see Starting the ReportCenter Control Region in Chapter 10.
- Ensure that you copied the generated JCL to your MVS PROCLIB data set.
- Check REPTTEST Filesystem-related output (messages WRSTIN\*, WRSTCO\*, WRSTHF\*) for HFS details.

## Does Start, No JCL Error

### Symptoms

- Started task does not become active.
- No JCL error message on the SYSLOG or JOBLOG.
- No Java Task log is written.

### Possible Causes

- Security problems such as started task not defined to RACF/ACF2, OMVS segment setup incorrect, started task not allowed to execute BPXBATCH.
- Java product implementation errors, USS environment errors.

### Action

- Check the SYSLOG at the time the Java Task started and stopped.
- Check the Java Task JOBLOG.
- Check REPTTEST task-related messages (messages WRSTJF\*). This produces errors about the inactive task, but should still display environment variable values, STDERR, and STDOUT text.

If it does not, browse the STDERR and STDOUT files manually.

#### Specific Causes

If the STDERR file contains an error similar to the following:

```
.../adaptor/Adaptor.bat 1: FSUM7351 not found
```

the z/OS Java product is not installed or is installed but cannot be found.

From OMVS, navigate to the Java /bin directory and enter the following command to verify whether a z/OS Java product is installed:

```
java -version
```

You should see output similar to the following:

```
java version "1.4.2"  
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.2)  
Classic VM (build 1.4.2, J2RE 1.4.2 IBM z/OS Persistent Reusable VM build  
cm142ifx-20070813 (SR9a) (JIT enabled: jitc))
```

If Java is correctly installed, review the Java path you entered in the REPORTCENTER Customizer parameter group.



## Starts, but Comes Down After a Short Time

### Symptoms

Java Task becomes active, a Java Task log is written, but the task always fails shortly afterwards.

### Possible Causes

The Timeframe and Prompt Generator services run immediately at task startup, and problems discovered at the first database access most frequently cause this situation.

#### DB2 subsystem not active

Incorrect DB2 security setup.

JDBC implementation incorrect.

**Note:** This condition can happen to a working system if JDBC maintenance is applied, and the corequisite JDBC profile regenerations and rebinds are forgotten.

RRS security setup incorrect.

DB2 sections of the /REPORTCENTER parameter group incorrectly completed.

#### CA Datacom/AD

Datacom MUF address space not active.

Datacom Server (JDBC) address space not active.

Datacom product installation incorrect.

Datacom Common Services prerequisites incorrect.

ReportCenter database setup incorrect.

Datacom sections of the /REPORTCENTER parameter group incorrectly completed.

Java or USS Environment problems.

Incorrectly generated CLASSPATH.

### Action

- Review the Java Task log. Usually this situation produces error messages such as SQL error codes indicating security or database problems.
- For more information about common DB2 and Datacom errors, see the DB2 and CA Datacom/AD sections.
- Review the SYSLOG at the time task started and terminated.
- Review the Java Task JOBLOG.
- Ensure that the JDBC DBRMs have been rebound after DB2 maintenance.
- Review the REPTTEST task-related messages (messages WRSTJF\*).  
These messages show environment variable values, and STDERR and STDOUT text.

### Specific Causes

If the following message appears in the ReportCenter Java Task log:

Cannot establish database connection. Message: DB2SQLJConnection error in native method: constructor: RRS "IDENTIFY" failed using DB2 system:D...

Proceed as follows, according to the REASON code:

- If the REASON code is 00f30012, verify that the DB2 subsystem has started.
- If the REASON code is 00f30049, verify that the statements in the supplied CC2DSAMP(WRBD2GRA) member have run.
- If the REASON code is 00f30091, verify that RRS/MVS has started.

**Note:** If RRS is recycled, you must recycle DB2; therefore, you must recycle the ReportCenter Java Task when your DB2 subsystem is recycled.

---

## Was Running, but Suddenly Terminates

### Symptoms

Started task is active and processing, but unexpectedly terminates.

### Possible Causes

#### Deliberate

If the Java Task detects an external condition that is difficult to recover from, it terminates. Such conditions include problems with database access, security, database resource shortages, and so on.

If these problems are present when the Java Task starts, it terminates immediately and this situation is indistinguishable from the one above. However, the task can also process correctly for a long time, before an unrecoverable condition appears. The database or DBMS being shut down is a frequent cause of such a condition.

#### Accidental

The task abends on the USS side - running out of Java storage, uncaught Java exceptions, JVM heap damage, and so on.

The task abends on the MVS side - OCX abends in DB2 or LE modules.

### Action

- Check the Java Task log. If the Java Task deliberately terminates, it always writes a terminating ... message to its log, with the contributing error details.  
For more information about common DB2 and Datacom errors, see the DB2 and Datacom sections.
- If there are no errors on the log and it stops in the middle of a task, this indicates an involuntary abend. Check the SDSF JOBLOG for the Java Task and the SYSLOG at the time of the STC termination for an MVS abend messages
- If there are no JOBLOG or SYSLOG errors, the REPTTEST task-related messages (messages WRSTJF\*) should show STDERR and STDOUT text. If there has been an abend or dump on the USS side, there is usually a message in either of these.

## Diagnose Report Failures

This section describes problems that you may encounter with reports.

## Run Report on Demand Fails

### Symptoms

When you click the Execute on a Run Report on Demand tab, an WRCALL\* error message appears.

No report output is produced.

### Possible causes

Java Task is not active.

Socket or other connection problems between the control region and the Java Task.

### Action

- Check the REPTTEST task-related messages (messages WRSTJF\*). This tests everything used by the Run Report on Demand function.
- Check the NM Activity Log at the time of the attempt. This may show socket or connection error details. Determine if other activity is happening, for example, being processed.
- Check the Java Task log at the time of the attempt.

## Report Output Contains Error Message

### Symptoms

When viewing a report, the report output contains an error message.

The report run appears in the Report Runs tab list, but with a status of failed.

The report run does not appear on the ReportCenter Home Page (because this page only contains runs with a status of OK).

### Possible causes

As per the error message, frequently:

- DBMS, database, or SQL errors
- Java storage errors

Proceed as for problem, *Resource Usage: Java Task JVM Heap Storage*

- Java Task is terminating and cannot generate the report

### Action

- Try running the same report with the same criteria to see if the problem is persistent.
- Check whether all report runs are failing or only this report is failing.
- Review the Java Task log at the time of the report generation for further error details.
- For DBMS and database errors, review the REPTTEST database-related messages (WRSTDB\*).
- For Java Task terminating errors, see whether the task was terminated by the user (P, CANCEL, or OCS JFSTOP) or due to an error condition.

## Diagnose Missing Data

This section describes problems that you may encounter with missing data.

### Missing Criteria, WRCALL17

#### Symptoms

The drop-down boxes that usually contain the resource names are missing from the Run Report on Demand and Add Schedule tabs. When you click one of these tabs, the following error appears:

WRCALL17 There appears to be no data yet in the database for this report.

### Possible Causes

There is no such data in the database:

- No data collection has been requested.
- Data collection has been requested, but failed.

The database has data, but the Prompt Generator service failed for the following reasons:

- External reasons, for example, database, DBMS, or HFS errors
- Internal reasons (usually a problem with the Prompts.ini file)

### Action

- Review the Java Task log at the time the Prompt Generation service last ran. Verify that it finished with no errors. The prompt names are listed as they are generated.
- Review the REPTTEST output for any HFS errors. Prompt files are stored on HFS, and the correct permissions must be set for them to be read and written.
- Check whether maintenance that updates the Prompts.ini file has been recently applied. Ensure that you have applied the REPORTCENTER parameter group, and that the file was regenerated (look for WRINWI31 in the ILOG).
- Review a current DWS Resource Status report to see whether there are any resources of this type listed.
- If the DWS Resource Status report shows none of these resources, then there is no data. Proceed as for problem, *Data Missing or Incorrect: A whole report is empty*.

If there is data and there are no obvious errors, collect the following and send to Technical Support:

- The Java Task log, at the time the Prompt Generation service last ran. Include the start and finish of the Prompt generation.
- A list of the generated Prompts.ini file (not the supplied one, the one in the /usr directory).
- A detailed list of the /usr/prompts directory. Use TSO/OMVS or the OCS command.

```
uss ls -l /u/users/aunmd/denm/denm17/nm/reporter/usr/prompts  
ILOG (not Activity log) of the REPORTCENTER Customizer parameter group.
```

## A Whole Report Is Empty

Review the chapter about [collecting report data](#) (see page 105).

## Report Has Some Empty Charts and Tables

Review the section about [empty charts and tables](#) (see page 126).

# Diagnose Resource Usage Problems

This section describes problems that you may encounter with resource use.

## CPU Usage

### Symptoms

An address space uses what you consider to be too much CPU.

### Possible Causes

The DBMS has the largest CPU requirements of all of the ReportCenter components.

DBMS and database tuning are specialist and complex topics. Technical Support will provide a plan and work with you to assess and reduce the resource resources of your overall ReportCenter environment.

When you contact Technical Support about any CPU usage problem, please provide answers to the following:

- Is the CPU usage only high when you are viewing large reports? If so, you may be missing some essential APARs in this area.
- What specific metric are you looking at? CPU seconds? CPU%? MIPS?
- What tool are you using to monitor CPU?
- Over what timeframe? How long have you been monitoring?
- What may be a more acceptable range of values?
- When is the CPU thought to be too high? Is there an hourly or daily pattern to the CPU usage? Spikes? When? Long periods of high usage? When? If possible, provide a report of the CPU usage over a period of at least a few days.
- Has ReportCenter always used this amount of CPU, or is it growing?
- Do you have an extremely large database? For example, while different sites have different requirements, fact tables with tens of millions of rows is considered extremely large.

Use the REPTTEST DB command from OCS, to list the database table sizes as at the last Java Task restart.

- How powerful is this LPAR?
- Do you have any Strobe or similar application monitor reports?

## JVM Heap Storage

### Symptoms

Related error messages in STDERR or STDOUT, possible task termination.

Related error messages in Java Task log.

Related error messages on generated report output page.

### Possible Causes

Insufficient JVM heap size specified by the Java Task.

Insufficient LE buffer or storage allocations. Much JVM storage is allocated from LE storage.

JVM incorrectly freeing or reusing storage.

### Action

- Check the generated Adaptor.bat HFS file. This shows the initial and maximum heap size specifications on the Java command. These are specified as `-ms?M` and `-mx?M`.
- Check the WRCALL23 TASKNAME JVM Memory In Use ... messages from the NM Activity log, for the 24 hours immediately preceding the problem. These messages are issued every 30 minutes; there will be only 48.

You can change the initial and maximum JVM heap sizes used by the ReportCenter Java Task by updating the ReportCenter Customizer parameter group. The default maximum is 256 MB.

z/OS Java storage usage and garbage collection is a complex area, much affected by environmental factors. Only change the default values on the recommendation of your systems programming or tuning staff.

## Diagnose DB2 Problems

This section describes problems that you may encounter with DB2.



## Database Connection Cannot Be Established

If the following message appears in the ReportCenter Java Task log:

Cannot establish database connection. Message: DB2SQLJConnection error in native method: constructor:

RRS "IDENTIFY" failed using DB2 system:D...

Proceed as follows, according to the REASON code:

- If the REASON code is 00f30012, verify that the DB2 subsystem has started.
- If the REASON code is 00f30049, verify that the statements in the supplied CC2DSAMP(WRBD2GRA) member have run.
- If the REASON code is 00f30091, verify that RRS/MVS has started.

**Note:** If RRS is recycled, you must recycle DB2; therefore, you must recycle the ReportCenter Java Task when your DB2 subsystem is recycled.

## Database Connection Cannot Be Established-No Suitable SQLJ/JDBC Driver

If the following message appears in the ReportCenter Java Task log, ensure that you have implemented the REPORTCENTER parameter group in the ReportCenter control region correctly.

```
Cannot establish database connection. Message: No suitable driver...
```

```
Ensure that the REPORTCENTER parameter group is completed correctly in terms of the HFS path for DB2 JDBC classes and the DB2 subsystem location name, for example:
```

```
REPORTCENTER - ReportCenter Control Region
```

```
DB2 Database and JDBC information: (Get these values from your DB2 DBA)
```

```
JDBC Driver Name ..... ibm.sql.DB2Driver
```

```
JDBC Class File (eg. /usr/lpp/db2/db2710/classes/db2j2classes.zip )  
/sys/usr/lpp/db2/db2710/classes/db2j2classes.zip
```

```
JDBC DLL Directory (eg. /usr/lpp/db2/db2710/lib )  
/sys/usr/lpp/db2/db2710/lib
```

```
JDBC Properties File  
(eg. /usr/lpp/db2/db2710/classes/db2sqljjdbc.properties )  
/sys/usr/lpp/db2/db2710/classes/db2sqljjdbc.properties
```

This information should carry through to the last five lines of the Adaptor.ini file as follows:

### For the Legacy Driver

```
WebReportsDB2JDBC.driver=ibm.sql.DB2Driver  
WebReportsDB2JDBC.url=jdbc:db2os390:  
WebReportsDB2JDBC.SQLType=DB2
```

### For the Universal Driver using Type 2 Connectivity

```
WebReports.driver=com.ibm.db2.jcc.DB2Driver  
WebReports.url=jdbc:db2:Db2LocationName  
WebReports.SQLType=DB2
```

### For the Universal Driver using Type 4 Connectivity

```
WebReports.driver=com.ibm.db2.jcc.DB2Driver  
WebReports.url=jdbc:db2://IpAddress:port/Db2LocationName  
WebReports.user=user  
WebReports.password=password  
WebReports.SQLType=DB2
```

## Database Information Cannot Be Retrieved

If the following message appears in the ReportCenter Java Task log, ensure that you have run the statements in the supplied CC2DSAMP(WRBD2GRA) member.

```
Cannot get database information: DB2JDBCcursor Received Error in Method
prepare:SQLCODE=> -551
SQLSTATE => 42501 Error Tokens => <<DB2 6.1 ANSI SQLJ-0/JDBC 1.0>> j$name SELECT
SYSIBM.SYSxxxxxx      com.ca.syed.utils.datawarehouse.ExpiryService.009
```

## Key Range Does Not Exist

This is indicated by the following message in the ReportCenter Java Task log:

```
Key range for table database-table-name does not exist
```

Check the following:

- In the db2sqljdbc.properties file, check that your DB2 subsystem name is specified correctly.  
If you find a problem, correct the file, and then rerun the db2genJDBC utility and the DSNTJJCL job to recreate and rebind the DBRMs.
- Check the output of the WRDB2CRE job to ensure that no errors were encountered, and that all table spaces, tables, and indexes are created correctly.
- The DB2 subsystem that contains your ReportCenter databases has been brought down while you have been collecting data. Restart the ReportCenter Java Task so that new database connections can be obtained.

## Diagnose CA Datacom/AD Problems

This section describes problems that you may encounter with CA Datacom/AD.

### CA Datacom Server Job Fails with Message DSV00026E

The CA Datacom Server job or started task fails with a condition code of 16, and the following message is displayed:

```
DSV00026E-Database open failure. Server initialization ended
```

This occurs if you start CA Datacom Server before the CA Datacom/AD MUF is started or before the MUF has finished initializing.

Verify that the CA Datacom/AD MUF has started. Wait a short time, and then resubmit the CA Datacom Server job.

## CA Datacom Server Job Fails with Message DSV00028E

The CA Datacom Server job or started task fails with the following message:

```
DSV00028E - Server ended, CCI failure in function: CCIRECV.1
```

This is caused by a duplicate APPLID value in the CA Datacom Server input parameters.

APPLID is a unique value that identifies the server job to CCI. This must be unique in the CCI system, and that depends upon your CCI environment.

This occurs where multiple CA Datacom Server jobs are in use.

**Note:** For information about how to resolve this situation, contact Technical Support.

## CA Datacom Server Job Fails with Message DSV00092E

The CA Datacom Server job or started task fails with the following message:

```
DSV00092E-Duplicate SERVERNAME entered
```

This is caused by an error with CA Datacom Server input parameters—either SERVERNAME is duplicated, or both SERVERNAME and APPLID are duplicated.

SERVERNAME must be different for every copy of CA Datacom Server that is running.

APPLID is a unique value that identifies the server job to CCI. This value must be unique in the CCI system, and that depends upon your CCI environment.

This problem occurs only where multiple CA Datacom Server jobs are in use.

**Note:** For information about how to resolve this situation, contact Technical Support.

## ReportCenter Java Task with Return Code 0137

ReportCenter Java Task terminates with return code 0137.

```
Syslog message CA CCI API ROUTINE FRR.
```

This may happen intermittently. To correct the problem:

- Ensure that you are running CA Common Services for z/OS 2.2, SP03 or above.
- If you are running CA Common Services for z/OS 2.2, SP03, obtain and apply the following POST SP03 HYPER FIXES: QO28980, QO28981, QO28982, QO28990, QO28996, QO29001, QO29004, QO29672, QO30518, QO30507, QO30510, QO30460, and PIB QI29627.

## Report Generation Fails with Message NO CONNECTION HANDLE

Running a report fails with messages similar to the following:

```
java.sql.SQLException:  
ca.datacom.db.DBSQLException  
ca.datacom.db.DBSQLException  
MAINFRAME SERVER ERROR:  
NO CONNECTION HANDLE  
No receiver online in Session(executeImmediate)in Query(prepare)
```

The CA Datacom Server job is down and no database connection is possible.

Resubmit the CA Datacom Server job, and then restart the ReportCenter Java Task.

## Report Generation Fails with Message UNEXPECTED ENGINE ERROR

Running a report fails with messages similar to the following:

```
java.sql.SQLException  
ca.datacom.db.DBSQLException  
ca.datacom.db.DBSQLException  
MAINFRAME SERVER ERROR: UNEXPECTED ENGINE ERROR  
No receiver online in Session(executeImmediate)in Query(prepare)
```

A similar UNABLE TO ALLOCATE MEMORY message may also occur.

The CA Datacom/AD Multi-User Facility (MUF) has started with too small a region size.

With simple usage, the default size at installation time of 6144 will suffice; however, CA Datacom SQL usage generally requires a larger region size. Modify your CA Datacom/AD job/task to use a larger region size, and then restart CA Datacom/AD, CA Datacom Server, and the ReportCenter Java task.

## Diagnose Miscellaneous Problems

This section describes other problems that you may encounter.

## Incorrect Time and Date

If the time and date stamps reported in the ReportCenter Java Task log (or any other time and date stamps generated by ReportCenter) are offset from your local time by a few hours, it is likely that the UNIX System Services time zone variable is not set correctly.

ReportCenter determines the current time and date by using the system clock and the TZ (time zone) environment variable in USS. The TZ environment variable specifies the offset between your local time and Coordinated Universal Time (UTC) (also known as Greenwich Mean Time (GMT)).

**Note:** The ReportCenter Java Task ignores the value specified in the user.timezone Java environment variable.

The time zone actually used by the ReportCenter Java Task appears at the start of the Java Task log.

The value for TZ is in the /etc/profile USS file. Your systems programmer updates this value to specify the time zone where your z/OS system is located. The default entry is TZ=EST5EDT.

**Note:** For information about how to specify a value for TZ, see IBM's *Unix System Services Command Reference*.

If the ReportCenter Java Task reports the wrong time or schedules its activities at the wrong time, check this variable and ask your systems programmer to set it to the correct value for your location. If it is not possible to have the value changed, you can override it by specifying a value in the *prefix2/nm/reporter/usr/adaptor/Adaptor.ini* ReportCenter Java Task control file. In the section headed [Adaptor] add a line with "timezone=x", where x is the timezone specification for your location. You must restart the ReportCenter Java Task to bring the change into effect.

### Example: GMT

```
TZ=GMT0
```

This is Greenwich Mean Time with 0 hours offset from UTC and no adjustment for daylight saving in the summer.

### Example: EST

```
TZ=EST5EDT
```

This is Eastern (American) Standard Time, which is 5 hours behind UTC. In the summer, Eastern Daylight Time (EDT) is used. For daylight saving, the default amount (1 hour), the default start date (the last Sunday of March), and the default end date (the last Sunday of October) are used.

**Example: ACT**

```
TZ=ACT-09:30ACDT-10:30:00,M10.5.0,M3.5.0
```

This is Australian Central Time, which is 9.5 hours ahead of UTC. In the summer, Australian Central Daylight Time (ACDT) is used, which is 10.5 hours ahead of GMT. M10.5.0 indicates that daylight saving starts on the last Sunday of October (10 indicates the tenth month, 5 indicates the last week of the month, and 0 indicates Sunday). M3.5.0 indicates that daylight saving ends on the last Sunday of March.

## Out of HFS Space

Running out of space in a ReportCenter HFS can have a variety of symptoms, depending on the file and operation that encountered the condition. Symptoms range from none at all-the Java Task just hangs-to error messages.

To see how much space is available in a file system, use one of the following commands:

- ishell and the U action code
- OMVS and the `df -P /?your_ReportCenter_directory` command.

Contact your UNIX System Services administrator who may need to do the following:

1. Stop the Java Task.
2. Unmount the HFS file system that runs out of space.
3. Reorganize or expand the file system.
4. Remount the file system.
5. Start the Java Task.

## /DWS Display Shows Red

Sometimes, when you issue the /dws command, you notice that the following is displayed in RED:

```
CM31          0      0      0      0      0
Issue the CHK command; if this does not bring it into OK (GREEN) status, then issue
the RCY command.
```

If the RCY command has no effect, the connection between the database and the ReportCenter Java Task may be broken. This problem occurs if the database is brought down or the Warehouse service (or any other service) did not connect at initialization. From OCS, run the command REPTTEST and check for any errors.

You can also verify this problem by reviewing the Adaptorxxx.log. Check for the following:

```
Port sharing protocol WAREHOUSE not supported by this Adaptor, cannot service
Connection ID 60 to at 141.202.200.72:2101
```

You may see the following messages at initialization:

```
*****
Cannot establish database connection.
*****
```

To correct this problem, ensure that the database and all prerequisite and corequisite tasks are running, then cancel and restart the ReportCenter Java Task. Review the Adaptorxxx.log on startup to verify that proper connection is made. When the socket is open for connection, reissue the CHK command and the /DWS service should go into the OK (green) state.

## Information to Provide to Technical Support

If you contact Technical Support, please provide the following information with your initial call. You may then be asked to collect more diagnostic data, depending on the problem type.

- The CA NetMaster Products running in the ReportCenter Control Region. Provide names, versions, and maintenance
- The type of database ReportCenter is using. Provide DBMS, version, and maintenance. For example, DB2 Version 8, DB2 Version 7, CA Datacom/AD Version 10 SP02, CA Datacom/AD Version 10 SP04, CA Datacom/AD r11 SP02.
- Output from the REPTTEST command on the Control Region.
- The number of different Data Feed regions sending data to ReportCenter.
- Whether you are a new, existing, or migrating ReportCenter user.



## How To Collect Diagnostic Data

This section is common to all problems. It explains how to collect the diagnostic data required by the other tasks.

No single problem requires all of this data. Collect only what is required by your specific problem or what is requested by Technical Support.

**Important!** Ensure that all information and diagnostic data that you provide to Technical Support is collected from the same incident.

### CA NetMaster Products

To collect diagnostic data from CA NetMaster products, use the OCS ST command on the ReportCenter Control Region or Data Region.

This shows what CA NetMaster products run in the region, their version or release, and their Service Pack levels.

### REPTTEST Output

REPTTEST is a self-test facility that verifies ReportCenter components. You can run it from the 3270 or WebCenter, whatever is more convenient.

#### Run REPTTEST From the 3270

To run REPTTEST from the 3270, use the OCS command REPTTEST. This runs all component tests.

Place your cursor on any message number, and then press F1 (Help) for more information.

REPTTEST ? displays the separate tests available.

To write the test output to the activity log, use SUB BLOG REPTTEST.

To write the test output to a separate SYSOUT file, for printing or saving to a data set, use LOGSWAP; SUB BLOG REPTTEST; LOGSWAP then manage the SYSOUT file using SDSF.

## Run REPTTEST From WebCenter

### To run REPTTEST from WebCenter

1. Select ReportCenter, Report Activity Status.  
The Report Activity Status page appears.
2. Click the Run Function Test tab, choose a function test, and review the results for any errors.
3. Click a message number for more information.

## Java Task Log

You can view the Java Task log from the 3270 or WebCenter.

### View Java Task Log From the 3270

Viewing the log from the 3270 is recommended for troubleshooting.

To view the Java Task log from the 3270, logon to TSO, and issue the following OMVS command:

```
obrowse /?log_files_HFS_directory/nm/reporter/usr/logs/Adaptor001.log
```

To list your log files HFS directory, use OCS command REPTTEST INST and look for the following message:

```
WRSTIN01    HFS Java Task logs: /u/users/abcde/nm/nm01
```

Using obrowse displays the entire log file. This file can contain log data from many different runs of the Java Task. The most recent run is at the end of the log.

A new run starts with lines similar to the following:

```
*****  
**** ReportCenter Log Number n  
**** System initialised at 2007-Jul-31 19:41:25.449  
2007-Jul-06 00:26:32.726 Using timezone GMT-04:00, built from "tz=EST5EDT"  
2007-Jul-06 00:26:32.727 Starting ReportCenter Java Task; version nn.n
```

To find the start of the latest run, browse the file, go to the end, and find (backwards) the first starting ReportCenter Java task.

## View Java Task Log From WebCenter

To view the Java Task log from WebCenter, select ReportCenter, Java Task Log to display the end of the log.

Because the log may be very long, only the most recent entries are displayed.

For this reason, viewing the Java Task log from the 3270 is more useful for troubleshooting.

## Java Code PTF Levels

Java code PTF levels appear near the top of the Java Task log. Find the start of the latest run and look for messages such as the following:

```
adaptor.jar          PTF level is base (compile date 2006-Mar-31).
datawarehouse.jar   PTF level is base (compile date 2006-Jun-01). reportgenerator.jar
PTF level is base (compile date 2006-May-31). reportservices.jar PTF level is base
(compile date 2006-May-31).
```

## CA NetMaster Activity Log

You can view the CA NetMaster Activity log from the 3270 or WebCenter.

### View CA NetMaster Activity Log From the 3270

To view the CA NetMaster activity log, do *one* of the following:

- Type command \$LOG at the Command prompt
- Use PF7 from OCS.
- Use option =H.L.

You can also type HELP from the log.

#### Notes:

- For more information, see the *User Guide*.
- Do not confuse the CA NetMaster activity log with the Java Task log. They are produced by different address spaces, and are logically and physically different.

### View CA NetMaster Activity Log From WebCenter

To view the CA NetMaster activity log, select Utilities, View activity log.

## REPORTCENTER Customizer ILog

The REPORTCENTER Customizer Ilog can be viewed only from the 3270.

### To view the REPORTCENTER Customizer Ilog

1. From the ReportCenter control region, enter **/PARMS**.  
The Customizer : Parameter Groups menu appears.
2. Enter command L (=ILog) next to the following line in the INTERFACES section:  
`$WR REPORTCENTER ReportCenter Control Region`  
The Customizer : Initialization Log appears.
3. Enter command S (=Message Help) next to any message.

**Note:** Do not confuse the CA NetMaster activity log with the ReportCenter Customizer ILog. They are both produced by the CA NetMaster region, and messages that appear on one may also appear on the other; however, only the ILog contains the complete details of what happens when the ReportCenter parameter group performs its work.

## DB2 Version

You can obtain the DB2 version from your DB2 Database Administrator.

## CA Datacom/AD Version and Maintenance

The Datacom version is displayed on the Datacom MUF JOBLOG.

Look for message DB00215I.

### Example: Display CA Datacom/AD Version

```
DB00215I - CA DATACOM/DB SYSTEM VERSION: 10.0 AT SERVICE PACK: AD04
DB00215I - Advantage CA Datacom/DB Database r11 at service pack: SP02
```

## Display STDOUT and STDERR HFS Files

The REPTTEST command lists the initial content of the STDOUT and STDERR HFS files if they exist, and if the CA NetMaster region can read them. If you do not want all of the REPTTEST output, use OCS command REPTTEST STC and look for message numbers WRSTJF03 and WRSTJF13.

### Example: STDOUT and STDERR HFS Files

WRSTJF03 Job DENMX2JV produced the following STDOUT output:

```
WRSTJF03 * DENMX2JV NetMaster ReportCenter USS Environment Variable
WRSTJF03 * DENMX2JV PATH set to /bin:/sys/javatm2/v1r4m2/usr/lpp/ja
WRSTJF03 * DENMX2JV LIBPATH set to /lib:/sys/usr/lpp/db2/db2710/lib
WRSTJF03 * DENMX2JV STEPLIB set to DB2.DB2710.SDSNEXIT:DB2.DB2710.S
WRSTJF03 * DENMX2JV DB2SQLJPROPERTIES set to /sys/usr/lpp/db2/db271
WRSTJF03 * DENMX2JV LD_LIBRARY_PATH set to /sys/usr/lpp/db2/db2710/
WRSTJF13 Job DENMX2JV produced the following STDERR output:
WRSTJF13 * java version "1.4.2"
WRSTJF13 * Java(TM) 2 Runtime Environment, Standard Edition (build
WRSTJF13 * Classic VM (build 1.4.2, J2RE 1.4.2 IBM z/OS Persistent
```

If this does not work, or you need to see the full contents of these files, log on to TSO, and use the following OMVS commands:

```
obrowse /?runtime_control_files_HFS_directory/nm/reporter/usr/adaptor/stderr.txt
obrowse /?runtime_control_files_HFS_directory/nm/reporter/usr/adaptor/stderr.txt
```

To list your runtime control files HFS directory, use OCS command REPTTEST INST and look for the following message:

```
WRSTIN01 HFS Working Data: /u/users/abcde/nm/nm01
```

## Contents of an HFS File

To display the contents of an HFS file, obtain the full path name of the file and use the TSO OMVS command [obrowse](#) (see page 95).

## List an HFS Directory

To list an HFS directory, you can issue some [USS commands](#) (see page 94) from OCS, if the CA NetMaster region is set up correctly.

### Example: List HFS Directory

```
USS ls -l /?directory_pathnam
```



# Appendix A: ReportCenter Implementation Worksheet

---

This section contains the following topics:

[About the Implementation Worksheet](#) (see page 167)

[Started Task Parameter](#) (see page 167)

[JDK Parameter](#) (see page 168)

[DB2 Parameters](#) (see page 168)

[CA Datacom Parameters](#) (see page 170)

## About the Implementation Worksheet

This worksheet lists some of the parameter values that you need to know to update the REPORTCENTER parameter group in the ReportCenter control region.

The parameters included here are the ones that result from activities external to your CA NetMaster product. As you perform the whole ReportCenter implementation process, you should fill in the values specific to your site, so that you can refer to them when required.

**More information:**

[Customize the ReportCenter Control Region](#) (see page 82)

## Started Task Parameter

This parameter is the name of the Java Task started task chosen in Implementing UNIX System Services Authorization. This name must be defined to your security system as a started task. The user ID associated with this name must also be defined to your security system to permit OMVS access.

| Item                        | Description and Use  |
|-----------------------------|--|
| ReportCenter Java Task Name | The MVS started task name of the ReportCenter Java Task. This name is needed to generate the JCL and to monitor task availability.<br><b>Default:</b> NMJAVA<br><b>My Details:</b> |

## JDK Parameter

You obtain the value of this parameter from your mainframe Java installation, done in Implementing z/OS Mainframe Java. If your Java product was already implemented, contact your systems programmer for the value of this parameter.

| Item                | Description and Use   |
|---------------------|---|
| Java Directory Name | <p>The HFS directory path name of your IBM z/OS Java JDK Command Directory. This is included in the PATH environment variable for the ReportCenter Java Task.</p> <p><b>Example:</b> /usr/lpp/java/J1.4/bin</p> <p><b>My Details:</b></p> |

## DB2 Parameters

Your DB2 database administrator provides the values of these parameters, as they perform the tasks in Implementing DB2 with ReportCenter.

| Item                                      | Description and Use   |
|---|---|
| ReportCenter DB2 Database Table Qualifier | <p>The table qualifier chosen when the ReportCenter DB2 database was created, using the WRDB2CRE job. This name is needed to customize the ReportCenter SQL statements. The ReportCenter Java Task uses this name to qualify all table names in all SQL statements.</p> <p><b>Default:</b> None</p> <p><b>My Details:</b></p> |



| Item                                       | Description and Use   |
|--|---|
| DB2 Load Library Data Set Names            | <p>The data set names of the DB2 SDSNEXIT, SDSNLOAD, and SDSNLOAD2 load libraries. These load libraries contain executable code used by DB2 JDBC. They are used to set the STEPLIB environment variable for the ReportCenter Java Task.</p> <p><b>Example:</b></p> <p>SYS3.DB2810.SDSNEXIT<br/> SYS3.DB2810.SDSNLOAD<br/> SYS3.DB2810.SDSNLOAD2</p> <p><b>My Details:</b></p>   |
| DB2 JDBC Class File Directory or File Name | <p>The HFS path name of the zip file (Legacy Driver) or directory (Universal Driver) that contains the DB2 JDBC Java classes. This is included in the CLASSPATH specification for the ReportCenter Java Task.</p> <p><b>Example:</b></p> <p>/usr/lpp/db2/db2710/classes/db2j2classes.zip (Legacy Driver)<br/> /usr/lpp/db2/db2810/classes (Universal Driver)<br/> /usr/lpp/db2/db2910/classes</p> <p><b>My Details:</b></p> |
| DB2 JDBC DLL Directory Name                | <p>The HFS directory path name of your DB2 JDBC DLL Directory. This is included in the LIBPATH and LD_LIBRARY_PATH environment variable for the ReportCenter Java Task.</p> <p><b>Example:</b> /usr/lpp/db2/db2810/lib</p> <p><b>My Details:</b></p>  |
| DB2 JDBC Properties File Name              | <p>The HFS path name of your DB2 JDBC properties file. This is used to set the DB2SQLJPROPERTIES environment variable for the ReportCenter Java Task.</p> <p><b>Example:</b> /usr/lpp/db2/db2810/classes/db2sqljdbc.properties</p> <p><b>My Details:</b></p>  |

## CA Datacom Parameters

You obtain the values of these parameters during your CA Datacom Server implementation, which is done in Implementing CA Datacom/AD with ReportCenter.

You need these values in addition to the items on the CA Datacom/AD installation worksheet (in the *CA Datacom/AD Installation and Maintenance Guide*).

| Item                                    | Description and Use  |
|---|--|
| CA Datacom JDBC DLL and Class Directory | The path where the HFS modules reside. This path was specified in the CA Datacom/AD installation jobs AX22MKD and AX23CSIU.<br><b>Default:</b> None<br><b>My Details:</b>  |
| CA Datacom JDBC Server Name             | The value of the SERVERNAME parameter in the CA Datacom Server startup JCL (see the sample WRDCMSVS job). The name is used to construct the CA Datacom Server JDBC URL. Unless directed otherwise, use the default value.<br><b>Default:</b> NETMASTER<br><b>My Details:</b>   |
| CA Datacom JDBC Application ID          | The value of the APPLID parameter in the CA Datacom Server startup JCL (see the sample WRDCMSVS job). The ID is used to construct the CA Datacom Server JDBC URL. Unless directed otherwise, use the default value.<br><b>Default:</b> NETMASTER<br><b>My Details:</b>   |
| CCI System ID                           | The CAICCI system ID of the system where the CA Datacom Server runs. (This system is the same system where the ReportCenter control region and Java Task run). This value is the SYSID name specified in the CCIPARM member that the CAICCI startup JCL uses. Contact the systems programmer who installed the CA Common Services CCI component for this value. If you have sufficient authority, you can issue the <b>F ENF,DISPLAY,SYSID</b> system command to get this value. This system ID is used to construct the CA Datacom Server JDBC URL.<br><b>Default:</b> None<br><b>My Details:</b> |

# Appendix B: Hierarchical File System Considerations

---

This section contains the following topics:

[HFS Files](#) (see page 171)

[Types of File System](#) (see page 172)

[Use an Existing File System](#) (see page 172)

[Use a New File System](#) (see page 172)

[Prepare to Install the HFS code](#) (see page 174)

[Review Space Usage](#) (see page 175)

## HFS Files

Hierarchical file system (HFS) format files are standard for Java and UNIX System Services.

ReportCenter is a z/OS-hosted, web-based reporting feature of your product that includes HFS SMP/E Target Libraries.

Installation and implementation of ReportCenter is optional, or may be done later after your product region has been set up and you are familiar with its operation. You install the ReportCenter HFS code when you install ReportCenter.

Special authority levels, such as UNIX superuser, may be required for some steps in this task.

If you are unfamiliar with MVS HFS files, see IBM's *UNIX System Services User's Guide* for your version of z/OS.

## Types of File System

UNIX System Services implements the following types of hierarchical file systems:

### HFS

HFS (Hierarchical File System) is the original implementation for USS. Data is physically stored in VSAM files, which are mounted to correspond to a certain directory path.

### zFS

zFS (z/OS File System) is a newer implementation that can provide better performance and reliability, especially in environments where the file system is shared across multiple z/OS systems.

### NFS

NFS (Network File System) is an implementation that allows a file system to be shared across a network.

ReportCenter can use any of these implementations. For simplicity, the examples in this guide always refers to HFS; you may substitute HFS with zFS or NFS.

## Use an Existing File System

You may choose to install the ReportCenter code into a new or existing directory in an existing file system, for example:

`/u/users/ca`

`/cai`

`/usr/lpp`

If the directory does not exist, you must create it.

## Use a New File System

If you do not want to install the ReportCenter code into one of your existing file systems, you must allocate a new physical file system and mount it permanently.

Your UNIX Systems Services administrator can tell you what your HFS data set naming standards are and what mount point to use for the new file system.

For more information about how to allocate and mount a file system, see IBM's *UNIX System Services Planning* guide.

## Allocate the File System

Use the following sample JCL code as a guide to allocate a file system:

```

//*-----*
//*      ALLOCATE THE HFS                               *
//*-----*
//ALLOC  EXEC  PGM=IEFBR14
//HFS    DD  DSN=?HFSQUAL.NETMASTR.HFS,
//        DISP=(NEW,CATLG,DELETE),
//        DSNTYPE=HFS,
//        ?VOL=SER=XXXXXX or STORCLAS=X,MGMTCLAS=X
//        SPACE=(CYL,(100,50,5)),DCB=DSORG=PO

```

## Mount the File System

Use the following sample JCL code as a guide to temporarily mount a file system. The file system must be mounted read/write on the system where your generated installation JCL will be run. You may also issue the mount command from OMVS. See IBM's UNIX System Services documentation for details.

```

//*-----*
//*      MOUNT THE HFS TO MOUNTPOINT                   *
//*-----*
//* Instructions: 1) Change ?HFSDSN to the name of the HFS file *
//*               that was allocated.                   *
//*-----*
//*               2) Change /?cai to the mount point for your *
//*               installation                             *
//*-----*
//*               3) Update your BPXPARM to include the new mount *
//*               point.                                   *
//*-----*
//MOUNTHFS EXEC  PGM=IKJEFT01,REGION=4096K,DYNAMNBR=50
//SYSTSPRT DD  SYSOUT=*
//SYSTSOUT DD  SYSOUT=*
//SYSTSIN  DD  *
MOUNT FILESYSTEM(' ?HFSDSN') +
        TYPE(HFS) MODE(RDWR) +
        MOUNTPOINT('/ ?cai')
/*

```

## Mount the File System Permanently

This file system only remains mounted until the next initial program load (IPL). To permanently mount this file system, you must update your PARMLIB BPXPRMxx member to include the mount point so subsequent IPLs mount the HFS automatically.

## Prepare to Install the HFS code

When you have a new or existing file system to use and you know what directory path name to use for the ReportCenter HFS files, you should review these common considerations with your UNIX Systems Services administrator.

### Authorities Required

The SMP/E user who will be submitting the generated installation JCL for ReportCenter must have write access to the path name.

In addition, the SMP/E program name (*not* the name of the submitting user) must be defined to the security class BPX.SUPERUSER before any SMP/E installation or maintenance can be done. This ensures that SMP/E always has sufficient file system access, irrespective of who runs the SMP/E jobs.

See IBM's *SMP/E for z/OS and OS/390 User's Guide* for more information.

### Shared Mount Points

The file system must be mounted read/write on the same system where your generated installation JCL will be run. This is so SMP/E can create the SMP/E target library.

A ReportCenter control region needs at least read and execute access to the code in this file system. If such a region is on a different system, this file access may be accomplished by methods such as mounting the file system as read accessible from multiple systems or copying the target library files to a runtime directory. This depends on your specific configuration and code management standards.

ReportCenter data regions do not access the ReportCenter HFS files.

## Directories and Files Created

The generated installation JCL for ReportCenter creates and runs a shell script named C2DMKDR. This script creates various subdirectories starting with nm/reporter/wr76 under your path name.

For example, if your path name is /u/users, the JCL creates directories including:

```
/u/users/nm/reporter/wr76/classes  
/u/users/nm/reporter/wr76/cntl  
...
```

During the installation of ReportCenter, the access permissions for the individual files are set at 775 for executable files and 664 for nonexecutable files.

**Note:** For more information about setting and changing HFS file permissions, see IBM's *UNIX System Services User's Guide* and *UNIX System Services Command Reference*.

## Future HFS Requirements

The file system that you specify here is for the SMP/E target libraries. ReportCenter also requires HFS directories for its user data. These are specified separately during ReportCenter implementation and are not part of installation.

ReportCenter user data can share the physical file system used for this SMP/E target libraries, or use separate file systems. If you eventually want to have both ReportCenter SMP/E and user data on this file system, take this into account when deciding the file size and mount point.

## Review Space Usage

To see how much free space remains in your HFS file system and what percentage of its capacity has been used, use the following OMVS command:

```
df -P mount-point
```

where *mount-point* is the mount point of your file system (for example, /u/users/nm/). A response similar to the following appears:

| Filesystem           | 512-blocks | Used   | Available | Capacity | Mounted on  |
|----------------------|------------|--------|-----------|----------|-------------|
| OMVSGRP.ABC.SYS4.HFS | 432000     | 314368 | 117232    | 73%      | /u/users/nm |





# Appendix C: HFS Directory Structure

---

This section contains the following topics:

[ReportCenter Path Names](#) (see page 177)

[SMP/E Target Libraries](#) (see page 178)

[Working Data](#) (see page 179)

[Logs](#) (see page 179)

[Report Output](#) (see page 180)

[Access HFS Files](#) (see page 181)

## ReportCenter Path Names

ReportCenter uses HFS to store files that include the following:

- SMP/E Target Libraries—program code, definitions, control files, and so on
- Working data such as report schedule definitions
- Log files
- Report output

ReportCenter path names have the following format:

```
?iia prefix/nm/reporter/wr76/classes/...
?iia prefix/nm/reporter/wr76/cntl/...
?iia prefix/nm/reporter/wr76/datacom/...
?iia prefix/nm/reporter/wr76/reports/common/...
?iia prefix/nm/reporter/wr76/reports/common/images/...
?iia prefix/nm/reporter/wr76/reports/definitions/...
?ics_prefix2/nm/reporter/usr/adaptor/...
?ics_prefix2/nm/reporter/usr/prompts/...
?ics_prefix2/nm/reporter/usr/schedules/...
?ics_prefix3/nm/reporter/usr/logs/...
?ics_prefix4/nm/reporter/usr/output/...
```

### **?iia\_prefix**

Specifies the HFS directory path name entered when you install ReportCenter.

### **/nm/reporter/wr76**

Identifies system data, specifically SMP/E Target libraries. The value is constant. These subdirectories were created by SMP/E and contain files installed and maintained by SMP/E.

**?ics\_prefixn**

Specifies the value entered in the REPORTCENTER Customizer parameter group on the ReportCenter control region.

**Note:** You can use the same value for all ICS HFS prefixes if necessary. This appendix describes what kinds of files are stored under each of the prefixes.

**/nm/reporter/usr**

Identifies user data. The value is constant. The ReportCenter control region creates these subdirectories, which contain files generated by the ReportCenter control region and the ReportCenter Java Task.

## SMP/E Target Libraries

The SMP/E target libraries include the following files:

**.../nm/reporter/wr76/ctl/\*.\***

Control file templates

**.../nm/reporter/wr76/classes/\*.\***

Executable Java code

**.../nm/reporter/wr76/datacom/\*.\***

CA Common Services CAICCI modules for 31-bit Java JDK and 64-bit Java JDK

**.../nm/reporter/wr76/reports/common/\*.\***

Attribute description, HTML skeleton, and style sheet files

**.../nm/reporter/wr76/reports/common/images/\*.\***

Graphic files

**.../nm/reporter/wr76/reports/definitions/Reporter.dtd**

Document type definition file for report definitions

**.../nm/reporter/wr76/reports/definitions/report-name.xml**

Report definitions

**Note:** ?iia\_prefix prefixes these path names.

## Working Data

The working data is in the following files:

**.../nm/reporter/usr/adaptor/Adaptor.bat**

Customized .bat file executed by ReportCenter Java Task

**.../nm/reporter/usr/adaptor/Adaptor.ini**

Customized initialization parameters for ReportCenter Java Task

**.../nm/reporter/usr/adaptor/stderr.txt**

ReportCenter Java Task USS standard error output

**.../nm/reporter/usr/adaptor/stdout.txt**

ReportCenter Java Task USS standard output

**.../nm/reporter/usr/prompts/\*.\***

Live data prompt value files

**.../nm/reporter/usr/schedules/report-name/file-subdirectory-prefix/report.pty**

Schedule log

**.../nm/reporter/usr/schedules/report-name/file-subdirectory-prefix/report.sched**

Schedule details

where *file-subdirectory-prefix* is the ID of the user that scheduled the report concatenated with an internally generated identifier.

**Note:** These path names are all prefixed by *?ics\_prefix2*. The total size of the files under this prefix is usually very small.

## Logs

The ReportCenter Java Task logs are in the following files:

**.../nm/reporter/usr/logs/AdaptorNNN.log**

**Note:** These path names are all prefixed by *?ics\_prefix3*. The total size of the files under this prefix depends on your log file specifications. They will not grow indefinitely—once the maximum log size and number has been reached, the files are reused.

## Specify the Number and Size of Log Files

The log files are controlled by the following keywords in the Adaptor.ini file.

```
maxNumberOfLogs=3  
switchLogWhenSize=9999
```

This example specifies that three separate log files are created and cycled around (max is nine), and the maximum size of each log is 9999K.

In this example (the default), Adaptor001.log is created, when it gets to 9999K it switches to Adaptor002.log, and so on. If a log exists, it is overwritten.

## Report Output

The report output is in the following files:

**.../nm/reporter/usr/output/report-name/file-subdirectory/\*.png**

Charts

**.../nm/reporter/usr/output/report-name/file-subdirectory/report.html**

Generated report page for live data

**.../nm/reporter/usr/output/report-name/file-subdirectory/report.pty**

Details of a report run on live data

*file-subdirectory* is *file-subdirectory-prefix\_yyyymmddhhmmss*, where:

***file-subdirectory-prefix***

Specifies the ID of the user that scheduled or ran the report concatenated with an internally generated identifier.

***yyymmdd***

Specifies the date at which the report is run.

***hhmmss***

Specifies the time at which the report is run.

**Notes:**

- These path names are all prefixed by *?ics\_prefix4*. The files under this prefix contain the finished report output. The total size of the files under this prefix depends on how many reports you generate and the length of time you keep the report output. You can make this directory available to other HTTP web server or portal products that are able to display the report output.
- The pre-generated report examples are supplied in a CA NetMaster VSAM file, not in HFS. These reports are available even when ReportCenter is not implemented.

## Access HFS Files

In operation, the ReportCenter control region and the ReportCenter Java Task access all the necessary HFS files. In some special cases, you may need to access the ReportCenter HFS files manually. You can use any of the standard IBM OMVS functions, such as OBROWSE or OEDIT, to do so.

### Examine the ReportCenter Java Task Log Files

For performance and space reasons, the WebCenter Java Task Log option shows only the most recent log records. To examine the complete ReportCenter Java Task logs, look at all *AdaptorNNN.log* files in directory *?ics\_prefix3/nm/reporter/usr/logs/...*

*Adaptor001.log* is the current log, and the file with the highest number is the oldest.

If you are asked to forward your ReportCenter Java Task log files to Technical Support, transfer the entire contents of the *?ics\_prefix3/nm/reporter/usr/logs/...* directory as text, in zipped format.

Directory *?ics\_prefix3/nm/reporter/usr/logs/...* also contains status files written by the scheduled ReportCenter services. These files contain the last run status of the service. The filenames are *SERVICENAME.log*, for example, *AGGREGATION.log*.

## Update the ReportCenter Java Task Initialization Parameters

The initialization parameters used by the ReportCenter Java Task are stored in the `.../nm/reporter/usr/adaptor/Adaptor.ini` file.

They are customized to reflect your input, the first time you update and action the REPORTCENTER Customizer parameter group on the ReportCenter control region.

If you want a greater level of customization, such as service timers or data retention rules, you can update this file manually.

Be careful, as errors can cause malfunctions in the ReportCenter Java Task. Make a backup copy of this file before you modify it.

You must then restart the ReportCenter Java Task to pick up your modified parameters.

Next time the REPORTCENTER parameter group is applied (for example, at ReportCenter control region startup), it will not override your manual updates. The parameter group only regenerates this file if the file is not customized.

### To regenerate the file

1. Make a copy of your customized file.
2. Delete your customized file from `.../nm/reporter/usr/adaptor/`.
3. Apply the REPORTCENTER parameter group by pressing F6 (Action).
4. Customize the newly generated file again.

**Important!** Never alter any files in any of the `.../wr76/...` directories. These files are maintained by SMP. Modifying these files can cause product malfunction. Changes made to these files will be lost after SMP/E maintenance.

# Appendix D: Database Structure

---

This section contains the following topics:

[ReportCenter Data Model](#) (see page 183)

[Resource Table](#) (see page 184)

## ReportCenter Data Model

During implementation, you created a database based on the supplied data model.

ReportCenter accesses the data in this database by using a JDBC connection. You can also use any ODBC or native database product to access the data from outside of ReportCenter.

The same data model is used for DB2 and CA Datacom/AD.

The data model uses a classic data warehousing snowflake schema with non-application specific design including large, central fact tables, and a generic resource dimension table.

The data model has the following tables:

### **PerformanceAgent Table**

Stores the details of performance agents sending data to the data warehouse. There is one row per agent.

### **Resource Table**

Stores the details of an individual monitored resource. The column usage varies with the resource class. There is one row per monitored resource.

### **NumericFact Table**

Stores numeric fact data for counter and gauge attributes.

### **Timeframe Table**

Provides DBMS-independent time frame handling. Used as an internal worktable.

### **Attribute Table**

Contains one row for every reported or monitored attribute.

### **Keyrange Table**

Controls the generation of dimension table keys. Used as an internal worktable.

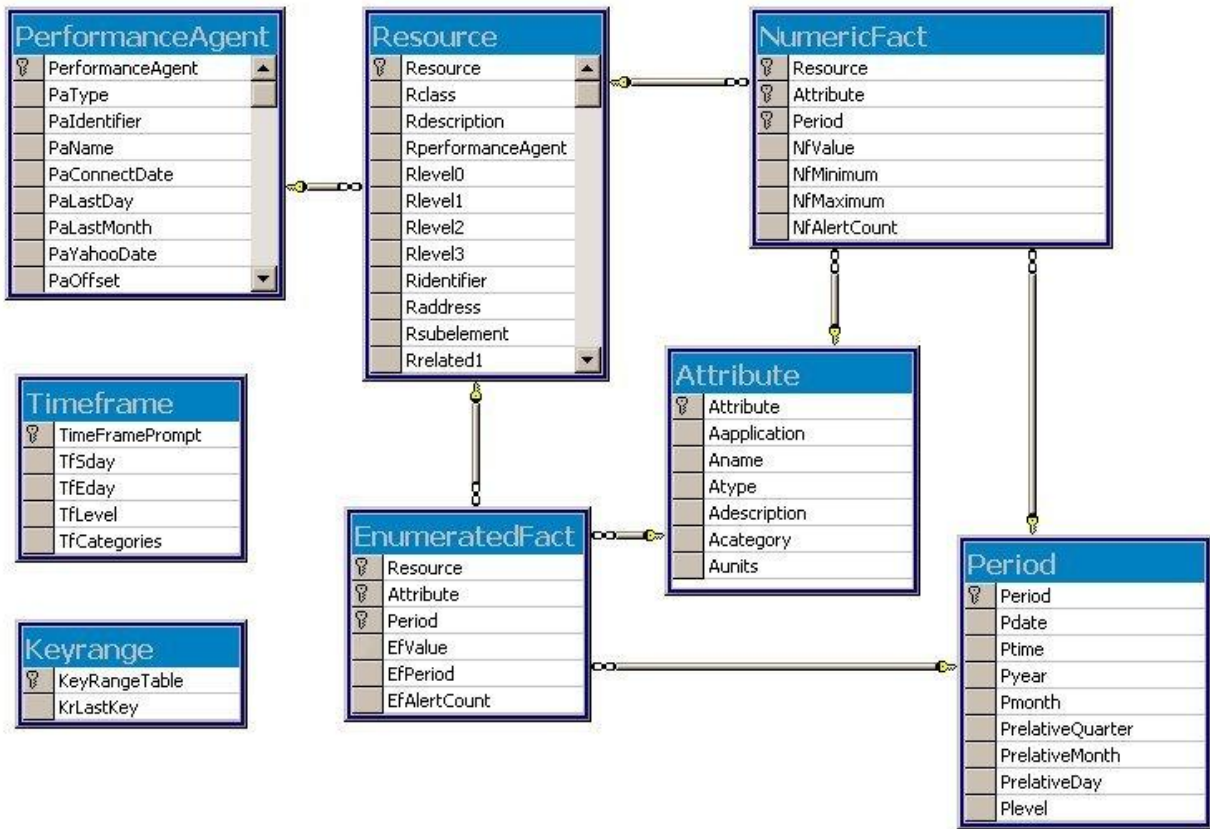
**EnumeratedFact Table**

Stores character fact data for enumerated attributes such as NETSTATUS and PUSTATUS.

**Period Table**

Used in conjunction with the Timeframe table to provide data retrieval based on an DBMS-independent time frame.

The database tables and their relationships are shown in the following diagram. A fact table always joins to the Attribute, Period, and Resource tables, as indicated by the keyed connections. The Resource table further joins to the PerformanceAgent table.



**Resource Table**

The use of the columns in the Resource table is dependent on the resource class. For all classes, the resource is an automatically generated key.



## Address Space

The following table shows the column usage for an IP application address space:

| <b>Column</b>     | <b>Value</b>                       |
|-------------------|------------------------------------|
| Rclass            | IPASM                              |
| RperformanceAgent | Foreign key to CA NetMaster region |
| Rlevel0           | Sysplex name                       |
| Rlevel1           | System name                        |
| Rlevel2           |                                    |
| Rlevel3           |                                    |
| Ridentifier       | Address space name                 |
| Rsubelement       |                                    |
| Raddress          |                                    |
| Rrelated1         |                                    |
| Rrelated2         |                                    |

## Cisco Channel Card Interface

The following table shows the column usage for a Cisco channel card interface:

| Column            | Value  |
|-------------------|--|
| Rclass            | IPCIPM   |
| RperformanceAgent | Foreign key to CA NetMaster region   |
| Rlevel0           |  |
| Rlevel1           |  |
| Rlevel2           |  |
| Rlevel3           |  |
| Ridentifier       | Channel card name  |
| Rsubelement       | Null<br>0 or 1<br>CMCC channel<br>CLAW total<br>CLAW address<br>TN3270 server IP address<br>Host.ChSysid.CHPID |
| Raddress          |  |
| Rrelated1         |  |
| Rrelated2         |  |

## Cisco CLAW

The following table shows the column usage for a Cisco CLAW:

| <b>Column</b>     | <b>Value</b>                       |
|-------------------|------------------------------------|
| Rclass            | IPCCLAW                            |
| RperformanceAgent | Foreign key to CA NetMaster region |
| Rlevel0           | Channel card name                  |
| Rlevel1           | 0 or 1 (channel ID)                |
| Rlevel2           |                                    |
| Rlevel3           |                                    |
| Ridentifier       | CLAW IP address                    |
| Rsubelement       |                                    |
| Raddress          | Path                               |
| Rrelated1         | z/OS SYSID                         |
| Rrelated2         | z/OS CHPID                         |

## Cisco TN3270 Server

The following table shows the column usage for a Cisco TN3270 server:

| <b>Column</b>     | <b>Value</b>                       |
|-------------------|------------------------------------|
| Rclass            | IPC IPTNS                          |
| RperformanceAgent | Foreign key to CA NetMaster region |
| Rlevel0           | Channel card name                  |
| Rlevel1           |                                    |
| Rlevel2           |                                    |
| Rlevel3           |                                    |
| Ridentifier       | TN3270 card IP address             |
| Rsubelement       |                                    |
| Raddress          |                                    |
| Rrelated1         |                                    |
| Rrelated2         |                                    |

## Communications Storage Manager

The following table shows the column usage for a CSM:

| <b>Column</b>     | <b>Value</b>                              |
|-------------------|---|
| Rclass            | IPCSMM                                    |
| RperformanceAgent | Foreign key to CA NetMaster region        |
| Rlevel0           | Sysplex name                              |
| Rlevel1           | System name                               |
| Rlevel2           |   |
| Rlevel3           |   |
| Ridentifier       | CSM                                       |
| Rsubelement       | Task name: (ALL), VTAM, stack, or user ID |
| Raddress          |   |
| Rrelated1         |   |
| Rrelated2         |   |

## Enterprise Extender

The following table shows the column usage for an Enterprise Extender:

| <b>Column</b>     | <b>Value</b>                       |
|-------------------|------------------------------------|
| Rclass            | IPEEM                              |
| RperformanceAgent | Foreign key to CA NetMaster region |
| Rlevel0           | Sysplex name                       |
| Rlevel1           | System name                        |
| Rlevel2           |                                    |
| Rlevel3           |                                    |
| Ridentifier       | EE                                 |
| Rsubelement       | VIPA                               |
| Raddress          |                                    |
| Rrelated1         |                                    |
| Rrelated2         |                                    |

## File Transfer Event

The following table shows the column usage for a file transfer event:

| <b>Column</b>     | <b>Value</b>                       |
|-------------------|------------------------------------|
| Rclass            | FTMON                              |
| RperformanceAgent | Foreign key to CA NetMaster region |
| Rlevel0           | Sysplex name                       |
| Rlevel1           | System name                        |
| Rlevel2           | User                               |
| Rlevel3           | File transfer task name            |
| Ridentifier       | Source address                     |
| Rsubelement       | Target address                     |
| Raddress          | Address                            |
| Rrelated1         | File transfer product              |
| Rrelated2         |                                    |

## IP Node

The following table shows the column usage for an IP node:

| <b>Column</b>     | <b>Value</b>   |
|-------------------|--|
| Rclass            | IPNMON   |
| RperformanceAgent | Foreign key to CA NetMaster region                           |
| Rlevel0           | Subnetwork   |
| Rlevel1           | System name  |
| Rlevel2           |  |
| Rlevel3           |  |
| Ridentifier       | Node identifier (name or address)                            |
| Rsubelement       | Null<br>Interface details<br>Card details<br>Adapter details |
| Raddress          | Node address   |
| Rrelated1         |  |
| Rrelated2         |  |



## Open Systems Adapter

The following table shows the column usage for an Open Systems Adapter:

| <b>Column</b>     | <b>Value</b>                           |
|-------------------|--|
| Rclass            | IPOSAM                                 |
| RperformanceAgent | Foreign key to CA NetMaster region     |
| Rlevel0           | Sysplex name                           |
| Rlevel1           | System name                            |
| Rlevel2           |  |
| Rlevel3           |  |
| Ridentifier       | OSA device name                        |
| Rsubelement       | Ignore                                 |
| Raddress          | z/OS CHPID                             |
| Rrelated1         | OSA type: OSA2, EXPRESS, DIRECTEXPRESS |
| Rrelated2         |  |

## TCP/IP Stack

The following table shows the column usage for a TCP/IP stack:

| Column            | Value                                     |
|-------------------|---|
| Rclass            | IPSTMON                                   |
| RperformanceAgent | Foreign key to CA NetMaster region        |
| Rlevel0           | Sysplex name                              |
| Rlevel1           | System name                               |
| Rlevel2           |   |
| Rlevel3           |   |
| Ridentifier       | Stack name                                |
| Rsubelement       | Null<br>Application<br>Subnetwork<br>User |
| Raddress          |   |
| Rrelated1         |   |
| Rrelated2         |   |

## TCP/IP Stack Network Interface

The following table shows the column usage for a TCP/IP stack network interface:

| Column            | Value  |
|-------------------|--|
| Rclass            | IPIFMON  |
| RperformanceAgent | Foreign key to CA NetMaster region                     |
| Rlevel0           | Sysplex name   |
| Rlevel1           | System name  |
| Rlevel2           | Subnetwork   |
| Rlevel3           | Link (not device type)<br>Type (user-specified format) |
| Ridentifier       | Full host name   |
| Rsubelement       | Link name (not device name)                            |
| Raddress          | Stack address  |
| Rrelated1         | z/OS CHPID   |
| Rrelated2         | Stack name   |

## VIPA

The following table shows the column usage for a VIPA (Virtual IP Address):

| Column            | Value  |
|-------------------|--|
| Rclass            | IPVIPAM  |
| RperformanceAgent | Foreign key to CA NetMaster region   |
| Rlevel0           |  |
| Rlevel1           |  |
| Rlevel2           |  |
| Rlevel3           |  |
| Ridentifier       | IP Address   |
| Rsubelement       | System-Stack (for example, XE22-TCPIP22), or Port-XCFAddress (for example, 23-172.24.170.3)                                  |
| Raddress          |  |
| Rrelated1         | Local Interface Link Name  |
| Rrelated2         |  |
| Rdescription      | Type of VIPA, one of the following:<br>Sysplex Distributor VIPA<br>Application VIPA<br>Dynamic VIPA for takeover or takeback |

# Appendix E: Data Retention Rules

---

This section contains the following topics:

[About Data Retention Rules](#) (see page 197)

[Syntax](#) (see page 198)

## About Data Retention Rules

The default data retention rules are specified in the ReportCenter Java Task initialization file.

You can change the rules; however, you should:

- Use the default retention rules until you are familiar with ReportCenter and your own requirements.
- Be aware that expired data is deleted. There is no automatic backup or confirmation prompt.
- Back up the database regularly.
- For information about updating the ReportCenter Java Task parameters, see HFS Directory Structure.

Changes are picked up the next time the ReportCenter Java Task starts.

You need to have more than one retention rule.

**Note:** You can use the `simulate=Y` statement to test the retention rules. Deletions will not occur, but you can view the totals in the ReportCenter Java Task log at the end of the Database Expiry Service process to see what would have been deleted. To reinstate deletions, reset the statement to `simulate=N`.

## Syntax

Data retention rules have the following format:

RetentionRule*n* = *period-level.attribute-name.application-id.retention-days*

***n***

Specifies a sequence number for the rule. Rules must be numbered sequentially, starting at 1.

***period-level***

Specifies HOURLY, DAILY, or MONTHLY. This value is the recording level of the rows covered by this rule. A resource class or an attribute can have a different retention period for each period level. For example, hourly TotalConnections data can be kept for one week, daily TotalConnections data can be kept for six months, and monthly TotalConnections data can be kept for two years.

***attribute-name***

Specifies a valid attribute name or percentage, which means that this rule applies to the facts for any attribute that does not appear in a more specific rule. For information about the attributes, see the attributedetails.txt file in the SMP/E .../nm/reporter/wr76/reports/common/... Target Library directory.

***application-id***

Specifies an ID that organizes attributes into groups under a resource class. You can specify a resource class, a comma-separated list of resource classes, or percentage to indicate all resource classes.

***retention-days***

Specifies an integer that indicates the number of days that the data is kept before being deleted.

Data that does not match any rule is retained forever.

**Example: Application ID for file transfer management attributes is FTMON**

**To find the application ID for an IP attribute**

1. From a data region, enter the **/MONATTR** shortcut.  
The Monitoring Attributes panel appears.
2. Enter **SHOWALL** to list all the attributes.
3. Enter **S** next to the required attribute.

The Attribute Application Controls panel appears, showing the application ID. Ignore the \$ prefix in the displayed ID.

**Example: Retain All Data for 93 Days**

The following retention rule keeps the daily data for all attributes with the application ID IPCWMON for 93 days:

```
RetentionRule1=DAILY.%.IPCWMON.93
```

**Example: Retain ConTotalBytes Data for 14 Days**

The following retention rule keeps the hourly aggregated ConTotalBytes data for 14 days:

```
RetentionRule2=HOURLY.CONTOTALBYTES.IPCWMON.14
```

**Example: Retain Data for 366 Days**

The following retention rule keeps the daily aggregated data for classes FTMON, IPCWMON, IPFWMON, and IPTWMON for 366 days:

```
RetentionRule3=DAILY.%.FTMON,IPCWMON,IPFWMON,IPTWMON.366
```

**Example: Delete CSM Data**

The following retention rule deletes the monthly aggregated data for any attributes from the communications storage manager (CSM) monitor:

```
RetentionRule4=MONTHLY.%.IPCSMM.0
```





# Appendix F: Report Definition Structure

---

This section contains the following topics:

[XML Top Level](#) (see page 201)

[Report Heading](#) (see page 202)

[Report Sections](#) (see page 202)

[Charts](#) (see page 204)

[Queries](#) (see page 206)

[Parameters](#) (see page 208)

[Document Type Definition](#) (see page 210)

## XML Top Level

At the top level, the report definition file contains an extensible markup language (XML) definition and a reference to the document type definition (DTD) as follows:

```
<?xml version="1.0"?>
<!DOCTYPE report SYSTEM "Reporter.dtd">
```

These are followed by exactly one <report> tag. The <report> tag contains everything that is specific to this report. There is a heading and a list of <section> tags.

The <report> tag can also contain the following optional attributes:

**Note:** These are free-form text and do not appear in the report.

### **class and subclass**

Used by the WebCenter presentation code for grouping together similar reports. These are not inspected, verified, or used by the report generator.

### **displayname**

Used wherever the report name is displayed, for example, in the title bar of the report window.

## Report Heading

A report heading has exactly one <title> tag, optionally followed by a <subtitle> tag and an optional <text> tag. The <title> tag contains a string of text. This should be a short name for the report.

### Example: Report Title

```
<title>Stack Analysis</title>
```

The <subtitle> tag (if used) contains text and parameters. It can be used to identify the conditions for which the report was run.

### Example: Report Subtitle

```
<subtitle>for Stack = <parm name=Stack></subtitle>
```

The <text> tag (if used) can contain a few lines of text that are used to explain the purpose of the report. Multiple <text> tags are allowed, and each becomes a paragraph in the HTML output.

### Example: Report Purpose

```
<text> This report is for people who need to know the TCP/IP traffic details for an individual stack.</text>
```

**Note:** The <title>, <subtitle>, and <text> tags must appear in that order, and you cannot have more than one of each of the <title> and <subtitle> tags.

## Report Sections

Each section consists of a heading section and one or more data sections. Each data section is the result of executing a structured query language (SQL) query (or, occasionally, several queries). A data section can be presented as a chart, a table, or a statement.

### Heading Sections

A heading section contains a <title> tag and can optionally contain <text> tags. As with report headings, these tags contain the name of the section and some explanatory text; however, headings section do not have a <subtitle> tag.

## Data Sections

Each data section can be presented as a chart, table, or statement.

### Charts

A chart has an optional <title> tag, a <query> or a <reference> tag, and an optional <footnote> tag.

#### More information:

[Charts](#) (see page 204)

### Tables

A table contains an optional <title> tag that contains text, a <query> or a <reference> tag that defines the displayed data, and an optional <footnote> tag to pass on handy hints to the user. By default, the table is a copy of the result returned by executing the query. Alternatively, you can turn the table into a [crosstab](#) (see page 207) by including the summarise=crosstab attribute in the query.

You can use the optional datalimit="*n*" attribute in the <table> tag to limit the number of rows displayed. Any rows in excess of *n* are discarded. You should order the query to ensure that the most significant rows are at the start of the set of results.

#### Example: Table Section

```
<table>
  <title>Utilization of CHPID</title>
  <query>
    select pintervalname as Date, nfMinimum as Minimum,
           nfvalue as Average, nfMaximum as Maximum
    from <databasename/>.numericfact n,
         <databasename/>.resource r,
         <databasename/>.period p,
         <databasename/>.attribute a
    where a.attribute = n.attribute
          and r.resource = n.resource
          and p.period = n.period
          and aname = 'ChpidUtilization'
          and p.pDate='2001-12-31'
          and p.plevel = 'Hourly'
          and rclass='IpOsaM'
          and r.raddress = '<parm name="OsaChpid"/>'
  </query>
  <footnote>See the "detail" report for more info.</footnote>
</table>
```

## Statements

A statement contains a mixture of text and query results, and is presented as an HTML paragraph.

### Example: Statement Section

```
<statement>
An interesting number in the database is <query> select nfValue from numericfact
</query>. An interesting enumeratedFact is <query> select efValue from enumeratedFact
</query>.
</statement>
```

The query can return as much data as you like, but only the first datum (that is, the item in the first column of the first row) is used.

## Charts

Basic types are pie, bar, and line charts. Bar charts and line charts can show multiple sets of data. Bars and lines can be combined on one chart.

The data for a pie chart is provided by embedding a <query> or <reference> tag inside the <chart> tag. The result of the query for a pie chart must have at least two columns. The first should be character data and is used to label the pie slices; the second should be numeric and is used to provide the values to be plotted. Any subsequent columns are ignored.

As for tables, you can use a `datalimit="n"` attribute in a <chart> tag to limit the number of rows used. If the query returns more than *n* rows, the excess rows are discarded.

### Example: Pie Chart

```
<chart style="pie">
  <query>
    select aName, nfValue
    from <databasename/>.attribute, <databasename/>.numericfact
    where <databasename/>.attribute.aName = <databasename/>.numericfact.aName
  </query>
</chart>
```

The data for a bar or line chart is provided by one or possibly two <query> tags. In the result from a query, the first column is always used as X-axis values and the second and subsequent columns are each treated as a set of data to be plotted. For most charts, it is expected that one query is enough. The left-hand Y-axis is always labeled with values that describe the data in the first (or only) <query> tag. If there is a second <query> tag, the right-hand Y-axis will be labeled to describe it.

---

## Pie Charts

The <chart> tag for a pie chart is as follows:

```
<chart style="pie">
```

The result used to build the chart must have at least two columns. The first column is used for labels and the second column is used for the numerical data that is plotted. Third and subsequent columns are ignored. There is no way to plot more than one set of data on a pie chart.

It is usually a good idea to specify in the query that the set of results be sorted in descending order on the numerical data. The reason is that the chart generator will plot some reasonable number of slices and group any remaining results into one slice, which can hide important information if that slice contains big lumps of data.

## Bar Charts

The <chart> tag for a bar chart has two variations as follows:

```
<chart style="bar">  
<chart style="stackedbar">
```

Bar charts can plot one or more sets of data against a set of X-axis values. The first column of the result forms the X-axis values. The second and subsequent columns are the sets of data to be plotted. If there is more than one set of data, a legend is included to identify them.

If a <chart style="bar"> tag contains multiple sets of data, they are plotted side by side with the first set of data on the left.

If a <chart style="stackedbar"> tag contains multiple sets of data, they are stacked vertically with the first set of data at the bottom. A stacked bar chart with only one set of data does not really make a lot of sense, but it does no harm.

## Line Charts

The <chart> tag for a line chart is as follows:

```
<chart style="line">
```

Line charts can plot one or more sets of data against a set of X-axis values. The first column of the result forms the X-axis values. The second and subsequent columns are the sets of data to be plotted. If there is more than one set of data, a legend is included to identify them.

## Combined Bar and Line Chart

The <chart> tag for a combined bar and line chart is as follows:

```
<chart style="linebar">
```

A combined bar and line chart combines a line and a set of bars on one chart. For 3-D charts, the line is plotted in front of the bar. This type of chart can only show two sets of data—you cannot have multiple lines or multiple sets of bars.

## X-axis Labels

By default, only the first and last points on the X-axis are labeled. This can be overridden by specifying an “xlabels” attribute in the chart tag as follows:

```
<chart style="anything-other-than-pie" xlabels="all">
```

Valid values are all, none, and ends.

## Queries

The <query> tag contains text that is passed as an SQL query to the database. The text can contain parameter values to control what is selected, and <databasename> tags to control which database is used. The text is always converted to upper case before being sent to the database.

Later versions of SQL use an 'as' keyword to allow user-friendly column names, for example, Select CrypticColumnName as UserFriendlyName. Datacom does not support this option; instead, the report generator supports a <columns> tag to achieve the same result. You can label the first nine columns, as required. If you do not assign a name, the column retains its original name, that is, the one it was assigned in the table from which it was selected.

### Example: Query

```
<query>
  <columns column2="Interval"/>
  select pRelativeDay, pIntervalName from <databasename/>.period
  where pRelativeDay=<parm name="startRelativeDay"/>
</query>
```

## Crosstabs

The result from a query can be converted from a simple table to a crosstab by specifying the `summarise=crosstab` attribute in the `<query>` tag. This attribute causes the values in the first column of the result to be used to label rows in the output, values from second column of the result to be used to label the columns of the output, and values from the third column of the result to be used as the actual data. Any other columns in the result are ignored. The usual case is that the first column contains dates, the second column contains attribute names, and the third column contains numeric facts.

**Note:** The `<columns>` tag is ignored for queries that have `summarize=crosstab`.

You can sort crosstabs by specifying the `sort=column, direction` attribute, where *column* is a column number or an untranslated column name, and *direction* is `asc` (ascending) or `desc` (descending). The default is ascending.

### Example: Crosstab

```
<query summarise="crosstab" sort="BytesOut, desc">
  select pIntervalname, aName, nfValue from period, attribute, numericfact
  where numericfact.period = period.period
  and numericfact.attribute = attribute.attribute
  and aName in ( 'BytesIn', 'BytesOut' )
</query>
```

The query may return the following set of data:

|            |          |     |
|------------|----------|-----|
| 2001-12-01 | BYTESIN  | 123 |
| 2001-12-01 | BYTESOUT | 456 |
| 2001-12-02 | BYTESIN  | 789 |
| 2001-12-02 | BYTESOUT | 12  |

This set of data would be converted to the following:

|            | BYTESIN | BYTESOUT |
|------------|---------|----------|
| 2001-12-01 | 123     | 456      |
| 2001-12-02 | 789     | 12       |

## Reusing Queries

You can save and reuse the output from a query. To do this, you can give the original query a name, and refer to it later using the `<reference>` tag. You can use a `<reference>` tag anywhere that a query can be used. The `<query>` tag must appear before the `<reference>` tag.

You can include a `column=` attribute to select a subset of the columns of the original query. The parameter for the `column` attribute is a comma-separated list of columns.

### Example: Reuse Query

```
<query name="fred">...</query>
...
<reference query="fred" columns="1,3,5"/>
```

## Parameters

A report definition can have a corresponding list of required parameters, which is stored elsewhere in `prefix2/nm/reporter/usr/prompts/report-name.txt`. There must be a corresponding `<prompt>` tag for each parameter. Where parameters are related to each other, they can be grouped by using the `group` attribute in the `<prompt>` tag. This attribute causes ReportCenter to check that the values chosen by the user are compatible with each other.

### Examples: Parameters

```
<prompt name="System" group="SystemNameGroup">
<prompt name="Sysplex" group="SystemNameGroup">
<prompt name="Timeframe">
```

The first prompt is called the report's criteria and is used to help identify one instance of a report from another.

Within a group, the sequence of the prompts is important—it must match what is in the prompts file.

When a report is run, ReportCenter provides a value for each of these parameters. The parameter names and the parameter values are text strings.

You can substitute the value of a parameter into a `<query>` tag or into the report's `<subtitle>` tag by including a `<parm>` tag in the text of the query or subtitle. The `<parm>` tag requires a `'name'` attribute, but has no other content.

Parameter names are case-sensitive. So, `<parm name="TimeFrame" />` and `<parm name="timeframe" />` are not the same.



You can substitute the value of a parameter into a <query> or the <subtitle> of the report by including a <parm> tag in the query or subtitle. The <parm> tag must have a name attribute.

#### Example: Parameter Substitution

```
<query>
  select * from <databasename/>.period
  where pLevel = '<parm name="periodLevel" />'
</query>
```

After substitution, this may become:

```
select * from mydatabase.period where pLevel = 'DAILY'
```

The prompts file should contain an entry for each distinct name used in any <parm> tag. When a report is run, every parameter must have a value (even if only an empty string); otherwise, the report generator rejects the request.

## Time Frames

Many reports operate over a selected time frame. Some special processing is included to support this. If the report's parameter list contains a parameter named Timeframe, ReportCenter creates some extra time frame related parameters and gives them values that correspond to the value of the Timeframe parameter. The extra, automatically created, parameters are StartRelativeDay, EndRelativeDay, StartDate, EndDate, and PeriodLevel. You can use these in a <parm> tag, like any other parameter.

#### Example: Time Frames

If today is 31 December 2007 and a report needs a Timeframe parameter with the value LAST 7 DAYS, then at the start of processing the report, the following parameters are created:

```
StartRelativeDay=11316
EndRelativeDay=11322
StartDate=2007-12-24
EndDate=2007-12-30
PeriodLevel=DAILY
```

## Document Type Definition

The following is a copy of the Document Type Definition (DTD) that controls the accepted syntax:

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
<!ELEMENT report (prompt*, title, subtitle?, text*, section+)>
<!ATTLIST report
  class CDATA #IMPLIED
  subclass CDATA #IMPLIED
  displayname CDATA #IMPLIED
>
<!ELEMENT prompt EMPTY>
<!ATTLIST prompt
  name CDATA #REQUIRED
  group CDATA #IMPLIED
>
<!ELEMENT section (title, text*, (chart | statement | table)+)>
<!ELEMENT chart (title?, (query | reference), footnote?)>
<!ATTLIST chart
  style (pie | bar | line | linebar | stackedbar) "bar"
  xlabel (all | ends | none) "ends"
  datalimit CDATA #IMPLIED
>
<!ELEMENT statement (#PCDATA | query | reference | title | parm)*>
<!ELEMENT table (title?, (query | reference), footnote?)>
<!ATTLIST table
  datalimit CDATA #IMPLIED
>
<!ELEMENT parm EMPTY>
<!ATTLIST parm
  name CDATA #REQUIRED
>
<!ELEMENT query (#PCDATA | parm | databasename | columns | popupinfo)* >
<!ATTLIST query
  summarise (crosstab | none) "none"
  translate (left | top | both | neither) "top"
  name CDATA #IMPLIED
  sort (asc | desc) "asc"
>
<!ELEMENT databasename EMPTY>
<!ELEMENT popupinfo EMPTY>
<!ATTLIST popupinfo
  text CDATA #REQUIRED
>
<!ELEMENT reference EMPTY>
<!ATTLIST reference
  query CDATA #REQUIRED
  columns CDATA #IMPLIED
```

```
>
<!ELEMENT subtitle (#PCDATA | parm)*>
<!ELEMENT text (#PCDATA | parm)>
<!ELEMENT title (#PCDATA | parm)>
<!ELEMENT footnote (#PCDATA | parm)>
>
<!ELEMENT columns EMPTY>
<!ATTLIST columns
  column1 CDATA #IMPLIED
  column2 CDATA #IMPLIED
  column3 CDATA #IMPLIED
  column4 CDATA #IMPLIED
  column5 CDATA #IMPLIED
  column6 CDATA #IMPLIED
  column7 CDATA #IMPLIED
  column8 CDATA #IMPLIED
  column9 CDATA #IMPLIED
>
<!ENTITY nbsp "nbsp">
```

## Object Repetition

The special characters that control repetition of objects in a DTD are as follows:

**\***

Specifies that zero or more are required.

**+**

Specifies that one or more are required.

**?**

Specifies that zero or one is allowed.

**| or none**

Specifies exactly one.



# Appendix G: Migration Considerations

---

This section contains the following topics:

[Upgrade to ReportCenter Release 12.1](#) (see page 213)

[How to Prepare for a ReportCenter Upgrade](#) (see page 214)

[HFS Directories and Files](#) (see page 214)

[ReportCenter Java Task](#) (see page 217)

[JCL PDS Data Set](#) (see page 217)

[CA NetMaster Region Customizer Parameters](#) (see page 217)

[Common Database Issues](#) (see page 218)

[IPv6 Database Issues](#) (see page 218)

[DB2 Database Issues](#) (see page 220)

[DB2 JDBC Issues](#) (see page 220)

[CA Datacom/AD Database Issues](#) (see page 221)

[Sample Database](#) (see page 221)

[Compatibility Between Releases](#) (see page 221)

[Clone a ReportCenter Control Region](#) (see page 222)

## Upgrade to ReportCenter Release 12.1

You can upgrade to ReportCenter Release 12.1 from one of the following:

- ReportCenter r11
- ReportCenter r11.5
- ReportCenter r11.6
- ReportCenter r11.7

The procedure for migration is similar. This chapter uses ReportCenter r11.7 in the examples.

You can choose whether to retain your existing production database, some report schedules, and report output when upgrading from any of these versions.

## How to Prepare for a ReportCenter Upgrade

Before you upgrade ReportCenter, you must complete the following steps:

1. Finish all the migration tasks for your products that use ReportCenter.  
**Note:** For more information, see the *Installation Guide*.
2. Read this appendix. It tells you what you can retain from your previous implementation. Decide which, if any, of these components you want to keep. You can keep all, some, or none of the following components:
  - Existing data
  - Existing schedules
  - Existing report output
3. Ensure that you have completed the implementation steps. You need to perform most of those tasks even if you are upgrading.

Possible exceptions are:

### Implementing DB2 or CA Datacom/AD with ReportCenter

You can continue to use your current production DB2 or CA Datacom/AD database; however, consider reviewing your database size allocations.

### Implementing UNIX System Services Authorization

If you plan to continue using the same user IDs for the upgraded ReportCenter control region and ReportCenter Java Task, then they are already authorized.

4. Ensure that you have the required level of the z/OS Java SDK available. Earlier versions of ReportCenter could operate with Java version 1.3. ReportCenter 11.5 and above require features of Java that were introduced in version 1.4, so you must use version 1.4.x or version 5.x of the IBM SDK for z/OS, Java 2 Technology Edition.

## HFS Directories and Files

This HFS directory contains both system files and user files, such as your generated report output and your report schedules.

**Note:** Any HFS directories and files created prior to r11.5 are obsolete. If you do not want to save any of your report output or schedules, use the new ReportCenter HFS directory.

## HFS System Directories

The HFS files supplied with ReportCenter r11.7 were installed in the wr65 directory.

These old files do not work with ReportCenter Release 12.1. A new SMP/E target library directory is created during the installation of ReportCenter Release 12.1, and named `.../nm/reporter/wr76/...`

## HFS User Directories

In general, use new, separate user HFS directories in ReportCenter Release 12.1. If you implement any of the exceptions described later, ensure that only the specified files and subdirectories are reused. Incompatibilities between these files in this release and files in previous releases can cause unforeseen errors.

For the purpose of migration, *prefix\_Release 12.1* refers to the *?ia\_prefix* you used for Release 12.1 and *prefix\_r117* refers to the *?ia\_prefix* you used for r11.7.

## Java Task Parameters

The Java Task parameters for ReportCenter r11.5 were generated into the `.../nm/reporter/usr/adaptor/...` user directory.

These parameters are not compatible with ReportCenter r11.6 and above. If you reuse the directory, delete all files from it first. They are regenerated when you apply the REPORTCENTER parameter group in the ReportCenter control region.

If you have a customized version of the Adaptor.ini file, note your changes, and print or save a copy of this old file. After the new Adaptor.ini file is generated, make your changes again to this new file.

## Prompts

Prompts for ReportCenter r11.5 were generated into the `.../nm/reporter/usr/prompts/...` directory.

Although you may use the old database for ReportCenter r11.6 and above, some prompt file names have changed between versions. If you reuse this directory, delete all files from it first. They are regenerated when the Prompt Generator service runs.

## Schedules

Schedules that you added for ReportCenter r11.5 and r11.6 were saved into the `.../nm/reporter/usr/schedules/...` directory.

The schedule control file (`report.sched`) format has not changed.

To retain your existing report schedules, do *one* of the following:

- Reuse the directory and its files for ReportCenter Release 12.1. Specify it in the REPORTCENTER parameter group in the ReportCenter control region.
- Use the USS `mv` command to move all or selected subdirectories to `prefix_Release 12.1/nm/reporter/usr/schedules/`, for example:

```
mv -R prefix_r117/nm/reporter/usr/schedules/* prefix_Release
12.1/nm/reporter/usr/schedules/
```

**Note:** For a description of the `mv` command, see IBM's *UNIX System Services Command Reference*.

## Logs

ReportCenter Java Task log files for ReportCenter r11.5 through r11.7 were written to the `.../nm/reporter/usr/logs/...` directory.

Although the log file format is unchanged, there should be no requirement to retain log files from a previous release. If you reuse this directory, delete all files from it first. This action ensures that it contains only logs from the current version and avoids potential confusion while browsing logs.

## Report Output

Report output for ReportCenter r11.5 through r11.7 was placed into the `.../nm/reporter/usr/output/...` directory.

Most report output is kept for short periods, and it is not common to keep it from one version to another. If you want to retain report output, we recommend that you keep the same output directory for reports. Specify it in the REPORTCENTER parameter group in the ReportCenter control region.

The Report Expiry service of ReportCenter r11.6 and above deletes expired report output from all versions.

**Important!** Do not use report definition files with a different version of ReportCenter. The XML DTD is different, and the files do not work.



## ReportCenter Java Task

The ReportCenter Java Task JCL for ReportCenter r11.5 was produced by applying the REPORTCENTER Customizer parameter group.

The JCL changed in ReportCenter r11.6. You cannot run your r11.5 JCL with ReportCenter Release 12.1. If you want to continue using the same started task name for the ReportCenter Java Task, delete the old JCL member.

The new JCL member is generated when you apply the REPORTCENTER parameter group in the ReportCenter control region. Copy it into your MVS PROCLIB data set.

## JCL PDS Data Set

Older versions of ReportCenter contained sample JCL in its own PDS, *dsnpref.\*.WRSAMP*. The WRSAMP members are now obsolete. Do not run any of them as part of r11.6 or above implementation.

Since ReportCenter r11.5, this JCL is supplied in shared PDS which contains the examples for many product features. In this release, the PDS is named *dsnpref.NMC1.CC2DSAMP*. All the members related to ReportCenter start with WR\*.

## CA NetMaster Region Customizer Parameters

In older versions, data regions and the control region used different parameters in the same parameter group, REPORTCENTER.

ReportCenter now uses the following parameter groups:

### **REPORTCENTER in the control region**

This includes most of the parameters from your current parameter group, and new ones.

### **REPORTDATA in the data regions**

This includes the address and port information. An APPC link between control and data regions is no longer required.

**Important!** Ensure that you note the values of all the parameters that you have specified in the REPORTCENTER parameter group in your current control region. You need these values when you customize the REPORTCENTER parameter group in your Release 12.1 control region.

## Common Database Issues

Consider the following common database issues:

- You can retain your current ReportCenter production data, or delete it and start collecting new data with ReportCenter Release 12.1.
- To discard your collected data, delete and recreate the database. Ensure that you use the updated database definitions that are supplied with ReportCenter Release 12.1.
- The database column name and item type definitions for the ReportCenter database have not changed. You can use the same database without any data conversion or migration.
- You can use your current data with ReportCenter Release 12.1 by directing it to use your existing production database.

## IPv6 Database Issues

**Note:** If you have not implemented IPv6 or are migrating from r11.7, disregard this section.

Although the database column name and item type definitions for the ReportCenter database have not changed, some existing character columns have lengthened in the RESOURCE table definition supplied. This change is to fit TCP/IP Version 6 IP addresses.

If your enterprise includes z/OS IPv6 resources and you are migrating from r11 through r11.6, expand these column lengths; otherwise, full IPv6 addresses are truncated if necessary, before being stored in the database.

| RESOURCE Table Column Name | Expanded Length for IPv6 |
|----------------------------|--------------------------|
| RLEVEL                     | 39 characters            |
| RSUBELEMENT                | 52 characters            |
| RADDRESS                   | 39 characters            |
| RRELATED1                  | 39 characters            |
| RRELATED2                  | 39 characters            |

Use your DBMS-specific utilities to expand these columns.

**Example: Expand Column Length Using ALTER TABLE Function**

This example shows how to expand DB2 column lengths using the ALTER TABLE function.

```
ALTER TABLE NMDB.RESOURCE
  ALTER COLUMN RLEVEL0
  SET DATA TYPE CHAR(39);
ALTER TABLE NMDB.RESOURCE
  ALTER COLUMN RSUBELEMENT
  SET DATA TYPE CHAR(52);
ALTER TABLE NMDB.RESOURCE
  ALTER COLUMN RADDRESS
  SET DATA TYPE CHAR(39);
ALTER TABLE NMDB.RESOURCE
  ALTER COLUMN RRELATED1
  SET DATA TYPE CHAR(39);
ALTER TABLE NMDB.RESOURCE
  ALTER COLUMN RRELATED2
  SET DATA TYPE CHAR(39);
```

## DB2 Database Issues

ReportCenter supports the Legacy and Universal DB2 for z/OS JDBC drivers. You do not need to change or upgrade drivers. If you are using the Legacy driver, you can continue to do so.

Review the information in DB2 Administration. If you have monitored the performance of your current production database, this information can help you assess whether any of the suggestions can benefit your environment.

In particular, migration is an ideal time to review the database size and whether all the data stored justifies the space it takes. You can delete unwanted data and prevent it from being sent to ReportCenter in the future.

Review the space usage of your tablespace data sets. For large fact tables, you can redefine these data sets to fit all the data into one primary extent.

Review your buffer pool allocations. You can create a dedicated buffer pool for ReportCenter.

If you have not previously done so, verify that SQL Dynamic Statement Caching is enabled on the DB2 subsystem where the ReportCenter database runs.

You can get ReportCenter to use your current production database by performing the following steps:

Specify the current schema name in the DB2 section of the REPORTCENTER parameter group.

Use the same DB2 JDBC properties file, which points to the current DB2 subsystem.

## DB2 JDBC Issues

ReportCenter does not require DB2 JDBC environment variables to be set and inherited through the USS profile files of the ReportCenter Java Task user ID. Instead, you must specify the values of the environment variables in the REPORTCENTER parameter group. This validates them in a consistent manner and makes them available directly to the ReportCenter Java Task environment by adding a SET statement for each environment variable to the generated Adaptor.bat file.

## CA Datacom/AD Database Issues

Discuss the following issues with your CA Datacom/AD administrator:

- CA Datacom/AD r11 was supplied with ReportCenter r11.5 through Release 12.1. You do not need to reinstall CA Datacom/AD r11 to upgrade to ReportCenter Release 12.1. You can continue to use the existing CA Datacom/AD r11 database unchanged when you upgrade.
- ReportCenter r11 was shipped with CA Datacom/AD Version 10.0. While ReportCenter Release 12.1 works with CA Datacom/AD Version 10.0, the End-of-Support date for CA Datacom/AD is September 2008. If you install newer versions of CA Common Services for z/OS, compatibility issues can arise between these versions and the older versions of CA Datacom/AD. While you can keep using your CA Datacom/AD Version 10.0 ReportCenter database with Release 12.1, we recommend that you plan an eventual migration to the most recent CA Datacom/AD.
- ReportCenter Release 12.1 can use your current CA Datacom/AD production database by performing the following steps:
  1. Retain your current CA Datacom/AD implementation, including the same JCL procedures that start the MUF and the server.
  2. Specify the path where you installed the HFS modules at CA Datacom/AD installation time. See installation jobs AX22MKD and AX23CSIU. These modules are no longer supplied in the ...wr76/datacom directory.
  3. Specify the current CA Datacom Server name, application ID, and CCI system ID in the CA Datacom section of the REPORTCENTER parameter group.

## Sample Database

ReportCenter does not distribute or reference a sample database. You can delete any sample database remaining from previous versions.

## Compatibility Between Releases

ReportCenter control and data regions at different releases can coexist without technical problems; however, there are some operational and reporting limitations. Full reporting can only be realized by upgrading these regions.

In a ReportCenter environment that includes r11.7 or Release 12.1, you can administer and view reports only from the WebCenter interface of the control region. The data regions are not aware of the control region, and provide no external ReportCenter functions; they only collect and send data.

## Clone a ReportCenter Control Region

**Note:** This topic is not about migration between different versions of ReportCenter, but some of the steps are similar to migration.

Sometimes, you want to clone a working ReportCenter environment to create an additional separate environment (but using the same installed version of ReportCenter).

Usually, cloning is required in large sites, for example:

- To move ReportCenter from a testing environment into a production environment
- To set up two production ReportCenter control regions to handle many data regions

The following procedure describes a general approach to clone a ReportCenter environment to another z/OS system (LPAR). The exact technical procedure, what utilities to use, and so on, depends on your own specific processes, tools, and shared DASD environment.

This procedure assumes the following scenario:

- You have installed and implemented a Release 12.1 ReportCenter environment on system SYS1, consisting of ReportCenter control region NM01 and Java Task NMJAVA01.
- You want to deploy an identical ReportCenter environment on system SYS2.
- You already have an Release 12.1 NetMaster region (NM02) implemented on SYS2

**Follow these steps:**

**Note:** With CA MSM, you can use the Software Deployment Service to perform some of these steps.

1. Allocate new HFS directories on SYS2 for holding copies of the supplied HFS product code. These directories have the `.../nm/reporter/wr76/...` paths.

If you installed with:

- ESD or Tape, modify and rerun the I21\* job that the Install Utility generates, which allocated the original SMP/E HFS Target Libraries on SYS1.
- CA MSM, define the paths as listed in the file `/yourpath/C2DMKDR`, which allocated the original SMP/E HFS Target Libraries on SYS1.

2. Copy the HFS files from the existing SYS1 SMP/E HFS Target Library directories to the equivalent SYS2 directories.

You do not have to reallocate the user directories, `.../nm/reporter/usr/...`, or copy them to SYS2; they always start empty.

These user directories are allocated when you apply the REPORTCENTER Customizer parameter group for the first time in NM02. They eventually contain the reports, logs, and stderr and stdout files, from the new Java task NMJAVA02.

3. Edit the IAPARMS member that is associated with the region NM02 on SYS2, in data set `dsnpref.PARMLIB`.

Copy the contents of that member from the existing equivalent data set on SYS1, and change the directory name if necessary.

This member tells the ReportCenter control region where the supplied HFS code is, for example:

```
BROWSE   DSNPREF.PARMLIB(IAPARMS) - 01.08
Command ==>
***** Top of Data *****
WRHFS1='/u/users/netmgmt/reporter/nmjava01'
***** Bottom of Data *****
```

4. Ensure that the new region NM02 on SYS2 specifies `PROD=REPORTER` at startup. The Install Utility sets it up that way; otherwise, add it.

Perform a REPTTEST on the new NM02 region before proceeding. Verify that the result says that it is a Dormant Control Region.

5. Enter **/PARMS** and then update and action the REPORTCENTER Customizer parameter group on the new NM02 region.

**Note:** If you see only the REPORTDATA Customizer parameter group, this region was not started with PROD=REPORTER. Go back to the previous step.

Ensure that the REPORTCENTER Customizer parameter group actions without errors.

Look at the initialization log for the creation of the usr directories.

6. Follow the steps in previous topics of this guide for the following tasks:
  - Set up a new empty ReportCenter database on SYS2.
  - Set up the NMJAVA02 ReportCenter Java Task on SYS2.



# Appendix H: DB2 Administration

---

This section contains the following topics:

- [Optimize Query Performance](#) (see page 226)
- [Database Reorganizations](#) (see page 226)
- [DB2 Catalog Statistics](#) (see page 227)
- [Reserve Free Space in Tablespaces and Indexes](#) (see page 227)
- [DB2 Subsystem Activity](#) (see page 227)
- [DB2 Maintenance Levels](#) (see page 228)
- [DB2 Dynamic SQL Parameters](#) (see page 228)
- [DB2 Sort Pools and Data Sets](#) (see page 228)
- [DB2 Buffer Pools](#) (see page 229)
- [DB2 EDM Pool](#) (see page 230)
- [DB2 RID Pool](#) (see page 230)
- [Backing Up and Recovering](#) (see page 230)
- [How to Delete Data Immediately](#) (see page 230)

## Optimize Query Performance

If report generation is slow, the most probable cause is DB2 performance. Environmental factors can affect DB2 query response time adversely.

The performance of the same DB2 application can vary widely between different environments. The application program cannot control or predict many factors that impact DB2 performance, no matter how good its internal practices.

These factors include but are not limited to the following:

- Database size and data distribution
- Database reorganizations
- Physical CPU and DASD hardware capabilities
- DB2 catalog statistics
- DB2 subsystem activity
- DB2 and JDBC driver versions
- DB2 maintenance levels
- DB2 dynamic SQL parameters
- DB2 sort and work table characteristics
- DB2 buffer pool characteristics
- WLM (Workload Manager) performance enclaves and settings

Inefficient SQL query processing affects DB2 resource usage. The DB2 optimizer determines the access path for each SQL query based on variable conditions including table sizes, column cardinalities, and physical CPU capacity.

## Database Reorganizations

You can maximize ReportCenter performance by reorganizing your ReportCenter database at least once a week.

Testing has shown large decreases in service units resulting from database reorganization alone. The ReportCenter database is volatile. New data is added hourly, and after the initial expiration period passes, data is deleted regularly.

Reorganization also reclaims space. Table data sets in large numbers of extents affect performance. Allocate a database large enough for your needs.

## DB2 Catalog Statistics

To ensure efficient usage in CPU time and I/O resources, you should run the RUNSTATS utility regularly and often.

The DB2 optimizer estimates the number of rows that are returned by every query predicate and uses these estimates to determine the optimum query access path. Bad estimates lead to a sub-optimal access path requiring additional I/O resources.

Accurate catalog statistics can maximize the likelihood of efficient data access. You should do the following:

- Run the RUNSTATS utility or equivalent (for example, BMCSTATS or PDASTATS) at least after every database reorganization, and more frequently if possible.
- Include the INDEX(ALL) and UPDATE(ALL) options.

## Reserve Free Space in Tablespaces and Indexes

You should monitor the free space in the tablespaces and indexes associated with the DB2 objects. Your DB2 administration team should be able to advise if you experience negative performance because of poor organization of data and the lack of free space.

If there is a lack of free space, increase the free space parameters, and then reorganize the tablespace and index. If the free space parameters are adequate, simply reorganize the tablespace and index. These actions result in the following benefits:

- Improved row access because of the clustering of data
- More space for data resulting in fewer overflows
- Less frequent reorganization required because of fewer overflows and fragmentation
- Fewer index page splits and consequently more effective index access to data rows because of more space for index entries

## DB2 Subsystem Activity

The DB2 CPU usage and response time is affected by the presence and operational characteristics of other databases in the same DB2 subsystem, and other system activities. It is not accurate to compare, for example, the resource usage of the same application running in dissimilar uncontrolled environments with different subsystem and system workloads.

Beware of comparing percentage of CPU usage and CPU time between systems with different processing power.

DB2 can make use of specialist WLM facilities such as SRB enclaves. Ensure that your WLM setup reflects your business processing priorities.

ReportCenter does much of its database work in the background, and does not require the high priority and response times of a traditional OLTP application, where end user response time depends on database response.

## DB2 Maintenance Levels

IBM distributes DB2 performance enhancements through normal APAR and PTF maintenance. Ensure that you keep your DB2 software, including the DB2 SQLJ/JDBC component, up to date.

## DB2 Dynamic SQL Parameters

ReportCenter uses the JDBC API, which means that all SQL is dynamic.

There are several DB2 tuning parameters related to dynamic SQL performance, such as the CACHEDYN parameter and the KEEP\_DYNAMIC bind option.

Use of these parameters must be evaluated by your DBA, taking into account your specific environment.

The effectiveness of dynamic SQL caching depends, among other things, on the mix of applications in the DB2 subsystem. Applications with large volumes of dynamic SQL requests can swamp the statement cache, to the detriment of less active dynamic applications. Such caching also requires supporting buffer storage.

If your dynamic SQL cache resides in a data space, then there are related tuning variables to consider.

## DB2 Sort Pools and Data Sets

ReportCenter charts and tables require the data to be sorted correctly, and many report queries involve extensive sorting.

The internal sorting of DB2 generally performs faster with a number of DSNDB07 data sets spread out on different volumes (to eliminate contention and I/O wait), rather than with fewer, larger data sets. Do not use the default sort pool sizes.

Use four to five data sets. Allocate the data sets with the same size for the most efficient sorting. Keep the data in the primary space.

Define DSNDB07 in a separate buffer pool, and tune it specifically for sorting. Do not use BP0.

Make your sort pools as large as possible. Sorting efficiency increases with sort pool size. Large sort pools minimize the use of a buffer pool or the DSNDB07 file. This reduction in external I/O improves performance.

## DB2 Buffer Pools

Physical I/O requests are a major contributor to DB2 CPU usage. Large buffer pools minimize I/O.

Efficient buffer pools allocation to the DB2 objects ensures the following:

- Fewer I/O operations resulting in faster access to your data
- Reduced I/O contention with data and indexes
- Reduced sorting effort and time for work files for analytical queries

If performance problems exist, discuss with your DB2 administration team to analyze the typical workloads for ReportCenter, and customize the buffer pools to these requirements.

General buffer pool usage guidelines include the following:

- Using BP0 for everything impacts performance. Use BP0 only for the catalog and directory.
- The DB2 subsystem supports up to 80 different buffer pools. Consider using separate buffer pools for the following:
  - Catalog and directory (BP0)
  - DSNDB07
  - Tablespaces
  - Indexes
  - Small, read-only tables
  - Small, frequently updated tables and indexes
  - Large tablespaces supporting random processing

Isolating the ReportCenter application objects in a dedicated buffer pool greatly raises buffer pool hit ratios for the fact tables, improving synchronous I/O and CPU usage.

## DB2 EDM Pool

The environmental descriptor manager (EDM) pool functions as a system buffer pool and is the main memory area of DB2. It minimizes I/O against the DB2 directory (DSNDB01) and catalog (DSNDB06). It is also used by dynamic SQL processing.

In addition to increased directory and catalog I/O, an insufficient EDM pool increases PREPARE activity for dynamic SQL, and may limit concurrent thread usage. Specify the biggest EDM pool you can afford.

## DB2 RID Pool

The record identifier (RID) pool is where the RID for certain types of index accesses are sorted and stored. Review the default RID pool size. Performance analysis should indicate whether you would benefit from expanding the RID pool.

## Backing Up and Recovering

The daily management of DB2 objects typically falls in the management boundaries already defined in your organization. Back up the tablespaces in the ReportCenter database. Your DB2 administration team can determine the type of backup. Similarly, you should balance the frequency of backup with the time it takes for forward-log recovery.

## How to Delete Data Immediately

The ReportCenter Expiry Service runs regularly, deleting expired data from your database.

If you must delete data immediately without waiting for it to expire, you can delete it manually. For example, you could have the following reasons for deleting data:

- Your database is too large, and has space or performance problems.
- You have been testing ReportCenter and want to get rid of the data collected during testing.
- You no longer have certain resources and want to get rid of their performance data.

Ensure that only the performance attributes on which you want to report are sent to ReportCenter and stored in your database. Rather than sending everything to ReportCenter, use the Example Reports to see what reports are useful to you.

To delete data immediately, perform the following steps:

1. Run the data warehouse status reports.
2. Decide what to delete.
3. Back up your database.
4. Edit and run the SQL DELETE statements.
5. Run reorganization and statistics utilities.
6. Prevent future unwanted data.

**More information:**

[About Data Retention Rules](#) (see page 197)

## Run the Data Warehouse Status Reports

If you do not have a recent run of the following reports, run them.

- Data Warehouse Fact Status

**Note:** On a large database, this may take a while to generate.

- Data Warehouse Resource Status

These reports appear under the Reports, Miscellaneous option. We recommend that you schedule them to run weekly.

## Decide What to Delete

Look at the Data Warehouse Fact Status Report, and determine what is taking up space. Assess whether the value to your organization of the resulting reports justifies the number of rows taken by particular resources, attributes, and sampling applications.

The aim is not to trim the database of every last unwanted row, but to identify what can most easily reduce the bulk, without impacting the reports you find most useful.

Note the resources, attributes and data sampling applications that you want to delete.

## Back Up Your Database

Stop the ReportCenter Java Task, and back up your database.

## Edit and Run the SQL DELETE Statements

### To edit and run the SQL DELETE statements

1. Locate and copy the *dsnpref.NMC1.CC2DSAMP(WRDB2SQE)* data set member. This member contains examples of SQL DELETE statements.
2. Edit your copy of WRDB2SQE, as instructed at the top of the member.
3. Confirm that you really want to delete what you have specified, and you have specified what you want to delete.
4. Run the delete statements, using any DB2 batch plan or SQL interface.

The user who runs them must have adequate database authority to delete fact table rows.

There must be sufficient DB2 resources to process statements that delete large numbers of rows.

5. A successfully run delete statement ends with a condition code of zero, and a message resembling the following:

```
SUCCESSFUL DELETE    OF    31517 ROW(S)
```

## Run Reorganization and Statistics Utilities

### To run reorganization and statistics utilities

1. Re-organize your database, to reclaim space.
2. Run the RUNSTATS or equivalent utility to ensure optimal access paths and get any response time benefits from a smaller database.
3. Restart the ReportCenter Java Task.
4. Rerun the Data Warehouse Fact Status Report and compare it to the previous one.

## Prevent Future Unwanted Data

### To avoid collecting unwanted data in the future

1. Review and, if necessary, modify the Expiry Service Data Retention Rules.
2. If you never want to report on a resource or attribute, and you just deleted it, set SEND TO REPORTCENTER = NO so you don't collect it any more.



# Appendix I: CA Datacom/AD Administration

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CA Datacom/AD requires regular tasks to be implemented for backups and other functions.

For information about administering your CA Datacom/AD environment, see the CA Datacom/AD r11 documentation. CA Datacom documentation is available from Technical Support.



# Appendix J: ReportCenter Java Task Services

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This section contains the following topics:

[ReportCenter Java Task](#) (see page 235)

[Aggregation Service](#) (see page 235)

[Control Service](#) (see page 235)

[Database Expiry Service](#) (see page 236)

[Data Warehouse Service](#) (see page 236)

[Prompt Generator Service](#) (see page 236)

[Report Expiry Service](#) (see page 236)

[Report Generator Service](#) (see page 237)

[Scheduler Service](#) (see page 237)

[Timeframe Service](#) (see page 237)

[Check the Service](#) (see page 237)

## ReportCenter Java Task

The ReportCenter Java Task is the Java code that provides the infrastructure and specific functions used by ReportCenter. Java has features that a CA NetMaster region does not, such as chart generation and JDBC database access.

The ReportCenter Java Task runs as an MVS started task under the UNIX System Services Java Virtual Machine (JVM) environment. It provides a number of services. Some services are persistent (that is, they are always available). Other services are timer-based (that is, they do not start until triggered by a timer). The daily and weekly times are specified in the REPORTCENTER parameter group of the ReportCenter control region.

## Aggregation Service

The daily timer schedules this service once a day. It updates the database and aggregates hourly data into daily data. The first run in a new calendar month also aggregates daily data into monthly data.

## Control Service

This service is always active, either waiting for or processing commands. It provides a generalized command and control interface for the ReportCenter control region to access the ReportCenter Java Task services. It also processes the status and information commands for the ReportCenter Java Task infrastructure itself. It is used to pass on demand requests to the Report Generator Service.

## Database Expiry Service

The timer schedules this service once a week. It updates the database and deletes expired data.

Data expires according to its retention period and application ID. The data retention period varies with the level of data. For example, hourly data is kept for four days, daily data is kept for a few weeks, and monthly data may be kept for many years. To find out the time ranges of the data in your database, use the Data Warehouse Status report.

The default [data retention rules](#) (see page 197) are in the Adaptor.ini file.

## Data Warehouse Service

This service is always active, either waiting for or processing incoming collected data. It maintains socket connections with data regions to receive performance data as extensible markup language (XML) documents, parses the documents, transforms the data into data warehouse fact rows, and adds them to a structured query language (SQL) database through its JDBC (Java database connectivity) connection.

## Prompt Generator Service

A timer schedules this service when the ReportCenter Java Task is started. Also, a daily timer schedules this service once a day. It reads the database and updates the HFS files to build lists of values for report criteria prompts. These values appear in the drop-down lists on the web pages. The lists are customized for the specific attributes and resource class that are included in the selected report.

## Report Expiry Service

The daily timer schedules this service once a day. It updates the HFS to delete any expired report output. The entire directory for an expired run is deleted. Report output expires after 48 hours for on demand reports, and after the number of days chosen by the user for scheduled reports.

## Report Generator Service

This service is always active, either waiting for or processing report generation requests. It takes report run requests from a queue and processes them serially. The Scheduler Service can place requests for scheduled reports on the queue; the report administrator can place requests for on demand one-off reports on the queue.

For each request, it reads the report definition file from the HFS and uses that information to query the database for each chart or table in the report. It generates .PNG graphics files for the charts and the hypertext markup language (HTML) for the final report. It writes the HTML and other files to the HFS.

## Scheduler Service

The daily timer schedules this service once a day. It reads the schedule definitions from the HFS and assesses whether the reports are due to run today. If a report is due, it adds it to the report queue for processing by the Report Generator Service.

## Timeframe Service

This service is scheduled once a day by a special daily timer specified in the Adaptor.ini file. It is set at one minute past midnight. It updates the Timeframe table in the database to map absolute day values to relative time frames.

**Note:** The timeframe service also runs when the ReportCenter Java Task starts.

## Check the Service

A check of the Java task and the Last Run Status of the timer-based services runs periodically on the control region.

An alert is raised when the Java Task is inactive, or when a service failure is logged. These alerts are cleared when the task is next found active, or the service logs a successful run.

To check the Last Run Status, use REPTTEST SERV from OCS.

To simulate the alert checking, use REPALERT from OCS.



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