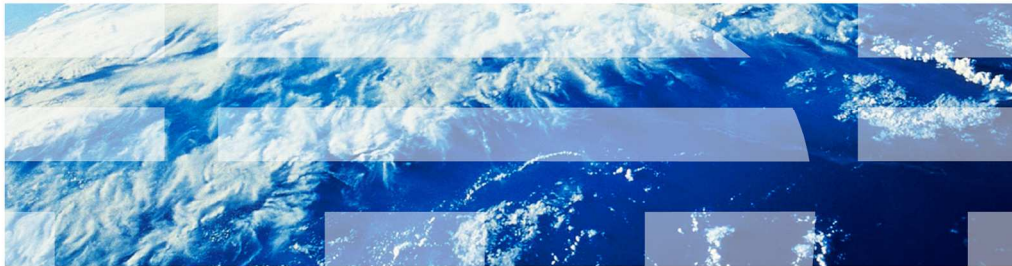IBM

IBM WebSphere Application Server V8.5

Multi-cell performance management

This presentation describes the multi-cell performance management feature included in IBM WebSphere Application Server V8.5

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This presentation will provide an overview of Multi-cell performance management, illustrate an example usage scenario involving Multi-cell star topology and how to configure it. It will provide a summary of the information covered, and finally provide additional resources for this topic.

Overview

Multi-cell performance management

This section will discuss the overview of multi-cell star topology performance management.

Multi-cell performance management overview and advantages

- Intelligent Management helps manage the performance of the multi-cell topology

- Performance of multiple cells is managed as a single unit

- Applies to server virtualized environments and non-virtualized environments

- A single point of entry to all cells

- Adding/removing cells is dynamic
    - No processes restarts needed
    - Core group bridges are not needed

- Monitor Performance and goal data from a single report page

Multi-cell performance management

Based on customer business needs or WebSphere Application Server V8.5 administration purposes you can choose a multi cell topology instead of a large single cell topology. The intelligent management feature of WebSphere Application Server V8.5 helps manage the performance of the multi cell topology in order to avoid over provisioning of resources such as processor and memory utilization.

In a stacked environment, where multiple cells share physical hardware, The intelligent management feature manages multiple cells as a single unit to avoid over provisioning of resources such as CPU and memory utilization. From a functional perspective, the performance management aspects of the intelligent manager feature, such as dynamic clusters, overload protection and others, operates on multiple cells of the same hardware in the same way that performance management operates in a single cell.

This star topology is applicable to server virtualized environments such as AIX LPARs/WPARs, zLinux, VMware, and Solaris Zones, and non-virtualized environments in which multiple cells share the same physical hardware.

In the Star Topology, placing the On Demand Routers in the center cell provides a single point of entry to all cells. Suppose IBM HTTP Server or plug-in is in the demilitarized zone (DMZ) and the center cell is in the secure region (that is, there are firewalls between IHS/plug-in and the on demand router). In this topology, you can add or remove cells without having to reconfigure your firewall. Normally, you have to open new ports in your firewall to add a new cell.

Adding and removing cells is completely dynamic. With the star topology, you can add additional cells and additional physical hardware with ease whenever necessary. Processes do not require a restart when linking or unlinking a point cell to the center cell. Core group bridges are not needed.

Performance and goal data of all cells can be monitored from a single report page of the Deployment Manager of the center cell. This is discussed in more detail in upcoming slides.

WASV85_MCP.ppt

Usage scenario

Multi-cell performance management

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This section provides a usage scenario for this feature.

WASV85_MCP.ppt

Multi-cell star topology performance management

- A single cell is designated as the center-of-the-star cell while the other cells are point-of-the-star cells
- When cells share the same physical hardware, only the center cell makes performance management decisions (for example starting and stopping of application servers
- On demand routers in the center cell automatically route to application servers in the point cells
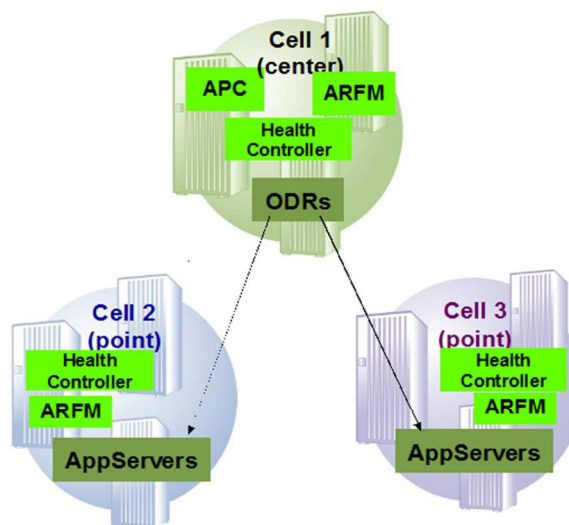
ARFM: Autonomic Request Flow Manager
APC: Application Placement Controller

In a multi-cell star topology where cells share the same physical hardware, a single cell is designated as the center cell while the other cells are designated as the point cells. In this topology, demonstrated here, the Application Placement Controller (APC) is only active in the center cell. As a result, only the center cell makes performance management decisions (example starting and stopping of application servers and avoiding over provisioning of resources).

The On Demand Routers (ODRs) are installed and running on Cell1, the center cell which provides a single point of entry to the cells. The two point cells, Cell2 and Cell3, contain the dynamic clusters and applications. The On Demand Routers in the center cell automatically route the work requests to dynamic cluster members across cells.

Configuring the star topology

Linking cells

- Use linkCells.sh/bat to link the center cell to a point cell.
    - If the cells are at the same WebSphere Application Server version:
      Run from the deployment manager of the center cell **OR**
      Run from the deployment manager of the point cell (not both)
    - If the cells are on different WebSphere Application Server versions
      run from the deployment manager at the lower level WebSphere Application Server version.

Marking cells

- This step is required if the cells share the same physical hardware
- Set the cell custom property 'CenterCell' to 'true' on the center cell and 'false' on all point cells.

Unlinking cells

- Use unlinkCells.sh/bat to unlink two cells:
    - # linkCells.sh centerHost:centerSoapPort:centerUID:centerPWD
      pointHost:pointSoapPort:pointUID:pointPWD

Linking and unlinking completely dynamic. No process restarts are required. No core groups or core group bridges.

Multi-cell performance management

To setup a star topology, you can use the linkCells script to automatically configure the overlay communication between multiple cells. The script can run either from the deployment manager of the center cell or from the point cell (not both) if they are running the same version of WebSphere Application Server. Otherwise, it must be run from the deployment manager running the oldest level of WebSphere Application Server.

If the cells share the same physical hardware, the next step is to configure the cells. Set custom property 'CenterCell' to 'true' on the center cell and 'false' on all point cells so that the Application Placement Controller (APC) is only active in the center cell designated to make all the placement decisions .

If needed, you can use the unlinkCells script to automatically disable the overlay communication between the Intelligent Management center cell and a point cell without disrupting service to the other cells in the environment. After you run the unlinkCells script, the on demand router (ODR) no longer routes work requests to the unlinked cell.

Linking and unlinking cells is completely dynamic. No process restarts and no core groups or core group bridges are required.

Summary

Multi-cell performance management

This section contains a summary for multi-cell star topology performance management.

Summary

- Manage the performance of your multi-cell topology as single unit and avoid over-provisioning
- Linking and unlinking cells is completely dynamic

The intelligent management feature of WebSphere Application Server V8.5 helps you manage the performance of a multi-cell topology as a single unit and avoid over-provisioning. The process of linking and unlinking cells is completely dynamic.

References

- Configuring multi-cell performance management:
  - http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/topic/com.ibm.websphere.wve.doc/ae/twve_mcpconfig.html

- Manually disabling communication between multiple cells:
  - http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/topic/com.ibm.websphere.wve.doc/ae/twve_manunlink.html

Multi-cell performance management

For additional information, see these references.

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