

IBM Z

*Secure Service Container
User's Guide*

Level 01a



Note:

Before you use this information and the product it supports, read the information in “Safety” on page ix, Appendix B, “Notices,” on page 69 and *IBM Systems Environmental Notices and User Guide, Z125-5823*.

This edition, SC28-7005-01a, applies to IBM Z (Z) and IBM LinuxONE (LinuxONE) servers. This edition replaces SC28-7005-01.

There might be a newer version of this document in a **PDF** file available on **Resource Link**.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.

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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 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® (Z) and IBM® LinuxONE (LinuxONE) models can use I/O cards such as FICON®, Open Systems Adapter (OSA), RoCE Express, Integrated Coupling Adapter (ICA SR), zHyperLink Express, or other I/O features which are fiber optic based and utilize lasers (short wavelength or long wavelength lasers).

Laser compliance

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.

Laser Notice: U.S. FDA CDRH NOTICE if low power lasers are utilized, integrated, or offered with end product systems as applicable. Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

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 Secure Service Container to install and run software appliances on Z and LinuxONE servers. Topics include how to configure and start a Secure Service Container partition, and how to install a software appliance using the Secure Service Container installer.

You can configure Secure Service Container partitions on the following systems:

- IBM z15™ (z15™): machine types 8561 and 8562
- IBM z14 (z14): machine types 3906 and 3907
- IBM z13® (z13®) or IBM z13s® (z13s®)
- IBM LinuxONE III: machine types 8561 and 8562
- IBM LinuxONE Emperor II (Emperor II), or IBM LinuxONE Rockhopper II (Rockhopper II)
- IBM LinuxONE Emperor (Emperor), or IBM LinuxONE Rockhopper (Rockhopper) machine type 2965

This book describes the version of Secure Service Container that is available starting with the Hardware Management Console (HMC) / Support Element (SE) Version 2.15.0. For information about Secure Service Container for the previous version of the HMC/SE, see *Secure Service Container User's Guide*, SC28-6978.

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 Secure Service Container partition.

Prerequisite and related information

To create and manage Secure Service Container partitions, system administrators use specific tasks on the HMC for a host system running either in standard mode (that is, with Processor Resource/System Manager or PR/SM), or with Dynamic Partition Manager (DPM) enabled. These HMC tasks can be accomplished through a program as well, with the HMC Web Services application programming interfaces (APIs).

- For more information about the host system, see the appropriate overview on the IBM Redbooks® website at <http://www.redbooks.ibm.com/>. For example, for the z15, see the *IBM z15 Technical Introduction*, SG24-8850.
- For more information about the following topics, go to the Library link for the appropriate host system on IBM Resource Link® at <http://www.ibm.com/servers/resourcelink>.
 - For more information about PR/SM, see *PR/SM Planning Guide*.
 - For information about DPM, see *IBM Dynamic Partition Manager Guide*.
 - For information about the HMC APIs, see *Hardware Management Console Web Services API*.

HMC users also can monitor and manage systems and partitions through the IBM HMC Mobile for Z and LinuxONE (HMC Mobile) mobile app for iOS and Android. The systems can either run in standard mode (that is, with Processor Resource/System Manager or PR/SM), or run with DPM enabled. The HMC Mobile app provides system and partition views, status monitoring, hardware messages, operating system messages, and the ability to receive push notifications from the HMC, using the existing support server connection. For more information, see the HMC online help for the **HMC Mobile Settings** task.

Related HMC and SE console information

Hardware Management Console (HMC) and Support Element (SE) information can be found on the console help system.

How to use this publication

This book provides an overview of the Secure Service Container, and lists the system requirements for its use. This book also provides step-by-step instructions for system administrators who create Secure Service Container partitions, and install software in them.

Topics are organized into the following parts.

Part 1, “Introduction to the Secure Service Container,” on page 1

Topics in this part contain general information about Secure Service Container and the advantages of installing software appliances in a Secure Service Container partition, and the prerequisites for use.

Part 2, “Working with Secure Service Container partitions on a standard mode system,” on page 11

Topics in this part contain step-by-step instructions for initially configuring and starting a Secure Service Container partition on a host system that is running in standard mode (that is, with Processor Resource/System Manager or PR/SM).

Part 3, “Working with Secure Service Container partitions on a DPM-enabled system,” on page 27

Topics in this part contain step-by-step instructions for initially configuring and starting a Secure Service Container partition on a host system with DPM enabled.

Part 4, “Software appliances,” on page 43

Topics in this part contain step-by-step instructions for installing software appliances in a Secure Service Container partition, using the Secure Service Container user interface, and moving an existing appliance to another Secure Service Container partition.

Appendixes

Topics in this part include error and information codes from the Secure Service Container installer, legal notices, and trademarks.

Accessibility

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

If you experience any difficulty with the accessibility of any IBM Z and IBM LinuxONE information, go to Resource Link at <http://www.ibm.com/servers/resourcelink> and click **Feedback** from the navigation bar on the left. In the **Comments** input area, state your question or comment, the publication title and number, choose **General comment** as the category and click **Submit**. You can also send an email to reslink@us.ibm.com providing the same information.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Accessibility features

The following list includes the major accessibility features in IBM Z and IBM LinuxONE documentation, and on the Hardware Management Console and Support Element console:

- 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.

Consult assistive technologies

Assistive technology products such as screen readers function with our publications, the Hardware Management Console, and the Support Element console. Consult the product information for the specific assistive technology product that is used to access the EPUB format publication or console.

IBM and accessibility

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

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. Send your comments by using Resource Link at <http://www.ibm.com/servers/resourcelink>. Click **Feedback** on the navigation bar on the left. You can also send an email to reslink@us.ibm.com. Be sure to include the name of the book, the form number of the book, the version of the book, if applicable, and the specific location of the text you are commenting on (for example, a page number, table number, or a heading).

Summary of changes

For the most recent edition only, technical changes to the text are indicated by a thick vertical line to the left of the change.

Summary of changes for SC28-7005-01a

The following topics have been updated with information about DPM R4.3, which introduces support for Fibre Channel Protocol (FCP) tape storage. Secure Service Container appliances do **not** support the use of tape storage devices.

- [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#)
- [Chapter 8, “Creating a Secure Service Container partition on a DPM-enabled system,” on page 29](#)
- [“Viewing and managing storage resources” on page 55](#)

Also, all references to IBM Knowledge Center have been changed to IBM Documentation (<https://www.ibm.com/docs/en>).

Summary of changes for SC28-7005-01

- [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#) includes the following information:
 - References to the new IBM z15 machine type 8562 in several topics.
 - Clarified information about network and storage adapters in [“Before you configure a Secure Service Container partition” on page 6](#).
 - New supported appliances in [“Appliances that can be installed in a Secure Service Container partition” on page 7](#).
- Various topics have been updated with minor editorial changes.

Summary of changes for SC28-7005-00b

The topic, [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#), has been updated with bundle and engineering change numbers.

Summary of changes for SC28-7005-00a

- The topic, [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#), has been updated with bundle and engineering change numbers.
- Various topics have been updated with minor changes related to IBM Dynamic Partition Manager (DPM) version 4.0.

Part 1. Introduction to the Secure Service Container

This part contains general information about Secure Service Container and the advantages of installing software appliances in a Secure Service Container partition, and the prerequisites for use.

- [Chapter 1, “Secure Service Container: A container technology for deploying appliances,” on page 3](#)
- [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#)

Chapter 1. Secure Service Container: A container technology for deploying appliances

The IBM Secure Service Container is a container technology through which you can more quickly and securely deploy software appliances on IBM Z and IBM LinuxONE (LinuxONE) servers. A Secure Service Container partition is a specialized container for installing and running specific 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.

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 I/O adapters.

IBM Z 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) 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.

The host system mode determines how an administrator defines partition characteristics.

- For a host system running in standard mode (that is, with Processor Resource/System Manager or PR/SM), administrators use the **Customize/Delete Activation Profiles** task to define the operating mode of a partition. For a Secure Service Container partition, the operating mode is **SSC**.

Figure 1 on page 3 shows a sample screen capture of the **Customize/Delete Activation Profiles** task page through which an administrator selects the partition mode. To configure a Secure Service Container partition, an administrator selects **SSC** as the Mode value.

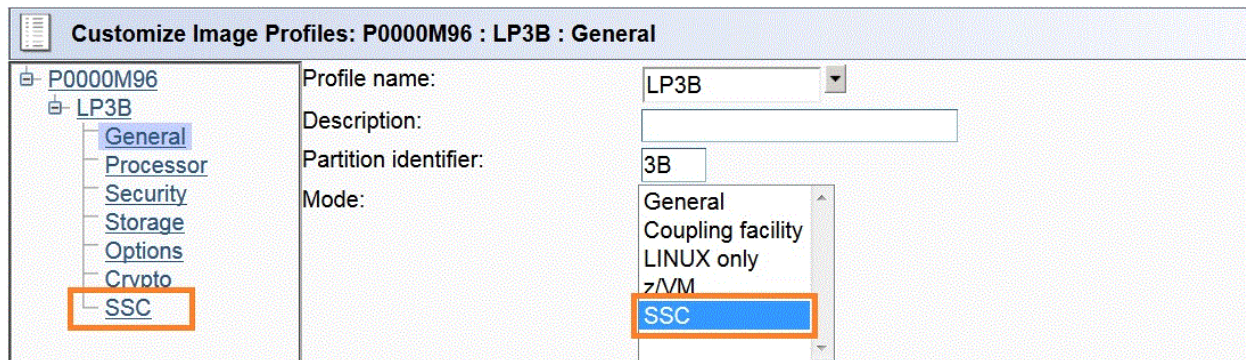


Figure 1. A portion of the General page of the Customize/Delete Activation Profiles task

- For a host system with IBM Dynamic Partition Manager (DPM) enabled, administrators use the **New Partition** task to select the partition type. For a Secure Service Container partition, the partition type is **Secure Service Container**.

Figure 2 on page 4 shows a sample screen capture of the **New Partition** task (in basic mode) through which an administrator selects the partition type. To configure a Secure Service Container partition, an administrator selects **Secure Service Container** as the type value.

New Partition - RACKPR27

Welcome

- * **Name**
- Processors
- Memory
- * Network
- Storage
- Accelerators
- Cryptos
- Boot
- * Summary

Provide a name and description for the partition.

* Name:

Description:

Partition Type:

Provide a master user ID and password to use when logging in to the SSC web interface.

* Master User ID:

* Master Password:

* Confirm Master Password:

Figure 2. A portion of the Name page of the New Partition task in basic mode

What makes a Secure Service Container partition different from other partitions

Unlike most other types of partitions, a Secure Service Container 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.

Through this infrastructure, Secure Service Container provides:

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

For a list of supported appliances and the requirements for their installation in a Secure Service Container partition, see [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#).

Chapter 2. Prerequisites for using Secure Service Container

This topic provides information about the IBM Z and IBM LinuxONE (LinuxONE) systems that contain the IBM Secure Service Container.

You can configure Secure Service Container partitions on the following IBM Z and LinuxONE servers.

- IBM z15 (z15): machine types 8561 and 8562
- IBM z14 (z14): machine types 3906 and 3907
- IBM z13 (z13) or IBM z13s (z13s)
- IBM LinuxONE III: machine types 8561 and 8562
- IBM LinuxONE Emperor II (Emperor II), or IBM LinuxONE Rockhopper II (Rockhopper II)
- IBM LinuxONE Emperor (Emperor), or IBM LinuxONE Rockhopper (Rockhopper) machine type 2965

This topic describes the prerequisites for using the version of Secure Service Container that is available starting with the Hardware Management Console (HMC) / Support Element (SE) Version 2.15.0. For information about Secure Service Container for the previous version of the HMC/SE, see *Secure Service Container User's Guide*, SC28-6978.

The suggested practice is to use the latest available firmware for Secure Service Container, which is identified by the engineering changes (ECs) in [Table 1 on page 5](#). To find the latest available EC microcode control levels (MCLs) for Secure Service Container, use the instructions for hardware updates in “Where to find hardware planning and corequisite software information” on [page 8](#).

Machine type	HMC/SE version and driver	Bundle	Engineering changes
8561 and 8562	Version 2.15.0 Driver 41	S20b or later	<ul style="list-style-type: none"> • SE-BCBASE P46639 • SE-BCBOOT P46640 • SE-BCINST P46655
3906 and 3907	Version 2.14.1 Driver 36	S12 or later	<ul style="list-style-type: none"> • SE-BCBASE P41453 • SE-BCBOOT P41454 • SE-BCINST P41467
	Version 2.14.0 Driver 32	S53 or later	<ul style="list-style-type: none"> • SE-BCBASE P42638 • SE-BCBOOT P42639 • SE-BCINST P42652
2964 and 2965	Version 2.13.1 Driver 27	S86 or later	<ul style="list-style-type: none"> • SE-BCINST P08458 • SE-FWPART P08442

Required feature codes

Depending on the type of applications that you intend to run in a Secure Service Container partition, you need to order and install one of the feature codes listed in [Table 2 on page 6](#). These feature codes enable unlimited right to use on IBM Z and LinuxONE server machine types 3907, 3906, 2965, and 2964.

These feature codes are mutually exclusive; each server can have only one of these Secure Service Container feature codes installed.

<i>Table 2. Required feature codes for Secure Service Container</i>	
Feature codes	Secure Service Container and supported applications
0103	Linux® Hosting Foundation: Supports the use of Secure Service Container, which is a specialized container for installing and running specific appliances. For details about supported applications, see “Appliances that can be installed in a Secure Service Container partition” on page 7.
0104	Container Hosting Foundation: Supports the use of Secure Service Container for IBM Cloud Private, which is a software appliance framework that is designed to securely host one or more Linux variable-use or container-based applications. For more information, see the Secure Service Container for ICP documentation in IBM Documentation at https://www.ibm.com/docs/en/sscfcp/1.1.0

Before you configure a Secure Service Container partition

The host system mode determines which HMC task you can use to define a Secure Service Container partition.

- For a host system running in standard mode (that is, with Processor Resource/System Manager or PR/SM), use the **Customize/Delete Activation Profiles** task.
- For a host system with DPM enabled, use the **New Partition** task.

Before you use either task to create a partition, make sure that your installation meets the following prerequisites.

- Your installation must have correctly configured the IBM Z or LinuxONE server on which you want to configure the Secure Service Container partition.
- Before you create a Secure Service Container partition, use the appropriate method to specify the activation order for the new partition.
 - For a host system running in standard mode, update the CPC reset profile to include the activation order for the new partition.
 - For a host system with DPM enabled, update the **Start Options** section of the **System Details** task.
- Before starting the Secure Service Container 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 any Open Systems Adapter (OSA) features that are configured on the system.

For OSA features, Secure Service Container can use either port 0 or port 1. Another Secure Service Container partition, or another type of partition, can use any remaining port of the same OSA feature. From a security point of view, however, a dedicated I/O resource is more secure than a shared one. So if the appliance that you install in a Secure Service Container partition requires a high level of security, consider configuring the OSA feature as dedicated rather than shared.

- Supported storage devices are Fibre Connection (FICON) Extended Count Key Data (ECKD) direct access storage devices (DASD) and Fibre Channel Protocol (FCP) disks.
- For FICON DASD, you can use parallel access volumes only when your storage administrator has activated the optional HyperPAV feature on the IBM System Storage® DS8000® series, and has configured both base and alias volumes.
- Target FCP disks must be large enough to fit the uncompressed appliance, with an additional 2 GB for the Secure Service Container installer to use.

To enable Secure Service Container to discover FCP disks on which you can install software appliances, your installation needs to verify that the logical unit numbers (LUNs) for these disks are

mapped to the appropriate host/initiator worldwide port names (WWPNs), and to enable N Port Identifier Virtualization (NPIV) through the Support Element. To enable NPIV, complete the following steps.

1. On the HMC, log on to the Support Element through the **Single Object Operations** task, with a user ID that is associated with the operator, advanced operator, system programmer, or service representative role.
2. Locate the channel path identifier (CHPID) that provides access to the FCP devices.
3. Locate and open the **FCP NPIV Mode On/Off** task.
4. On the NPIV Mode On/Off window, select the listed channel paths to be enabled for FCP NPIV mode, and click **Apply**.

The host system mode determines how to define network connections and storage devices for this partition.

- For a host system running in standard mode, 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 HCD User's Guide*, SC34-2669, which is available in IBM Documentation at <https://www.ibm.com/docs/en/zos/2.4.0?topic=zos-hcd>
 - *Input/Output Configuration Program User's Guide for ICP IOCP*, SB10-7172, which is available in IBM Resource Link at <http://www.ibm.com/servers/resourcelink>
- For a host system with DPM enabled, DPM automatically detects the I/O adapters that are connected to the system. The DPM version determines which type of storage devices are available for use, and which method you use to configure them:
 - With DPM R3.0 or earlier, you can access FCP storage disks only. Use the HMC **Manage Adapters** task to manage the adapters for those storage devices.
 - With DPM R3.1 or later, you can access both FCP disks and FICON DASD. Use the **Configure Storage** task (instead of the **Manage Adapters** task) to configure storage adapters.
 - Starting with R4.3, DPM provides support for access to FCP tape storage through the **Configure Storage** task. However, although you can create and start a Secure Service Container partition that has tape links defined for access to FCP tape storage, Secure Service Container appliances do **not** support the use of tape storage devices.

Regardless of the DPM version, use the **Manage Adapters** task to view and manage network adapters.

For more information about prerequisites for using DPM, see the appropriate edition of the *IBM Dynamic Partition Manager Guide*, which is available on IBM Resource Link at <http://www.ibm.com/servers/resourcelink>

Appliances that can be installed in a Secure Service Container partition

Secure Service Container supports the following appliances.

- Linux container-based applications that are designed to run in Secure Service Container for IBM Cloud Private. For more information, see <https://www.ibm.com/docs/en/daafz>
- IBM Db2® Analytics Accelerator for z/OS®, which is a bundled solution package for the acceleration of database queries. It supports two deployment options, one of which requires a Secure Service Container; this deployment option is called the mainframe-only solution, or Db2 Analytics Accelerator on Z. For more information, see <https://www.ibm.com/docs/en/daafz>
- IBM Hyper Protect Virtual Servers, which protect Linux workloads on IBM Z and LinuxONE throughout the application lifecycle. For more information, see <https://www.ibm.com/us-en/marketplace/hyper-protect-virtual-servers>

- IBM Data Privacy Passports, through which you can encrypt your eligible data, grant and revoke access to it, and maintain control of it, even as it moves off the system of record within your enterprise. For more information, see <https://www.ibm.com/us-en/marketplace/data-privacy-passports>
- IBM Blockchain High Security Business Network. For more information, see the IBM announcement at <https://www.ibm.com/common/ssi/cgi-bin/ssialias?infotype=an&subtype=ca&appname=gpatteam&supplier=897&letternum=ENUS216-491>
- The IBM z Advanced Workload Analysis Reporter (IBM zAware) Software Appliance. For more information, go to the web page for IBM Z Operations Analytics at <http://www.ibm.com/software/products/en/ibm-operations-analytics-for-z-systems>

The following requirements apply for all supported appliances:

- Only one appliance can be installed and run in a Secure Service Container partition at any given time; this type of partition does not support running multiple appliances simultaneously.
- You can define more than one Secure Service Container partition on the same system, and run instances of the same appliance in each one. In this case, each partition must use separate storage devices.
- You can reuse an existing Secure Service Container partition for a different appliance. After stopping the installed appliance and the partition, reboot the Secure Service Container installer and select a different appliance to install. Before doing so, however, check the storage and network connections for the partition to make sure that they are appropriate for the appliance to be installed.

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 z15, the 8561DEVICE or 8562DEVICE PSP bucket
 - For a LinuxONE III, the 8561DEVICE or 8562DEVICE PSP bucket
 - For a z14, the 3906DEVICE or 3907DEVICE PSP bucket
 - For an Emperor II, the 3906DEVICE PSP bucket
 - For a Rockhopper II, the 3907DEVICE PSP bucket
 - For a z13 or Emperor, the 2964DEVICE PSP bucket
 - For a z13s or Rockhopper (machine type 2965), the 2965DEVICE PSP bucket

Browser requirements and dependencies

The following tables list supported browser versions for the Secure Service Container installer and for using the user interface (UI) widgets for an installed appliance. The last table provides information about the Secure Service Container license file display.

The Secure Service Container (UI) requires the use of an HTML5-compliant web browser with JavaScript enabled. The latest version of the Secure Service Container allows only browsers with TLS 1.2 enabled.

Browser	Version	Operating system
Firefox	38 and above	Windows, Linux
Chrome	49 and above	Windows, Linux

Table 3. Supported browsers for the Secure Service Container installer (continued)

Browser	Version	Operating system
Internet Explorer	11 and above	Windows

Table 4. Supported browsers for the Secure Service Container UI widgets

Browser	Version	Operating system
Firefox	38 and above	Windows, Linux
Chrome	49 and above	Windows, Linux
Internet Explorer	11 and above	Windows

Table 5. Secure Service Container license file display

Browser	Operating system	Display
Firefox	Windows, Linux	The license file shown depends on the web page display language.
Chrome	Linux	The license file shown depends on the browser display language, which is controlled by the operating system locale.
Chrome	Windows	The license file shown depends on the browser display language, which can be set independently from the operating system console.
Internet Explorer	Windows	The license file shown depends on the browser display language, which is controlled by the operating system locale.

Part 2. Working with Secure Service Container partitions on a standard mode system

This part contains step-by-step instructions for initially configuring and starting a Secure Service Container partition on a host system that is running in standard mode (that is, with Processor Resource/System Manager or PR/SM). Topics include instructions for resetting login and network values.

- [Chapter 3, “Configuring a Secure Service Container partition on a standard mode system,” on page 13](#)
- [Chapter 4, “Starting a Secure Service Container partition on a standard mode system,” on page 19](#)
- [Chapter 5, “Changing the logon settings for a Secure Service Container partition on a standard mode system,” on page 21](#)
- [Chapter 6, “Changing the network settings for a Secure Service Container partition on a standard mode system,” on page 23](#)

Chapter 3. Configuring a Secure Service Container partition on a standard mode system

Use this procedure to configure a Secure Service Container partition on a host system that is running in standard mode (that is, with Processor Resource/System Manager or PR/SM). These configuration instructions include 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 IBM Z and LinuxONE servers. To configure a Secure Service Container partition on a standard mode system, 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

- Your installation must have correctly configured a supported host system and its I/O and storage devices. Check the list of prerequisites and information sources in [Chapter 2, “Prerequisites for using Secure Service Container,”](#) on page 5.
- Make sure that the image profile name that you supply for the Secure Service Container 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 Secure Service Container partition, 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

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

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 Secure Service Container 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 **SSC** mode from the scrollable list.

When you select **SSC** as the partition mode, the HMC adjusts the navigation pane and individual page content to display LPAR characteristics that are appropriate for a Secure Service Container partition.

The profile tree view now contains a link for the **SSC** 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 Secure Service Container partition. If necessary, use the online help for guidance.

Secure Service Container 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 Secure Service Container 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 Secure Service Container 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 **SSC** page in the profile tree view.

[Figure 3 on page 15](#) shows the **SSC** page elements.

Customize Image Profiles: P0000M96 : LP3B : SSC

Secure Service Container installer
 Secure Service Container

Master user ID:
 Master password:
 Confirm master password:
 Host name:

Network Adapters

--- Select Action ---

Select ^ CHPID ^ Port ^ VLAN ^ IP address ^ Mask/Prefix ^

IPv4 gateway:
 IPv6 gateway:

DNS Servers

--- Select Action ---

Select ^ IP address ^

Figure 3. LPAR image profile: SSC page elements

- Under Boot selection, note that only one option is selectable: **Secure Service Container installer**
- 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 Secure Service Container partition. This user ID has authority to perform any task that is available through the Secure Service Container graphical user interface (GUI).

A master user ID can be 1 - 32 characters long. It cannot contain 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.

- Provide a value for the host name.

A host name can be 1 - 32 characters long. It cannot contain 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 Secure Service Container partition.

- i) 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.
- ii) For each type of network connection in the Secure Service Container environment, supply the following information.

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

CHPID

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

Note: 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).

Port

Select either port 0 or port 1. By default, port 0 is selected.

VLAN ID

Specify the identifier of 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 type

Select one of the following types:

- Dynamic Host Connection Protocol (DHCP)
- Link local addressing
- Static IPv4 Address
- Static IPv6 Address

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.

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

For an IPv4 address, optionally specify a 2-digit mask.

Prefix

For an IPv6 address, optionally specify a prefix in the range 1 - 128.

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.

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

e) Customize global network attributes for the Secure Service Container partition.

- i) Depending on the IP address type you selected for the network adapter, enter either an IPv4 address in the IPv4 gateway field, or an IPv6 address in the IPv6 gateway field. Do not include the mask or prefix for the gateway address.
 - ii) 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 Secure Service Container partition.
 - iii) Enter the IPv4 or IPv6 address of the DNS server.
 - iv) Click **OK** to save your changes and return to the **SSC** page.
9. Click **Save** when you finish working with the image profile for the Secure Service Container partition. The HMC displays a message indicating the status of the save operation.

Results

The image profile for the Secure Service Container partition is complete.

What to do next

Activate the Secure Service Container partition by following the instructions in [Chapter 4, “Starting a Secure Service Container partition on a standard mode system,” on page 19](#).

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 Secure Service Container partition on a standard mode system,” on page 21](#)
- [Chapter 6, “Changing the network settings for a Secure Service Container partition on a standard mode system,” on page 23](#)

Chapter 4. Starting a Secure Service Container partition on a standard mode system

Use this procedure to start a Secure Service Container partition through the Hardware Management Console (HMC) on a host system that is running in standard mode (that is, with Processor Resource/System Manager or PR/SM).

Before you begin

- Before activating the Secure Service Container partition, make sure that I/O and storage devices have been configured for this partition in the I/O definition file (IODF) or I/O configuration data set (IOCDS) that is currently in effect for the host system. The I/O and storage device requirements depend on the appliance that you plan to install.
- To activate the Secure Service Container 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 Secure Service Container 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 Secure Service Container partition is activated, the sequence of events varies, depending on which boot selection you specified on the **SSC** page of the image profile.

Secure Service Container Installer

With this boot selection, the partition start process initializes the Secure Service Container Installer so you can install an appliance. This boot selection is the only option when you start a newly configured Secure Service Container partition for the first time. With this option, the Secure Service Container Installer is started automatically. When the start process completes, you can access the Secure Service Container Installer through your choice of browser. For more instructions, see the appropriate installation topic in [Part 4, “Software appliances,” on page 43](#).

Secure Service Container

With this boot selection, the partition start process effectively restarts an installed appliance. If you previously used the Secure Service Container Installer to successfully install a software appliance, this boot selection becomes the default selection in the image profile for the Secure Service Container partition. In this case, the Secure Service Container Installer is rebooted, and the installed appliance is restarted in the Secure Service Container 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 Secure Service Container partition for the first time, connect to the Secure Service Container installer through the browser of your choice, and install a software appliance. For instructions, see the appropriate topic in [Part 4, “Software appliances,” on page 43](#).

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- 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 Secure Service Container partition on a standard mode system

Use this procedure when you need to change the current logon settings for a Secure Service Container partition on a host system that is running in standard mode (that is, with Processor Resource/System Manager or PR/SM). This procedure is intended for experienced system administrators or system programmers who are responsible for configuring logical partitions on IBM Z and LinuxONE servers. To modify the logon settings of a Secure Service Container 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 system on which you created the Secure Service Container partition, and select that partition in the Partitions list. From the Operational Customization Tasks group, open the **Customize/Delete Activation Profiles** task.
2. On the **Customize Image Profiles** window, select the **SSC** page in the profile tree view.
3. On the **SSC** page, click **Reset Logon Settings**. On the resulting confirmation window, 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 Secure Service Container partition. This user ID has authority to perform any task that is available through the Secure Service Container graphical user interface (GUI).

A master user ID can be 1 - 32 characters long. It cannot contain 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 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 Secure Service Container 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 Secure Service Container partition by following the instructions in [Chapter 4, "Starting a Secure Service Container partition on a standard mode system,"](#) on page 19.

Chapter 6. Changing the network settings for a Secure Service Container partition on a standard mode system

Use this procedure when you need to change the current network settings for a Secure Service Container partition on a host system that is running in standard mode (that is, with Processor Resource/System Manager or PR/SM). This procedure is intended for experienced system administrators, system programmers, or network administrators who are responsible for configuring logical partitions on IBM Z and LinuxONE servers. To modify the network settings of a Secure Service Container 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.

An administrator also can modify network settings from within an installed appliance, through the Secure Service Container UI network management widget. For more information, see [“Viewing and managing network connections”](#) on page 52.

Procedure

1. From the Systems Management menu on the HMC, select the system on which you created the Secure Service Container partition, and select that partition in the Partitions list. From the Operational Customization Tasks group, open the **Customize/Delete Activation Profiles** task.
2. On the **Customize Image Profiles** window, select the **SSC** page in the profile tree view.
3. On the **SSC** page, click **Reset Network Settings**. On the resulting confirmation window, click **Yes** to continue.
 - a) Modify the network adapter configuration, as necessary.
 - i) 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.
 - ii) For each type of network connection in the Secure Service Container environment, supply the following information.

CHPID

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

Note: 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).

Port

Select either port 0 or port 1. By default, port 0 is selected.

VLAN ID

Specify the identifier of 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 type

Select one of the following types:

- Dynamic Host Connection Protocol (DHCP)
- Link local addressing
- Static IPv4 Address
- Static IPv6 Address

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.

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

For an IPv4 address, optionally specify a 2-digit mask.

Prefix

For an IPv6 address, optionally specify a prefix in the range 1 - 128.

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.

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

b) Modify the global network attributes, as necessary.

- i) Depending on the IP address type you selected for the network adapter, enter either an IPv4 address in the IPv4 gateway field, or an IPv6 address in the IPv6 gateway field. Do not include the mask or prefix for the gateway address.
- ii) 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 Secure Service Container partition.

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

iv) Click **OK** to save your changes and return to the **SSC** page.

4. Click **Save** when you finish working with the image profile for the Secure Service Container 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 Secure Service Container partition by following the instructions in [Chapter 4, "Starting a Secure Service Container partition on a standard mode system,"](#) on page 19.

Chapter 7. Deactivating or deleting a Secure Service Container partition on a standard mode system

Use this procedure to deactivate or delete a Secure Service Container partition through the Hardware Management Console (HMC) on a host system that is running in standard (Processor Resource/System Manager or PR/SM) mode. This action is a disruptive task.

Before you begin

To deactivate or delete the Secure Service Container 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.

About this task

When you determine that you no longer need a Secure Service Container partition, deactivate and then either delete or modify its image profile to avoid inadvertently restarting a software appliance from a disk that might be in use by another partition.

Procedure

1. To deactivate a Secure Service Container partition, complete the following steps.

This task stops the installed appliance and the embedded operating system, and deallocates resources for the selected partition.

- a) Select the image for the Secure Service Container partition.
- b) From the **Daily** task group, open the **Deactivate** task.
The **Deactivate Task Confirmation** window is displayed.
- c) Review the confirmation text to decide whether to proceed with the task. If you want to continue this task, click **Yes**.
The **Deactivate Progress** window opens to indicate the progress of the deactivation and the outcome.
- d) Click **OK** to close the window when the deactivation completes successfully.
Otherwise, if the deactivation does not complete successfully, follow the directions on the window to determine the problem and how to correct it.

2. After the partition is deactivated, you can either delete or modify its image profile to prevent the automatic restart of the partition and its installed appliance.

- To delete the image profile:
 - a. Select the image for the Secure Service Container partition.
 - b. From the Operational Customization Tasks group, open the **Customize/Delete Activation Profiles** task.
 - c. Select the image profile for the Secure Service Container partition, and click **Delete**. The HMC displays a message that indicates the status of the delete operation.
- To modify the image profile:
 - a. Select the image for the Secure Service Container partition.
 - b. From the Operational Customization Tasks group, open the **Customize/Delete Activation Profiles** task.
 - c. Select the image profile for the Secure Service Container partition, and click **Customize profile**.
 - d. On the **Customize Image Profiles** window, select the **SSC** page from the profile tree, and select the **Secure Service Container installer** boot selection.

- e. Click **Save** when you finish working with the image profile for the Secure Service Container partition. The HMC displays a message indicating the status of the save operation.

Results

The image profile is either deleted or modified such that an appliance cannot be restarted in the Secure Service Container partition.

Part 3. Working with Secure Service Container partitions on a DPM-enabled system

This part contains step-by-step instructions for initially configuring and starting a Secure Service Container partition on a host system with DPM enabled. Topics include instructions for resetting login and network values.

- [Chapter 8, “Creating a Secure Service Container partition on a DPM-enabled system,” on page 29](#)
- [Chapter 9, “Starting a Secure Service Container partition on a DPM-enabled system,” on page 35](#)
- [Chapter 10, “Changing the login settings for a Secure Service Container partition on a DPM-enabled system,” on page 37](#)
- [Chapter 11, “Changing the network settings for a Secure Service Container partition on a DPM-enabled system,” on page 39](#)
- [Chapter 12, “Stopping or deleting a Secure Service Container partition on a DPM-enabled system,” on page 41](#)

Chapter 8. Creating a Secure Service Container partition on a DPM-enabled system

Use this procedure to configure a Secure Service Container partition on a host system with DPM enabled. These configuration instructions include setting initial logon and network values. This procedure is intended for system administrators or system programmers who are responsible for configuring logical partitions on IBM Z and LinuxONE servers. To configure a Secure Service Container partition on a DPM-enabled system, use the Hardware Management Console (HMC) **New Partition** task to create a partition definition.

Before you begin

The **New Partition** task offers two modes through which you can create a partition: basic and advanced. This procedure provides instructions only for the basic mode of the **New Partition** task. However, because the advanced mode is similar, you can use these instructions for the advanced mode as well. Note that some pages, or sections, of the advanced mode might have slightly different names and additional content, compared to the basic mode.

- Your installation must have correctly configured a supported host system and its I/O and storage devices. Check the topic [Chapter 2, “Prerequisites for using Secure Service Container,”](#) on page 5 for a list of requirements.
- Make sure you have the appropriate authorization to use the **New Partition** task. You need to use either the default SYSPROG user ID or a user ID that a system administrator authorized to this task through customization controls in the **User Management** task.
- Use the online help for the **New Partition** task together with these instructions; the online help explains the page elements and functions in more detail. To access the online help, click **Help** on the **New Partition** task window. Note that the basic and advanced modes of the task have separate online help; to access the help for the advanced mode, switch to that mode and then click **Help**.

About this task

The basic mode of the **New Partition** task provides a quick, guided method of creating a partition; DPM either provides default values or automatically generates many of the values for partition properties that are required to successfully start a partition. Some of these properties are not displayed or editable in the basic task mode.

Some of the following individual steps are marked as required, which indicates that the corresponding task page contains fields for which you need to supply a value or make a selection. The end result of the task is a partition definition, which you can modify through the **Partition Details** task, or use to start the partition through the **Start** task.

Procedure

1. Open the **New Partition** task.

You can access this task from the main HMC page by selecting the Systems Management node, by selecting a specific DPM-enabled system, or by selecting the task in the Tasks index. For example:

- a) Select a DPM-enabled system listed under the Systems Management node.
- b) From the Configuration task group, click the link for the **New Partition** task.

The **New Partition** window opens, with an overlay that highlights key task controls on the window.

- c) Click the **Okay, got it** button to remove the page overlay.

The Welcome page is displayed.

- d) Click **Next** to navigate to the next page in the task.

2. Required: Use the Name page to enter the name of the new partition, an optional description, and the partition type.

A partition name must uniquely identify the partition from all other partitions defined on the same system.

- Specify the name of the new partition, which can be 1 - 64 characters in length. Supported characters are alphanumeric, blanks, periods, underscores, dashes, or at symbols (@). Names cannot start or end with blank characters.
- Optionally, specify a description for the partition. The description can be up to 1024 characters in length.
- For partition type, select **Secure Service Container** from the list, as shown in [Figure 4](#) on page 30.

Figure 4. A portion of the Name page of the New Partition task in basic mode

When the selected partition type is **Secure Service Container**, the page display includes the following additional fields.

Master User ID

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

A master user ID can be 1 - 32 characters long. It cannot contain 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.

- When you have finished, click **Next** to navigate to the next page in the task.

3. Required: Use the Processors page to define the number of virtual processors for the partition, and to view various charts that are based on your selections.

Select the number of processors that you want to assign to your new partition. Processors can be either shared or dedicated. Although you can select a number of processors greater than the number that is currently available, your new partition will not start unless currently active, unreserved partitions are stopped or more processors are added to the system.

When you have finished, click **Next** to navigate to the next page in the task.

4. Required: Use the Memory page to define the initial and maximum amounts of memory to be assigned to the new partition.

When you define the amount of memory to be assigned, or allocated, to a specific partition, you specify an initial amount of memory, and a maximum amount that must be equal to or greater than the initial amount. For a Secure Service Container partition, you must specify a minimum initial amount of 4096 MB (4 GB).

When you have finished, click **Next** to navigate to the next page in the task.

5. Required: Use the Network page to define all of the network interface cards (NICs) that the new partition requires to access specific networks. For a Secure Service Container partition, you must also specify at least one NIC for communication with the Secure Service Container web interface.

- a) From the Actions list in the NICs table, select **New** to open the **New Network Interface Card** window.
- b) On the **New Network Interface Card** window, define a NIC for each network connection that is required for the operating system or hypervisor that runs on this partition, or for the applications that the operating system or hypervisor supports.

For each NIC that you define, complete the following steps.

- i) Enter a unique, meaningful name and, optionally, a description of the new NIC.
- ii) Set the **Use to access the web interface** switch for each NIC that you are creating. Set the switch to **YES** only for a NIC that provides access to the Secure Service Container web interface.

When the switch is set to **YES**, the display includes the following configuration settings, which Secure Service Container partitions require for access to the web interface. For a Secure Service Container partition, you can select only an OSA or HiperSockets adapter.

VLAN ID

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. Note that DPM does not provide VLAN enforcement for Secure Service Container partitions.

IP Address Type

Select one of the following types:

- **DHCP** (Dynamic Host Configuration Protocol)
- **Link Local**
- **Static IPv4 Address**
- **Static IPv6 Address**

The selected type determines which of the remaining fields require values. An asterisk (*) preceding the label indicates that a value is required.

IP Address

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

Mask/Prefix

For an IPv4 address type, enter the mask/prefix in either bit notation (for example, /24) or mask notation (for example, 255 . 255 . 255 . 0). For an IPv6 address type, enter the mask/prefix in bit notation only.

- iii) Review the entries in the Adapter Ports and Switches table to determine which network adapters are configured on the system. Select only one port or switch by clicking the radio button in the Select column.
- iv) Click **OK** to create the new NIC and close the **New Network Interface Card** window.
- v) Check the entry for the new NIC that is displayed in the NICs table in the Network section.

If the new NIC provides access to the Secure Service Container web interface, provide the required network settings that are displayed after the NICs table. Some of the values that you supply depend on the IP address type of the NIC that you created to access the web interface. An asterisk (*) preceding the label indicates that a value is required.

Host Name

Enter the Linux host name of the appliance to run in the Secure Service Container partition. To access the Secure Service Container web interface, users need to specify a URL that contains either a host name or an IP address for the Secure Service Container partition. A host name can be 1 - 32 characters long. It cannot contain blanks. Valid characters are numbers 0 - 9, letters A - Z (any case), and the following special characters: period (.), colon (:), and hyphen (-).

Default IPv4 Gateway

Enter an IPv4 address for the default gateway. A default IPv4 gateway is required if you specified a Static IPv4 IP address type for the NIC.

Default IPv6 Gateway

Enter an IPv6 address for the default gateway. A default IPv6 gateway is required if you specified a Static IPv6 IP address type for the NIC.

DNS Server 1

Enter an IPv4 or IPv6 address for the primary domain name system (DNS) server. A DNS server definition is required if you specified a Dynamic Host Configuration Protocol (DHCP) IP address for the NIC.

DNS Server 2

Enter an IPv4 or IPv6 address for a secondary DNS server.

- c) Repeat the preceding steps, as necessary, to create a new NIC for each network connection that your new partition requires.
- If you define multiple NICs for a Secure Service Container partition, use the "Use to access the web interface" switch to identify whether the NIC provides access to the web interface.
- d) When you have finished, click **Next** to navigate to the next page in the task.
6. Use the Storage page to attach storage groups or to create host bus adapters (HBAs) that enable the partition to access storage networks and hardware that is connected to the DPM-enabled system.

Depending on the version of DPM that is applied on the system, the Storage section contains a Storage Groups table or an HBAs table with controls that you can use to attach storage groups or to create HBAs. Follow the instructions that correspond to the type of table displayed on the page.

Note: Starting with DPM R4.3, the Storage page also contains a Tape Links table. A *tape link* defines the attributes of a connection that one or more partitions can use to access one FCP tape library in the SAN. Although you can create and start a Secure Service Container partition that has tape links defined for access to FCP tape storage, Secure Service Container appliances do **not** support the use of tape storage devices. For information about the Tape Links table, see the online help for this task.

Storage Groups table

System administrators create storage groups to enable partitions (and the operating systems and applications that they host) to use physical storage hardware that is connected to the system. A *storage group* is a logical group of storage volumes that share certain attributes.

To attach one or more storage groups to the partition, complete the following steps.

- a. When you first use the **New Partition** task, the Storage display contains an empty Storage Groups table. Select the plus icon in the table toolbar to open the **Attach Storage Groups** window.
- b. On the **Attach Storage Groups** window, select one or more storage groups listed in the Storage Groups table to attach to this partition.
 - The suggested practice is to select storage groups that are in the Complete fulfillment state, but you can select any storage group except for those with a fulfillment state of Incomplete, or those that are already attached to the maximum number of partitions. If you do select groups in states other than Complete, some storage might not be available for use when you start the partition.
 - Use the additional information in the Storage Groups table, as necessary, to decide which storage groups to attach. For descriptions of the columns in the Storage Groups table, see the online help.
- c. When you have finished selecting storage groups to attach, select **OK** to close the **Attach Storage Groups** window.
- d. Check the entries for the storage groups that you selected, which are now displayed in the Storage Groups table in the Storage section. If necessary, you can use the minus icon in the table toolbar to remove a storage group from the table.

HBAs table

Host bus adapters (HBAs) provide a partition with access to external storage area networks (SANs) and devices that are connected to a system. Each HBA represents a unique connection between the partition and a physical FICON channel that is configured on the system. When you create an HBA, you can select the adapter that you want to use from a list of all of the storage adapters that are currently configured on the system.

- For availability, select at least two storage adapters of the same type, and create an HBA for each one.
- If you are creating a Secure Service Container partition to install a software appliance, define at least one HBA to access the storage device on which the appliance installation image resides.

To work with the information on the Storage page, complete the following steps.

- a. When you first use the **New Partition** task, the Storage display contains an empty HBAs table. From the Actions list in the HBAs table, select **New** to open the **New Host Bus Adapter** window.
- b. On the **New Host Bus Adapter** window, define an HBA for each storage area network that is required for the applications that run in this partition. For each HBA that you define, complete the following steps. For more detailed descriptions of the **New Host Bus Adapter** window elements, see the online help.
 - i) Enter a unique, meaningful name and, optionally, a description of the new HBA.
 - ii) Review the entries in the Adapter Ports table to determine which storage adapters are configured on the system.
 - a) Check the percentage listed in the Adapter HBA Allocation column. If the percentage is high (for example, 90%) for a specific port, consider selecting a different port.
 - b) Look for a warning icon next to the name in the Adapter Name column; if the warning icon is displayed for a specific port, select a different one.
 - c) Select one port by clicking the radio button in the Select column.

Click **OK** to create the new HBA and close the **New Host Bus Adapter** window.
- iii) Check the entry for the new HBA that is displayed in the HBAs table in the Storage section. If your company uses a specific numbering convention for its storage networks, you can change a system-generated device number by selecting the **Details** action and editing the HBA device number.

- c. Repeat the preceding steps, as necessary, to create a new HBA for each storage area network that your new partition requires.
- d. When you have finished, click **Next** to navigate to the next page in the task.

The next page to open might be either Accelerators, Cryptos, or Boot, depending on the system configuration. The Accelerators page is enabled only for systems that support accelerators, and is displayed only when a system that supports accelerators is managed through this HMC.

7. If the system supports accelerators and has one installed, use the Accelerators page to enable the new partition to use accelerators that the software appliance requires.
8. If the system has configured cryptographic features, use the Cryptos page to enable the new partition to use the cryptographic features that it requires. Crypto features are optional and, therefore, might not be installed on the system.
9. On the Boot page, note that option set in the "Boot from" menu is **Secure Service Container**. This boot option cannot be changed unless you first change the partition type.

With this option, the display includes the **Boot in Installer Mode** switch, which is set to **YES** and cannot be set to **NO**. With the switch set to **YES**, the partition start process initializes the Secure Service Container Installer so you can install an appliance in the partition.

10. Click **Next** to navigate to the Summary page.

You might need to vertically scroll the Summary page to view all of the partition properties. If necessary, click **Back** to return to a particular page to change a property value or setting.

11. Required: On the Summary page, click **Finish** to save the partition definition.

A progress indicator is displayed until DPM finishes creating the partition.

Results

DPM opens the Validation window when it finishes creating the partition definition. The Validation window displays a message indicating that your Secure Service Container partition has been created, and lists additional tasks that you can use to work with the new partition.

When you are finished reviewing the information on the Validation window or using the provided links to related tasks, click **Close** to close the Validation window.

What to do next

Start the Secure Service Container partition by following the instructions in [Chapter 9, "Starting a Secure Service Container partition on a DPM-enabled system," on page 35](#).

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

- [Chapter 10, "Changing the login settings for a Secure Service Container partition on a DPM-enabled system," on page 37](#)
- [Chapter 11, "Changing the network settings for a Secure Service Container partition on a DPM-enabled system," on page 39](#)

Chapter 9. Starting a Secure Service Container partition on a DPM-enabled system

Use this procedure to start a Secure Service Container partition through the Hardware Management Console (HMC) on a host system with DPM enabled.

Before you begin

- Before activating the Secure Service Container partition, make sure that I/O and storage devices have been configured for this partition through the **Manage Adapters** task. The I/O and storage device requirements depend on the appliance that you plan to install.
- To activate the Secure Service Container 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 Secure Service Container partition.
2. From the **Daily** task group, open the **Start** task.

If the DPM R3.1 storage management feature or a later DPM version has been applied to the system, and one or more of the partitions to be started have attached storage groups that are being configured or modified, a warning message is displayed. The warning message includes the name of the affected partitions. The Start task does not continue until you make a selection.

- Select **YES** to allow the affected partitions to be started.
- Select **NO** to cancel the start operation for only the affected partitions.

The Start window includes a progress bar, along with information about the start operation in the Progress or Details columns.

3. Check the Details column for the results of the start operation.

If the DPM R3.1 storage management feature or a later DPM version has been applied to the system, the Details column contains messages that indicate the outcome. Otherwise, the Details column contains one of the following icons and labels, with a clickable **Details** link that identifies the failed partitions and provides a message that explains the failure.

If the start operation completed successfully, the Details column contains an IP address link that you can use to access the Secure Service Container web interface through a browser. [Figure 5 on page 35](#) shows the part of the Start task window where the IP address is displayed.

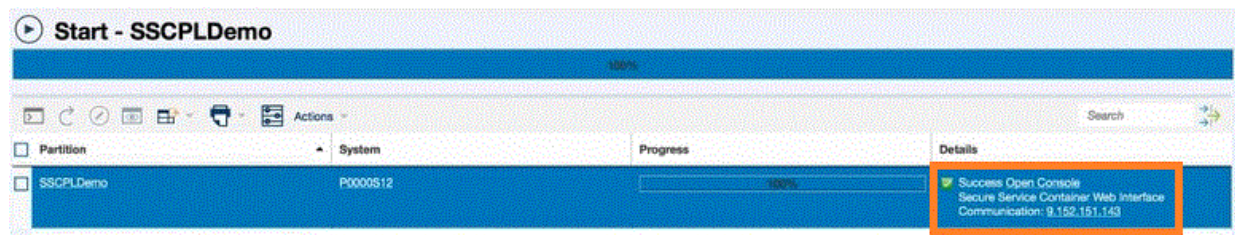


Figure 5. Portion of a Start task window with the successful completion indicated in the Details column

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 Secure Service Container partition is started, the sequence of events varies, depending on the setting of the **Boot in Installer Mode** switch in the Boot section of the **Partition Details** task.

If the switch is set to YES

The partition start process initializes the Secure Service Container Installer so you can install an appliance. This boot selection is the only option when you start a newly configured Secure Service Container partition for the first time. With this option, the Secure Service Container Installer is started automatically. When the start process completes, you can access the Secure Service Container Installer through your choice of browser. For more instructions, see the appropriate installation topic in Part 4, “Software appliances,” on page 43.

If the switch is set to NO

With this boot selection, the partition start process effectively restarts an installed appliance. If you previously used the Secure Service Container Installer to successfully install a software appliance, this boot selection becomes the default selection in the partition definition for the Secure Service Container partition. In this case, the Secure Service Container Installer is rebooted, and the installed appliance is restarted in the Secure Service Container partition on this and all subsequent reboots, until you change the boot selection in the **Partition Details** task.

What to do next

- To find the IP address of the Secure Service Container partition after you close the Start window, select the partition and start the **Operating System Messages** task. In the resulting display, search for the message about connecting to the Secure Service Container installer, which includes the IP address through which the Secure Service Container server is listening.
- If you have started a new Secure Service Container partition for the first time, connect to the Secure Service Container installer through the browser of your choice, and install a software appliance. For instructions, see the appropriate topic in Part 4, “Software appliances,” on page 43.
- If a previously installed appliance has been restarted, use the IP address to connect to the appliance. For more details, see the product documentation for the installed appliance.

Chapter 10. Changing the login settings for a Secure Service Container partition on a DPM-enabled system

Use this procedure when you need to change the current login settings for a Secure Service Container partition on a host system with IBM Dynamic Partition Manager (DPM) enabled. This procedure is intended for system administrators or system programmers who are responsible for configuring logical partitions on IBM Z and LinuxONE servers. To modify the login settings of a Secure Service Container partition, use the Hardware Management Console (HMC) **Partition Details** task to modify the partition definition.

Before you begin

Make sure that you log in to the HMC with a user ID that is assigned to one of the following roles: SYSPROG, ADVANCED, OPERATOR or ACSADMIN.

About this task

A system administrator might need to change the current login 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.

Note that changing the login settings is a disruptive action if the partition status is any value other than **Stopped**.

Procedure

1. From the Systems Management menu on the HMC, select the system on which you created the Secure Service Container partition, and select that partition in the Partitions list.
2. Click the partition name to open the **Partition Details** task.
3. In the **General** section, click **RESET LOGIN**.
 - a) Replace the current values for either the default master user ID, the password, or both.

Master user ID

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

A master user ID can be 1 - 32 characters long. It cannot contain 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.

4. Click **OK** or **Apply** to save your changes.

If the partition status is Stopped

Your changes are saved but do not take effect until you start the partition.

If the partition status is any value other than Stopped

The Confirm Disruptive Action window opens. Depending on the type of requested changes, you might be required to type in confirmation text or enter your password. On the **Confirm Disruptive Action** window, complete the following steps to save your changes. Note that they do not take effect until you stop and restart the partition.

- a. Review the Changes table to verify the disruptive changes that you requested.
- b. Review the Partition table to determine whether you must type a confirmation value. This table contains the following columns:

Name

The name of the partition for which you are requesting disruptive changes.

System

The system that is associated with this partition. The system name is a hyperlink through which you can open the **System Details** task.

Status

The current status of this partition.

OS Name

The operating system name that is associated with this partition.

Confirmation Text

This column is displayed only if you are required to type in confirmation that the action will disrupt a partition's operations. To confirm, type either the value in the Name column, or the value in the OS Name column, exactly as it is displayed in this table.

- c. If you are required to enter a password, this display includes a text box in which you need to type the password associated with your user ID.
- d. Click **Save** to save the changes that you have requested, or click **Cancel** to close the window without saving any changes.

Results

The partition definition has been updated with the revised login settings.

What to do next

Start the Secure Service Container partition by following the instructions in [Chapter 9, "Starting a Secure Service Container partition on a DPM-enabled system,"](#) on page 35.

Chapter 11. Changing the network settings for a Secure Service Container partition on a DPM-enabled system

Use this procedure when you need to change the current network settings for a Secure Service Container partition on a host system with IBM Dynamic Partition Manager (DPM) enabled. This procedure is intended for system administrators or system programmers who are responsible for configuring logical partitions on IBM Z and LinuxONE servers. To modify the network settings of a Secure Service Container partition, use the Hardware Management Console (HMC) **Partition Details** task to modify the partition definition.

Before you begin

Make sure that you log in to the HMC with a user ID that is assigned to one of the following roles: SYSPROG, ADVANCED, OPERATOR or ACSADMIN.

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. Note that changing the network settings is a disruptive action if the partition status is any value other than **Stopped**.

An administrator also can modify network settings from within an installed appliance, through the Secure Service Container UI network management widget. For more information, see [“Viewing and managing network connections”](#) on page 52.

Procedure

1. From the Systems Management menu on the HMC, select the system on which you created the Secure Service Container partition, and select that partition in the Partitions list.
2. Click the partition name to open the **Partition Details** task.
3. In the **Network** section, click **RESET NETWORK**.
 - a) Replace the current values for one or more of the following network settings.

Host Name

Enter the Linux host name of the appliance to run in the Secure Service Container partition. To access the Secure Service Container web interface, users need to specify a URL that contains either a host name or an IP address for the Secure Service Container partition. A host name can be 1 - 32 characters long. It cannot contain blanks. Valid characters are numbers 0 - 9, letters A - Z (any case), and the following special characters: period (.), colon (:), and hyphen (-).

Default IPv4 Gateway

Enter an IPv4 address for the default gateway. A default IPv4 gateway is required if you specified a Static IPv4 IP address type for the NIC.

Default IPv6 Gateway

Enter an IPv6 address for the default gateway. A default IPv6 gateway is required if you specified a Static IPv6 IP address type for the NIC.

DNS Server 1

Enter an IPv4 or IPv6 address for the primary domain name system (DNS) server. A DNS server definition is required if you specified a Dynamic Host Configuration Protocol (DHCP) IP address for the NIC.

DNS Server 2

Enter an IPv4 or IPv6 address for a secondary DNS server.

4. Click **OK** or **Apply** to save your changes.

If the partition status is Stopped

Your changes are saved but do not take effect until you start the partition.

If the partition status is any value other than Stopped

The Confirm Disruptive Action window opens. Depending on the type of requested changes, you might be required to type in confirmation text or enter your password. On the **Confirm Disruptive Action** window, complete the following steps to save your changes. Note that they do not take effect until you stop and restart the partition.

- a. Review the Changes table to verify the disruptive changes that you requested.
- b. Review the Partition table to determine whether you must type a confirmation value. This table contains the following columns:

Name

The name of the partition for which you are requesting disruptive changes.

System

The system that is associated with this partition. The system name is a hyperlink through which you can open the **System Details** task.

Status

The current status of this partition.

OS Name

The operating system name that is associated with this partition.

Confirmation Text

This column is displayed only if you are required to type in confirmation that the action will disrupt a partition's operations. To confirm, type either the value in the Name column, or the value in the OS Name column, exactly as it is displayed in this table.

- c. If you are required to enter a password, this display includes a text box in which you need to type the password associated with your user ID.
- d. Click **Save** to save the changes that you have requested, or click **Cancel** to close the window without saving any changes.

Results

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

What to do next

Start the Secure Service Container partition by following the instructions in [Chapter 9, "Starting a Secure Service Container partition on a DPM-enabled system,"](#) on page 35.

Chapter 12. Stopping or deleting a Secure Service Container partition on a DPM-enabled system

Use this procedure to stop or delete a Secure Service Container partition through the Hardware Management Console (HMC) on a host system with DPM enabled. This action is a disruptive task.

Before you begin

To stop or delete the Secure Service Container 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.

About this task

When you determine that you no longer need a Secure Service Container partition, stop and then either delete or modify its partition definition to avoid inadvertently restarting a software appliance from a disk that might be in use by another partition.

Procedure

1. To stop a Secure Service Container partition, complete the following steps.

This task stops the installed appliance and the embedded operating system, and deallocates resources for the selected partition.

- a) Select the image for the Secure Service Container partition.
- b) Open the **Stop** task.

The **Confirm Disruptive Action** window opens.

- c) On the **Confirm Disruptive Action** window, complete the following steps to save your changes.
 - i) Review the Changes table to verify the disruptive changes that you requested.
 - ii) Review the Partition table to determine whether you must type a confirmation value. This table contains the following columns:

Name

The name of the partition for which you are requesting disruptive changes.

System

The system that is associated with this partition. The system name is a hyperlink through which you can open the **System Details** task.

Status

The current status of this partition.

OS Name

The operating system name that is associated with this partition.

Confirmation Text

This column is displayed only if you are required to type in confirmation that the action will disrupt a partition's operations. To confirm, type either the value in the Name column, or the value in the OS Name column, exactly as it is displayed in this table.

- iii) If you are required to enter a password, this display includes a text box in which you need to type the password associated with your user ID.
- iv) Click **Stop Partition**.

The Stop window opens to indicate the progress of the stop operation and the outcome.

- d) Click **OK** to close the window when the stop operation completes successfully.

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

2. After the partition is stopped, you can either delete or modify its partition definition to prevent the automatic restart of the partition and its installed appliance.
 - To delete the partition definition:
 - a. Select the image for the Secure Service Container partition.
 - b. Open the **Delete Partition** task.
 - c. Click **Delete**. The HMC displays a message indicating the status of the delete operation.
 - To modify the partition definition:
 - a. Select the image for the Secure Service Container partition.
 - b. Open the **Partition Details** task.
 - c. On the Boot page, set the **Boot in Installer Mode** switch to **YES**.
 - d. Click **OK** to save your changes and close the **Partition Details** window.

Results

The partition definition is either deleted or modified such that an appliance cannot be inadvertently restarted in the Secure Service Container partition.

The appliance installation image continues to reside on the storage device, and you can use the Secure Service Container Installer to migrate it to a different partition. Or, if the partition definition still exists, you can change the boot setting to restart the appliance.

Part 4. Software appliances

This part contains step-by-step instructions for installing software appliances in a Secure Service Container partition, using the Secure Service Container user interface, and moving an existing appliance to another Secure Service Container partition.

- [Chapter 13, “Installing a new software appliance in a Secure Service Container partition,” on page 45](#)
- [Chapter 14, “Using the Secure Service Container user interface,” on page 49](#)
- [Chapter 15, “Moving an existing software appliance into a different Secure Service Container partition on the same system,” on page 61](#)

Chapter 13. Installing a new software appliance in a Secure Service Container partition

Use this procedure to install and start a new software appliance in a Secure Service Container partition. Only one appliance can be installed and run in a Secure Service Container partition at any given time; this type of partition does not support running multiple appliances simultaneously. You can define more than one Secure Service Container partition on the same system, and run instances of the same appliance in each one. In this case, each partition must use separate storage devices.

Before you begin

- If you plan to install a software appliance on an FCP disk, make sure that your installation has completed the required steps in [Chapter 2, “Prerequisites for using Secure Service Container,”](#) on page 5 to enable N Port Identifier Virtualization (NPIV). Target FCP disks must be large enough to fit the uncompressed appliance, with an additional 2 GB for the Secure Service Container installer to use.
- You must configure and start a Secure Service Container partition with the boot option **Secure Service Container Installer** selected. For instructions, see the following topics:
 - On a standard mode system:
 - [Chapter 3, “Configuring a Secure Service Container partition on a standard mode system,”](#) on page 13
 - [Chapter 4, “Starting a Secure Service Container partition on a standard mode system,”](#) on page 19
 - On a DPM-enabled system:
 - [Chapter 8, “Creating a Secure Service Container partition on a DPM-enabled system,”](#) on page 29
 - [Chapter 9, “Starting a Secure Service Container partition on a DPM-enabled system,”](#) on page 35
- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container 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 Secure Service Container installer, which includes the IP address through which the Secure Service Container server is listening. [Figure 6 on page 45](#) shows a sample operating system message that contains the IP address.

```
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 6. Sample display of Operating System Messages

- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.
- Order and download the software appliance to your local disk. For a list of supported appliances, see [Chapter 2, “Prerequisites for using Secure Service Container,”](#) on page 5.

Procedure

1. Connect to the Secure Service Container installer through the browser of your choice.

Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. For example: `https://ip_address`

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 in the image profile (standard mode system) or the partition definition (DPM-enabled system), 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**, select the device type.

FICON DASD

If you select **FICON DASD** as the device type, click the down arrow in the **Disk** field 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. From the list, select a disk.

FCP

If you select **FCP** as the device type, select one of the options listed for the **Discovery** field.

Scan All Devices

Select this option and click **Discover**. When the discovery operation completes, select a disk from the **Disk** list.

Scan Single Device Only

Select this option, then select a storage device from the **Device** list, and click **Discover**. When the discovery operation completes, select a disk from the **Disk** list.

Manual

Select this option, select a storage device from the **Device** list, and enter the target worldwide port number (WWPN) and logical unit number (LUN) information for the disk. Then click **Check Path** to validate these details. If an error message is displayed, you must correct the WWPN or LUN details before you can proceed.

- 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 Secure Service Container 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 Secure Service Container 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 in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition, and click **Login**.

Results

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

If a problem occurs, the installer displays an error message that can help you troubleshoot problems related to user input. If the message indicates an internal problem, see [Appendix A, “Codes from the Secure Service Container installer,”](#) on page 67.

What to do next

You can reuse an existing Secure Service Container partition for a different appliance. After stopping the installed appliance and the partition, reboot the Secure Service Container installer and select a different appliance to install. Before doing so, however, check the storage and network connections for the partition to make sure that they are appropriate for the appliance to be installed.





Chapter 14. Using the Secure Service Container user interface





Appliances that are designed to run in a Secure Service Container partition can use one or more Secure Service Container user interface (UI) widgets, through which you can view the Secure Service Container 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 Secure Service Container UI widgets:

- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.
- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.

The following list contains brief descriptions of the available UI widgets and the icons that are displayed in the navigation bar. For information about browser requirements, see [“Browser requirements and dependencies”](#) on page 8.

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”](#) on page 50.
2. The **Maintenance** widget () provides a way to shut down a currently running appliance and automatically reboot the Secure Service Container installer in the partition. Use this function to upgrade an existing or install a new appliance. For more information, see [“Rebooting the Secure Service Container installer”](#) on page 51.
3. 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.

You can filter the log entries that are displayed on the Log page; the filter text string is matched against the Entry Text field contents. You can also archive log entries, which only removes them from the Log page display. To archive existing log entries, click the file cabinet icon (). To retrieve archived logs, request a dump through the **Dumps** widget.
4. 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 51.
5. The **Networks** widget () displays the status and details for the network interfaces that are defined for the Secure Service Container partition and the installed appliance. The Networks widget also includes controls through which you can manage network connections for the appliance. For more information, see [“Viewing and managing network connections”](#) on page 52.
6. The **Storage** widget () displays the status and details of attached storage devices. The Storage widget also includes controls through which you can modify a storage pool by adding either FICON DASD or FCP disks.

Before you can use the **Storage** widget, an administrator must add storage resources to the Secure Service Container partition. The host-system mode determines how storage resources are configured, as described in Chapter 2, “Prerequisites for using Secure Service Container,” on page 5.

For more information about the **Storage** widget, see “[Viewing and managing storage resources](#)” on page 55.

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 Secure Service Container partition. You can use this function only if the installed appliance is designed to use the Secure Service Container Dump widget.

Before you begin

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

- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. However, if an administrator overwrote the HMC network settings through the UI **Networks** widget for the installed appliance, you need to specify the IP address of the network adapter as specified in the UI widget.
- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container 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 Dump

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

Disruptive Dump

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.

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

Rebooting the Secure Service Container installer


Through the Maintenance user interface (UI) widget, you can shut down a currently running appliance and automatically reboot the Secure Service Container installer in the partition. The alternative method is to use the appropriate HMC task on the system on which the Secure Service Container resides: the **Customize/Delete Activation Profile** task on a standard mode system, or the **Partition Details** task on a DPM-enabled system.

Before you begin

You can access the Secure Service Container UI through the browser of your choice. To access the Secure Service Container UI, you need to have the following information.

- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. However, if an administrator overwrote the HMC network settings through the UI **Networks** widget for the installed appliance, you need to specify the IP address of the network adapter as specified in the UI widget.
- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.

Procedure

- In the navigation pane, click the **Maintenance** icon () to display the **Invoke Installer** page.
- Click **Installer**.
- In the Description field, enter an optional description and click **Export**.
The Installer exports the appliance configuration, which does not include runtime data from external storage devices.
- Select **Save File** and click **OK** to save the exported configuration file to your file system.
- On the **Confirm Invoke Installer** page, click **Yes** to continue.

Results

The installer is rebooted. How you access the Secure Service Container UI depends on the network settings that are in effect.

- If the network settings specified through the HMC are still the active settings, you are automatically routed to the **Login** page of the installer.
- If the HMC network settings were modified through the UI network management widget (that is, overwritten within the installed appliance), you need to manually enter the HMC-specified IP address in your browser. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.

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 Secure Service Container partition. An administrator might use these functions to update an appliance

or to transfer the appliance configuration to another Secure Service Container partition. You can use this function only if the installed appliance is designed to use the Secure Service Container Ex-/Import widget.


Before you begin

You can access the Secure Service Container user interface (UI) through the browser of your choice.

To access the Secure Service Container UI:

- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. However, if an administrator overwrote the HMC network settings through the UI **Networks** widget for the installed appliance, you need to specify the IP address of the network adapter as specified in the UI widget.
- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container 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**.

Viewing and managing network connections

Through the Networks user interface (UI) widget, you can view and manage the network connections for an appliance that is installed in a Secure Service Container partition. The alternative method is to use the appropriate HMC task on the system on which the Secure Service Container resides: the **Customize/Delete Activation Profile** task on a standard mode system, or the **Partition Details** task on a DPM-enabled system.

Before you begin

You can access the Secure Service Container user interface (UI) through the browser of your choice. To access the Secure Service Container UI, you need the following information.

- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. However, if an administrator

overwrote the HMC network settings through the UI **Networks** widget for the installed appliance, you need to specify the IP address of the network adapter as specified in the UI widget.

- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.

About this task

You can use the **Networks** widget in the Secure Service Container UI to either view or manage network connections for the appliance. Initially, the list of network connections reflects the network information that an administrator specified when defining the partition through the HMC. The list view includes the following details for each type of network connection: name, status, type (Ethernet or VLAN), device number, and IPv4 or IPv6 addresses. You can filter the list or modify its contents through icons at the top of the **Network Connections** page.


Through the **Networks** widget, you can add, activate, deactivate, or remove the following types of network connections.

- Ethernet-type connections through which the appliance can communicate over IBM HiperSockets or Open Systems Adapter-Express (OSA-Express) devices.
- VLAN-type connections that associate a VLAN ID with a parent device (that is, an Ethernet-type connection).
- Bond-type connections that combine multiple network interfaces of the same kind (for example, two eth0 interfaces) into a single virtual link.

Important:

- When you modify network connections through the **Networks** widget, these changes are **not** reflected in the HMC image profile or partition definition for the Secure Service Container partition.
- Although you can dynamically add, remove, or change network adapters for an active LPAR or partition through either HCD or the HMC on a standard (PR/SM) system, or through the HMC on a DPM-enabled system, these dynamic changes do not affect a running Secure Service Container appliance. For those dynamic configuration changes to take effect:
 - On a standard system, you must deactivate and reactivate the LPAR.
 - On a DPM-enabled system, you must stop and restart the partition.

Procedure

1. In the navigation pane, click the **Network** icon () to display the **Network Connections** page. The **Network Connections** page opens.
2. To add a new connection, click the plus (+) icon on the top right of the page, and select **Ethernet** or **VLAN** or **Bond**.
Depending on the connection type that you selected, one of the following pages opens.
 - **Add Ethernet Connection:** for instructions, go to step “3” on page 53.
 - **Add VLAN Connection:** for instructions, go to step “4” on page 54.
 - **Add Bond:** for instructions, go to step “5” on page 54.
3. If you are adding an Ethernet connection, complete the following steps.
 - a) On the **General** tab, select a network device from the list of unconfigured devices.
The Device Details section displays information about the network device, and the Connection Name field is automatically populated with a name that you can edit.
 - b) Choose a connection state: **Active** automatically activates the connection after it is created, and **Inactive** stores the connection properties for later use.
 - c) Optional: Select the **IPv4** tab or the **IPv6** tab to complete the network connection configuration. You can specify both IPv4 and IPv6 addresses for the same network connection. If you do not

provide any information on one of these tabs, the network connection is defined with Dynamic Host Configuration Protocol (DHCP) address mode.

- i) Select one of the following address modes.

Manual

Select this mode to enter specific address settings: address, prefix, and gateway. You can specify only a single gateway, but multiple IP addresses (with their corresponding prefixes) per connection.

Automatic

Select this mode to use a DHCP address.

Disabled

Select this mode to define the network connection without configuring an address.

- d) Click **Add** to add the connection and return to the **Network Connections** page.

4. If you are adding a VLAN connection, complete the following steps.

- a) On the **General** tab, select a parent device from the list of unconfigured devices or click the plus (+) icon to create a new parent device.

If you click the plus icon, complete the following steps; otherwise, continue to step [“4.b” on page 54](#).

- i) On the **Create New Parent Device for VLAN** page, select a network device from the list of unconfigured devices. The Device Details section displays information about the network device.
 ii) If the network device supports multiple ports, select port **0** or **1** in the Port list.
 iii) Click **Create** to create the device and return to the **General** tab.

- b) Select a VLAN ID and choose a connection state: **Active** automatically activates the connection after it is created, and **Inactive** stores the connection properties for later use.

- c) Optional: Select the **IPv4** tab or the **IPv6** tab to complete the network connection configuration. You can specify both IPv4 and IPv6 addresses for the same network connection. If you do not provide any information on one of these tabs, the network connection is defined with Dynamic Host Configuration Protocol (DHCP) address mode.

- i) Select one of the following address modes.

Manual

Select this mode to enter specific address settings: address, prefix, and gateway. You can specify only a single gateway, but multiple IP addresses (with their corresponding prefixes) per connection.

Automatic

Select this mode to use a DHCP address.

Disabled

Select this mode to define the network connection without configuring an address.

- d) Click **Add** to add the VLAN connection and return to the **Network Connections** page.

5. If you are adding a Bond connection, complete the following steps.

- a) On the **General** tab, fill in or select values for the required fields.

- Provide a connection name to uniquely identify the connection, and a bond device ID.
- Add one or more slave connections by selecting the plus (+) icon. For each slave, select a network device and port number, then click **Yes** to add the device.
- Select a mode for the bond network connection. If you want to specify values for advanced options, click the circled arrow icon to the right of the **Mode** field to view the list of options.
- Select values for link monitoring and delay options, and the connection state.

- b) Optional: Select the **IPv4** tab or the **IPv6** tab to complete the network connection configuration. You can specify both IPv4 and IPv6 addresses for the same network connection. If you do not provide any information on one of these tabs, the network connection is defined with Dynamic Host Configuration Protocol (DHCP) address mode.

i) Select one of the following address modes.

Manual

Select this mode to enter specific address settings: address, prefix, and gateway. You can specify only a single gateway, but multiple IP addresses (with their corresponding prefixes) per connection.

Automatic

Select this mode to use a DHCP address.

Disabled

Select this mode to define the network connection without configuring an address.

c) Click **Add** to add the Bond connection and return to the **Network Connections** page.

Results

Depending on the address mode that you selected, network connections that you defined for the appliance are either saved and activated, or saved for later use.

What to do next

You can use the icon controls on the top right of the **Network Connections** page to manage the newly defined network connections.

To modify a network connection

1. Select a network connection listed in the table on the **Network Connections** page.
2. Either double-click the table entry or click **Edit** (pencil icon) to modify details about the network connection. For both Ethernet or VLAN connections, you can modify any properties on the **General**, **IPv4**, or **IPv6** pages; however, you cannot change the network device. For Bond connections, you can modify any properties on the **General**, **IPv4**, or **IPv6** pages; however, you cannot modify the bond device ID.
3. Click **Update** to save the modified properties.

To activate a network connection

1. Select an inactive network connection listed in the table on the **Network Connections** page. Use the Status indicator to determine which network connections are active (green) or inactive (orange).
2. Click **Activate** (icon of a triangle pointing to the right) to enable all of the configuration properties for the selected network connection, so it can be used for communication.
3. In the confirmation dialog, click **Yes** to continue the operation, or **No** to cancel it.

To deactivate a network connection

1. Select an active network connection listed in the table on the **Network Connections** page. Use the Status indicator to determine which network connections are active (green) or inactive (orange).
2. Click **Stop** (icon of a square) to deactivate the selected network connection.
3. In the confirmation dialog, click **Yes** to continue the operation, or **No** to cancel it.

To remove a network connection

1. Select a network connection listed in the table on the **Network Connections** page.
2. Click **Remove** (trash can icon) to remove the selected network connection.
3. In the confirmation dialog, click **Yes** to continue the operation, or **No** to cancel it.

Viewing and managing storage resources

Through the Storage user interface (UI) widget, you can view and manage the storage resources for an appliance that is installed in a Secure Service Container partition. Storage resources are grouped into storage pools that are created when the appliance is built. A *storage pool* is a uniquely named collection of storage disks on which the appliance file system is mounted.

Supported storage devices are Fibre Connection (FICON) Extended Count Key Data (ECKD) direct access storage devices (DASD), and Fibre Channel Protocol (FCP) disks. Each storage pool must contain only one type of storage: either FICON DASD or FCP disks. The host-system mode determines which types of storage resources you can use.

- For a host system running in standard mode (that is, with Processor Resource/System Manager or PR/SM), supported storage devices are FICON DASD and FCP disks.
- For a host system with DPM enabled, the DPM version determines the supported storage types.
 - With DPM R3.0 or earlier, you can access FCP storage disks only.
 - With DPM R3.1 or later, you can access both FCP disks and FICON DASD.
 - Starting with R4.3, DPM provides support for access to FCP tape storage. However, although you can create and start a Secure Service Container partition that has tape links defined for access to FCP tape storage, Secure Service Container appliances do **not** support the use of tape storage devices.

From the Secure Service Container user interface (UI), you can view the storage pools for an installed

appliance by selecting the **Storage** icon (🗄️) in the navigation pane. This action opens the **Storage Disks by Storage Pool** page, which contains a table-like display with alternating rows, as shown in [Figure 7 on page 56](#). You can filter the display by typing the storage pool name in the Filter field, or selecting the name from the **All Storage Pools** list.

Storage Disks By Storage Pool

Filter **All Storage Pools**

Disk ID	Status	Disk Type	Capacity (GB)
Analytics Data pool (+) (?) Used: 0%			
No items to display			
Appliance Operation (?) Used: 4%			
36005076307ffc6a60000000000001506	●	FCP	20
Btrfs pool (+) (?) Used: 0%			
No items to display			

1 Header row

2 Disk list

3 Plus icon for adding disks

Figure 7. Sample display of the **Storage Disks by Storage Pool** page

The list of storage pools on the **Storage Disks by Storage Pool** page contains the following elements.

1. A highlighted header row for each defined storage pool for the installed appliance. For each storage pool, the header row contains the following information or controls.
 - The storage pool name.
 - The plus (+) icon that you can select to add disks to the storage pool. Note that this control is not available for the Appliance Operation storage pool, which cannot be modified.
 - The hint (?) icon that you can select to display the properties of the storage pool.
 - The percentage of the total disk capacity that is in use.

2. One or more rows that list details about the disks in the storage pool. Each row contains the following information.

Disk ID

Specifies the disk identifier, which varies, depending on the type of storage disk.

- For an FCP disk, the ID is the universally unique identifier (UUID) of the volume.
- For FICON DASD, the ID is a combination of the logical control unit (LCU) number and volume ID.

Status

Indicates that the disk is available (green dot) or not available (red dot).

Disk Type

Specifies whether the disk is FICON DASD or an FCP disk.

Capacity

Indicates the disk capacity in gigabytes (GB).

To add disks to a storage pool, see the appropriate topic.

- [“Adding FICON DASD to available storage pools” on page 57](#)
- [“Adding FCP disks to available storage pools” on page 58](#)

If the Storage UI widget is not implemented for the installed appliance, the alternative method of viewing and managing storage is to use the appropriate HMC view or task on the system on which the Secure Service Container resides. The host-system mode determines which HMC view or task to use.

- For a host system running in standard mode (that is, with Processor Resource/System Manager or PR/SM), storage details are specified in the input/output configuration data set (IOCDs) that is in effect for the host system. To view this information, select the host system under the **System Management** node, expand the **Partitions** node, expand the entry for the Secure Service Container partition, and select **CHPIDs**.
- For a host system with IBM Dynamic Partition Manager (DPM) enabled, the DPM version determines where storage details are specified. With DPM R3.0 or earlier, storage details are specified in the IOCDs that is in effect for the host system. With DPM R3.1 or later, storage details are specified on the Storage Overview page of the HMC **Configure Storage** task. To view or modify storage information for the Secure Service Container partition, use the **Partition Details** task.

Important: Although you can dynamically add, remove, or change storage adapters for an active LPAR or partition through either HCD or the HMC on a standard (PR/SM) system, or through the HMC on a DPM-enabled system, these dynamic changes do not affect a running Secure Service Container appliance. For those dynamic configuration changes to take effect:

- On a standard system, you must deactivate and reactivate the LPAR.
- On a DPM-enabled system, you must stop and restart the partition.

Adding FICON DASD to available storage pools

Use these instructions to add FICON DASD to an existing storage pool for an appliance. You can add not only base volumes but also alias volumes, only when your storage administrator has activated the optional HyperPAV feature on the IBM System Storage DS8000 series, and has configured both base and alias volumes. In this case, you must add the base volumes to a storage pool *before* adding alias volumes to the same pool.

Before you begin




Attention: When you add disks to a storage pool, any existing data that is on those disks is lost when the disks are formatted.

You can access the Secure Service Container user interface (UI) through the browser of your choice. To access the Secure Service Container UI, you need the following information.

- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. However, if an administrator overwrote the HMC network settings through the UI **Networks** widget for the installed appliance, you need to specify the IP address of the network adapter as specified in the UI widget.
- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.

Procedure

1. Log in to the Secure Service Container user interface (UI).
2. In the navigation pane, click the **Storage** icon () to display the **Storage Disks by Storage Pool** page.
3. To add FICON DASD to a storage pool, select the plus (+) icon in the header row for the storage pool. By default, the **Add Storage Disks to Storage Pool** page opens with the **FICON DASD** tab selected.
4. In the **Available Devices** list, review the devices that you can add to the storage pool.

The counter under the **Available Devices** list indicates how many devices are available. If necessary, you can scroll through the list, select how many entries to display at one time, or filter the list by typing in the Filter field.

- a) Select either Assign (>) to add only selected devices, or Assign All (>>) to add any available devices that match the filter that you set. If you did not set a filter, Assign All adds all available devices to the storage pool.
The devices are moved from the **Available Devices** list to the **Assigned to Pool** list.
 - b) Select **Apply** to assign the devices to the storage pool.
5. On the **Confirm Add Disk** page, review the disks to be added and select **Yes** to continue the operation. The FICON DASD are added to the storage pool asynchronously. On the **Storage Disks by Storage Pool** page, the Status column entry displays a progress indicator and message that indicates which step of the operation is underway. You cannot add any more disks until all steps of the operation have been completed.

Results

When the Status column entry changes from the progress indicator to a green dot, the FICON DASD are ready for use in the storage pool.

What to do next

If you want to add HyperPAV alias volumes to the same storage pool, repeat the steps in this procedure, adding the alias devices that are assigned to the base volumes. Note that you must successfully add the base volumes to the storage group *before* you can add the alias volumes.

Adding FCP disks to available storage pools

Use these instructions to add FCP disks to an existing storage pool for an appliance.

Before you begin




Attention: When you add disks to a storage pool, any existing data that is on those disks is lost when the disks are formatted.

- You can access the Secure Service Container user interface (UI) through the browser of your choice. To access the Secure Service Container UI, you need the following information.
 - You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition

definition (DPM-enabled system) for the Secure Service Container partition. However, if an administrator overwrote the HMC network settings through the UI **Networks** widget for the installed appliance, you need to specify the IP address of the network adapter as specified in the UI widget.

- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.
- To enable Secure Service Container to discover FCP disks that you can add to a storage pool, make sure that your installation has completed the required steps in Chapter 2, “Prerequisites for using Secure Service Container,” on page 5 to enable N Port Identifier Virtualization (NPIV).

Procedure

1. Log in to the Secure Service Container user interface (UI).
2. In the navigation pane, click the **Storage** icon () to display the **Storage Disks by Storage Pool** page.
3. To add FCP disks to a storage pool, select the plus (+) icon in the header row for the storage pool. By default, the **Add Storage Disks to Storage Pool** page opens with the **FICON DASD** tab selected.
4. Select the **FCP** tab to display the controls for discovering and adding FCP disks to the storage pool.
 - a) Select one of the following discovery methods: **Scan all devices**, **Scan single device only**, or **Manual**.
 - Scan all devices**
Scans all FCP adapters for which NPIV is enabled.
 - Scan single device only**
Scans only one FCP adapter for which NPIV is enabled. Select the FCP adapter from the **Device** list.
 - Manual**
Scans only the FCP device for which you provide the FCP path information.
 - i) Select the FCP adapter from the **Device** list.
 - ii) In the Target WWPN field, provide the 16-character hexadecimal worldwide port number (WWPN) of the storage controller.
 - iii) In the LUN field, provide the 16-character hexadecimal logical unit (LUN) identifier.
 - b) Select **Discover** to start the discovery operation. If you selected **Scan all devices**, the **Discovered Volumes** pane displays a progress indicator. In this case, the discovery operation can take some time, depending on the number of configured adapters, and the number of disks that are assigned to each adapter.
When the operation completes, available disk volumes are listed in the **Discovered Volumes** pane.
5. In the **Discovered Volumes** list, review the disk volumes that you can add to the storage pool.
The counter under the **Discovered Volumes** list indicates how many volumes are available. If necessary, you can scroll through the list, select how many entries to display at one time, or filter the list by typing in the Filter field.
 - a) Select either Assign (>) to add only selected volumes, or Assign All (>>) to add any available volumes that match the filter that you set. If you did not set a filter, Assign All adds all available volumes to the storage pool.
The volumes are moved from the **Discovered Volumes** list to the **Assigned to Pool** list.
 - b) Select **Apply** to assign the volumes to the storage pool.
6. On the **Confirm Add Disk** page, review the disk volumes to be added and select **Yes** to continue the operation.
The disk volumes are added to the storage pool asynchronously. On the **Storage Disks by Storage Pool** page, the Status column entry displays a progress indicator and message that indicates which

step of the operation is underway. You cannot add any more disks until all steps of the operation have been completed.

Results

When the Status column entry changes from the progress indicator to a green dot, the FCP disk volumes are ready for use in the storage pool.

Chapter 15. Moving an existing software appliance into a different Secure Service Container partition on the same system

Use this procedure to move an existing software appliance from one Secure Service Container partition to a new Secure Service Container partition on the same system. This action is a disruptive task. Only one appliance can be installed and run in a Secure Service Container partition at any given time; this type of partition does not support running multiple appliances simultaneously. You can define more than one Secure Service Container partition on the same system, and run instances of the same appliance in each one. In this case, each partition must use separate storage devices.

Before you begin

- If you plan to install a software appliance on an FCP disk, make sure that your installation has completed the required steps in [Chapter 2, “Prerequisites for using Secure Service Container,”](#) on page 5 to enable N Port Identifier Virtualization (NPIV). Target FCP disks must be large enough to fit the uncompressed appliance, with an additional 2 GB for the Secure Service Container installer to use.
- You must configure and start a Secure Service Container partition with the boot option **Secure Service Container Installer** selected. For instructions, see the following topics:
 - On a standard mode system:
 - [Chapter 3, “Configuring a Secure Service Container partition on a standard mode system,”](#) on page 13
 - [Chapter 4, “Starting a Secure Service Container partition on a standard mode system,”](#) on page 19
 - On a DPM-enabled system:
 - [Chapter 8, “Creating a Secure Service Container partition on a DPM-enabled system,”](#) on page 29
 - [Chapter 9, “Starting a Secure Service Container partition on a DPM-enabled system,”](#) on page 35
- You need to know the IP address for the Secure Service Container partition. Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container 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 Secure Service Container installer, which includes the IP address through which the Secure Service Container server is listening.
- You need to know the master user ID and password for the Secure Service Container partition. These values are specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition.
- You need to know the ID of the disk on which the existing software appliance image is currently installed. This disk must be attached to the server that hosts the new Secure Service Container partition.

Procedure

1. Connect to the Secure Service Container installer through the browser of your choice.

Use the IP address of the network adapter that is specified in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition. For example: `https://ip_address`

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 in the image profile (standard mode system) or the partition definition (DPM-enabled system), 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) In the **Existing Disk with Software Appliance** section, select the device type.

FICON DASD

If you select **FICON DASD** as the device type, click the down arrow in the **Disk** field 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.

FCP

If you select **FCP** as the device type, select one of the options listed for the **Discovery** field.

Scan All Devices

Select this option and click **Discover**. When the discovery operation completes, select the disk on which the software appliance resides from the **Disk** list.

Scan Single Device Only

Select this option, then select a storage device from the **Device** list, and click **Discover**.

When the discovery operation completes, select the disk on which the software appliance resides from the **Disk** list.

Manual

Select this option, select a storage device from the **Device** list, and enter the target worldwide port number (WWPN) and logical unit number (LUN) information for 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 Secure Service Container 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 Secure Service Container 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 in the image profile (standard mode system) or the partition definition (DPM-enabled system) for the Secure Service Container partition, and click **Login**.

Results

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

If a problem occurs, the installer displays an error message that can help you troubleshoot problems related to user input. If the message indicates an internal problem, see [Appendix A, "Codes from the Secure Service Container installer,"](#) on page 67.

Chapter 16. Migrating an appliance from one system to a new system

You can migrate an installed appliance from one system to any other system on which you can configure a Secure Service Container partition. When you migrate an appliance from one system to another, you have the option of reusing the existing installation disk for the appliance, or attaching a new installation disk to the new system.

The suggested practice is to migrate appliances from one system model to the same model or a more recent model, with the same or a more recent level of firmware installed; for example, from a z13 2964 to another z13 2964, or from a z13 2964 to a z14 3906. To review the list of systems that support Secure Service Container partitions, and to find out where to get the latest available firmware for specific system models, see [Chapter 2, “Prerequisites for using Secure Service Container,” on page 5](#).

Depending on whether you are reusing an installation disk or attaching a new disk, use the instructions in one of the following topics.

- [“Migrating an appliance, reusing an existing installation disk” on page 63](#)
- [“Migrating an appliance, using a new installation disk” on page 65](#)

Migrating an appliance, reusing an existing installation disk

Use this procedure to migrate a Secure Service Container appliance from one system to another, reusing the existing installation disk for the appliance on the new system.

Before you begin

- Make sure that you can log in to a Hardware Management Console (HMC) through which you can access the originating system and the new system.
- Make sure that the storage configuration of the new system includes the installation disk that you plan to reuse.

About this task

This procedure contains steps that you need to perform on the originating system (where the appliance is currently installed) and steps to complete on the new system. [Table 6 on page 63](#) provides an overview of these steps; each step number provides a link to the corresponding instructions. To maximize availability of the appliance, make sure you complete each step in sequence.

Note: Depending on the appliance that you are migrating, you might need to complete additional steps that are not part of this procedure. Make sure that you also check the appliance documentation for any additional migration requirements.

Step number	Complete on the originating system	Complete on the new system
Step “1” on page 64	—	Configure a new Secure Service Container partition.
Step “2” on page 64	Optional: Export the configuration of the installed appliance that you are migrating.	—
Step “3” on page 64	Look up the disk ID of the installation disk, so you can find the appropriate disk in a later step on the new system.	—

Table 6. Overview of steps for migrating an appliance, reusing an existing installation disk (continued)

Step number	Complete on the originating system	Complete on the new system
Step "4" on page 64	Deactivate (or stop) the Secure Service Container partition.	—
Step "5" on page 64	—	Activate (or start) the Secure Service Container partition in Installer mode.
Step "6" on page 64	—	Install the appliance, attaching the installation disk to the Secure Service Container partition.


Procedure

1. On the new system, configure a Secure Service Container partition.


Make sure that the storage devices and network connections for this new partition are based on the requirements of the appliance that you plan to migrate.

The new system can be running in standard mode (that is, with Processor Resource/System Manager or PR/SM), or have IBM Dynamic Partition Manager (DPM) enabled. Use the appropriate instructions for the new system.

- [Chapter 3, "Configuring a Secure Service Container partition on a standard mode system," on page 13](#)
- [Chapter 8, "Creating a Secure Service Container partition on a DPM-enabled system," on page 29](#)

2. Optional: On the originating system, log in to the appliance, and use the Ex-/Import widget () to export the appliance configuration.

For instructions, see ["Exporting or importing appliance configuration data" on page 51](#).

3. On the originating system, log in to the appliance, and use the Storage widget () to find the disk ID of the installation disk.

You need this ID to successfully complete step "6" on page 64.

- a) Click the Storage widget icon to open the Storage Disks By Storage Pool page.
 - b) Record the disk ID that is listed under the Appliance Operation heading. Depending on the type of disk, the ID is either a disk identifier (for FICON DASD) or a worldwide unique identifier (for FCP devices).
4. Log in to an HMC through which you can access the originating system, and deactivate (or stop) the Secure Service Container partition on that system.

Use the appropriate instructions:

- [Chapter 7, "Deactivating or deleting a Secure Service Container partition on a standard mode system," on page 25](#)
- [Chapter 12, "Stopping or deleting a Secure Service Container partition on a DPM-enabled system," on page 41](#)

5. On an HMC through which you can access the new system, start the new Secure Service Container partition, specifying the Secure Service Container Installer boot selection.


Use the appropriate instructions:

- [Chapter 4, "Starting a Secure Service Container partition on a standard mode system," on page 19](#)
- [Chapter 9, "Starting a Secure Service Container partition on a DPM-enabled system," on page 35](#)

6. Install the appliance on the new system, following the instructions in [Chapter 13, "Installing a new software appliance in a Secure Service Container partition," on page 45](#).

In step “4” on page 46, make sure that you select the target disk with an ID that matches the ID that you recorded in step “3” on page 64.

What to do next

If you exported the appliance configuration as part of this procedure, log in to the appliance, and use the Ex-/Import widget () to import the appliance configuration.

Migrating an appliance, using a new installation disk

Use this procedure to migrate a Secure Service Container appliance from one system to another, attaching a new installation disk to the new system.

Before you begin

- Make sure that you can log in to a Hardware Management Console (HMC) through which you can access the originating system and the new system.
- Make sure that the storage configuration of the new system includes the installation disk that you plan to reuse.

About this task

This procedure contains steps that you need to perform on the originating system (where the appliance is currently installed) and steps to complete on the new system. [Table 7 on page 65](#) provides an overview of these steps; each step number provides a link to the corresponding instructions. To maximize availability of the appliance, make sure you complete each step in sequence.

Note: Depending on the appliance that you are migrating, you might need to complete additional steps that are not part of this procedure. Make sure that you also check the appliance documentation for any additional migration requirements.



Step number	Complete on the originating system	Complete on the new system
Step “1” on page 65	—	Configure a new Secure Service Container partition.
Step “2” on page 66	Export the configuration of the installed appliance that you are migrating.	—
Step “3” on page 66	Deactivate (or stop) the Secure Service Container partition.	—
Step “4” on page 66	—	Activate (or start) the Secure Service Container partition in Installer mode.
Step “5” on page 66	—	Install the appliance in the Secure Service Container partition, using the new installation disk.
Step “6” on page 66	—	Import the appliance configuration.

Procedure

1. On the new system, configure a Secure Service Container partition.

Make sure that the storage devices and network connections for this new partition are based on the requirements of the appliance that you plan to migrate.

The new system can be running in standard mode (that is, with Processor Resource/System Manager or PR/SM), or have IBM Dynamic Partition Manager (DPM) enabled. Use the appropriate instructions for the new system.

- [Chapter 3, “Configuring a Secure Service Container partition on a standard mode system,” on page 13](#)
 - [Chapter 8, “Creating a Secure Service Container partition on a DPM-enabled system,” on page 29](#)
2. On the originating system, log in to the appliance, and use the Ex-/Import widget () to export the appliance configuration.
For instructions, see [“Exporting or importing appliance configuration data” on page 51](#).
 3. Log in to an HMC through which you can access the originating system, and deactivate (or stop) the Secure Service Container partition on that system.
Use the appropriate instructions:
 - [Chapter 7, “Deactivating or deleting a Secure Service Container partition on a standard mode system,” on page 25](#)
 - [Chapter 12, “Stopping or deleting a Secure Service Container partition on a DPM-enabled system,” on page 41](#)
 4. On an HMC through which you can access the new system, start the new Secure Service Container partition, specifying the Secure Service Container Installer boot selection.
Use the appropriate instructions:
 - [Chapter 4, “Starting a Secure Service Container partition on a standard mode system,” on page 19](#)
 - [Chapter 9, “Starting a Secure Service Container partition on a DPM-enabled system,” on page 35](#)
 5. Install the appliance on the new system, following the instructions in [Chapter 13, “Installing a new software appliance in a Secure Service Container partition,” on page 45](#).
 6. Log in to the appliance, and use the Ex-/Import widget () to import the appliance configuration.

Appendix A. Codes from the Secure Service Container installer

If the Secure Service Container installer finds a problem that is not a client error, the installer returns an error message to indicate a server error. In this case, the UI displays a failure message. If the Call Home feature is enabled on the host system, the installer sends failure data to IBM for analysis.

Table 8 on page 67 lists the error codes that the installer can issue.

<i>Table 8. Installer error reference codes</i>	
Error code	Description
2A5A0488	Detected an internal error related to the boot configuration file.
2A5A0490	Detected an error while attempting to read or modify the network configuration file.
2A5A0492	Detected an internal error related to reading appliance boot files.
2A5A0494	Detected an internal error related to uploading or installing a software appliance to a device.
2A5A0496	Detected an unexpected internal error.

Table 9 on page 67 lists the informational codes that the installer can issue.

<i>Table 9. Installer informational reference codes</i>	
Informational code	Description
2A5A0481	Detected unexpected input or a timeout during the upload process. User should retry after checking input to the Secure Service Container installer.

Appendix B. Notices

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