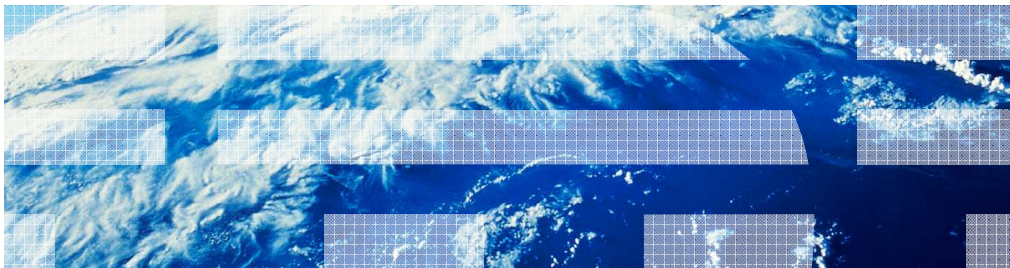


IBM WebSphere Application Server V8.5

Health management



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This presentation describes support for creating Health Policies included in IBM WebSphere Application Server V8.5

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These are the topics that are covered in this presentation.

Overview

This presentation will cover configuring health policies in WebSphere Application Server version 8.5

Health management

- Policy driven approach to monitoring and managing servers in an enterprise environment
- Health Policy
 - Health conditions define what needs to be monitored
 - Health actions are actions that need to be taken when health conditions are not met
- Uses Health controller to check environment at every control cycle

Health management is the process by which Intelligent Management dynamic operations monitor and manage servers to preserve an optimal server environment.

The application server health management feature is used to monitor the status of your application servers, and detect and respond to problem areas before an outage occurs. You can manage the health of your application serving environment with a policy-driven approach that enables specific actions to occur when monitored criteria is met. For example, when memory usage exceeds a percentage of the heap size for a specified time, health actions can run to correct the situation.

The health management subsystem continuously monitors the state of servers and the work that is performed by the servers in your environment. The health management subsystem consists of two main elements: the health controller and health policies.

The health controller runs on a control cycle. The control cycle length defines the amount of time between environment checks initiated by the health controller. At the end of the control cycle, the health controller checks the environment and generates runtime tasks to resolve any breaches in the health conditions.

You define the health policies, which include the health conditions that you want to monitor in your environment and the health actions to take if these conditions are not met.

This presentation discusses how to create a Health Policy which can then be monitored by Intelligent Management.

Usage scenario

This scenario will focus on configuring health policies and configuring the health controller.

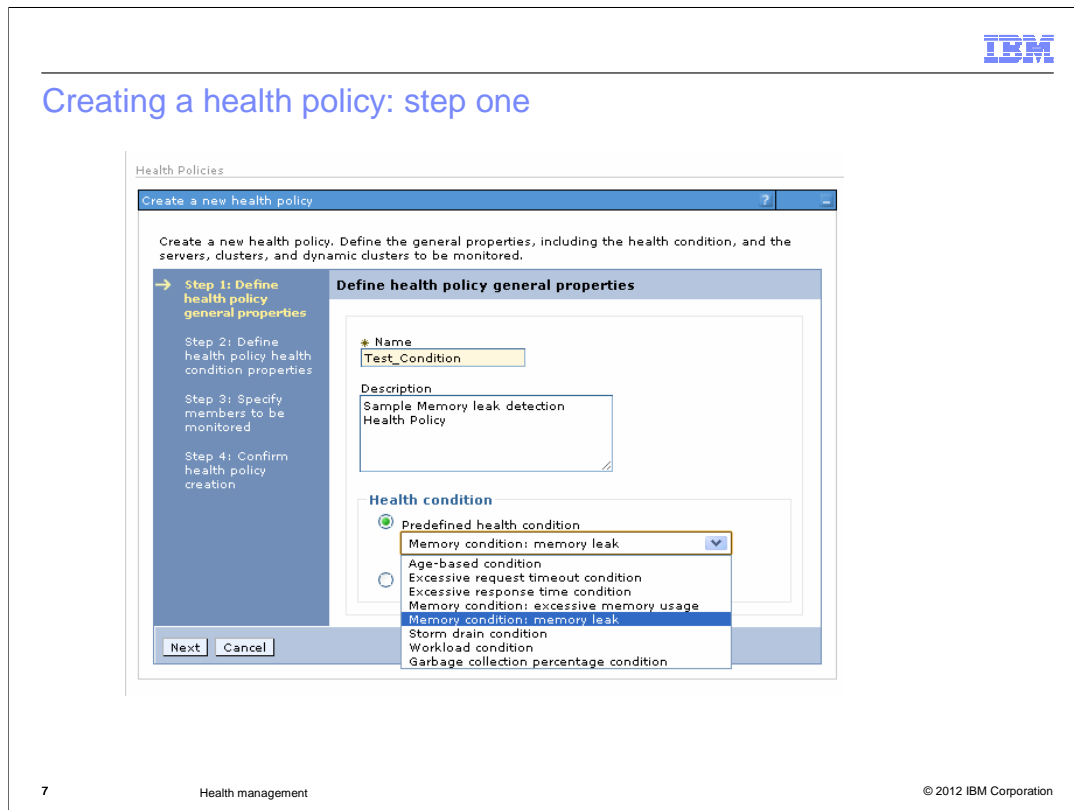
Creating a health policy

The screenshot displays the WebSphere administrative console interface. The top navigation bar includes 'WebSphere, software', 'Welcome admin', and 'Help'. The left sidebar contains a navigation tree with 'Operational policies' expanded to 'Health Policies'. The main content area is titled 'Health Policies' and includes a description: 'A health policy defines runtime behaviors to monitor and take corrective actions when these behaviors are determined to be present.' Below this, there are 'New...' and 'Delete' buttons, and a table with columns for 'Name', 'Reaction mode', and 'Description'. The table is currently empty, showing 'None' and 'Total 0'.

Health policies can be created and modified in the administrative console under the 'operational policies' menu item.

Use the 'New' button to configure a new health policy.

Creating a health policy: step one



Health policies can be created and modified in the administrative console under the 'operational policies' menu item.

When creating a new health policy, you first specify a name and choose the type of condition for which you want to monitor. In this example, a memory leak condition is configured.

Creating a health policy: step two

The screenshot shows the WebSphere software interface for configuring a health policy. The main window is titled "Define health policy health condition properties". On the left, there is a navigation pane with a tree view showing various system components. The central area displays a progress bar with four steps: "Step 1: Define health policy general properties", "Step 2: Define health policy health condition properties" (which is the current step), "Step 3: Specify members to be monitored", and "Step 4: Confirm health policy creation". The right-hand side of the window contains the configuration options for the memory condition. It includes a description: "The memory condition: memory leak will look for memory leaks for each server that is a member of the policy. It profiles the JVM heap size after a garbage collection has occurred and looks for trends of increased consumption. When an increasing trend is detected, the condition is triggered." Below this, there are "Health condition properties" with three radio buttons for "Detection level": "Fast (more false alarms)", "Standard (some false alarms)" (which is selected), and "Slow (fewer false alarms)". Under "Health management monitor reaction", there is a "Reaction mode" dropdown menu set to "Supervise". At the bottom, there is a table titled "Take the following actions when the health condition breaches" with columns for "Select", "Step", "Action", "Target server", and "Target node". The table contains two rows: Row 1: "1", "Take JVM heap dumps", "Sick server", "Node hosting sick server"; Row 2: "2", "Restart server", "Sick server", "Node hosting sick server".

This step shows the options that are available when configuring a memory leak condition. To more accurately detect a true leak, the system must wait for a longer memory growth pattern to develop. The three available detection levels give you the choice of balancing accuracy against detection speed. The action list specifies the actions that the health controller will take when the health policy is breached. The health controller will perform the actions sequentially in the order they appear in the list. The default reaction for a memory leak condition is to trigger a Java™ heap dump, then restart the server.

The condition-specific options and default action list vary for the different standard conditions. All health policy types allow you to select between Automatic and Supervised Reaction mode, add additional actions, and reorder the action list.

To add an additional action to the action list, select “Add Action.”

Add custom action: step two A

The screenshot displays the 'Create a new health policy' wizard in the WebSphere software interface. The wizard is currently at Step 2.1: Select action. The 'Predefined health policy action' section is selected, and a dropdown menu is open showing 'Restart server' as the chosen action. Other predefined actions include 'Take thread dumps', 'Take JVM heap dumps', 'Generate an SNMP trap', 'Place server in maintenance mode', 'Place server in maintenance mode and break affinity', and 'Place server out of maintenance mode'. The interface includes a navigation pane on the left with categories like 'Operational policies' and 'Health Policies', and a main content area with step-by-step instructions and navigation buttons.

You can specify one of the predefined health policy actions, or you can choose from the list of custom actions that have been defined. Predefined actions are always performed on the sick server.

Add custom action: step two A

The screenshot displays the WebSphere software interface for creating a new health policy. The main window is titled 'Create a new health policy' and contains a wizard with four steps:

- Step 1: Define health policy general properties
- Step 2: Define health policy health condition properties
- Step 2.1: Select action (highlighted)
- Step 2.2: Select target
- Step 2.3: Specify members to be monitored
- Step 2.4: Confirm health policy creation

In the 'Select action' step, the 'Custom health policy action' is selected, and the 'Create new custom action...' option is highlighted. The 'Select target' step shows the 'Target node' as 'xdblade06b03.rtp.raleigh.ibm.com' and the 'Target server' as 'TestClusterA_xdblade06b03.rtp.raleigh.ibm.com'.

At the bottom of the interface, the page number '10' is visible on the left, 'Health management' is centered, and '© 2012 IBM Corporation' is on the right.

If you have defined custom health policy actions, you can select one from the custom action list. For custom health policy actions you must also specify which specific server is the target of the action.

Creating a health policy: step two

Take the following actions when the health condition breaches

Select	Step	Action	Target server	Target node
<input type="checkbox"/>	1	Take JVM heap dumps	Sick server	Node hosting sick server
<input type="checkbox"/>	2	Restart server	Sick server	Node hosting sick server
<input type="checkbox"/>	3	invokeWSAdmin	TestClusterA_xdblade06b03.rtp.raleigh.ibm.com	xdblade06b03.rtp.raleigh.ibm.com
<input type="checkbox"/>	4	Generate an SNMP trap	Sick server	Node hosting sick server

You can create complex action plans with numerous steps which occur sequentially in the order specified.

Creating a health policy: step three

Health Policies [Close page](#)

Create a new health policy

Create a new health policy. Define the general properties, including the health condition, and the servers, clusters, and dynamic clusters to be monitored.

Step 1: Define health policy general properties

Step 2: Define health policy health condition properties

→ Step 3: Specify members to be monitored

Step 4: Confirm health policy creation

Specify members to be monitored

Select the members to monitor with this health policy. If you defined health rules that only apply to certain member types, this list of available members is automatically filtered based on your previously defined health rule for this health policy.

Memberships

Filter by:

Available for membership

TestClusterA
TestClusterC

Members of **Test_Condition**:

TestClusterB (Dynamic clusters)

Add >>

<< Remove

Previous Next Cancel

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After defining the condition and the reaction list, choose the members of your cell that should be monitored for this condition. The pop-up menu labeled 'Filter by' populates the 'Available for Membership' list with all resources of the chosen type. Use the 'Add' and 'Remove' buttons to choose which members should be monitored.

Creating a health policy: step four

Health Policies

Create a new health policy

Create a new health policy. Define the general properties, including the health condition, and the servers, clusters, and dynamic clusters to be monitored.

Step 1: Define health policy general properties

Step 2: Define health policy health condition properties

Step 3: Specify members to be monitored

→ **Step 4: Confirm health policy creation**

Confirm health policy creation

The following is a summary of your selections. Click Finish to complete the health policy creation. If there are settings you want to change, click Previous to review the health policy settings.

Options	Values
Name	Test_Condition
Description	Sample Memory leak detection Health Policy
Health condition	Memory condition: memory leak
Detection level	Standard (some false alarms)
Reaction mode	Supervise
Actions	Take JVM heap dumps Restart server invokeWSAdmin Generate an SNMP trap
Members	TestClusterB (Dynamic clusters)

Previous
Finish
Cancel

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Health management

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Step four displays the options you have chosen for this health policy. Click finish to create the policy. Remember that you must save your changes before this policy will take effect.

Configuring the health controller

Operational Policies → Autonomic Managers → Health Controller

Global Health Controller Parameters

These parameters are used to configure the global Health Controller parameters. These parameters are used by the Health Controller in cooperation with the defined Health Policies.

Configuration | Runtime

General Properties

- Enable health monitoring
- Control cycle length: 2 Minutes
- Maximum consecutive restarts: 3
- Restart timeout: 5 Minutes
- Minimum restart interval: 0 Minutes

Prohibited restart times

	Start	End	Sun	Mon	Tue	Wed	Thu	Fri	Sat
<input type="checkbox"/>	00 : 00	00 : 00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Apply OK Reset Cancel

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The health controller itself also has configurable properties, including how often it should run, and how many times in a row a server can be restarted. You can also define 'prohibited restart times', during which the health controller will not restart servers, even if they are in violation of a health policy. This can be useful for restricting restarts to non-peak times.

Summary

To summarize creating health policies...

Summary

- A health policy define a group of servers, a health condition, and a reaction
 - The reaction is triggered if a server reaches the defined condition
- Health policies are easily configured using a wizard in the administrative console

A health policy makes administering a group of servers easier by defining a health condition for which a group of servers should be monitored. A health policy can notify the operator or take automatic corrective action when the condition is detected. Health policies can be easily created using a wizard in the administrative console.



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