CA Chorus™

Manual Configuration Guide

Version 03.0.00, Fourth Edition

CA Product References

This document references the following CA Technologies products:

- CA ACF2™ for z/OS (CA ACF2)
- CA Chorus™
- CA Chorus™ for DB2 Database Management
- CA Chorus™ for Security and Compliance Management
- CA Chorus™ for Storage Management
- CA Chorus™ Infrastructure Management for Networks and Systems
- CA Chorus™ Software Manager
- CA Datacom®/AD (CA Datacom/AD)
- CA Distributed Security Interface for z/OS (CA DSI Server)
- CA Detector® for DB2 for z/OS (CA Detector)
- CA Insight™ Database Performance Monitor for DB2 for z/OS (CA Insight)
- CA NetMaster® Network Management for TCP/IP (CA NetMaster NM for TCP/IP)
- CA OPS/MVS® Event Management and Automation (CA OPS/MVS)
- CA RC/Migrator™ for DB2 for z/OS (CA RC/Migrator)
- CA Subsystem Analyzer for DB2 for z/OS (CA Subsystem Analyzer)
- CA SYSVIEW® (CA SYSVIEW)
- CA Top Secret® for z/OS (CA Top Secret)
- CA Vantage™ Storage Resource Manager (CA Vantage SRM)
- Storage Management interface

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- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
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Documentation Changes

The following documentation updates have been made since the third edition of this documentation:

- Enable TSF Processing for Remote Systems (see page 24)—Added an optional step to set the TSF relay monitor port using the MONPORT parameter in in CETJOPTN(TSFRPRMS). (PTFs RO71593 and RO71594 required.)

The following documentation updates have been made since the second edition of this documentation:

- Legal Notices (see page 2)—Updated to reflect public documentation legal disclaimer.
- Seeding Data to Multiple TSF Regions (see page 37)—Removed incorrect reference to TSFSUFFIX default in step 2.

The following documentation updates have been made since the first edition of this documentation:

- Override the DB2 Execution Mode (see page 47)—Added this optional step to the CA Chorus for DB2 Database Management configuration tasks. If you are running any DB2 subsystems in Compatibility Mode (CM), review this topic.
- Establish Database Connections (see page 57)—Updated this CA Chorus for Security and Compliance Management topic to note a simplified method to find your SYSTEMID.

The following list details changes from content that previously appeared in the *Installation Guide*:

General—Created this guide to identify manual configuration tasks. However, we recommend that you use CA CSM or the Automatic Configuration process as defined in the *Installation Guide*.

CA Chorus Configuration

Address APF Authorization Requirements (see page 17):

- Removed note about optional steplib recommendations.
- Adjusted the final note to refer only to CCS r14.1 and added text about user access requirements for *your_chorus_hlq*.CETJOPTV and *your_chorus_hlq*.CETJEZTR.
- Noted CA Datacom/AD jobs that must be APF-authorized and clarified the HLQ for both.

How to Configure the CA Chorus Database (see page 17)—Simplified the procedure according to 3.0 requirements and clarified the final TSF notes.

How to Configure the Time Series Facility (see page 19)—Removed Metrics Management examples, which now appear in the *Administration Guide*.

Control Stored Metric Data—Removed this topic, which now appears in the *Administration Guide* under Manage Stored Metric Data.

How to Enable TSF Processing for Remote Systems (see page 24)—Changed TTSFIAPPDR to TTSFHOST in step 1a.

(Optional) Enable HTTPS for User Access (see page 26)—Added this procedure.

(Optional) Configure CA DSI SSL (see page 26)—Removed the unpax step and updated the export commands to match Version 3.0 settings.

Configure SMTP Mail Server (see page 27)—Added this procedure.

Configure the CA Chorus Software Manager Quick Link (see page 28)—Added this procedure.

Configure the JDBC Driver for CA Datacom/AD (see page 28)—Added this procedure.

Configure CA Chorus to Use the SDK—Removed this topic. For details, see the *Software Development Kit User Guide*.

How to Configure the JBoss Server (see page 81)

- Moved this topic so you execute it after you configure the CA DSI Server and the SDK.
- Removed the requirement/note about scenario when dynamic ports are not required.
- Changed consecutive port requirement from 18 to 12.
- Removed the note about assigning the CHORJBOS started task to the user ID from step 3. This step is completed when you run the security job (ETJI095*x*).
- Removed the step to configure HTTPS support, which now appears in (Optional) Enable HTTPS for User Access (see page 26).

Activate Your Configuration Changes (see page 81)—Added this procedure.

Added the manual configuration steps for each discipline. Previously, each reside in the discipline *Installation Guide*, which does not exist in Version 3.0.

Define Data Sources (see page 47)—Added the steps to rerun E3KI0020.

Contents

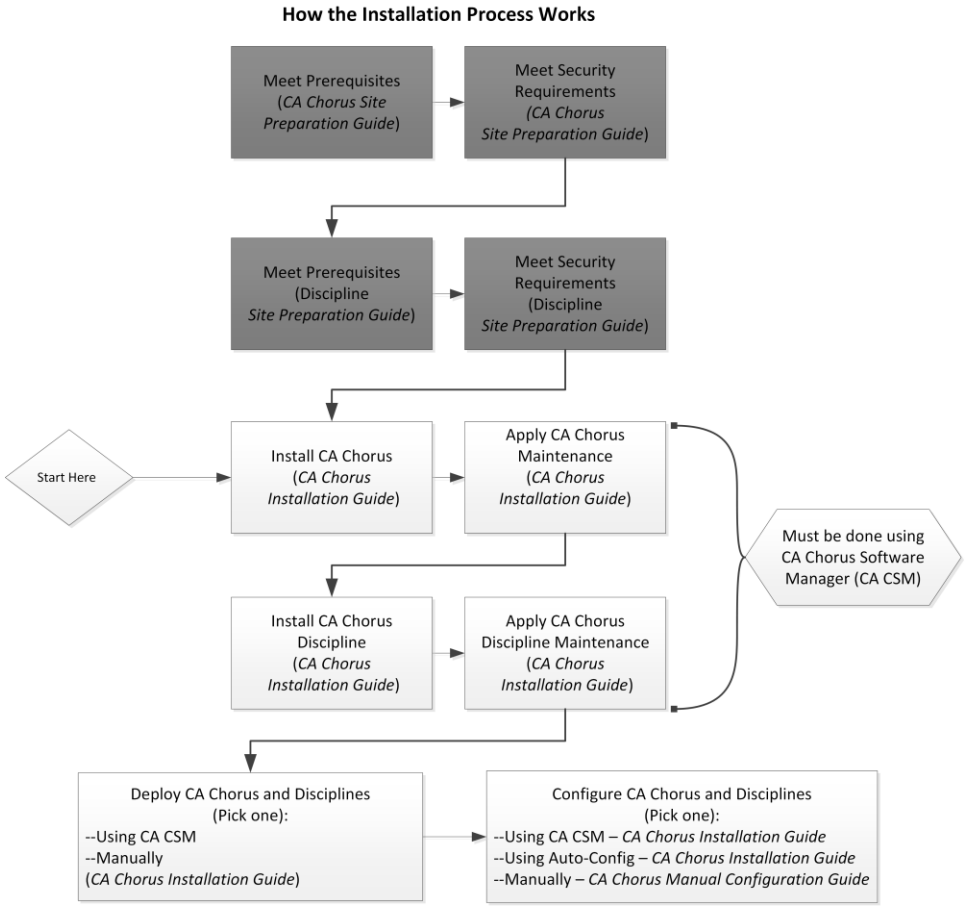
Chapter 1: Overview

How the Installation Process Works

The following diagram provides a high-level overview of the CA Chorus and discipline installation, deployment, and configuration process and the guides that you use.

Stop and read the *Site Preparation Guide* before continuing. Do not continue until you have completed all security and prerequisite work as noted in the CA Chorus Platform *Site Preparation Guide* and the applicable discipline *Site Preparation Guide*.

Note: The grayed out boxes indicate tasks that the system administrator and security administrator must have completed before starting the actual installation.



To install, deploy, and configure your CA Chorus and its disciplines, complete the following steps:

Important! Review the following points before you continue:

-- Install the Third-Party Pre-reqs and then the CA Chorus platform before you install any disciplines.
-- You must use CA Chorus Software Manager to install CA Chorus and its disciplines.
-- If you install a discipline, you must deploy and configure it.

1. Meet the software, system, port, and other prerequisites as described in the *CA Chorus Site Preparation Guide*.
2. Meet security requirements as described in the *CA Chorus Site Preparation Guide*.
3. Use the Prerequisite Validator to confirm that you have set up your system correctly as described in the *CA Chorus Site Preparation Guide*.
4. Meet the software, system, port, and other prerequisites as described in the applicable discipline *Site Preparation Guide*. Repeat this step for each discipline that you are installing.
5. Meet security requirements as described in the applicable discipline *Site Preparation Guide*. Repeat this step for each discipline that you are installing.
6. Install CA Chorus and the applicable disciplines using CA Chorus Software Manager as described in the *Installation Guide*. This step involves acquiring the software (transporting to your z/OS system) and installing using SMP/E. The installation process creates a CSI environment and runs the RECEIVE, APPLY, and ACCEPT SMP/E steps. The software is untailored.
7. Deploy CA Chorus and the applicable disciplines using CA CSM or a manual process. The *CA Chorus Installation Guide* details both methods.

   This step copies the target libraries to another system or LPAR.

   Important! For deployments from CA Chorus Software Manager (CA CSM), deploy CA Chorus and your disciplines at the same time. For example, installing CA Chorus, DBA, and Security, and then deploying only CA Chorus and DBA *is not supported*.

   Important! To use the CA CSM Software Configuration Service, CA CSM deployment is required.

8. Configure CA Chorus and the disciplines. This step creates customized load modules, bringing the CA Chorus software to an executable state. You configure the product using one of the following methods:

   Note: We recommend one of the first two options as the most efficient method to configure your products.

   CA CSM

   This method lets you use the wizard-based CA CSM tools to configure the product. For this configuration method, a deployment using CA CSM is required.

   For this method, configure CA Chorus and its disciplines using the *Installation Guide*.

   Automated Configuration

   This method lets you edit one batch job (ETJICUST) and one configuration file. A Java program then propagates your changes to the applicable members. You then manually submit each job. For this option, we recommend that you configure the platform and disciplines at the same time.

   For this method, configure CA Chorus and its disciplines using the *Installation Guide*.

   Manual

   This method lets you manually edit and run each configuration job.

   For this method, configure CA Chorus and its disciplines using the *Manual Configuration Guide*.

   Your CA Chorus system is installed, deployed, and configured.

How the Manual Configuration Process Works

Configure your product by using the following topics in sequential order:

Important! We recommend that you configure your product with the CA Chorus Software Manager Software Configuration Service or the Automated Configuration. For both methods, see the *Installation Guide*.

1. Configure CA Chorus (see page 13).
2. Configure the CA Chorus disciplines. Skip the disciplines that do not apply. If you are only using the Software Development Kit, go to step 3.
   - Configuring CA Chorus for DB2 Database Management (see page 31)
   - Configuring CA Chorus Infrastructure Management for Networks and Systems (see page 49)
   - Configuring CA Chorus for Security and Compliance Management (see page 55)
   - Configuring <chorustor> (see page 69)
3. Activate your configuration changes (see page 81). Do so only after configuring CA Chorus and the disciplines.
4. Verify the CA Chorus and discipline configurations.

Auto Configuration and Manual Configuration

Important! In *your_chorus_hlq*.CETJJCL and other data sets, you see seemingly duplicate members. For example, CHORJBOS and $HORJBOS. The first member is for manual configuration use. The second member is for automatic configuration use; however, with this method, you do not manually update any members that lead with the $ symbol. The ETJICUST batch job updates these members for you.

Chapter 2: Configuring CA Chorus

Important! We strongly recommend that you complete all configuration tasks on deployed copies of the target data sets and UNIX System Services (USS) file systems. Leave the SMP/E-installed copies of these files intact. Keep the deployed USS data sets in R/W until you complete all CA Chorus configuration tasks.

Define Site-Specific Installation Variables

Before you configure the CA Chorus components, configure the product installation variables to conform to installation standards at your site.

Important! Incorrectly setting these key variables can cause your installation jobs to fail during the configuration.

Follow these steps:

1. Edit the ETJVARS member in *your_chorus_hlq.*CETJJCL as described in the member, and save your changes.

   The ETJVARS member is customized. Member ETJVARS contains statements that set symbolic variables that are used in the JCL members found in the *your_chorus_hlq.*CETJJCL data set.

2. Modify the JOBCARD member in *your_chorus_hlq.*CETJJCL, and save your changes:

   - Edit the JOB statement to conform to your installation standards.

     Note: An INCLUDE statement in this member references the ETJVARS member in *your_chorus_hlq.*CETJJCL.

   - Modify the SET CAI statement to point to the high-level qualifier of the CA Chorus installation data sets. This value must match the one in the *your_chorus_hlq.*ETJVARS member.

   The JOBCARD member is customized for use by the jobs in the *your_chorus_hlq.*CETJJCL data set.

Define Site-Specific JBoss Environment Variables

The ENVETJ member in *your_chorus_hlq.*CETJOPTN contains the configuration information for the JBoss server that must be edited to set site-specific environment variables. The Java Virtual Machine (JVM) uses these values to start the JBoss server and to identify discipline-specific behaviors and report options.

To define site-specific JBoss environment variables, edit the ENVETJ member in the *your_chorus_hlq.*CETJOPTN library as described in the member.

Note: For more information, see JBoss Environment Variables (ENVETJ).

ENVETJ is customized and the JBoss environment variables are defined.

Change zFS Ownership

To change the owning ID and group of the zFS aggregates for CA Chorus, edit and submit member ETJI0100 in *your_chorus_hlq.*CETJJCL. The owning ID and group that is specified in this member must match the ID and group that is defined when you created the CA Chorus user ID.

Note the following settings:

CHORUS_HOME

Installation home directory. Set to the same value as INSTALL_HOME in ENVETJ.

CHORUS_USER

Set to the same value specified for the started task user ID that is used to run CA Chorus. The default is CHORADM.

CHORUS_GROUP

Set to the same value specified for the default group name. The default is CHORGRP.

The expected return code is 0.

Important! The user ID used to run this job must have superuser (su) authority.

Mount the CA Chorus User File Systems

The ETJI0101 member in *your_chorus_hlq.*CETJJCL creates and mounts the user file systems that hold all configuration, log, and user data that is needed in CA Chorus. To customize the ETJI0101 member, see the job comments.

Follow these steps:

1. Edit the ETJI0101 member in *your_chorus_hlq.*CETJJCL as described in the member, and save your changes.

   The ETJI0101 member is customized.

2. Submit the job.

   The expected return code is zero.

(Optional) Configure the Knowledge Center zFS

Knowledge Center documentation is stored and indexed on the mainframe zFS. Before you can upload and index your Knowledge Center documentation, create, format, and mount a zFS using the ETJUDCDF and ETJUDCMT members in *your_chorus_hlq.*CETJJCL.

Note: If you do not plan to upload and index your own Knowledge Center documentation, this step is optional.

Important! Do not allocate the Knowledge Center zFS on the same volumes as the CA Chorus zFS file systems. If your documentation is larger than the space allocated for CA Chorus, space issues can occur.

Follow these steps:

1. Confirm that you have enough space allocated for the Knowledge Center files that you plan to include. We recommend that you allocate 250 cylinders for every 200 MB of documentation on hard disk drive (HDD).
2. Create a zFS using *your_chorus_hlq.*CETJJCL member ETJUDCDF.
3. Mount the zFS to the desired mount point using *your_chorus_hlq.*CETJJCL member ETJUDCMT.

   The zFS is mounted at /cai/cetjr3m0/userdoc by default.

Configure CA Chorus Report Options

Use this procedure to create a default master JCL report template and define site-specific Java Virtual Machine (JVM) environment variables. Doing so lets users generate reports from CA Chorus. The template is used to create batch JCL that can be submitted to generate reports from data in the CA Chorus interface. The batch JCL that is submitted to z/OS to produce the reports uses the environment variables.

Note: Multiple report templates can be created as needed (for example, to support multiple disciplines or to customize JOB statement information). After the templates are defined, users can select the default or another template to generate reports.

Important! Any user that runs the JCL to generate reports must be given READ access to *your_chorus_hlq.*CETJOPTV and the CA Chorus and CA Easytrieve Report Generator load modules. Users also need READ access to *your_chorus_hlq.*CETJEZTR to generate the JCL.

Follow these steps:

1. Edit the EZTMPL01 member in *your_chorus_hlq.*CETJEZTR as described in the member and save your changes. Do not submit.

   Note: For EZTLIB, specify the name of the load library for the CA Easytrieve service component of CA Common Services.

   The default master JCL template is defined.

   Note: To use a different template as the default, copy EZTMPL01 into a new PDS, and edit it as needed. Keep the new default template member name as EZTMPL01. Update the environment variables in the following steps to point to the new PDS as is applicable. If needed, use EZTMPL01 as a template to create report templates in the same PDS.

2. Edit the ENVEZT member in *your_chorus_hlq.*CETJOPTV as described in the member. Do not submit.

   The configuration information for the JVM is defined.

3. Edit the ENVETJ member in *your_chorus_hlq.*CETJOPTN to specify the data set name where the report templates are stored and save your changes. This value must match the name that is specified for EZT_MASTER_PDS in the ENVEZT member of *your_chorus_hlq.*CETJOPTV (see Step 2).

   Note: This step may have been done as part of configuring the JBoss environment variables.

   When JBoss is started, the default template and any additional templates that you defined are available from the CA Chorus interface.

Address APF Authorization Requirements

The following data sets must be APF-authorized to ensure the proper execution of CA Chorus:

Important! All data sets in STEPLIB must be APF-authorized.

***your_chorus_hlq*.CC2DLOAD**

Includes the Time Series Facility (TSF) library.

***your_chorus_hlq*.CETJLOAD**

Includes the CA Chorus library.

***your_chorus_hlq*.CETJPLD**

Includes the CA Chorus library.

Note: As part of meeting the CA Datacom/AD prerequisite, the following libraries must be APF-authorized: *datacomad_adthlq*.CAAXLOAD (CA Datacom/AD load library) and *datacomad_adchlq*.CUSLIB (CA Datacom/AD customization library).

Configure the CA Chorus Database

CA Chorus uses a database that is installed into the CA Datacom/AD environment, which you previously installed and configured as described in the *Site Preparation Guide*. Use this procedure to define and initialize the CA Chorus tables and load the Time Series Facility (TSF) database files.

Follow these steps:

1. Edit and submit the CPYAXDAT from *your_chorus_hlq*.CETJJCL. This job copies the AXDATIN1 and AXDATIN2 settings from *your_chorus_hlq*.CETJOPTN to *datacomad_adchlq*.CUSMAC.
2. Start the CA Datacom/AD MUF. You established the name of this MUF during prerequisite setup. Use that name in the following command.

   ```
   /S your_muf_name
   ```

   Message DB00212I appears on the z/OS console when the MUF is available. This message identifies the release of CA Datacom/AD that you have installed.

   Note: We recommend that all CA Chorus tasks run as a started task with REGION=0M. If your site restricts the REGION=0M parameter, run with the maximum region size permitted.

3. Initialize the tables and define the CA Chorus data sources by editing and submitting CHDB004 in *your_chorus_hlq*.CETJJCL.

   After successful execution, this job installs the data sources that are needed for CA Chorus. The job includes one step for every data source. The expected completion code is zero (0) for all steps. When CHDB004 is executed, the INSTALL_HOME/config/SQL directory is updated to create the following SQL files:_create_QWIKREF.sql and _destroy_QWIKREF.sql.

   If a step fails, the remaining steps do not execute. To clean up and restart the initialization, edit and execute the CHDB101 member in *your_chorus_hlq*.CETJJCL, edit and execute the CHDB102 member in *your_chorus_hlq*.CETJJCL, and repeat step 3.

4. Allocate and define the TSF database to the CA Datacom/AD MUF by editing and submitting TSDB002 in *your_chorus_hlq*.CETJJCL.

   TSF stores data that is collected and provided to it by CA Chorus.

   The CA Chorus TSF database data sets are defined.

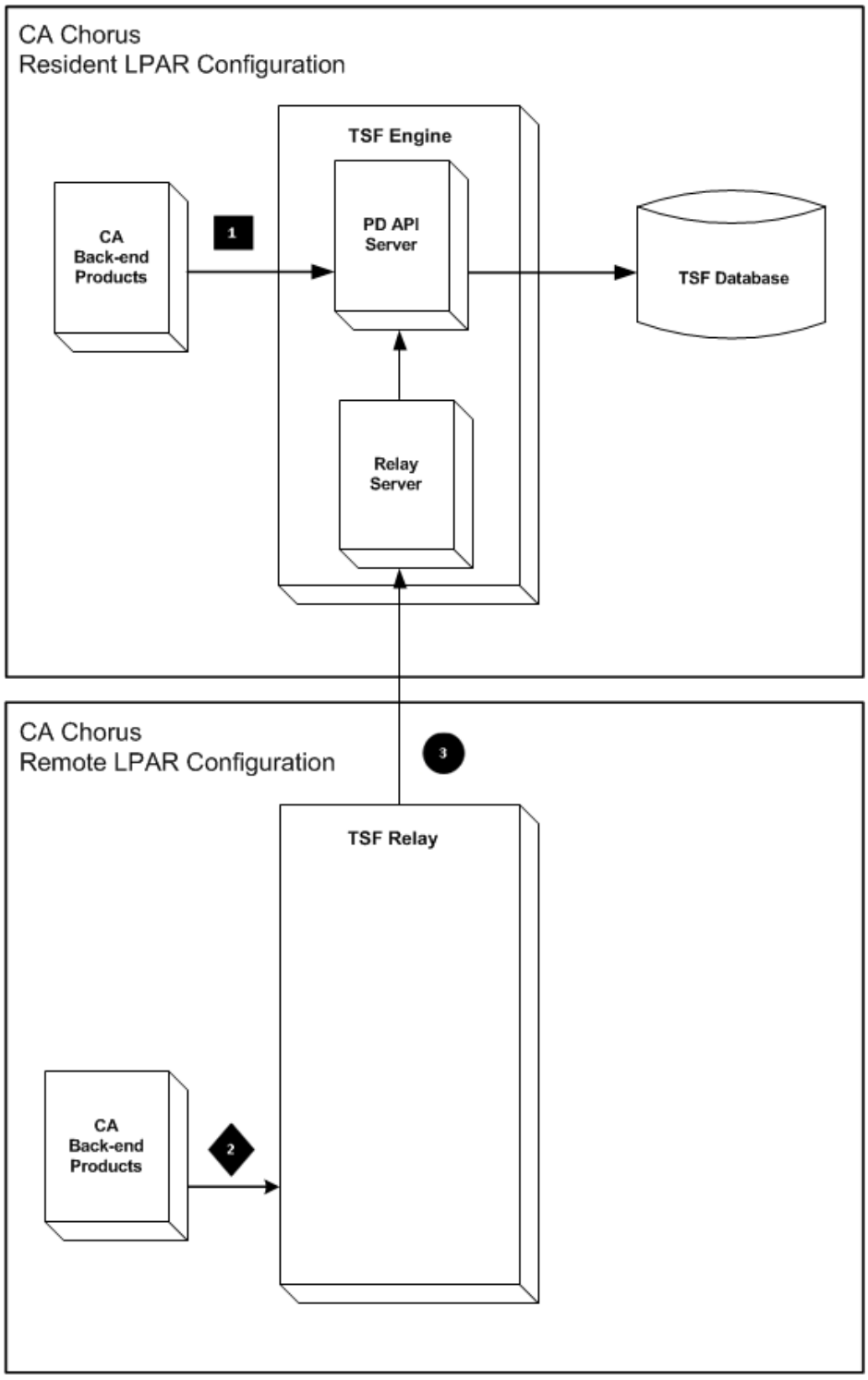
   If a step fails, the remaining steps do not execute. To clean up and restart the initialization, edit and execute the TSDB102 member in *your_chorus_hlq*.CETJJCL, edit and execute the CHTSDBDL member in *your_chorus_hlq*.CETJJCL, and repeat step 4.

   Note: For information about the TSF database, managing data, and adding space after data collection has been started, see the *Administration Guide*.

Configure the Time Series Facility

The Time Series Facility (TSF) stores data that is collected and provided to it by back-end CA Technologies products, such as CA Detector for CA Chorus for DB2 Database Management. TSF provides a single point for the collection, storage, management, and organization of the product data.

The following diagram shows how data is collected and provided to TSF:


CA Chorus
Resident LPAR Configuration
TSF Engine
CA
Back-end
Products
1
PD API
Server
TSF Database
Relay
Server
CA Chorus
Remote LPAR Configuration
3
TSF Relay
CA
Back-end
Products
2

TSF uses the following process to collect and store data:

The back-end CA Technologies products pass data to the Provide Data (PD) API server. This data is stored in the TSF database. Data is passed to the PD API server through the TCP/IP stack and port that is specified by the PDAPIPORT parameters in the TSFPARMS member.

The back-end CA Technologies products pass data from a remote LPAR to the TSF relay. Data is passed through the TCP/IP stack and port that is specified by the PDAPIPORT parameters in the TSFRPRMS member.

The TSF relay passes the Time Series data to the relay server. The relay server passes the data to the PD API server and it is stored in the TSF database. Data is passed to the relay server through the TCP/IP stack and port that is specified by the TTSFHOST and TTSFRELAYPORT parameters in the TSFRPRMS member. The port parameter must match the PDRELAYPORT parameter that is specified in the TSFPARMS member.

Follow these steps:

1. Allocate the TSF VSAM data sets by editing member TSF#ALOC in *your_chorus_hlq*.CETJJCL as described in the member, and submit. For background details, see TSF Configuration.
2. Populate the TSF VSAM data sets by editing member TSF#PPL8 in *your_chorus_hlq.*CETJJCL as described in the member, and submit. For background details, see TSF Configuration.

3. Define the following TSF port for your site by editing member TSFPARMS in *your_chorus_hlq*.CETJOPTN as described in the member. Do *not* submit this member.

   Important! TSF by default is defined to connect to all CINET TCP/IP stacks using UNIX System Services (USS) and use dynamic ports. If your site requires that you control or limit the TCP/IP stack in a multistack environment and/or requires static ports, add the following parameters: **STACKNAME=***tcpip_stack_name* and **STACKTYPE=IBM**. Additionally, supply port values for the following defined ports.

   PDRELAYPORT=[*nnnnn*|NONE]

   Specifies the port that provides data from the remote LPAR to TSF.

   Important! If you are not enabling TSF processing for remote systems, use the default value for this parameter. If you are enabling TSF processing for remote systems, this value must match the TTSFRELAYPORT parameter value in the TSFRPRMS member of *your_chorus_hlq*.CETJOPTN.

   Valid values: 1024 to 65535 and NONE

   Default: NONE

   QUERYPORT=[*nnnnn*]

   Specifies the port to use for query requests from CA Chorus.

   Range: 1024 to 65535

   Default: Allocated dynamically if left blank or commented out.

   Note: This port is dynamically allocated by default; however, you can configure it for a specific port value.

PDAPIPORT=[*nnnnn*]

Specifies the port to use for communications between data providers (like CA Detector) and the data API in TSF.

Range: 1024 to 65535

Default: Allocated dynamically if left blank or commented out.

Note: This port is dynamically allocated by default; however, you can configure it for a specific port value.

Example: Running TSF with dynamic ports and TSF Relay:

```
PDRELAYPORT=12345
* QUERYPORT=
* PDAPIPORT=
```

Example: Running TSF with static ports and TSF Relay:

```
PDRELAYPORT=12345
QUERYPORT=12346
PDAPIPORT=12347
```

Example: Running TSF with static ports, specifying a specific stack and TSF Relay:

```
STACKNAME=TCPIP
STACKTYPE=IBM
PDRELAYPORT=12345
QUERYPORT=12346
PDAPIPORT=12347
```

Save your changes.

The TSF parameters are defined.

Note: If you are required to run concurrent Time Series regions, see Upgrading Your Product.

Important! The TSF metric database uses large amounts of disk space. We strongly recommend that you set up automation to reclaim free space and monitor your database space usage. For more information about setting up this automation, see the *Administration Guide*.

4. Start the TSF started task:
   a. Edit the CHORTSF member in *your_chorus_hlq.*CETJJCL.
   b. Change the job name in the member to a value unique from the default JOB statement.

c. Convert this JCL to a started task and copy to a PROCLIB.

d. Start the CHORTSF started task (/S CHORTSF).

When TSF is available, the following message appears on the z/OS console:

```
N00503 *** TSF INITIALIZATION COMPLETE TSF ***
```

Note: We recommend that all CA Chorus tasks run as a started task with REGION=0M. If your site restricts the REGION=0M parameter, run with the maximum region size permitted.

5. (Optional) Enable TSF processing for remote systems (see page 24).

Example: Set up the TSF Started Task without a Remote Relay

This example sets up the TSF started task without a remote relay and with dynamically allocated ports:

```
PDRELAYPORT=NONE
* QUERYPORT=
* PDAPIPORT=
```

Example: Set up the TSF Started Task with a Remote Relay

This example sets up the TSF started task with a remote relay and the ports that are set to 1234*n*:

```
PDRELAYPORT=12345
QUERYPORT=12346
PDAPIPORT=12347
```

Enable TSF Processing for Remote Systems

A Time Series Facility (TSF) data relay lets you send data that is collected on a remote LPAR to TSF. TSF data relays are controlled with parameters in the TSFRPRMS member. Set up a TSF data relay on each LPAR that sends data to TSF. Do *not* set up a TSF data relay on the TSF LPAR.

Note: For more information about running multiple instances, see the *Upgrade Guide*.

Follow these steps:

1. Complete the following steps in the CETJOPTN member TSFRPRMS:

   a. Enter the following parameters:

      TTSFHOST=[*nnn.nnn.nnn.nnn*|*nnnn:nnnn:nnnn:nnnn*]

      Specifies the TCP/IP Host Name or IP address for the system (LPAR) on which the target TSF region resides.

      Valid values: Must be an IPv4 or an IPv6 address.

      TTSFRELAYPORT=*nnnnn*

      Specifies the TCP port for the TSF relay. This value must be the same as the PDRELAYPORT value specified in the target TSF system TSFPARMS startup parameters.

      Valid values: 1024 to 65535

      PDAPIPORT=*nnnnn*

      Specifies the TCP port for communications between data providers (like CA Detector) and the TSF relay. If this value is not specified, it is allocated dynamically.

      Valid values: 1024 to 65535

   b. (Optional) Define the port to use for data provider communication and the CHORTSFR started task in the PDAPIPORT parameter. If this parameter is set, this value must be the same as the PDAPIPORT value specified in the target TSF system TSFPARMS startup parameters.

      Range: 1024 to 65535

      Default: Allocated dynamically if left blank or commented out.

      PDAPIPORT is customized.

   c. (Optional) Define the port to use for monitoring the connection from the TSF relay to the TCP/IP stack in the MONPORT parameter.

      Range: 1024 to 65535

      Default: Allocated dynamically if left blank or commented out.

      MONPORT is customized.

   Save your changes.

   TSFRPRMS is updated.

   Note: Member TSFRPRMS parameter values can be overridden through the PARM parameter on the CHORTSFR procedure EXEC statement. Variable data, such as z/OS static system symbols, can also be passed through the PARM parameter.

2. Edit the member CHORTSFR in *your_chorus_hlq.*CETJJCL as described in the member.

   The TSF data relay started task is ready to execute.

3. Convert this JCL to a started task and copy to a PROCLIB.

4. If remote DASD is not shared with the local LPAR, verify that copies of the following data sets are available on the remote LPAR:

   - CC2DLOAD
   - CETJOPTN
   - CETJJCL

5. Verify that CC2DLOAD is APF-authorized on the remote LPAR.

   The TSF data relay is ready to send data to TSF.

6. Start the CHORTSFR started task.

   Note: For information about the return codes for this started task, see the *Troubleshooting Guide*.

   Note: We recommend that all CA Chorus tasks run as a started task with REGION=0M. If your site restricts the REGION=0M parameter, run with the maximum region size permitted.

(Optional) Enable HTTPS for User Access

You can configure JBoss to enable HTTPS for user access. This option provides more security by encrypting the user name and password when it is sent to and from the web browser.

Enable HTTPS by editing the ETJI0110 member in *your_chorus_hlq*.CETJJCL as described in the member, and submit the job.

Note: To use this job to disable HTTPS, set SSL_ENABLE=no and resubmit the job.

(Optional) Configure CA DSI SSL

Secure Socket Layer (SSL) refers to the standard method of encryption and authentication on the Internet. This added security protects you from having your password stolen on an unsecure connection.

The CA Distributed Security Integration for z/OS (CA DSI Server) provides a remotely callable interface. This interface uses TCP/IP to enable applications within the enterprise to communicate with a mainframe external security manager (ESM). For example, CA ACF2, CA Top Secret, or IBM RACF.

To enable secure communications between CA DSI and the CA Chorus server, we provide sample self-signed certificates as part of the product installation. Use the following procedure to configure SSL for CA DSI and CA Chorus communications using the sample certificates.

Follow these steps:

1. Edit the following lines in the ENVETJ member in *your_chorus_hlq.*CETJOPTN. Uncomment them starting with the second line:

   ```
   # For DSI SSL
   #IJO="$IJO -Dcom.ca.chorus.dsiSSLEnabled=true"
   #export GSK_HOME=$INSTALL_HOME/samples/certificates
   #export GSK_KEYRING_FILE=$GSK_HOME/CA_SelfSigned_Server.kdb
   #export GSK_KEYRING_STASH=$GSK_HOME/CA_SelfSigned_Server.sth
   #export GSK_KEY_LABEL="Cert for SelfSigned Server"
   ```

   Note: If you do not use the self-signed certificates, modify the previously noted variables. The variables must point to your certificates in the dsi.env file and in the ENVETJ member for the JBoss server.

   CA DSI and JBoss are enabled to use the self-signed certificate.

2. **CA Chorus for Security and Compliance Management Users Only**: If you have CA DSI Servers running systems that are configured for use with the Security Command Manager module or the Security Simulation interface, add the following lines to the dsi.env file for each of those servers:

   ```
   GSK_KEYRING_FILE={Path to the KEYRING FILE}
   GSK_KEYRING_STASH={Path to the KEYRING STASH file}
   GSK_KEY_LABEL=Cert for SelfSigned Server
   ```

(Optional) Configure SMTP Mail Server

From the Investigator, you can specify an email action so that you are notified when a performance policy is met. Use this procedure to configure CA Chorus to send these email notifications.

To configure your SMTP mail server, customize and run ETJI0135 from *your_chorus_hlq.*CETJJCL data set.

When you start the JBoss server as part of the CA Chorus configuration, these changes take effect.

(Optional) How to Configure the CA Chorus Software Manager Quick Link

Each quick link provides shortcut access to various interfaces. The Quick Links module lets you quickly access your data and respond to requests or troubleshoot issues. Many companies create their own tools to manage various tasks or house data. Adding a link to these components in this module can help you efficiently manage tasks and your time from CA Chorus.

By adding CA Chorus Software Manager as a quick link, you can manage product and maintenance installations from the same location where you manage your data.

Important! If you are using an APPL name that differs from the default value for CA CSM (CSMAPPLM), modify the APPL in ENVETJ of *your_chorus_hlq*.CETJOPTN.

To configure this quick link, customize and run ETJI0140 from *your_chorus_hlq.*CETJJCL data set.

When you start the JBoss server as part of the CA Chorus configuration, these changes take effect.

Configure the JDBC Driver for CA Datacom/AD

The JDBC driver is a software component that helps Java applications interact with the CA Datacom/AD database.

To configure JDBC, customize and run ETJI0145 from *your_chorus_hlq.*CETJJCL data set.

When you start the JBoss server as part of the CA Chorus configuration, these changes take effect.

Configure CA DSI

Use this procedure to configure CA DSI to work with the JBoss server.

Important! Be sure that you have specified the TEIID_PORT value and other required values in the ENVETJ member in the CETJOPTN library before submitting ETJI0105. A proper configuration helps ensure that JBoss starts properly.

Follow these steps:

1. Edit the ETJI0105 member in *your_chorus_hlq.*CETJJCL as described in the member, and submit.

   The following files are updated:

   - /config/dsi.conf: This file is updated to change the port assignment for the DSI server that performs the authentication and resource verification tasks for JBoss.
   - /config/dsi.env: This file is updated to change the INSTALL_HOME value for the DSI spawned from JBoss.

     Note: Neither of these values is used in Compliance Information Analysis (CIA) real-time configuration for CA Chorus for Security and Compliance Management.

2. Verify that all ports are available and enabled.

Important! Go to the next discipline configuration chapter or go to Activating Your Configuration (see page 81).

Chapter 3: Configuring CA Chorus for DB2 Database Management

How to Configure CA Chorus for DB2 Database Management Manually

Perform the following configuration tasks to configure CA Chorus manually (without CA Chorus Software Manager):

Important! We strongly recommend that you complete all configuration tasks on deployed copies of the target data sets and UNIX System Services (USS) file systems. Leave the SMP/E-installed copies of these files intact. Keep the deployed USS data sets in R/W until you complete all CA Chorus configuration tasks.

CA Chorus for DB2 Database Management Configuration Tasks Summary

- Load CA Detector collection data automatically or manually for the Time Series Facility (TSF) in CA Chorus.

  Note: This configuration is not required for integration with CA Chorus Infrastructure Management for Networks and Systems.

  Important! This step must be performed manually outside of CA Chorus Software Manager.

- Enable DB2 object migration.

  Note: This configuration is not required for integration with CA Chorus Infrastructure Management for Networks and Systems.

  Important! This step must be performed manually outside of CA Chorus Software Manager.

- Define site-specific installation variables (edit ETJVARS and CHORJBOS in *your_chorus_hlq.*CETJJCL, edit E3KJBCRD in *your_chorusdba_hlq.*CE3KJCL).
- Define DB2 subsystem connections (edit E3KCFG10 in *your_chorusdba_hlq.*CE3KPARM, and edit and submit E3KI0010 in *your_chorusdba_hlq.*CE3KJCL).
- Define data sources (edit and submit E3KI0020 in *your_chorusdba_hlq.*CE3KJCL).

- (Optional) If you are running any DB2 subsystems in Compatibility Mode (CM), override the DB2 execution mode (edit E3KMOD10 in *your_chorusdba_hlq*.CE3KPARM, and edit and submit E3K3I0030 in *your_chorusdba_hlq*.CE3KJCL).

Note: Detailed information about these tasks is provided in the following sections.

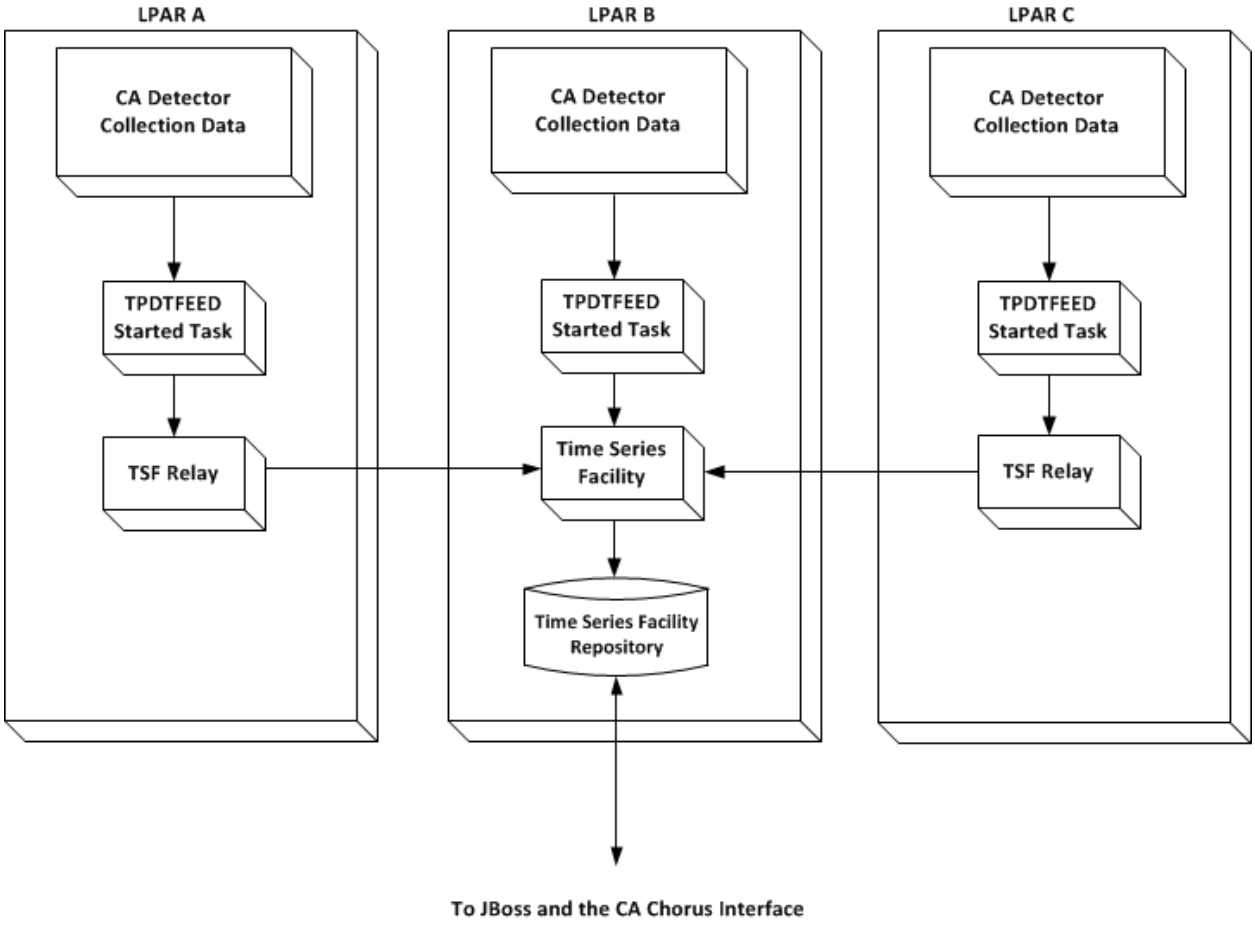
CA Detector Statistics Gathering Overview

The Time Series Facility (TSF) displays application performance data in CA Chorus. Before you can view application performance data using TSF, start statistics gathering in CA Detector. Statistics gathering is the process of collecting system statistics and sending data to TSF for a specific time frame (collection interval).

Note: This configuration is not required for integration with CA Chorus Infrastructure Management for Networks and Systems.

Important! This step must be performed manually outside of CA Chorus Software Manager.

The following diagram shows the statistics gathering configuration for a single enterprise:



In the previous diagram, CA Detector passes collection data automatically from each DB2 subsystem being monitored (LPAR A, B, and C) to TSF when a collection interval ends using the TPDTFEED started task. The TSF relay passes data to TSF from remote LPAR A and C. TSF saves the data in the TSF repository.

- To load CA Detector collection data to TSF automatically, complete the following steps:
  1. Customize and submit the TPDTCOPY batch job in *your_db2tools_hlq*.CDBASAMP.
  2. Customize the TPDTFEED started task in *your_db2tools_hlq*.CDBASAMP.
  3. Automate the started task using CA OPS/MVS or another message processing and scheduling service. (REXX EXEC TPDT0170 is provided in in *your_db2tools_hlq*.CDBASAMP.)
- To load CA Detector collection data manually when an automation service like CA OPS/MVS is not available, use the TPDTHIST batch job in *your_db2tools_hlq*.CDBASAMP.

How to Load CA Detector Collection Data Automatically

Use the following process to provide CA Detector collection data automatically to the Time Series Facility (TSF) in CA Chorus.

The TPDTFEED started task procedure runs the CA Detector UNLOAD utility for the most recently completed CA Detector collection interval on a DB2 subsystem. This started task also provides that data to the Time Series Facility (TSF) through a TCP/IP connection. The task is executed for each CA Detector collection interval per DB2 subsystem.

When a collection interval ends, message PDT0170 is issued in the Xmanager JOBLOG where the collection is running. Use this message to trigger the start of each TPDTFEED started task.

Note: If CA OPS/MVS is not available, another message processing and scheduling service can be used.

Follow these steps:

1. Edit and submit the TPDTCOPY member in *your_db2tools_hlq*.CDBASAMP as described in the member.

   Note: Select a CA Detector TSF high-level qualifier (TPDTHLQ) that determines where to create the CA Detector TSF parmlib and unload data sets. TPDTHLQ must not exceed a length of 12 characters to avoid exceeding the 44 character DSN limit.

   The CA Detector TSF parmlib library is created and the TPDTPARM member is copied to the new library.

Alternatively, use the following definitions to create the CA Detector TSF parmlib data set manually, and then copy the member TPDTPARM from *your_db2tools_hlq*.CDBASAMP to *TPDTHLQ*.PDTTSF.PARMLIB:

```
DISP=(NEW,CATLG,DELETE),DSNTYPE=LIBRARY,UNIT=SYSDA,
DCB=(RECFM=FB,LRECL=80,BLKSIZE=3120,DSORG=PO),
DSN=TPDTHLQ.PDTTSF.PARMLIB,SPACE=(TRK,(100,20))
```

2. Verify that the following required permissions are provided for the z/OS ID used to start the TPDTFEED started task:
   - OMVS segment for TCP/IP
   - READ access to the high-level qualifier of the CA Database Management Solutions for DB2 for z/OS
   - UPDATE access to the chosen CA Detector TSF high-level qualifier (TPDTHLQ)

   The TPDTFEED started task required permissions are defined.

3. Customize the TPDTFEED started task:
   a. Copy the TPDTFEED member in *your_db2tools_hlq.*CDBASAMP to a PROCLIB.
   b. Edit the TPDTFEED member as described in the member. The PRDTSF step transmit data to TSF.
   c. Ensure that the CA Detector collection interval is set to a valid TSF interval. The TSF interval is restricted to 1, 5, 10, 15, 20, or 30 minutes or to 1, 2, 4, 6, 8, 12, or 24 hours.

      Note: For more information about specifying these collection intervals, see the *CA Detector User Guide*.

4. Customize the REXX EXEC TPDT0170:

   a. Copy the TPDT0170 REXX EXEC located in *your_db2tools_hlq*.CDBASAMP into a valid CA OPS/MVS production rule set. This EXEC processes data collector messages from Xmanager and starts the TPDTFEED started task that provides data to TSF. A sample message follows:

      ```
      PDT0170 DETECTOR COLLECTION INTERVAL END TIME=08:00
      INTERVAL=01:00 DB2=ssid VCAT=PDTDBA.Rnn
      DATASTORE=datastore-name
      ```

      Note: If CA OPS/MVS is not available, another message processing and scheduling service can be used.

   b. Edit TPDT0170 as follows:

      - Modify the site-specific variables for active subsystems and Xmanager jobs.
      - Under tsf_jobname<1-3>, set the TPDTFEED STC names and the corresponding release of the CA Database Management Solutions for DB2 for z/OS.

      Note: If multiple releases send data to TSF concurrently, define a separate TPDTFEED STC for each release.

5. (Optional) See Seeding Data to Multiple TSF Regions to send data to TSF regions on multiple CA Chorus installations.

How to Load CA Detector Collection Data Manually in Batch

CA Detector history data can be fed to the Time Series Facility (TSF) in batch using the TPDTHIST job that is located in *your_db2tools_hlq*.CDBASAMP. Use the TPDTHIST batch job in *your_db2tools_hlq*.CDBASAMP to load data into TSF manually.

Follow these steps:

1. Create the history collection file using the CA Detector UNLOAD utility.

   Note: For help using the CA Detector UNLOAD utility and the batch reporting facility, see the *CA Detector for DB2 for z/OS User Guide*.

2. Edit the member TPDTHIST in *your_db2tools_hlq*.CDBASAMP as described in the member.

3. Submit the member.

   Member TPDTHIST is updated and executed.

Sending Data to Multiple TSF Regions

If you have multiple installations of CA Chorus, complete the following steps to transmit data to multiple Time Series Facility (TSF) regions:

Note: These steps are not needed unless you want to send data from a given DB2 subsystem to more than one CA Chorus installation. For information about concurrent versions with TSF, see the *Upgrade Guide*. For information about remote TSF systems, see the *Manual Configuration Guide*.

1. Copy the TPDTFEED STEP PRDTSF in the TPDTFEED started task directly underneath the original PRDTSF step, and specify a new STEPNAME. For example:

```
//*-------------------------------------------------------------
//PRDTSF  EXEC PGM=PDTTSF,REGION=0M,COND=(4,LE,UNLOAD),
// PARM='-I&ITIME &ETIME'
//STEPLIB  DD  DISP=SHR,DSN=&TGTPFX..CDBALOAD
//INFILE   DD  DISP=SHR,
//             DSN=&TPDTHLQ..PDTTSF.DB2&SSID..D&VDATE..T&VTIME
//SYSOUT   DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//SYSERR   DD  SYSOUT=*
//STDERR   DD  SYSOUT=*
//CEEDUMP  DD  SYSOUT=*
//*-------------------------------------------------------------
//OTHERTSF  EXEC PGM=PDTTSF,REGION=0M,COND=(4,LE,UNLOAD),
// PARM='-I&ITIME &ETIME'
//STEPLIB  DD  DISP=SHR,DSN=&TGTPFX..CDBALOAD
//INFILE   DD  DISP=SHR,
//             DSN=&TPDTHLQ..PDTTSF.DB2&SSID..D&VDATE..T&VTIME
//SYSOUT   DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//SYSERR   DD  SYSOUT=*
//STDERR   DD  SYSOUT=*
//CEEDUMP  DD  SYSOUT=*
```

2. Specify the additional TSF region using a unique value for the TSFSUFFIX parameter (-T) in the PARM statement. This value must match TSFSUFFIX of the TSF region you are connecting to. For example, to start a second TSF region with a TSFSUFFIX of O, specify -TO as follows:

   ```
   // PARM='-I&ITIME -TO &ETIME'
   ```

   Note: By default, TSFSUFFIX (-T) is not required.

3. Save your changes to the TPDTFEED started task.

   In this example, the OTHERTSF step connects to the TSF region with a TSFSUFFIX of O. This region runs on the same LPAR as the TPDTFEED started task executes.

How to Enable DB2 Object Migration

Before you can use the Object Migrator function in CA Chorus for DB2 Database Management to migrate DB2 objects, create CA RC/Migrator models and the Object Migrator configuration PDS and members. In addition, update the OFAPROC started task, and MJETJOM model JCL.

Note: This configuration is not required for integration with CA Chorus Infrastructure Management for Networks and Systems.

Important! This step must be performed manually outside of CA Chorus Software Manager.

The OFAPROC started task ID needs READ permission for BPX.SERVER.

Note: If the EZB.STACKACCESS resource is protected, the appropriate READ permissions are needed for the user ID associated with the OFAPROC started task and the users requesting access to the Object Migrator function. The OFAPROC started task was created and customizing during the configuration of the Object Framework Services agent (OFA) during the installation of the CA Database Management Solutions for DB2 for z/OS. For more information about configuring the OFA agent, see the *CA Database Management Solutions for DB2 for z/OS Installation Guide*.

Note: To execute the [set the rbp variable for your book], you must be granted EXECUTE authority on the Batch Processor plan. For more information about granting product authorizations, see the *CA Database Management Solutions for DB2 for z/OS General Facilities Reference Guide*.

Follow these steps:

1. Create a default model for global configuration and optional user-specific models for individual user configurations by completing the following steps using CA RC/Migrator:

   Note: Any @DEFAULT model can be used.

   a. Type **PROF** on the CA RC/Migrator Main Menu and press Enter.

      The Expert Profile panel appears.

   b. Type **6** for Utility Model Services on the Option line and press Enter.

      The General Model Services panel appears.

   c. Type **T** next to an existing model to create a template (copy).

      The General Model Utilities panel appears.

   d. Specify a name for the model in the Model ID field and press PF3.

      The model is created and saved with the name (model ID) and creator. These models are used during the DB2 object migration when the migration is submitted for analysis.

2. Create the Object Migrator configuration data set (*config.om.pds*) and members by completing the following steps:

   a. Create the Object Migrator configuration PDS with the following attributes:

      - Tracks: 2
      - Record format: FB
      - Record length: 80
      - Block size: 27920

      The configuration PDS is defined.

   b. Create an @DEFAULT member in the configuration PDS and optional members for each Object Migrator user.

      The members appear in the configuration data set members list. Object Migrator user members override global settings that are defined in the @DEFAULT member.

   c. Add the following JCL to the @DEFAULT member, replacing the italicized text with site-specific values:

      Note: The members must include the desired JOB statement for z/OS batch jobs and the model name and creator.

      ```
      <JOB CARD>
      //jobcard JOB (ACCT INFO),'job title',CLASS=A,MSGCLASS=X,
      //       MSGLEVEL=(1,1),REGION=0M,NOTIFY=userid
      </JOB CARD>
      <MODEL4>
      MODEL4 model ID
      </MODEL4>
      <MODEL4C>
      MODEL4C creator
      </MODEL4C>
      ```

      Note: Use the JOB statement, model name (ID), and creator values for overriding global settings that are defined in the @DEFAULT member. For more information about overriding high-level qualifiers for work data set allocations, see the *CA Chorus for DB2 Database Management User Guide*.

<JOB CARD> </JOB CARD>

Specifies the JOB statement details.

<MODEL4></MODEL4> and <MODEL4C>/</MODEL4C>

Specifies information that is required for the Object Migrator configuration including the model ID and creator. The model ID specifies an existing CA RC/Migrator model name. Specify @DEFAULT for the global configuration member. If you created models, the model ID and creator must match the models that you created. The creator specifies the model creator user ID.

Save your changes.

The @DEFAULT global configuration member is created.

d. Repeat the previous step.

The JCL is added to the individual user members.

3. Update the OFAPROC started task JCL:

a. Add the CFGFILE and SYSTCPD DD statements.

```
//CFGFILE  DD DISP=SHR,DSN=config.om.pds
//SYSTCPD  DD DISP=SHR,DSN=&tcpdata
```

config.om.pds

Specifies the name of the PDS that was previously created for the Object Migrator configuration.

&tcpdata

Specifies a TCPDATA data set from SYSTCPD of TCPIP PROC.

Default: TCPIP.TCPIP.DATA

b. (Optional) If you want to direct output to a data set instead of SYSOUT (the default):

- Add the following DD statements for the sequential log data sets:

  //LOGGER1 DD DISP=SHR,DSN=*hlq*.LOGGER1

  //LOGGER2 DD DISP=SHR,DSN=*hlq*.LOGGER2

- Allocate the sequential log data sets manually with the following attributes:

  Record format: VB

  Record length: 1028

  Block size: 6144

  Cylinders: 20.

Note: To turn off the logging capability for OFAPROC, contact CA Support for instructions.

Save your changes.

The OFAPROC started task JCL is updated.

Note: Enable these changes by recycling the agent.

4. Update the MJETJOM model JCL member in *your_db2tools.hlq*.CDBAMDL as follows:

   a. (Optional) If you are using JES3, replace the /*JOBPARM S=%SYSTEM statement with //*MAIN SYSTEM=%SYSTEM.

   b. Set %CHRPFX to the high-level qualifier prefix for the CA Chorus target library data set name prefix (*hlq*.CETJPLD). This value must match the value that is specified during the installation of CA Chorus.

   c. Add the following DD statement for the TCPDATA data set name to all steps executing FLQMASTT:

      ```
      //SYSTCPD  DD DISP=SHR,DSN=&tcpdata
      ```

      &tcpdata

      Specifies a data set from SYSTCPD of TCPIP PROC.

      Default: TCPIP.TCPIP.DATA

   Save your changes.

   The MJETJOM model is updated and Object Migrator is configured for use in the CA Chorus Investigator.

Define Site-Specific Installation Variables

Before you configure the CA Chorus for DB2 Database Management components, update the JBoss and CA Chorus installation variables to enable CA Chorus for DB2 Database Management processing, and define the JOB statement for the CA Chorus for DB2 Database Management jobs.

Follow these steps:

1. Identify the target libraries prefix for the deployed CA Database Management Solutions for DB2 for z/OS products by completing the following steps:

   a. Locate the following line in the ETJVARS member of CETJJCL in the CA Chorus installation:

      ```
      //*SET DB2TOOLS='CAI.DB2TOOLS.'
      ```

   b. Uncomment the line by removing the asterisk:

      ```
      // SET DB2TOOLS='CAI.DB2TOOLS.'
      ```

c. Replace CAI.DB2TOOLS with the deployed CA Database Management Solutions for DB2 for z/OS target libraries prefix. The trailing period is required.

We recommend that you point to the latest version of the CA Database Management Solutions for DB2 for z/OS that are running in your environment.

Important! This value is the CSI for the CA Database Management Solutions for DB2 for z/OS, not the CA Chorus for DB2 Database Management discipline.

d. Save your changes.

ETJVARS is updated.

Note: Verify that the ETJI095x member in *your_chorus_hlq.*CETJJCL has also been updated with the same information.

2. Modify the JBoss started task parameters in the CHORJBOS member of CETJJCL as follows:

a. Uncomment the STEPLIB DD for the CA Database Management Solutions for DB2 for z/OS load library (&DB2TOOLS.CDBALOAD).

b. Replace &DB2TOOLS with the target library prefix for the deployed CA Database Management Solutions for DB2 for z/OS.

c. Save your changes.

CHORJBOS is updated.

3. Modify the E3KJBCRD member in CE3KJCL as follows:

- Edit the JOB statement as needed.
- Modify the SET CAI statement to point to the high-level qualifier of the CA Chorus installation data sets (like, CETJPROC and CETJJCL). This value must match the value that is specified in Step 1a.

Save your changes.

E3KJBCRD is customized. Reuse this JOB statement as needed for CA Chorus for DB2 Database Management jobs in the CE3KJCL data set.

Define DB2 Subsystem Connections

Each installation of the CA Database Management Solutions for DB2 for z/OS (requisite products) is united in a functional group by Xmanager. Xmanager establishes and controls an execution environment and executes as a started task in its own address space. The Xmanager connection identifier (XMANID) establishes a connection between the products and components (like Xnet) and Xmanager. The XMANID is used to service requests on behalf of the products.

The Xnet communications server in each installation provides the network interface and manages the requests and responses between CA Chorus for DB2 Database Management and the requisite products. Xnet also provides CA Chorus for DB2 Database Management with real-time status and configuration information for the products that are part of the Xnet functional group.

CA Chorus for DB2 Database Management uses a data source handler (DSH) component to service requests that interact with a DB2 subsystem through the requisite products. The DSH runs inside the CA Chorus JBoss server. Each CA Chorus for DB2 Database Management request for a DB2 action specifies the z/OS system, DB2 subsystem ID, and the requested function. The DSH routes the request to the requisite products (such as CA Detector and CA Insight) for processing. The DSH then returns the response data back to the CA Chorus for DB2 Database Management user. The DSH communicates directly with the correct Xnet using TCP/IP. Xnet manages the request and response activity for products in the installation group using a cross-memory API.

Update the sample DSH configuration file to define a connection from the DSH to your CA Database Management Solutions for DB2 for z/OS Xnet server. The updated configuration file is activated after you restart the CA Chorus JBoss server.

When all of your connections are defined and operational, from a single CA Chorus for DB2 Database Management session a user has access to all of the DB2 subsystems, regardless of their physical location within your network of systems. This setup differs from the traditional TSO/ISPF interface that requires a logon to the system or sysplex hosting the DB2 subsystems and the requisite products.

Each Xnet tracks active products in its functional group and the DB2 subsystems to which they interface. The DSH collects this dynamic configuration information from each Xnet to create a consolidated view of all DB2 subsystems that are accessible to CA Chorus for DB2 Database Management users. This consolidated view of the DB2 subsystems is presented to each CA Chorus for DB2 Database Management user in the Active Configuration folder of the Investigator.

Use the following procedure to enable communications in CA Chorus for DB2 Database Management with the CA Database Management Solutions for DB2 for z/OS.

Update the sample DSH configuration file (db2tools.cfg) to define a connection from the DSH to your CA Database Management Solutions for DB2 for z/OS Xnet server. The updated configuration file is activated after you restart the CA Chorus JBoss server.

The information in this configuration file tells the DSH how to establish TCP/IP connections to CA Chorus for DB2 Database Management product installations and which PassTicket session key to use for each connection. Each connection is assigned to a confederation. Each confederation has a unique name. Therefore, the simplest configuration consists of one confederation that includes all of the CA Chorus-enabled DB2 product installations. Confederations also let you partition your view of DB2 subsystems into subsets, which can be useful in the following scenarios:

- When the number of DB2 subsystems creates an excessively large working view
- When you want to use subsets to align with organizational responsibilities
- When you want to set up production and test environments

Important! All CA Chorus for DB2 Database Management users need READ access to the db2tools.cfg configuration file in the *<chorus-install-home>*/config directory.

Follow these steps:

Note: This procedure assumes that the applicable CA Chorus servers are already defined.

1. Identify the Xnet servers in your CA Chorus configuration by editing member E3KCFG10 in *your_chorusdba_hlq*.CE3KPARM:

   a. Specify the following global settings that apply to all confederations:

      ```
      Trace=0
      Refresh=60
      GlobalApplid=DB2TOOLS
      ```

      Note: If the default values are acceptable, no changes are required. DB2TOOLS is the application ID associated with the PassTicket session keys that have been defined for use with CA Chorus for DB2 Database Management. This value applies to all members defined in the confederations unless overridden by the Applid parameter on an individual member definition.

   b. Define the confederations in the CA Chorus for DB2 Database Management configuration as follows:

      ```
      Conf=DEFAULT Host=localhost Port=1027
      Applid=global_applid_override_value
      ```

      Each line identifies one Xnet server with the TCP/IP host address and port that is required to connect to that Xnet from the CA Chorus server. Each Xnet server provides the CA Chorus for DB2 Database Management communications interface for all of the CA Database Management Solutions for DB2 for z/OS Xnet installation.

      Note: The Applid parameter is optional. Specify this parameter only if you want to override the application ID PassTicket value that is specified for GlobalApplid.

c. Save your changes.

The Xnet server connections and confederations in your environment are defined.

2. Copy the E3KJBCRD member in *your_chorusdba_hlq.*CE3KJCL into the E3KI0010 member in *your_chorusdba_hlq.*CE3KJCL, save your changes, and submit.

   The DB2 subsystem connections are defined. The db2tools.cfg file is updated. This file is located in /cai/cetjr3m0/config by default.

   Note: The ENVE3K member in *your_chorus_hlq.*CETJOPTN contains the DSHCONFIG_PATH environment variable for CA Chorus for DB2 Database Management. The Java Virtual Machine (JVM) uses this value to identify discipline-specific behaviors. DSHCONFIG_PATH points to the path for the db2tools.cfg file.

3. (Optional) If you are modifying confederation data after CA Chorus for DB2 Database Management installation, use the Reconfigure option in the Investigator to update your configuration.

   The DSH begins using the updated file when the Data Source Handler Reconfigure folder is accessed in the CA Chorus Investigator.

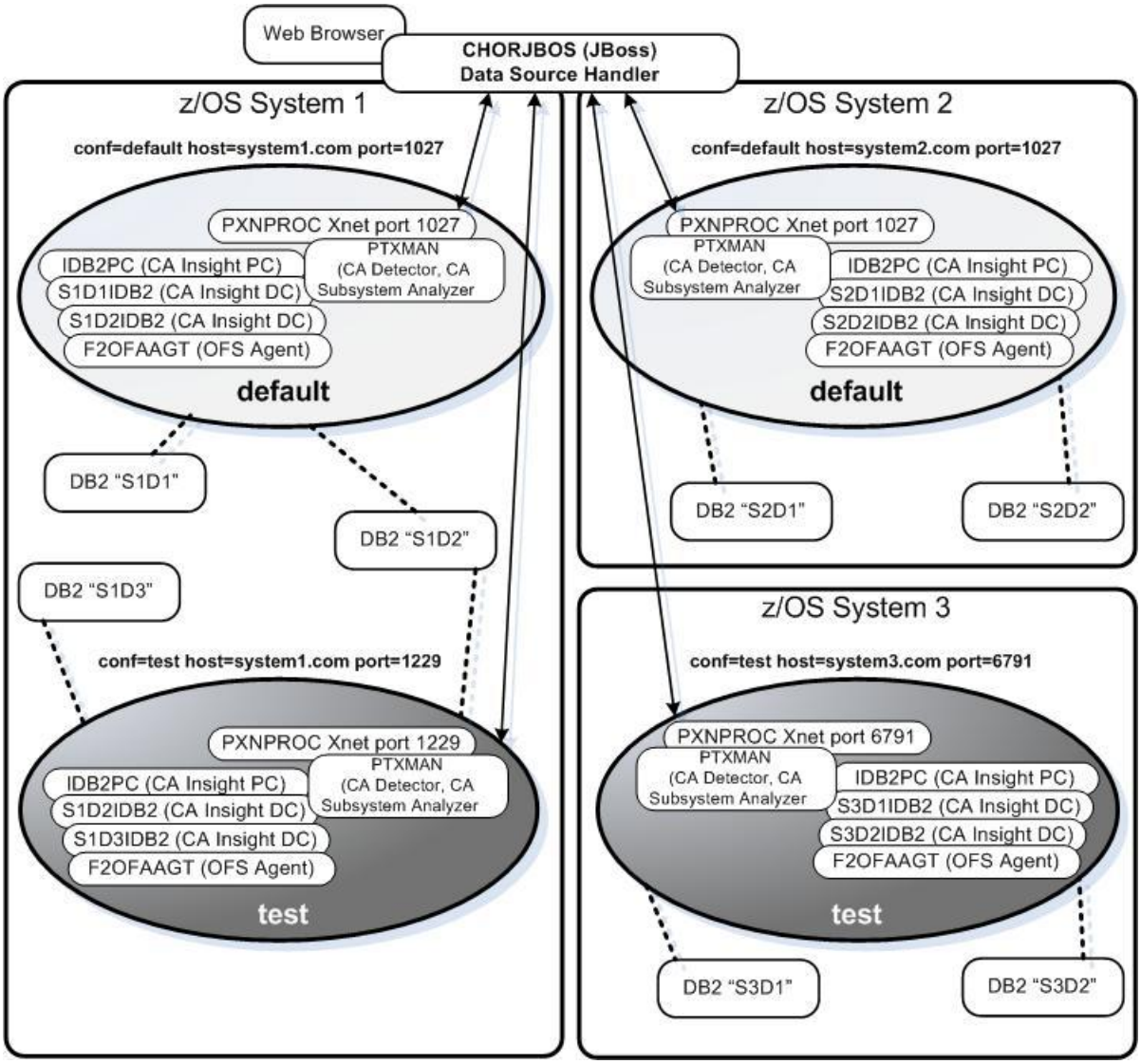
Sample Confederation Definitions

Sample confederation definitions are provided in the E3KCFG10 member.

```
#-----------------------------------------------------------------
------
# DEFAULT Confederation member definitions
#-----------------------------------------------------------------
------
#
Conf=DEFAULT=Host=localhost   Port=1027
#Conf=DEFAULT Host=system1.com Port=1027
#Conf=DEFAULT Host=system2.com Port=1027
#
#-----------------------------------------------------------------
------
# TEST Confederation member definitions
#-----------------------------------------------------------------
------
#
#Conf=Test   Host=system1.com Port=1229 Applid=CATICKET
#Conf=Test   Host=system3.com Port=6791 Applid=CATICKET
```

Sample Configuration

The following diagram shows a CA Chorus configuration containing four complete installations of CA Chorus for DB2 Database Management. The definitions demonstrate the use of confederations to separate the four complete installations into a *default* grouping of two installations and a *test* grouping of two installations.



Define Data Sources

To initialize and define CA Chorus for DB2 Database Management data sources, edit the E3KI0020 member in *your_chorusdba_hlq*.CE3KJCL as described in the member, and submit the job.

Note: Verify that <install_home>/config is mounted to chorus_hlq.CETJCONF before running this job.

After successful execution, this job installs the data sources (DB2TOOLS and DB2TSTAT) that are needed for CA Chorus for DB2 Database Management. The job includes one step for every data source. The expected completion code is zero (0) for all steps.

Note: To clean up and restart the initialization, submit the CHDB101 member in *your_chorus_hlq*.CETJJCL, CHDB102 member in *your_chorus_hlq*.CETJJCL, CHDB004 from *your_chorus_hlq*.CETJJCL, and resubmit E3KI0020.

Override the DB2 Execution Mode

To support a DB2 subsystem running in Compatibility Mode (CM or CM*), you update a user configurable file to reflect the current executing mode of DB2. The configuration file directs CA Chorus for DB2 Database Management to treat a DB2 subsystem running in CM or CM* as a different version of DB2. This file is located in the following USS directory and is created as part of deploying CA Chorus for DB2 Database Management:

`/<chorus-install-home>/roles/dba/DBMzDB2-version-override.txt`

Note: This procedure assumes that the applicable CA Chorus servers are already defined.

Follow these steps:

1. Add a DB2 subsystem override definition in comma-separated value (CSV) format for each DB2 running in CM or CM* using the E3KMOD10 member in *your_chorusdba_hlq*.CE3KPARM. The file is comma-separated value (CSV) format and contains the following columns:

   dsConf

   Specifies the confederation that is used to access this DB2 subsystem. The confederation names are defined in the db2tools.cfg configuration file that is located in the /cai/cetjr3m0/CA_axis2c/config USS directory by default.

   dsGroup

   Specifies the DB2 data sharing group attach name. If the DB2 subsystem is not a data sharing group member, leave this value blank.

   dsSystem

   Specifies the LPAR where the DB2 subsystem is running.

dsSSID

Specifies the DB2 subsystem identifier.

VersionOverride

Specifies the DB2 override version. Use the following values in place of the actual DB2 version.

- For DB2 V8, specify 081.
- For DB2 9, specify 091.
- For DB2 10, specify 101.

2. Copy the E3KJBCRD member in *your_chorusdba_hlq.*CE3KJCL into the EK3I0030 member in *your_chorusdba_hlq.*CE3KJCL, save your changes, and submit the job.

   The CA Chorus for DB2 Database Management DB2 subsystem version override definitions are created. The DBMzDB2-version-override.txt file in <chorus-install-home>/roles/dba is updated.

3. Activate your changes by restarting the CA Chorus JBoss STC.

Example:

In this example, note the following DB2 subsystem settings:

- DA0G and D91A are part of the QA confederation as defined in the db2tools.cfg.
- DA0G is a DB2 10 data sharing group member of data sharing group DA0G running in CM9.
- D91A is a DB2 10 subsystem running in CM8*. The DB2 subsystem is not a data sharing group member.

To support this configuration:

1. Update the E3KMOD10 member as follows:

```
dsConf,dsGroup,dsSystem,dsSSID,VersionOverride

QA    ,DA0G   ,CA31    ,DA1G  ,091
QA    ,       ,CA31    ,D91A  ,081
```

2. Submit the E3KI0030 member in *your_chorusdba_hlq.*CE3KJCL.

Important! Go to the next discipline configuration chapter or go to Activating Your Configuration (see page 81).

Chapter 4: Configuring CA Chorus Infrastructure Management for Networks and Systems

Important! We strongly recommend that you complete all configuration tasks on deployed copies of the target data sets and UNIX System Services (USS) file systems. Leave the SMP/E-installed copies of these files intact.

Note: Use the CA Chorus Infrastructure Management for Networks and Systems installation checklists and worksheets in the *CA Chorus Installation Guide* to help confirm all of the required installation tasks are complete.

Define Site-Specific Installation Variables

Before you configure the CA Chorus components:

- Enable discipline processing by updating the JBoss and CA Chorus installation variables.
- Define the JOB statement for the CA Chorus jobs.

Note: These variables could have been updated during the CA Chorus installation and configuration process.

Follow these steps:

1. Identify the target libraries prefix for the deployed CA Chorus products by completing the following steps:

   a. Locate the following line in the ETJVARS member of CETJJCL in the CA Chorus installation:

   ```
   //*SET SYSVIEW=CAI.SYSVIEW.
   ```

   b. Uncomment the line by removing the asterisk:

   ```
   // SET SYSVIEW=CAI.SYSVIEW.
   ```

   c. Replace CAI.SYSVIEW. with the deployed CA SYSVIEW target libraries prefix. The trailing period is required.

   Important! This value is the CA SYSVIEW load library.

   d. Save your changes.

   ETJVARS is updated.

   Note: Verify that the ETJI095*x* member in *your_chorus_hlq.*CETJJCL has also been updated with the same information. If necessary, run the command to add permissions.

2. Update the ENVFAW member in *your_chorus_hlq*.CETJOPTN.

   This member contains all of the environment variables that the Infrastructure Management for Networks and Systems discipline uses.

   Note: Set CAPS OFF before modifying this member.

   a. Uncomment SYSVIEW_PATH so that it begins in column 1.

      ```
      SYSVIEW_PATH=<sysview_directory_path>
      ```

   b. Edit <*sysview_directory_path*> so that it reflects the USS directory path where the SysviewXapi.jar file resides.

      The creation of this directory path occurred during the CA SYSVIEW installation/configuration.

   c. Uncomment SYSVIEW_AMODE and all of the rows that follow.

      ```
      # SYSVIEW_AMODE=64
      # export SYSVIEW_PATH
      # export SYSVIEW_AMODE
      #
      # LIBPATH="$LIBPATH":"$SYSVIEW_PATH"
      # export LIBPATH="$LIBPATH"
      #
      # CLASSPATH="$CLASSPATH":"${SYSVIEW_PATH}/SysviewXapi.jar"
      # export CLASSPATH="$CLASSPATH"
      #
      # JBMP="$JBMP:${INSTALL_HOME}/roles/performance/modules"
      # export JBMP
      # JMA="-mp $JBMP $END_JMA"
      # export JZOS_MAIN_ARGS="$JMA "
      ```

      This data now begins in column 1.

      ```
      SYSVIEW_AMODE=64
      export SYSVIEW_PATH
      export SYSVIEW_AMODE

      LIBPATH="$LIBPATH":"$SYSVIEW_PATH"
      export LIBPATH="$LIBPATH"

      CLASSPATH="$CLASSPATH":"${SYSVIEW_PATH}/SysviewXapi.jar"
      export CLASSPATH="$CLASSPATH"

      JBMP="$JBMP:${INSTALL_HOME}/roles/performance/modules"
      export JBMP
      JMA="-mp $JBMP $END_JMA"
      export JZOS_MAIN_ARGS="$JMA "
      ```

   d. Save your changes.

   Member ENVFAW is updated.

3. (Skip this step if the CA SYSVIEW load library is part of the LINKLIST concatenation.) Modify the JBoss started task parameters in the CHORJBOS member of CETJJCL as follows:

   a. Uncomment the STEPLIB DD for the CA SYSVIEW load library (&SYSVIEW.PDSE).

   b. Replace &SYSVIEW with the target library prefix for the deployed CA SYSVIEW.

   c. Save your changes.

   CHORJBOS is updated.

4. Modify the FAWJBCRD member in CFAWJCL as follows:

   - Edit the JOB statement to your installation standards.
   - Modify the SET CAI statement so that it points to the high-level qualifier of the CA Chorus installation data sets (like, CETJPROC and CETJJCL). Set this value to match the previously specified value in the ETJVARS member of CETJJCL.

   Save your changes.

   FAWJBCRD is customized. Reuse this JOB statement as needed for CA Chorus jobs in the CFAWJCL data set.

Edit the Configuration Settings to the Back-end Products

Configure the settings for the CA Chorus back-end products CA NetMaster NM for TCP/IP and CA SYSVIEW.

Follow these steps:

1. Edit and submit FAWGSMP1 from *your_chorusperf.hlq*.CFAWJCL to set the properties for CA NetMaster NM for TCP/IP in the chorus-performance-netmaster-ds.xml file in the CA Chorus/config directory as described in the member.

   Running the FAWGSMP1 job creates the chorus-performance-netmaster-ds.xml file.

2. Edit and submit FAWGSMP2 from *your_chorusperf.hlq*.CFAWJCL to set the properties for CA SYSVIEW in the chorus-performance-sysview-ds.xml file in the CA Chorus/config directory as described in the member.

   Running the FAWGSMP2 job creates the chorus-performance-sysview-ds.xml file.

3. Define the class of the security product running on the CA Chorus Infrastructure Management for Networks and Systems system. Use the class that is based on the value that reflects your security product.

   The CA Chorus address space user ID communicates with CA SYSVIEW through the security entity (resource name).

Value	Class	Entity (Resource Name)
RACF	FACILITY	SV.XAPI.ALTUSER.*ccisyst*.*ssid*.*jobname*
TOPS	CAGSVX	SV.XAPI.ALTUSER.*ccisyst*.*ssid*.*jobname*
ACF2	SYSVIEW	SV.XAPI.ALTUSER.*ccisyst*.*ssid*.*jobname*

   ccisyst

   The CAICCI system name of the system where the CA SYSVIEW user address spaces are running. Because CA Chorus Infrastructure Management for Networks and Systems accesses multiple instances of CA SYSVIEW, use the security appropriate masking for this node.

   ssid

   The subsystem name for CA SYSVIEW that you specified on the SYSVSSID= parameter in the installation.

   jobname

   The job name of the CA SYSVIEW user address space. Because CA Chorus Infrastructure Management for Networks and Systems accesses multiple instances of CA SYSVIEW, use the security appropriate masking for this node.

4. Edit and submit FAWGSMP3 from *your_chorusperf.hlq*.CFAWJCL to configure the sysview-module.xml file in the CA Chorus/config directory as described in the member.

The CA NetMaster NM for TCP/IP and CA SYSVIEW products are configured.

Important! Go to the next discipline configuration chapter or go to Activating Your Configuration (see page 81).

Chapter 5: Configuring CA Chorus for Security and Compliance Management

How to Configure CA Chorus for Security and Compliance Management Manually

Perform the following configuration tasks to configure CA Chorus for Security and Compliance Management manually (without CA Chorus Software Manager):

Important! We strongly recommend that you complete all configuration tasks on deployed copies of the target data sets and UNIX System Services (USS) file systems. Leave the SMP/E-installed copies of these files intact.

Internet Configuration

For the CA Compliance Manager interface to communicate correctly over the Internet, configure several Java settings that are based on your internet access software (Internet Explorer or Mozilla Firefox).

Configure Internet Explorer

Use this procedure to configure Internet Explorer to communicate correctly with the interface.

Follow these steps:

1. Select Tools, Internet Options from the Internet Explorer menu bar.
2. Select the Security folder, and click Custom Level.

   The Security Settings dialog appears.
3. From the Scripting section, set the following values:
   - Active scripting to Enable
   - Scripting of Java applets to Enable

   These values appear with checkmarks.
4. Click OK twice.

   The internet options are configured.

Configure Mozilla Firefox

Use this procedure to configure Mozilla Firefox to communicate correctly with the interface.

Follow these steps:

1. Select Tools, Internet Options from the Mozilla Firefox menu bar.
2. Select the Content folder.

   The Content settings appear.
3. Select Enable JavaScript and Enable Java.

   These values appear with checkmarks.
4. Click OK.

   The internet options are configured.

Define Site-Specific Installation Variables

Before you configure the CA Chorus for Security and Compliance Management components, configure the installation variables to conform to installation standards at your site.

Follow these steps:

1. Edit the E1MIVARS member in *your_chorussec_hlq.*CE1MJCL as described in the member. This member sets site-specific key variables for the installation. These variables include the following values:

   - Data set high-level qualifiers
   - DB2 and CA Datacom/AD installation data sets
   - Compliance Information Analysis (CIA) default storage group and database
   - CA Compliance Manager default storage group and database

   Important! Set these key variables correctly to prevent your installation jobs from failing during the configuration.

   The E1MIVARS member is customized.
2. Edit the UPDTVARS job within *your_chorussec_hlq.*CE1MJCL as described in the member. Specify the fully qualified data set name of the CE1MJCL data set within this REXX script.

   The UPDTVARS member is customized.
3. Execute the UPDTVARS REXX script as described in the comments.

   This script opens and updates all members in *your_chorussec_hlq.*CE1MJCL using the variable substitutions that are specified in E1MIVARS.

4. Edit the E1MJBCRD member in *your_chorussec_hlq.*CE1MJCL to conform to your installation standards.

   The E1MJBCRD member is customized. The jobs in the *your_chorussec_hlq*.CE1MJCL data set use this member.

   Note: Member E1MI0015 uses the JOBCARD member in *your_chorus_hlq*.CETJJCL instead.

5. Copy E1MJBCRD into each job, save, and exit from each member. Do not submit these members now.

   The members are updated.

Establish Database Connections

CA Chorus for Security and Compliance Management gives you access to your Compliance Information Analysis (CIA) and CA Compliance Manager databases for CA Datacom/AD or DB2 from a single CA Chorus session. CA Chorus for Security and Compliance Management connects to CA Datacom/AD and DB2 to perform the following tasks:

- Read information for the Compliance Information Analysis (CIA) and CA Compliance Manager databases using PassTickets
- Fetch data for CIA and CA Compliance Manager

To obtain DB2 and CA Datacom/AD connection definitions and other parameters, CA Chorus for Security and Compliance Management reads the SECDBCFG member in *your_chorussec_hlq.*CE1MOPTV. The SECDBCFG member defines database connections from the CA Chorus server to the CIA and CA Compliance Manager servers.

Follow these steps:

1. (Optional) Execute the DB2 command -DISPLAY DDF on the DB2 regions where the CIA and CA Compliance Manager databases reside.

   The command output provides information about the status and configuration of DDF. Use this output to modify E1MI0010 in Step 2.

   Important! DB2 DBADM authority is required for the installer on the CIA and CA Compliance Manager databases.

2. Modify the SECDBCFG member in *your_chorussec_hlq.*CE1MOPTV to define one record for *each* CIA and CA Compliance Manager (data warehouse and data mart) database to be connected to. Define the database definitions using comma-separated value (CSV) formatting and the following parameters:

   `TYPE,DATAMART_NAME,DB_TYPE,DB_QUAL,DB_HOST,SYSTEMID,DB_PORT,DB_LOC,CCIAPPL,APPLID`

   TYPE

   Identifies the type of security database. The following values are valid:

   - CIA—CIA data warehouse database.
   - WH—CA Compliance Manager data warehouse database.
   - DM—CA Compliance Manager data mart database.

   DATAMART_NAME

   Identifies the CA Compliance Manager data mart name that is used for the tree node name in the CA Chorus Investigator.

   This value is valid for DM types only. NULL for other types.

   DB_TYPE

   Identifies the database type (DB2 or DATACOM).

   DB_QUAL

   Specifies the qualifier to use for the CA Datacom/AD or DB2 tables that make up the CIA data warehouse database, CA Compliance Manager data mart database, or CA Compliance Manager data warehouse database. For example, specify CMGRD1 for a data mart database consisting of tables that are defined as CMGRD1.*tablename*.

   DB_HOST

   Specifies the JDBC connection host name. For example, USILCA31.

   SYSTEMID

   Specifies the JDBC connection system ID. For example, SYSTEMID=XE59. This value is valid for the DB_TYPE=DATACOM only.

   For CA Datacom Server, this value is the named defined by the CAIENF protocol (ENF command). To locate this value, see the CCI SYSID in your parmlib.

DB_PORT

Specifies the JDBC connection port number. This value is required for CA Datacom/AD and DB2.

DB_LOC

Specifies the JDBC connection database location. For CA Datacom/AD, this value is the CA Datacom Server SERVERNAME (like CIA*x*_SYS*y).* For DB2, this value is the DB2 location name.

CCIAPPL

Specifies the CA Datacom Server CAICCI application name (APPLID). For example, APPLID=CIA*x*_SYS*y*. This value is valid for the DB_TYPE=DATACOM only.

Note: This value is defined to the CA Datacom Server configuration. For more information about this value, see the *CA Datacom Server User Guide*.

APPLID

Specifies the database application ID that is used for PassTicket generation. For CA Datacom/AD, this value is the MUF name. For DB2, this value is the GENERICLU, LUNAME, or IPNAME. This value must match the values that are specified during PassTicket configuration.

Save your changes.

The CIA and CA Compliance Manager databases are defined in SECDBCFG. Modify SECDBCFG when security databases and data marts are created or deleted.

The configuration file is also input to the JBoss startup procedure and used with velocity script to determine union requirements for security object views.

3. Modify the ENVE1M member in your *your_chorussec_hlq.*CETJOPTN as described in the member. If you are using CA Datacom/AD for your security database, uncomment DBRSV_HOME=<Datacom-Server-Directory> and change <Datacom-Server-Directory> to the USS home directory for the CA Datacom/AD server files. The directory must be an absolute path name and not a symbolic link name.

4. Modify the E1MI0010 member in *your_chorussec_hlq.*CE1MJCL as described in the member and submit the job.

   After successful execution (RC=0), the following files are created in *<chorus-install-home>*:

   - /config/security-database.cfg—Populated with the security database definitions.
   - /config/security-database-model.xml—Updated to read database data using PassTickets by default.
   - /config/security-database-jdbc-ds.xml—Updated to identify the database connections to CA Datacom/AD or DB2 for CIA and CA Compliance Manager data.

   Additionally, the following files are copied from *<chorus-install-home>*/roles/security to *<chorus-install-home>*/config:

   - security-cia-objects-model.xml
   - security-dm-objects-model.xml
   - security-wh-objects-model.xml
   - security-model.xml
   - statg-model.xml

   CA Chorus reads these configuration files and displays the respective nodes in the CA Chorus Investigator. When DB2 or CA Datacom/AD data is accessed through the Investigator, the CA Chorus user credentials are used to permit access to the DB2 or CA Datacom/AD subsystem.

Establish CA LDAP Server Connections

CA Chorus for Security and Compliance Management lets you interact with data reported through your CIA database. The CA Chorus for Security and Compliance Management discipline connects to a CA LDAP Server to perform the following tasks:

- Update user security fields
- Delete users

To obtain CA LDAP Server connection details, CA Chorus for Security and Compliance Management reads the LDAPCFG member in *your_chorussec_hlq*.CE1MOPTV.

Note: CA Chorus for Security and Compliance Management only directly connects to one CA LDAP Server. CA LDAP Server for z/OS can route commands to CA DSI Server installed on other systems. The first row after the header in LDAPCFG must be the CA LDAP Server you to which you want to connect. All proceeding rows functionally use LDAP_SECURITY_TYPE, LDAP_SYSID, and LDAP_SUFFIX to map CIA-derived SYSIDs to their respective LDAP DNs. Doing so lets LDAP administer other remote or local security systems as defined by its slapd.conf configuration file.

Follow these steps:

1. Modify the LDAPCFG member in *your_chorussec_hlq*.CE1MOPTV to define one record for each CIA SYSID which the LDAP server connects, keeping the existing header line. Define the CA LDAP Server for z/OS connection settings using comma-separated value (CSV) formatting and the following parameters:

   LDAP_SECURITY_TYPE,LDAP_HOST_URL,LDAP_PORT,LDAP_ADMIN_USER_DN,LDAP_ADMIN_USER_PW,LDAP_SYSID,LDAP_SUFFIX

   LDAP_SECURITY_TYPE

   Identifies the type of security software that is used on the system hosting the CA LDAP Server or CA DSI Server this row defines. The following values are valid:

   - ACF2
   - TSS

   LDAP_HOST_URL

   Specifies the URL of the system hosting the CA LDAP Server this row defines.

   LDAP_PORT

   Specifies the port the CA LDAP Server defined by this row is listening on.

LDAP_ADMIN_USER_DN

Specifies the DN of a user with admin level privileges. The DN is CN= followed by a user ID used to establish a connection to the CA LDAP Server for z/OS.

This field has two valid values:

- A user defined on the LPAR on which CA LDAP Server is installed.
- An ID defined by the authid global option. This option is defined in your CA LDAP Server slapd.conf configuration file. The ID defined by the authid global option must be uppercase.

Note: For more information on authid, consult the *CA LDAP Server Product Guide*.

LDAP_ADMIN_USER_PW

Specifies the password for the LDAP_ADMIN_USER_DN.

This field has two valid values:

- The password of the user specified by the LDAP_ADMIN_USER_DN field.
- The password is contained in a password file defined by the authpw global option. This option is defined in your CA LDAP Server slapd.conf configuration file.

Note: For more information on authpw, and on the steps necessary to create your password file, consult the *CA LDAP Server Product Guide*.

LDAP_SYSID

Specifies the SYSID of the CA LDAP Server or CA DSI Serverconnection. Matches the SYSID value in CIA.

LDAP_SUFFIX

Specifies the suffix that is associated with LDAP_SYSID. Can be found in the slapd.conf of the CA LDAP Server being connected.

LDAPCFG Example:

Given data in CIA for SYSID 'ABCD', (CA Top Secret system), as well as SYSID 'PROD' (CA ACF2 system), configuration member LDAPCFGcan appear similar to the following sample:

```
LDAP_SECURITY_TYPE,LDAP_HOST_URL,LDAP_PORT,LDAP_ADMIN_USER_DN,LDAP_ADMIN_USER
_PW,LDAP_SYSID,LDAP_SUFFIX
TSS,usi142me.ca.com,389,CN=(user1),secret,ABCD,tssadmingrp=acids,host=tssxe42
_cia,o=ca,c=us
ACF2,usi242me.ca.com,389,CN=(user1),secret,PROD,acf2admingrp=lids,host=acf2xe
42_cia,o=ca,c=us
```

Save your changes.

The CA LDAP Server required to perform the security administration are defined in LDAPCFG. Modify LDAPCFG and rerun E1MI0020 whenever LDAP servers or connections are created, deleted, or modified.

2. Modify the E1MI0020 member in *your.chorussec.hlq*.CE1MJCL as described in the member and submit the job.

   After successful execution (RC=0), the following files are created in <chorus-install-home>:

   - /config/ldap-configuration.cfg - Populated with the CA LDAP Server connection details
   - /config/sysidHostMapping.properties - Populated with details necessary to relate CA LDAP Server hosts to the proper LDAP SYSIDs
   - /roles/security/chorus-security-ldap-ds.xml - Created to identify the CA LDAP Server connections for the JBoss server

Define CIA and CA Compliance Manager Database Views

The Compliance Information Analysis (CIA) and CA Compliance Manager (CM) databases can exist on different DB2 or CA Datacom/AD subsystems. To enable this processing, edit and run the following jobs to create the View DDL.

Follow these steps:

1. Edit and submit the following jobs in *your_chorussec_hlq*.CE1MJCL to create views of the CIA databases:
   - For DB2, use E1MI0011.
   - For CA Datacom/AD, use E1MI0016.

   The required views for the CIA databases are created.
2. Edit and submit the following jobs in *your_chorussec_hlq*.CE1MJCL to create views of the CA Compliance Manager databases:
   - For DB2, use E1MI0012.
   - For CA Datacom/AD, use E1MI0017.

   The required views for the CA Compliance Manager database are created.

Define Security and Policy Administration Nodes

To use the CA Chorus for Security and Compliance Management discipline in CA Chorus, define the security and CA Compliance Manager nodes whose data you want to monitor and manage. Use the E1MI0014 member in *your_chorussec_hlq*.CE1MJCL to define nodes for CA Chorus for Security and Compliance Management. The E1MI0014 member lets you define several LDAP nodes for security administration against CA ACF2 and CA Top Secret databases, and policy administration against a policy database.

Follow these steps:

1. Edit the E1MI0014 member in *your_chorussec_hlq*.CE1MJCL to specify the following parameters and save your changes:

   SWORKDIR

   Specifies the CA Chorus installation home directory.

   Default: /cai/*your_chorussec_hlq*

   INSTALL_HOME

   Specifies the CA Chorus installation home directory.

   Default: /cai/*your_chorussec_hlq*

   NODETYPE

   Determines what type of node is being added. Specify ACF2, TSS, or CMGR.

LDAP_NODE_DESCRIPTION

Specifies a description for the CA LDAP Server node that is displayed in the Security Administration or Policy Administration UI.

LPAR_NODE_HOST

Specifies the host name that the CA LDAP Server instance is running on.

LDAP_NODE_PORT

Specifies the TCP/IP host port where the CA LDAP Server instance is listening.

Example: 389

LDAP_NODE_SUFFIX

Specifies a unique suffix for the CA LDAP Server that is used to determine which defined CA LDAP Server database handles the request from CA Chorus for Security and Compliance Management.

Example: o=ca,c=us

Note: You can obtain status and back-end values for CA LDAP Server using the following z/OS modify commands: F LDAPR*nn*,STATUS and F LDAPR*nn*,BACKEND, where.*nn* represents the CA LDAP Server version or release. For example, LDAPRN15,STATUS and LDAPR15,BACKEND.

E1MI0014 is updated.

2. Submit the E1MI0014 member in *your_chorussec_hlq.*CE1MJCL.

   After successful execution (RC=0), the following files are created in *<chorus-install-home>*/config:

   acf2_config.xml

   Defines CA ACF2 security administration nodes.

   tss_config.xml

   Defines CA Top Secret security administration nodes.

   cmgr_config.xml

   Defines CA Compliance Manager administration nodes.

   The respective nodes appear in the CA Chorus Investigator.

   Note: To correct the security or policy administration node data that is defined in these files, use the E1MDELND member in *your_chorussec_hlq.*CE1MJCL. E1MDELND lets you delete security or policy administration nodes. For example, if the wrong port or suffix data was entered. For more information about configuring these files, see the *CA Chorus for Security and Compliance Management User Guide*.

3. (Optional) Update the xml files created in the previous step as follows to show only product-specific information in the PolicyAdmin UI drop-down selections:

   a. Add the <showProduct> element to the <server_info> of the host node.

      ```
      <showProduct>ACF2,TSS</showProduct>
      ```

      Note: This entry shows all external security manager (ESM) types.

   b. Remove the security product or products you do not want to appear. For example, specify the following text to show only CA ACF2 information:

      ```
      <showProduct>ACF2</showProduct>
      ```

   c. Save your changes.

   The ESM data that is specified appears in the PolicyAdmin UI. If you are running multiple external security managers and you do not want to restrict the data that appears, skip this step.

Identify Systems for the Security Command Manager Module

The Security Command Manager module processes all CA ACF2, CA Top Secret, and IBM RACF commands. When a user executes commands, CA Chorus sends the commands to DSI for execution. DSI returns the results. Before you can use this module, the following items must be identified:

- Security systems that you want to access
- Host and port values where the DSI is installed and listening for requests
- Authentication for the logged-in user must be defined using a PassTicket.

Edit the E1MI0015 member in CE1MJCL to identify security systems for use with the Security Command Manager module.

Follow these steps:

1. Replace the default values provided on the SYSUT1 DD to define the location of the systems you are using:

   host

   Specifies a domain name or an IP address where the DSI is installed. If you specify a domain name, the server converts it to an IP address.

   Default: HOST1

   port

   Specifies the port where the standalone DSI is listening for requests. Use the following command to find the port value:

   ```
   F DSIRnn,STATUS
   ```

   Default: PORT1

alias

Specifies the user-defined name that appears in the System drop-down list of the Security Command Manager module.

Default: ALIAS1

lpar

Specifies the logical name for the system that connects to the CA DSI Server. Each LPAR is cross-referenced with the SYSID value specified in the CIA CMXREF table. The SYSID is used to obtain the system information from the SECURITY.SYSINFO table. The system information appears in the System drop-down list in the Security Command Manager module.

If the value specified for LPAR is not defined in the CIA CMXREF table, the System drop-down list contains the specified value. For example, if you specify D10A for the lpar, D10A appears in the System drop-down list.

Default: LPAR1

applid

(Optional) Specifies the application ID used for the PassTicket generation for the logged-in user. This value was specified during the PassTicket configuration to connect to CA LDAP Server for the Quick Links module.

Leaving this value blank bypasses PassTicket processing and the logged in user must supply a password for authentication.

Default: CALDAP

The security systems that can be used in the Security Command Manager module are defined.

2. Add the JOBCARD member from CETJJCL, and save your changes.

   Member E1MI0015 is updated.

3. Submit E1MI0015.

   The expected return code is 0.

   Important! Restart the CA Chorus JBoss server (CHORJBOS) after modifying E1MI0015. The changes take effect only after restarting.

   The next time that you open the Security Command Manager module, the System drop-down list is updated with any changes.

Example: Identify Security Systems for the Security Command Manager Module

Sample text for the SYSUT1 DD follows:

```
HOST1,PORT1,ALIAS1,LPAR1,CALDAP
HOST2,PORT2,ALIAS2,LPAR2,
```

In this example, the following processing would occur in CA Chorus:

- HOST1 appears on the Security Command Manager, and the password field is hidden. The system generates a PassTicket to authenticate the user.
- HOST2 appears on the Security Command Manager. The user must specify a password to authenticate because a PassTicket cannot be generated without a specified application ID (applid).

Important! Go to the next discipline configuration chapter or go to Activating Your Configuration (see page 81).

Chapter 6: Configuring CA Chorus for Storage Management

How to Configure CA Chorus for Storage Management

The tasks that are described in this chapter must be performed to configure CA Chorus for Storage Management manually.

Additional CA Chorus for Storage Management configuration tasks can be done after initial installation and configuration. These tasks are described in the *Administration Guide*. For example, how to change the Cost Analysis feature configuration is described in the *Administration Guide*.

Important! We strongly recommend that you complete all configuration tasks on deployed copies of the target data sets and UNIX System Services (USS) file systems. Leave the SMP/E-installed copies of these files intact.

Establish CA Chorus Connectivity to the Storage Engine

CA Chorus connects to each storage engine subsystem through TCP/IP to display object data in the interface.

Follow these steps:

1. Edit the Job card statement member (E4HJBCRD) in *your_chorusstor_hlq*.CE4HJCL to conform to your installation standards.

   The Job card statement is customized. The jobs in the *your_chorusstor_hlq*.CE4HJCL data set use this member.

2. Edit and submit E4HI0006 and E4HI0007 members in CE4HJCL to create the Storage Management interface database USS file system (CE4HVDB). This database contains all user preferences, such as host connection and user-created object view definitions.

   Note: If you have an existing CA Chorus system and you want to use the database in a newer CA Chorus version, the E4HDUPDT job is provided to upgrade the newer system to use the older database.

3. (Optional) Edit and submit E4HI0008 and E4HI0009 members in CE4HJCL to create a USS file system to output the Storage Management interface reports (CE4HRPT). Reports that are created from the Storage Management interface can be placed in any USS location. However, if you want a specific place for scheduled output, we suggest that you create its own file system.

   Note the following items before submitting the jobs:

   - If you are using a new system for reporting, run both jobs.
   - If you are using an existing reporting system, run only E4HI0009.

   Note: The zFS data set created in steps 2 and 3 are added as a custom data set during the deployment. We recommend that the zFS file systems be permanently mounted by including them in the SYS1.PARMLIB(BPXPRM*xx*) member.

4. Edit and submit the E4HI0010 member in *your_chorusstor_hlq.*CE4HJCL as described in the member to identify your storage engine subsystems configuration. The E4HI0010 job sets the following variables:

   Note: Record the job variable attributes exactly (with upper and lower case characters). Save this information for future reference.

   - For each storage engine subsystem that you want to configure within the Storage discipline, replicate the *StorageDsName* line in the E4HI0010 job.

     In a multiple storage engine subsystem environment, one storage engine is chosen as the Main (storage) Engine in the CA Chorus Investigator. The Main Engine provides CA Chorus with storage object attributes, which include storage object table header information, the available Administrative Actions for the object, relationships to other objects, and so on.

     CA Chorus determines the Main Engine during JBoss startup. This determination depends on the order of the storage engines that are defined in the E4HI0010 job and if CA Chorus can receive data from the storage engines. That is, the first storage engine that is listed in the E4HI0010 job defaults as the Main Engine during JBoss startup. If a connection to this storage engine is not available during JBoss startup, CA Chorus sets the next storage engine that is listed in the E4HI0010 job as the Main Engine and tries to connect to it. The Main Engine repeats this process until it finds a storage engine to which it can connect and receive data from.

     To be able to take advantage of the latest storage engine features, the Main Engine should have the latest CA Vantage SRM maintenance applied.

     Verify the first storage engine that is listed in the E4HI0010 job contains all user-created Summary Objects, Joined Objects, and so on, and that CA Chorus can connect and receive data from the first storage engine that is listed in the E4HI0010 job during JBoss startup.

     Note: For more information about multiple storage engines, see the *CA Chorus for Storage Management User Guide*.

Note: We recommended a maximum of eight storage engine subsystems. If you configure more than eight, you receive a warning message when running the E4HI0010 job. Despite this message, all of your servers will be configured as requested.

Substitute the following variables in each replicated *StorageDsName* line as follows:

StorageDsName

Specifies the storage engine subsystem name. The value of the *StorageDsName* variable can be any descriptive name of your choice for each storage engine subsystem (maximum 12 characters). Each storage engine subsystem must be assigned a unique *StorageDsName* value. This value is case-sensitive. That is, if you enter it in upper case then it must be specified as uppercase in the Storage Management interface My Profile Host definition. The value of the *StorageDsName* variable is displayed in the HOST column of the Investigator in the object table when the object table is populated with data from multiple hosts.

Note: Record the *StorageDsName* values, exactly as you enter them in this job. You need them when creating *public* host connection definitions in the Storage Management interface.

The Storage Management interface accessed from the Quick Links module has only one authenticating host which is used as the single-sign on to the Storage Management interface. The Storage Management interface authenticating host name is specified in the *Dvantage.web.client.host.name* found in the CETJOPTN (ENVE4H) member. The value of the *StorageDsName* and *Dvantage.web.client.host.name* can be the same but it is not required.

VantageIpAddr

Specifies the IP address where the back-end storage engine z/OS host runs.

VantageIpPort

Specifies the TCP/IP port number that the storage engine subsystem is listening on for connection requests. This value is set in the parameter TCPPORT found from within each VKGPARMS member of each storage engine subsystem parameter library.

Note: For information about how to add a new or delete a storage engine subsystem from the storage discipline in the future, see the *Administration Guide*.

- For the Storage Management interface, specify the Storage Management interface passwords. For more information, see the instructions in the E4HI0010 job.
  - WEBUI_BOOTPASSWORD=<bootpassword>
  - WEBUI_ADMINPASSWORD=<vantage@admin>

The expected return code is zero (0). The CA Chorus connectivity to the storage engine subsystems is configured, and the Storage Management interface database is defined.

5. Edit and submit the E4HI0011 member in *your_chorusstor_hlq*.CE4HJCL as described in the member to configure cost analysis. Run this job with the default values and then rerun it after you use it for a while so it reflects your site costs.
6. Verify that the Time Series Facility (TSF) configuration is set up. Each storage engine subsystem must be able to connect to the TSF using the loopback address of '127.0.0.1' for an IPV4 stack.

   To determine if the stack is IPV4 enabled, enter the following command:

   ```
   D TCPIP,stackname,NETSTAT,ROUTE,ADDRTYPE=IPV4
   ```

   Note: For more information about configuring TSF, see the *CA Chorus Installation Guide* and *Administration Guide*.
7. Submit either $TJI0150 or ETJI0150 job in CETJJCL to update the data source XML files with the storage engines.

   You can now start the CA Chorus task (CHORJBOS) to verify that the storage engines are connected, or continue to step 8.
8. Continue to the section Initialize and Configure the Storage Management Interface (see page 72) to enable the Storage Management interface from the Quick Links module for end users.

Initialize and Configure the Storage Management Interface

CA Chorus for Storage Management customers must initialize and perform some Storage Management interface configuration so users can use it. The following items must be done:

- A name for the single-signon authenticating host for the Storage Management interface must be specified.
- A display port must be specified so reports can be created from the Storage Management interface.
- The Storage Management interface database must be initialized.
- At least one *public* host for the single-signon authenticating storage engine subsystem for the Storage Management interface must be created.

- Email server settings must be specified.
- The charting facility must be configured.

Note: Some Storage Management interface functions have limited use until the system administrator performs more tasks. For more information about these tasks, see the *Administration Guide*.

Follow these steps:

1. Edit and submit the ENVE4H member in *your_chorus_hlq*.CETJOPTN as described in the member. All of the Storage environment variables can run with the supplied default values except the <*vantage_public_host*> variable in the following statement:

   ```
   #IJO="$IJO –Dvantage.web.client.host.name=<vantage_public_host>"
   ```

   Note: If you have started the CA Chorus JBoss task, restart it to activate the environment variable changes by issuing the following commands:

   ```
   /P CHORJBOS, to stop it
   ```

   ```
   /S CHORJBOS, to start it
   ```

2. Log in to CA Chorus.
3. Add the Quick Links module to your CA Chorus dashboard, and click Manage Storage Resources.

   The Storage Management interface log on window opens in a separate browser window.

4. Enter the system administrator user Name and Password.

   The system administrator credentials are as follows:

   - The default system administrator user Name: APP
   - Password: See the WEBUI_ADMINPASSWORD parameter that is specified in the E4HI0010 job in *your_chorusstor_hlq*.CE4HJCL.

5. Select VantageDB in the Authenticating Host field, and click Login.

   If you are logging in to the Storage Management interface as the system administrator for the first time, the Storage Management interface database starts to initialize.

6. Click OK in the initialize confirmation dialogs that appear.

   After the database initialization completes, the Storage Management interface opens in your browser with the My Profile window open. If the My Profile window does not open, click My Profile in the Storage Management interface Menu bar or select My Profile from the Tools menu.

   Note: The Storage Management interface online help details how to use the different options in the My Profile window.

7. Click Add Host Definition.
8. Enter values and make selections in the New Host Definition dialog for the following required fields:

   Important! Create a single *public* host for users to authenticate for single-sign on using the host that is specified in step 1.a. When a user is logged in to the Storage Management interface, they can create their own *private* hosts.

   Note: New Host Definition dialog field explanations are available in the Storage Management interface online help system.

   Host Name

   Specifies a unique host name. This name appears in the Host Definition List and Object Tree. Consider that you could eventually have multiple hosts. The host names must be equivalent to the *StorageDsName* variables in the E4HI0010 job.

   Important! Create a public host for the single-signon authenticating host that is specified in step 1.a.

   Note: The host name is case-sensitive. Enter the host names exactly as you entered the values for the *StorageDsName* variables in the E4HI0010 job.

   IP Address

   Specifies the IP address where the storage engine z/OS host runs. This value is the same as the value of the *VantageIpAddr* variable in the E4HI0010 job.

   Port

   Specifies the port number of the storage engine z/OS host. This value is the same as the value of the *VantageIpPort* variable in the E4HI0010 job.

   Include On Object Tree

   Select this option so that the Storage Management interface displays the host name in the Object Tree for all end users.

   Use PassTicket

   Select this option. When this option is selected, the following actions occur:

   - The PassTickets security feature is invoked.
   - Automatic log in to the Storage Management interface occurs when end users select the Manage Storage Resources link in the Quick Links module.

   PassTickets do not send the password over the network, instead the PassTicket configuration on the host is used. PassTickets must be activated on *each* storage engine host for this option to work.

   Note: For more information about activating PassTickets on the storage engine hosts, see the *CA Chorus for Storage Management Site Preparation Guide*.

Public Host

Select this option. At least one *public* host is required for CA Chorus for Storage Management. However, if you are using multiple storage engine subsystems for your CA Chorus user-interface, create a *public* host for each subsystem.

Note: This option is only available if you are logged in as the system administrator to the VantageDB database.

Note: Do not define *private* hosts when logged in as the system administrator to VantageDB if you plan to activate PassThrough in the *private* host definition. Users can activate PassThrough in their *private* host definitions. Use the Storage Management interface online help to learn how to use the different My Profile options to create their *private* hosts after they open the Storage Management interface from the Quick Links module.

9. Click OK.

   The My Profile window opens with the *public* host definition in the Host Definition List. The Scope column should read "PUBLIC".

   A *public* host is created for the *StorageDsName*: ADDR(*VantageIpAddr*) PORT(*VantageIpPort*) (first) line that you have in the E4HI0010 job. This single *public* host is required for users to authenticate for single-sign on using the host that is specified in step 1a.

10. (Optional) Create more public hosts for each additional storage engine subsystem that is set up for your CA Chorus user-interface by repeating steps 7 through 9. This step is for creating public host definitions for the remaining *StorageDsName*: ADDR(*VantageIpAddr*) PORT(*VantageIpPort*) lines that you have in the E4HI0010 job.

    Note: This step is marked optional because it is easier to perform it now while you are logged on to the Storage Management interface as a system administrator. You also have the additional hosts information from the E4HI0010 job. However, the system administrator can add new and can manage existing *public* hosts any time. For the instructions, see the *Administration Guide*.

11. Test that the *public* Host Definitions work for the Storage Management interface from the My Profile dialog:

    a. Select the newly created *public* Host Definition in the Host Definition List.

    b. Click Actions, and then Connect.

       The login dialog opens.

    c. Enter a valid User Name and Password for the *public* host. The User Name and Password must have the access authority to the storage engine on the z/OS host of the *public* host definition.

    d. Click Log In.

       The *public* host is listed in the Object Tree pane with status *connected*. You have created and tested the *public* host.

e. Repeat steps a through d for each public host definition.

f. Click Close to close the My Profile dialog.

12. Set the Storage Management interface email server settings of the email server the Storage Management interface uses to send emails and set number of concurrent reports. Follow these steps:

    In this context, the email server is the email server the Storage Management interface uses to send emails to the following items:

    - The output report recipients.
    - Email failure notices if the reports are not produced (for example, as scheduled).

    Note: Output report schedules and request for a failure notification are maintained using the Customize Report Wizard by the end user.

    a. Click Tools in the Storage Management interface Menu bar and then Application Configuration to open the Application Configuration dialog.

    b. Specify email server settings.

       The email Server pane in the Application Configuration dialog has the following options:

       Email Server

       (Required) The DNS name or IP address of your email server, which the Storage Management interface uses to relay email messages. The Storage Management interface sends email directly to the recipient email server using the SMTP protocol.

       Port

       (Required) The port number of the email server that the Storage Management interface uses to send emails.

       The Storage Management interface sends emails for the following items:

       - Report emails with output report attachments.

       - Report generation failure messages.

       The default value is 25. However, some sites use a different value, for example, 587.

       User Name

       (Optional) Enter the user ID that has the authority to send email from the designated email server. This field is for sites that have the security requiring an authorized user ID and password to send email.

       Note: Only enter a user ID if the mail server designated for relaying Storage Management interface email only accepts authorized requests.

Password

(Optional) Enter the password of the user ID that has the authority to send email from the designated email server.

Note: Only enter a password if the mail server designated for relaying Storage Management interface email only accepts authorized requests.

Note: If the Storage Management interface continues to have problems sending email after adding the *Email Server* settings, you have probably encountered a security problem. For example, some corporate firewalls disable or could be configured to disable outgoing connections to port 25 (the SMTP default port). Contact your Email Administrator, Network Administrator, and Security Administrator to discuss the correct values for the Email Server Setting fields. Storage Management interface emails are sent with the sender address of VantageGMIScheduler@ca.com.

13. Verify that the single-sign on authenticating *public* host connection and passticket for the Storage Management interface works from the Quick Links module:
    a. Click Logout in the Storage Management interface toolbar and close the Storage Management interface browser window.
    b. Click Manage Storage Resources in the Quick Links module from your CA Chorus dashboard.

       The Storage Management interface opens in a separate window and logs on automatically.

       Note: If automatic logon is unsuccessful, verify PassTickets are defined properly. For more information, see the *CA Chorus for Storage Management Site Preparation Guide*.
14. Close Storage Management interface and CA Chorus.
15. Configure the charting utility that is used in the Storage Management interface:
    a. Copy the member E4HWEBX from the CE4HJCL library to your proclib.

       This member contains the charting utility started task that is used to create charts in the Storage Management interface. Start the CHORWEBX procedure before the CA Chorus JBOSS started task. Verify with your system administrator that execution permissions are granted on the Xvfb X Server (application) and the Xvfb startXvfb.sh script.

       The JCL is copied and ready for modifications.

b. Follow the instructions in the sample JCL.

Because this procedure runs as a started task, its JCL procedure must reside in one of your system proclibs.

Note: The Xvfb application is part of the IBM Ported Tools for z/OS. IBM Ported Tools for z/OS is a nonpriced program product that is designed to deliver tools and applications for the z/OS environment. These applications have been modified to operate within the z/OS environment. IBM Ported Tools for z/OS is only available to customers with a license to z/OS; it is supported on z/OS 1.4 and above. Xvfb is an X server that can run on machines without display hardware and physical input devices. Xvfb emulates a dumb framebuffer using virtual memory. APAR OA10965 provides support for Xvfb. Consult with administrators for the location of the installed application for Xvfb X-Server. For example: /usr/lpp/tcpip/bin/X11/samples directory.

The STC is now ready for execution.

c. Start the CHORWEBX PROCLIB member for the *Xvfb X* server.

The *X* server address space starts.

If the server starts successfully, the following messages appear in STDOUT:

```
Starting Xvfb using server/display: 11
Xvfb will be run in the background.
Run "ps -ef | grep Xvfb" to see process ID.
```

If the startup fails, the following message appears in STDOUT:

```
XVFB0178: Failed to establish all listening sockets
```

The *Xvfb X* server JOB is completed.

The CHORWEBX is started.

d. Start CHORMUF, CHORTSF, and CHORJBOS in this order by issuing the following commands:

```
/S CHORMUF
/S CHORTSF
/S CHORJBOS
```

You receive a confirmation message after entering each command.

Note: You must start CHORWEBX before starting the CHORJBOS task.

16. Verify that charting is enabled in the Storage Management interface by doing the following steps:

a. Log in to CA Chorus.

b. Click Manage Storage Resources in the Quick Links module from your CA Chorus dashboard.

The Storage Management interface opens in a separate window and logs on automatically.

c. Open any object in the Storage Management interface. For example, the Space and Other Attributes object in the Storage Groups folder of the Object Tree.

d. Click Customize Settings to open the Customize View Wizard.

e. Click Chart in the Navigation Tree of the Customize View Wizard.

f. Click the check-box next to Show Chart, and click Finish.

A line chart with default settings is displayed in the Storage Management interface. You have verified that charting is enabled in the Storage Management interface.

g. Click Log Out in the Storage Management interface Menu bar, close the browser window, and log out of the CA Chorus user-interface.

The following Storage Management interface initialization and configuration items are completed:

- A name for the authenticating single-signon storage engine subsystem for the Storage Management interface is specified.
- The Storage Management interface database is initialized.
- A display port is specified so that charts can be created from the Storage Management interface.
- At least one *public* host for the authenticating single-signon storage engine subsystem is configured.
- Email server settings are specified.
- The charting facility is configured.

Note: The Storage Management interface system administrator can do the following tasks any time:

- Create new and manage existing Storage Management interface *Public* Hosts.

  Note: Users can manage their Storage Management interface global options. For more information, see the *CA Chorus for Storage Management User Guide*. Users can also create their own Storage Management interface *private* host definitions when they are logged on to the Storage Management interface.
- Stop and Start the Storage Management interface Scheduler.
- Manage Storage Management interface scheduled items.
- Create new and manage existing Storage Management interface *public* logo images.
- Create new and manage existing Storage Management interface *public* holiday schedules.

- Create new and manage existing Storage Management interface *public* user views of source objects.

For more information about these tasks, see the *Administration Guide*.

Chapter 7: Activating Your Configuration

Activate Configuration Changes

Important! Do not complete this step until you have configured your disciplines.

After you complete a CA Chorus installation and configuration (platform, discipline, or both), run the following job to notify JBoss of the configuration changes.

Important! If you do not complete this step, CA Chorus does not start or it starts but without your disciplines available.

To activate your changes, customize and run ETJI0150 from *your_chorus_hlq*.CETJJCL data set.

When you start the JBoss server, your configuration changes are activated.

Configure the JBoss Server

JBoss is an open source Java-based application server that operates cross-platform. JBoss is usable on any operating system that supports Java.

To configure the JBoss server, define the JBoss and Teiid ports, and start the JBoss server. Twelve consecutive port numbers are required.

Important! Be sure that you have specified the TEIID_PORT value and other required values in the ENVETJ member in the CETJOPTN library before submitting ETJI0105. A proper configuration ensures that JBoss starts properly.

Note: For administrative JBoss tasks, see the *Administration Guide*.

Follow these steps:

1. Edit the CHORJBOS member in *your_chorus_hlq.*CETJJCL as described in the member.
2. Copy the CHORJBOS member to a PROCLIB.
3. Start the CHORJBOS started task.

   The following message appears when JBoss startup is complete:

   ```
   ETJTC001I CA Chorus Startup Complete
   ```

   Note: We recommend that all CA Chorus tasks run as a started task with REGION=0M. If your site restricts the REGION=0M parameter, run with the maximum region size permitted.

Chapter 8: Verify the Installation and Configuration

Use this procedure to confirm that you have successfully completed the CA Chorus installation and configuration procedures. If at any point you do not see the expected result, confirm that you have completed the configuration steps as documented. If you cannot identify the issue, contact CA Support.

Note: In addition to this procedure, for CA Chorus for Security and Compliance Management, you can run ETJIVP01 in *chorussec_custom_hlq.*CETJJCL to verify the discipline installation.

Follow these steps:

1. Confirm that the applicable back-end products are up and running.
2. Open a supported browser.

3. Enter the JBoss host name and port in the URL using *one* of the following formats:

   `http://jbosshostname:httpconnectorport/Chorus`
   `https://jbosshostname:httpsconnectorport/Chorus`

   Note: If you ran ETJI0110 in *chorus_runtime_hlq*.CETJJCL to enable HTTPS, use the previously shown HTTPS format to specify the host name and port.

   jbosshostname

   Host name of the system where JBoss is running. Use the value of the TEIID_MACHINE environment variable in CETJOPTN(ENVETJ).

   httpconnectorport

   Port number that is used to access JBoss. Use the value of JBOSS_HTTP_PORT in CETJOPTN(ENVETJ). By default, this value is the TEIID_PORT value +4 for HTTP. For SSL, use the value of JBOSS_SSL_PORT in CETJOPTN(ENVETJ). By default, the value is the TEIID_PORT value + 10.

   Press Enter.

   The CA Chorus login page opens.

   Note: If HTTPS is enabled, follow the prompts to add the URL as a trusted site.

4. Log in to the product.

   The CA Chorus interface opens.

5. Add the Investigator module to your dashboard from the Module Library, and click Start New Investigation.

   The Investigator opens.

6. Select your discipline from the drop-down list in the upper left corner.

7. Confirm that the table in the Investigator displays data.

   You have confirmed that you can log in to CA Chorus and back-end data appears in the user interface.

8. (Optional) Open the Quick Links module, and select a link.

   You have confirmed that the quick links configuration is accurate.

   CA Chorus and the applicable disciplines are installed, deployed, and configured.

Post-Installation Considerations

Before allowing users to access the product, consider the following points:

- Confirm that your mount points and APF authorizations are in your PARMLIB.
- Place your mount points in BPXPRM*xx*.
- If you had to set the MAXFILEPROC, place it in BPXPRM*xx*.
- If you used a customized ETJI095*x* job, copy it to *chorus_runtime_hlq*.CETJJCL.
- If you installed CA Chorus solely to use the SDK, see the *Software Development Kit User Guide* to configure your kit.

Important! For CA Chorus for Storage Management, completion of the Initialize and Configure the Storage Management interface (see page 72) procedure is required to finalize the configuration.

Important! For CA Chorus for Security and Compliance Management, completion of the Configure the Global Configuration procedure is required to finalize the configuration. Doing so lets the Policy Administration interface send alerts to the Alerts module.

Appendix A: Troubleshooting

Cannot See How to Turn On Debug for CA Chorus for Security and Compliance Management

Symptom:

I want to use the trace output to debug setup or configuration issues during the installation.

Solution:

You control tracing levels for the Quick Links module in CA Chorus for Security and Compliance Management by editing a log4j.properties file in the following locations:

```
INSTALL_HOME/jboss/standalone/deployments/SecAdmin.war/WEB-INF/classes
INSTALL_HOME/jboss/standalone/deployments/PolicyAdmin.war/WEB-INF/classes
```

By default, the debug level is set to *debug* using the following line:

```
log4j.logger.com.ca.vantage=debug, drfileapp, consapp
```

Follow these steps:

1. Change the debug level to report errors only:

   ```
   log4j.logger.com.ca.vantage=error, drfileapp, consapp
   ```

2. Activate this change by restarting the JBoss server:

   ```
   S CHORJBOS
   ```

   A message indicating that startup is complete is logged.

Manage Storage Resources Link does not Appear in the Quick Links Module

Symptom:

My Quick Links module does not display the Manage Storage Resources link to the Storage Management interface. I have access to the CA Chorus for Storage Management, CA Chorus for Security and Compliance Management, and CA Chorus for DB2 Database Management disciplines. I can see all three discipline options in the Alerts module and metrics, which also do the discipline access check.

Solution:

You do not have the resource CHORUS.ROLE.STORAGE added to your user ID security profile. For the instructions, see the section Security Requirements. Contact your security administrator.

The Storage Investigator Tree is Blank

Symptom:

No categories are displayed under the Storage tab in the Investigator. (The Storage Investigator tree is blank.)

Solution:

The CA Chorus started task User ID must be granted SAF access to the Storage backend. For the instructions, see the section Security Requirements in the *CA Chorus for Storage Management Site Preparation Guide*. Contact your Security Administrator.

For the sites using the IBM RACF security system, the CHORADM ID security profile might be defined without a password. CA Chorus for Storage Management requires the CHORADM ID to be defined with a password. The password is not used but instead PassTickets create a password when connecting to the back-end storage engine. Review the CA Chorus job CETJJCL(ETJI095R) to see if NOPASSWORD was specified on the ADDSD statement. Change it to PASSWORD(*anypassword*), as follows:

Change the following statement:

```
ADDUSER CHORADM DFLTGRP(CHORGRP) NAME('CHORUS STARTUP ID') -
OMVS(UID(uidnn) HOME(&XWORKDIR)) NOPASSWORD
```

To:

```
ADDUSER CHORADM DFLTGRP(CHORGRP) NAME('CHORUS STARTUP ID') -
OMVS(UID(uidnn) HOME(&XWORKDIR)) PASSWORD(anypassword)
```

Contact your security administrator to update the security rule.

JBoss Startup Error

Symptom:

The following error is displayed during JBoss startup:

GMT WARN .PreloadMetadata. Unable to get metadata for object chorus_tsf.TSF_Storage_POOLS java.lang.IllegalArgumentException: No enum const class com.ca.mfui.chorusR2.shared.metadata.ActionMetadata$ActionPropertyType.TSFPeriodDefault

Solution:

The Time Series Facility (TSF) does not have the registration file that is configured for the CA Chorus for Storage Management discipline. For the instructions, see the section Security Requirements. Contact your security administrator.

CHORJBOS Message - VantageDb-AES Not Found

Symptom:

I see the following message at startup in the CHORJBOS started task log. I cannot access the Storage Management interface (storage engine web client) from the Quick Links module.

```
java.sql.SQLException: Database
'/u/users/chorqa/harm/Chorus/jboss-5.1.0.GA-teiid7.3/server/default/deploy/chorus/storage-data/webclient/VantageDb-AES' not found.
        at org.apache.derby.impl.jdbc.SQLExceptionFactory.getSQLException(Unknown Source)
       at org.apache.derby.impl.jdbc.SQLExceptionFactory40.wrapArgsForTransportAcrossDRDA(Unknown Source)
```

Solution:

The Storage Management interface database zFS file system was not mounted (*<your file system>*.CE4HVDB). For the instructions, see the section Establish CA Chorus Connectivity to the Storage Engine (see page 69).

Cannot see Some Objects, Columns, or Actions

Symptom:

Some storage objects are not displayed in the storage object tree, some columns are not displayed in storage objects, or some Administrative or Navigation actions are not displayed in the Actions pane for storage objects.

Solution:

The storage objects that are displayed in the storage object tree and the columns that are displayed in storage objects are defined during JBoss startup.

In a multiple storage engine environment, one storage engine is chosen as the Main (storage) Engine in CA Chorus. The Main Engine is the storage engine that provides CA Chorus with storage object attributes, which include storage object table header information, the available Administrative Actions for the object, relationships to other objects, and so on.

Note: To be able to take advantage of the latest storage engine features, the Main Engine should always have the latest CA Vantage SRM maintenance applied.

Missing Objects or Object Columns

If maintenance is applied to a storage engine after JBoss startup and the maintenance includes new storage objects or new columns (fields) to existing storage objects they do not appear in the Investigator unless you restart the JBoss STC after maintenance is applied.

Missing Administrative or Navigation Actions

If maintenance is applied to a storage engine after JBoss startup and the maintenance includes new Administrative or Navigation actions, they do not appear in the Investigator Actions pane unless you restart the JBoss STC after maintenance is applied.

Missing User-defined Summary Objects or Joined Objects

If a user-defined Summary Object or user-defined Joined Object is created on a storage engine after JBoss startup, it does not appear in the Investigator. User-defined Summary Objects and user-defined Joined Objects must exist in the Main Engine and the JBoss STC restarted after they are created in the Main Engine.

In a multiple storage engine environment, if a user-defined Summary Object or a user-defined Joined Object exists on a storage engine that is not the Main Engine, you can:

- Use the Summary Objects Distribution Wizard in the storage engine windows client to distribute user-defined Summary Objects to the Main Engine (and all storage engines).

- Use the Joined Objects Distribution Wizard in the storage engine windows client to distribute user-defined Joined Objects to the Main Engine (and all storage engines).

Restart the JBoss STC after the user-defined Summary Object and user-defined Joined Objects are distributed to the Main Engine.

Note: For more information about restarting JBoss, see the *Administration Guide*.

Cannot see More than 5,000 Rows in My Object Table Displays

Symptom:

Storage object tables in your multiple storage engine environment are showing a maximum of 5,000 rows.

Solution:

The default value setting for the maximum number of rows displayed in storage object tables in a multiple storage engine environment is 5,000 rows. To specify the maximum number of rows, edit the Dchorus.storage.numberOfRowsLimit variable in the ENVE4H member in *your_chorus_hlq*.CETJOPTN.

No Data Found in Specific Volumes in the Data Set for System (ALL) Object

Symptom:

A query for a specific volume in the Data Set for System (ALL) object gives a return of 'No data Found'. However, the Volumes object shows that it exists and it has data.

Solution:

The Data Set for System (ALL) object scans the Data Set Table of Contents (DTOC) which contains information about all online volumes. However, the back-end storage engine has a data set include-exclude table where sites can specify to include or exclude certain data sets from the DTOC scan specifically. This exclusion table can exclude volumes from the Data Sets online but still collect Volume information for the Volumes object. The same behavior applies in the reverse.

Verify that the data set on the volume you are investigating has not been excluded.

Note: For more information about include-exclude volumes, see the section Exclude Volumes (Optional) in the *CA Vantage SRM Configuration Guide*.