CA Nimsoft Monitor

Implementing CA Nimsoft Monitor for Citrix CloudPlatform powered by Apache CloudStack

October 2013
## Document Revision History

<table>
<thead>
<tr>
<th>Document Version</th>
<th>Date</th>
<th>Changes</th>
</tr>
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<tr>
<td>1.00</td>
<td>Oct. 1, 2013</td>
<td>First edition of this guide</td>
</tr>
<tr>
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<td>Dec. 11, 2013</td>
<td>Minor revisions in naming and structure</td>
</tr>
</tbody>
</table>
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Overview of the Process

Chapter 2: Pre-installation Preparation

Chapter 3: Install CA Nimsoft Monitor Server

Chapter 4: Deploy and Integrate the cloudstack Probe

Chapter 5: Deploy Other CA Nimsoft Monitor Probes (optional)

Chapter 6: Install the Unified Management Portal

Chapter 7: Configure CA Nimsoft Monitor for Integration
Create Accounts and Contacts in UMP
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Cloudstack Host Performance
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Chapter 1: Introduction

This document guides you through the implementation of CA Nimsoft Monitoring for a Citrix CloudPlatform Powered by Apache CloudStack environment, including multi-tenant situations. This document primarily uses the short name "CloudPlatform"; in describing reports, it conforms to the Unified Reporter interface in using the name "CloudStack".

Intended Audience

The intended audience can be characterized as technically skilled, independent, and proficient with CA Nimsoft implementations. High expertise in a Citrix CloudPlatform ecosystems is not expected, though a working knowledge will be important.

Those with some training or experience with Nimsoft Monitoring should find the process straightforward and natural.

Approach

This guide provides structure and ordering to the task of implementing CA Nimsoft monitoring in a Citrix CloudPlatform environment. It is not a detailed, step-by-step cookbook that covers all details. As you proceed, you will find numerous links to essential sections of core CA Nimsoft documents, which are not duplicated here. This document furnished detailed information only for steps that are unique to this solution.

Note: Users of CA Nimsoft products can find all documentation in the CA Nimsoft Product Information Library. This Guide provides many links directly to that library, but you may want to browse it for further information of interest to you.

This section contains the following topics:

Overview of the Process (see page 8)
Overview of the Process

Implementing CA Nimsoft Monitor in a Citrix CloudPlatform Environment

Major Tasks

- Pre-Installation Preparation
- Install CA Nimsoft Monitor Server
- Deploy the cloudstack Probe
- Deploy other Probes
- Install Unified Management Portal and configure for CloudStack
- Set Up Reporting

Instructions

- Details in Chapter 2
  - Review Getting Started Guide
  - Verify systems compatibility using the Compatibility Support Matrix
  - Collect Citrix administrative and access credentials, and know the CloudPlatform server IP address or hostname
  - Locate the custom CA Nimsoft integration components

- Details in Chapter 3
  - Obtain software and license
  - Follow instructions in the installation Guide
  - Configure CA Nimsoft Server
  - Discover your network (optional)
  - Obtain and install custom integration components

- Details in Chapter 4
  - Deploy and configure the cloudstack probe
  - Deploy the cloudstack_qos_processor package to the CA Nimsoft Monitor Server hub
  - Deploy the cloudstack_tenant package to the CloudStack server

- Details in Chapter 5
  - Deploy and configure virtualization, database, and general probes as needed

- Details in Chapters 6 and 7
  - Obtain software and license
  - Follow instructions in the installation Guide
  - Create accounts corresponding to CloudPlatform, and contacts for each
  - Create and configure logical groups in USM

- Details in Chapter 7
  - Follow instructions in the Unified Reporter Installation Guide
  - Install custom reports
  - Create UMP page to display reports
To prepare for integrating CA Nimsoft Monitor into your Citrix CloudPlatform environment:

1. If you are unfamiliar with the CA Nimsoft Monitor, you should review the Getting Started Guide for CA Nimsoft Monitor.

2. Verify system compatibility using the CA Nimsoft Monitor Compatibility Support Matrix.

3. Collect the Citrix administrative and access credentials and have them at hand for later configuration tasks.

4. Locate the custom CA Nimsoft integration components by visiting http://support.nimsoft.com/Files/Archive/CitrixCloudPlatform/index.htm. Download the files found there to a temporary location. You will use them in later steps.

Note: You must extract the content split_function.zip—a single file named split_file.sql—in order to use it. You will use the other ZIP files without extracting their content.
Chapter 3: Install CA Nimsoft Monitor Server

To install the CA Nimsoft Monitor Server in your environment:

1. Obtain the necessary licenses from license.fulfillment@nimsoft.com
2. Read the CA Nimsoft Monitor Server Release Notes.
3. Download the most current version of the CA Nimsoft Monitor Server from support.nimsoft.com.
4. Follow the instructions provided in the CA Nimsoft Monitor Server Installation Guide. To ensure a trouble-free experience, be sure to follow the pre-installation steps.
5. Use the CA Nimsoft Monitor Server Configuration Guide to set up your initial configuration.
6. (Optional) Allow the Nimsoft Monitor Server to discover your network, as described in the CA Nimsoft Monitor Discovery User Guide.
7. Use Infrastructure Manager to create a "CloudStack" group and import the cloudstack_qos_processor and cloudstack_tenant packages into it. See the Infrastructure Manager Guide for details. You will deploy them later.

Related Reading:

- The CA Nimsoft Monitor Infrastructure Manager Guide describes the Infrastructure Manager and its use.
- The CA Nimsoft Monitor Admin Console Guide describes the Admin Console—also available through the Unified Management Portal—and its use.
Chapter 4: Deploy and Integrate the cloudstack Probe

**Note:** Be sure you have deployed a robot to monitor the Apache CloudStack server as described in the "Nimsoft Client Installation" section of the CA Nimsoft Monitor Server Installation Guide.

Use Infrastructure Manager to deploy the cloudstack probe you obtained in Chapter 2 (see page 11) to the robot monitoring the Apache CloudStack server. **Note:** Do not use the probe found on the Nimsoft Archive, as it does not have the necessary customizations for this implementation!

Then follow the instructions in the [cloudstack probe 1.0 guide](#) to do the following:

1. Create one or more resources defining your Citrix CloudPlatform installation(s). You should use the Test button to confirm correct communication with the Apache CloudStack server.
2. Drag all of the predefined templates to the Auto Configurations node of the new resource(s).

Open a session of Infrastructure Manager, and do the following:

1. Under the Archive node, locate the CloudStack group you created earlier.
2. Drag the `cloudstack_qos_processor` to the Nimsoft Monitor Server hub and drop it there.
3. Drag the `cloudstack_tenant` object to the robot running on the CloudStack system and drop it there.
Chapter 5: Deploy Other CA Nimsoft Monitor Probes (optional)

You may want to deploy other probes to more fully monitor your Citrix CloudPlatform environment. In general, you will only perform a basic deployment of these probes. When applicable, you should apply the out-of-the-box monitoring templates. In other cases you may need to perform some site- or goal-specific configuration.

**Important:** The **cloudstack** probe is an essential component for monitoring Citrix CloudPlatform environments and the reports supplied in this solution. For special instructions on deploying that probe, see the section titled *Deploy the cloudstack Probe* (see page 15).

The following probes are likely to be desirable in various situations:

1. Follow the procedure for deploying probes described in the **probe deployment section** of the CA Nimsoft Monitor Infrastructure Manager Guide.

2. Configure each probe according to the instructions in that probe’s documentation; refer to the Notes below for any instructions specific to this implementation guide.

<table>
<thead>
<tr>
<th>Probe Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Probes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>net_connect</strong></td>
<td>The net_connect probe measures network connectivity that is based on “ping” (ICMP ECHO) and the TCP connections to a list of user-defined services. The service can be NetBIOS, Telnet, FTP, and HTTP. The probe supports the Nimsoft Monitor family of solutions by sending quality of service (QoS) messages.</td>
</tr>
<tr>
<td><strong>rsp</strong></td>
<td>The rsp probe monitors system metrics. The rsp probe collects performance data in an agentless manner without having to install proprietary software on the system.</td>
</tr>
<tr>
<td><strong>snmpget</strong></td>
<td>The snmpget probe performs SNMP GET queries to selected SNMP devices transforming the query result into alarms and/or quality of service (QoS) messages for SLA purposes. You can configure the profile to your requirements in order to integrate the device seamlessly into the Nimsoft Monitor solution. Browse the remote SNMP agent for the information you require and create monitoring solutions by drag-and-drop operations.</td>
</tr>
<tr>
<td><strong>snmpfd</strong></td>
<td>The snmpfd probe lets you receive SNMP trap messages from other monitoring tools. You can then generate alarms that are based on those messages.</td>
</tr>
</tbody>
</table>
### Overview of the Process

<table>
<thead>
<tr>
<th>Probe</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>snmptoolkit</strong></td>
<td>The snmptoolkit probe lets you configure DTA files that enable you to create SNMP-based probes with minimal time and effort. You can configure the DTA file to display a dynamic user interface with resource hierarchy and grouping. For more information on DTA files, see the Working with DTA Files section.</td>
</tr>
<tr>
<td><strong>tomcat</strong></td>
<td>The tomcat probe monitors Apache Tomcat servers via the JMX interface (jsr160). Apache Tomcat is the servlet container that is used in the official Reference Implementation for the Java Servlet and JavaServer Pages technologies.</td>
</tr>
<tr>
<td><strong>Virtualization Probes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>hyperv</strong></td>
<td>The hyperv probe is used for monitoring the health and performance of the Microsoft Hyper-V servers. The probe monitors the host operating system and its corresponding hypervisor system (Windows 2008/2012 Server + Hyper-V / Windows 2008 Server Core + Hyper-V), as well as the Windows virtual machines that are running on the host through the Host Operating System. The probe defines the alarms and their corresponding threshold values.</td>
</tr>
<tr>
<td><strong>rhev</strong></td>
<td>The rhev probe collects and stores data on Storage domain, clusters and their contained components. Within a Red Hat Enterprise Virtualization environment you can monitor multiple tenants for which you have access permissions.</td>
</tr>
<tr>
<td><strong>vmware</strong></td>
<td>Use the vmware probe to monitor VMware virtualization implementations in your Citrix CloudPlatform environment.</td>
</tr>
<tr>
<td><strong>xenserver</strong></td>
<td>The xenserver probe monitors the Citrix XenServer host status as well as the health and status of VMs hosted within the environment. It uses remote management interfaces for data collection and uses APIs and gateways to integrate Citrix XenServer monitoring with your data center tools and wider environment. The xenserver probe provides discovery of virtual elements within the environment (including resource pools, physical hosts, and VM guests), configuration and deployment of monitoring to VM guests based on VM guest parameters, templates for monitoring data, and alarms tailored to Citrix XenServer</td>
</tr>
<tr>
<td><strong>Database Probes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>mysql</strong></td>
<td>The mysql probe monitors the internal performance and space allocation throughout the MySQL database. It extracts vital information about your MySQL Servers using MySQL API calls as well as selected SQLs and presents it to the database-administrator as alarms and/or as a report. An extensive range of checkpoints can be selected and individually scheduled to meet the needs of specific monitoring requirements.</td>
</tr>
<tr>
<td>sql_response</td>
<td>The sql_response probe executes SQL queries using ADO or ODBC connectivity. The probe then evaluates the response time, number of returned rows, and returned value.</td>
</tr>
</tbody>
</table>
Chapter 6: Install the Unified Management Portal

To install the CA Nimsoft Unified Management Portal:

1. Obtain the necessary licenses from license.fulfillment@nimsoft.com
2. Download the most current version of the CA Nimsoft Unified Management Portal from support.nimsoft.com.
4. Follow the instructions provided in the CA Nimsoft Monitor Unified Management Portal Installation Guide.

Related Reading:
- The Unified Management Portal Multiple Server Configuration Guide
- The Unified Management Portal HTTPS Implementation Guide
- The Unified Management Portal DMZ Guide

Note: The online help for Unified Management Portal can be accessed directly from the UMP interface, or from the User Information link in the CA Nimsoft Product Information Library.
Chapter 7: Configure CA Nimsoft Monitor for Integration

This section describes the actions required to set up UMP for data access by tenants.

This section contains the following topics:

Create Accounts and Contacts in UMP (see page 23)
Create and Configure Groups in UMP (see page 24)

Create Accounts and Contacts in UMP

Note: The following procedure works only if the cloudstack probe has been deployed and configured as recommended. See Deploy the cloudstack Probe (see page 15) for details.

Follow these steps:

Note: See the Account Admin section of the UMP User Help for detailed instructions for creating accounts and contacts.

1. Log in to UMP on an account with administrator privileges.
2. Open Configuration -> Accounts and Contacts.
3. Use the Add Account button ( beside the Account drop-down list) to create an account for each tenant. Use Account Names that logically pair with the Ownership (origin) you select for each account. The Account Name and Ownership fields are required; all other field are optional.
4. For each new Account:
   
a. Select the account in the list of Accounts.
   
b. Use the Add Contact button (🔗, at the bottom of the list of Accounts) to create one or more contacts for the Account. In most cases, you will want to assign the Operator ACL to these contacts.

Create and Configure Groups in UMP

Open the Unified Service Manager portlet, and create new Groups as desired. You have considerable flexibility in how you define and use Groups, and will want to spend some time designing a logical and useful strategy for each situation. You will probably want to create a container for CloudStack, with a sub-group for each account. You may also want sub-groups for databases, VMs, and so on.

See the Working with Groups section of the UMP User Help for detailed information and examples on how to create, manage, and use Groups.

Note: When you select the Account for a new group, you will need to specify the origin for that group at the bottom of the Edit Group dialog:

![Origin Selection](image)
Chapter 8: Set Up Reporting

To set up reporting from CA Nimsoft Monitor for your Citrix CloudPlatform environment:

1. Read the CA Nimsoft Monitor Unified Reporter Quick Start Guide. It contains important concepts about how Unified Reporter integrates with CA Nimsoft Monitor Server and the Unified Management Portal. It covers, in a concise way, information found in the next two references.

   **Note:** For the purposes of this integration, you do not need to set up iReport. If you want to edit the supplied reports at some point, you will need to set up iReport.


4. Log into UMP as a nimbus user with the "Portal Administration" permission set its ACL.

5. Navigate to Unified Reports (Reports > Unified Reports).

6. In the Unified Reports portlet, open the Manage menu and click Server Settings.
7. Under **Settings**, click **Import**.

8. Under **Import**, leave the import options set as they are, and click the **Choose File** button.

9. Locate the ZIP file you downloaded that contains the custom reports. Then click **Open**. This installs the custom reports.
10. Open Microsoft SQL Server Management Studio.

11. Navigate to the Nimsoft database.

12. Use File >Open to open the split_function.sql file.

13. Right-click in the content panel—where the file is displayed—to open the context menu, and click Execute. This runs the SQL commands in the file against your Nimsoft database.


15. Create a page for your Citrix CloudPlatform monitoring reports, and add the Unified Reporter portlet to it, as described in the Unified Management Portal online help.

You should now be able to view your Citrix CloudPlatform monitoring reports. If not, there is probably a security setting you need to change. See Troubleshooting Reports (see page 28) for details.
Troubleshooting Reports

If you are unable to see the Cloudstack reports in the Unified Reports portlet, you must change a security property.

Follow these steps:

1. Open the following file in a text editor (for example, Notepad):
   ```
   C:\Program Files (x86)\Nimsoft\probes\wasp\webapps\jasperserver-pro\WEB-INF\classes\esapi\security-config.properties
   ```

2. Find the parameter that turns sql validation on or off. It is near the top of the file, and reads as follows:
   ```
   security.validation.sql.on=true
   ```

3. Change the value of this parameter to `false`, as follows:
   ```
   security.validation.sql.on=false
   ```

4. Save the file.

5. Restart the jasperserver-pro webapp or the entire wasp to make the change effective. You should now be able to see the reports.
Appendix A: Available Reports

Reports are available for several levels of the resource hierarchy: Zones, Pods, Hosts, and Virtual Machines.

This section contains the following topics:

Cloudstack Zone Performance (see page 29)
Cloudstack Pod Performance (see page 30)
Cloudstack Host Performance (see page 31)
Cloudstack VM Performance (see page 32)

Cloudstack Zone Performance

The following table describes entries in a Cloudstack Zone Performance report.

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone Name</td>
<td>The name of the Zone to which data in the row pertains. Each name is a link to Cloudstack Pod Performance report</td>
</tr>
<tr>
<td>CPU Used %</td>
<td>The percentage of CPU in this zone used over the last hour.</td>
</tr>
<tr>
<td>Memory Used %</td>
<td>The percentage of memory in this zone used over the last hour.</td>
</tr>
<tr>
<td>Storage Used %</td>
<td>The percentage of storage in this zone used over the last hour.</td>
</tr>
<tr>
<td>Secondary Storage Used %</td>
<td>The percentage of secondary storage in this zone used over the last hour.</td>
</tr>
</tbody>
</table>

Cloudstack Zone Performance

Fri, 27 Sep 2013 10:30:30 -0400

<table>
<thead>
<tr>
<th>Zone Name</th>
<th>CPU Used %</th>
<th>Memory Used %</th>
<th>Storage Used %</th>
<th>Secondary Storage Used %</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMEA</td>
<td>0.1756000</td>
<td>0.2110000</td>
<td>0.3522000</td>
<td>0.0000000</td>
</tr>
<tr>
<td>North America</td>
<td>0.274500</td>
<td>0.3560000</td>
<td>0.0000000</td>
<td>0.0000000</td>
</tr>
<tr>
<td>Alpha</td>
<td>0.2759000</td>
<td>0.5908000</td>
<td>0.0000000</td>
<td>0.7985000</td>
</tr>
</tbody>
</table>
## Cloudstack Pod Performance

The following table describes entries in a Cloudstack Pod Performance report.

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone</td>
<td>The name of the Zone to which the Pod named in this row belongs (see Pod, next)</td>
</tr>
<tr>
<td>Pod</td>
<td>The name of the Host to which data in the row pertains. Each name is a link to Cloudstack Host Performance report for the named Host.</td>
</tr>
<tr>
<td>CPU Used %</td>
<td>The percentage of CPU in this Pod used over the last hour.</td>
</tr>
<tr>
<td>Memory Used %</td>
<td>The percentage of memory in this Pod used over the last hour.</td>
</tr>
<tr>
<td>Storage Used %</td>
<td>The percentage of storage in this Pod used over the last hour.</td>
</tr>
</tbody>
</table>
**Cloudstack Host Performance**

When you request a Cloudstack Host Performance report, an Input Controls dialog prompts you to select a time period over which the report data should be calculated: the past hour, the past day, or the past week. You have three choices:

**Apply**

Use the selected time period to open the report, but do not close the Input Controls dialog.

**OK**

Use the selected time period to open the report, and close the Input Controls dialog.

**Reset**

Reset the time-period selector to its default

**Cancel**

Exit the dialog without making further selection. If a report is currently displayed, it remains. If not, no report is presented.

**Save**

Save the selection under a specific name. This name will then be an option presented on the Input Controls dialog for this report in the future.

The following table describes entries in a Cloudstack Host Performance report.

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster</td>
<td>The name of the Cluster to which the Host named in this row belongs (see Host, next).</td>
</tr>
<tr>
<td>Host</td>
<td>The name of the Host to which data in the row pertains. Each name is a link to Cloudstack VM Performance report for the named VM.</td>
</tr>
<tr>
<td>CPU Used %</td>
<td>The average percentage of this Host's CPU used over the selected time period.</td>
</tr>
<tr>
<td>Memory Used MB</td>
<td>The average amount of this Host's memory used over the selected time period.</td>
</tr>
<tr>
<td>Network Read (kb/s)</td>
<td>The average inbound network activity to this Host over the selected time period.</td>
</tr>
<tr>
<td>Network Write (kb/s)</td>
<td>The average outbound network activity from this Host over the selected time period.</td>
</tr>
</tbody>
</table>
Cloudstack VM Performance

When you request a Cloudstack VM Performance report, an Input Controls dialog prompts you to select a time period over which the report data should be calculated: the past hour, the past day, or the past week. You have three choices:

**Apply**

Use the selected time period to open the report, but do not close the Input Controls dialog.

**OK**

Use the selected time period to open the report, and close the Input Controls dialog.

**Reset**

Reset the time-period selector to its default
Cancel

Exit the dialog without making further selection. If a report is currently displayed, it remains. If not, no report is presented.

Save

Save the selection under a specific name. This name will then be an option presented on the Input Controls dialog for this report in the future.

The following table describes entries in a Cloudstack VM Performance report.

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>The name of the Host to which the VM named in this row belongs (see VM name, next).</td>
</tr>
<tr>
<td>VM name</td>
<td>The name of the VM to which data in the row pertains.</td>
</tr>
<tr>
<td>Status</td>
<td>The status of the VM. The possible values are Online and Offline.</td>
</tr>
<tr>
<td>CPU Used %</td>
<td>The average percentage of this VM's CPU used over the selected time period.</td>
</tr>
<tr>
<td>Network Read (kb/s)</td>
<td>The average inbound network activity to this VM over the time period selected.</td>
</tr>
<tr>
<td>Network Write (kb/s)</td>
<td>The average outbound network activity from this VM over the time period selected.</td>
</tr>
</tbody>
</table>
### Citrix Cloudstack Virtual Machines

<table>
<thead>
<tr>
<th>Host</th>
<th>VM Name</th>
<th>Status</th>
<th>CPU Used %</th>
<th>Network Read (kB/s)</th>
<th>Network Write (kB/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexh1</td>
<td>null</td>
<td>Online</td>
<td>2.156</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
<tr>
<td>Alexh1</td>
<td>null</td>
<td>Online</td>
<td>2.179</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
<tr>
<td>Iodsmazz04</td>
<td>H-12-VM-Win7-db</td>
<td>Online</td>
<td>1.000000</td>
<td>-0.000000</td>
<td>-1.000000</td>
</tr>
<tr>
<td>Iodsmazz04</td>
<td>i-2-18-VM-Win7vm1</td>
<td>Online</td>
<td>1.000000</td>
<td>-1.000000</td>
<td>-1.000000</td>
</tr>
<tr>
<td>Iodsmazz04</td>
<td>i-2-18-VM-WIN1uxw4</td>
<td>Online</td>
<td>1.000000</td>
<td>-1.000000</td>
<td>-1.000000</td>
</tr>
<tr>
<td>Iodsmazz04</td>
<td>i-2-18-VM-WIN1uxw1</td>
<td>Online</td>
<td>1.000000</td>
<td>-1.000000</td>
<td>-1.000000</td>
</tr>
<tr>
<td>172.16.3.223</td>
<td>H-5-42-Aooc1GB1Vmx-1</td>
<td>Online</td>
<td>24.055571</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
<tr>
<td>172.16.3.223</td>
<td>H-5-42-Aooc1GB1Vmx-2</td>
<td>Online</td>
<td>24.055571</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
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