

# CA Mainframe Connector for Linux on System z

## Installation Guide

Version 1.0



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## CA Technologies Product References

This document references the following CA Technologies products:

- CA Mainframe Connector for Linux on System z (CA Mainframe Connector)
- CA Mainframe Software Manager™ (CA MSM)
- CA OPS/MVS® Event Management and Automation (CA OPS/MVS)
- CA SOLVE:Operations® Automation
- CA TCPaccess™ Communications Server for z/OS (CA TCPaccess CS)

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### Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information you need for your Home Office, Small Business, and Enterprise CA Technologies products. At <http://ca.com/support>, you can access the following:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

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# Chapter 1: Overview

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This guide describes how to install and implement CA Mainframe Connector.

This section contains the following topics:

[How the Product Works](#) (see page 9)

[Audience](#) (see page 12)

[How You Acquire the Product](#) (see page 12)

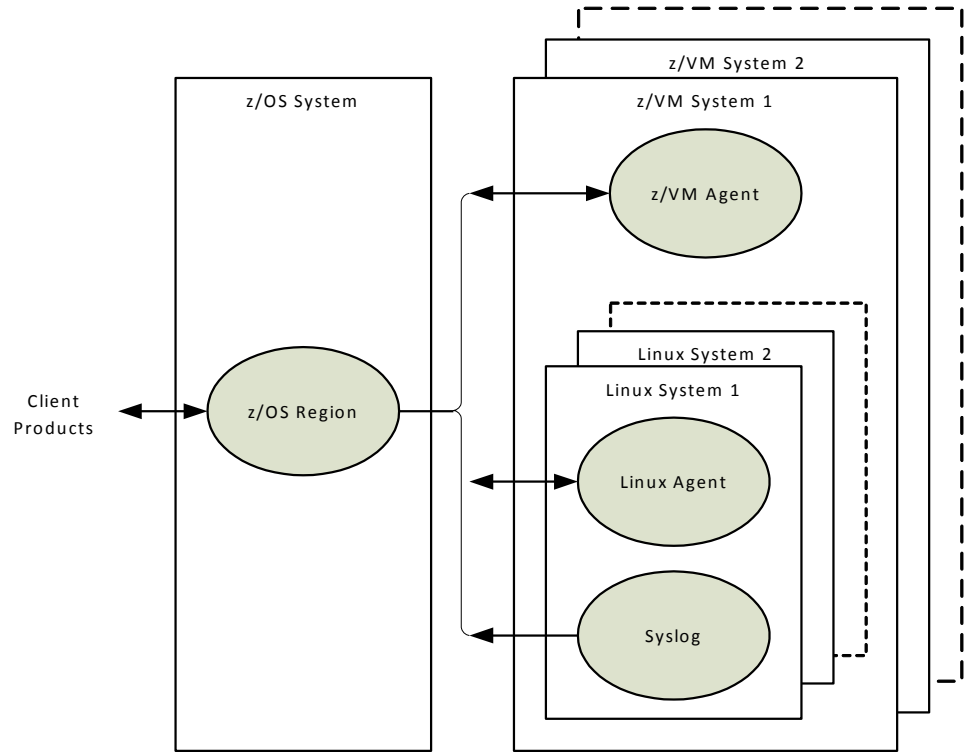
[How Product Implementation Works](#) (see page 13)

## How the Product Works

CA Mainframe Connector enables client products (such as CA OPS/MVS and CA SOLVE:Operations Automation) to manage Linux resources on z/VM systems. The product provides the z/VM and Linux message, and command and response services that client products use to manage the Linux resources. The product consists of the following components:

- A z/OS region (or task)
- A z/VM agent on each z/VM system that hosts the Linux systems you want to manage through the client products
- A Linux agent on each Linux system

The following illustration shows the main product components and the flow of data:



The product has the following main components:

### **z/OS Region**

Provides the following TCP/IP servers for the traffic between client products and the agents. You can use the following command to find out the status of these servers: `F,rname,SERVERS`.

#### **VMMON**

Provides the following services to the z/VM agents:

- To receive unsolicited z/VM events and messages from the agents
- To provide a command and response interface for the agents

This server sets up the port to which z/VM agents connect.

#### **SYSLOG**

Receives messages from the syslog daemon. This server sets up the port to which the syslog daemon on each Linux system connects.

#### **UNSOLMSG**

Passes unsolicited events and messages to client products. This server sets up the port to which client products connect.

#### **COMMANDS**

Provides a command and response interface between client products and agents:

- For z/VM agents, the end-to-end command flow is client product, COMMANDS server, VMMON server, and z/VM agent. The reverse applies to the response flow.
- For Linux agents, the end-to-end command flow is client product, COMMANDS server, and Linux agent. The reverse applies to the response flow. This server communicates directly with a Linux agent. All Linux agents to be connected must set up their ports using the same port number.

You configure and run the region on the same z/OS system where your client products run. The task serves multiple z/VM and Linux agents.

### **z/VM Agent**

Provides the following services:

- To pass unsolicited z/VM events and messages to client products through the z/OS region
- To accept z/VM commands from and return responses to client products through the z/OS region

You configure and run an agent on each z/VM system that hosts the Linux systems that you want to manage through client products.

### Linux Agent

Accepts Linux commands from and return responses to client products through the z/OS region.

You configure an agent on each Linux system you want to manage through client products. The agent is started automatically after the syslog daemon connects with the z/OS region.

## Audience

Readers of this book require knowledge or can delegate tasks to persons who have knowledge in the following areas:

- JCL
- TSO/ISPF
- z/OS environment and installing software in this environment
- z/VM and Linux on z/VM environments and installing software in these environments
- IT environment, enterprise structure, and region structure in your organization

You work with the following personnel:

- Systems programmers for z/OS and TCP/IP definitions, z/VM, and Linux
- Security administrators for access authorities
- Storage administrator for direct access storage device (DASD) allocations

## How You Acquire the Product

You can acquire the product using one of the following methods:

- Using CA Mainframe Software Manager (CA MSM), which is an application with a web-based user interface (UI) that helps you download, install, deploy, and maintain z/OS products, and provides a unified view of the products

**Note:** If you do not have the application, you can download it using Electronic Software Delivery (ESD). For more information about CA MSM, see the *CA Mainframe Software Manager Product Guide*.

- Using ESD, which lets you download the product from the Technical Support Download Center at CA Support Online
- From tape, if that is what you ordered

## How Product Implementation Works

Typically, product implementation consists of the following stages:

1. Prepare for the installation by confirming that your site meets all installation requirements.
2. Install the product:
  - a. Transfer the software to your system.
  - b. Install the software.

Installation uses the following processes:

- A process that installs the software in a z/OS SMP/E environment  
**Important!** You can install these software components using either CA MSM or the Install Utility supplied by the product. If you use CA MSM, you continue with setup (or configuration) using the Install Utility.
  - An RPM process that installs the Linux agent software on a Linux system
3. Set up the product:
    - Set up a region for a z/OS system where the client products run.
    - Set up a z/VM agent to connect to the z/OS region.
    - Set up a Linux agent port to which the z/OS region connects.
    - Configure the syslog daemon on each Linux system to connect to the z/OS region.
  4. Deploy the product components:
    - The z/OS region to the target z/OS system.
    - The z/VM agent to the target z/VM systems.
    - The Linux agent to the target Linux systems.
  5. Set up user security.
  6. Start the z/OS region, z/VM agents, and Linux agents.



# Chapter 2: Preparing for Installation

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This section describes what you need to know and do before you install the product.

This section contains the following topics:

[Software Requirements](#) (see page 15)

[CA Common Services Requirements](#) (see page 15)

[Security Requirements](#) (see page 16)

[Storage Requirements](#) (see page 16)

[Worksheets](#) (see page 17)

## Software Requirements

You install the product components on the following systems: z/OS, z/VM, and Linux.

- Your z/OS system must have a currently supported version of z/OS.

**Note:** An Install Utility is distributed to help you with installation and setup. The utility uses ISPF Table Services and requires a data set to be allocated to the ISPTABL DD. If you encounter a 'Library not Allocated' message, allocate a data set to ISPTABL DD (FB 80 PDS). For more information, see the IBM *ISPF User's Guide*.

- Your z/VM system must satisfy the following requirements:

- The system has a currently supported version of z/VM.
- The system has at least *one* of the following libraries for REXX:
  - Library for REXX on zSeries (5695-014)
  - Alternate Library for REXX on zSeries Version 1.4.0 for use with z/VM

**Note:** If you do not have the Library for REXX, you can acquire the Alternate Library from

<http://www.ibm.com/support/docview.wss?rs=960&uid=swg24006250>.

- Your Linux system must have an IBM-certified version of *one* of the following operating systems:
  - Red Hat at minimum release level 6
  - SuSE at minimum release level 11.1

## CA Common Services Requirements

The CA Common Services load library must be accessible to the CA Mainframe Connector address space through the JCL STEPLIB or system LNKLST.

## Security Requirements

You require access to UNIX System Services (USS).

When you prepare your z/OS task for startup, the following authorities are required on your system:

- You have READ authority to data sets with a prefix of CAI.\*.
- You have UPDATE authority to the following data sets or libraries:
  - Started task PROCLIB that stores the run-time JCL job, for example, SYS1.PROCLIB
  - SYS1.PARMLIB to APF-authorize run-time load libraries
  - Master catalog, a requirement if you intend to define alias entries for data set prefixes

When you prepare your z/VM agents for startup, UPDATE authority to the system directory is required on your z/VM systems.

When you install and prepare your Linux agents for startup, root permissions are required on your Linux systems.

## Storage Requirements

CA Mainframe Connector has the following 3390 DASD space requirements:

- If you are using CA MSM or ESD, the following z/OS UNIX file system space is required for the downloaded and unpacked files: 115 MB.
- For installation and setup, the following spaces are required:
  - Installation = 890 cylinders
  - IBM System Modification Program Extended (SMP/E) libraries = 40 cylinders
  - Setup = 195 cylinders
  - Setup temporary work area = 430 cylinders
  - z/OS UNIX file system space = 20 KB

Each deployed z/VM agent has the following space requirement: Three cylinders.

The Linux agent has the following Linux file system space requirements:

- 15 KB for the RPM file
- 35 KB for the installed files

## Worksheets

The [preparation worksheets](#) (see page 75) help you gather the required information before you install and configure (or set up) the product.



# Chapter 3: Installing Your Product Using CA MSM

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**Important!** During installation, use the CAIT72 target zone and the CAID72 distribution zone. The setup process requires that these zone names be used.

These topics provide information to get you started managing your product using CA MSM. You can use the online help included in CA MSM to get additional information.

Before using these topics, you must already have CA MSM installed at your site. If you do not have CA MSM installed, you can download it from the Download Center at [the CA Support Online website](#), which also contains links to the complete documentation for CA MSM.

**Note:** The information in this section applies to the latest version of CA MSM. If you are using an earlier version, see the appropriate bookshelf on the CA Mainframe Software Manager product page.

## How to Use CA MSM: Scenarios

In the scenarios that follow, imagine that your organization recently deployed CA MSM to simplify the installation of CA Technologies products and unify their management. You have also licensed a new CA Technologies product. In addition, you have a number of existing CSIs from previously installed products.

- The first scenario shows how you can use CA MSM to acquire the product.
- The second scenario shows how you can use CA MSM to install the product.
- The third scenario shows how you can use CA MSM to maintain products already installed in your environment.
- The fourth scenario shows how you can use CA MSM to deploy the product to your target systems.

## How to Acquire a Product

The *Product Acquisition Service (PAS)* facilitates the acquisition of mainframe products and the service for those products, such as program temporary fixes (PTFs). The PAS retrieves information about the products to which your site is entitled and records these entitlements in a software inventory maintained on your driving system.

You can use the PAS component of CA MSM to acquire a CA Technologies product.

**Follow these steps:**

1. Set up a CA Support Online account.

To use CA MSM to acquire or download a product, you must have a CA Support Online account. If you do not have an account, you can create one on [the CA Support Online website](#).

2. Determine the CA MSM URL for your site.

To [access CA MSM](#) (see page 23), you require its URL. You can get the URL from your site's CA MSM administrator and log in using your z/OS credentials. When you log in for the first time, you are prompted to create a CA MSM account with your credentials for [the CA Support Online website](#). This account enables you to download product packages.

3. Log in to CA MSM and go to the Software Catalog page to locate the product that you want to manage.

After you log in to CA MSM, you can see the products to which your organization is entitled on the Software Catalog tab.

If you cannot find the product you want to acquire, update the catalog. CA MSM refreshes the catalog through [the CA Support Online website](#) using the site IDs associated with your credentials for [the CA Support Online website](#).

4. Download the product installation packages.

After you find your product in the catalog, you can download the product installation packages.

CA MSM downloads (acquires) the packages (including any maintenance packages) from the CA FTP site.

After the acquisition process completes, the product is ready for you to install or maintain.

## How to Install a Product

The *Software Installation Service (SIS)* facilitates the installation and maintenance of mainframe products in the software inventory of the driving system, including browsing downloaded software packages, managing SMP/E consolidated software inventories (CSIs) on the driving system, and automating installation tasks.

You can use the SIS component of CA MSM to install a CA Technologies product.

**Follow these steps:**

1. Initiate product installation and review product information.
2. Select an installation type.
3. Review installation prerequisites if any are presented.

4. Do *one* of the following to select a CSI:
  - Create a new CSI:
    - a. Set up the global zone.
    - b. Create a target zone.
    - c. Create a distribution zone.
  - Use an existing CSI from your working set:
    - a. Update the global zone.
    - b. Set up the target zone: either create a new target zone or use an existing target zone.
    - c. Set up the distribution zone: either create a new distribution zone or use an existing distribution zone.
5. Review the installation summary and start the installation.

After the installation process completes, the product is ready for you to deploy. You may have to perform other steps manually outside of CA MSM before beginning the deployment process.

## How to Maintain Existing Products

If you have existing CSIs, you can bring those CSIs into CA MSM so that you can maintain all your installed products in a unified way from a single web-based interface.

You can use the PAS and SIS to maintain a CA Technologies product.

### Follow these steps:

1. Migrate the CSI to CA MSM to maintain an existing CSI in CA MSM.  
During the migration, CA MSM stores information about the CSI in the database.
2. Download the latest maintenance for the installed product releases from the Software Catalog tab.

If you cannot find a release (for example, because the release is old), you can add the release to the catalog manually and then update the release to download the maintenance.

3. Apply the maintenance.

**Note:** You can also install maintenance to a particular CSI from the SMP/E Environments tab.

After the maintenance process completes, the product is ready for you to deploy. You may have to perform other steps manually outside of CA MSM before beginning the deployment process.

## How to Deploy a Product

The *Software Deployment Service (SDS)* facilitates the deployment of mainframe products from the software inventory of the driving system to the target system, including deploying installed products that are policy driven with a set of appropriate transport mechanisms across a known topology.

You can use the SDS component of CA MSM to deploy a CA Technologies product that you have already acquired and installed.

### Follow these steps:

1. Set up the system registry:
  - a. Determine the systems you have at your enterprise.
  - b. Set up remote credentials for those systems.
  - c. Set up the target systems (Non-Sysplex, Sysplex or Monoplex, Shared DASD Cluster, and Staging), and validate them.
  - d. Add FTP information, including data destination information, to each system registry entry.
2. Set up methodologies.
3. Create the deployment, which includes completing each step in the New Deployment wizard.

After creating the deployment, you can save it and change it later by adding and editing systems, products, custom data sets, and methodologies, or you can deploy directly from the wizard.

**Note:** If you must deploy other products to the previously defined systems using the same methodologies, you must create a separate deployment.

4. Deploy the product, which includes taking a snapshot, transmitting to target, and deploying (unpacking) to your mainframe environment.

After the deployment process completes, the product is ready for you to configure. You may have to perform other steps manually outside of CA MSM before beginning the configuration process.

## Access CA MSM Using the Web-Based Interface

You access CA MSM using the web-based interface. Obtain the URL of CA MSM from the CA MSM administrator.

### Follow these steps:

1. Start your web browser, and enter the access URL.

The login page appears.

**Note:** If the Notice and Consent Banner appears, read the information provided, and click the link to confirm it.

2. Enter your z/OS login user name and password, and click the Log In button.

The initial page appears. If you log in for the first time, you are prompted to define your account on [the CA Support Online website](#).

**Note:** For more information about the interface, click the Help link at the top right corner of the page.

3. Click New.

You are prompted for the credentials to use on [the CA Support Online website](#).

**Important!** The account to which the credentials apply *must* have the Product Display Options set to BRANDED PRODUCTS. You can view and update your account preferences by logging into [the CA Support Online website](#) and clicking My Account. If you do not have the correct setting, you are not able to use CA MSM to download product information and packages.

4. Specify the credentials, click OK, and then click Next.

You are prompted to review your user settings.

**Note:** These settings are available on the User Settings page.

5. Change the settings or keep the defaults, and then click Finish.

A dialog shows the progress of the configuration task. You can click Show Results to view the details of the actions in a finished task.

**Important!** If your site uses proxies, review your proxy credentials on the User Settings, Software Acquisition page.

## Install the Linux Agent

The Linux agent software is packaged in an RPM file. During the SMP/E installation process, the file is placed in a nominated z/OS UNIX file system directory. The file name has the following format:

```
ca1xagnt-v.r-1.s390x.rpm
```

**Follow these steps:**

1. Transfer the file to a Linux on z/VM system into the following directory:
  - For SuSE, `/usr/src/packages/RPMS/s390x`
  - For Red Hat, `/usr/src/redhat/RPMS/s390x`
2. Install the Linux agent software using the following command:

```
rpm -Uhv rpm_file_name
```

**Note:** Maintenance of the Linux agent is by upgrading to a new RPM file.

# Chapter 4: Installing Your Product from Pax-Enhanced ESD

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This section contains the following topics:

[How to Install a Product Using Pax-Enhanced ESD](#) (see page 25)

[Allocate and Mount a File System](#) (see page 31)

[Copy the Product Pax Files into Your USS Directory](#) (see page 34)

[Create a Product Directory from the Pax File](#) (see page 39)

[Copy Installation Files to z/OS Data Sets](#) (see page 40)

[Unload the Install Utility](#) (see page 41)

[How to Install Products Using Native SMP/E JCL](#) (see page 42)

[Install the Software in an SMP/E Environment](#) (see page 42)

[Clean Up the USS Directory](#) (see page 44)

[Maintenance](#) (see page 45)

[Install the Linux Agent](#) (see page 51)

**Note:** When you have completed the procedures in this section, go to [Configuring Your Product](#) (see page 63).

## How to Install a Product Using Pax-Enhanced ESD

This section describes the Pax-Enhanced ESD process. We recommend that you read this overview and follow the entire procedure the first time you complete a Pax-Enhanced ESD installation. For experienced UNIX users, the *Pax-Enhanced ESD Quick Reference Guide* has sufficient information for subsequent installations.

**Important!** Downloading pax files for the SMP/E installation as part of the Pax-Enhanced ESD process requires write authority to the UNIX System Services (USS) directories used for the ESD process.

If you prefer not to involve all CA Technologies product installers with z/OS UNIX System Services, assign a group familiar with USS to perform Steps 1 through 4 and provide the list of the unpacked MVS data sets to the product installer. USS is not required for the actual SMP/E RECEIVE of the product or for any of the remaining installation steps.

To install files using Pax-Enhanced ESD, use the following process:

1. Allocate and mount the file system. This process requires a USS directory to receive the pax file and to perform the unpack steps. We recommend that you allocate and mount a file system dedicated to Pax-Enhanced ESD and create the directory in this file system. Ensure that all users who will be working with pax files have write authority to the directory.
2. Copy the product pax files into your USS directory. To download files, choose one of the following options:
  - Download a zip file from CA Support Online to your PC, unzip the file, and then upload the product pax files to your USS file system.
  - FTP the pax files from CA Support Online directly to your USS directory.

**Note:** Perform Steps 3 through 6 for each pax file that you upload to your USS directory.
3. Create a product directory from the pax file. Set the current working directory to the directory containing the pax file, and create a new directory in your USS directory by entering the following command:  

```
pax -rvf pax-filename
```
4. Use the SMP/E GIMUNZIP utility to create z/OS installation data sets. The file UNZIPJCL in the directory created by the pax command in Step 3 contains a sample job to GIMUNZIP the installation package. Edit and submit the UNZIPJCL job.
5. Proceed with product installation. Consult product-specific documentation, including AREADME files and installation notes to complete the product installation.
6. (Optional) Clean up the USS directory. Delete the pax file, the directory created by the pax command, all of the files in it, and the SMP/E RELFILES, SMPMCS, and HOLDDATA data sets.

**More Information:**

[USS Environment Setup](#) (see page 30)

[Allocate and Mount a File System](#) (see page 31)

[Copy the Product Pax Files into Your USS Directory](#) (see page 34)

[Create a Product Directory from the Pax File](#) (see page 39)

[Copy Installation Files to z/OS Data Sets](#) (see page 40)

## How the Pax-Enhanced ESD Download Works

**Important!** To download pax files for the SMP/E installation as part of the Pax-Enhanced ESD process, you must have write authority to the UNIX System Services (USS) directories used for the ESD process and available USS file space before you start the procedures in this guide.

Use the following process to download files using Pax-Enhanced ESD:

1. Log in to <https://support.ca.com/>, and click Download Center.

The CA Support Online web page appears.

2. Under Download Center, select Products from the first drop-down list, and specify the product, release, and genlevel (if applicable), and click Go.

The CA Product Download window appears.

3. Download an entire CA Technologies product software package or individual pax files to your PC or mainframe. If you download a zip file, you must unzip it before continuing.

For both options, [The ESD Product Download Window](#) (see page 27) topic explains how the download interface works.

**Note:** For traditional installation downloads, see the *Traditional ESD User Guide*. Go to <https://support.ca.com/>, log in, and click Download Center. A link to the guide appears under the Download Help heading.

4. Perform the steps to install the product based on the product-specific steps.

The product is installed on the mainframe.

## ESD Product Download Window

CA Technologies product ESD packages can be downloaded multiple ways. Your choices depend on the size of the individual files and the number of files you want to download. You can download the complete product with all components or you can select individual pax and documentation files for your product or component.

The following illustration shows sample product files. It lists all components of the product. You can use the Download Cart by checking one or more components that you need or check the box for Add All to cart. If you prefer to immediately download a component, click the Download link.

**CA Earl - MVS**

- » [Pax Enhanced Electronic Software Delivery \(ESD\) Guide](#)
- » [Pax Enhanced Electronic Software Delivery \(ESD\) Quick Reference Guide](#)
- » [Traditional Electronic Software Delivery \(ESD\) Guide](#)
- » [Learn more about Using pkzip with your Downloaded Mainframe Products](#)
- » [Learn more about downloading components of CA product](#)

If you have comments or suggestions about CA product documentation, send a message to [techpubs@ca.com](mailto:techpubs@ca.com).

[View Download Cart](#)

**Add All to cart**

Product Components				Add to cart	Download
<b>CA COMMON SERVICES PROD PKG</b> 11SP08AW000.pax.Z	11.0 /SP08	03/31/2010	407MB	<input type="checkbox"/>	<a href="#">Download</a>
<b>CA EARL PRODUCT PACKAGE</b> 610106AEO00.pax.Z	6.1 /0106	03/31/2010	1MB	<input type="checkbox"/>	<a href="#">Download</a>
<b>EARL PIPPACK</b> AEO61010600.pdf	6.1 /0106	03/31/2010	93KB	<input type="checkbox"/>	<a href="#">Download</a>
<b>EARL INSTALL GUIDE MANUAL</b> I2J2ED610NE.pdf	6.1 /0000	03/31/2010	361KB	<input type="checkbox"/>	<a href="#">Download</a>
<b>CA COMMON SERVICES COVER LTR</b> QI92742.pdf	11.0 /SP08	03/31/2010	46KB	<input type="checkbox"/>	<a href="#">Download</a>

Clicking the link for an individual component takes you to the Download Method page.

### Download Method

---

Please choose a download method to complete your download request. [Learn More](#)

---

**HTTP via Download Manager**  
This is the CA recommended method for download. The Download Manager allows you to download your files faster and more efficiently.  
[Download](#)

---

**HTTP via Internet Browser**  
If Download Manager cannot be used or fails to start you may access your file(s) via your internet browser.  
[View File Link\(s\)](#)

---

**FTP**  
This method allows you to download your file(s) via FTP from CA's content delivery network or via native FTP servers.  
**Note:** Processing is required and an email notification will be sent when your request is ready for downloading.  
[FTP Request](#)

Depending on the size and quantity of product files ordered, the Download Method screen could also have these options:

**Note:** For mainframe downloads using this HTTP method, click the Learn More link.

### Download Method

---

Please choose a download method to complete your download request. [Learn More](#)

---

**HTTP via Download Manager**  
This is the CA recommended method for download. The Download Manager allows you to download your files faster and more efficiently.  
[Download](#)

---

**Create a Zip File**  
This method allows you to bundle your download files into one or more zip files of up to 3.5 GB each. These zip files can then be downloaded via HTTP or FTP.  
**Note:** Processing is required and an email notification will be sent when your request is ready for downloading.  
[Create Zip](#)

The HTTP method lets you start downloading immediately. The FTP method takes you to the Review Orders page that displays your order, first in a Pending status changing to Ready when your order has been processed.

Preferred FTP uses the new content delivery network (CDN). Alternate FTP uses the CA Technologies New York-based FTP servers.

The Create a Zip File option first creates the zip, and when ready, offers the options shown by the Zip Download Request examples in the next screen.

**Review Download Requests**

Below is a list of the FTP and large HTTP downloads that have been requested by your site. When status is set to 'Ready' a link will appear.

- For FTP requests, click on the FTP link to view the path information for your download. For more information view our [FTP Help document](#)
- For HTTP requests, click on the HTTP link to initiate your download.
- To view the details of your request, click on the desired order number.

**Today's Downloads**

Order #	Status	Description	Date Placed	Download Options
<a href="#">10000961</a>	Ready	FTP Download Request	04/30/2010	<a href="#">Preferred FTP</a> ▼   <a href="#">Alternate FTP</a> ▼

**Previous 6 day Download History**

Order #	Status	Description	Date Placed	Download Options
<a href="#">10000949</a>	Ready	ZIP Download Request	04/29/2010	<a href="#">HTTP via DLM</a>   <a href="#">Preferred FTP</a> ▼   <a href="#">Alternate FTP</a> ▼
<a href="#">10000948</a>	Ready	ZIP Download Request	04/29/2010	<a href="#">HTTP via DLM</a>   <a href="#">Preferred FTP</a> ▼   <a href="#">Alternate FTP</a> ▼

## USS Environment Setup

You need a UNIX System Services (USS) directory and a file system with adequate space to perform the following tasks:

- Receive product pax files from CA Support Online.
- Perform utility functions to unpack the pax file into MVS data sets that you can use to complete the product installation.

We recommend that you allocate and mount a file system dedicated to Pax-Enhanced ESD. The amount of space that you need for the file system depends on the following variables:

- The size of the pax files that you intend to download.
- Whether you plan to keep the pax files after unpacking them. We do not recommend this practice.

We recommend that you use one directory for downloading and unpacking pax files. Reusing the same directory minimizes USS setup. You need to complete the USS setup only one time. You reuse the same directory for subsequent downloads. Alternatively, you can create a new directory for each pax download.

**Important!** Downloading pax files for the SMP/E installation as part of the Pax-Enhanced ESD process requires write authority to the UNIX System Services (USS) directories used for the ESD process. In the file system that contains the ESD directories, you also need free space approximately 3.5 times the pax file size to download the pax file and unpack its contents. For example, to download and unpack a 14 MB pax file, you need approximately 49 MB of free space in the file system hosting your ESD directory.

## Allocate and Mount a File System

You can use the zSeries File System (zFS) or hierarchical file system (HFS) for ESD downloads.

This procedure describes how to perform the following tasks:

- Allocate a zFS or an HFS.
- Create a mount point in an existing maintenance USS directory of your choice.
- Mount the file system on the newly created mount point.

**Note:** You must have SUPERUSER authority to do this.

- Optionally, permit write access to anyone in the same group as the person who created the directory.

**Important!** USS commands are case-sensitive.

**Follow these steps:**

1. Allocate the file system by customizing one of the following samples to your site's requirements:

- On a zFS, use the following sample:

```
//DEFINE EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//AMSDUMP DD SYSOUT=*
//SYSIN DD *
  DEFINE CLUSTER ( +
    NAME(your_zFS_dataset_name) +
    STORAGECLASS(class) +
    LINEAR +
    CYL(primary secondary) +
    SHAREOPTIONS(3,3) +
  )
/*
//FORMAT EXEC PGM=IOEAGFMT,REGION=0M,
// PARM=(' -aggregate your_zFS_dataset_name -compat')
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//STDOUT DD SYSOUT=*
//STDERR DD SYSOUT=*
//CEEDUMP DD SYSOUT=*
/*
```

- On an HFS, use the following sample:

```
//ALCHFS EXEC PGM=IEFBR14
//CAESD DD DSN=yourHFS_dataset_name,
// DISP=(NEW,CATLG,DELETE),UNIT=3390,
// DSNTYPE=HFS,SPACE=(CYL,(primary,secondary),1)
```

The file system is allocated.

**Note:** Ensure that the zFS or HFS data set name that you use conforms to your data set naming conventions for USS file systems. If the allocation of the file system data set fails, it is because of environmental settings not allowing for the allocation. On an HFS, try using the ISPF 3.2 Data Set Utility to allocate your HFS data set.

2. Create a mount point for the file system. This example shows how to create a /CA/CAESD directory in an existing directory, /u/maint. From the TSO OMVS shell, enter the following commands:

```
cd /u/maint/  
mkdir CA  
cd CA  
mkdir CAESD
```

**Note:** This document refers to this structure as *yourUSSESDdirectory*.

The mount point is created.

3. Mount the file system by customizing one of the following samples to your site's requirements:

- On a zFS, use the following sample:

```
MOUNT FILESYSTEM('your_zFS_dataset_name')  
MOUNTPOINT('yourUSSESDdirectory')  
TYPE(ZFS) MODE(RDWR)  
PARM(AGGRGROW)
```

- On an HFS, use the following sample:

```
MOUNT FILESYSTEM('your_HFS_dataset_name')  
MOUNTPOINT('yourUSSESDdirectory')  
TYPE(HFS) MODE(RDWR)
```

The file system is mounted.

4. (Optional) Set security permissions for the directory. You can use the chmod command to let other users access the ESD directory and its files. For example, to allow write access to the ESD directory for other users in your USS group, from the TSO OMVS shell, enter the following command:

```
chmod -R 775 /yourUSSESDdirectory/
```

Write access is granted.

**Note:** For more information about the chmod command, see the IBM *z/OS UNIX System Services User Guide (SA22-7802)*.

## Copy the Product Pax Files into Your USS Directory

To begin the CA Technologies product installation procedure, copy the product's pax file into the USS directory you set up. Use one of the following methods:

- Download the product pax files directly from the CA Support Online FTP server to your z/OS system.
- Download the product pax file from the CA Support Online FTP server to your PC, and upload it to your z/OS system.
- Download the product file from CA Support Online to your PC. If your download included a zip file, unzip the file, and upload the unzipped pax files to your z/OS system.

This section includes a sample batch job to download a product pax file from the CA Support Online FTP server directly to a USS directory on your z/OS system and sample commands to upload a pax file from your PC to a USS directory on your z/OS system.

**Important!** The FTP procedures vary due to local firewall and other security settings. Consult your local network administrators to determine the appropriate FTP procedure to use at your site.

Ensure that sufficient free space is available in the USS file system you are using for Pax-Enhanced ESD to hold the product pax file. If you do not have sufficient free space, error messages similar to the following appear:

```
EZA1490I Error writing to data set  
EZA2606W File I/O error 133
```

When the download finishes, the pax file size in your USS directory matches the value in the Size column for the corresponding pax file on the CA Technologies Products Download window.

### More Information:

[How the Pax-Enhanced ESD Download Works](#) (see page 27)  
[ESD Product Download Window](#) (see page 27)

## Download Using Batch JCL

Use this process to download a pax file from the CA Support Product Downloads window by running batch JCL on the mainframe. Use the sample JCL attached to the PDF file as CAt>Mainframe.txt to perform the download.

**Important!** To simplify the Pax-Enhanced ESD process, the PDF version of this guide includes a sample JCL job that you can copy directly to the mainframe. To access this job, click the paper clip icon in the lower left corner of the PDF reader. This opens a window displaying attachments. Double-click the file to view the sample JCL.

**Note:** We recommend that you follow the preferred method as described on CA Support Online. This procedure is our preferred download method; however, we do include the procedure to download to the mainframe through a PC in the next section.

### Follow these steps:

1. Supply a valid JOB statement.
2. Replace *yourTCPIP.PROFILE.dataset* with the name of the TCP/IP profile data set for your system. Consult your local network administrators, if necessary.  
The job points to your profile.
3. Replace *YourEmailAddress* with your email address.  
The job points to your email address.
4. Replace *yourUSSESDdirectory* with the name of the USS directory that you use for ESD downloads.  
The job points to your USS directory.
5. Locate the product component to download on the CA Support Product Download window.  
You have identified the product component to download.
6. Click Download for the applicable file.  
**Note:** For multiple downloads, add files to a cart.  
The Download Method window opens.
7. Click FTP Request.  
The Review Download Requests window displays any files that you have requested to download.  
**Note:** We send you an email when the file is ready to download or a link appears in this window when the file is available.

8. Select one of the following methods:

**Preferred FTP**

Uses CA Technologies worldwide content delivery network (CDN). If you are not able to download using the Preferred FTP method, check the security restrictions for all servers that company employees can download from that are outside of your corporate network.

**Host Name:** ftp://ftpdnloads.ca.com

**Alternate FTP**

Uses the original download servers that are based on Long Island, New York.

**Host Name:** ftp://scftpd.ca.com for product files and download cart files and ftp://ftp.ca.com for individual solution files.

Both methods display the host, user name, password, and FTP location, which you then can copy into the sample JCL.

**Note:** For details regarding FTP, see the FTP Help document link in the Review Download Requests window and the Learn More link available in the Download Methods window.

9. Submit the job.

**Important!** If your FTP commands are incorrect, it is possible for this job to fail and still return a zero condition code. Read the messages in the job DDNAME SYSPRINT to verify the FTP succeeded.

After running the JCL, the pax file resides in the mainframe USS directory that you supplied.

**Example: CAtoMainframe.txt, JCL**

The following text appears in the attached CAtoMainframe.txt JCL file:

```
//GETPAX JOB (ACCOUNTNO),'FTP GET ESD PACKAGE',
//          MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID
//*****
/* This sample job can be used to download a pax file directly from *
/* CA Support Online to a USS directory on your z/OS system.      *
/*                                                                *
/* When editing the JCL ensure that you do not have sequence numbers *
/* turned on.                                                    *
/*                                                                *
/* This job must be customized as follows:                       *
/* 1. Supply a valid JOB statement.                              *
/* 2. The SYSTCPD and SYSFTPD JCL DD's statements in this JCL maybe *
/* optional at your site. Remove the statements that are not    *
/* required. For the required statements, update the data set   *
/* names with the correct site specific data set names.        *
/* 3. Replace "Host" based on the type of download method.      *
/* 4. Replace "YourEmailAddress" with your email address.       *
/* 5. Replace "yourUSSESDdirectory" with the name of the USS    *
/* directory used on your system for ESD downloads.            *
/* 6. Replace "FTP Location" with the complete path              *
/* and name of the pax file obtained from the FTP location     *
/* of the product download page.                                *
//*****
//GETPAX EXEC PGM=FTP,REGION=0K
//SYSTCPD DD DSN=yourTCPIP.PROFILE.dataset,DISP=SHR
//SYSFTPD DD DSN=yourFTP.DATA.dataset,DISP=SHR
//SYSPRINT DD SYSOUT=*
//OUTPUT DD SYSOUT=*
//INPUT DD *
Host
anonymous YourEmailAddress
lcd yourUSSESDdirectory
binary
get FTP location
quit
```

## Download Files to Mainframe through a PC

If you download pax or zip files from CA Support Online to your PC, use this procedure to upload the pax file from your PC to your z/OS USS directory.

### Follow these steps:

1. Follow the procedures in How the Pax-Enhanced ESD Download Works to download the product pax or zip file to your PC. If you download a zip file, first unzip the file to use the product pax files.

The pax or zip file resides on your PC.

2. Open a Windows command prompt.

The command prompt appears.

3. Customize and enter the FTP commands with the following changes:
  - a. Replace *mainframe* with the z/OS system's IP address or DNS name.
  - b. Replace *userid* with your z/OS user ID.
  - c. Replace *password* with your z/OS password.
  - d. Replace *C:\PC\folder\for\thePAXfile* with the location of the pax file on your PC.
  - e. Replace *yourUSSESDdirectory* with the name of the USS directory that you use for ESD downloads.
  - f. Replace *paxfile.pax.Z* with the name of the pax file to upload.

The pax file is transferred to the mainframe.

### Example: FTP Commands

This list is a sample of FTP commands to upload the pax file from your PC to your USS Pax-Enhanced ESD directory:

```
ftp mainframe
userid
password
bin
lcd C:\PC\folder\for\thePAXfile
cd /yourUSSESDdirectory/
put paxfile.pax.Z
quit
exit
```

## Create a Product Directory from the Pax File

Use the sample job attached to the PDF file as `Unpackage.txt` to extract the product pax file into a product installation directory.

**Important!** To simplify the Pax-Enhanced ESD process, the PDF version of this guide includes a sample JCL job that you can copy directly to the mainframe. To access this job, click the paper clip icon in the lower left corner of the PDF reader. This opens a window displaying attachments. Double-click the file to view the sample JCL.

### Follow these steps:

1. Supply a valid JOB statement.
2. Replace *yourUSSESDdirectory* with the name of the USS directory that you use for ESD downloads.

The job points to your specific directory.

3. Replace *paxfile.pax.Z* with the name of the pax file.

The job points to your specific pax file.

4. Submit the job.

The job runs and creates the product directory.

**Note:** After making the changes noted in the job, if the `PARM=` statement exceeds 71 characters, uncomment and use the second form of `UNPAXDIR` instead. This sample job uses an X in column 72 to continue the `PARM=` parameters to a second line.

## Sample Job to Execute the Pax Command (Unpackage.txt)

The following text appears in the attached Unpackage.txt JCL file:

```
//ESDUNPAX JOB (ACCOUNTNO),'UNPAX ESD PACKAGE ',
// MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID
//*****
//* This sample job can be used to invoke the pax command to create  *
//* the product-specific installation directory.                      *
//*                                                                    *
//* This job must be customized as follows:                          *
//* 1. Supply a valid JOB statement.                                 *
//* 2. Replace "yourUSSESDdirectory" with the name of the USS       *
//*    directory used on your system for ESD downloads.             *
//* 3. Replace "paxfile.pax.Z" with the name of the pax file.      *
//* NOTE: If you continue the PARM= statement on a second line, make *
//*    sure the 'X' continuation character is in column 72.        *
//*****
//UNPAXDIR EXEC PGM=BPXBATCH,
// PARM='sh cd /yourUSSESDdirectory/; pax -rvf paxfile.pax.Z'
//*UNPAXDIR EXEC PGM=BPXBATCH,
//* PARM='sh cd /yourUSSESDdirectory/; pax                          X
//          -rvf paxfile.pax.Z'
//STDOUT DD SYSOUT=*
//STDERR DD SYSOUT=*
```

## Copy Installation Files to z/OS Data Sets

Use this procedure to invoke the SMP/E GIMUNZIP utility to create MVS data sets from the files in the product-specific directory.

### Follow these steps:

1. Locate and read the product readme file or installation notes, if applicable, which resides in the product-specific directory that the pax command created. This file contains product-specific details you need to complete the installation procedure.

You have identified product-specific installation details.

2. Use ISPF EDIT or TSO ISHELL to edit the UNZIPJCL sample job. You can perform this step in one of the following ways:
  - Use ISPF EDIT. Specify the full path name of the UNZIPJCL file.
  - Use TSO ISHELL. Navigate to the UNZIPJCL file and use the E line command to edit the file.

The job is edited.

3. Change the SMPDIR DD PATH to the product-specific directory created by the pax command.

Your view is of the product-specific directory.

4. If ICSF is not active, perform the following steps:
  - a. Change the SMPJHOME DD PATH to your Java runtime directory. This directory varies from system to system.
  - b. Perform one of the following steps:
    - Change the SMPCPATH DD PATH to your SMP/E Java application classes directory, usually /usr/lpp/smp/classes/.
    - Change HASH=YES to HASH=NO on the GIMUNZIP parameter.

One of the following occurs: ICSF is active or you are using Java.

5. Change all occurrences of *YourHLQ* to the high-level qualifier (HLQ) for z/OS data sets used by the installation process. We suggest that you use a unique HLQ for each expanded pax file to uniquely identify the package. Do not use the same value for *yourHLQ* as you will use for the SMP/E RELFILES.

All occurrences of *YourHLQ* are set to your high-level qualifier for z/OS data sets.

6. Submit the UNZIPJCL job.

The UNZIPJCL job completes with a zero return code. Messages GIM69158I and GIM48101I in the output and IKJ56228I in the JES log are acceptable.

GIMUNZIP creates z/OS data sets with the high-level qualifier you specified in the UNZIPJCL job. You use these data sets to perform the product installation. The pax file and product-specific directory are no longer needed at this point.

**Note:** For more information, see the IBM Reference Manual, *SMP/E for z/OS Reference (SA22-7772)*.

## Unload the Install Utility

The installation utility software lets you generate and run the JCL required to install your product. The installation utility software is delivered electronically with ESD.

The installation software unloads into the *dsnpref.CAI.LX10.CC2DJCL* data set; *dsnpref* is a prefix you specify for your product data sets.

After you unzip the data sets, do *one* of the following:

- Rename *dsnpref.CAI.LX10.CC2DJCL* to *dsnpref.LX10.CC2DJCL*
- Copy the members in *dsnpref.CAI.LX10.CC2DJCL* into *dsnpref.LX10.CC2DJCL*

## How to Install Products Using Native SMP/E JCL

The following steps describe the process to install products using native SMP/E JCL:

1. Allocate product data sets and SMP/E data sets.
2. Create SMP/E CSI.
3. Receive base functions.
4. Apply base functions.
5. Accept base functions.
6. Configure the product according to your site requirements.

## Install the Software in an SMP/E Environment

During the installation process, you provide the site-specific installation information that you previously collected. This information is used to generate the installation JCL jobs.

The installation process creates the *dsnpref.LX10.INSTDB* database to store details of each installation that you perform. These details include the installation values that you specify.

### Follow these steps:

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

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

The Install Utility panel appears.

**Note:** On each of the Install Utility panels, you can use the following keys:

- Enter to proceed to the next panel
- F1 to display online help
- F3 to return to the previous panel
- F4 to exit and return to the main menu

2. Press Enter.

The Install Utility Primary Menu panel appears.

3. Enter **1**.

The Parameters Primary Menu panel appears.

4. Enter **A** to start the parameter review process.

The first of a sequence of Parameters panels appears.

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

6. Enter **2** to start the installation process.

The INSTALLATION Primary Menu panel appears.

7. Enter **1**.

The installation software generates a series of jobs in the *dsnpref.LX10.CNTL* JCL data set.

**Note:** Jobs can be submitted from the panel or directly from this data set after exiting the panel.

8. Submit and run the following installation jobs in sequence. Do not proceed with any job until the previous job has completed successfully.

Each job should return condition code 0 unless otherwise indicated.

**I01ALLOC**

Allocates the data sets.

The I01ALLOC member allocates CC2DLOAD as a load library of the PDS type. Do not change it to a PDS/E type because the type is not supported.

**I02INSMP**

Initializes the SMP/E data sets.

**I03RCSMP**

Performs an SMP/E RECEIVE.

**I04AKSMP**

(Optional) Performs an SMP/E APPLY CHECK.

**I05RSSMP**

Performs an SMP/E RESTORE. This job is provided as a sample.

**I06APSMP**

Performs an SMP/E APPLY.

**I07ACSMP**

Performs an SMP/E ACCEPT.

9. Press F3.

You are returned to the Primary Menu panel.

## Clean Up the USS Directory

**Important!** This procedure is optional. Do not use this procedure until you complete the entire installation process.

To free file system disk space for subsequent downloads after downloading and processing the pax files for your CA Technologies product, we recommend removing the files from your USS directory and deleting unnecessary MVS data sets. You can delete the following items:

- Pax file
- Product-specific directory created by the pax command and all of the files in it
- SMP/E RELFILEs, SMPMCS, and HOLDDATA MVS data sets

These data sets have the HLQ that you assigned in the UNZIPJCL job.

**Note:** Retain non-SMP/E installation data sets such as *yourhlq*.INSTALL.NOTES for future reference.

### Follow these steps:

1. Navigate to your Pax-Enhanced ESD USS directory.

Your view is of the applicable USS directory.

2. Delete the pax file by entering the following command:

```
rm paxfile
```

***paxfile***

Specifies the name of the CA Technologies pax file that you downloaded.

The pax file is deleted.

3. Delete the product-specific directory by entering the following command:

```
rm -r product-specific-directory
```

***product-specific-directory***

Specifies the product-specific directory created by the pax command.

The product-specific directory is deleted.

**Note:** You can also use TSO ISHELL to navigate to the pax file and product-specific directory, and delete them using the D line command.

## Maintenance

Maintenance includes program temporary fixes (PTFs) that supersede all authorized program analysis reports (APARs) that were created up to that time. Details of the superseded APARs are available as comments within the PTFs.

### Product Maintenance

**Important!** The *dsnpref.LX10.CC2DLINK* data set must be in your system LNKLST before you start maintenance. You can also create a STEPLIB to the data set name (DSN) in your TSOPROC (that is, allocate it to ISPLLIB). If you installed the product using CA MSM, you must use CA MSM to apply maintenance.

Product maintenance is provided as system modification program (SMP) fixes. The fixes consist of PTFs applied using the IBM System Modification Program Extended (SMP/E) tool.

**Note:** If an installed SMP fix contains maintenance for the VSAM data sets, you must update those data sets for each region you have set up.

## Apply Maintenance

This section describes how to apply individual SMP fixes using the product's Install Utility.

**Note:** Individual SMP fixes are only available from the [CA Technical Support site](#) (see page 3).

When you receive SMP fixes, unload them into one of the following:

- A sequential data set
- A member of a partitioned data set

Multiple SMP fixes can be appended into a single data set or member.

### Follow these steps:

1. Ensure that the *dsnpref.LX10.CC2DLINK* data set is in your system LNKLST.  
For example, include the following statement in the system LNKLST SYS1.PARMLIB(PROGxx):  

```
LNKLST ADD NAME(LNKLST00) DSNAME(dsnpref.LX10.CC2DLINK)
```
2. Access the ISPF/PDF Primary Menu, and select the COMMAND option.  
The ISPF Command Shell panel appears.
3. At the command prompt, enter and execute the following command:  

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

  
The Install Utility title panel appears.
4. Press Enter.  
The Install Utility Primary Menu panel appears.
5. Enter **5**.  
The MAINTENANCE Primary Menu panel appears.
6. Enter **3** (Apply individual SMP/E fixes from a DASD data set).  
The MAINTENANCE DASD Fixes Data Set Name panel appears.
7. Enter the data set name that contains the SMP fixes to be applied, and press Enter.  
The fixes are listed.
8. Review the list, deselect any fixes you do not require, and press Enter.  
The maintenance software generates the members in the *dsnpref.LX10.CNTL* data set. When generation is complete, a list of generated members and a description of what each member does appears.

- Submit and run the following jobs in sequence. Do *not* proceed with any job until the previous job has completed successfully. Each job returns condition code 0 unless otherwise indicated.

**My1RCSMP**

Performs an SMP/E RECEIVE on the maintenance and lists existing HOLDDATA and SOURCEIDs that are already applied. If a job step returns condition code 04, there is no HOLDDATA present.

Review the information. For any held APARs that you want to apply, add the correct BYPASS HOLDx operands to the corresponding APPLY control statement for those APARs. Add the operands by manually editing the My2AKSMP and My3APSMP jobs that contain the SMP control statements.

**Note:** For information about the BYPASS HOLDx operands, see the IBM *SMP/E Commands* guide.

**My2AKSMP**

Performs an SMP/E APPLY CHECK on the maintenance to identify conflicts.

**My3APSMP**

Performs an SMP/E APPLY on the maintenance.

**y**

Is a character that is used to identify the members generated from a fixes data set.

- Press F3.

The Install Utility Primary Menu panel appears.

If the fix contains maintenance for VSAM data sets (as indicated by HOLDDATA), continue with the [procedure to update the VSAM data sets for the regions you have set up](#) (see page 50). Otherwise, you have finished applying the fix.

## HOLDDATA

When you apply maintenance, you typically encounter SMP/E HOLDDATA. We use HOLDDATA to notify your SMP/E system of SYSMODs that have errors or special conditions. We support system and external HOLDDATA.

### System HOLDDATA

System HOLDDATA indicates data that is an in-stream part of the SYSMOD, informing you of special conditions. The following reasons are used with SYSTEM HOLDDATA for CA Mainframe Connector:

**ACTION**

Indicates that you must perform special processing before or after you apply this SYSMOD.

**AO**

Affects automated operations. It changes either the message identifier or the displacement of a field inside the message.

**DB2BIND**

Indicates that DBRMs have changed and packages need to be rebound.

**DDDEF**

Indicates that data sets and DDDEFs are being added or modified.

**DELETE**

Deletes the SYSMOD load module. You cannot reverse this type of SYSMOD with the SMP/E RESTORE command.

**DEP**

Indicates a dependency for this SYSMOD that you must externally verify.

**DOC**

Indicates a documentation change with this SYSMOD.

**SYSMOD**

Indicates that some or all of the elements delivered by this SYSMOD are to be downloaded to a workstation.

**DYNACT**

Describes the steps to dynamically activate this fix without performing an IPL.

**ENH**

Introduces a small programming enhancement. The hold contains the instructions to implement the enhancement. If no action is needed to implement the enhancement, give a summary of the enhancement.

**EXIT**

Indicates that changes delivered by this SYSMOD require reassembly of user exits.

**EXRF**

Indicates that the SYSMOD must be installed in both the Active and Alternate Extended Recovery Facility Systems.

**MULTSYS**

Apply this SYSMOD to multiple systems for either pre-conditioning, coexistence, or exploitation.

**RESTART**

Indicates that after applying this SYSMOD, the site must perform a special restart as opposed to a routine restart.

Code a bypass operand on your APPLY command to install SYSMODs that have internal holds. Code the bypass operand only after you have performed the required action, or if you are performing the action after the APPLY, if that is appropriate.

## External HOLDDATA

External HOLDDATA is not part of the PTF. It resides in a separate file. It is commonly used for SYSMODs that have been distributed and later are discovered to cause problems.

Download the external HOLDDATA from CA Support to a DASD file, and allocate the file to the SMPHOLD DD statement. To take care of the external HOLDDATA, receive it into your SMP/E environment. SMP/E receives the HOLDDATA from CA-supplied jobs.

If a SYSMOD has an unresolved hold error, SMP/E does not install it unless you add a bypass to your APPLY command. You can bypass an error hold in situations that are not applicable to you. Error holds that are not applicable to you can include a problem that happens only with a hardware device that you do not have or in a product feature that you do not use.

When CA publishes a SYSMOD that resolves the hold, the resolving SYSMOD supersedes the hold error. This action lets you apply the original SYSMOD in conjunction with the fixing SYSMOD.

A special HOLDDATA class called ERREL exists. We have determined that the problem fixed by the SYSMOD is more important than the one that it causes. We recommend that you apply these SYSMODs.

The only manual task is running a REPORT ERRSYSMODS. This report identifies the following:

- Any held SYSMODs already applied to your system.
- Any resolving SYSMODs that are in RECEIVE status.

SMP/E identifies the SYSMOD to apply to correct the situation.

## Update VSAM Data Sets

If an installed SMP fix contains maintenance for VSAM data sets, then, to complete maintenance, select maintenance Option V of the Install Utility. The option updates the data sets for the regions you have set up.

**Follow these steps:**

1. Access the ISPF/PDF Primary Menu, and select the COMMAND option.  
The ISPF Command Shell panel appears.
2. At the command prompt, enter and execute the following command:  

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

  
The Install Utility title panel appears.
3. Press Enter.  
The Install Utility Primary Menu panel appears.
4. Enter **5**.  
The MAINTENANCE Primary Menu panel appears.
5. Enter **V** (Update MODS, PANELS and OSCNTL data sets with installed maintenance).  
The MAINTENANCE MPO Data Sets panel appears.
6. Review the information, and press Enter.  
The maintenance software generates the members in the *dsnpref.LX10.CNTL* data set. When generation is complete, a list of generated members and a description of what each member does appears.
7. Submit and run the job Mz7RFRSH to update the VSAM data sets.  
**z**  
Is a character that is used to identify the members generated from a fixes data set that contains maintenance for VSAM data sets.  
**Note:** The utility also generates the following jobs: Mz90DUMP and Mz91REST. If a shared DASD is not available, the jobs help you deploy those updates to a target system. The Mz90DUMP job creates backup data set that include the updated VSAM data sets, which you deploy to the target system. This backup data set is *dsnpref.DFDSS.SHAREDz*. The Mz91REST job, when submitted on the target system, restores the updated VSAM data sets from the backup data sets.
8. Press F3.  
The Install Utility Primary Menu panel appears.
9. Press F4 to exit the Install Utility Primary Menu panel and return to the ISPF Command Shell panel, or continue with the other options.

## Install the Linux Agent

The Linux agent software is packaged in an RPM file. During the SMP/E installation process, the file is placed in a nominated z/OS UNIX file system directory. The file name has the following format:

```
ca1xagnt-v.r-1.s390x.rpm
```

**Follow these steps:**

1. Transfer the file to a Linux on z/VM system into the following directory:
  - For SuSE, /usr/src/packages/RPMS/s390x
  - For Red Hat, /usr/src/redhat/RPMS/s390x
2. Install the Linux agent software using the following command:

```
rpm -Uhv rpm_file_name
```

**Note:** Maintenance of the Linux agent is by upgrading to a new RPM file.



# Chapter 5: Installing Your Product from Tape

---

This section contains the following topics:

[Unload the Installation Software into a New Data Set from Tape](#) (see page 53)

[How to Install Products Using Native SMP/E JCL](#) (see page 55)

[Install the Software in an SMP/E Environment](#) (see page 55)

[Maintenance](#) (see page 56)

[Install the Linux Agent](#) (see page 62)

**Note:** When you have completed the procedures in this section, go to [Configuring Your Product](#) (see page 63).

## Unload the Installation Software into a New Data Set from Tape

The installation software helps install CA Mainframe Connector. The software is delivered on tape.

The installation software unloads into the *dsnpref.LX10.CC2DJCL* data set; *dsnpref* is a prefix you specify for your data sets.

If *dsnpref.LX10.CC2DJCL* does not exist and you are installing from tape, unload the installation software from the tape on to your DASD and into a new data set.

**Follow these steps:**

1. Create an unload job by copying the following JCL:

```
//jobname JOB .....
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DSN=CAI.SAMPJCL,
//          DISP=OLD,UNIT=?device_in,VOL=SER=?tapeser,
//          LABEL=(1,SL,EXPDT=98000)
//SYSUT2 DD DSN=?dsnpref.LX10.CC2DJCL,
//          DISP=(NEW,CATLG,DELETE),
//          UNIT=?device_out,VOL=SER=?volser,
//          SPACE=(CYL,(10,1,120)),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=0)
//SYSIN DD DUMMY
```

**Important!** The SYSUT2 data set name must end with LX10.CC2DJCL.

2. Replace the variables prefixed with a question mark (?) with your own values as follows:

**?device\_in**

Specifies the tape drive unit to mount the tape.

**?tapeser**

Specifies the tape volume serial number. The complete value is printed on the label of your tape.

**?dsnpref**

Specifies the data set prefix to use for the installation and maintenance data sets. Do not include the name of your planned product region in the prefix. If the data set high-level qualifiers you are using do not exist, define an alias entry in the master catalog.

**Limits:** 29 characters

**?device\_out**

Specifies the type of the DASD device where you want to place the installation software.

**?volser**

Specifies the volume serial number of the DASD.

If SMS controls SYSUT2 allocation, replace UNIT= and VOL=SER= with STORCLAS=?storclass.

3. Submit and run the job.
4. Check that the job successfully completed.

## How to Install Products Using Native SMP/E JCL

The following steps describe the process to install products using native SMP/E JCL:

1. Allocate product data sets and SMP/E data sets.
2. Create SMP/E CSI.
3. Receive base functions.
4. Apply base functions.
5. Accept base functions.
6. Configure the product according to your site requirements.

## Install the Software in an SMP/E Environment

During the installation process, you provide the site-specific installation information that you previously collected. This information is used to generate the installation JCL jobs.

The installation process creates the *dsnpref.LX10.INSTDB* database to store details of each installation that you perform. These details include the installation values that you specify.

### Follow these steps:

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

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

The Install Utility panel appears.

**Note:** On each of the Install Utility panels, you can use the following keys:

- Enter to proceed to the next panel
- F1 to display online help
- F3 to return to the previous panel
- F4 to exit and return to the main menu

2. Press Enter.

The Install Utility Primary Menu panel appears.

3. Enter **1**.

The Parameters Primary Menu panel appears.

4. Enter **A** to start the parameter review process.

The first of a sequence of Parameters panels appears.

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

6. Enter **2** to start the installation process.

The INSTALLATION Primary Menu panel appears.

7. Enter **1**.

The installation software generates a series of jobs in the *dsnpref.LX10.CNTL* JCL data set.

**Note:** Jobs can be submitted from the panel or directly from this data set after exiting the panel.

8. Submit and run the following installation jobs in sequence. Do not proceed with any job until the previous job has completed successfully.

Each job should return condition code 0 unless otherwise indicated.

**I01ALLOC**

Allocates the data sets.

The I01ALLOC member allocates CC2DLOAD as a load library of the PDS type. Do not change it to a PDS/E type because the type is not supported.

**I02INSMP**

Initializes the SMP/E data sets.

**I03RCSMP**

Performs an SMP/E RECEIVE.

**I04AKSMP**

(Optional) Performs an SMP/E APPLY CHECK.

**I05RSSMP**

Performs an SMP/E RESTORE. This job is provided as a sample.

**I06APSMP**

Performs an SMP/E APPLY.

**I07ACSMP**

Performs an SMP/E ACCEPT.

9. Press F3.

You are returned to the Primary Menu panel.

## Maintenance

Maintenance includes program temporary fixes (PTFs) that supersede all authorized program analysis reports (APARs) that were created up to that time. Details of the superseded APARs are available as comments within the PTFs.

---

## Product Maintenance

**Important!** The *dsnpref.LX10.CC2DLINK* data set must be in your system LNKLST before you start maintenance. You can also create a STEPLIB to the data set name (DSN) in your TSOPROC (that is, allocate it to ISPLLIB). If you installed the product using CA MSM, you must use CA MSM to apply maintenance.

Product maintenance is provided as system modification program (SMP) fixes. The fixes consist of PTFs applied using the IBM System Modification Program Extended (SMP/E) tool.

**Note:** If an installed SMP fix contains maintenance for the VSAM data sets, you must update those data sets for each region you have set up.

## Apply Maintenance

This section describes how to apply individual SMP fixes using the product's Install Utility.

**Note:** Individual SMP fixes are only available from the [CA Technical Support site](#) (see page 3).

When you receive SMP fixes, unload them into one of the following:

- A sequential data set
- A member of a partitioned data set

Multiple SMP fixes can be appended into a single data set or member.

### Follow these steps:

1. Ensure that the *dsnpref.LX10.CC2DLINK* data set is in your system LNKLST.

For example, include the following statement in the system LNKLST SYS1.PARMLIB(PROGxx):

```
LNKLST ADD NAME(LNKLST00) DSNAME(dsnpref.LX10.CC2DLINK)
```

2. Access the ISPF/PDF Primary Menu, and select the COMMAND option.

The ISPF Command Shell panel appears.

3. At the command prompt, enter and execute the following command:

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

The Install Utility title panel appears.

4. Press Enter.

The Install Utility Primary Menu panel appears.

5. Enter **5**.  
The MAINTENANCE Primary Menu panel appears.
6. Enter **3** (Apply individual SMP/E fixes from a DASD data set).  
The MAINTENANCE DASD Fixes Data Set Name panel appears.
7. Enter the data set name that contains the SMP fixes to be applied, and press Enter.  
The fixes are listed.
8. Review the list, deselect any fixes you do not require, and press Enter.  
The maintenance software generates the members in the *dsnpref.LX10.CNTL* data set. When generation is complete, a list of generated members and a description of what each member does appears.
9. Submit and run the following jobs in sequence. Do *not* proceed with any job until the previous job has completed successfully. Each job returns condition code 0 unless otherwise indicated.

**My1RCSMP**

Performs an SMP/E RECEIVE on the maintenance and lists existing HOLDDATA and SOURCEIDs that are already applied. If a job step returns condition code 04, there is no HOLDDATA present.

Review the information. For any held APARs that you want to apply, add the correct BYPASS HOLDx operands to the corresponding APPLY control statement for those APARs. Add the operands by manually editing the My2AKSMP and My3APSMP jobs that contain the SMP control statements.

**Note:** For information about the BYPASS HOLDx operands, see the IBM *SMP/E Commands* guide.

**My2AKSMP**

Performs an SMP/E APPLY CHECK on the maintenance to identify conflicts.

**My3APSMP**

Performs an SMP/E APPLY on the maintenance.

**y**

Is a character that is used to identify the members generated from a fixes data set.

10. Press F3.  
The Install Utility Primary Menu panel appears.  
If the fix contains maintenance for VSAM data sets (as indicated by HOLDDATA), continue with the [procedure to update the VSAM data sets for the regions you have set up](#) (see page 50). Otherwise, you have finished applying the fix.

## HOLDDATA

When you apply maintenance, you typically encounter SMP/E HOLDDATA. We use HOLDDATA to notify your SMP/E system of SYSMODs that have errors or special conditions. We support system and external HOLDDATA.

### System HOLDDATA

System HOLDDATA indicates data that is an in-stream part of the SYSMOD, informing you of special conditions. The following reasons are used with SYSTEM HOLDDATA for CA Mainframe Connector:

#### **ACTION**

Indicates that you must perform special processing before or after you apply this SYSMOD.

#### **AO**

Affects automated operations. It changes either the message identifier or the displacement of a field inside the message.

#### **DB2BIND**

Indicates that DBRMs have changed and packages need to be rebound.

#### **DDDEF**

Indicates that data sets and DDDEFs are being added or modified.

#### **DELETE**

Deletes the SYSMOD load module. You cannot reverse this type of SYSMOD with the SMP/E RESTORE command.

#### **DEP**

Indicates a dependency for this SYSMOD that you must externally verify.

#### **DOC**

Indicates a documentation change with this SYSMOD.

#### **SYSMOD**

Indicates that some or all of the elements delivered by this SYSMOD are to be downloaded to a workstation.

#### **DYNACT**

Describes the steps to dynamically activate this fix without performing an IPL.

#### **ENH**

Introduces a small programming enhancement. The hold contains the instructions to implement the enhancement. If no action is needed to implement the enhancement, give a summary of the enhancement.

**EXIT**

Indicates that changes delivered by this SYSMOD require reassembly of user exits.

**EXRF**

Indicates that the SYSMOD must be installed in both the Active and Alternate Extended Recovery Facility Systems.

**MULTSYS**

Apply this SYSMOD to multiple systems for either pre-conditioning, coexistence, or exploitation.

**RESTART**

Indicates that after applying this SYSMOD, the site must perform a special restart as opposed to a routine restart.

Code a bypass operand on your APPLY command to install SYSMODs that have internal holds. Code the bypass operand only after you have performed the required action, or if you are performing the action after the APPLY, if that is appropriate.

## External HOLDDATA

External HOLDDATA is not part of the PTF. It resides in a separate file. It is commonly used for SYSMODs that have been distributed and later are discovered to cause problems.

Download the external HOLDDATA from CA Support to a DASD file, and allocate the file to the SMPHOLD DD statement. To take care of the external HOLDDATA, receive it into your SMP/E environment. SMP/E receives the HOLDDATA from CA-supplied jobs.

If a SYSMOD has an unresolved hold error, SMP/E does not install it unless you add a bypass to your APPLY command. You can bypass an error hold in situations that are not applicable to you. Error holds that are not applicable to you can include a problem that happens only with a hardware device that you do not have or in a product feature that you do not use.

When CA publishes a SYSMOD that resolves the hold, the resolving SYSMOD supersedes the hold error. This action lets you apply the original SYSMOD in conjunction with the fixing SYSMOD.

A special HOLDDATA class called ERREL exists. We have determined that the problem fixed by the SYSMOD is more important than the one that it causes. We recommend that you apply these SYSMODs.

The only manual task is running a REPORT ERRSYSMODS. This report identifies the following:

- Any held SYSMODs already applied to your system.
- Any resolving SYSMODs that are in RECEIVE status.

SMP/E identifies the SYSMOD to apply to correct the situation.

## Update VSAM Data Sets

If an installed SMP fix contains maintenance for VSAM data sets, then, to complete maintenance, select maintenance Option V of the Install Utility. The option updates the data sets for the regions you have set up.

### Follow these steps:

1. Access the ISPF/PDF Primary Menu, and select the COMMAND option.  
The ISPF Command Shell panel appears.
2. At the command prompt, enter and execute the following command:  

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

  
The Install Utility title panel appears.
3. Press Enter.  
The Install Utility Primary Menu panel appears.
4. Enter **5**.  
The MAINTENANCE Primary Menu panel appears.
5. Enter **V** (Update MODS, PANELS and OSCNTL data sets with installed maintenance).  
The MAINTENANCE MPO Data Sets panel appears.
6. Review the information, and press Enter.  
The maintenance software generates the members in the *dsnpref.LX10.CNTL* data set. When generation is complete, a list of generated members and a description of what each member does appears.

7. Submit and run the job Mz7RFRSH to update the VSAM data sets.

**z**

Is a character that is used to identify the members generated from a fixed data set that contains maintenance for VSAM data sets.

**Note:** The utility also generates the following jobs: Mz90DUMP and Mz91REST. If a shared DASD is not available, the jobs help you deploy those updates to a target system. The Mz90DUMP job creates backup data set that include the updated VSAM data sets, which you deploy to the target system. This backup data set is *dsnpref.DFDSS.SHAREDz*. The Mz91REST job, when submitted on the target system, restores the updated VSAM data sets from the backup data sets.

8. Press F3.

The Install Utility Primary Menu panel appears.

9. Press F4 to exit the Install Utility Primary Menu panel and return to the ISPF Command Shell panel, or continue with the other options.

## Install the Linux Agent

The Linux agent software is packaged in an RPM file. During the SMP/E installation process, the file is placed in a nominated z/OS UNIX file system directory. The file name has the following format:

```
ca\lxagnt-v.r-1.s390x.rpm
```

### Follow these steps:

1. Transfer the file to a Linux on z/VM system into the following directory:
  - For SuSE, `/usr/src/packages/RPMS/s390x`
  - For Red Hat, `/usr/src/redhat/RPMS/s390x`
2. Install the Linux agent software using the following command:

```
rpm -Uhv rpm_file_name
```

**Note:** Maintenance of the Linux agent is by upgrading to a new RPM file.

# Chapter 6: Configuring Your Product

---

This section describes the minimum configuration tasks needed before CA Mainframe Connector can be started, customized, and used in your environment.

This section contains the following topics:

[Set Up a z/OS Region](#) (see page 63)

[Configure z/VM Agents](#) (see page 65)

[Configure the Linux Syslog Daemon](#) (see page 68)

[Configure Linux Agents](#) (see page 69)

## Set Up a z/OS Region

The Install Utility lets you set up a region. You can reuse the utility to set up additional regions for deployment on multiple systems.

During the setup process, you provide the site-specific installation information that you previously collected. This information is used to generate the setup JCL jobs.

**Important!** After you have run a setup job, you cannot alter the results using the setup software. You can use the setup software to create a region, or you can manually customize the JCL members for the existing region.

### Follow these steps:

1. Ensure that the *dsnpref.LX10.CC2DLINK* data set is in your system LNKLST.

For example, include the following statement in the system LNKLST SYS1.PARMLIB(PROGxx):

```
LNKLST ADD NAME(LNKLST00) DSNAME(dsnpref.LX10.CC2DLINK)
```

2. At the ISPF/PDF TSO Command Shell prompt, execute the following command:

```
EXEC 'dsnpref.LX10.CC2DJCL(INSTALL)'
```

The Install Utility panel appears.

**Note:** On each of the Install Utility panels, you can use the following keys:

- Enter to proceed to the next panel
- F1 to display the online help
- F3 to return to the previous panel
- F4 to exit and return to the main menu

3. Press Enter.

The Install Utility Primary Menu panel appears.

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

- a. Enter **1**.

The Parameters Primary Menu panel appears.

- b. Enter **A** to start the parameter review process.

The first of a sequence of Parameters panels appears.

- c. Complete the panel:

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

Press Enter.

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

5. Enter **3**.

The SETUP Primary Menu panel appears.

6. Enter **1**.

A panel appears for you to define the region name.

7. Enter the name (*rname*), an ID (*i*), and a description of the region you are setting up.

*i*

Is an alphanumeric character that differentiates the setup for different regions.

The Install Utility uses the name that you entered to generate the started task JCL job. For example, if you enter REGION01 as the name, your started task JCL job is REGION01.

8. Complete each of the SETUP panels as they open. You can accept the default values or specify site-specific values.

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

The setup software generates a series of jobs in the *dsnpref.LX10.CNTL* data set.

9. Submit and run the following jobs in sequence. Do not proceed with any job until the previous job has completed successfully. Each job returns condition code 0 if successful.

**Si2SHALC**

Allocates the shared run-time data sets.

**Si3LDVIP**

Populates the MODS, PANELS, and OSCNTL files.

**Si5LDPDS**

Copies some PDS members to *dsnpref*.PARMLIB for use by the region.

**Note:** The member names include the *Si* prefix (for example, *SiLNXP*RM).

**Note:** The utility also generates the following two jobs to help you deploy the configuration files for your region to a target system if a shared DASD is not available: *Si90DUMP* and *Si91REST*. The *Si90DUMP* job creates a backup data set that includes the configuration files for the region, which you deploy to the target system. The backup data set is *dsnpref*.DFDSS.SHARED (containing files that multiple regions can share). The *Si91REST* job, when submitted on the target system, restores the configuration files from the backup data set. In addition to deploying the configuration files, you also deploy the target libraries. CA MSM can help you with this deployment.

10. Press F3.

You are returned to the Primary Menu panel.

## Configure z/VM Agents

After you install the z/VM agent software on the z/OS system, you transfer the software to each target z/VM system and configure the agent. The following list describes the installed software by the members in the *dsnpref*.LX10.CNTL and the SMP/E-installed *dsnpref*.LX10.CE2JOB0 data sets. You rename the data set members during the transfer to conform to the z/VM file name file type naming conventions.

***dsnpref*.LX10.CNTL(CAVLUSR*i*)**

Is the z/VM directory for the agent user ID. The member contains the user ID and the allocation parameters for a 191 disk that you specify during setup using the Install Utility. *i* is the alphanumeric character assigned to the associated z/OS region during setup.

**CMS file name:** *agent\_user\_id*

**CMS file type:** DIRECT

***dsnpref.LX10.CNTL(CAVLRUN*i*)***

Is the REXX program that runs \$UTVM002. The member contains the z/OS region IP address and port number that you specify during z/OS region setup using the Install Utility. *i* is the alphanumeric character assigned to the associated z/OS region during setup.

**CMS file name:** CAVLRUNA

**CMS file type:** EXEC

***dsnpref.LX10.CE2JOB0(CAVLPROF)***

Is the profile for the agent user ID.

**CMS file name:** PROFILE

**CMS file type:** EXEC

***dsnpref.LX10.CE2JOB0(GENIUCVM)***

Is the REXX program that generates the IUCVMSG module.

**CMS file name:** GENIUCVM

**CMS file type:** EXEC

***dsnpref.LX10.CE2JOB0(IUCVMSG)***

Is the Inter-User Communications Vehicle (IUCV) message handler.

**CMS file name:** IUCVMSG

**CMS file type:** TEXT

***dsnpref.LX10.CE2JOB0(\$UTVM002)***

Is the compiled REXX program that is the agent.

**CMS file name:** \$UTVM002

**CMS file type:** EXEC

**To configure a z/VM agent on a z/VM system**

1. Define a user ID for the z/VM agent to the z/VM system:
  - a. Log on to the user ID responsible for directory maintenance on the target z/VM system.
  - b. Transfer the CAVLUSR*i* data set member to the 191 disk as *agent\_user\_id* DIRECT.
  - c. Customize the password in the directory to suit your requirements.
  - d. Add the directory to the z/VM system directory.
  - e. Install the changed directory using the DIRECTXA utility.

A user ID is defined for the agent.

2. Log on to the agent user ID.
3. Transfer the other data set members to the 191 disk for the agent user ID. Use the CMS file names and types indicated previously for the target files.

**Important!** Transfer the IUCVMSG and \$UTVM002 members using the binary data type.

The agent software is on the z/VM system.

4. Run the GENIUCVM EXEC.

The IUCVMSG module is generated.

## Configure the Linux Syslog Daemon

You configure the Linux syslog daemon to establish communication with the z/OS region. The syslog daemon has various implementations. The following procedures show you how to configure rsyslog and syslog-ng.

### To configure rsyslog for CA Mainframe Connector

1. Add the following statements in the `/etc/rsyslog.conf` file for the Linux system:

```
$WorkDirectory /var/spool/rsyslog # where to place spool files
$ActionQueueFileName fwdRule1    # unique name prefix for spool files
$ActionQueueMaxDiskSpace 1g      # 1gb space limit (use as much as possible)
$ActionQueueSaveOnShutdown on    # save messages to disk on shutdown
$ActionQueueType LinkedList      # run asynchronously
$ActionResumeRetryCount -1       # infinite retries if host is down
*. * @[host_name]:601
```

*host\_name* specifies the name or IP address of the z/OS system on which the z/OS region is running.

**Note:** You can change the port number, but the corresponding SLPORT value in the `SiLNXP` parameter member for the z/OS region must match.

2. Enter the following command:

```
/etc/init.d/rsyslog restart
```

rsyslog is restarted with the new configuration.

### To configure syslog-ng for CA Mainframe Connector

1. Add the following statements in the `/etc/syslog-ng.conf` file for the Linux system:

```
destination loghost { tcp("host_name" port(601)); };
log { source(src); destination(loghost); };
```

*host\_name* specifies the name or IP address of the z/OS system on which the z/OS region is running. If you are using Internet Protocol Version 6 (IPv6), use the `tcp6()` driver instead of the `tcp()` driver.

**Note:** You can change the port number, but the corresponding SLPORT value in the `SiLNXP` parameter member for the z/OS region must match.

2. Enter the following command:

```
/etc/init.d/syslog restart
```

syslog-ng is restarted with the new configuration.

## Configure Linux Agents

After you install the Linux agent software on the Linux system, you configure the agents for communication with the z/VM host and the z/OS region.

### Follow these steps:

1. Enable the Linux agent to issue z/VM CP commands:
  - a. Enter the following command:

```
modprobe vmcp
```

The Linux agent can issue CP commands in the current session.
  - b. Add the command in the `/etc/init.d/boot.local` (SuSE) or `/etc/rc.local` (Red Hat) file.  
The Linux agent can issue CP commands the next time the Linux system starts.

2. Update the SOLVE service in the xinetd configuration:
  - a. Create a file, named `solve`, in the `/etc/xinetd.d` directory, using the following name for the server program:

```
/usr/sbin/calxagnt
```

The following example shows the content of a `solve` file:

```
#Linux Agent for CA Mainframe Connector
service SOLVE
{
    socket_type    = stream
    protocol      = tcp
    wait          = no
    user          = root
    server        = /usr/sbin/calxagnt
}
```

**Note:** If you are using SuSE, you can use YaST (Yet another Setup Tool) to create this file.

- b. (Optional) If root privilege is not required, change the user under which the agent runs.
- c. (Optional) Add the following server argument to run the agent from a home directory:

```
server_args      = -d home_directory_path
```

- d. Enter the following command to restart the xinetd daemon:

```
service xinetd restart
```

Communication between the Linux agent and the z/OS region is configured.



# Chapter 7: Starting Your Product

---

This section describes what you need to do to start CA Mainframe Connector.

This section contains the following topics:

- [z/OS Region Parameter Member](#) (see page 71)
- [Prepare the z/OS Region Started Task](#) (see page 71)
- [Load Libraries](#) (see page 72)
- [Enable Auditing by CA Auditor](#) (see page 72)
- [Start the Product Region](#) (see page 73)
- [Start the z/VM Agents](#) (see page 73)
- [Linux Agent Startup](#) (see page 73)

## z/OS Region Parameter Member

The Install Utility generates the PARMLIB(SiLNXPXM) member based on the values entered during the installation and setup process.

SiLNXPXM specifies the product region parameters.

Review [SiLNXPXM](#) (see page 81):

- Ensure that it meets your site-specific requirements.
- Reapply any previous customization that is still required.

## Prepare the z/OS Region Started Task

The Install Utility generates a started task member for each region you set up. Review it to verify that it meets your site-specific requirements. You can then copy it to a procedure library with the required authority.

**Note:** To help you plan future deployment, you can update the started task member to use z/OS static system symbols.

**Follow these steps:**

1. Review and update the DD statements in the region started task member *dsnpref.LX10.CNTL(rname)* for your site-specific requirements.
2. Copy the reviewed member to SYSx.PROCLIB.
3. Grant the user ID associated with the region UPDATE authority on the run-time data sets created by the installation and setup processes.

## Load Libraries

Most products have their own load library but also require the load libraries of supporting services. The following load libraries must be APF-authorized:

- CC2DLOAD

### Authorization of the Load Libraries

To APF-authorize your load libraries, add the run-time load libraries to the SYS1.PARMLIB(IEAAPFxx) APF list.

To dynamically APF-authorize the load libraries, issue the following z/OS command:

```
SETPROG APF,ADD,DSNAME=?loadLib,VOLUME=?volser
```

**?loadlib**

Specifies the name of the load library.

**?volser**

Specifies its volume serial number.

To dynamically APF-authorize load libraries controlled by SMS, issue the following z/OS command:

```
SETPROG APF,ADD,DSNAME=?loadLib,SMS
```

## Enable Auditing by CA Auditor

If your auditors require CA Auditor or CA Common Inventory Service to know of this product running on your system, put a load module in your system LNKLST.

To define the load module to the system LNKLST, include the library *dsnpref.LX10.CC2DLINK* in the system LNKLST SYS1.PARMLIB(PROGxx), for example:

```
LNKLST ADD NAME(LNKLST00) DSNAME(dsnpref.LX10.CC2DLINK)
```

## Start the Product Region

To start the product region, issue the following command:

```
S rname
```

*rname* is the name you specified for the region during the setup process.

**Note:** To stop the started task, issue the following command from the MVS console:  
P *rname*.

## Start the z/VM Agents

To start a z/VM agent, use *one* of the following methods:

- Issue the following command:

```
XAUTOLOG agent_user_id
```

- Log on to the agent virtual machine. After the agent has started, issue the following command to disconnect from the agent:

```
#CP DISC
```

You can configure the AUTOLOG1 virtual machine to start an agent automatically at initial program load (IPL) of the z/VM system.

**Note:** To stop an agent, use *one* of the following methods:

- Issue the following command:

```
FORCE agent_user_id
```

- Log on to the agent virtual machine, and issue the STOP command.

## Linux Agent Startup

Linux agent startup is automatic. When the z/OS region receives a message from syslog on a Linux system, the region invokes the startup of the Linux agent on that system.



# Appendix A: Preparation Worksheets

---

During the installation and setup process, you enter values that are used to do the following:

- Allocate data sets.
- Set initial parameters.
- Prepare for the use of your product.

You can print out the worksheets in this section to record the values needed for your site when installing the product.

This section contains the following topics:

- [JOB CARD Information](#) (see page 75)
- [Product Unloading](#) (see page 76)
- [Prefixes for Installation and Setup Data Sets](#) (see page 78)
- [IBM Data Sets](#) (see page 80)
- [SMP/E Members](#) (see page 80)
- [Linux Agent Location](#) (see page 81)
- [z/OS Region Setup](#) (see page 81)
- [z/VM Agent Configuration](#) (see page 84)

## JOB CARD Information

Gather the following job information:

### Batch job class

Record the value that your site uses here:

Class = \_\_\_\_\_

**Default:** A

### Batch job class for tape mounts

(Tape only) Record the value that your site uses here:

Class = \_\_\_\_\_

### Instructions to operator

Record any instructions here:

---

---

---

## Product Unloading

To facilitate the unloading of product files onto your system, you gather information about the source and destination of the files.

### ESD

If you plan to use ESD to download the product, gather the following information:

#### USS directory

Is where you download the product archive file into.

---

**Example:** .../CA/CAESD/

#### Data set prefix

Is the prefix (*dsnpref*) of the data sets to which you copy the retrieved product files. The data set names have the following format: *dsnpref.CAI.data\_set\_type*.

---

## Tape Unloading

If you are installing from tape, gather the following information related to tape unloading:

### Tape unit

Record the value that your site uses for UNIT=?*device\_in* here:

UNIT = \_\_\_\_\_

**Example:** CART

### Tape volume serial number

Record the value that your site uses for VOL=SER=?*tapeser* here:

VOL=SER = \_\_\_\_\_

**Example:** C2D720

### Tape expiry date

Record the values that your site uses here:

Expiry Date = \_\_\_\_\_

**Example:** 98000

**Note:** See the cover letter that comes with your product tapes for your values.

Gather the following information related to the DASD to which the software is unloaded:

### Data set prefix

Do not include the name of your planned product region.

**Limits:** Maximum 29 characters

Record the value that your site uses here:

?*dsnpref* = \_\_\_\_\_

### DASD unit

Record the value that your site uses here:

?*device\_out* = \_\_\_\_\_

### DASD volume serial number

Record the value that your site uses here:

?*volser* = \_\_\_\_\_

### Storage Management Subsystem (SMS) storage class

(If using SMS) Record the value that your site uses here:

?*storclas* = \_\_\_\_\_

## Prefixes for Installation and Setup Data Sets

Use these prefixes for high-level qualifiers for the different data set groups.

Record the values that your site uses here:

### JCL library for generated installation and setup members

Data Set Prefix = \_\_\_\_\_

Management class = \_\_\_\_\_

Storage class = \_\_\_\_\_

Volume serial number = \_\_\_\_\_

Unit = \_\_\_\_\_

### SMP/E target

Data Set Prefix = \_\_\_\_\_

Management class = \_\_\_\_\_

Storage class = \_\_\_\_\_

Volume serial number = \_\_\_\_\_

Unit = \_\_\_\_\_

### SMP/E distribution

Data Set Prefix = \_\_\_\_\_

Management class = \_\_\_\_\_

Storage class = \_\_\_\_\_

Volume serial number = \_\_\_\_\_

Unit = \_\_\_\_\_

### SMP/E libraries

Data Set Prefix = \_\_\_\_\_

Management class = \_\_\_\_\_

Storage class = \_\_\_\_\_

Volume serial number = \_\_\_\_\_

Unit = \_\_\_\_\_

**SMP/E CSI**

Data Set Prefix = \_\_\_\_\_

Management class = \_\_\_\_\_

Storage class = \_\_\_\_\_

Volume serial number = \_\_\_\_\_

**SMPTLIB**

Data Set Prefix = \_\_\_\_\_

Volume serial number = \_\_\_\_\_

Unit = \_\_\_\_\_

Gather the following information related to a region:

**Prefix for local sequential data sets**

Record the value that your site uses here:

\_\_\_\_\_

**Default:** *dsnpref* (The actual prefix is formed by appending the region name, *dsnpref.rname*.)

**Prefix for shareable PARMLIB data sets**

Record the value that your site uses here:

\_\_\_\_\_

**Default:** *dsnpref*

**Prefix for shareable VSAM data sets**

Record the value that your site uses here:

\_\_\_\_\_

**Default:** *dsnpref* (The actual prefix is formed by appending LX10, *dsnpref.LX10*.)

## IBM Data Sets

Gather the following information related to IBM data sets:

### Language Environment Parameters

Record these language environment values:

#### Language Environment link-edit input 2

Record the value that your site uses here:

SCEEBND2 = \_\_\_\_\_

**Default:** CEE.SCEEBND2

#### Language Environment link-edit input

Record the value that your site uses here:

SCEELIB = \_\_\_\_\_

**Default:** CEE.SCEELIB

#### Language Environment library

Record the value that your site uses here:

SCEELKED = \_\_\_\_\_

**Default:** CEE.SCEELKED

#### IBM macros

Record the value that your site uses here:

MODGEN = \_\_\_\_\_

**Default:** SYS1.MODGEN

## SMP/E Members

Gather the following information related to members required by SMP/E:

### Data set that contains the GIMZPOOL member

Record the value that your site uses here:

\_\_\_\_\_

**Default:** SYS1.MACLIB

---

## Linux Agent Location

Gather the following information related to the Linux agent:

### Linux Connector Agent location

Specifies the z/OS UNIX file system path name for the Linux agent directory. This directory must exist and is used as the SMP/E target library for the agent.

\_\_\_\_\_

## z/OS Region Setup

Gather the following information for each z/OS region you plan to set up in the following worksheet:

### Region name (*rname*)

Record the value that your site uses here:

\_\_\_\_\_

### TCPIP.DATA data set name

Specifies the name of the configuration data set used by IBM Communications Server:

\_\_\_\_\_

**Default:** TCPIP.DATA

## SiLNXPDM Parameter Member

### Command on ABEND

Specifies the command to issue if the z/OS region abends. Typically, you specify the START *rname* command.

ABENDCMD = \_\_\_\_\_

### TCP/IP stack type

Specifies the type of stack:

- IBM indicates the IBM Communications Server using Internet Protocol Version 4 (IPv4).
- IBMV6 indicates the IBM Communications Server using Internet Protocol Version 6 (IPv6).
- TCPAXS indicates CA TCPAccess CS.

STACKTYPE = \_\_\_\_\_

### TCP/IP stack job name

Specifies the stack job name if an IBM TCP/IP stack is in use.

STACKNAME = \_\_\_\_\_

### CA TCPAccess CS subsystem ID

Specifies the stack subsystem ID if a CA TCPAccess CS TCP/IP stack is in use.

STACKSSID = \_\_\_\_\_

### z/VM interface port

Specifies the port number that z/VM agents use to connect to the region. The same port must be specified in the z/VM agent configuration.

IPPORT = \_\_\_\_\_

**Default:** 2636

**Range:** 1024 through 65535

### Linux interface port

Specifies the port number that the region uses to connect to Linux agents. This port is specified in the Linux agent configuration.

LXPORT = \_\_\_\_\_

**Default:** 2636 (port of the SOLVE service in the xinetd configuration on the Linux systems)

**Range:** 1024 through 65535

### syslog interface port

Specifies the port number that syslog uses to connect to the region. The same port must be specified in the syslog configuration.

SLPORT = \_\_\_\_\_

**Default:** 601

**Range:** 1 through 65535

**Message port**

Specifies the port number used to deliver unsolicited messages to client products. You can specify either an unused port number (static) or a token (up to 16 bytes) that acquires a port number dynamically. The same configuration must be specified in the client products.

We recommend using a token.

MSGPORT or MSGTOKEN= \_\_\_\_\_

**Default:** CALINUXUNSOLMSG: (a token)

**Range:** 1024 through 65535 for MSGPORT

**Command port**

Specifies the port number used for commands from and responses to client products. You can specify either an unused port number (static) or a token (up to 16 bytes) that acquires a port number dynamically. The same configuration must be specified in the client products.

We recommend using a token.

CMDPORT or CMDTOKEN = \_\_\_\_\_

**Default:** CALINUXCOMMANDS: (a token)

**Range:** 1024 through 65535 for CMDPORT

**Multiclient connections**

Specifies whether to permit multiple clients to connect to the UNSOLMSG server. Permitting multiclient connections degrades performance.

**Values:** NO and YES

## z/VM Agent Configuration

Gather the following information about the z/OS region for each z/VM agent you plan to configure in the following worksheet:

**z/VM agent user ID**

Specifies the z/VM user ID you want to assign to the agent.

\_\_\_\_\_

**VOLSER of DASD for minidisk**

Specifies the VOLSER of the DASD where the minidisk for the agent is located.

\_\_\_\_\_

**Starting cylinder for minidisk**

Specifies the cylinder where the minidisk starts.

**Host name or IP address**

Specifies the host name or IP address of the z/OS system on which the region runs:

\_\_\_\_\_

**Important!** If you specify an IP address, it must be an IPv4 address. The z/VM agent uses REXX sockets, and z/VM REXX sockets do not support IPv6.

**z/VM interface port**

Specifies the corresponding port number in the SiLNXPXM parameter member for the region:

\_\_\_\_\_

# Appendix B: Format of Product Tape

---

The following topics provide information about the function modification identifiers (FMIDs) and, if you have the product delivered on tape, details about the tape format.

This section contains the following topics:

[FMID Descriptions](#) (see page 85)

[Format of Cartridge VOLSER C2D720](#) (see page 86)

## FMID Descriptions

This product has the following FMIDs, which are codes that identify the release levels of a product:

### **CC2D720**

Is the FMID for Management Services (MS).

### **CC2D72H**

Is the FMID for Health Checker (HC).

### **CE2J100**

Is the FMID for Connector Services (LX).

## Format of Cartridge VOLSER C2D720

This table lists the file sequence numbers, data set names, and data set contents for the product tape.

Files	DSN	Contents
1	CAI.SAMPJCL	Installation and maintenance JCL members
2	CAI.SMPMCS	SMP/E modification control statements (MCSs) containing functions and all published SYSMODs for those functions
3	CAI.CC2D720.F1	Management Services RELFILE 1—JCLIN for CC2D720
4	CAI.CC2D720.F2	Management Services RELFILE 2—NCAL-linked MODS for CC2D720 (object module)
5	CAI.CC2D720.F3	Management Services RELFILE 3—++MAC for CC2D720 (RECFM=FB) (FB 80 members)
6	CAI.CC2D720.F4	Management Services RELFILE 4—++DATA for CC2D720 (RECFM=VB) (VSAM members)
7	CAI.CC2D72H.F1	Health Checker RELFILE 1—JCLIN for CC2D72H
8	CAI.CC2D72H.F2	Health Checker RELFILE 2—NCAL-linked MODS for CC2D72H (object module)
9	CAI.CC2D72H.F3	Health Checker RELFILE 3—Installation and maintenance JCL members
10	CAI.CE2J100.F1	Connector Services RELFILE 1—++MACS for CE2J100 (RECFM=FB) (FB 80 members)
11	CAI.CE2J100.F2	Connector Services RELFILE 2—++HFS for CE2J100 (RECFM=VB) (Linux agent software)
12	CAI.CE2J100.F3	Connector Services RELFILE 3—++PRODXML for CE2J100 (RECFM=VB) (XML data for CA MSM)

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