z Systems

Appliance Container Infrastructure (zACI) User's Guide

SC28-6970-00

Level 00a

Note

Before you use this information and the product it supports, read the information in "Safety" on page vii, "Notices," on page 33 and *IBM Systems Environmental Notices and User Guide*, Z125–5823.

This edition, SC28-6970-00, applies to IBM z Systems (z Systems) and IBM LinuxONE (LinuxONE) servers.

There might be a newer version of this document in a **PDF** file available on **Resource Link**. Go to http://www.ibm.com/servers/resourcelink and click **Library** on the navigation bar. A newer version is indicated by a lowercase, alphabetic letter following the form number suffix (for example: 00a, 00b, 01a, 01b).

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Safety

Safety notices

Safety notices may be printed throughout this guide. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

World trade safety information

Several countries require the safety information contained in product publications to be presented in their translation. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the translated safety information with references to the US English source. Before using a US English publication to install, operate, or service this IBM® product, you must first become familiar with the related safety information in the *Systems Safety Notices*, G229-9054. You should also refer to the booklet any time you do not clearly understand any safety information in the US English publications.

Laser safety information

All IBM z Systems™ (z Systems™) and IBM LinuxONE™ (LinuxONE) models can use I/O cards such as FICON®, Open Systems Adapter (OSA), InterSystem Channel-3 (ISC-3), or other I/O features which are fiber optic based and utilize lasers (short wavelength or long wavelength lasers).

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All lasers are certified in the US to conform to the requirements of DHHS 21 CFR Subchapter J for Class 1 or Class 1M laser products. Outside the US, they are certified to be in compliance with IEC 60825 as a Class 1 or Class 1M laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION: Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION: This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

About this publication

This book describes how to use the z Appliance Container Infrastructure (zACI) to install and run software appliances on IBM z Systems (z Systems) and IBM LinuxONE (LinuxONE) servers. Topics include how to configure and start a zACI partition, and how to install a software appliance using the zACI installer.

Figures included in this document illustrate concepts and are not necessarily accurate in content, appearance, or specific behavior.

Intended audience

The primary audience for this book is system administrators who are responsible for developing, installing, and managing software that runs in a partition on a z Systems or LinuxONE server.

Prerequisite and related information

To configure a zACI partition, you need to use Hardware Management Console (HMC) / Support Element (SE) Version 2.13.1 or later.

- Information about HMC/SE tasks is available in the console help or IBM Knowledge Center, as described in "Related HMC and SE console information."
- HMC/SE tasks can be accomplished programmatically as well, through the HMC Web Services application programming interfaces (APIs). For information about APIs, see *z Systems Hardware Management Console Web Services API*, SC27-2634, which is available through the Publications link on IBM Resource Link® at http://www.ibm.com/servers/resourcelink

You can configure zACI partitions on the following z Systems and LinuxONE servers:

- An IBM z13™ (z13™) or IBM z13s™ (z13s™)
- An IBM LinuxONE Emperor™ (Emperor) or IBM LinuxONE Rockhopper™ (Rockhopper)

For more information about specific mainframes, see the appropriate product document on the IBM Redbooks® web site at http://www.redbooks.ibm.com/

- *IBM z13 Technical Guide*, SG24-8251
- *IBM z13s Technical Guide*, SG24-8294

For information about configuring all types of partitions on a z Systems or LinuxONE server, see *z Systems PR/SM™ Planning Guide*, SB10-7162.

If your company has the IBM zAware hardware feature on a supported z Systems or LinuxONE server, you can install the IBM zAware platform appliance in a zACI partition. For additional details and instructions, see *z Advanced Workload Analysis Reporter (IBM zAware) Guide*, SC27-2632.

Related HMC and SE console information

Hardware Management Console (HMC) and Support Element (SE) information can be found on the console help system, or on the IBM Knowledge Center at http://www.ibm.com/support/knowledgecenter/ (Select **z Systems** on the navigation bar, and then select your server).

How to use this publication

This book provides an overview of the z Appliance Container Infrastructure (zACI), and lists the system requirements for its use. This book also provides step-by-step instructions for system administrators who create zACI partitions, and install software in them. For a list of topics, see “Contents” on page iii.

Accessibility

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Accessible publications for this product are offered in HTML format and can be downloaded from Resource Link at http://www.ibm.com/servers/resourcelink.

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Accessibility features

The following list includes the major accessibility features in z Systems and IBM LinuxONE documentation:

- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Customizable display attributes such as color, contrast, and font size
- Communication of information independent of color
- Interfaces commonly used by screen magnifiers
- Interfaces that are free of flashing lights that could induce seizures due to photo-sensitivity.

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

IBM and accessibility

See http://www.ibm.com/able for more information about the commitment that IBM has to accessibility.

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Summary of changes

For the most recent edition only, technical changes to the text are indicated by a vertical bar (|) to the left of the change.

Summary of changes for SC28-6970-00a

In the following topics, the URL syntax for accessing the zACI Installer has been corrected.

- Chapter 7, “Installing a new software appliance in a zACI partition,” on page 23
- Chapter 9, “Moving an existing software appliance into a zACI partition,” on page 29

Part 1. Introduction to the z Appliance Container Infrastructure

This part contains general information about z Appliance Container Infrastructure (zACI) and the advantages of installing software appliances in a zACI partition, and the prerequisites for use.

Chapter 1. zACI: A container technology for deploying appliances

The z Appliance Container Infrastructure (zACI) is a container technology through which you can more quickly and securely deploy platform and software appliances on IBM z Systems (z Systems) and IBM LinuxONE (LinuxONE) servers.

A zACI partition is a specialized container for installing and running specific firmware or software appliances. An *appliance* is an integration of operating system, middleware and software components that work autonomously and provide core services and infrastructures that focus on consumability and security. *Platform appliances* are delivered with the mainframe system; *software appliances* are delivered through software distribution channels.

Partition basics

On other platforms, a partition is a portion of the system hard drive that you create to run different operating systems on the same disk, or to give the appearance of separate hard drives for multiple users or other purposes. On a mainframe system, a *logical partition* is a virtual representation of all of the physical hardware resources of that system, which include processors, memory, and input/output (I/O) adapters.

z Systems and LinuxONE servers support several types of partitions. When system administrators define a partition, they specify characteristics that include processor resources, memory resources, and security controls. System administrators use the Hardware Management Console (HMC) **Customize/Delete Activation Profiles** task to define partition characteristics.

A key partition characteristic is the operating mode, which reflects the specialized function that the partition is to provide, or reflects the operating system or hypervisor that the system administrator wants to load and run in the partition. For example, only the z/VM® operating system can run in a z/VM-mode partition. For such partitions, administrators specify load parameters that define how to install and initialize the operating system. Figure 1 shows a sample screen capture of the **Customize/Delete Activation Profiles** task page through which an administrator selects the partition mode.

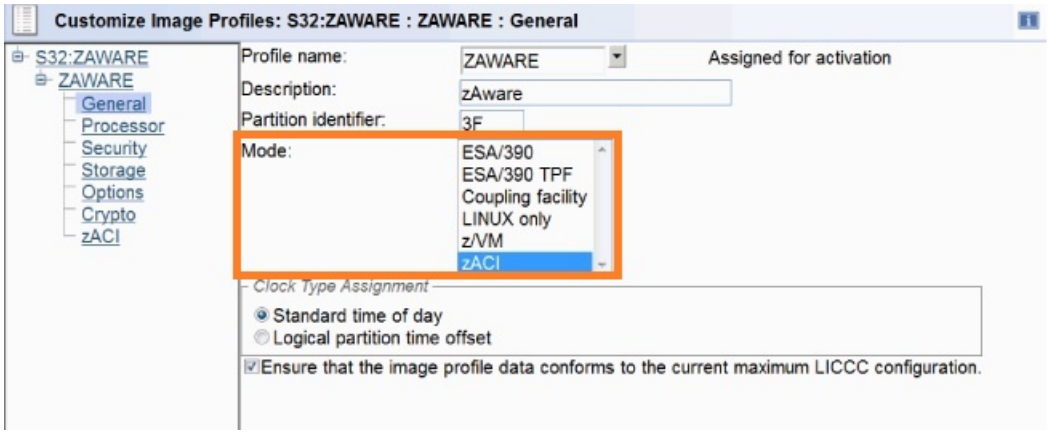

Figure 1. The General page of the Customize/Delete Activation Profiles task

What makes zACI different from other partitions

Unlike most other types of partitions, a zACI-mode partition contains its own embedded operating system, security mechanisms, and other features that are specifically designed for simplifying the installation of appliances, and for securely hosting them. Figure 2 provides a high-level view of the zACI components for hosting appliances.

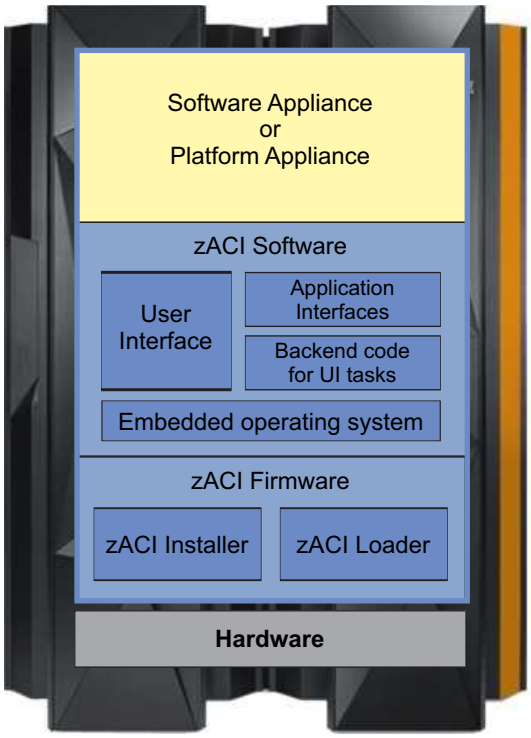

Figure 2. A zACI-mode partition that shows zACI components

Through these components, zACI provides:

- Quicker and simpler installation of platform and software appliances
- End-to-end appliance tamper protection
- Protected intellectual property of appliance components

Chapter 2. Prerequisites for using zACI

This topic provides information about the IBM z Systems (z Systems) and IBM LinuxONE (LinuxONE) servers that contain the z Appliance Container Infrastructure (zACI).

You can configure zACI partitions on the following z Systems and LinuxONE servers. Note that a zACI partition cannot be defined or activated on a server that has IBM Dynamic Partition Manager (DPM) mode enabled.

- An IBM z13 (z13) or IBM z13s™ (z13s™)
- An IBM LinuxONE Emperor (Emperor) or IBM LinuxONE Rockhopper (Rockhopper)

To configure a zACI partition, you need to use Hardware Management Console (HMC) / Support Element (SE) Version 2.13.1 or later. The suggested practice is to use the latest available firmware for zACI, which is identified by the engineering change (EC) SE-BCINST P08458. To find the latest available firmware, use the instructions for hardware updates in "Where to find hardware planning and corequisite software information."

Before you configure a zACI partition

- Your installation must have correctly configured the z Systems or LinuxONE server (or central processor complex, CPC) on which you want to configure the zACI partition.
- Before you can create an image profile for the zACI partition, make sure that the CPC reset profile specifies the activation order for the new partition.
- Before activating the zACI partition, make sure that I/O and storage devices have been configured for this partition. The I/O and storage device requirements depend on the appliance that you plan to install.

  Supported network options are HiperSockets™ or Open Systems Adapter (OSA) features. For OSA cards, zACI can use only port 0.

  To define network connections and storage devices for this partition, you use either the Hardware Configuration Definition (HCD) or the Input/Output Configuration Program (IOCP). Depending on the tool you are using, you might need to use the instructions in one of the following books:
  - *z/OS® Hardware Configuration Definition User's Guide*, SC33-7988, and *z/OS Hardware Configuration Definition Scenarios*, SC33-7987
  - *System z® Input/Output Configuration Program User's Guide for ICP IOCP*, SB10-7037

Platform and software appliances that can be installed in a zACI partition

- IBM z Advanced Workload Analysis Reporter (IBM zAware), which requires hardware feature code 0011 on the z Systems or LinuxONE server. This platform appliance is available with the server when customers order the server with feature code 0011.
- IBM z/VSE® Network Appliance (VNA). This software appliance is available for download through the z/VSE web site: http://www.ibm.com/systems/z/os/zvse/

Where to find hardware planning and corequisite software information

For the most recent hardware planning and corequisite software information, go to IBM Resource Link:

`http://www.ibm.com/servers/resourcelink`

- For hardware updates, click **Tools** on the navigation panel. Then click **Machine information** under **Servers**, and enter your enterprise number, customer number, or machine serial number for the host system (CPC). You must register with IBM to search machine information.

- For software updates, click **Fixes** on the navigation panel. Then click **Preventative Service Planning buckets (PSP)** under **Preventive actions**, and check the PSP bucket for the appropriate server.:
  - For a z13 or Emperor, the 2964DEVICE PSP bucket
  - For a z13s™ or Rockhopper, the 2965DEVICE PSP bucket

Part 2. zACI partitions

This part contains step-by-step instructions for initially configuring and starting a zACI partition, and for modifying its logon or network settings.

Chapter 3. Configuring a zACI partition

Use this procedure to configure a logical partition (LPAR) in zACI mode, which includes setting initial logon and network values. This procedure is intended for experienced system administrators or system programmers who are responsible for configuring logical partitions on z Systems and LinuxONE servers. To configure a zACI partition, use the Hardware Management Console (HMC) **Customize/Delete Activation Profiles** task to create an image profile. Depending on the IT roles and responsibilities at your installation, you might need to collaborate with network administrators to complete specific configuration tasks.

Before you begin

- Check the list of prerequisites and information sources in Chapter 2, "Prerequisites for using zACI," on page 5.
- Make sure that the image profile name that you supply for the zACI partition is the same as the name of an LPAR image in the input/output configuration data set (IOCDS) for the CPC. Otherwise, the partition cannot be activated.
- To prepare to use the HMC to configure the zACI partition, make sure that you log in to the HMC with a user ID that is assigned to the system programmer role (SYSPROG).
- Before activating the zACI partition, make sure that I/O and storage devices have been configured for this partition. The I/O and storage device requirements depend on the appliance that you plan to install.

About this task

This procedure includes only the instructions required to use the HMC **Customize/Delete Activation Profiles** task to supply specific LPAR characteristics for a zACI partition. If you need additional information about other LPAR characteristics that you can specify through this task, see the HMC online help.

If your company has the IBM zAware hardware feature on a supported z Systems or LinuxONE server, you can install the IBM zAware platform appliance in a zACI partition. In this case, use the instructions for configuring a zACI partition in *z Advanced Workload Analysis Reporter (IBM zAware) Guide*, SC27-2632.

Procedure

1. Through the HMC, select the CPC and open the **Customize/Delete Activation Profiles** task. Select the LPAR that you want to either create or customize as a zACI partition. The remaining steps in this procedure illustrate how to customize an existing image profile; however, you can use this information to help you create an image profile through the **New Image Profile** wizard.
2. On the Customize Image Profiles window, select the **General** page from the profile tree view to define the partition mode and other characteristics.
   a. If you are using the default image profile or an existing image profile as a template for a new image profile, or you selected the default image profile, supply a new name for this image profile by typing over the displayed name before you make any other changes, and click **Save** to save the profile with the new name.

      A profile name can be 1 - 8 characters long. It cannot have special characters or imbedded blanks. Valid characters for a profile name are:

      Characters 0 - 9
      Decimal digits

      Characters A - Z
      Letters of the English alphabet

Profile names are not case-sensitive. All alphabetic characters are saved in uppercase.

b. For **Mode**, select **zACI** mode from the scrollable list. When you select **zACI** as the partition mode, the HMC adjusts the navigation pane and individual page content to display LPAR characteristics that are appropriate for a zACI-mode partition. The profile tree view now contains a link for the **zACI** page.

c. Provide or modify any remaining values on the **General** page, using the online help for guidance.

3. Select the **Processor** page and specify the processor requirements for the appliance that you plan to install in the zACI partition. If necessary, use the online help for guidance.

   zACI does not require any processing resources, so specify the values that are required for only the appliance to be installed. You can assign only one of two processor types for the zACI partition: Integrated facilities for Linux (IFLs) or central processors (CPs). The IFLs or CPs can be shared or dedicated. The available processor types vary by host system; for example, both IFLs and CPs are available on a z13, but only IFLs are available on an Emperor.

4. Select the **Security** page and provide or modify any values as appropriate for the appliance that you plan to install. If necessary, use the online help for guidance.

   You can specify any partition security options for this partition. Select the remaining options according to the requirements of the appliance.

5. Select the **Storage** page and specify the amount of central and expanded storage that is required for the appliance that you plan to install. If necessary, use the online help for guidance.

   Although the storage amounts that you specify are based on the requirements of the appliance that you plan to install, note that a minimum of 4096 MB (4 GB) of central storage is required to activate the zACI partition.

6. Select the **Options** page and provide or modify any values as appropriate for the appliance that you plan to install. If necessary, use the online help for guidance.

7. Select the **Cryptos** page and provide or modify any cryptographic controls as appropriate for the appliance that you plan to install. If necessary, use the online help for guidance.

8. Select the **zACI** page in the profile tree view.

   Figure 3 on page 11 shows the **zACI** page elements.

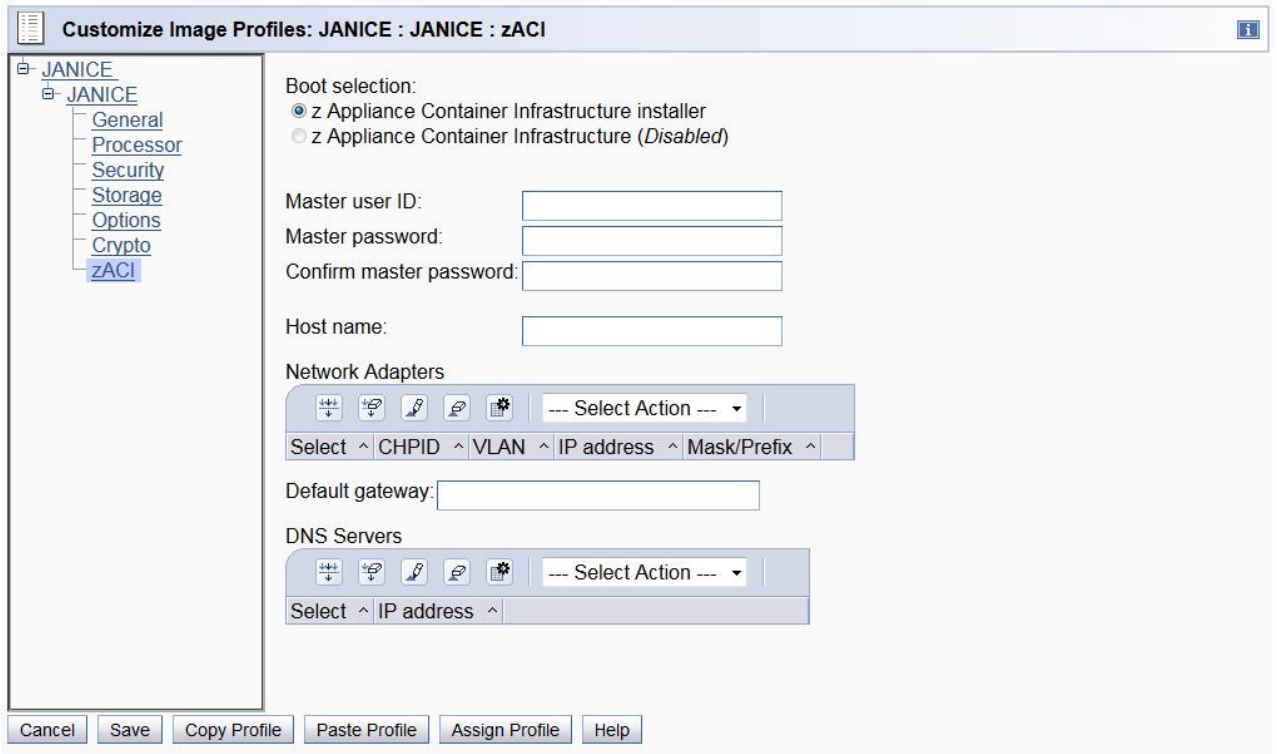

Figure 3. LPAR image profile: zACI page elements

a. Under Boot selection, note that only one option is selectable: **z Appliance Container Infrastructure installer**

b. Provide values for the default master user ID and password.

Master user ID
Enter the user ID to be used as the default master user ID for the zACI partition. This user ID has authority to perform any task that is available through the zACI graphical user interface (GUI).

A master user ID can be 1 - 32 characters long. It cannot contain imbedded blanks. Valid characters are numbers 0 - 9, letters A - Z (upper or lower case), and the following special characters: period (.), underscore (_), and hyphen (-).

Master password
Enter the password for the master user ID. A master password can have a minimum of 8 characters and a maximum of 256 characters. A master password is case-sensitive and can contain numbers 0 - 9, letters A - Z (upper or lower case), and the following special characters: hyphen (-), underscore (_), exclamation (!), at (@), hash (#), dollar ($), percent (%), carat (^), ampersand (&), asterisk (*), left parenthesis ((), right parenthesis ()), plus (+), left brace ({), right brace (}), vertical bar (|), colon (:), less than (<), greater than (>), question mark (?), and equals (=).

Confirm master password
Reenter the password exactly as you typed it for the Master password field.

c. Provide a value for the host name.

A host name can be 1 - 32 characters long. It cannot contain imbedded blanks. Valid characters are numbers 0 - 9, letters A - Z (upper or lower case), and the following special characters: period (.), colon (:), and hyphen (-).

d. Customize the network adapter configuration for the zACI partition.

1) From the **Select Action** list in the Network Adapters table, click **Add/Edit Network Adapters** to define a network connection. The Add/Edit Network Adapters Entry window is displayed.
2) For each type of network connection in the zACI environment, supply the following information.

   For example, if the appliance to be installed uses a HiperSockets subnet for communication, and zACI administrators are using an Open Systems Adapter (OSA) channel to access the zACI GUI, you need to define two network adapters: one for the HiperSockets subnet and another for the OSA channel.

   IP address type
   Select one of the following types:
   - Dynamic Host Connection Protocol (DHCP)
   - Link local addressing
   - Static IPv4 Address
   - Static IPv6 Address (This option is supported only for the IBM zAware platform appliance.)

   The type you select determines which of the remaining fields you can complete; if a field does not apply for a specific selected type, you cannot enter a value.

   CHPID
   Enter the logical channel path identifier (CHPID) of the network adapter. You can specify the same CHPID multiple times.

   Note:
   - For an Open Systems Adapter (OSA) card, you can use only port 0.
   - Because of unpredictable behavior in the address resolution protocol, the suggested practice is to use only one CHPID for IP addresses on the same subnet. If you use more than one CHPID with IP addresses on the same subnet, a significant amount of time might be required before all IP addresses are reachable (it could take up to a day for larger network environments).

   VLAN Specify the virtual local area network (VLAN) if the link you are using is defined in `TRUNK` mode. The valid range of VLAN IDs is 1 - 4094.

   IP Address
   Enter the IP address of the network adapter. This field is available only for IP addresses of type **Static IPv4 Address** and **Static IPv6 Address**.

   Mask/Prefix
   For an IPv4 or IPv6 address, optionally specify the 2-digit mask/prefix. If you need to convert a 4-byte subnet mask to the 2-digit format, you can find several subnet mask converters on the Internet.

   For network connections:
   - You can define 1 - 100 connections.
   - You can define multiple connections using the same CHPID.
   - You can assign IP addresses of both types **Static IPv4 Address** and **Static IPv6 Address** to the same CHPID/VLAN set. To do so requires one connection entry for IPv4 and another connection entry for IPv6.
3) Click **OK** to save your changes and return to the previous page.

e. Customize global network attributes for the zACI partition.
   1) In the **Default gateway** field, enter an IPv4 address for the default gateway.

      Note: Only IPv4 is supported.

2) From the **Select Action** list in the DNS Servers table, click **Add/Edit DNS server** to define a primary domain name system (DNS) server. The Add/Edit DNS Entry window is displayed. You can define a maximum of two DNS entries.

   A DNS server definition is required if you specified a DHCP-type IP address for any of the network adapters for the zACI partition.

3) Enter the IPv4 or IPv6 address of the DNS server.

4) Click **OK** to save your changes and return to the **zACI** page.

9. Click **Save** when you finish working with the image profile for the zACI partition. The HMC displays a message indicating the status of the save operation.

Results

The image profile for the zACI partition is complete.

What to do next

Activate the zACI partition by following the instructions in Chapter 4, “Starting a zACI partition,” on page 15.

If you need to modify the logon or network settings at a later time, see the instructions in the following topics:

- Chapter 5, “Changing the logon settings for a zACI partition,” on page 17
- Chapter 6, “Changing the network settings for a zACI partition,” on page 19

Chapter 4. Starting a zACI partition

Use this procedure to start a zACI partition through the Hardware Management Console (HMC).

Before you begin

- Before activating the zACI partition, make sure that I/O and storage devices have been configured for this partition. The I/O and storage device requirements depend on the appliance that you plan to install.
- To activate the zACI partition, make sure that you log in to the HMC with a user ID that is assigned to one of the following roles: SYSPROG, OPERATOR, or ADVANCED.

Procedure

1. Select the image for the zACI partition.
2. From the **Daily** task group, open the **Activate** task. The Activate Task Confirmation window is displayed.
3. Review the confirmation text to decide whether to proceed with the task. If you want to continue this task, click **Yes**. The Activate Progress window opens to indicate the progress of the activation and the outcome.
4. Click **OK** to close the window when the activation completes successfully.

   Otherwise, if the activation does not complete successfully, follow the directions on the window to determine the problem and how to correct it.

Results

When the zACI partition is activated, the sequence of events varies, depending on which boot selection you specified on the **zACI** page of the image profile.

z Appliance Container Infrastructure Installer
: With this boot selection, the partition start process initializes the zACI Installer so you can install an appliance. This boot selection is the only option when you start a newly configured zACI partition for the first time. With this option, the zACI Installer is started automatically. When the start process completes, you can access the zACI Installer through your choice of browser. For additional instructions, see the appropriate installation topic in Part 3, “Software appliances,” on page 21.

z Appliance Container Infrastructure
: With this boot selection, the partition start process effectively restarts an installed appliance. If you previously used the zACI Installer to successfully install a platform or software appliance, this boot selection becomes the default selection in the image profile for the zACI partition. In this case, the zACI Installer is rebooted, and the installed appliance is restarted in the zACI partition on this and all subsequent reboots, until you change the boot selection in the image profile.

What to do next

- If you have activated a new zACI partition for the first time, connect to the zACI installer through the browser of your choice, and install a software appliance. For instructions, see the appropriate topic in Part 3, “Software appliances,” on page 21.

  If your company has the IBM zAware hardware feature on a supported z Systems or LinuxONE server, you can install the IBM zAware platform appliance in a zACI partition. For additional details and instructions, see *z Advanced Workload Analysis Reporter (IBM zAware) Guide*, SC27-2632.

- If a previously installed appliance has been restarted, use the IP address to connect to the appliance. For additional details, see the product documentation for the installed appliance.

Chapter 5. Changing the logon settings for a zACI partition

Use this procedure when you need to change the current logon settings for a zACI partition. This procedure is intended for experienced system administrators or system programmers who are responsible for configuring logical partitions on z Systems and LinuxONE servers. To modify the logon settings of a zACI partition, use the Hardware Management Console (HMC) **Customize/Delete Activation Profiles** task to modify the partition profile.

Before you begin

Make sure that you log in to the HMC with a user ID that is assigned to the system programmer role (SYSPROG).

About this task

A system administrator might need to change the current logon settings for the partition, for example, to comply with company rules for changing passwords. An administrator also might change the master ID and password for the partition if the ID and password values are forgotten or lost.

Procedure

1. From the Systems Management menu on the HMC, select the zACI partition that you want to modify. From the Operational Customization Tasks group, open the **Customize/Delete Activation Profiles** task.
2. On the Customize Image Profiles window, select the **zACI** page in the profile tree view.
3. On the **zACI** page, click **Reset Logon Settings**. On the resulting confirmation dialog, click **Yes** to continue.
   a. Replace the current values for the default master user ID and password.

      Master user ID
      Enter the user ID to be used as the default master user ID for the zACI partition. This user ID has authority to perform any task that is available through the zACI graphical user interface (GUI).

      A master user ID can be 1 - 32 characters long. It cannot contain imbedded blanks. Valid characters are numbers 0 - 9, letters A - Z (upper or lower case), and the following special characters: period (.), underscore (_), and hyphen (-).

      Master password
      Enter the password for the master user ID. A master password can have a minimum of 8 characters and a maximum of 256 characters. A master password is case-sensitive and can contain numbers 0 - 9, letters A - Z (upper or lower case), and the following special characters: hyphen (-), underscore (_), exclamation (!), at (@), hash (#), dollar ($), percent (%), carat (^), ampersand (&), asterisk (*), left parenthesis ((), right parenthesis ()), plus (+), left brace ({), right brace (}), vertical bar (|), colon (:), less than (<), greater than (>), question mark (?), and equals (=).

      Confirm master password
      Reenter the password exactly as you typed it for the Master password field.

   b. Replace the current value for the host name.

      A host name can be 1 - 32 characters long. It cannot contain imbedded blanks. Valid characters are numbers 0 - 9, letters A - Z (upper or lower case), and the following special characters: period (.), colon (:), and hyphen (-).

4. Click **Save** when you finish working with the image profile for the zACI partition. The HMC displays a message indicating the status of the save operation.

Results

The partition profile has been updated with the revised logon settings.

What to do next

Reactivate the zACI partition by following the instructions in Chapter 4, “Starting a zACI partition,” on page 15.

Chapter 6. Changing the network settings for a zACI partition

Use this procedure when you need to change the current network settings for a zACI partition. This procedure is intended for experienced system administrators or system programmers who are responsible for configuring logical partitions on z Systems and LinuxONE servers. To modify the network settings of a zACI partition, use the Hardware Management Console (HMC) **Customize/Delete Activation Profiles** task to modify the partition profile.

Before you begin

Make sure that you log in to the HMC with a user ID that is assigned to the system programmer role (SYSPROG).

About this task

A system administrator might need to change the current network settings for the partition, for example, when the hardware configuration changes or when an additional network is required.

Procedure

1. From the Systems Management menu on the HMC, select the zACI partition that you want to modify. From the Operational Customization Tasks group, open the **Customize/Delete Activation Profiles** task.
2. On the Customize Image Profiles window, select the **zACI** page in the profile tree view.
3. On the **zACI** page, click **Reset Network Settings**. On the resulting confirmation dialog, click **Yes** to continue.
   a. Modify the network adapter configuration, as necessary.
      1) From the **Select Action** list in the Network Adapters table, click **Add/Edit Network Adapters** to define a network connection. The Add/Edit Network Adapters Entry window is displayed.
      2) For each type of network connection in the zACI environment, supply the following information.

         IP address type
         Select one of the following types:
         - Dynamic Host Connection Protocol (DHCP)
         - Link local addressing
         - Static IPv4 Address
         - Static IPv6 Address (This option is supported only for the IBM zAware platform appliance.)

         The type you select determines which of the remaining fields you can complete; if a field does not apply for a specific selected type, you cannot enter a value.

         CHPID
         Enter the logical channel path identifier (CHPID) of the network adapter. You can specify the same CHPID multiple times.

         Note:
         - For an Open Systems Adapter (OSA) card, you can use only port 0.
         - Because of unpredictable behavior in the address resolution protocol, the suggested practice is to use only one CHPID for IP addresses on the same subnet. If you use

more than one CHPID with IP addresses on the same subnet, a significant amount of time might be required before all IP addresses are reachable (it could take up to a day for larger network environments).

VLAN Specify the virtual local area network (VLAN) if the link you are using is defined in TRUNK mode. The valid range of VLAN IDs is 1 - 4094.

IP Address
Enter the IP address of the network adapter. This field is available only for IP addresses of type **Static IPv4 Address** and **Static IPv6 Address**.

Mask/Prefix
For an IPv4 or IPv6 address, optionally specify the 2-digit mask/prefix. If you need to convert a 4-byte subnet mask to the 2-digit format, you can find several subnet mask converters on the Internet.

For network connections:

- You can define 1 - 100 connections.
- You can define multiple connections using the same CHPID.
- You can assign IP addresses of both types **Static IPv4 Address** and **Static IPv6 Address** to the same CHPID/VLAN set. To do so requires one connection entry for IPv4 and another connection entry for IPv6.

3) Click **OK** to save your changes and return to the previous page.

b. Modify the global network attributes, as necessary.

1) In the **Default gateway** field, enter an IPv4 address for the default gateway.

Note: Only IPv4 is supported.

2) From the **Select Action** list in the DNS Servers table, click **Add/Edit DNS server** to define a primary domain name system (DNS) server. The Add/Edit DNS Entry window is displayed. You can define a maximum of two DNS entries.

A DNS server definition is required if you specified a DHCP-type IP address for any of the network adapters for the zACI partition.

3) Enter the IPv4 or IPv6 address of the DNS server.

4) Click **OK** to save your changes and return to the **zACI** page.

4. Click **Save** when you finish working with the image profile for the zACI partition. The HMC displays a message indicating the status of the save operation.

Results

The partition profile has been updated with the revised network settings.

What to do next

Reactivate the zACI partition by following the instructions in Chapter 4, “Starting a zACI partition,” on page 15.

Part 3. Software appliances

This part contains step-by-step instructions for installing software appliances in a zACI partition.

Chapter 7. Installing a new software appliance in a zACI partition

Use this procedure to install and start a new software appliance in a zACI partition.

Before you begin

- You must configure and start a zACI partition with the boot option **z Appliance Container Infrastructure installer** selected. For instructions, see the following topics:
  - Chapter 3, "Configuring a zACI partition," on page 9
  - Chapter 4, "Starting a zACI partition," on page 15
- You need to know the IP address for the zACI partition. Use the IP address of the network adapter that is specified in the image profile for the zACI partition. If you do not know the IP address to use, select the partition and start the **Operating System Messages** task. In the resulting display, search for the message about connecting to the zACI installer, which includes the IP address through which the zACI server is listening. Figure 4 shows a sample operating system message containing the IP address.

```
Please connect to the zACI Installer web UI via your browser
The server is listening on: 10.1.1.9

        Network Interface Summary:

Interface       IP Address
=========================================================================
enccw0.0.1a80   [IPv4] 10.1.1.9
enccw0.0.1a80   [IPv6] fe80::ff::feb5:6322
```

Figure 4. Sample Operating System Messages display

- You need to know the master user ID and password for the zACI partition. These values are specified in the image profile for the partition.
- Order and download the software appliance to your local disk. For a list of supported appliances, see Chapter 2, "Prerequisites for using zACI," on page 5.

Procedure

1. Connect to the zACI installer through the browser of your choice.

   Use the IP address of the network adapter that is specified in the image profile for the zACI partition. For example: `https://ip_address/zaci/`

   You are connected through a Secure Sockets Layer (SSL) connection. If prompted by your browser, accept the self-signed certificate for the SSL connection.
2. On the Login page, enter the master user ID and password values that you supplied on the **zACI** page of the image profile, and click **Login**. The main page of the installer opens.
3. On the main page, click the plus (+) icon to install image files from local media. The page display changes to the Install Software Appliance page.
4. On the Install Software Appliance page, complete the following steps.
   a. Make sure that **Upload image to target disk** is selected.
   b. Under Local Installation Image, click Browse and navigate to the location where you installed the software appliance on your local disk. Select the software appliance image and click **Open**. The Image Details section is populated with information about the selected software appliance.

c. Under Target Disk on Server, click the down arrow to display a list of available disks on the server, and either scroll the list or begin typing a disk name in the text box to filter the search. Select a target disk from the list. Only Extended Count Key Data (ECKD™) storage devices are shown in the list of available disks.
d. Click **Apply** to upload the software appliance image to the target disk on the server.

A confirmation dialog is displayed.

5. On the confirmation dialog, complete the following steps.
   a. Click **Reboot** to have the installer automatically reactivate the partition.
   b. Click **Yes** to continue with the installation.

   The zACI installer uploads the appliance image to the target disk, and prepares the partition to load the appliance after the next reboot.
   a. When the reboot process begins, the installer displays the Reboot window.
   b. If an IP address type other than DHCP is in use for the appliance page, the zACI installer redirects the browser to the software appliance page.
6. On the appliance page, complete the following steps.
   a. If prompted by your browser, accept the self-signed certificate for the SSL connection.
   b. Enter the master user ID and password values that you supplied on the **zACI** page of the image profile, and click **Login**.

Results

The software appliance is available for use. See the product documentation for the appliance for additional information and instructions.

Chapter 8. Using the zACI user interface

Appliance that are designed to run in a zACI partition can use one or more zACI user interface (UI) widgets, through which you can view the zACI partition network and logon settings, request a dump of partition data for reporting a problem to IBM, and complete additional management tasks.

To access the installed appliance and view the zACI UI widgets:

- You need to know the IP address for the zACI partition. Use the IP address of the network adapter that is specified in the image profile for the zACI partition.
- You need to know the master user ID and password for the zACI partition. These values are specified in the image profile for the partition.

The following list contains brief descriptions of the available UI widgets and the icons that are displayed in the navigation bar.

1. The Dumps widget () provides the controls through which you can view dumps that have been collected, request a dump, or download the contents of a dump. For more information, see "Requesting and downloading dumps."
2. The Log widget () contains a table display of entries that you can use for problem diagnosis. Each log entry indicates the date and time of the entry, the severity and type of the log entry, and the log entry text. If any additional debug information is available, a download icon () is displayed for the entry; to access this information, click the download icon.
3. The Ex-/Import widget () provides controls through which users can export or import appliance data. For more information, see "Exporting or importing appliance configuration data" on page 26.
4. The Networks widget () displays the status and details for the network interfaces that are defined in the image profile for the zACI partition. These details reflect the information specified in the image profile of the zACI partition.
5. The Storage widget () displays the current storage settings.

Requesting and downloading dumps

Use this procedure to request and download a dump of data for an appliance that is installed and running in a zACI partition. You can use this function only if the installed appliance is designed to use the zACI Dump widget.

Before you begin

You can access the zACI user interface (UI) through the browser of your choice. To access the zACI UI:

- You need to know the IP address for the zACI partition. Use the IP address of the network adapter that is specified in the image profile for the zACI partition.
- You need to know the master user ID and password for the zACI partition. These values are specified in the image profile for the partition.

Procedure

1. In the navigation pane, click the **Dumps** icon () to display the Dumps page.

The Dumps table lists the dumps, if any, that have been collected. The entry for each dump includes a user-supplied reason for the dump request, and indicates the date and time when the dump content was collected. The dump content is configured by the appliance vendor and is encrypted to protect appliance data.

To filter the entries in the Dumps table, enter a text string in the Filter text area. If the text string matches text in any of the Dump Reason column entries, the table display includes only matching entries. To clear the filter, click the **x** in the Filter field or delete the text in that field.

2. To request a dump, click the **Add** icon ( ) to display the Dump dialog.
   a. Select the type of dump that you want.

      Concurrent
      While dump data is collected, the appliance continues to run but some functions might not work as expected.

      Disruptive
      Dump data is collected and the appliance is rebooted.

   b. In the Dump Reason text area, enter information that describes why you are requesting the dump.
   c. Click **Create Dump** to submit the dump request. The resulting process varies, depending on the type of dump you requested.

   For a concurrent dump
   The Dumps table is updated to display a temporary entry for the concurrent dump. The entry includes a status icon. When the dump process is completed, the temporary entry is updated with permanent information for this dump request.

   For a disruptive dump
   The browser display changes to the Reboot page, which changes to the Login page when the appliance has completed the dump and reboot process.

3. To download a specific dump, click the download icon ( ) in the Dump Date/Time column.

Exporting or importing appliance configuration data

Use this procedure to export or import configuration data for an appliance that is installed and running in a zACI partition. An administrator might use these functions to update an appliance or to transfer the appliance configuration to another zACI partition. You can use this function only if the installed appliance is designed to use the zACI Ex-/Import widget.

Before you begin

You can access the zACI user interface (UI) through the browser of your choice.

To access the zACI UI:

- You need to know the IP address for the zACI partition. Use the IP address of the network adapter that is specified in the image profile for the zACI partition.
- You need to know the master user ID and password for the zACI partition. These values are specified in the image profile for the partition.

Procedure

1. In the navigation pane, click the **Ex-/Import** icon ( ).
2. To export configuration data for an appliance, complete the following steps.
   a. Click **Export**.
   b. In the Description text area, enter information that describes the appliance or its configuration data.

c. Click **Export** again.
d. When prompted by your browser, select **Save File** and click **OK**.

The configuration file, export.data, is stored in your file system.

3. To import previously exported configuration data, complete the following steps.
   a. Click **Import**.
   b. On the File Upload page, select the export.data file and click **Open**.
   c. On the Confirm Upload page, click **Yes** to continue the upload. The Reboot page is displayed as the appliance configuration data is uploaded.
   d. When the appliance has been rebooted, the Login page is displayed. If the Login page does not appear, refresh your browser or clear its cache; otherwise, start a new browser session.
   e. On the Login page, enter your credentials and click **Login**.

Chapter 9. Moving an existing software appliance into a zACI partition

Use this procedure to move an existing software appliance from one zACI partition to another (this action is a disruptive task). In this case, the software appliance image already resides on a disk that is attached to the server that hosts the zACI partition.

Before you begin

- You must configure and start a zACI partition with the boot option **z Appliance Container Infrastructure installer** selected. For instructions, see the following topics:
  - Chapter 3, "Configuring a zACI partition," on page 9
  - Chapter 4, "Starting a zACI partition," on page 15
- You need to know the IP address for the zACI partition. Use the IP address of the network adapter that is specified in the image profile for the zACI partition. If you do not know the IP address to use, select the partition and start the **Operating System Messages** task. In the resulting display, search for the message about connecting to the zACI installer, which includes the IP address through which the zACI server is listening. Figure 5 shows a sample operating system message containing the IP address.

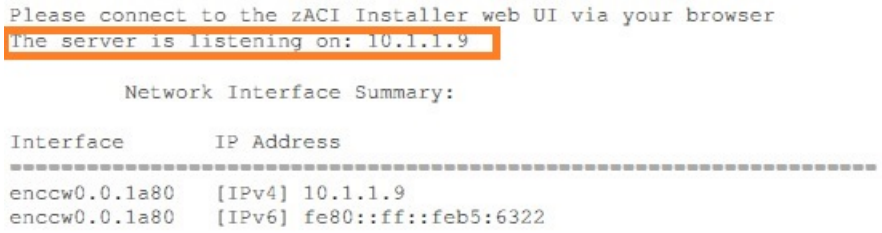

Figure 5. Sample Operating System Messages display

- You need to know the master user ID and password for the zACI partition. These values are specified in the image profile for the partition.
- You need to know the ID of the disk on which the existing software appliance image is currently installed.

Procedure

1. Connect to the zACI installer through the browser of your choice.

   Use the IP address of the network adapter that is specified in the image profile for the zACI partition. For example: `https://ip_address/zaci/`

   You are connected through a Secure Sockets Layer (SSL) connection. If prompted by your browser, accept the self-signed certificate for the SSL connection.
2. On the Login page, enter the master user ID and password values that you supplied on the **zACI** page of the image profile, and click **Login**. The main page of the installer opens.
3. On the main page, click the plus (+) icon to install image files from local media. The page display changes to the Install Software Appliance page.
4. On the Install Software Appliance page, complete the following steps.
   a. Select **Attach existing disk**.
   b. Under Existing Disk with Software Appliance, click the down arrow to display a list of the disks attached to the server, and either scroll the list or begin typing a disk name in the text box to filter

the search. From the list, select the disk on which the software appliance resides. The Image Details section is populated with information about the software appliance.

c. Click **Apply** to install and start the software appliance.

A confirmation dialog is displayed.

5. On the confirmation dialog, complete the following steps.
   a. Click **Reboot** to have the installer automatically reactivate the partition.
   b. Click **Yes** to continue with the installation.

   The zACI installer attaches the selected disk, and prepares the partition to load the appliance after the next reboot.
   a. When the reboot process begins, the installer displays the Reboot window.
   b. If an IP address type other than DHCP is in use for the appliance page, the zACI installer redirects the browser to the software appliance page.
6. On the appliance page, complete the following steps.
   a. If prompted by your browser, accept the self-signed certificate for the SSL connection.
   b. Enter the master user ID and password values that you supplied on the **zACI** page of the image profile, and click **Login**.

Results

The software appliance is available for use. See the product documentation for the appliance for additional information and instructions.

Part 4. Appendixes

Appendix. Notices

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European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
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回路分類：６（単相、ＰＦＣ回路付）
換算係数：０

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- 使用30分鐘請休息10分鐘
- 未滿2歲幼兒不看螢幕，2歲以上每天看螢幕不要超過一小時

The following is a summary of the Taiwan display statement above:
- Excessive use may harm your eyesight.
- Please take a 10-minute rest for every 30 minutes.
- Children less than two years old shall not watch the display. Children above two years old shall not watch the display more than one hour a day.

IBM Taiwan Contact Information:

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