IBM Workload Deployer

Troubleshooting

This presentation will discuss IBM Workload Deployer troubleshooting.

Overview

- IBM Workload Deployer appliance troubleshooting
  - Details of the Troubleshooting tools
- Other troubleshooting hints
  - Domain Name Server
  - Virtual Systems
- Summary

Troubleshooting

This presentation will discuss troubleshooting the IBM Workload Deployer appliance. First, you will see detailed information about the Troubleshooting tools provided from the **Appliance** tab in the administrative console. Then you will see additional information related to problems with the Domain Name Server (DNS) and information about virtual systems. The last slide is a summary of this presentation.

Section

IBM Workload Deployer troubleshooting

Troubleshooting

This section will discuss troubleshooting the IBM Workload Deployer device.

Troubleshooting categories

- If suspected problem is within IBM Workload Deployer firmware or software
  - Take snapshot if you see the error within IBM Workload Deployer administrative console
  - Use **Appliance > Troubleshooting** tools

- If suspected problem is not related to IBM Workload Deployer firmware or software, such as a specification or definition error
  - IBM Workload Deployer tools can help
    - Convenient links to logs, SSH, VNC, WebSphere Application Server administrative console
    - **Appliance > Troubleshooting** tools to review logging, auditing and to test outbound connections
  - Problems within a deployed virtual system typically require conventional operating system problem determination, including review of WebSphere Application Server logs

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When troubleshooting problems that you suspect are related to the IBM Workload Deployer firmware or software, you should consider first taking a snapshot of the screen where the error becomes apparent. The next step typically involves using the **Troubleshooting** tools in the IBM Workload Deployer administrative console, which are discussed on the following slides.

If the issue is outside the scope of IBM Workload Deployer firmware or software, such as a suspected specification or definition error or an error within a hypervisor, you can still use the appliance administrative console to assist in problem determination. The IBM Workload Deployer administrative console provides convenient links to remote logs, to SSH and VNC facilities, and links to the WebSphere Application Server administrative console for the deployed virtual systems. In addition, you can use the **Troubleshooting** tools within the **Appliances** tab to review the appliance logs and audit logs, and to test outbound connections. For problems within the deployed virtual system and WebSphere Application Server, you typically should use traditional troubleshooting techniques appropriate for that particular operating system, which can include reviewing the WebSphere Application Server logs. You can access the deployed virtual system using SSH or VNC facilities, or you can access the WebSphere Application Server administrative console for the deployed virtual system.

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IBM Workload Deployer troubleshooting

- **Troubleshooting** link in **Appliance** tab
  – Download and examine log and audit files
  – Review appliance memory and disk capacity and usage
  – Check appliance temperatures
  – Test network connections
  – Power off or restart the hardware
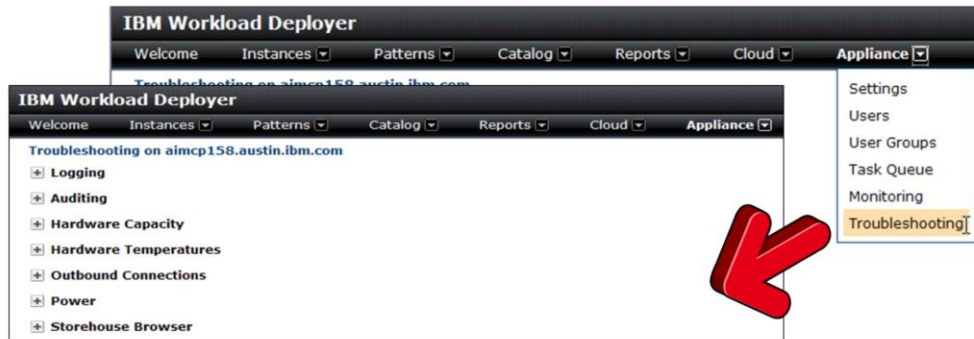
You can access the **Troubleshooting** page from the **Appliance** tab in the IBM Workload Deployer administrative console. The Troubleshooting page has several tools to help you diagnose IBM Workload Deployer problems. You can download and examine log and audit files, review the appliance memory and disk capacity and usage, check internal appliance temperatures, test outbound connections, and power off or restart the appliance.

Within the logging page, you can view the kernel service or storehouse log files. The kernel service is used to direct manage the deployment of virtual applications while the storehouse is where the artifacts are stored for virtual application deployments. From the logging page, you can also view the current error file, view the current trace file, download the log files, or configure trace levels. If you do not have specific instructions from IBM support for configuring the trace levels, you should use the default settings. For problems you submit to IBM support, you must provide the log files. You can download a complete set of log files from the appliance by clicking **Download log files**. The archive of log files that the appliance maintains contains a long history of logs and is a large file. The REST API provides syntax that allows you to grab just the latest sets of logs for the last few hours. This is very useful if you are troubleshooting a problem, have re-created it, and need to gather a recent set of logs to send to IBM support. The syntax for downloading just the latest log files is shown on this slide.

Auditing

- Audit data contains records of user activity for objects stored on the appliance
  - Download all audit data
  - Download audit data filtered by date and time

IBM Workload Deployer

| Welcome | Instances ▾ | Patterns ▾ | Catalog ▾ | Reports ▾ | Cloud ▾ | Appliance ▾ |

Troubleshooting on aimcp158.austin.ibm.com

[+] **Logging**

[−] **Auditing**

    📋 Download all data

    Filter system activity data by selecting a date range.

Start date	Jun 22, 2011	6:33 PM
End date	Jul 22, 2011	6:33 PM
Time zone:	GMT (United Kingdom) ▾	

    📋 Download filtered data

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The audit data contains records of user activity for auditable objects stored on the appliance. For example, using audit data, you can determine when virtual systems, cloud groups, hypervisors, and patterns are created, updated or deleted. Click **Download all data** to retrieve all audit data that exists on the appliance. Alternatively, set a date and time range, and then click **Download filtered data** to retrieve audit data within the specified date and time range.

Hardware capacity

- Shows memory and disk capacity
- Green if usage is below 80%
- Red if usage is 80% or greater

IBM Workload Deployer

| Welcome | Instances ▾ | Patterns ▾ | Catalog ▾ | Reports ▾ | Cloud ▾ | Appliance ▾ |

Troubleshooting on aimcp158.austin.ibm.com

☐ **Logging**

☐ **Auditing**

☐ **Hardware Capacity**

Memory usage	77%	Disk 50% (out of 96 GB)
Encrypted disk space	69%	
Temporary disk space (1)	0%	
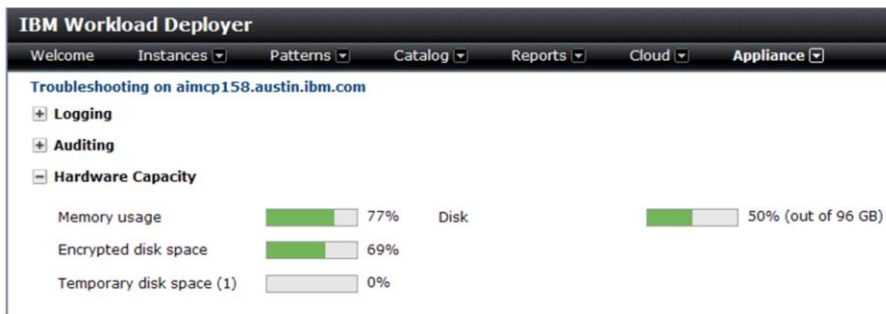
Hardware capacity shows you the memory usage and disk space statistics for the appliance. If the usage is below 80 percent, the graphs will display in green. If the usage is 80 percent or greater, the graphs will display in red. If the usage is unexpectedly high or critically high, you should open a problem to IBM support, including a snapshot of the screen image.

Hardware temperatures

- Reports the temperature of internal components
- A check mark in a green square indicates safe range
- An exclamation mark on a yellow triangle indicates unsafe range

IBM Workload Deployer

Welcome	Instances ▾	Patterns ▾	Catalog ▾	Reports ▾	Cloud ▾	Appliance ▾

Troubleshooting on aimcp158.austin.ibm.com

+ **Logging**

+ **Auditing**

+ **Hardware Capacity**

− **Hardware Temperatures**

System	105.8° ✔
CPU package (1)	100.4° ✔
CPU package (2)	111.2° ✔

The **Hardware Temperatures** page shows the temperature of internal components within the IBM Workload Deployer appliance. The green check icon is displayed if the temperature is within the safe range, and the yellow exclamation mark icon is displayed if the temperature is outside the safe range.

The **Outbound Connections** page allows you to ping a remote host using the IP address or using the host name. If the ping is successful, you will see a green box with a check mark to the right of the **Ping** button. If it is unsuccessful, you will see a red circle with an X to the right of the **Ping** button. If you suspect a Domain Name Server issue or communication issue, you should also ping the appliance from the remote host as well, first using the appliance IP address and again using the appliance host name.

Power

- Allow you to restart or shut down the appliance
- A confirmation message is issued to prevent accidental shut downs
- You can choose the action to be immediate or to be queued until current appliance tasks are completed

IBM Workload Deployer

| Welcome | Instances ▾ | Patterns ▾ | Catalog ▾ | Reports ▾ | Cloud ▾ | Appliance ▾ |

Troubleshooting on wcazvm01.rtp.raleigh.ibm.com

+ **Logging**

+ **Auditing**

+ **Hardware Capacity**

+ **Hardware Temperatures**

+ **Outbound Connections**

− **Power**

   ↻ Restart the appliance   ⓘ Shut down the appliance

The Power administration options allow you to restart the appliance or to shut down the appliance. For both actions, you receive a confirmation message so that the action is not accidentally invoked. In addition, you can choose the action to be immediate, or the action can be delayed until all current appliance tasks have been completed.

The Storehouse Browser hyperlink shown on the slide will open a new window, displaying the contents of the storehouse. The storehouse is where the artifacts are stored for virtual application deployments.

Section

Other troubleshooting hints

Troubleshooting

This section will discuss troubleshooting hints related to the IBM Workload Deployer appliance.

Domain name server

- IBM Workload Deployer requires that you define a Domain Name Server (DNS) for virtual system deployment
  Appliance > Settings > Domain Name Servers
- **All** IP addressable resources, including hypervisors, target addresses in IP Groups, and the IBM Workload Deployer appliance itself, must be defined within the DNS
  - **Forward and reverse DNS lookup is required**
    - Forward lookup – resolving a host name to a valid IP address
    - Reverse lookup – resolving an IP address to a valid host name

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When you initially configure IBM Workload Deployer, you must define the address of a Domain Name Server, or DNS. The setting is accessed within the **Appliance** tab, clicking on **Settings**, and expanding **Domain Name Servers.** All IP addressable resources related to the IBM Workload Deployer environment must be defined within the DNS, including hypervisors, target addresses within IP groups, and even the IBM Workload Deployer appliance itself. In addition, all addressable resources must be resolvable by both forward and reverse lookup. A successful forward lookup is when the appliance can resolve a host name to a valid IP Address. A successful reverse lookup is when the appliance can resolve an IP address to a valid host name. Failure to properly define resources within the DNS can cause problems that are sometimes difficult to diagnose.

Virtual systems

- View the status for most commonly needed information
- **Virtual Systems > (your_virtual_system)**
- Expand **History** and **Virtual machines** for more information
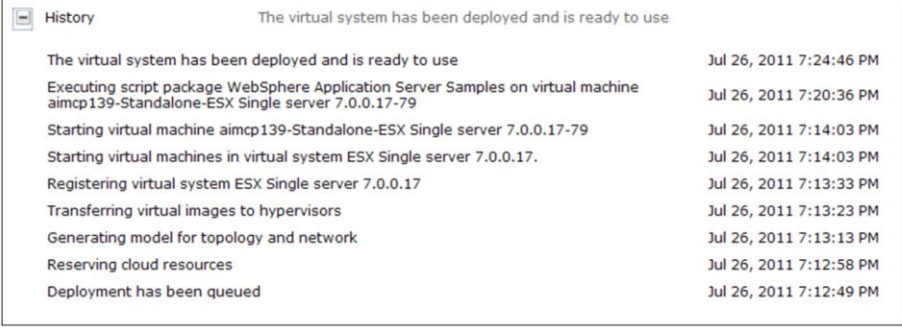
ESX Single server 7.0.0.17	
Created on:	Jul 26, 2011 7:12:49 PM
From pattern:	WebSphere single server with sample
Using Environment profile:	None provided
Current status:	▶ The virtual system has been deployed and is ready to use
Updated on:	Jul 26, 2011 7:24:50 PM
Access granted to:	Administrator [owner]
	Add more...
Snapshot:	Create
	(none)
⊞ History	The virtual system has been deployed and is ready to use
⊞ Virtual machines	1 total - 1 started

Status information

History

Virtual machines

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If you are having problems with a virtual system deployment, you will want to review all the information within the virtual system entry of interest. When you click an individual entry within the list of **Virtual Systems**, you will first see the most commonly needed status information. This includes the pattern from which the virtual system was created, the current status of the virtual system, and the list of users with access. Below that are the **History** section and the **Virtual machines** section, which you will see in the next slides.

Virtual systems - History

- Expand **History** to review the activity that occurred during the deployment of the virtual system
- Most recent entries are at the top

History	The virtual system has been deployed and is ready to use	
The virtual system has been deployed and is ready to use		Jul 26, 2011 7:24:46 PM
Executing script package WebSphere Application Server Samples on virtual machine aimcp139-Standalone-ESX Single server 7.0.0.17-79		Jul 26, 2011 7:20:36 PM
Starting virtual machine aimcp139-Standalone-ESX Single server 7.0.0.17-79		Jul 26, 2011 7:14:03 PM
Starting virtual machines in virtual system ESX Single server 7.0.0.17.		Jul 26, 2011 7:14:03 PM
Registering virtual system ESX Single server 7.0.0.17		Jul 26, 2011 7:13:33 PM
Transferring virtual images to hypervisors		Jul 26, 2011 7:13:23 PM
Generating model for topology and network		Jul 26, 2011 7:13:13 PM
Reserving cloud resources		Jul 26, 2011 7:12:58 PM
Deployment has been queued		Jul 26, 2011 7:12:49 PM

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When you expand the **History** section for a virtual system, you will see a list of actions that were performed during the deployment of the virtual system, each with a date and time stamp. You can look for errors within the history to assist with problem determination. In addition, the time stamps give you a good idea of how long individual actions took to complete.

Virtual systems – Virtual machines

If you expand the **Virtual machines** section of your virtual systems entry, you will see a list of each virtual machine in its own section, which in turn can be expanded. Each virtual machine section contains a great deal of information. At the top right of the display is a link labeled View that opens the action toolbar for this virtual machine. The toolbar contains links to start, stop, delete, or clone this virtual machine. The Login link opens an SSH console to the virtual machine. The two bars at the top show hardware utilization information for the virtual processor and memory that are allocated to this virtual machine. In the example above, the memory consumption for this virtual machine is 91%. The rest of the display provides details about the configuration for this virtual machine. The **General Information** section provides basic information about the virtual machine, including its current state, hypervisor, and cloud group. Below that you see the IBM products list. This contains a list of all of the IBM products that are included in this virtual machine for license tracking. Next you see **Hardware and network** information, including the processor information, virtual memory, and the host name and IP address. The Operating system section lists the name, type and version of the operating system running in the virtual machine. Under that you see information called **WebSphere configuration,** which refers to the WebSphere Application Server installation on that virtual machine. Further down you see a section entitled **Script Packages**. That section lists the scripts that ran during the virtual machine creation. To the right of the script package names you see the associated log files. You will see more information about those on the next slide. At the bottom of the screen you see the link to consoles for this virtual machine. All virtual machines contain the WebSphere link that takes you to the application server administrative console. In this example, there is also a VNC link that will open up a remote desktop to this virtual machine. VNC connections are only available on VMware deployments and can be optionally disabled at deployment time

You can review the logs for the scripts that run for each virtual machine. The scripts are listed under the details of each virtual machine, in a section called **Script Packages**. The script package section contains information about configuration scripts, WebSphere Hypervisor Edition Startup scripts, and custom scripts that you deploy. The script name is listed at the left and the related log file name is listed at the right. Each log file name is a link for the actual log file itself, so you can click each link to download or view the log files. A script can be defined to run at virtual system creation time, virtual system deletion time, or you can manually initiate the script yourself. You should review your custom script log closely for errors or unexpected operation.

Virtual applications

If you are having problems with a virtual application deployment, you will want to review all the information within the virtual application entry of interest, The VM status field starts out as 'LAUNCHING', moves to ' 'INSTALLING' and finally ends up at 'RUNNING' if all goes as planned. There is also a 'FAILED' and 'TERMINATED' status. The History section should look familiar to you because that is what you saw for the 'Virtual System' deployment history.

Virtual applications - application problems

- If the application has problems after it is in the RUNNING state, you can use the 'inlet' to look at application logs for all VMs or go directly to the logs for the problem VM:

If the virtual application has problems after the deployment is in the RUNNING state, you can go to the deployment inlet to look at application logs. This will include logs for all VMs that were deployed for the virtual application instance. You can also get to the logs for each particular VM by the hyperlink in the virtual machine list as shown by the 'VM logs' arrow. You will look at the logs available on the next slide.

Virtual applications - virtual machine logs

- Logs associated specifically with a particular VM
- These will vary depending on the type of VM
- For WebSphere Application Server:
  - OS (operating system)
  - WAS (WebSphere Application Server)
  - IWD Agent
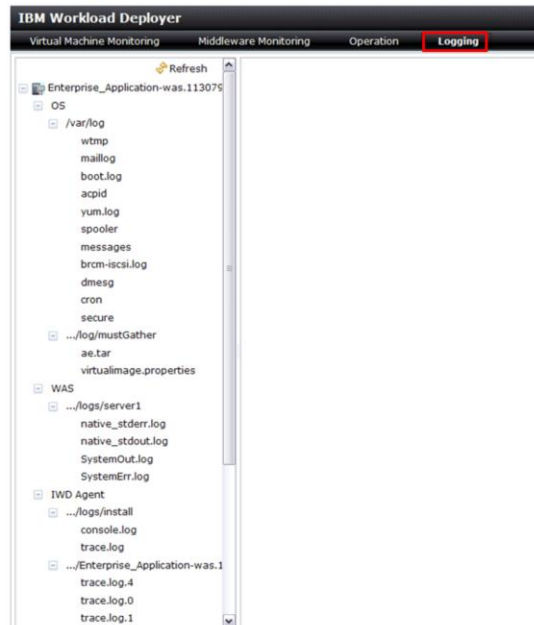
This slide is showing the logs available for a VM hosting WebSphere Application Server. It include logs for the Operating system in the VM itself, regular WebSphere logs such as SystemOutErr.log and then IBM Workload Deployer Agent logs. The IWD Agent logs show you actual 'installation' of the WebSphere Application Server code, coming from the Storehouse as you saw populated earlier. What you will probably be most interested in here are the WebSphere Application Server logs. The next slide will show you the SystemOut.log.

Virtual applications – WebSphere Application Server SystemOut.log

This is showing the SystemOut.log from the WebSphere deployment. This can be helpful when looking at problems with the applications running in the WebSphere Application Server VM. This slide is also showing you that you can download the logs with the green arrow next to each of the logs.

Section

Summary

Troubleshooting

This section will summarize the troubleshooting options available for the IBM Workload Deployer device.

Summary

- Try to determine if problem is with IBM Workload Deployer itself or with a particular virtual system or resource that you have defined
- Use the Troubleshooting tools to assist you with debugging
- Problems within an individual virtual machine often require traditional diagnostic techniques for the operating system and for WebSphere Application Server
- If you suspect a IBM Workload Deployer problem, remember to take a snapshot of the error and then download the log files
- Ensure you have two-way communications between the appliance and hypervisors or target addresses
- Remember that all IP resources must be defined within the DNS and must allow forward and reverse DNS lookup
- Review the individual virtual systems entries for clues about problems related to the deployment or start of a virtual system
- Review the script packages logs to ensure for errors or incorrect operation

In summary, you should try to determine if the suspected problem is with the IBM Workload Deployer appliance itself or with a particular virtual system or resource that you have defined. You can use the Troubleshooting tools to assist you with debugging. If you suspect the problem is within an individual virtual machine, you will often need to use traditional diagnostic techniques appropriate for that operating system environment and for WebSphere Application Server. If you suspect you have an IBM Workload Deployer problem, remember to take a screen snapshot of the error and then collect the appliance log files for IBM Support. For communications issues, ensure that you have two-way communications between the appliance and the target hosts or the hypervisors. All IP resources used by IBM Workload Deployer must be defined within the Domain Name Server, including the IBM Workload Deployer appliance itself. All entries within the DNS must allow forward and reverse DNS lookup. Review the individual virtual system entries for clues about problems related to deployment or start of a virtual system. Remember to review the script package logs for errors or incorrect operation.

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