

Setting up IBM zAware Step by Step

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Agenda



- Definition of the zAware partition
- zAware GUI Configuration
 - DASD Storage assignment
 - Security set up
 - Analytics configuration
- z/OS setup for monitored systems
- Priming the zAware partition with existing data
 - z/OS
 - zAware GUI
 - Training a model
- Ongoing operations

IBM zAware – IBM System z Advanced Workload Analysis Reporter

- Monitors z/OS OPERLOG including all messages written to z/OS console, including ISV and application generated messages
- Detects things typical monitoring systems miss due to:
 - Message suppression (message too common)
Useful for long-term health issues
 - Uniqueness (message not common enough)
Useful for real-time event diagnostics
- Color coded easy to use GUI via web browsers
- Output can be queued up to existing monitoring systems.
- Early detection and focused diagnosis can help improve time to recovery



Inside IBM zAware



zAware Partition
Shipped as firmware with EC12

z/OS pieces
Shipped with z/OS v1.13 +PTF

View zAware results Control zAware-specific knobs

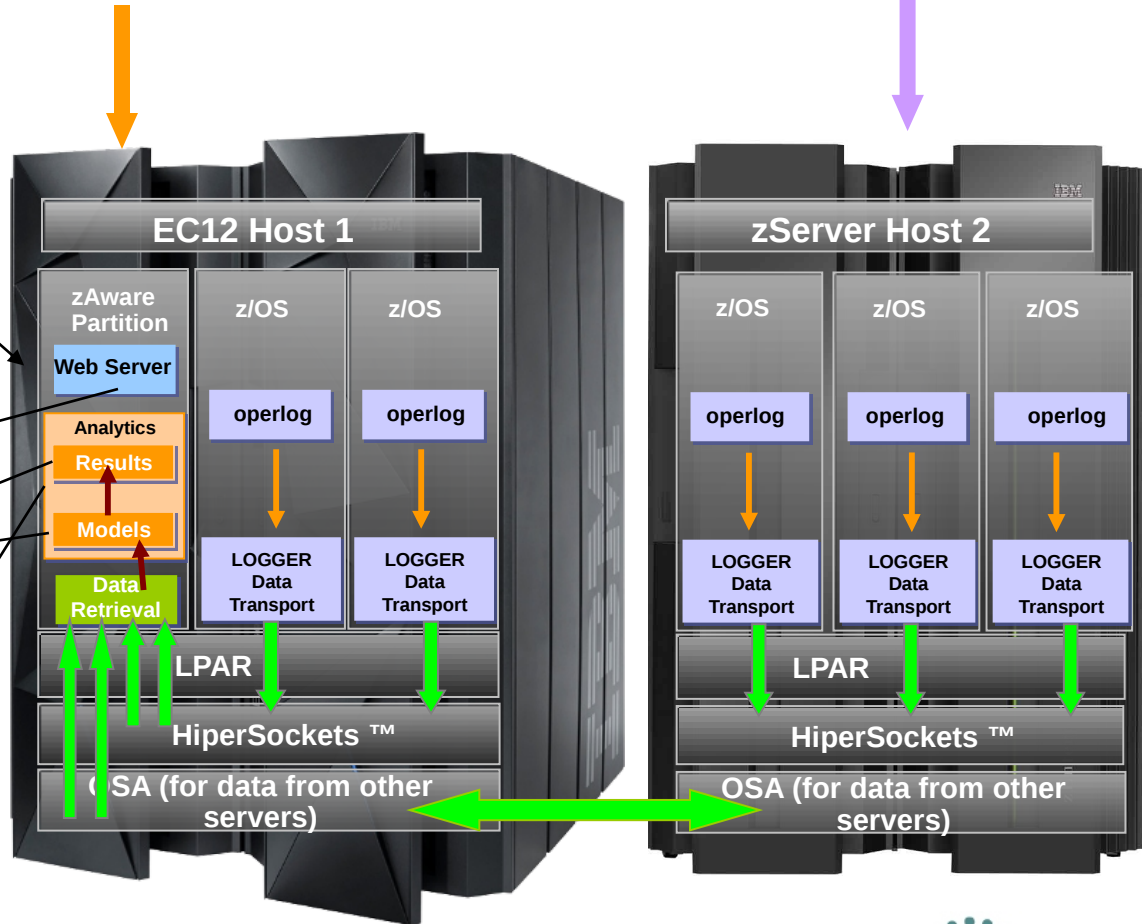
zAware GUI

Customer network

Persistent Storage

File System

Manage zAware Firmware partition



Operating Requirements – IBM zAware Server

- Logical partition on a zEC12 server
 - Runs on IFL or general purpose CP – may be dedicated or shared
 - Runs its own self-contained firmware stack
 - Recommended 2 partial engines
- Memory and DASD resources are dependent on the number of monitored clients, amount of message traffic, length of time data retained
 - Minimum Memory is 6 GB for the first 6 clients
For > 6 clients + 256 MB per client required
 - Estimated DASD storage is ~ 500 GB (ECKD)
- Network resources
 - HiperSockets or shareable OSA ports
 - IP address for partition
- Internet Explorer 9 or Firefox ESR 10 browser

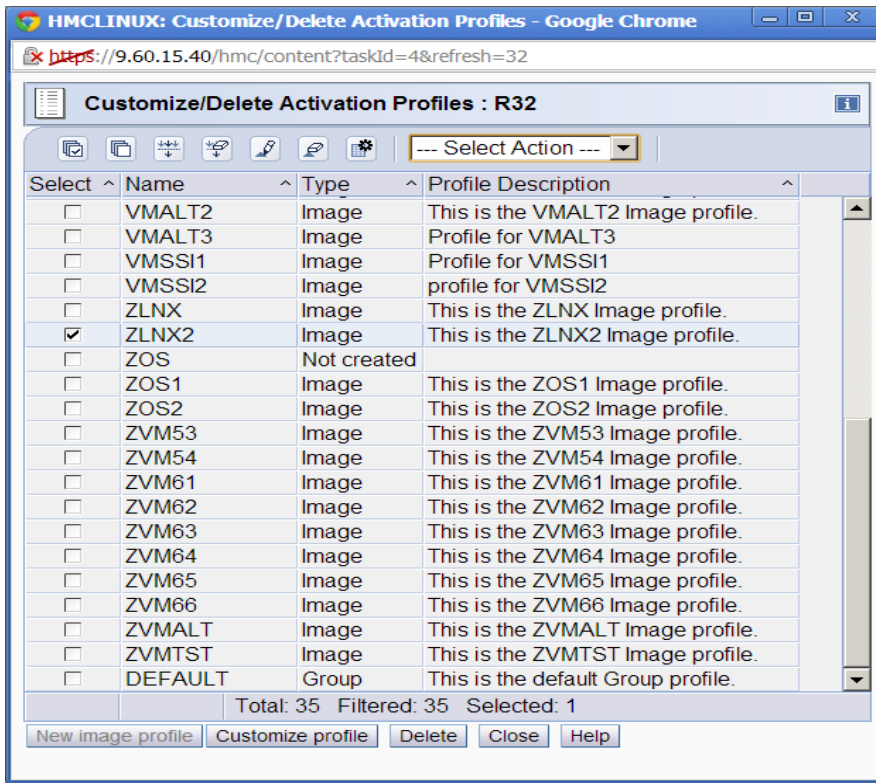
zAware Partition Background & IOCDS Definition

- IBM zAware Partition, including I/O, is defined like any other partition. You can use Hardware Configuration Definition (HCD) / Hardware Configuration Management (HCM) or equivalent.
- Similar in many ways to Coupling Facility type partitions
- zAware application loaded from Support Element (SE)
- zAware application is firmware
 - Separate EC stream
 - Updated like all other firmware
 - Part of Support Element (SE) version 2.12.0
 - Hardware Management Console (HMC) support starting with HMC version 2.12.0
 - Concurrent Driver Upgrade (CDU)
 - EC Upgrade
 - MCFs/MCLs
- Prerequisites to defining a zAware partition: Purchase and install the zAware Feature Codes (FC)

Several ways to define the zAware Partition

- Web Services APIs
- User Interface (**Customize/Delete Activation Profile**):

Traditional Image Profile Customization



HMCLINUX: Customize/Delete Activation Profiles - Google Chrome
<https://9.60.15.40/hmc/content?taskId=4&refresh=32>

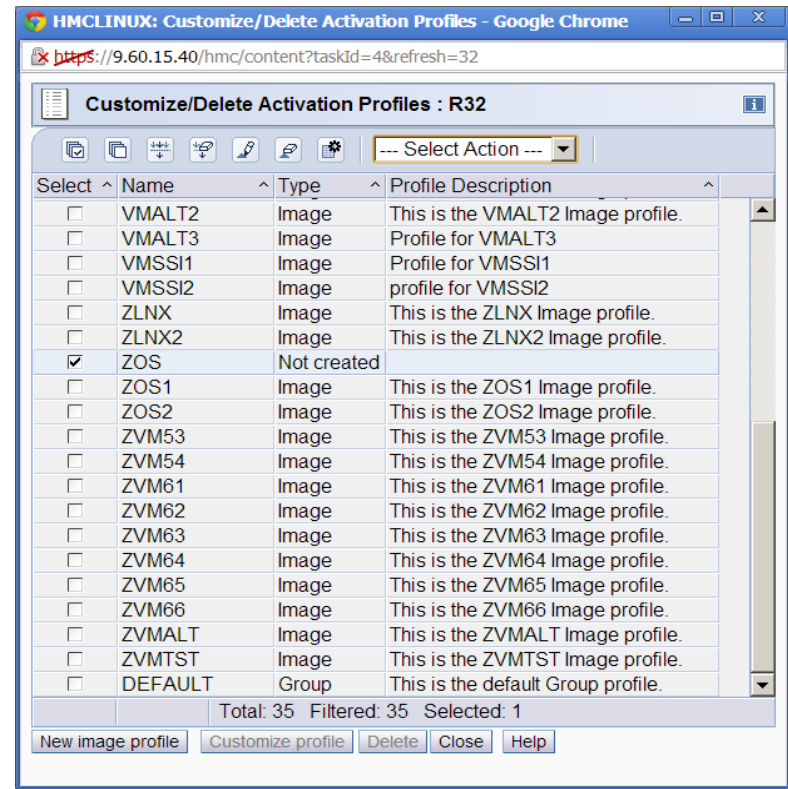
Customize/Delete Activation Profiles : R32

Select	Name	Type	Profile Description
<input type="checkbox"/>	VMALT2	Image	This is the VMALT2 Image profile.
<input type="checkbox"/>	VMALT3	Image	Profile for VMALT3
<input type="checkbox"/>	VMSSI1	Image	Profile for VMSSI1
<input type="checkbox"/>	VMSSI2	Image	profile for VMSSI2
<input type="checkbox"/>	ZLN2	Image	This is the ZLN2 Image profile.
<input checked="" type="checkbox"/>	ZLN2	Image	This is the ZLN2 Image profile.
<input type="checkbox"/>	ZOS	Not created	
<input type="checkbox"/>	ZOS1	Image	This is the ZOS1 Image profile.
<input type="checkbox"/>	ZOS2	Image	This is the ZOS2 Image profile.
<input type="checkbox"/>	ZVM53	Image	This is the ZVM53 Image profile.
<input type="checkbox"/>	ZVM54	Image	This is the ZVM54 Image profile.
<input type="checkbox"/>	ZVM61	Image	This is the ZVM61 Image profile.
<input type="checkbox"/>	ZVM62	Image	This is the ZVM62 Image profile.
<input type="checkbox"/>	ZVM63	Image	This is the ZVM63 Image profile.
<input type="checkbox"/>	ZVM64	Image	This is the ZVM64 Image profile.
<input type="checkbox"/>	ZVM65	Image	This is the ZVM65 Image profile.
<input type="checkbox"/>	ZVM66	Image	This is the ZVM66 Image profile.
<input type="checkbox"/>	ZVMALT	Image	This is the ZVMALT Image profile.
<input type="checkbox"/>	ZVMTST	Image	This is the ZVMTST Image profile.
<input type="checkbox"/>	DEFAULT	Group	This is the default Group profile.

Total: 35 Filtered: 35 Selected: 1

New image profile Customize profile Delete Close Help

Image Profile Wizard



HMCLINUX: Customize/Delete Activation Profiles - Google Chrome
<https://9.60.15.40/hmc/content?taskId=4&refresh=32>

Customize/Delete Activation Profiles : R32

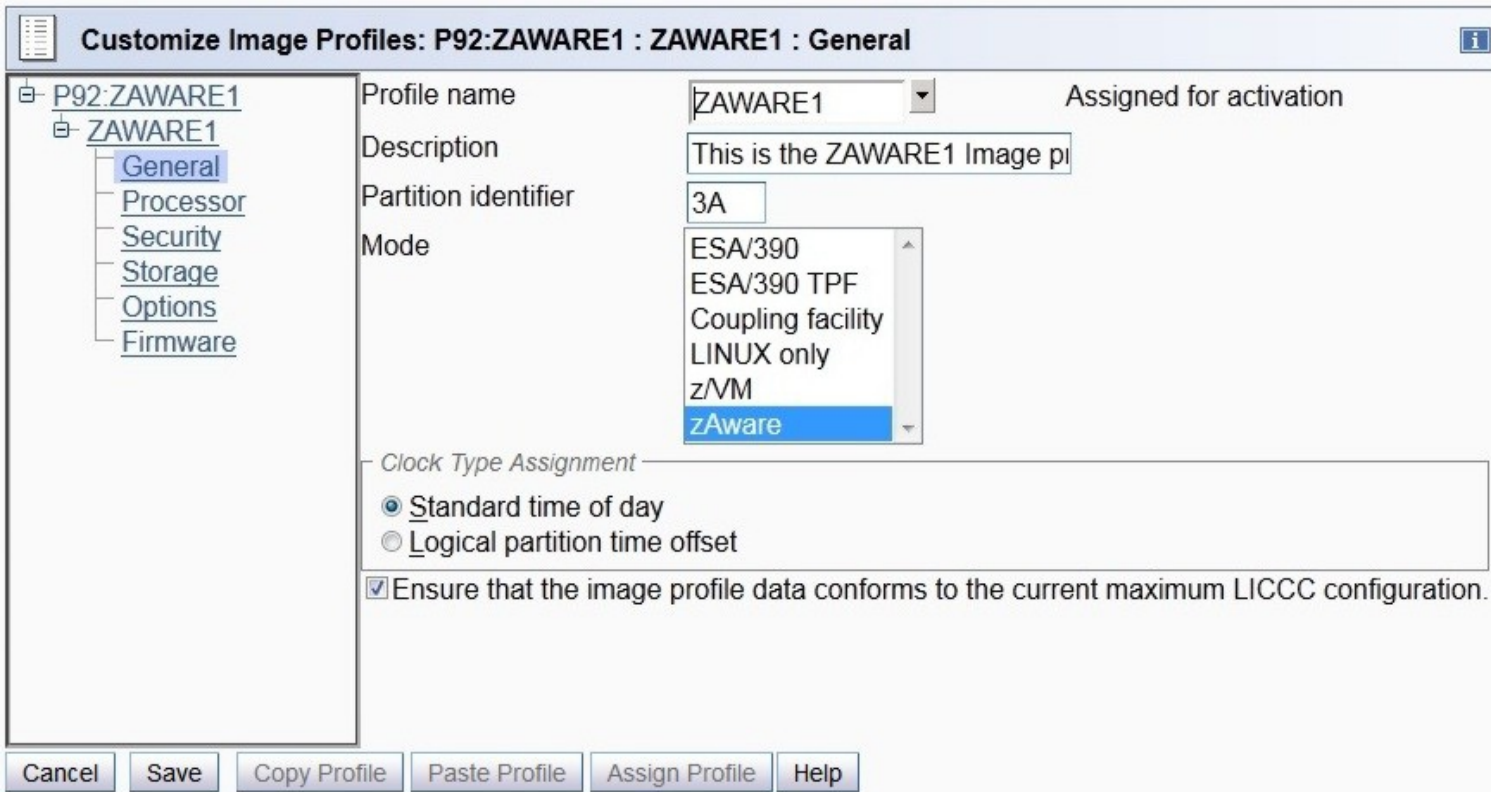
Select	Name	Type	Profile Description
<input type="checkbox"/>	VMALT2	Image	This is the VMALT2 Image profile.
<input type="checkbox"/>	VMALT3	Image	Profile for VMALT3
<input type="checkbox"/>	VMSSI1	Image	Profile for VMSSI1
<input type="checkbox"/>	VMSSI2	Image	profile for VMSSI2
<input type="checkbox"/>	ZLN2	Image	This is the ZLN2 Image profile.
<input type="checkbox"/>	ZLN2	Image	This is the ZLN2 Image profile.
<input checked="" type="checkbox"/>	ZOS	Not created	
<input type="checkbox"/>	ZOS1	Image	This is the ZOS1 Image profile.
<input type="checkbox"/>	ZOS2	Image	This is the ZOS2 Image profile.
<input type="checkbox"/>	ZVM53	Image	This is the ZVM53 Image profile.
<input type="checkbox"/>	ZVM54	Image	This is the ZVM54 Image profile.
<input type="checkbox"/>	ZVM61	Image	This is the ZVM61 Image profile.
<input type="checkbox"/>	ZVM62	Image	This is the ZVM62 Image profile.
<input type="checkbox"/>	ZVM63	Image	This is the ZVM63 Image profile.
<input type="checkbox"/>	ZVM64	Image	This is the ZVM64 Image profile.
<input type="checkbox"/>	ZVM65	Image	This is the ZVM65 Image profile.
<input type="checkbox"/>	ZVM66	Image	This is the ZVM66 Image profile.
<input type="checkbox"/>	ZVMALT	Image	This is the ZVMALT Image profile.
<input type="checkbox"/>	ZVMTST	Image	This is the ZVMTST Image profile.
<input type="checkbox"/>	DEFAULT	Group	This is the default Group profile.

Total: 35 Filtered: 35 Selected: 1

New image profile Customize profile Delete Close Help

Defining the zAware Image Profile (Traditional) – Setting the partition mode

- Create or Modify an image profile for the defined partition.
- On the **General** tab, select “zAware” for the partition mode:



Customize Image Profiles: P92:ZAWARE1 : ZAWARE1 : General

Profile name: ZAWARE1 Assigned for activation

Description: This is the ZAWARE1 Image p

Partition identifier: 3A

Mode: ESA/390, ESA/390 TPF, Coupling facility, LINUX only, z/VM, **zAware**

Clock Type Assignment:

- Standard time of day
- Logical partition time offset

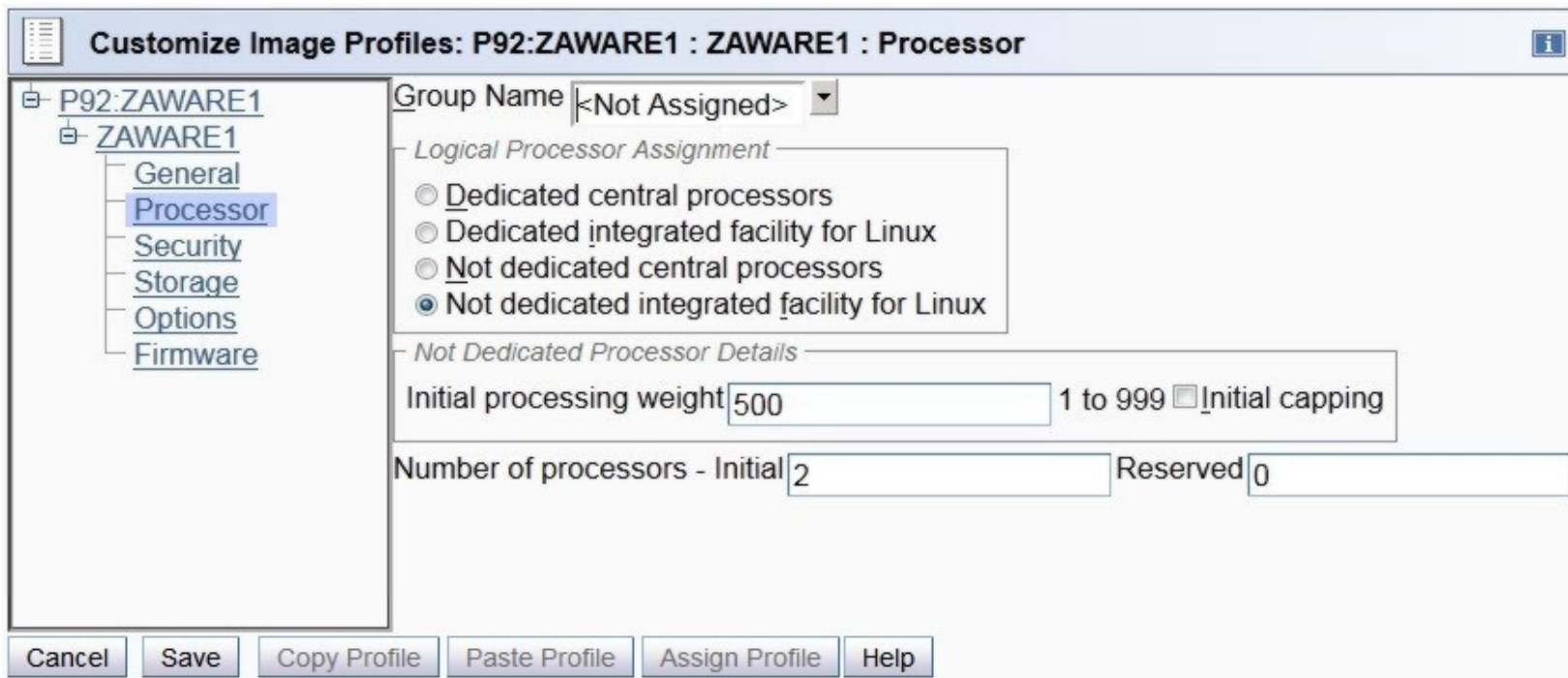
Ensure that the image profile data conforms to the current maximum LICCC configuration.

Buttons: Cancel, Save, Copy Profile, Paste Profile, Assign Profile, Help

Notice no “Load” page; Again, zAware application loaded from SE's HDD

Defining the zAware Image Profile (Traditional) – Setting the processors

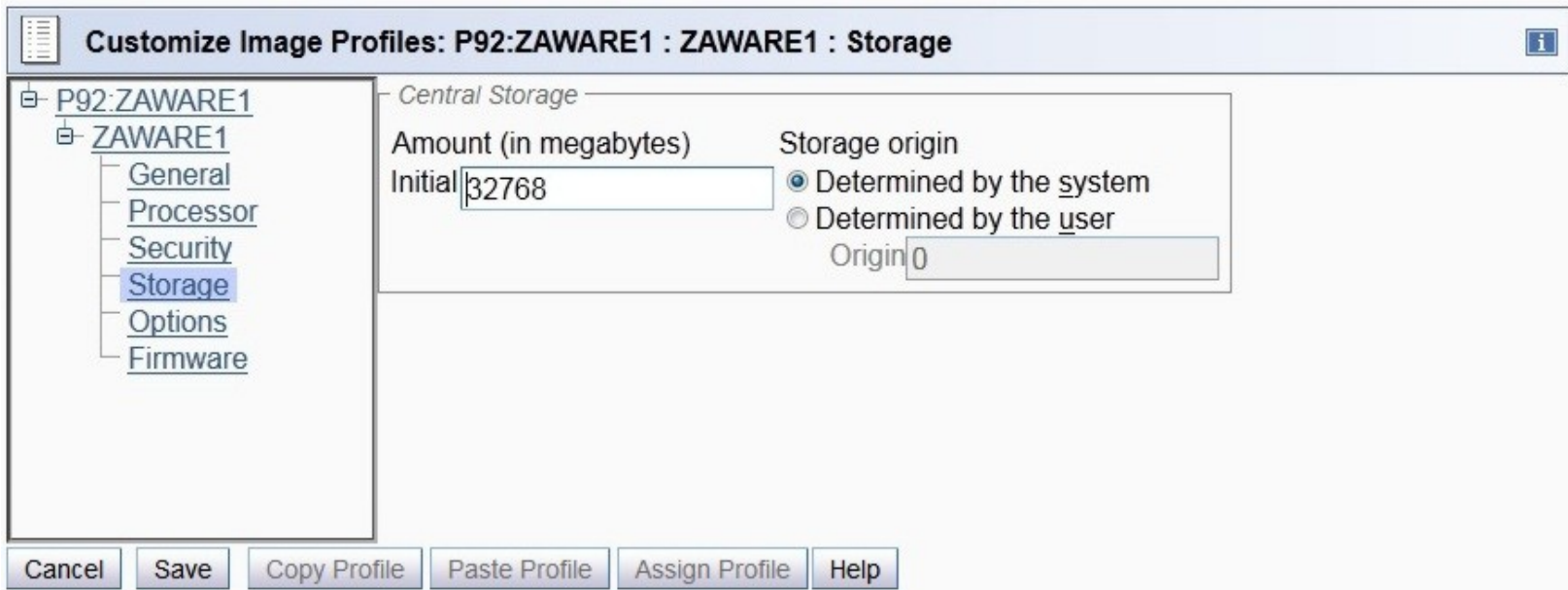
- You can use central processors or IFL processors
- You can use dedicated or shared processors
- Assign 2 processors to support monitored clients with message traffic up to 1500 messages per second.



The screenshot shows a software interface for configuring image profiles. The title bar reads "Customize Image Profiles: P92:ZAWARE1 : ZAWARE1 : Processor". On the left is a tree view with "P92:ZAWARE1" expanded to show "ZAWARE1", which has sub-items: "General", "Processor" (highlighted), "Security", "Storage", "Options", and "Firmware". The main area is titled "Group Name" with a dropdown menu set to "<Not Assigned>". Below this are two sections: "Logical Processor Assignment" with four radio button options: "Dedicated central processors", "Dedicated integrated facility for Linux", "Not dedicated central processors", and "Not dedicated integrated facility for Linux" (which is selected). The second section, "Not Dedicated Processor Details", contains two input fields: "Initial processing weight" set to "500" (with a range of "1 to 999" and an "Initial capping" checkbox) and "Number of processors - Initial" set to "2" (with a "Reserved" field set to "0"). At the bottom are buttons for "Cancel", "Save", "Copy Profile", "Paste Profile", "Assign Profile", and "Help".

Defining the zAware Image Profile (Traditional) – Setting the Storage size

- Minimum storage for a zAware partition is 4096 MB (4 GB)
- 6144 MB (6 GB) is recommended for a small number of monitored clients (6 or less) with light message traffic (up to 500 messages/second)
- 11264 MB (11 GB) is recommended for message traffic up to 1500 messages/second.
- As with all performance recommendations, you may be able to reduce or have to increase the memory footprint for your specific situation.



Customize Image Profiles: P92:ZAWARE1 : ZAWARE1 : Storage

P92:ZAWARE1
 ZAWARE1
 General
 Processor
 Security
 Storage
 Options
 Firmware

Central Storage

Amount (in megabytes)
Initial

Storage origin
 Determined by the system
 Determined by the user

Origin

Cancel Save Copy Profile Paste Profile Assign Profile Help

Use new tab to specify zAware-specific image profile parameters

Customize Image Profiles: P92:ZAWARE1 : ZAWARE1 : Firmware i

- [-] P92:ZAWARE1
 - [-] ZAWARE1
 - General
 - Processor
 - Security
 - Storage
 - Options
 - Firmware**

Host name :

Master user ID :

Master password :

Confirm master password :

Network Adapters

Select ^	CHPID ^	VLAN ^	IP address ^	Mask/Prefix ^
<input type="radio"/>	12		9.12.41.185	24
<input type="radio"/>	16		fec0::11:22:33:44:242	116
<input type="radio"/>	16		192.168.50.242	24



Default gateway :

DNS Servers

Select ^	IP address ^
<input type="radio"/>	9.12.16.2

Cancel Save Copy Profile Paste Profile Assign Profile Help

Add new Network Adapter Entry

 **Add/Edit Network Adapters Entry - P89:ZAWARE1** 

Select an address type and modify or fill in the details for this CHPID.

IP address type

DHCP
 Link Local
 Static IPv4 Address
 Static IPv6 Address


Details

CHPID :

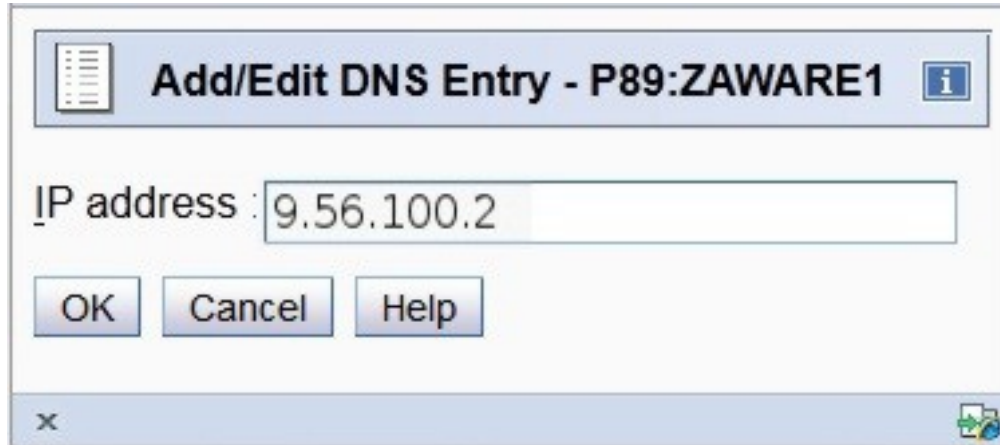
VLAN :

IP address :

Mask / Prefix :

x 

Add new DNS Entry



Add/Edit DNS Entry - P89:ZAWARE1 ⓘ

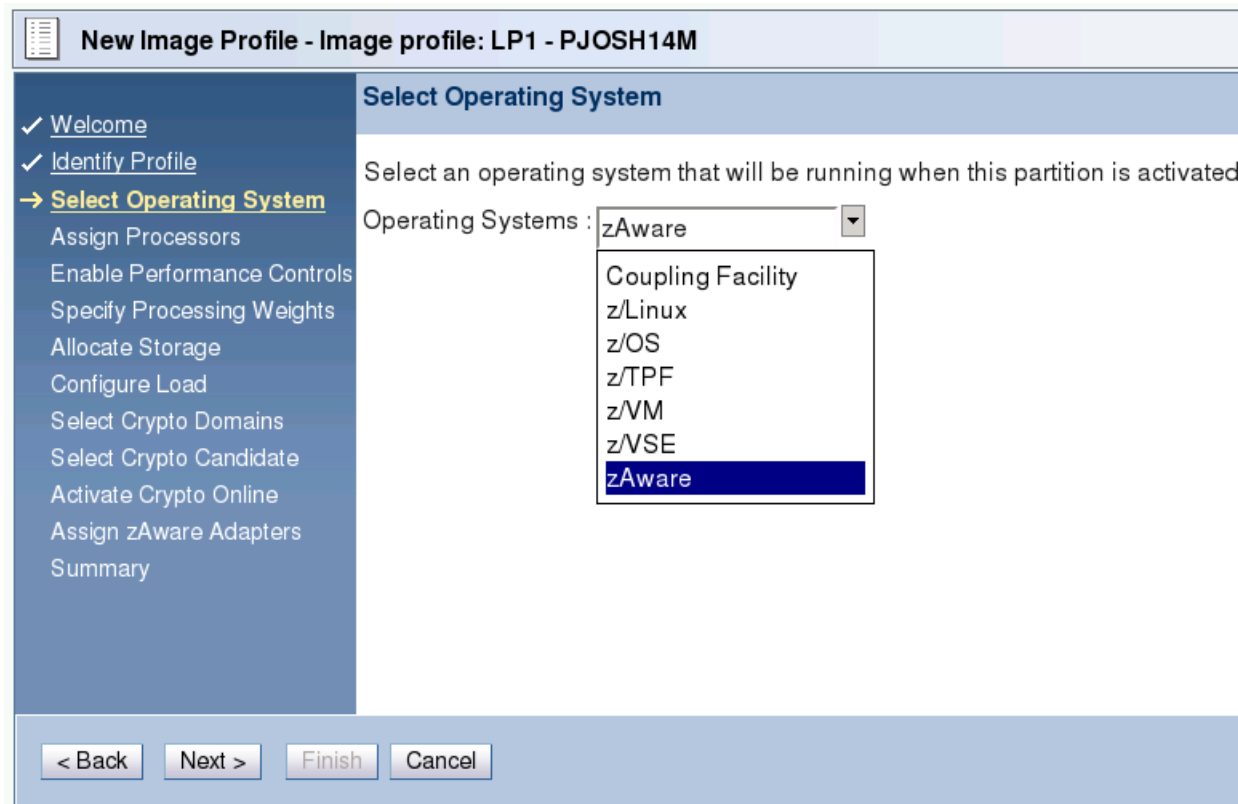
IP address : 9.56.100.2

OK Cancel Help

✕ ⓘ

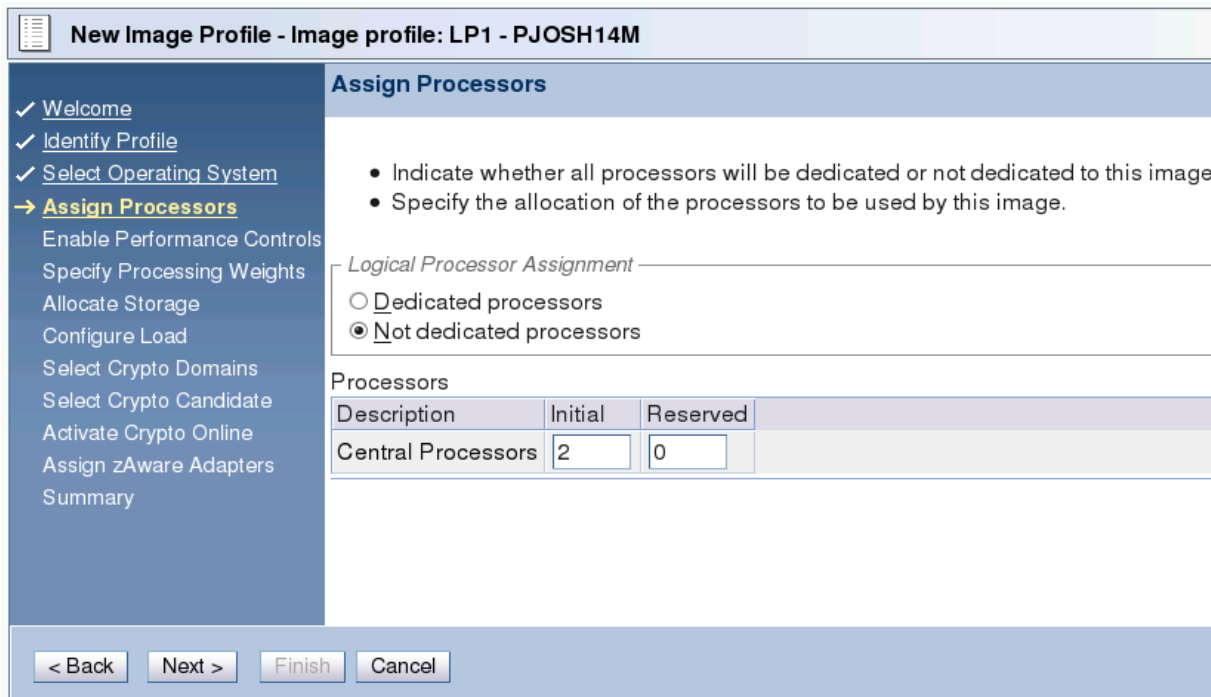
Defining the zAware Image Profile (Wizard) – Setting the Operating System type (i.e. partition mode)

- Create a new image profile
- Set the Operating System type to zAware



Defining the zAware Image Profile (Wizard) – Setting the Processors partition mode

- You can use central processors or IFL processors
- You can use dedicated or shared processors
- Assign 2 processors to support monitored clients with message traffic up to 1500 messages per second.



The screenshot shows a wizard window titled "New Image Profile - Image profile: LP1 - PJOSH14M". The left sidebar contains a list of steps: Welcome, Identify Profile, Select Operating System, Assign Processors (highlighted), Enable Performance Controls, Specify Processing Weights, Allocate Storage, Configure Load, Select Crypto Domains, Select Crypto Candidate, Activate Crypto Online, Assign zAware Adapters, and Summary. The main area is titled "Assign Processors" and contains the following text:

- Indicate whether all processors will be dedicated or not dedicated to this image.
- Specify the allocation of the processors to be used by this image.

Below this text is a section for "Logical Processor Assignment" with two radio buttons: "Dedicated processors" (unselected) and "Not dedicated processors" (selected).

Below that is a table titled "Processors":

Description	Initial	Reserved
Central Processors	2	0

At the bottom of the wizard are four buttons: "< Back", "Next >", "Finish", and "Cancel".

Defining the zAware Image Profile (Wizard) – Setting the Storage

- Minimum storage for a zAware partition is 4096 MB (4 GB)
- 6144 MB (6 GB) is recommended for a small number of monitored clients (6 or less) with light message traffic (up to 500 messages/second)
- 11264 MB (11 GB) is recommended for message traffic up to 1500 messages/second.
- As with all performance recommendations, you may be able to reduce or have to increase the memory footprint for your specific situation.

New Image Profile - Image profile: LP1 - PJOSH14M

Welcome
 Identify Profile
 Select Operating System
 Assign Processors
 Enable Performance Controls
 Specify Processing Weights
→ **Allocate Storage**
Configure Load
Select Crypto Domains
Select Crypto Candidate
Activate Crypto Online
Assign zAware Adapters
Summary

Allocate Storage

Central storage is allocated when this partition is initialized. This storage not shared with other active logical partitions.

Enter the amount of central storage to allocate to the logical partition upon activation.

Central storage range is from 256 MB to 352 GB.
The central storage amount must be a multiple of 256 MB.

Storage : Gigabytes (GB)

< Back Next > Finish Cancel

Defining the zAware Image Profile (Wizard) – zAware specific parameters

New Image Profile - Image profile: LP1 - PJOSH14M

- ✓ Welcome
- ✓ Identify Profile
- ✓ Select Operating System
- ✓ Assign Processors
- ✓ Enable Performance Controls
- ✓ Specify Processing Weights
- ✓ Allocate Storage
- Configure Load
- Select Crypto Domains
- Select Crypto Candidate
- Activate Crypto Online
- **Assign zAware Adapters**
- Summary

Assign zAware Adapters

Specify the zAware parameters.

Host name:

Master userid:

Master password:

Confirm master password:

Network Adapters

--- Select Action ---

Select	CHPID	VLAN	IP address	Mask/Prefix
<input type="radio"/>	12		9.12.41.185	24
<input type="radio"/>	16		fec0::11:22:33:44:242	116
<input type="radio"/>	16		192.168.50.242	24

Default gateway:

DNS Servers

--- Select Action ---

Select	IP address
<input type="radio"/>	9.12.16.2

< Back Next > Finish Cancel

Add new Network Adapter Entry (Wizard)

Add/Edit Network Adapters Entry - PJOSH14M ⓘ

Select an address type and modify or fill in the details for this CHPID.

IP address type

DHCP
 Link Local
 Static IPv4 Address
 Static IPv6 Address

Details

CHPID :

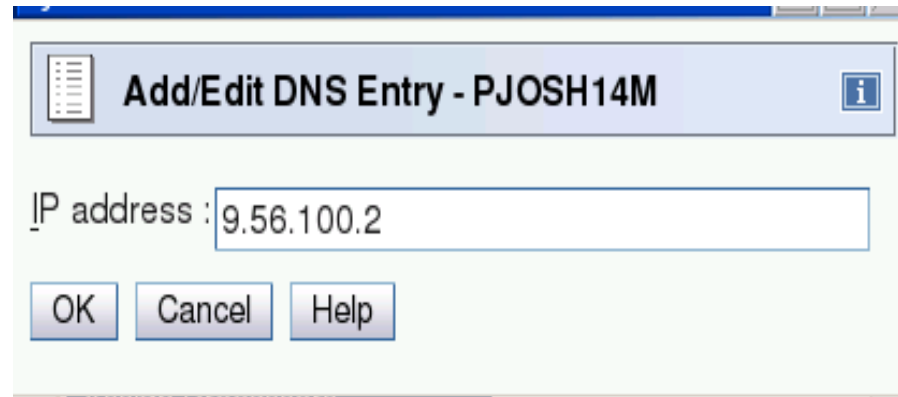
VLAN :

IP address :

Mask / Prefix :

OK Cancel Help

Add new DNS Entry (Wizard)



Add/Edit DNS Entry - PJOSH14M

IP address : 9.56.100.2

OK Cancel Help

Image Profile Wizard Summary

- ✓ [Welcome](#)
- ✓ [Identify Profile](#)
- ✓ [Select Operating System](#)
- ✓ [Assign Processors](#)
- ✓ [Enable Performance Controls](#)
- ✓ [Specify Processing Weights](#)
- ✓ [Allocate Storage](#)
- [Configure Load](#)
- Select Crypto Domains
- Select Crypto Candidate
- Activate Crypto Online
- ✓ [Assign zAware Adapters](#)
- [Summary](#)

Summary

The following data will be stored in the LP1 image profile:

Identify Profile

Partition identifier 1

Profile description zAware

Specify Operating System

Operating system zAware

Assign Processors

Logical processor assignment Dedicated

Description	Initial	Reserved
Central Processors	2	0

Allocate Storage

Initial central storage 16 Gigabytes (GB)

Assign zAware Adapters

Host name zAware1

Master user id admin

Master password *****

CHPID	VLAN	IP address	Mask/Prefix
12		9.12.41.185	24
16		fec0::11:22:33:44:242	116
16		192.168.50.242	24
24	1211	9.60.15.11	32

Default gateway 9.12.41.1

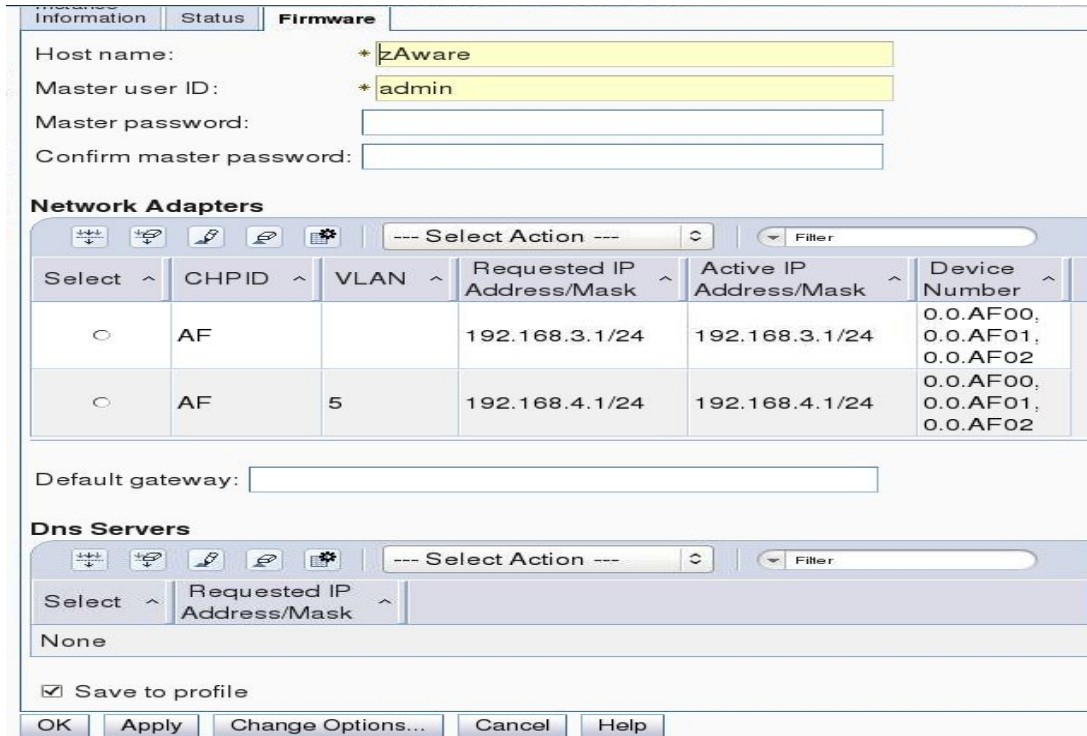
IP address
9.12.16.2
9.56.100.2

Click **Finish** to create the LP1 image profile.

< Back
Next >
Finish
Cancel

Activate the Partition / Dynamic Changes to the zAware configuration

- Activate the partition using the **Activate** task, just like all other partitions.
- Dynamic changes to the zAware partition can be made by using a new tab on the image details:



Information | Status | **Firmware**

Host name: *zAware
Master user ID: *admin
Master password:
Confirm master password:

Network Adapters

Select	CHPID	VLAN	Requested IP Address/Mask	Active IP Address/Mask	Device Number
<input type="radio"/>	AF		192.168.3.1/24	192.168.3.1/24	0.0.AF00, 0.0.AF01, 0.0.AF02
<input type="radio"/>	AF	5	192.168.4.1/24	192.168.4.1/24	0.0.AF00, 0.0.AF01, 0.0.AF02

Default gateway:

Dns Servers

Select	Requested IP Address/Mask
None	

Save to profile

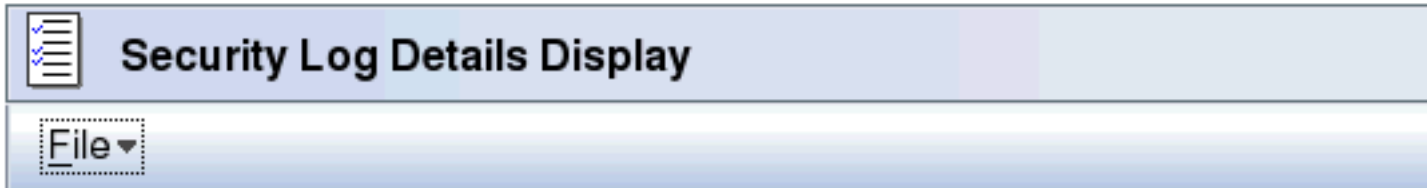
OK | Apply | Change Options... | Cancel | Help

- Running system always updated
- Can also update the image profile or not (“Save to Profile” checkbox)
- If you just want to change just the image profile, you must use the **Customize Activation Profiles** Task or equivalent (such as WebServices APIs).

APIs

- API Support
 - WebServices APIs updated to fully support IBM zAware
 - SNMP API only updated to handle new zAware mode
 - CIMOM API only updated to handle new zAware mode

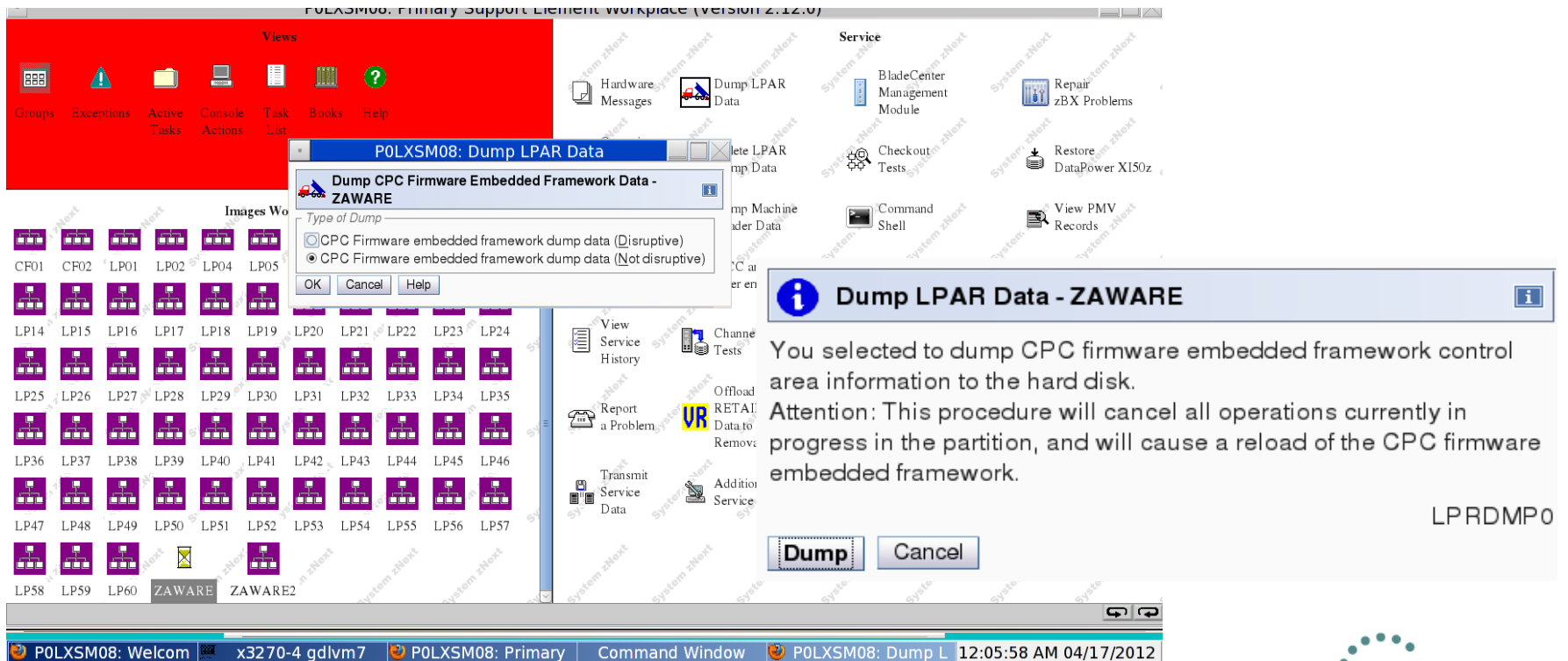
Security Log Updated for new IBM zAware image profile parameters



```
Profile name [11KZAWAR]
Profile type [Image]
Profile description [This is the default Image profile.]
Host name [zAwareHost]
Master userid [zAware.User-Id]
Master password [*****]
Network Adapters [CHPID 0x44 VLAN 1944 DHCP]
Network Adapters [CHPID 0x44 VLAN 1171 Link Local]
Network Adapters (New) [CHPID 0xA1 IP Address 9.60.15.111/28]
Network Adapters [CHPID 0xA2 VLAN 8001 IP Address e111:d123:c98a:4::0/128]
Network Adapters [CHPID 0x44 VLAN 1877 Link Local]
Network Adapters (Old) [CHPID 0xA1 IP Address 9.60.15.111/30]
Default gateway [9.60.15.255]
DNS [9.0.0.0]
DNS [e111:d123::ffff]
Load Parameter[      ]
Load Address [00000]
Load Type [Clear]
```

IBM zAware Dump

- Like a CF Dump, new zAware Dump support
- LPAR Dump Task
 - Concurrent
 - Disruptive



The screenshot shows the IBM zAware Primary Support Element workplace (version 2.12.0) interface. A dialog box titled "Dump LPAR Data - ZAWARE" is open, allowing the user to select the type of dump. The "Disruptive" option is selected. An information banner at the bottom of the dialog provides a warning that the procedure will cancel all operations in progress and cause a reload of the CPC firmware. The background shows a grid of LPARs (LP01-LP57) and ZAWARE components (ZAWARE, ZAWARE2).

LPRDMP0

IBM zAware Dump

- Use the **Delete LPAR Dump Data** task to delete a zAware Dump

P0LXSM08: Delete LPAR Dump Data

Delete Logical Partition Dump Data Confirmation - P0LXSM08

You selected to delete logical partition dump data from the hard disk.
 Note: The following logical partition data dumps exist on the hard disk.
 Select one or more dumps to delete.

Select	Dump Type	Partition	Date	Time
<input type="checkbox"/>	Logical Partition		04/12/12	03:20:56
<input type="checkbox"/>	Coupling Facility	CF01	04/12/12	03:12:25
<input type="checkbox"/>	Firmware Embedded Framework	ZAWARE	04/12/12	03:09:18

Attention: This procedure will permanently remove the dump data from the hard disk.

Delete **Cancel** **Help**

Transmit Service Data to IBM

- New Transmit Service Data to IBM (TSD) Task option to collect zAware Dump. Use the **CPC Firmware Embedded Framework Dump Data** option.

POLXSM36: Transmit Service Data

Transmit Service Data to IBM - POLXSM36

Select the data you want and the destination for the data.

<p><i>Service Data Selections</i></p> <p><input type="checkbox"/> Support element trace</p> <p><input type="checkbox"/> System availability data</p> <p><input type="checkbox"/> Support element log</p> <p><input type="checkbox"/> Support element log - truncated</p> <p><input type="checkbox"/> Support element backup log</p> <p><input type="checkbox"/> Problem determination data</p> <p><input type="checkbox"/> Change internal code trace</p> <p><input type="checkbox"/> Installation completion report</p> <p><input type="checkbox"/> Task recording data</p> <p><input type="checkbox"/> Print screen files</p> <p><input type="checkbox"/> Component logs</p> <p><input type="checkbox"/> Audit log</p> <p><input type="checkbox"/> Check stop dump data</p> <p><input type="checkbox"/> Concurrent Engineering Changes Upgrade Data</p> <p><input type="checkbox"/> System activity and activation profiles</p> <p><input type="checkbox"/> LICCC data files</p> <p><input type="checkbox"/> LPAR zone group files</p> <p><input type="checkbox"/> Logical partition dump data</p> <p><input type="checkbox"/> CPC dump data</p> <p><input type="checkbox"/> Coupling facility logical partition dump data</p> <p><input type="checkbox"/> Coupling facility diagnostic dump data</p> <p><input type="checkbox"/> CPC hardware configuration data</p> <p><input type="checkbox"/> Alternate SE problem data</p> <p><input type="checkbox"/> Temporary upgrade billing data</p> <p><input type="checkbox"/> Power logs</p> <p><input type="checkbox"/> Hydra service data</p> <p><input type="checkbox"/> Service trace data</p> <p><input type="checkbox"/> CPC firmware embedded framework dump data</p>	<p><i>Service Data Destination</i></p> <p><input checked="" type="radio"/> Removable media</p> <p><i>Product Engineering Files</i></p> <p><input type="text"/></p> <p><i>IOCDs Files</i></p> <p><input type="button" value="Select Files"/></p> <p>Number of IOCDs Files Selected: 0</p> <p><i>Virtual RETAIN Files</i></p> <p>Virtual retain files for problem number: <input type="text" value="81"/></p> <p><input type="button" value="Select Files"/></p> <p>Number of files selected: 0</p>
---	---

zAware Initial GUI login

- URL is `https://addr/zAware`
 - where *addr* is IP address from the image profile or hostname from the DNS entry
- If browser warns of the default SSL certificate, add a security exception



This Connection is Untrusted

You have asked Firefox to connect securely to **9.56.198.226**, but we can't confirm that your connection is secure.

- Use default master userID and password

IBM zAware

The **IBM System z Advanced Workload Analysis Reporter (IBM zAware)** provides a smart solution for detecting and diagnosing system behavior anomalies. Compared to models of normal system behavior, provides nearly real-time detection of anomalies. Through this graphical user interface, you can identify the cause of past or current anomalies.

Analysis	The Analysis page displays analytical data that provides a clear visual indication of systems that are experiencing anomalies. In Interval view , you can pinpoint and diagnose the cause of this behavior.
Notifications	View informational and error notifications pertaining to zAware's processing
System Status	View information about the z/OS systems that are connected to IBM zAware.
Administration	Through the Administration menu, you can use these functions to manage IBM zAware operations: <ul style="list-style-type: none"> • Training Sets: View information about the generation of system behavior models. • Configuration: Manage storage devices, manage system behavior models, manage system topology, and as

IBM zAware User Login

User ID:

Password:

Storage assignment


- ECKD DASD is required
- Add storage devices defined in the I/O configuration
- Devices must be exclusively for use by IBM zAware

IBM zAware Welcome admin

- Analysis
- Notifications
- System Status
- ☐ **Administration**
 - Training Sets
 - **Configuration**

Configure Settings

Analytics
Data Storage
Security
Sysplex Topology
Priming Data

 Storage has not been configured.

Total capacity (GB):	Total storage used (GB):	Total storage used (%):
0.00	0.00	0

Data Storage Devices

Add and Remove Devices
Apply Pending Removals

Device	Status	Device Type	Capacity (GB)
4f20	Available	3390/0c	—
4f21	Available	3390/0c	—

Storage assignment – add devices

Storage has not been configured.

Capacity (GB): Total storage used (GB): Total storage used (%):
0.00 0

Storage Devices

Add and Remove Devices

Select devices to add or remove, then press OK.

Devices Available:	Devices In Use:
460f (Type: 3390/0c)	There is no data to display.
4610 (Type: 3390/0c)	
4860 (Type: 3390/0c)	
4861 (Type: 3390/0c)	
4862 (Type: 3390/0c)	
4863 (Type: 3390/0c)	
4864 (Type: 3390/0c)	

Buttons: Add >, Add All >>, < Remove, << Remove All

⚠ Selected storage devices must be configured exclusively for use by the IBM zAware server. Any existing data on added devices is overwritten when the server formats the device for use.

Buttons: OK, Reset, Cancel

Storage assignment – adding devices

- Analysis
- Notifications
- System Status
- Administration
 - Training Sets
 - Configuration

Configure Settings

Analytics

Data Storage

Security

Sysplex Topology

Priming Data






Storage has not been configured.

Total capacity (GB):

Total storage used (GB):

Total storage used (%):

Data Storage Devices  Changing storage configuration; click the **Refresh** button to update progress)

Add and Remove Devices		Apply Pending Removals	
Device	Status	Device Type	Capacity (GB)
4860	 Being Added	3390/0c	7.39
4861	 Being Added	3390/0c	—
4f20	Available	3390/0c	—

Storage assignment – complete

IBM zAware Welcome admin

- Analysis
- Notifications
- System Status
- Administration
 - Training Sets
 - Configuration

Configure Settings

Analytics | Data Storage | Security | Sysplex Topology | Priming Data

Total capacity (GB): 14.76	Total storage used (GB): 1.14	Total storage used (%): 7.72
-------------------------------	----------------------------------	---------------------------------

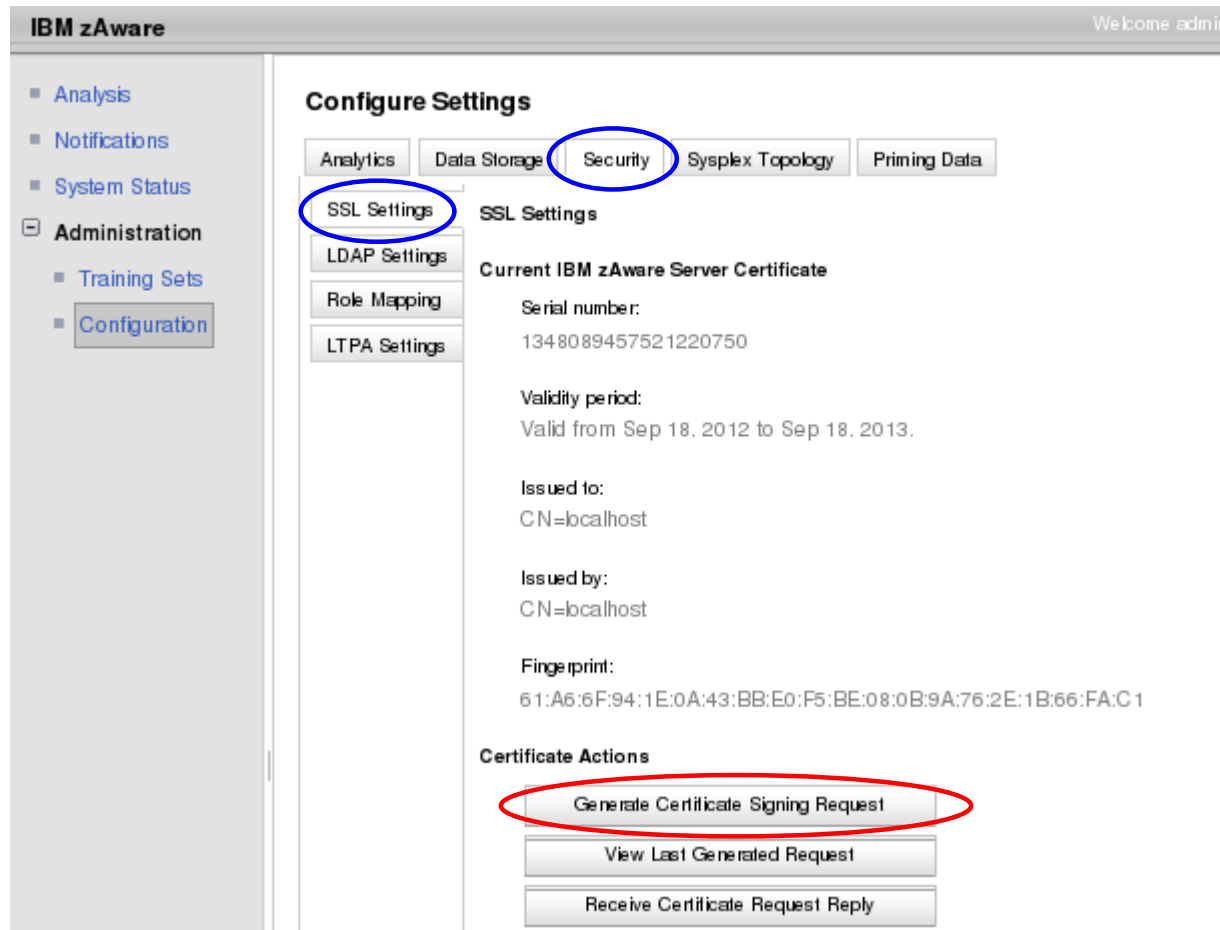
Data Storage Devices

Add and Remove Devices Apply Pending Removals

Device	Status	Device Type	Capacity (GB)
4860	In Use	3390/0c	7.38
4861	In Use	3390/0c	7.38
4f20	Available	3390/0c	—
4f21	Available	3390/0c	—

Security set up – SSL part 1

- To secure browser communication, request an SSL cert from a CA, and import it
- Generate Certificate Signing Request
- Copy CSR and send to the CA



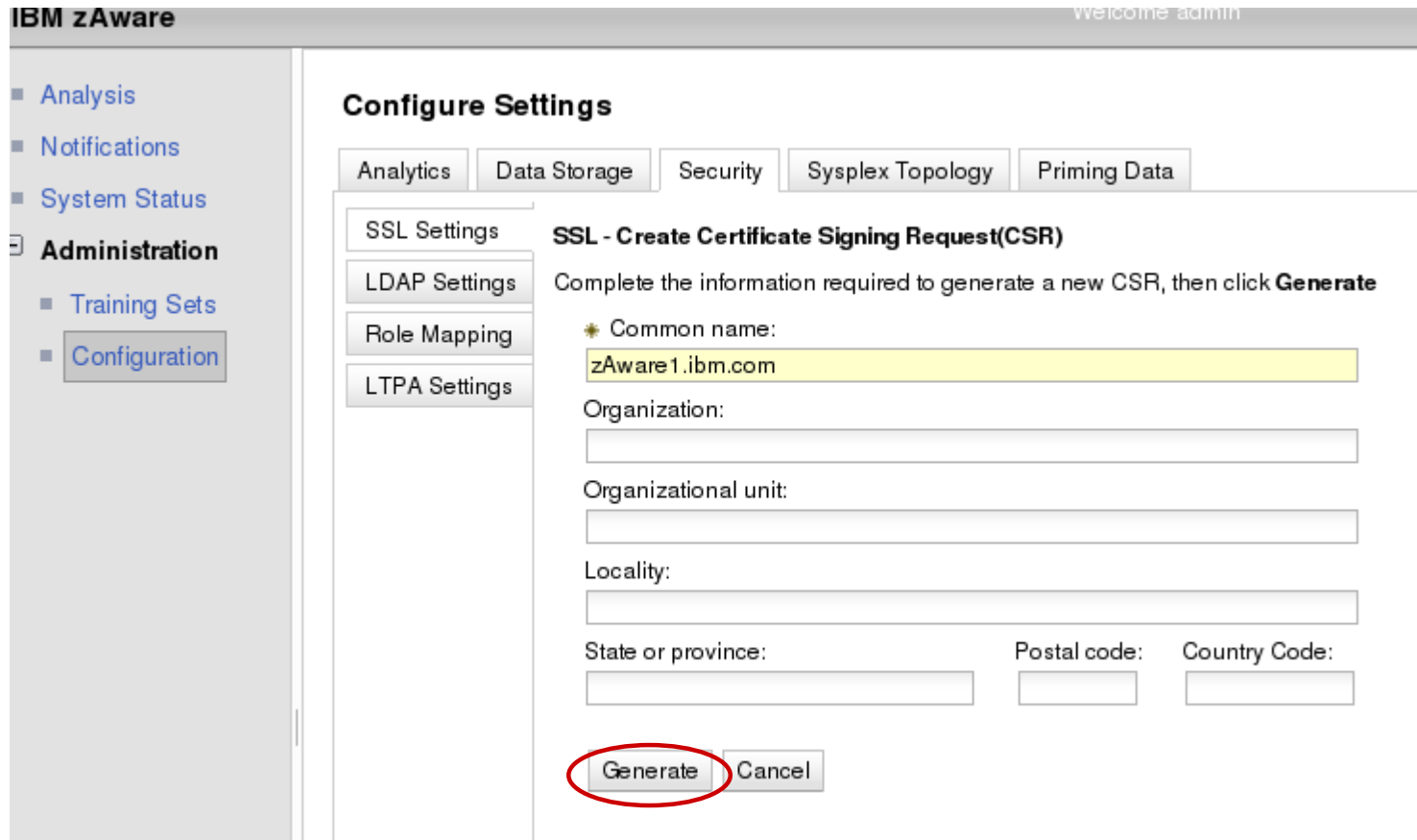
The screenshot shows the IBM zAware administration console. The top bar displays "IBM zAware" on the left and "Welcome admin" on the right. A left-hand navigation menu includes "Analysis", "Notifications", "System Status", "Administration" (expanded), "Training Sets", and "Configuration". The "Configuration" menu item is highlighted. The main content area is titled "Configure Settings" and contains several tabs: "Analytics", "Data Storage", "Security", "Sysplex Topology", and "Priming Data". The "Security" tab is selected and circled in blue. Under the "Security" tab, there are sub-tabs: "SSL Settings", "LDAP Settings", "Role Mapping", and "LTPA Settings". The "SSL Settings" sub-tab is selected and circled in blue. The main content area displays the "Current IBM zAware Server Certificate" information:

- Serial number: 1348089457521220750
- Validity period: Valid from Sep 18, 2012 to Sep 18, 2013.
- Issued to: CN=localhost
- Issued by: CN=localhost
- Fingerprint: 61:A6:6F:94:1E:0A:43:BB:E0:F5:BE:08:0B:9A:76:2E:1B:66:FA:C1

Below the certificate information, there is a section titled "Certificate Actions" with three buttons: "Generate Certificate Signing Request" (circled in red), "View Last Generated Request", and "Receive Certificate Request Reply".

Security set up – SSL part 2

- Fill in the Common name with host name or IP addr of the zAware partition
- Use the **host name** or **IP address** from the image profile Firmware page



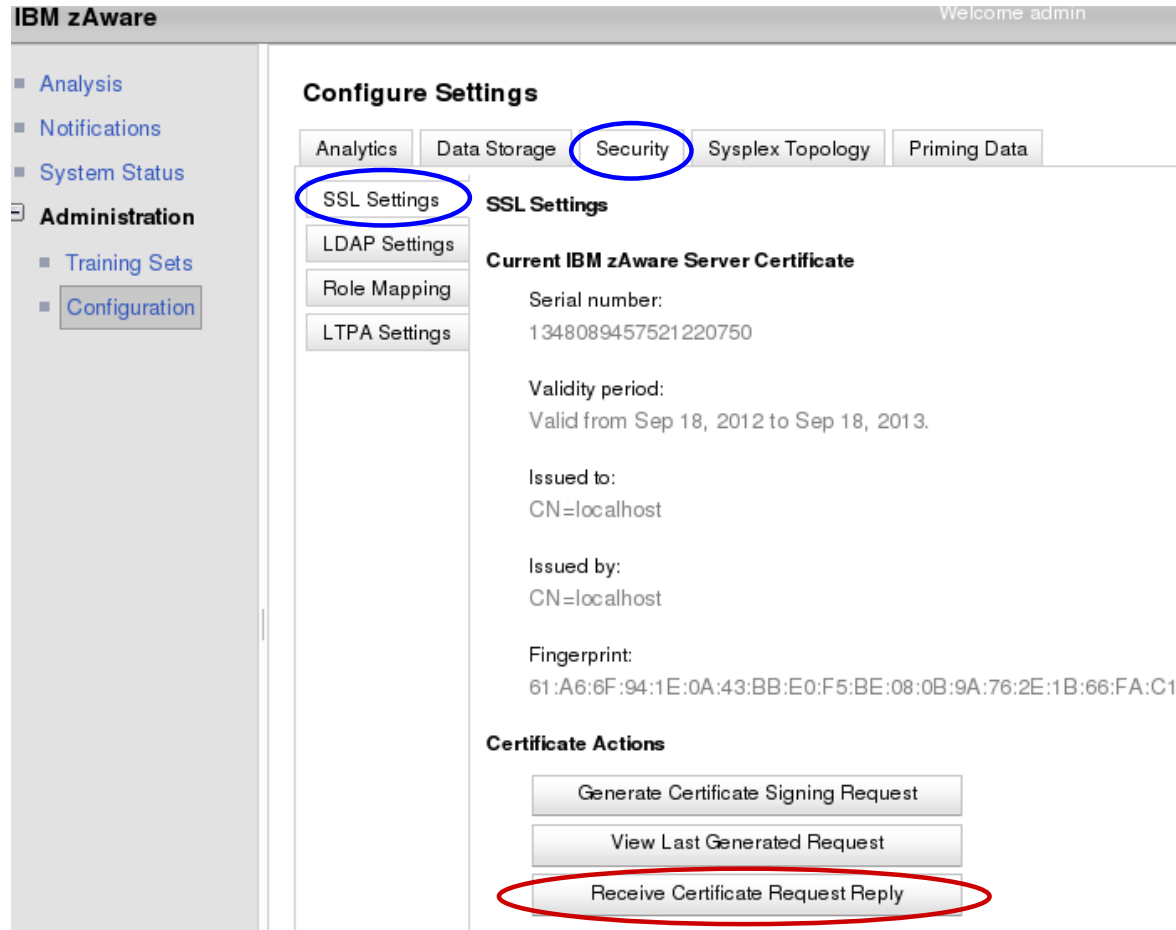
The screenshot shows the IBM zAware Administration console. The left sidebar contains a navigation menu with the following items: Analysis, Notifications, System Status, Administration (expanded), Training Sets, and Configuration. The main content area is titled "Configure Settings" and has tabs for Analytics, Data Storage, Security (selected), Sysplex Topology, and Priming Data. Under the Security tab, there are sub-tabs for SSL Settings (selected), LDAP Settings, Role Mapping, and LTPA Settings. The "SSL - Create Certificate Signing Request(CSR)" page is displayed, with the instruction: "Complete the information required to generate a new CSR, then click **Generate**". The form includes the following fields:

- * Common name: zAware1.ibm.com (highlighted in yellow)
- Organization: (empty)
- Organizational unit: (empty)
- Locality: (empty)
- State or province: (empty)
- Postal code: (empty)
- Country Code: (empty)

At the bottom of the form, there are two buttons: "Generate" (circled in red) and "Cancel".

Security set up – SSL part 3

After the CA replies with a certificate, import it with Receive ...



The screenshot shows the IBM zAware web interface. The left sidebar contains a navigation menu with 'Administration' expanded to show 'Configuration'. The main content area is titled 'Configure Settings' and has tabs for 'Analytics', 'Data Storage', 'Security', 'Sysplex Topology', and 'Priming Data'. The 'Security' tab is selected, and within it, the 'SSL Settings' sub-tab is also selected. Below the sub-tabs, there are buttons for 'LDAP Settings', 'Role Mapping', and 'LTPA Settings'. The main content displays the 'Current IBM zAware Server Certificate' with the following details:

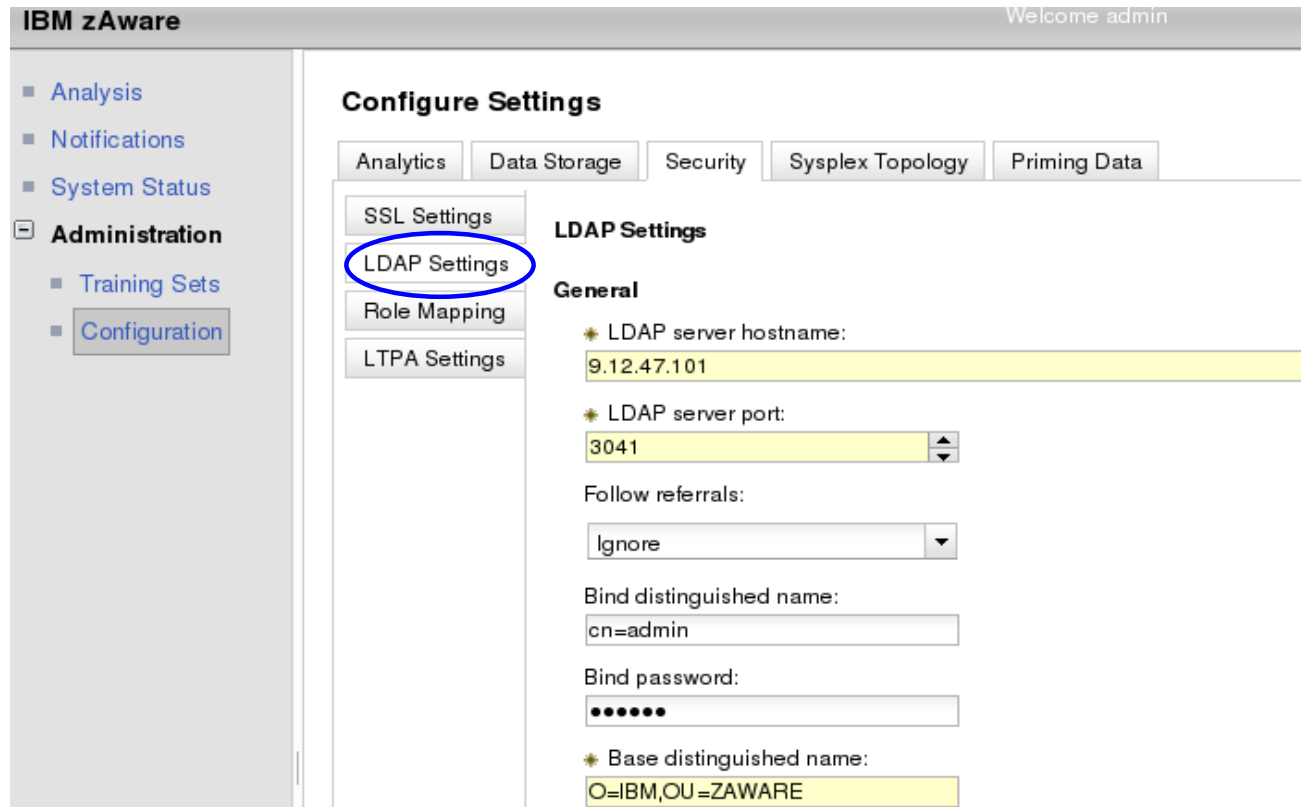
- Serial number: 1348089457521220750
- Validity period: Valid from Sep 18, 2012 to Sep 18, 2013.
- Issued to: CN=localhost
- Issued by: CN=localhost
- Fingerprint: 61:A6:6F:94:1E:0A:43:BB:E0:F5:BE:08:0B:9A:76:2E:1B:66:FA:C1

Below the certificate details is a section titled 'Certificate Actions' containing three buttons: 'Generate Certificate Signing Request', 'View Last Generated Request', and 'Receive Certificate Request Reply'. The 'Receive Certificate Request Reply' button is circled in red.

- Paste the reply (include the entire chain) and click Receive

Security set up – LDAP

- User authentication via existing LDAP repository
 - Alternatively, use a local file-based repository
- General LDAP settings (from LDAP Admin)
- Group LDAP settings (from LDAP Admin)
- Apply

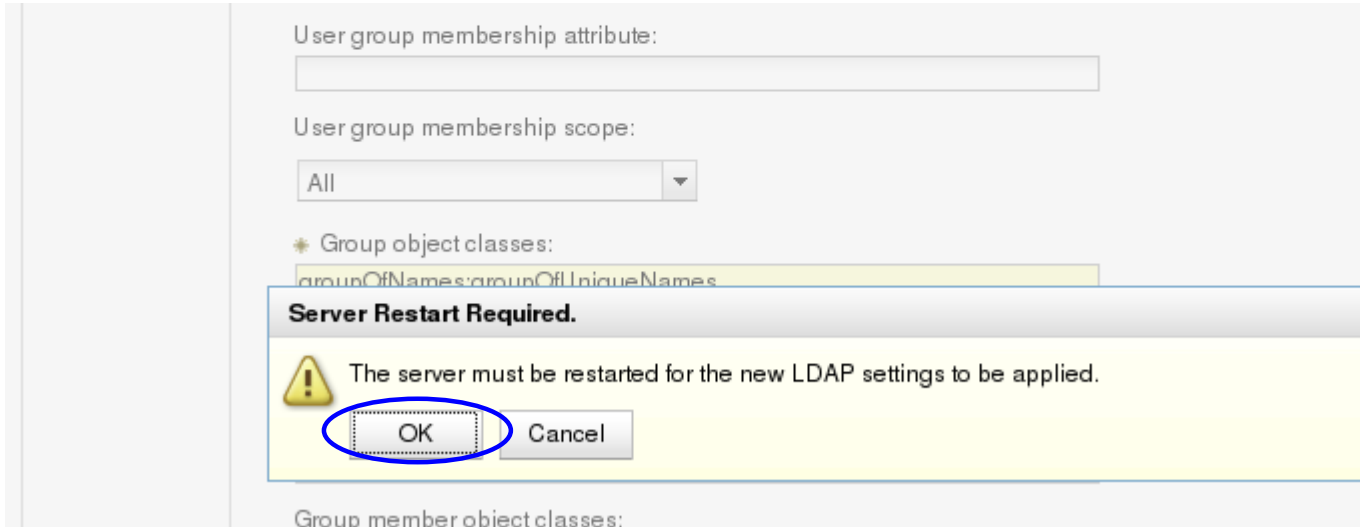


The screenshot shows the IBM zAware web interface. The top navigation bar includes 'Analytics', 'Data Storage', 'Security', 'Sysplex Topology', and 'Priming Data'. The 'Security' tab is active, and the 'LDAP Settings' sub-tab is selected. The 'LDAP Settings' section is titled 'General' and contains the following fields:

- LDAP server hostname: 9.12.47.101
- LDAP server port: 3041
- Follow referrals: Ignore
- Bind distinguished name: cn=admin
- Bind password: [masked]
- Base distinguished name: O=IBM,OU=ZAWARE

Security set up – LDAP

- Apply, then confirm zAware server restart
- The GUI will be unavailable while restarting



The screenshot shows a web-based configuration interface for LDAP settings. The visible fields include:

- User group membership attribute: (empty text input)
- User group membership scope: (dropdown menu set to "All")
- Group object classes: (text input containing "groupOfNames;groupOfUniqueNames")

A yellow dialog box with a warning icon is overlaid on the interface. The dialog contains the following text:

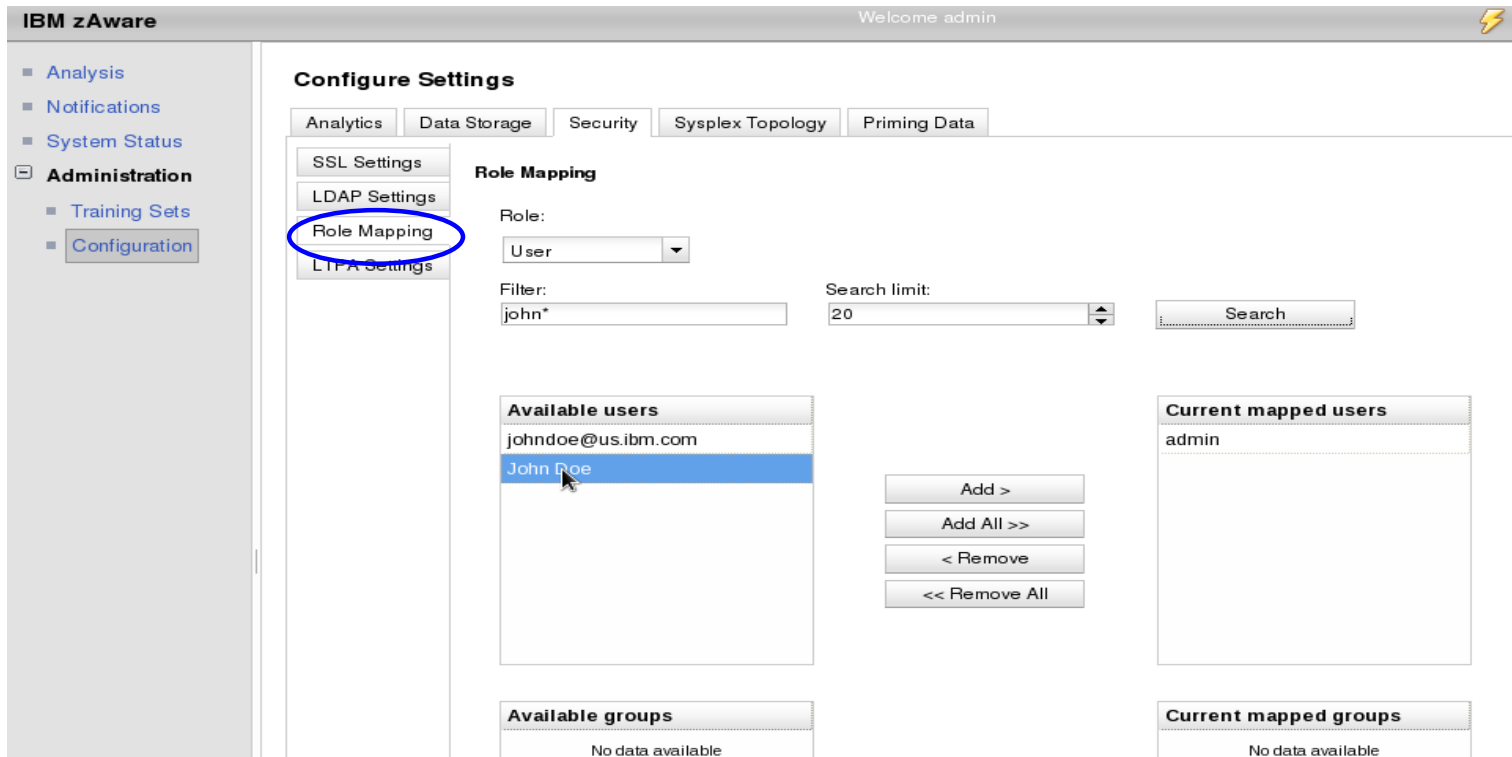
Server Restart Required.
The server must be restarted for the new LDAP settings to be applied.

At the bottom of the dialog are two buttons: "OK" and "Cancel". The "OK" button is circled in blue.

Below the dialog, the text "Group member object classes:" is visible.

Security set up – Role Mapping

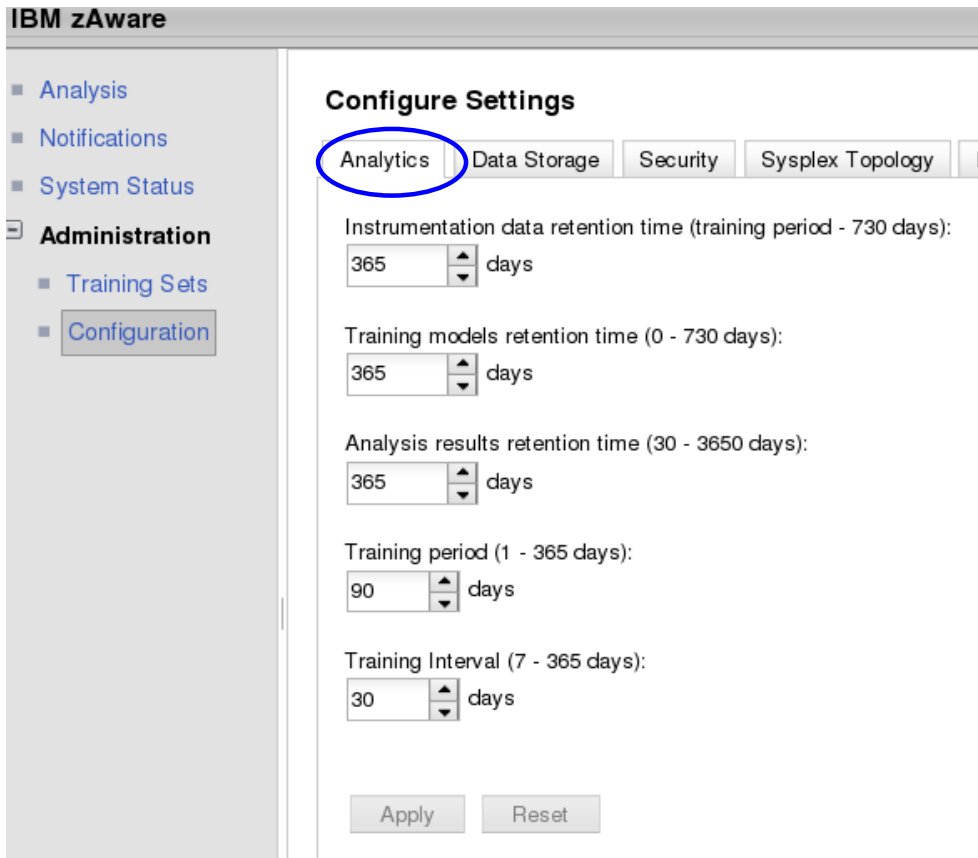
- Search
- Add users or groups to Admin or User role
- Apply
- Confirm zAware server restart



The screenshot shows the IBM zAware web interface. The top navigation bar includes 'Welcome admin' and a lightning bolt icon. The left sidebar shows a tree view with 'Administration' expanded to 'Configuration'. The main content area is titled 'Configure Settings' and has tabs for 'Analytics', 'Data Storage', 'Security', 'Sysplex Topology', and 'Priming Data'. Under the 'Security' tab, there are sub-tabs for 'SSL Settings', 'LDAP Settings', 'Role Mapping', and 'LTPA Settings'. The 'Role Mapping' sub-tab is selected and circled in blue. The 'Role Mapping' section contains a 'Role:' dropdown menu set to 'User', a 'Filter:' text box with 'john*', and a 'Search limit:' dropdown set to '20'. A 'Search' button is located to the right. Below these are four panels: 'Available users' (listing 'johndoe@us.ibm.com' and 'John Doe', with 'John Doe' selected), 'Current mapped users' (listing 'admin'), 'Available groups' (showing 'No data available'), and 'Current mapped groups' (showing 'No data available'). Between the 'Available users' and 'Current mapped users' panels are four buttons: 'Add >', 'Add All >>', '< Remove', and '<< Remove All'.

Analytics configuration

- Defaults should be good for most
- Retention times will affect DASD usage
 - Check the Data Storage capacity and usage periodically



The screenshot shows the IBM zAware web interface. On the left is a navigation menu with categories: Analysis, Notifications, System Status, Administration (expanded), Training Sets, and Configuration. The main content area is titled 'Configure Settings' and has several tabs: Analytics (circled in blue), Data Storage, Security, and Sysplex Topology. Under the Analytics tab, there are five settings, each with a numeric input field and a 'days' label: 'Instrumentation data retention time (training period - 730 days): 365 days', 'Training models retention time (0 - 730 days): 365 days', 'Analysis results retention time (30 - 3650 days): 365 days', 'Training period (1 - 365 days): 90 days', and 'Training Interval (7 - 365 days): 30 days'. At the bottom of the settings area are 'Apply' and 'Reset' buttons.

Operating Requirements - z/OS Monitored Clients



- System z servers supported as IBM zAware monitored clients
 - zEC12
 - IBM zEnterprise™ 196 (z196) or z114,
 - IBM System z10™ EC or BC
 - *Prior generations that meet the OS and configuration requirements*

- Running z/OS 1.13 + PTFs
 - *APAR OA38747*
 - *APAR OA38613*
 - *APAR OA39256*

- System needs to be configured as a monoplex, system in a multisystem sysplex, or a member of a parallel sysplex
- Using operations log (OPERLOG) as the hardcopy medium
- Sysplex name + system name must uniquely identify system
- Requires an OSA or HiperSocket for IP network connection

z/OS monitored system set up

- Configure network connection to zAware
 - TCP/IP profile, DNS, Resolver, firewall settings
- **D XCF** to confirm MONOPLEX or MULTISYSTEM
- **D CONSOLES** to confirm OPERLOG hardcopy
 - set in CONSOLxx

- Configure z/OS logger to send data to zAware
 - Give IXGLOGR a z/OS UNIX segment for TCP/IP connectivity
 - ADDUSER IXGLOGR OMVS(UID(xxxx) HOME('/'))
 - From a user with SAF update access to IXGZAWARE_CLIENT resource in the FACILITY class
 - Create **IXGCNFxx** parmlib member for logger
 - Add **IXGCNF=xx** to IEASYSxx parmlib member

z/OS monitored system - logger config

- **IXGCNFxx** parmlib member contains system logger values

The **ZAI** statement contains parameters for IBM zAware

- **SERVER**(*host_name|IP_address*)

Specifies the host name or IP address of IBM zAware server

- **PORT**(*number*)

Port number IBM zAware server is using. Port must be 2001

- **LOGBUFMAX**(*value*)

Maximum amount of storage buffers (GB) to be used by system logger to manage data that is being sent to the IBM zAware server

- **LOGBUFWARN**(*nn*)

Percent of used buffer space to trigger warning message

- **LOGBUFFULL**(**MSG|QUIESCE**)

Action system logger is to take when the log stream buffers are full

Sample in **SYS1.SAMPLIB(IXGCNFFXX)**

- Update the OPERLOG log stream to add:

- **ZAI(YES)**
- **ZADATA('OPERLOG')**

z/OS monitored system - logger config

- **SET IXGCNF=xx** to dynamically pick up the logger settings
- **DISPLAY LOGGER,STATUS,ZAI,VERIFY** to verify the config

```
ZAI LOGSTREAM CLIENTS: AVAILABLE
BUFFERS IN USE: 00 GB 0000 MB
ZAI VERIFY INITIATED, CHECK FOR MESSAGES IXG37X, IXG38X
...
IXG380I ZAI LOGSTREAM CLIENT ESTABLISHED
FOR DISPLAY ZAI,VERIFY
```

- Start sending to zAware Also, defines the *plex.system* to zAware

SETLOGR FORCE,ZAICONNECT,LSNAME=SYSPLEX.OPERLOG

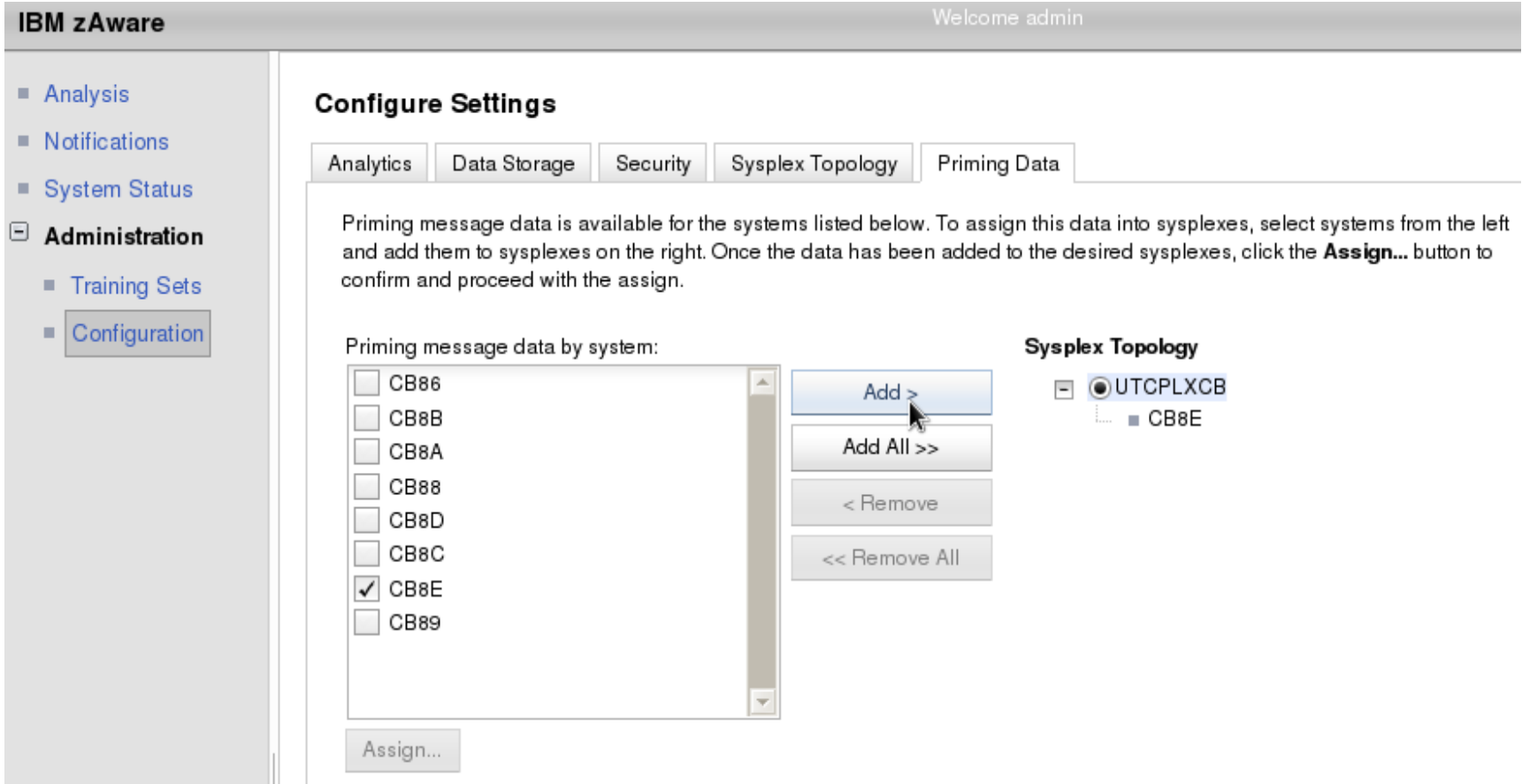
```
IXG651I SETLOGR FORCE ZAICONNECT COMMAND ACCEPTED FOR
LOGSTREAM=SYSPLEX.OPERLOG
IXG386I ZAI LOGSTREAM CLIENT CONNECT ATTEMPT IN PROGRESS FOR LOGSTREAM
SYSPLEX.OPERLOG
STATUS: ATTEMPTING SOCKET CREATE
...
IXG380I ZAI LOGSTREAM CLIENT ESTABLISHED FOR LOGSTREAM SYSPLEX.OPERLOG
```

Priming zAware – Bulk Load from z/OS

- Prior SYSLOG data may be sent to IBM zAware
- Reduces the time to build a model, and begin analysis
- Data sets should not exceed 90 days earlier than today
- Bulk load may be run from any z/OS system configured for IBM zAware
- Copy SYS1.SAMPLIB(AIZBLK) JCL to your JCL and modify
 - See instructions in the file
- Copy SYS1.SAMPLIB(AIZBLKE) REXX to your SYSEXEC
- Run bulk load for a small set of data to verify config
- Run bulk load for one plex at time

Priming zAware – zAware GUI – part 1

- Recommended bulk load all logs before assigning
 - Connections are terminated during assignment



The screenshot shows the IBM zAware web interface. The top navigation bar includes 'IBM zAware' and 'Welcome admin'. A left sidebar contains a menu with 'Administration' expanded to show 'Configuration'. The main content area is titled 'Configure Settings' and has several tabs: 'Analytics', 'Data Storage', 'Security', 'Sysplex Topology', and 'Priming Data'. The 'Priming Data' tab is active, displaying instructions: 'Priming message data is available for the systems listed below. To assign this data into sysplexes, select systems from the left and add them to sysplexes on the right. Once the data has been added to the desired sysplexes, click the **Assign...** button to confirm and proceed with the assign.'

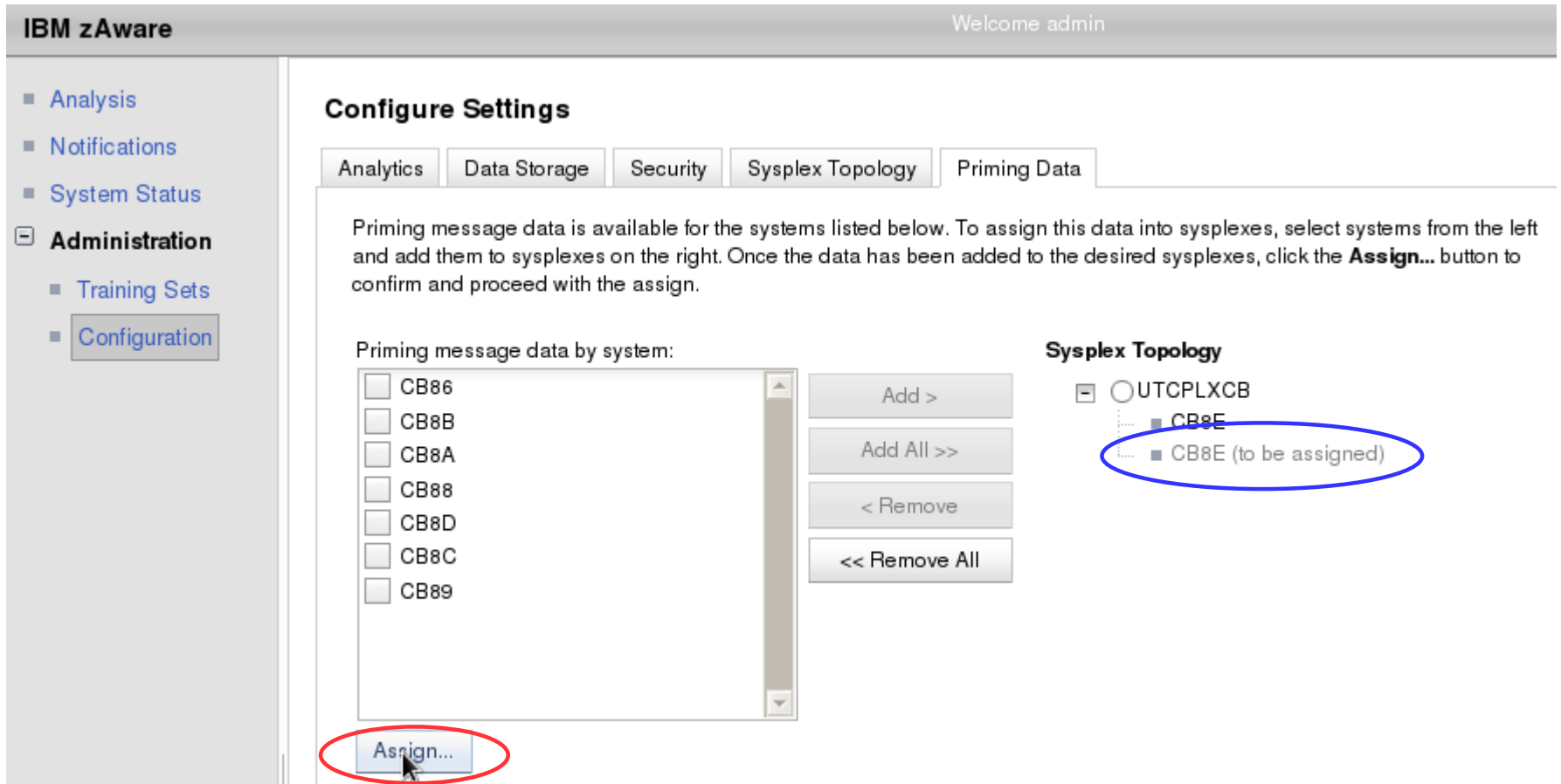
Under 'Priming message data by system:', a list of systems is shown with checkboxes. CB8E is checked. To the right are buttons: 'Add >', 'Add All >>', '< Remove', and '<< Remove All'. The 'Add >' button is highlighted with a mouse cursor.

Under 'Sysplex Topology', a tree view shows 'UTCPLXCB' expanded to show 'CB8E'.

An 'Assign...' button is located at the bottom left of the main content area.

Priming zAware – zAware GUI – part 2

- Assign, then confirm disconnect of all systems
- Usually logger reconnects automatically



IBM zAware Welcome admin

Configure Settings

Analytics | Data Storage | Security | Sysplex Topology | **Priming Data**

Priming message data is available for the systems listed below. To assign this data into sysplexes, select systems from the left and add them to sysplexes on the right. Once the data has been added to the desired sysplexes, click the **Assign...** button to confirm and proceed with the assign.

Priming message data by system:

- CB86
- CB8B
- CB8A
- CB88
- CB8D
- CB8C
- CB89

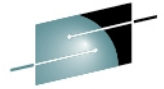
Add >
Add All >>
< Remove
<< Remove All

Sysplex Topology

- UTCPLXCB
 - CB8E
 - CB8E (to be assigned)

Assign...

Training a model



SHARE

Log out IBM

Help

IBM zAware

Welcome admin

- Analysis
- Notifications
- System Status
- Administration
 - Training Sets**
 - Configuration

Training Sets

The Monitored Systems table provides training statuses and results for IBM zAware monitored systems. The Actions menu provides functions for managing model dates, requesting or canceling training, and managing ignored messages. Training details for a given system can be accessed by clicking on links in the Training Progress and Last Training Result columns.

Monitored Systems

Actions ▾					
System	Sysplex	Training Progress	Last Training Result	Last Training Result Time	Current Model Built
<input type="radio"/> CB8E	UTCPLXCB	—	<input type="checkbox"/> Not Trained	—	—

- Actions > Request Training
 - processed asynchronously

Monitored Systems


Actions ▾				
System	Sysplex	Training Progress	Last Training Result	Last Training Result Time
<input checked="" type="radio"/> CB8E	UTCPLXCB	—	<input checked="" type="checkbox"/> Failed	January 15, 2013 3:16:58 PM EST

Request Training

The model for UTCPLXCB.CB8E will be queued for rebuild and its next training period dates will be updated.

Training complete

- After more systems have connected and trained

IBM zAware Welcome admin  Log out









Administration

- Analysis
- Notifications
- System Status
- Administration**
 - Training Sets**
 - Configuration

Training Sets

The Monitored Systems table provides training statuses and results for IBM zAware monitored systems. The Actions menu provides functions for managing model dates, requesting or canceling training, or managing ignored messages. Training details for a given system can be accessed by clicking on links in the Training Progress and Last Training Result columns.

Monitored Systems

Actions	System	Sysplex	Training Progress	Last Training Result	Last Training Result Time	Current Model Built
<input type="radio"/>	TA4	SVPLEXA	—	 Failed	January 16, 2013 7:00:14 PM EST	—
<input type="radio"/>	TA5	SVPLEXA	—	 Complete	January 15, 2013 11:03:08 AM EST	January 15, 2013 11:03:08 AM EST
<input checked="" type="radio"/>	CB86	UTCPLXCB	—	 Complete	January 4, 2013 7:23:35 AM EST	January 4, 2013 7:23:35 AM EST
<input type="radio"/>	CB88	UTCPLXCB	—	 Complete	January 4, 2013 9:12:39 AM EST	January 4, 2013 9:12:39 AM EST
<input type="radio"/>	CB89	UTCPLXCB	—	 Complete	January 4, 2013 7:38:43 AM EST	January 4, 2013 7:38:43 AM EST
<input type="radio"/>	CB8A	UTCPLXCB	—	 Complete	January 4, 2013 7:40:21 AM EST	January 4, 2013 7:40:21 AM EST
<input type="radio"/>	CB8B	UTCPLXCB	—	 Complete	January 4, 2013 6:39:14 AM EST	January 4, 2013 6:39:14 AM EST
<input type="radio"/>	CB8C	UTCPLXCB	—	 Complete	January 4, 2013 7:29:03 AM EST	January 4, 2013 7:29:03 AM EST

▼ Current Training Status Details (Click on training statuses above to view details)

System name: CB86	Training progress: —	Last training result: Complete
Training start time:	Time in training(h:m:s):	Last training result time:

- Failed training is typically due to too few unique messages. Check the Notifications.

Analysis results



- Once a model is built, a connected system will generate results

IBM zAware Welcome ggodfrey@us.ibm.com

- Analysis
- Notifications
- System Status

Analysis

The System Anomaly Scores graph shows message analysis data for each system in ten minute intervals. For each interval, the bar height indicates the number of unique messages. The bar color reflects the commonality of the messages occurring during that interval. Click on an interval bar to access detailed message information. To view messaging analyses from a different system, click the **Change Source** selector. To customize which systems are shown in the graph, click the **Change Source** button.

Date: Analysis Source:

Interval Anomaly Scores by System

System	Anomaly Scores
HOXCF01.AQHO (UTC)-5	
HOXCF01.AQS3	Score data is not available for this date


Timeline (UTC) 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Zoom level: (1 hr to 24 hrs)

Interval anomaly score key:

0	99.5	99.6 - 100	101
No Difference	←————→		Significantly Different

Notifications

- Notifications
 - zAware messages for asynchronous events
 - Storage, Training, Bulk load, ...
 - Viewable by all users
 - Persistent, until removed by an admin
 - New ones indicated by  in header





IBM zAware Welcome admin

- Analysis
- **Notifications**
- System Status
- ☐ Administration
 - Training Sets
 - Configuration

Notifications

Notification messages

Actions ▼

<input type="checkbox"/>	Message ID	Message Text	Message Date/Time
<input type="checkbox"/>	 AIFP0003I	Storage configuration has started adding device 4860.	Tue Jan 15 2013 14:48:59 GMT-0500 (EST)
<input type="checkbox"/>	 AIFP0004I	Storage configuration has completed adding device 4860.	Tue Jan 15 2013 14:49:01 GMT-0500 (EST)
<input type="checkbox"/>	 AIFP0003I	Storage configuration has started adding device 4861.	Tue Jan 15 2013 14:49:01 GMT-0500 (EST)
<input type="checkbox"/>	 AIFP0004I	Storage configuration has completed adding device 4861.	Tue Jan 15 2013 14:49:02 GMT-0500 (EST)



Connection status

- System status of monitored systems
 - Bulk load in progress



IBM zAware Welcome admin

- Analysis
- Notifications
- **System Status**
- ▣ Administration
 - Training Sets
 - Configuration


System Status

System Status displays the IBM zAware analytics engine status, as well as monitored systems information for z/OS systems connected to IBM zAware. Click the start button () to start the analytics engine, and the stop button () to stop it.

Analytics engine status: Running








IBM zAware Monitored System Data Suppliers:

System	Sysplex	Status	Instrumentation Data Type	Connect Start Time
CB8E	UTCPLXCB	 Active	SYSLOG	January 15, 2013 3:11:23 PM EST

- Normal operation

IBM zAware Monitored System Data Suppliers:

System	Sysplex	Status	Instrumentation Data Type	Connect Start Time
CB8C	UTCPLXCB	 Active	OPERLOG	January 15, 2013 4:05:56 PM EST
CB8D	UTCPLXCB	 Active	OPERLOG	January 15, 2013 4:19:40 PM EST
CB8E	UTCPLXCB	 Inactive	OPERLOG	July 23, 2012 6:19:39 PM EDT
TA0	SVPLEXA	 Active	OPERLOG	January 15, 2013 4:06:19 PM EST

You should now understand the steps to set up IBM zAware.

Questions?

**Thank
You**

Primary References

- IBM System z Advanced Workload Analysis Reporter (IBM zAware) Guide
 - SC27-2623-00
 - <http://www.ibm.com/systems/z/os/zos/bkserv/r13pdf/#E0Z>
or
 - IBMResourceLink Library → zEC12 → Publications
- Redbook: Extending z/OS System Management Functions with IBM zAware
 - SF24-8070-00
- z/OS 1.13 MVS Setting Up a Sysplex SA22-7625-22

Additional References

- Available from “Books” group of Classic Style UI and the Welcome page of the Tree Style UI (& IBM Resource Link: Library->zEC12->Publications)
 - IBM SC28-6919: Hardware Management Console Operations Guide (Version 2.12.0)
 - IBM SC28-6920: Support Element Operations Guide (Version 2.12.0)
 - IBM SB10-7030: Application Programming Interfaces
 - IBM SC28-2605: Capacity on Demand User’s Guide
 - IBM SB10-7154: Common Information Model (CIM) Management Interfaces
 - IBM SB10-7156: PR/SM Planning Guide
 - IBM SA22-1088: System Overview
- Available from IBM Resource Link: Library->zEC12->Technical Notes
 - System z Hardware Management Console Security
 - System z Hardware Management Console Broadband Remote Support Facility
 - System z Activation Profile Update and Processor Rules

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Setting up IBM zAware - Step by Step

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