



z/OSMF Incident Log Hands On Lab

z/OSMF Hands-On Labs - Choose Your Own – I, II, III
Estimated Lab Time: 15-20 minutes

Greg Daynes (gdaynes@us.ibm.com)
IBM Corporation

August 6-8, 2014
Session Numbers: 15814, 15815, 15604



 www.SHARE.org

#SHAReorg
  



© Copyright IBM Corporation 2014

Lab Exercise: z/OSMF Incident Log

Session ID: Part of 15814, 15815, and 15604

Estimated Lab Time: 15-20 minutes

Speaker Name: Greg Daynes

Abstract:

The z/OS Management Facility (z/OSMF) provides a web-based graphical interface for system programmers on z/OS. This hand on lab will give an opportunity to learn about the functions and features in z/OSMF first hand. Attendees can navigate through the z/OSMF Incident Log task to see how it can help them manage incidents that occurred on their system, or assist in sending diagnostic data to a vendor (IBM or ISV).

This session will be useful to systems programmers and their managers who will be using (or are considering using) the z/OS Management Facility.

Introduction to z/OSMF Incident Log:

When a problem occurs on a z/OS system, you might need to determine what happened and why, and then find the fix or report the problem to IBM or an independent software vendor (ISV). Typically, you need to get to the root of the problem quickly, but the task of gathering diagnostic data and sending it to a support team can be very time-consuming. To assist you with diagnosing and reporting the problem, z/OSMF offers a problem data management solution, the Incident Log task.

The Incident Log task streamlines and automates time-consuming and manual parts of the problem data management process. Specifically, the Incident Log task gathers and displays system-detected and user-initiated incidents, collects associated logs and dumps at the time of the problem, and facilitates sending that data to IBM or another vendor for further diagnostics. Using the Incident Log task reduces the possibility of errors while obtaining, aggregating and sending the collection of diagnostic data to IBM or an ISV.

Key features of the z/OSMF Incident Log Task

With the Incident Log task, you can:

- **Manage the incidents that occurred on a system or in a sysplex.** The Incident Log task provides a consolidated view of all incidents occurring on all participating systems in the sysplex (those that communicate through the same sysplex dump directory).
- **Browse the logs collected for an incident.** When an incident occurs, the Incident Log task collects and saves the associated SVC dumps and diagnostic log snapshots. You can browse the error log, error log summary, and operations log.
- **Allow the next dump of an incident with the same MVS symptom string.** The Incident Log task provides the ability to update the DAE data set, so that you can capture the next instance of an SVC dump being suppressed by DAE.
- **Send diagnostic data and attachments to IBM or another vendor for further diagnostics.** The Incident Log task provides a wizard that you can use to send diagnostic data and additional attachments to IBM or another vendor. You can send files using standard FTP or using the z/OS Problem Documentation Upload Utility (PDUU), which supports parallel FTP and encryption. For more information about PDUU, see [z/OS MVS Diagnosis: Tools and Service Aids](#).
- **Associate the incident with problems recorded in other problem management systems.** The Incident Log task allows you to correlate an incident with an IBM problem number, an ISV problem number, or with a problem record in your installation's problem management system.
- **Track additional information with an incident.** The Incident Log task allows you to specify additional information that you want to track about an incident, such as who is assigned to resolve the issue, which business applications are impacted, which component is the source of the issue, and which solution has been implemented.

- **Monitor the status of an FTP job.** An FTP job is created when you send diagnostic data to IBM or another vendor. The Incident Log task allows you to browse or cancel FTP jobs and view or delete the status of FTP jobs.

Incident log Lab

This lab consists of 6 tasks, plus 2 additional optional tasks.

1. Log on to z/OSMF
2. View all the incidents across all the systems in your sysplex
3. Customize your view of these incidents
4. View the details of an user incident
5. FTP the diagnostic data captured for an incident to your service provider
6. View the status of the FTP for that incident

Optional tasks if you have time and interest

7. View FTP destinations
8. View firewall proxy

It is recommended that you execute these tasks in the order listed above. As you get familiar with the Incident Log, you will be able to work directly with the task you need to accomplish.

As with all the labs in this session, all the teams will be working with the same z/OSMF instance. Each team will be given a unique id to work with. However, you must remember that as you work with a given incident, that incident is also available to the other teams to work with. When you are working with updating an incident please make sure you work with the user defined incident assigned to your team to avoid confusing the other teams.

Lab Hints and Tips

- At any time you can use the Help facilities by clicking on the link in the upper right hand corner of the screen
- You are encouraged to follow the instructions provided, but you can use the new views and reports on any defined software instance
 - Please note that the closer you follow the instructions, the easier it will be to assist you if you go astray
 - The handout contains screen captures and guidance to lead you through the lab
- **Do NOT use the Browser BACK button to go to the prior screen!!!**
 - Use z/OSMF “breadcrumbs” instead
- Also note that if you change the browser display size (Ctrl/+, or Ctrl/-) then what you see may not exactly match the handout.

© Copyright IBM Corporation 2014

2

Exercise instructions

Here are the steps you will perform in this lab:

- ___ 1. Logon to z/OSMF
 - ___ a. Launch the Mozilla Firefox browser
 - ___ b. Point Browser to z/OSMF – enter the following URL
<https://mvs1.centers.ihost.com/zosmf/>
 - ___ c. Enter the User ID (SHARAnn) and password assigned to your workstation.
- ___ 2. View all the incidents across all the systems in your sysplex
 - ___ a. Expand the Problem Determination Category in the Left Navigation Tree
 - ___ b. Click on Incident Log
- ___ 3. Customize your view of these incidents
 - ___ a. Filter columns
 - ___ b. Sort columns
 - ___ c. Configure the columns
 - ___ d. Rearrange the order of the columns as you would like to see them
- ___ 4. View the details of an user initiated incident
 - ___ a. Select a user initiated incident with the same suffix as your User ID.
 - ___ b. View Diagnostic Details of the incident
 - ___ c. Update the incident with tracking information and notes
 - ___ d. Browse diagnostic data
- ___ 5. FTP the diagnostic data captured for an incident to your service provider
 - ___ a. Select a user initiated incident with the same suffix as your User ID.
 - ___ b. Send Diagnostic Data for the incident
 - ___ c. Select the FTP Server (destination)
 - ___ d. Specify Security Settings
 - ___ e. Select FTP Profile
 - ___ f. Define Job Settings
 - ___ g. Review FTP Information
 - ___ h. Submit FTP Jobs
- ___ 6. View the status of the FTP for that incident
 - ___ a. Select FTP Job Status for the incident that you just sent

1. Logon to zOSMF

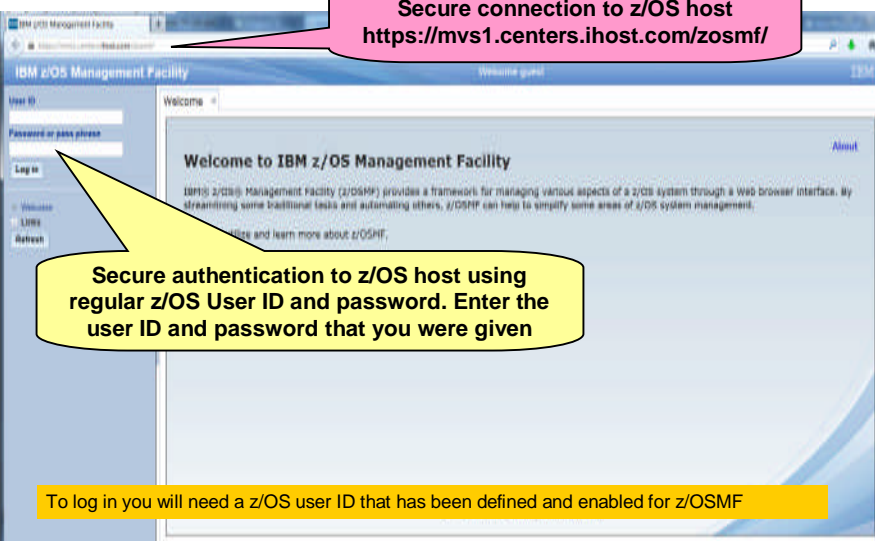
Step 1: Log in to z/OSMF

- **Launch the Mozilla Firefox browser**
 - Note: If browser asks to add exception for certificate, do so
- **Point Browser to z/OSMF – enter the following url**
 - <https://mvs1.centers.ihost.com/zosmf/>
 - Note: Ignore and close the warning message
 - IZUG809W Unsupported Web browser version or level found: "3.6.13 (.NET CLR 3.5.30729)". Some z/OSMF functions might not be available if you continue.
- **Login with SHARE userid/pw as provided by the lab instructor**
 - Each workstation has been assigned a unique z/OS User ID
 - SHARAnn (where nn is 01 - 20)
 - Password: to be provided
- **Each User ID has been authorized to all the z/OSMF applications (Plug-ins)**

© Copyright IBM Corporation 2014 4

Note: All screen captures in the handout show the ID SHARA20, your browser will be slightly different to reflect the User ID that you were given.

Step1c: Log in to z/OSMF ...

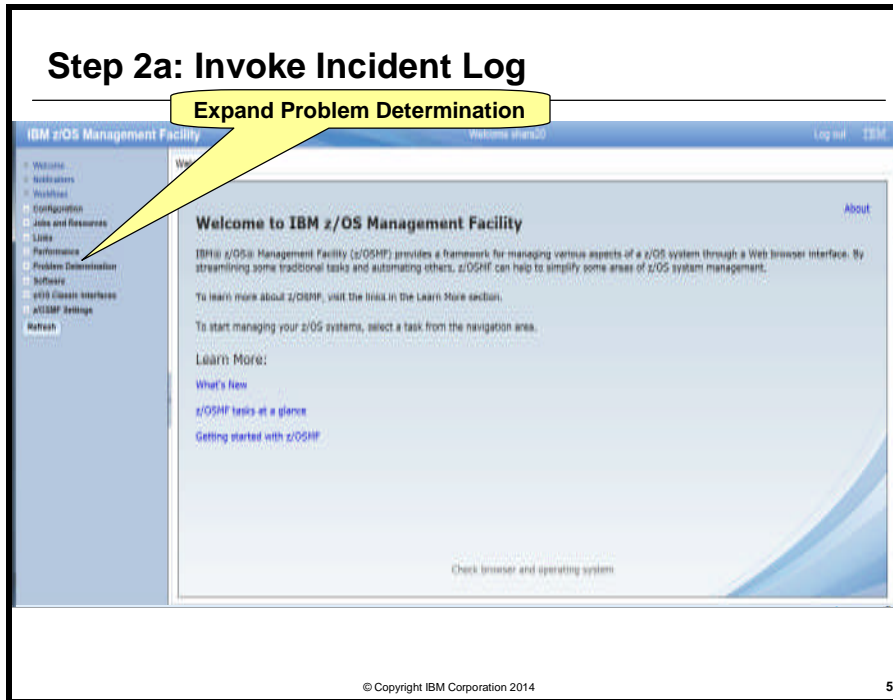


The screenshot shows the IBM z/OS Management Facility login page. A pink callout bubble points to the browser's address bar containing the URL <https://mvs1.centers.ihost.com/zosmf/>. A yellow callout bubble points to the 'Log in' button on the page. A yellow banner at the bottom of the page reads: 'To log in you will need a z/OS user ID that has been defined and enabled for z/OSMF'. The page content includes a 'Welcome' message and a brief description of the z/OSMF interface.

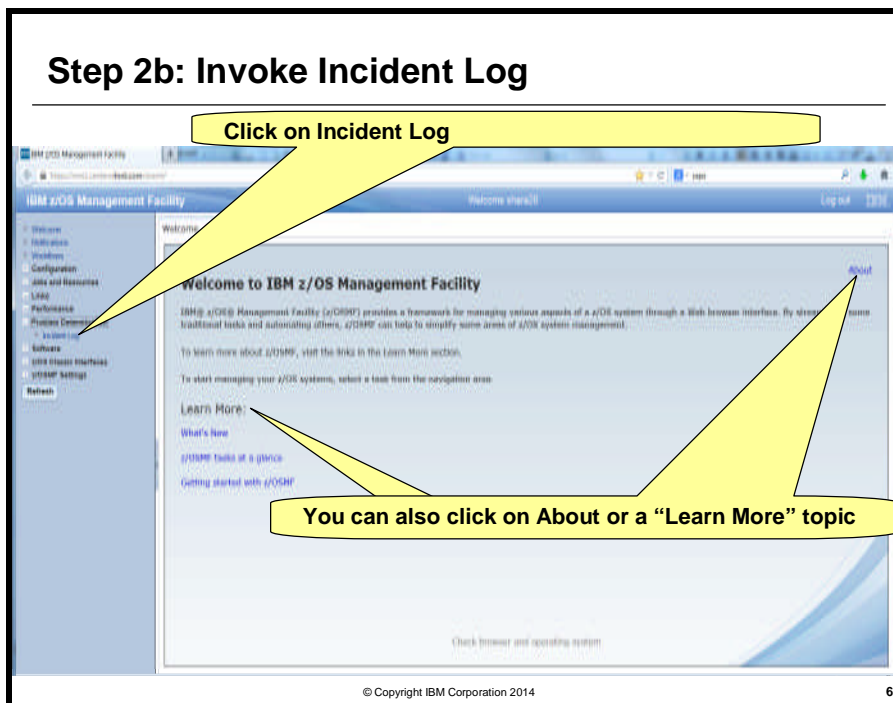
© Copyright IBM Corporation 2014 4

2. View all incidents across the systems in your sysplex

Step 2a: Expand the Problem Determination Category in the Left Navigation Tree

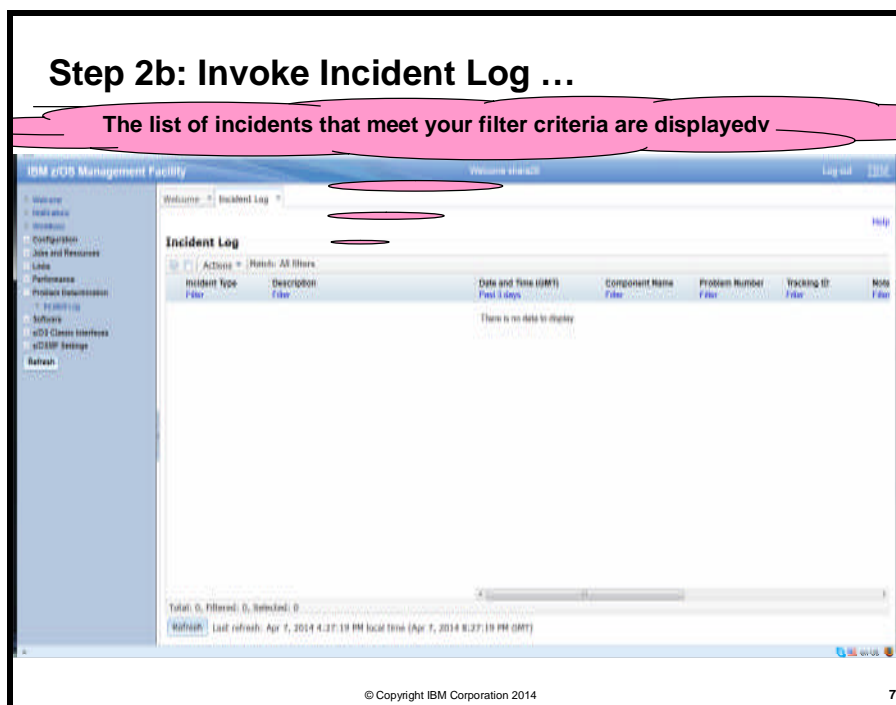


Step 2b: Click on Incident Log



The first panel that opens is the main panel of the Incident Log. Here you will see a summary view of all the Incidents across all the systems in the sysplex. Take some time to scroll through and look at all the columns.

Note: You will not see any incidents yet, because the default is to only show incidents that occurred in the last 3 days. In the next task you will be able to see incidents!



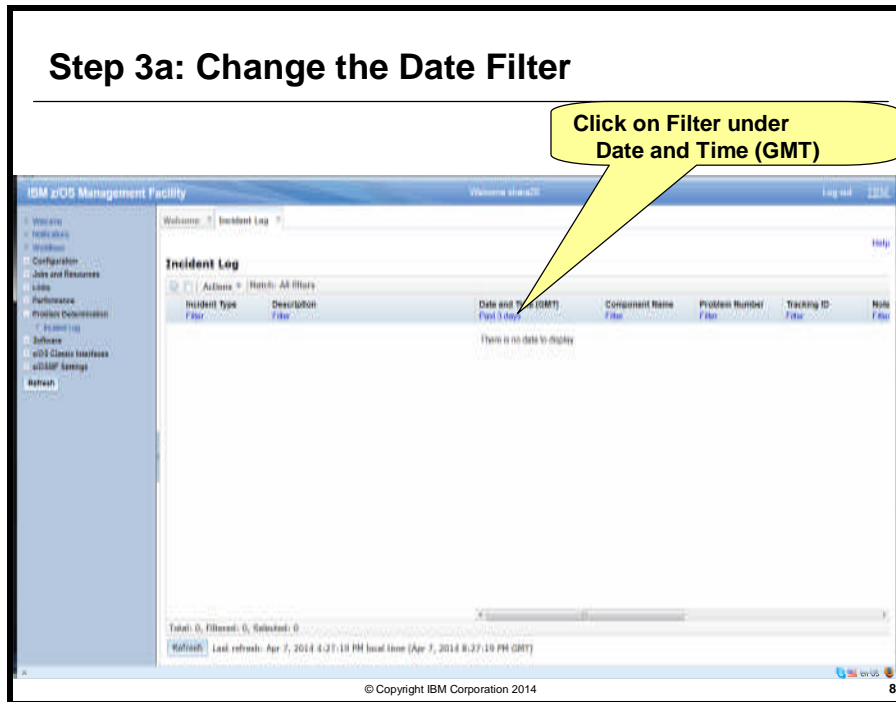
3. Customize Your View of These Incidents

You have the ability to control what data you see in terms of configuring what columns are displayed and the order of those columns. You can also control the data you see, which is you can filter on different columns. You can also sort the columns to view the data in different sort orders. You can sort on up to 3 columns at a time!

Remember that all customizations are saved on a per user basis.

Step 3a: Change the Date Filter

By default you will get all the incidents that have occurred in the last 3 days. You can change this. Click on the filter displayed under a column header to change the filter. For this example, let us say we want to look at incidents from the last **1000 days**.



Step 3a: Change the Date Filter ...

Change Amount to 1000

Then click OK

© Copyright IBM Corporation 2014

Step 3a: Change the Date Filter ...

Now the list of 26 incidents are displayed on a table

Incident Type Filter	Description Filter	Date and Time (GMT) Filter	System Filter	System Filter	Problem Number Filter	Tracking ID Filter
ANR01 0000	CICS DUMP SYSTEM=BPIC0001 000E=ICHO000P-ID=0000	Jul 20, 2013 9:42:38 PM	SHARPLEX	SI		
User released	**MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	Jan 10, 2013 2:50:16 PM	SHARPLEX	SI		
ANR01 00100	CONPROB=CFA COMP0=SCCA (RUBIN=CHAMBER)	May 8, 2013 4:41:10 PM	SHARPLEX	SI		
User released	**MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:20:19 PM	SHARPLEX	SI		
User released	**MFUS010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:20:00 PM	SHARPLEX	SI		
User released	**MFUS010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:20:30 PM	SHARPLEX	SI		
User released	**MFUS010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:30:33 PM	SHARPLEX	SI		
User released	**MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:29:50 PM	SHARPLEX	SI		
User released	**MFUS010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:28:14 PM	SHARPLEX	SI		
User released	**MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 8, 2013 9:28:41 PM	SHARPLEX	SI		

Total: 26, Filtered: 26, Selected: 0

© Copyright IBM Corporation 2014

Step 3b: Sort the Columns

You can sort the columns in the table display by clicking on the column header of the column you want to sort on. The first time you click on it, it will sort it in ascending order, the second time in descending order and the third time it will clear the sort. In this exercise you will create an ascending sort based on Description and a descending sort based on the Date and Time column. Notice the arrows that show up for ascending and down for descending. Also, notice that the sort order numbers that show up on the column headers.

Step 3b: Sort the Columns

Now you will sort the columns in the table

Click once on the Description column to put the incidents in ascending order

The screenshot shows the IBM z/OS Management Facility Incident Log interface. The table contains the following data:

Incident Type File	Description File	Date and Time (GMT) Past 1000 days	System File	System File	Program Number File	Tracking ID File
ADENO SDC/0	OS/3 (KAMP SYSTEM) MRCAM51 CODE=KORPNDAP ID=00000	Jul 25, 2013 1:40:38 PM	SHARPLEX	01		
User released	**MFUR000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	Jan 10, 2013 2:00:10 PM	SHARPLEX	01		
ADENO SDC/0	COMBOW/CA COMND/SCCEA/ISUER/COAMRE	May 9, 2013 4:41:10 PM	SHARPLEX	01		
User released	**MFUR010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 9, 2013 9:28:10 PM	SHARPLEX	01		
User released	**MFUR010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 9, 2013 9:28:00 PM	SHARPLEX	01		
User released	**MFUR010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 9, 2013 9:28:10 PM	SHARPLEX	01		
User released	**MFUR010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 9, 2013 9:28:14 PM	SHARPLEX	01		
User released	**MFUR010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 9, 2013 9:28:10 PM	SHARPLEX	01		
User released	**MFUR010 - TEST DUMP FOR USE WITH INCIDENT LOG IVP**	May 9, 2013 9:28:41 PM	SHARPLEX	01		

Total: 26, Filtered: 26, Selected: 0
 Refresh Last refresh: Apr 7, 2014 4:31:57 PM local time (Apr 7, 2014 8:31:57 PM GMT)

© Copyright IBM Corporation 2014 11

Step 3b: Sort the Columns

Click twice on the Date and Time (GMT) column to arrange that column in descending order

The screenshot shows the IBM z/OS Management Facility Incident Log interface. The table is sorted by the 'Date and Time (GMT)' column in descending order. A yellow callout bubble points to the 'Date and Time (GMT)' column header.

Incident Type	Description	Date and Time (GMT)	System	System	Problem Number	Tracking ID
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	Jun 19, 2013 2:50:18 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:17:23 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:17:55 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:18:20 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:24:37 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:44 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:25:00 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:41 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:14 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:50 PM	SHARPLEX	01		

Total: 30, Filtered: 30, Selected: 0
 Refresh Last refresh: Apr 7, 2014 4:31:57 PM local time (Apr 7, 2014 8:31:57 PM GMT)

© Copyright IBM Corporation 2014

Step 3b: Sort the Columns

Now the columns have a primary based on Description (ascending) and a secondary sort on Date and Time (descending). Note: If you click Date and Time a third time that column's sort will be removed.

The screenshot shows the IBM z/OS Management Facility Incident Log interface. The table is sorted by the 'Description' column in ascending order and the 'Date and Time (GMT)' column in descending order. A pink callout bubble points to the 'Date and Time (GMT)' column header.

Incident Type	Description	Date and Time (GMT)	System	System	Problem Number	Tracking ID
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	Jun 19, 2013 2:50:18 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:17:23 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:17:55 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:18:20 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:24:37 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:44 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:25:00 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:41 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:14 PM	SHARPLEX	01		
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG IVP	May 8, 2013 8:28:50 PM	SHARPLEX	01		

Total: 30, Filtered: 30, Selected: 0
 Refresh Last refresh: Apr 7, 2014 4:31:57 PM local time (Apr 7, 2014 8:31:57 PM GMT)

© Copyright IBM Corporation 2014

Step 3c: Configure the columns as you would like to see them

You can configure which columns are displayed and the order in which they are presented. In this exercise, you will remove the Sysplex and System columns. The lab environment is a monoplex, so all incidents were taken on the same system in the same sysplex (not very interesting and therefore for this lab you can remove them). You will also rearrange the columns to move the 'Component Name' column next to the Date and Time column.

Step 3c: Configure Columns ...

Now you will see how z/OSMF lets you reconfigure the columns that are displayed. First we will configure which columns are displayed.

Click Actions, then Configure Columns

Incident Type	Description	Date and Time (GMT)	Sysplex	System	Problem Number	Tracking ID
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:20:00 PM	SHARPLEX	SI		
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:24:37 PM	SHARPLEX	SI		
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:28:48 PM	SHARPLEX	SI		
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:29:00 PM	SHARPLEX	SI		
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:29:41 PM	SHARPLEX	SI		
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:29:14 PM	SHARPLEX	SI		
TEST DUMP FOR LOG WITH	DD IVP **	May 8, 2013 8:29:00 PM	SHARPLEX	SI		

Total: 26, Filtered: 26, Selected: 0
Last refresh: Apr 4, 2014 4:36:08 PM local time (Apr 4, 2014 8:36:08 PM GMT)

© Copyright IBM Corporation 2014 14

Step 3c: Configure Columns ...

Click "Sysplex", then "< Remove"

Available	Selected
Description (Date and Time)	Description (Date and Time)
Sysplex	Sysplex
System	System
Problem Number	Problem Number
Tracking ID	Tracking ID
Notes	Notes
Release	Release

Additional Read columns: 1

© Copyright IBM Corporation 2014 15

Step 3c: Configure Columns ...

IBM z/OS Management Facility

Welcome | Incident Log

Incident Log

Available: System

Selected: Date and Time (GMT), Problem Number, Tracking ID, Notes, Release, Product

Buttons: Add >, Add All >>, < Remove, << Remove All, Up, Down, OK, Restore Defaults, Cancel, Help

Total: 26, Filtered: 26, Selected: 0

Last refresh: Apr 7, 2014 4:31:57 PM local time (Apr 7, 2014 8:31:57 PM GMT)

© Copyright IBM Corporation 2014 16

Step 3c: Configure Columns ...

Now you configure the order in which columns are displayed

IBM z/OS Management Facility

Welcome | Incident Log

Incident Log

Available: System

Selected: Description, Date and Time (GMT), Problem Number, Tracking ID, Notes, Release, Product, Component Name

Buttons: Add >, Add All >>, < Remove, << Remove All, Up, Down, OK, Restore Defaults, Cancel, Help

Total: 26, Filtered: 26, Selected: 0

Last refresh: Apr 7, 2014 4:31:57 PM local time (Apr 7, 2014 8:31:57 PM GMT)

© Copyright IBM Corporation 2014 17

Step 3c: Configure Columns ...

IBM z/OS Management Facility

Incident Log

Configure Columns

Available:

- Sysplex
- System

Selected:

- Description
- Date and Time (GMT)
- Component Name
- Problem Number
- Tracking ID
- Note
- Release
- Product

Buttons: Add >, Add All >>, << Remove, << Remove All, OK, Restore Defaults, Cancel, Help

Then click OK

© Copyright IBM Corporation 2014

Step 3c: Configuration Columns ...

Now you can see that the Sysplex and System columns are no longer displayed and the component name column appears after Incident Type, Description, and Date and Time

Incident Log

Incident Type	Description	Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	Apr 18, 2013 2:50:18 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:17:23 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:17:55 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:18:20 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:28:37 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:28:44 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:25:00 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:28:41 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:28:44 PM				
User Incident	MFUS000 - TEST DUMP FOR USE WITH INCIDENT LOG FVP	May 8, 2013 8:28:30 PM				

Total: 26, Filtered: 26, Selected: 0

© Copyright IBM Corporation 2014

You have successfully customized your workspace! You are only viewing the columns you want, in the order you want, for a range of data that you filtered, in the sort order that you want.

4. View the details of an user initiated incident

Now that you've customized your workspace, let us dive deeper into an individual Incident.

Step 4a: Select a User Initiated Incident with the Same Suffix as Your User ID

You will need to filter the Description column to display only incidents that have the same suffix as your User ID (for example, “** MFUSR20 – TEST DUMP FOR USE WITH INCIDENT LOG IVP” if your User ID is SHARA20).

Step 4a: Select a user initiated incident with the same suffix as your User ID

Now you will view details of a user initiated incident. Unique incidents have been created for each user ID. You will use the filter to view incidents with the same suffix as your user ID

Click on Filter under Description

The screenshot shows the 'Incident Log' interface. The table has the following columns: Incident Type, Description, Date and Time (GMT), Component Name, Problem Number, Tracking ID, and Note. The 'Description' column is filtered with the text: "** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP". The table contains 10 rows of incident data. A yellow callout box points to the 'Filter' button under the 'Description' column header. A pink callout box contains the text: 'Now you will view details of a user initiated incident. Unique incidents have been created for each user ID. You will use the filter to view incidents with the same suffix as your user ID'. The status bar at the bottom indicates 'Total: 20, Filtered: 20, Selected: 0' and 'Last refresh: Apr 7, 2014 4:31:57 PM local time [Apr 7, 2014 8:31:57 AM GMT]'. The footer of the screenshot shows '© Copyright IBM Corporation 2014' and the page number '20'.

Incident Type	Description	Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	Jun 19, 2013 2:00:18 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 9:17:23 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 9:17:53 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:18:20 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:28:37 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:28:44 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:29:00 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:28:41 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:28:14 PM				
User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 8:28:00 PM				

Step 4a: Select a user initiated incident with the same suffix as your User ID

The screenshot shows the IBM z/OS Management Facility interface. The main window displays an 'Incident Log' table with columns for Incident Type, Description, Problem Number, Opening ID, and Date. A 'Modify Filters' dialog box is open, showing a search filter set to 'Contains' with the value 'HFVSRZ'. A yellow callout bubble points to this field with the text 'Change to your User ID'. Another yellow callout bubble points to the 'OK' button with the text 'Then click OK'. The interface includes a left-hand navigation menu and a top status bar with '© Copyright IBM Corporation 2014' and the page number '21'.

Step 4b: View Diagnostic Details of a User Initiated Incident

The incident with the same suffix as your user ID is now displayed. To view the details you can either:

- Click on “User Initiated” in the Incident Type column;
- Click on the selection box, then select Actions, followed by View Diagnostic Details; or
- Right click on “User Initiated” in the Incident Type column to view a context sensitive list of Actions, then select View Diagnostic Details.

For this exercise, it is recommended that you use the first option.

Step 4b: View Diagnostic Details of the Incident

The incident with the same suffix as your user ID is now displayed. To view the details you can either click on User Initiated; or click on the selection box and then select Actions, View Diagnostic Details; or right click on User Initiated and select View Diagnostic Details

Incident Type	Description	Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
<input type="checkbox"/> User Initiated	** MFUSR20 - TEST DUMP FOR USE WITH INCIDENT LOG IVP **	May 8, 2013 9:29:19 PM				

Total: 26, Filtered: 1, Selected: 0
[Refresh](#) Last refresh: Apr 7, 2014 6:00:54 PM local time (Apr 7, 2014 10:00:54 PM GMT)

© Copyright IBM Corporation 2014 22

Step 4b: View Diagnostic Details of the Incident ...

You now see a 2 tabbed display (General and Diagnostic Details). In the Diagnostic Details tab, you see the data that was captured for this incident. If you associated any other diagnostic data with this incident it would also be displayed.

Incident Log > View Diagnostics

View Diagnostic Details

General Diagnostic Data

Diagnostic Data:

Data Type	Source	Sysplex	System
SVC dump	SYS1 DUMPD130508.T212919.S1.S00144	SHARPLEX	S1
Error log	CEA.R00.CB54BE92.AB9399C0.X00.VIEW	SHARPLEX	S1
Operations log	CEA.Y00.CB54BE92.AB9399C0.X00.VIEW	SHARPLEX	S1
Error log summary	CEA.S00.CB54BE92.AB9399C0.X00.VIEW	SHARPLEX	S1

Total: 4, Selected: 0

You can attach up to ten additional files to send with this incident. When you close the panel, the Attachments table is cleared.

Attachments

New...

Data Type	Source
There is no data to display	

Total: 0, Selected: 0

Send View Status View Log

OK Apply Cancel

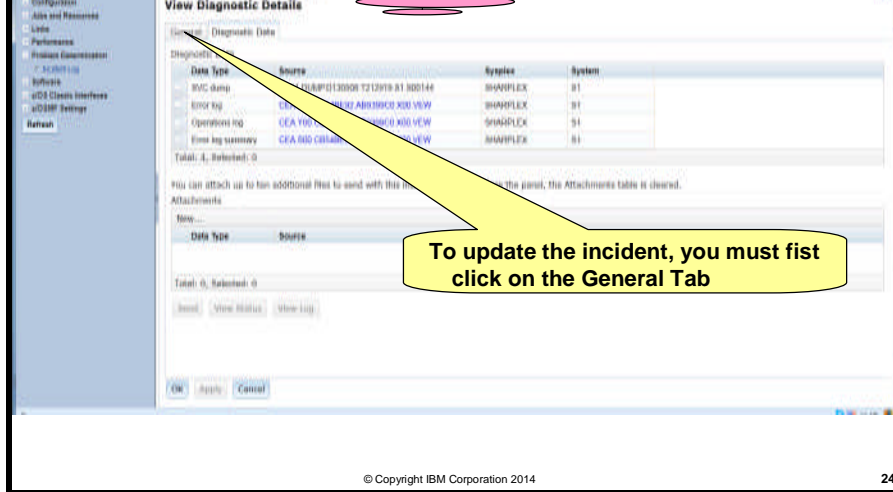
© Copyright IBM Corporation 2014 23

On this panel you can see all the pieces of diagnostic data that have automatically captured for this Incident by the backend instrumentation. Take some time to look at this. Observe that you also have the ability to attach additional pieces of diagnostic data (for example a trace file)

Once you've finished with this tab, lets move on to the other tab - General

Step 4c: Update the Incident

You now add a vendor problem number and installation problem tracking number to this incident. Optionally, you can also add a note.



© Copyright IBM Corporation 2014

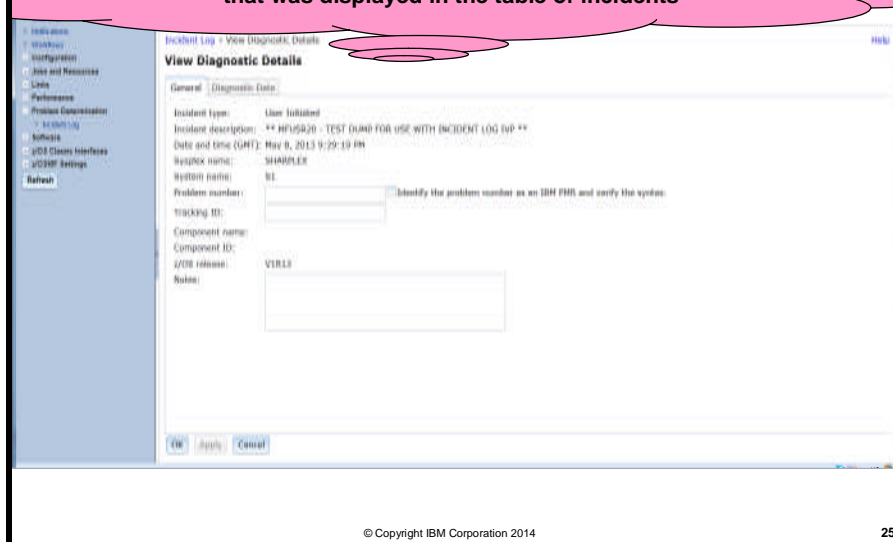
24

Step 4c: Update the Incident

Using the General tab, you can optionally enter a vendor problem number, an installation problem tracking number, and notes. For this exercise, you can enter "12345,123,123" as the problem number, "TRKabc" as the Tracking ID, and optionally enter any text for Notes.

Step 4c: Update the Incident ...

In the General tab you see the information about the incident that was displayed in the table of incidents



© Copyright IBM Corporation 2014

25

Step 4c: Update the Incident ...

The screenshot shows the IBM z/OS Management Facility Incident Log interface. The main window displays 'View Diagnostic Details' for an incident. The 'General' tab is active, showing fields for Incident type, description, date and time, sysplex name, system name, problem number, tracking ID, component name, and component ID. A 'Notes' field is also present. The problem number is set to '12345,123,123' and the tracking ID is 'TRKabc'. A checkbox is checked for 'Identify the problem number as an IBM PMR and verify the syntax.' The interface includes a left-hand navigation menu and buttons for 'OK', 'Apply', and 'Cancel' at the bottom.

1. Enter "12345,123,123" for problem number
2. Optionally check to identify the number as an IBM PMR

Then Enter "TRKabc" for the Tracking ID

Optionally, enter any text for notes

When you are done, click OK

Once you have entered the problem number and tracking ID and clicked OK, you can now see those values in the table of incidents.

Step 4c: Update the Incident ...

You now see the additional information in the table display

The screenshot shows the IBM z/OS Management Facility interface. The main content area displays an 'Incident Log' table. The table has the following columns: Incident Type, Description, Priority, Date and Time (GMT), Component Name, Problem Number, Tracking ID, and Note. A single incident is listed with the following details:

Incident Type	Description	Priority	Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
User Request	INFO CONSOLE - TEST DUMP FOR USE WITH INCIDENT LOGS RPT *	4-1	Apr 8, 2014 9:28:18 PM	Filter	S294, S21, S1	T0146	Who

At the bottom of the table, it shows 'Total: 26, Filtered: 1, Selected: 1' and a 'Refresh' button. The last refresh time is 'Apr 7, 2014 9:00:54 PM local time (Apr 7, 2014 10:00:54 PM GMT)'. The footer of the page contains '© Copyright IBM Corporation 2014' and the page number '27'.

Step 4d: Browse Diagnostic Data

Since z/OSMF V1.13, you can browse the logs captured for an Incident. z/OSMF ISPF Browse is used for this, so this feature only will work if your installation has setup and configured z/OSMF ISPF.

To select browse snapshots of diagnostic data, you must first view diagnostic details again. This time, since the incident with your suffix is already selected, you should try clicking Actions then View Diagnostic Data to bring up the diagnostic data.

You will see the diagnostic data elements captured for that Incident. Note the Source name of the data element. It is a hyperlink.

In this exercise, you will browse the Operation Log snapshot.

Step 4d: Browse Diagnostic Data

To browse diagnostic data, you must first view the details of your incident again.

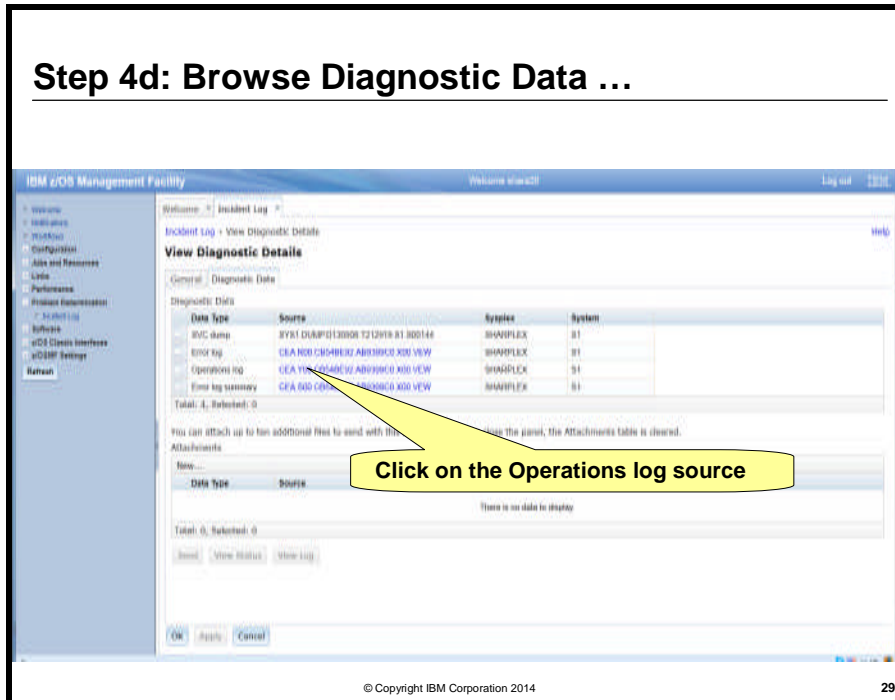
Inc	ID	Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
1	IS.MFUSR20	AND Past 1000 days May 8, 2013 9:29:19 PM		12345,123,123	TRKabc	Wha

© Copyright IBM Corporation 2014 28

Clicking on the Source name will enable you to browse that data element. For example, clicking on the Operations Log Source will cause z/OSMF to application link to ISPF inside of z/OSMF to enable you to browse the snapshot of SYSLOG data. You will see that it opens and ISPF tab if you didn't already have one open, and invoke browse in context for you.

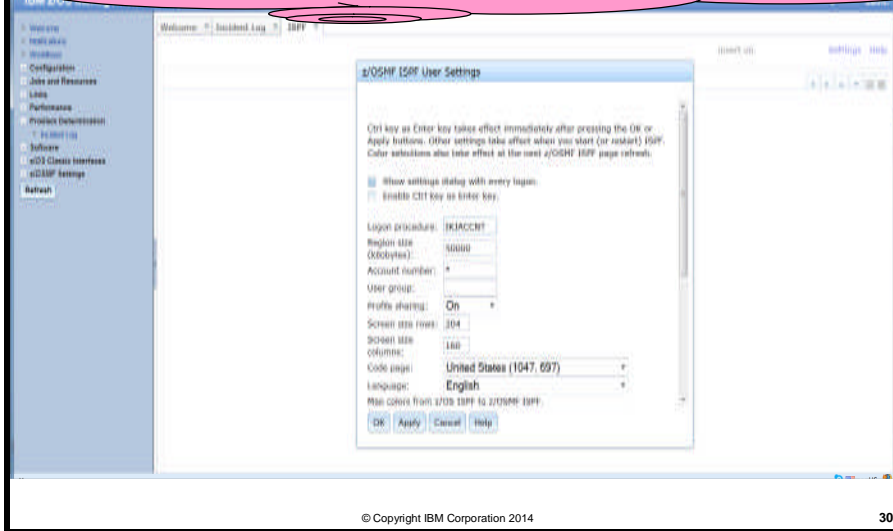
Note: If you do not already have a z/OSMF ISPF session running, you will get prompted for the TSO Sign-on parameters.

Step 4d: Browse Diagnostic Data ...



Step 4d: Browse Diagnostic Data ...

If you are the first user with this User ID to enter ISPF, then you will see the following default z/OSMF ISPF User Settings.

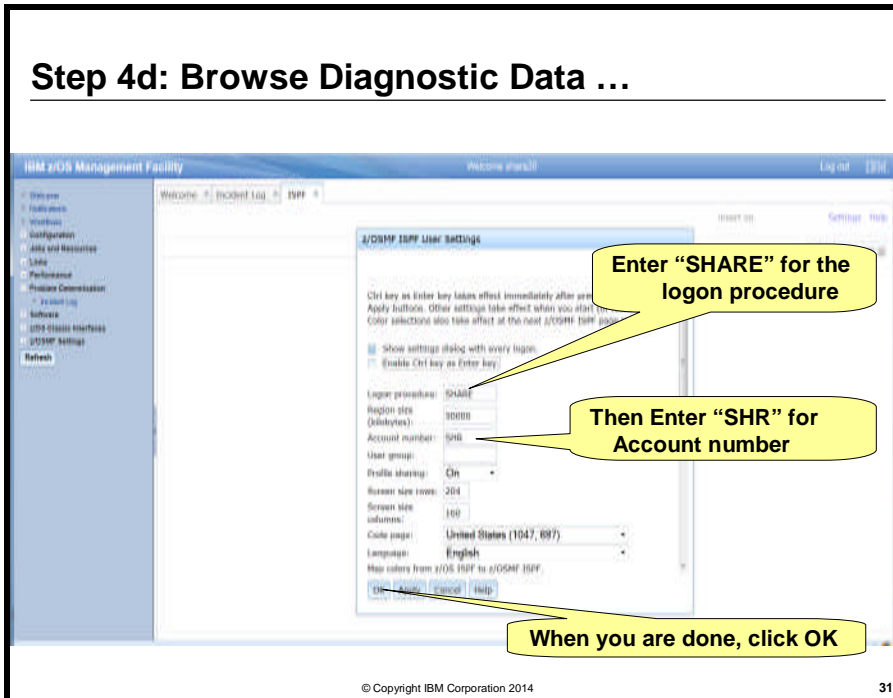


If you are the first person to use this ID to enter ISPF, then you will see the z/OSMF ISPF User Setup panel with default values. Please ensure that the logon procedure is set to SHARE and the Account number is set to SHR.

Optionally check box on top that will not open settings panel every time. If changes need to be made at a later time, you can click on 'Settings' on top right.

Click OK after entering the new values.

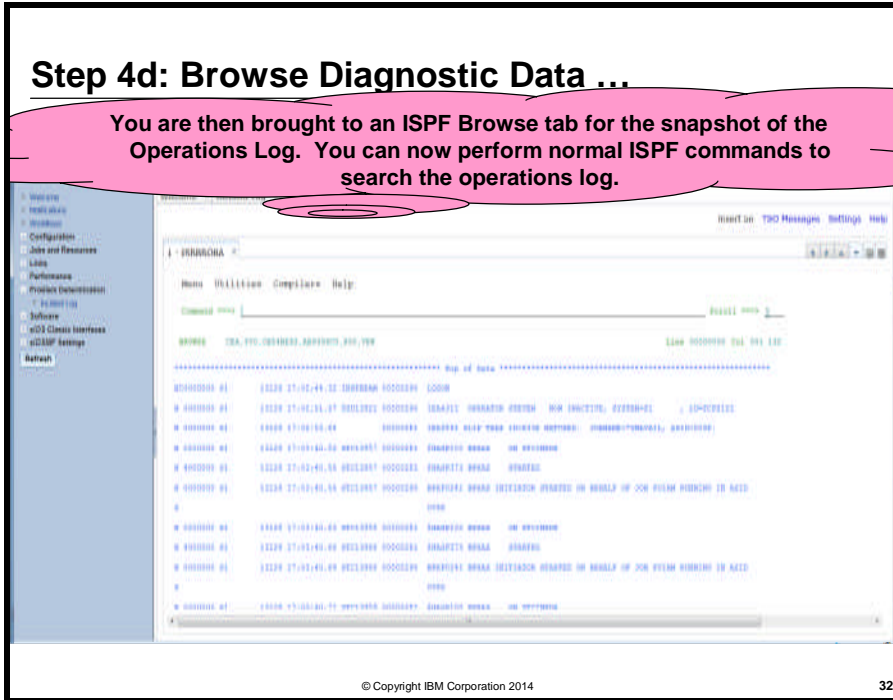
Step 4d: Browse Diagnostic Data ...



You will ultimately find yourself using ISPF Browse on the diagnostic data element that you had clicked on from the Incident Log!!

Step 4d: Browse Diagnostic Data ...

You are then brought to an ISPF Browse tab for the snapshot of the Operations Log. You can now perform normal ISPF commands to search the operations log.



5. FTP the diagnostic data captured for an incident to your service provider

Step 5: FTP the Diagnostic Data

Now you will ftp the diagnostic data for the incident that you've been viewing.

The screenshot shows the IBM z/OS Management Facility interface. The 'Incident Log' tab is selected, displaying a list of incidents. A yellow callout box with a pointer to the 'Incident Log' tab contains the text: "First, click on the Incident Log tab".

© Copyright IBM Corporation 2014 33

Step 5a: Select an Incident

Now you will be brought back to the Incident Log task. Ensure that the user initiated incident that you've been viewing is selected in the table.

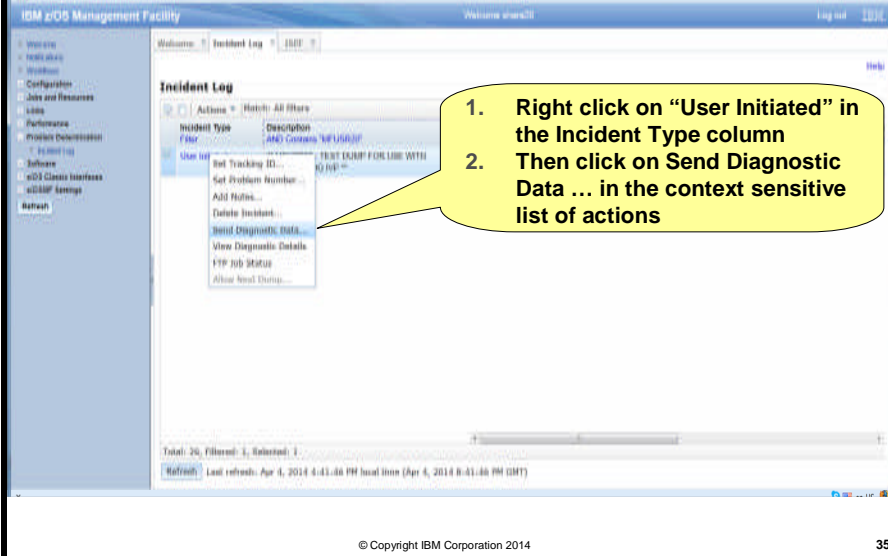
The screenshot shows the IBM z/OS Management Facility interface with the 'Incident Log' tab selected. A table of incidents is displayed, with the first row selected. The table has the following columns: Incident Type, Description, A.T. Date and Time (GMT), Component Name, Problem Number, Tracking ID, and Note.

Incident Type	Description	A.T. Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
User Incident	AMG Contains TDR LINKSIP	May 8, 2014 10:00 PM GMT	File	12345,123,123	THRU	YTD

Total: 20, Filtered: 1, Selected: 1
 Refresh Last refresh: Apr 7, 2014 8:00:54 PM local time (Apr 7, 2014 10:00:54 PM GMT)

© Copyright IBM Corporation 2014 34

Step 5b: Send Diagnostic Data for the Incident



The screenshot shows the IBM z/OS Management Facility Incident Log interface. A context menu is open over the 'User Initiated' incident type in the table. The menu items are: Set Tracking ID..., Set Problem Number..., Add Notes..., Delete Incident..., Send Diagnostic Data..., View Diagnostic Details..., FTP JOB STATUS..., and Allow Next Action... A yellow callout box with two numbered steps points to the 'Send Diagnostic Data...' option.

1. Right click on "User Initiated" in the Incident Type column
2. Then click on Send Diagnostic Data ... in the context sensitive list of actions

Total: 26, Filtered: 1, Selected: 1
Refresh: Last refresh: Apr 4, 2014 4:41:06 PM local time (Apr 4, 2014 8:41:06 PM GMT)

© Copyright IBM Corporation 2014 35

You will now be able to work with a wizard that will guide you through the steps to FTP the diagnostic data for that incident.

The first panel you see is the Welcome page. Notice that it has the steps you will be guided through on its left pane. It shows you what steps have been completed and which one is your current one

The welcome page has the details about the Incident you are working with, plus it lists the pieces of diagnostic data that is going to be sent.

It also shows you the problem number associated with the Incident. If the incident does not have one already associated, it allows you to set one here. The problem number is required to help identify the FTP-ed files at the destination.

Click on Next once you are done.

Step 5b: Send Diagnostic Data for the Incident

Now you are presented a wizard to guide you through the process of sending diagnostic data.

© Copyright IBM Corporation 2014
36

The next page in the wizard allows you to select where you want to send these files/datasets. For this exercise, select the first one in the list and click on Next.

Step 5c: Select the FTP Server

The first “real” step in the wizard is to select the FTP server.

Name	Activity	Host	Path Name	Port
File	File	File	File	File
IBM occupy-dmz		ip occupy dmz.com	ibmoccupy	
IBM occupy-host		ip occupy dmz.com	ibmoccupyhost	
IBM testcase-moz		testcase hostibm dmz.com	ibmtestcase	
IBM testcase-host		testcase hostibm dmz.com	ibmtestcasehost	
zsmr07-zsmr07-dmz.com		zsmr07 zsmr07 dmz.com	zsmr07	21

Note: Next is not enabled until an FTP server is selected

© Copyright IBM Corporation 2014 37

Step 5c: Select the FTP Server

Click on the first entry

Name	Activity	Host	Path Name	Port
File	File	File	File	File
IBM occupy-dmz		ip occupy dmz.com	ibmoccupy	
IBM occupy-host		ip occupy dmz.com	ibmoccupyhost	
IBM testcase-moz		testcase hostibm dmz.com	ibmtestcase	
IBM testcase-host		testcase hostibm dmz.com	ibmtestcasehost	
zsmr07-zsmr07-dmz.com		zsmr07 zsmr07 dmz.com	zsmr07	21

Then click Next

Note: Once an FTP server is selected, Next is enabled

© Copyright IBM Corporation 2014 38

This is where you can enter the userid/password needed to access the FTP Destination server you selected in the previous step. In this exercise, we will use the anonymous sign on. Click on Next to move on.

Step 5d: Specify Security Settings

The next step is to specify the security settings. For this server you can use an anonymous user id, which is the default.

© Copyright IBM Corporation 39

Just click Next

Step 5e: Select FTP Profile

The next step is to select an FTP Profile. Here you could specify a Proxy. For this server you can specify No Firewall or Proxy, which is the default.

© Copyright IBM Corporation 2014 40

Just click Next

This is where you can specify your firewall or proxy information if needed. In this exercise, we do not have a firewall. Make sure that the No firewall or proxy option is selected in the drop down, and then click on Next.

At this stage you have the ability to edit/specify the job card information for the FTP Job that is being built in the background.

You can make changes if you'd like. The default entries will work for our lab session, so you can also just click on Next.

Step 5f: Define Job Setting

The next step is to specify a JCL Job card. For this lab, you can just use what has been previously defined.

© Copyright IBM Corporation

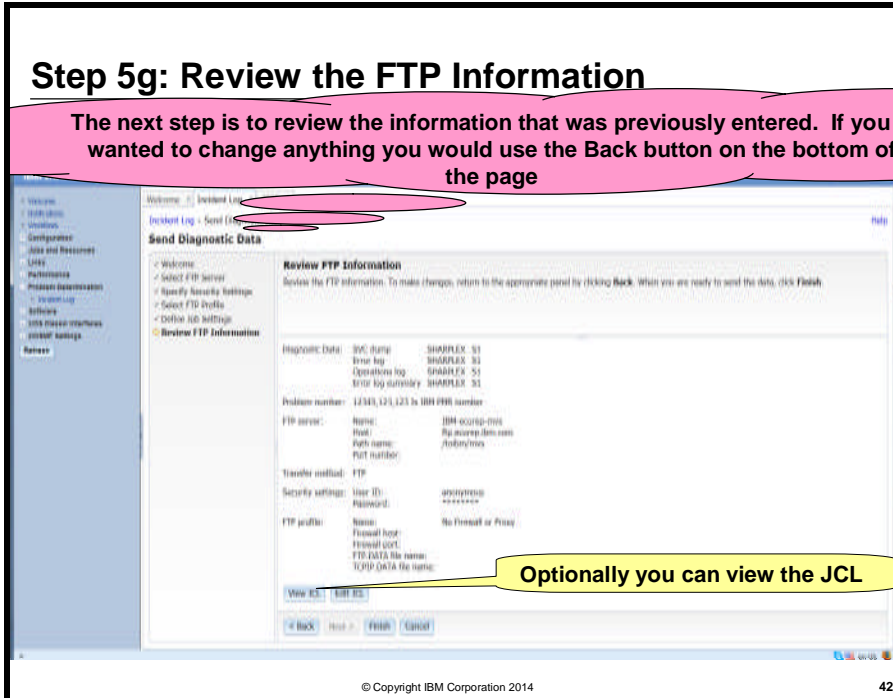
41

The wizard has walked you through collecting all the information needed to FTP the diagnostic data to your service provider. This page allows you to review all the data that you have provided.

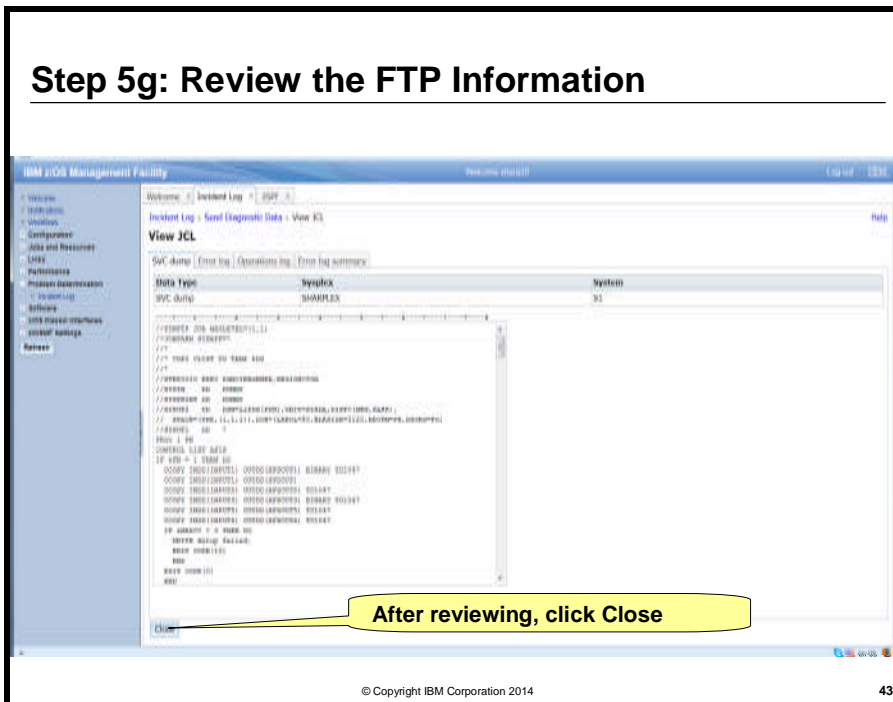
Optionally, you can view or edit the JCL. We do not recommend changing the JCL.

Step 5g: Review the FTP Information

The next step is to review the information that was previously entered. If you wanted to change anything you would use the Back button on the bottom of the page



Step 5g: Review the FTP Information



When you are ready to submit the FTP jobs, click on Finish. This will submit jobs to ftp the selected pieces of diagnostic data over to the selected FTP Destination.

Step 5g: Review the FTP Information

The last step is to click Finish which will submit the ftp jobs.

Click Finish

44

Step 5g: Review the FTP Information

A pop-up window is displayed with messages identifying the jobs that were submitted. Optionally you can click on the message to see the message description.

Click Close

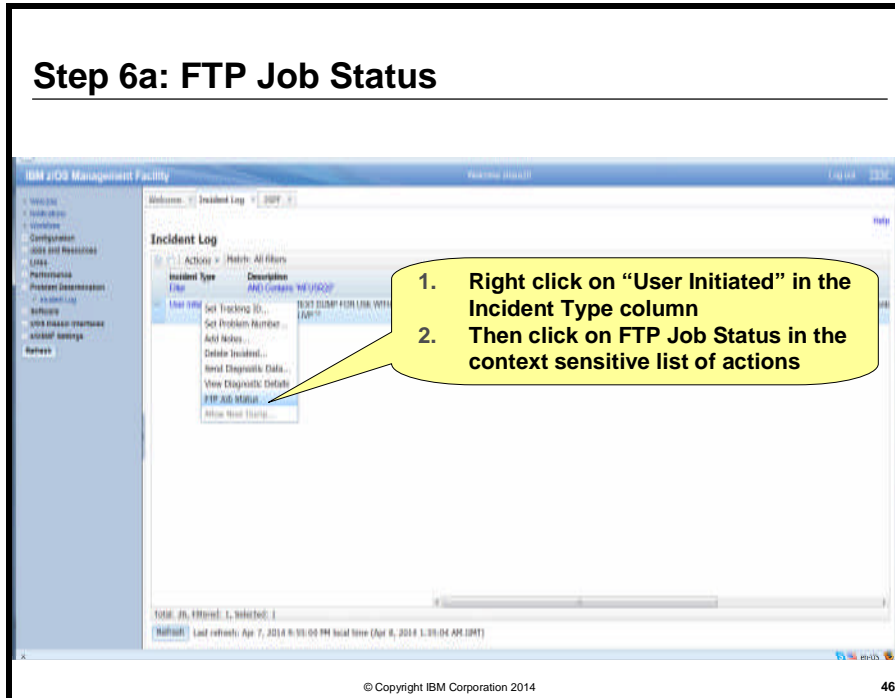
45

Once you click on the Finish button in the above step, z/OSMF will submit the jobs. You will get a confirmation window.

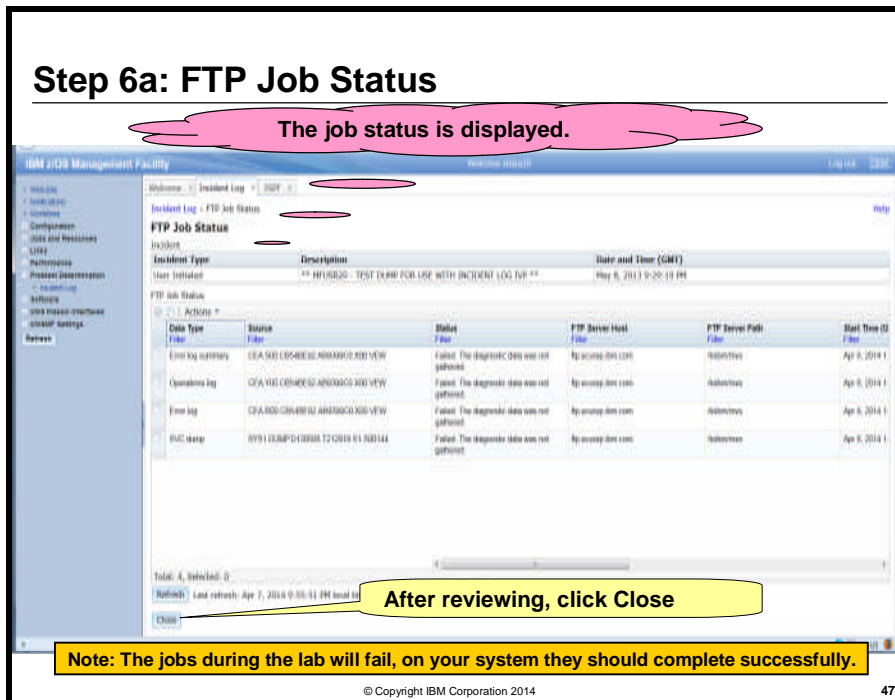
This page shows you the job status for all the FTP jobs submitted for this incident. You can click on the Refresh button to update the status of the jobs.

Note: If a log snapshot does not have any entries, the job might fail

Step 6a: FTP Job Status



Step 6a: FTP Job Status



Note: The jobs during the lab will fail, on your system they should complete successfully.

Optional Exercises

- 7. View FTP Destinations
- 8. View FTP the diagnostic data captured for an incident to your service provider

Optional Exercise – View FTP Servers

Step 7: View FTP Servers

To get started, click on the Welcome tab

The screenshot shows the IBM z/OS Management Facility interface. The 'Incident Log' is displayed with a table of incidents. A yellow callout bubble points to the 'Welcome' tab in the top navigation bar.

Incident Type	Description	A.1. Date and Time (GMT)	Component Name	Problem Number	Tracking ID	Note
User related	AMF Console: VSE USR00P	May 8, 2014 9:28:18 PM		12345, 123, 123	TRK001	W...

Total: 20, Filtered: 1, Selected: 1
 Refresh Last refresh: Apr 7, 2014 6:00:34 PM local time (Apr 7, 2014 10:00:34 PM GMT)

© Copyright IBM Corporation 2014 48

Step 7: View FTP Servers ...

Expand z/OSMF Settings

The screenshot shows the IBM z/OS Management Facility Welcome page. A yellow callout bubble points to the 'z/OSMF Settings' link in the left navigation menu.

Management Facility (z/OSMF) provides a framework for managing various aspects of a z/OS system through a Web browser interface. By streamlining some traditional tasks and adding others, z/OSMF can help to simplify some areas of z/OS system management.

To learn more about z/OSMF, visit the links in the Learn More section.

To start managing your z/OS systems, select a task from the navigation area.

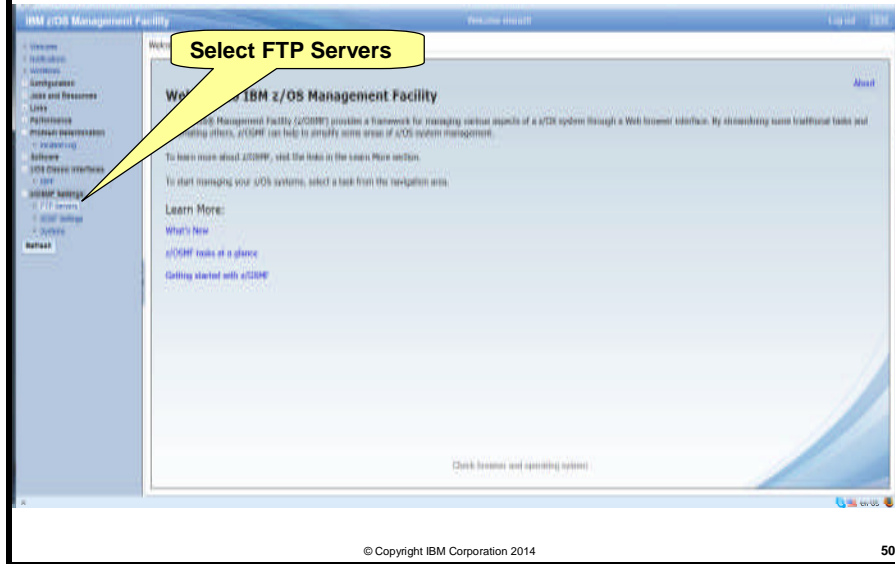
Learn More:

- What's New
- z/OSMF links at a glance
- Getting started with z/OSMF

Check browser and operating system

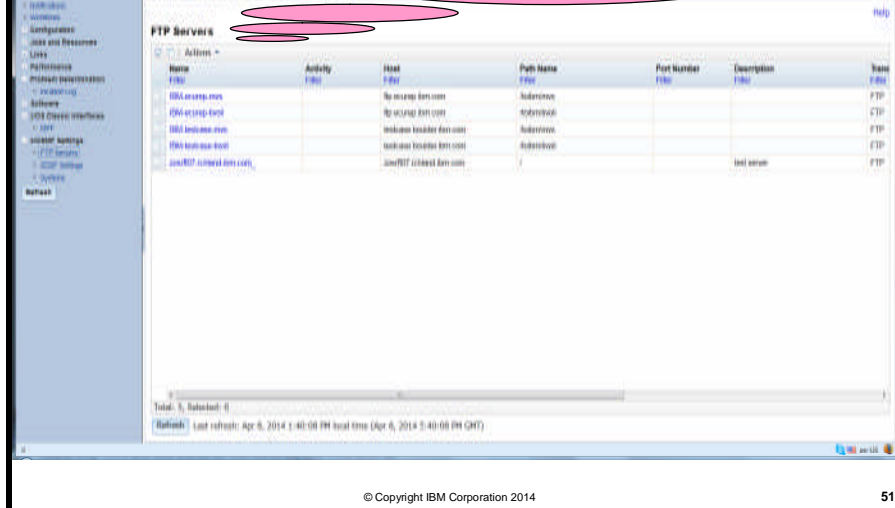
© Copyright IBM Corporation 2014 49

Step 7: View FTP Servers ...



Step 7: View FTP Servers ...

A list of defined FTP servers is displayed. The z/OSMF Administrator can add, modify, or remove an FTP Server. Servers in this list are displayed when selecting a FTP server during the Send Diagnostic Data wizard.



Step 7: View FTP Servers ...

First select the IBM-ecurep-mvs FTP Server

Then, click Actions, followed by View

The screenshot shows the IBM z/OS Management Facility interface. On the left is a navigation tree with categories like Home, Notifications, Configuration, and Software. The main area displays a table of FTP Servers. The table has columns for Activity, Host, Path Name, Port Number, Description, and Transfer Method. A context menu is open over the table, showing options like View, Select All, Deselect All, Configure Columns..., Modify Filters..., Hide Filter Row, Clear Filters, Modify Sort..., and Clear Sorts. The 'View' option is highlighted. Below the table, it says 'Total: 5, Selected: 1'. At the bottom, there is a 'Refresh' button and a timestamp: 'Last refresh: Apr 8, 2014 1:40:08 PM local time (Apr 8, 2014 5:40:08 PM GMT)'. The footer contains '© Copyright IBM Corporation 2014' and the page number '52'.

Step 7: View FTP Servers ...

The properties of the FTP Server are displayed.

After reviewing, click Close

The screenshot shows the 'View IBM-ecurep-mvs' dialog box. It displays various properties for the selected FTP server. Fields include: FTP server name (IBM-ecurep-mvs), Host (ftp.ecurep.ibm.com), Path name (/ibem/mvs), Port number (21), Transfer method (FTP), and FTP profile (Use the default profile). There is also a 'Description' field. At the bottom left, there is a 'Close' button. The footer contains '© Copyright IBM Corporation 2014' and the page number '53'.

Step 8: View FTP Profiles

Click Actions, then FTP Profiles

Name	Activity	Host	Path Name	Port Number	Description	Type
FTP Profiles	FTP					FTP
Select All		ip.msn.com	Subdomain			FTP
Deselect All		ip.msn.com	Subdomain			FTP
Configure Columns...		indiana.toucan.com	Subdomain			FTP
Modify Filters...		indiana.toucan.com	Subdomain			FTP
Hide Filter Row		indiana.toucan.com			Not empty	FTP

Total: 6, Selected: 1
Refresh: Last refresh: Apr 8, 2014 1:41:31 PM local time (Apr 8, 2014 5:41:31 PM GMT)

© Copyright IBM Corporation 2014 54

Step 8: View FTP Profiles ...

Click on No Firewall or Proxy in the Name column

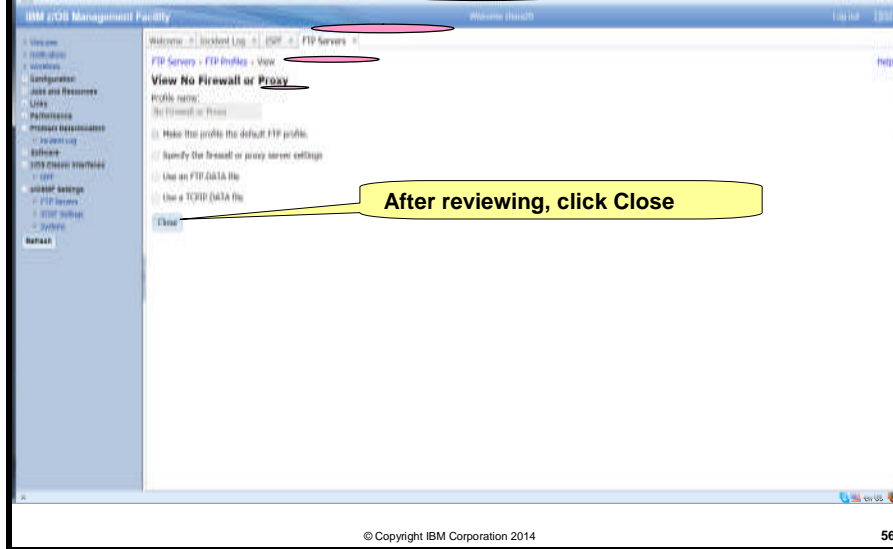
Name	Activity	Firewall Host	Firewall User ID	Firewall Port	Firewall Comments	FTP Data File Name
No Firewall or Proxy (default)	FTP					

Total: 1, Selected: 0
Refresh: Last refresh: Apr 8, 2014 1:41:42 PM local time (Apr 8, 2014 5:41:42 PM GMT)

© Copyright IBM Corporation 2014 55

Step 8: View FTP Profiles ...

The properties of the FTP Profile is displayed.



End of exercise

Exercise Review and Wrap-Up

Exercise Review and Wrap-Up

You now know how to:

- **Log on to z/OSMF**
- **Filter and configure tables within z/OSMF**
- **View incidents**
 - View details of incidents
- **Send diagnostic data to a vendor**

And possibly how to:

- **View information on FTP Servers**
- **View information on FTP Profiles**

© Copyright IBM Corporation 2014

57



Thank You

© Copyright IBM Corporation 2014

58

Additional Information

Additional information

- **z/OS Management Facility website**
 - <http://ibm.com/systems/zos/zos/zosmf/>
- **IBM z/OS Management Facility education modules in IBM Education Assistant**
 - <http://publib.boulder.ibm.com/infocenter/ieduasst/stgv1r0/index.jsp>
 - Scroll down to z/OS Management Facility
- **IBM Publications Center**
 - Program Directory for z/OS Management Facility (GI11-9847)
 - IBM z/OS Management Facility Configuration Guide (SA38-0657)
 - IBM z/OS Management Facility Programming (SA32-1066)
 - IBM z/OS V2R1.0 Management Facility License Information (GC52-1386)
 - <http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>
- **IBM z/OS Management Facility Information center**
 - <http://pic.dhe.ibm.com/infocenter/zos/v2r1/index.jsp>

© Copyright IBM Corporation 2014

59

Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

IBM^{*} ServerPac^{*} * Registered trademarks of IBM Corporation
 IBM (logo) WebSphere^{*}
 RACF^{*} z/OS^{*}

The following are trademarks or registered trademarks of other companies.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Firefox is a trademark of Mozilla Foundation

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license there from.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Internet Explorer is a trademark of Microsoft Corp

InfiniBand is a trademark and service mark of the InfiniBand Trade Association.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.

IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency, which is now part of the Office of Government Commerce.

* All other products may be trademarks or registered trademarks of their respective companies.

Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.

This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.

See url <http://www.ibm.com/legal/copytrade.shtml> for a list of IBM trademarks.

© Copyright IBM Corporation 2014

60