CA Nimsoft Monitor

Probe Guide for CPU, Disk and Memory
cdm v4.7 series

Legal Notices

Contact CA Nimsoft

Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information that you need for your Home Office, Small Business, and Enterprise CA Technologies products. At http://ca.com/support, you can access the following resources:

- Online and telephone contact information for technical assistance and customer services

- Information about user communities and forums

- Product and documentation downloads

- CA Support policies and guidelines

- Other helpful resources appropriate for your product

Providing Feedback About Product Documentation

Send comments or questions about CA Technologies Nimsoft product documentation to nimsoft.techpubs@ca.com.

To provide feedback about general CA Technologies product documentation, complete our short customer survey which is available on the CA Support website at http://ca.com/docs.

Documentation Changes

This table describes the version history for this document.

Version	Date	What's New?
4.7	June 2013	Online help restructured for consistency with other probe documentation.
4.7	February 2013	Initial documentation release to cover addition of this probe's web-based GUI (previously Infrastructure Manager and raw configure were the only configuration options). Version 4.7 of the cdm probe added these features: ■ Timeout option to avoid hang situations ■ Information for memory and paging properties ■ Updated information for CPU usage options and space monitoring ■ Information for memory usage graphs ■ Support for Debian and Ubuntu Linux distributions.

Related Documentation

Documentation for other versions of the cdm probe

The Release Notes for the cdm probe

Monitor Metrics Reference Information for CA Nimsoft Probes (http://docs.nimsoft.com/prodhelp/en_US/Probes/ProbeReference/index.htm)

Contents

Chapter 1: cdm Overview

The Nimsoft CPU, Disk and Memory probe (cdm) monitors load and usage on critical system resources. The probe provides two main benefits:

- Generates alarms--based on configured threshold values, it generates alarms that can trigger corrective action immediately.

- Generates trending data--quality of Service (QoS) data is measured and sent to the **data_engine** probe, which processes it and stores it in the database. This historical data facilitates capacity planning for monitored systems in the IT environment. For example, you can see how disks are filling up over time, plan batch jobs based on CPU utilization, and upgrade systems that consistently operate near capacity.

Related Documentation

For related information that may be of interest, see the following material:

Related Documentation

Documentation for other versions of the cdm probe

The Release Notes for the cdm probe

User documentation for the Admin Console

Monitor Metrics Reference Information for CA Nimsoft Probes (http://docs.nimsoft.com/prodhelp/en_US/Probes/ProbeReference/index.htm)

Supported Platforms

The cdm probe supports the same set of operating systems and databases as supported by the Nimsoft Server solution. Please refer to the Nimsoft Compatibility Support Matrix for the latest information on supported platforms.

See also the Support Matrix for Nimsoft Probes, for additional specific information on the cdm probe.

Preconfiguration Requirements

The cdm probe requires the following software environment:

- Nimsoft Monitor Server 6.5 or later

- Nimsoft Robot 5.70 or later

- Java Virtual Machine 1.6 or later (typically installed with NMS)

- Any one of the following Web Browsers (for configuration of probe attribute within Admin Console):

  - Google Chrome

  - Mozilla Firefox 15.0 or later

Considerations

- You can configure the probe to monitor shared disks as well as local disks. When monitoring shared disks (such as NFS mounts) over slow network links, be aware that monitoring response may be slow as well.

- If *quota* is turned on for a disk on a Windows system, the size reported is the total size, and the free disk space is calculated after quota.

Chapter 2: cdm Configuration Details

You can configure the cdm probe by selecting the green icon next to the probe icon in Admin Console and choosing **Configure**. This opens the cdm configuration dialog.

The left navigation pane displays the configurable items on the physical machine being monitored. To view all of the configuration nodes, expand the tree structure in the left navigation pane.

At the root level is cdm (see page 10), where you can configure the fundamental attributes for the cdm probe itself.

The next level down is the host on which cdm is installed, and which it is monitoring. Here you can enable quality of service (QoS) metrics and alarms that relate directly to host itself, separately from its disk, memory, and processor resources.

Beneath the host are three sections, one each for Disks (see page 12), Memory (see page 16) and Processor (see page 19) respectively. The Disks section contains a subnode for each disk that is mounted and monitored on the host.

Node	Subnode	Available settings
cdm		Probe information and logging attributes; view alarm messages
	<hostname>	Computer Uptime and System Reboot alarms for the cdm host system
Disks		Defaults applied to all newly-discovered disks
	<diskname1>	'disk missing' alarm message attributes
	Disk Usage	Usage alarms and threshold values for the <diskname1> disk
	Disk Usage Change	Change in usage alarms and threshold values for <diskname1>
	<diskname2>	Settings for <diskname2> (same as above)
Memory		Memory attributes (interval, samples, QoS interval, QoS target)
	Memory Paging	Alarms and threshold values
	Physical Memory	Alarms and threshold values
	Swap Memory	Alarms and threshold values
	Total Memory	Alarms and threshold values
Processor		Processor attributes (CPU configuration, queue length)
	Individual CPU	Alarms and threshold values
	Total CPU	Alarms and threshold values

This section contains the following topics:

Probe Configuration

Navigation: cdm (top-level node)

The Probe Configuration section allows you to configure the log level and log size. You can also specify if you want to send alarms for each sample, send the short name for the QoS source and allow the QoS source to be the target.

View or modify the following values based on your requirements:

cdm > **Probe Information**

This section provides basic probe information and is read-only.

cdm > **General Configuration**

This section covers general probe configuration.

■ Log Level: Sets the amount of detail to be logged to the log file. Log as little as possible during normal operation to reduce disk consumption, and increase the level of detail when debugging.

Default: 1 - Error

■ Log size (KB): Sets the maximum size of the log. You can enter a number in this field or use the up and down arrows to increment the number by 5.

Default: 100 (KB)

■ Send alarm on each sample: The probe generates an alarm on each sample where there is a threshold breach. If not selected, the probe waits for the number of samples (specified in **Samples** in the **cdm > Disk Configuration**, **cdm > Memory** or **cdm > Processor** configuration screens) before sending the alarm. The sample count is cleared on de-activation of the probe.

Default: checked

■ Send short name for QoS source: Sends only the host name. If not selected, sends the full host name with domain.

Default: unchecked

■ Allow QoS source as target: A number of QoS messages by default use the host name as their target. If selected, the target name is changed to be the same as the QoS source name.

Default: unchecked

cdm > **Messages**

This section provides a listing of alarm messages issued by the cdm probe and is read-only. Selecting a row displays additional alarm message attributes below the main list, including Message Token, Subsystem, and I18N Token.

Navigation: cdm > <hostname> (first sub-level node)

Beneath the root (cdm) level, you can configure whether or not to enable computer uptime QoS data and system reboot alarms.

cdm > <probe hostname> **Computer Uptime**

■ Publish Data: Publishes computer uptime to the Nimsoft bus; unchecked by default. All other fields are read-only.

cdm > <probe hostname> **System Reboot**

■ Publish Alarms: Publishes system reboot alarms to the Nimsoft bus; unchecked by default

■ Alarm Message for Detected Reboot: Choose the desired alarm message from the pull-down menu.

Disks

The left navigation pane displays all disks on your system under the **Disks** node. You can configure global defaults, and set attributes for each individual disk.

- Disks - Set *default* disk information applied when disks are added/monitored

- <diskname> Disk Missing Configuration (see page 14) - Configure alarm information sent in the event a specific disk is 'missing' (not mounted or available).

  Each named disk can have its attributes set individually:

  - Disk usage (see page 14) - Set thresholds and alarm messages for disk usage in MB and percent

  - Disk usage change (see page 15) - Set thresholds and alarms for changes in disk usage

  - Inode usage (see page 15) (UNIX platforms only) - Set alarms and inode usage by number of files (count) and percent.

At the **Disks** level, set or modify the following global values based on your requirements:

Navigation: cdm > **Disks** > **Disk Configuration**

Note that the first three fields are common to all three probe configuration sections (Disks, Memory, Processor).

- Interval (minutes): Specify the time in minutes for how often the probe retrieves sample data.

- Samples: Allows you to specify how many samples the probe should keep in memory to calculate average and threshold values.

  Note: If you did not select the **Send alarm on each sample** checkbox in the Probe Configuration pane, the probe waits for the number of samples (specified in this field) before sending the alarm.

- QoS Interval (Multiple of 'Interval'): Allows you to specify the time in minutes for how often the probe calculates QoS. For example, If the interval is set to 5 minutes and number of samples is set to 5, the CPU utilization reported will be the average for the last 25 minutes.

- Ignore Filesystems: Defines the filesystem to be excluded from monitoring. For example, specifying the regular expression *C:* in this field results in the probe *not* monitoring disk usage on disk C.

cdm > **Disks** > **Disk Missing Defaults**

- Disk Missing Alarm: Select the checkbox if you want to receive an alarm when a monitored disk becomes unavailable.

- Alarm Message: Select the message to send when a monitored disk is unavailable.

cdm > **Disks** > **Disk Usage Change Defaults**

- Type of Change: Indicates the type of change you want to monitor: increasing, decreasing, or both.

- Change Calculation: Indicates how you want to calculate the disk change. Select one of the following:

  - Summarized over all samples - The change in disk usage is the difference between the latest sample and the first sample in the set of samples specified in "Samples" (configured in the Disk Configuration section located at the top of the right-hand pane).

  - Between each sample - The change in disk usage will be calculated after each sample is collected.

  Note: The following six attributes are common to many probe configuration fields in the cdm user interface. Here they pertain to disk usage, elsewhere they pertain to memory or CPU usage, depending on context.

  – Enable High Threshold: Select this checkbox to enable the high threshold for disk usage change. This threshold is evaluated first and if it is not exceeded, then the low threshold is evaluated.

  – Threshold: The value in Mbytes of the free space on the disk. When disk free space gets below this value, an alarm message is sent.

  – Alarm Message: The alarm message to be sent when the free space on the disk is below the high threshold.

  – Enable Low Threshold: Select this checkbox to enable the low threshold for disk usage change. This threshold is evaluated only if the high threshold has not been breached.

  – Threshold: The value in Mbytes of the free space on the disk. When disk free space gets below this value, an alarm message is sent.

  – Alarm Message: The alarm message to be sent when the free space on the disk is below the low threshold.

- QoS for Disk Change: Select this checkbox to measure the QoS for Disk Change.

cdm > **Disks** > **Disk Usage Defaults**

- Publishing Alarm Based on: Indicates the usage measurement units. Select either percent or Mbytes.

- Thresholds and alarms attributes are the same as listed above in **Disk Usage Change Defaults.**

- QoS for Disk Usage MB: Select this checkbox to measure the QoS for Disk Usage MBytes.

- QoS for Disk Usage Percent: Select this checkbox to measure the QoS for Disk Usage percent.

cdm > **Disks** > **Inode Usage Defaults**

- Inode Usage Alarm Based on Threshold for: Indicates the usage measurement units. Select either percent or Mbytes.

- Other configuration attributes are the same as listed above in **Disk Usage Defaults.**

<diskname> Disk Missing Configuration

At this level you can individually configure the 'disk missing' settings for each disk listed under the **Disks** node.

Navigation: **cdm** > **Disks** > <diskname1> **Disk Missing**

- Publishing Data: Select this checkbox to send the QoS data.

- Publishing Alarms: Select this checkbox to send an alarm if the connection to the disk fails.

- Alarm Message: The alarm message sent when the connection to the disk fails.

<diskname> Disk Usage Configuration

You can configure disk usage individually for each monitored disk (diskname1, diskname2, etc). You can set attributes for alarm thresholds, disk usage (%) and disk usage (MB).

Navigation: **cdm** > **Disks** > <diskname1> **Disk Usage > Alarm Thresholds**

- Send Alarm Based on Threshold for: Indicates the usage measurement units. Select either percent or Mbytes.

- Thresholds and alarms attributes are the same as listed in Disk Usage Change Defaults (see page 13).

cdm > **Disks** > <diskname1> **Disk Usage** > **Disk Usage (%)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

cdm > **Disks** > <diskname1> **Disk Usage** > **Disk Usage (MB)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

<diskname> Disk Usage Change Configuration

You can individually configure thresholds for, and alarm messages sent with, changes in disk usage for each monitored disk.

Navigation: **cdm** > **Disks** > <diskname1> **Disk Usage Change** > **Disk Usage Change (MB)**

■ Publishing Data: Select this checkbox to send the QoS data.

  ■ Type of Change: Indicates the type of change you want to monitor: increase, decrease, or both.

■ Change Calculation: Indicates how you want to calculate the disk change. Select from the drop-down menu either of the following:

  ■ Summarized over all samples - The change in disk usage is the difference between the latest sample and the first sample in the "samples window," which is configured at the Disk Configuration level.

  ■ Between each sample - The change in disk usage is calculated after each sample is collected.

■ Thresholds and alarms attributes are the same as listed under Disk Usage Change Defaults (see page 13).

<diskname> Inode Usage Configuration

You can individually configure inode usage for each monitored disk on a Unix host.

Navigation: **cdm** > **Disks** > <diskname1> **Inode Usage > Alarm Thesholds**

■ Inode Usage Alarm Based on Threshold for: Indicates the usage measurement units. Select either percent or count.

■ Thresholds and alarms attributes are the same as listed in Disk Usage Change Defaults **(see page 13).**

cdm > **Disks** > <diskname1> **Inode Usage (%)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

cdm > **Disks** > <diskname1> **Inode Usage (Count)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Memory

The left navigation pane displays a system memory node and allows you to configure attributes for:

■ Memory Paging (see page 17)

■ Physical Memory (see page 17)

■ Swap Memory (see page 18)

■ Total Memory (see page 18)

At the **Memory** level, set or modify the following global memory attributes based on your requirements.

Navigation: cdm > **Memory** > **Memory Configuration**

Note that the first three fields are common to all three probe configuration sections (Disks, Memory, Processor).

■ Interval (minutes): Specify the time in minutes for how often the probe retrieves sample data.

■ Samples: Allows you to specify how many samples the probe should keep in memory to calculate average and threshold values.

   Note: If you did not select the **Send alarm on each sample** checkbox in the Probe Configuration pane, the probe waits for the number of samples (specified in this field) before sending the alarm.

■ QoS Interval (Multiple of 'Interval'): Allows you to specify the time in minutes for how often the probe calculates QoS. For example, If the interval is set to 5 minutes and number of samples is set to 5, the CPU utilization reported will be the average for the last 25 minutes.

■ Set QoS Target as 'Memory': Select this checkbox if you want the QoS target to be set to Memory.

Memory Paging Configuration

Navigation: **cdm** > **Memory** > **Memory Paging** > **Alarm Thresholds**

■ Send Alarm Based on Threshold for: Indicates the usage measurement units. Select either pages per second or kilobytes per second.

■ Enable High Threshold: Select this checkbox to enable the high threshold for memory paging. This threshold is evaluated first and if it is not exceeded, then the low threshold is evaluated.

■ Threshold: The value in pages or Kbytes per second. This is based on the selection in the alarm based on threshold setting. When the memory exceeds this value, an alarm message is sent.

■ Alarm Message: The alarm message to be sent when the memory paging exceeds the high threshold.

■ Enable Low Threshold: Select this checkbox to enable the low threshold for memory paging. This threshold is evaluated only if the high threshold has not been exceeded.

■ Threshold: The value in pages or Kbytes per second. This is based on the selection in the alarm based on threshold setting. When the memory exceeds this value, an alarm message is sent.

■ Alarm Message: The alarm message to be sent when the memory paging breaches the low threshold.

Navigation: **cdm** > **Memory** > **Memory Paging** > **Memory Paging (KB/s)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Navigation: **cdm** > **Memory** > **Memory Paging** > **Memory Paging (Pg/s)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Physical Memory Configuration

Navigation: **cdm** > **Memory** > **Physical Memory** > **Physical Memory (%)**

■ Publishing Data: Select this checkbox to send the QoS data.

■ Thresholds and alarm attributes are the same as listed in Memory Paging Alarm Thresholds **(see page 17).**

Navigation: **cdm** > **Memory** > **Physical Memory** > **Physical Memory (MB)**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Swap Memory Configuration

Navigation: **cdm** > **Memory** > **Swap Memory** > **Swap Memory (%)**

- Publishing Data: Select this checkbox to send the QoS data.

- Thresholds and alarm attributes are the same as listed in Memory Paging Alarm Thresholds **(see page 17).**

Navigation: **cdm** > **Memory** > **Swap Memory** > **Swap Memory (MB)**

- Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Total Memory Configuration

Navigation: **cdm** > **Memory** > **Total Memory** > **Memory Usage (%)**

- Publishing Data: Select this checkbox to send the QoS data.

- Thresholds and alarm attributes are the same as listed in Memory Paging Alarm Thresholds **(see page 17).**

Navigation: **cdm** > **Memory** > **Total Memory** > **Memory Usage (MB)**

- Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Processor

The left navigation pane displays the processor nodes on your system and allows you to configure:

-

-

Navigation: cdm > Processor

Set or modify the following values based on your requirement:

cdm > **Processo**r > **Processor Configuration**

Note that the first three fields are common to all three probe configuration sections (Disks, Memory, Processor).

- Interval (minutes): Specify the time in minutes for how often the probe retrieves sample data.

- Samples: Allows you to specify how many samples the probe should keep in memory to calculate average and threshold values.

  Note: If you did not select the **Send alarm on each sample** checkbox in the Probe Configuration pane, the probe waits for the number of samples (specified in this field) before sending the alarm.

- QoS Interval (Multiple of 'Interval'): Allows you to specify the time in minutes for how often the probe calculates QoS. For example, If the interval is set to 5 minutes and number of samples is set to 5, the CPU utilization reported will be the average for the last 25 minutes.Set QoS Target as 'Total': Select this checkbox if you want the QoS target to be set to Total.

- Include CPU Wait in CPU Usage: Select this checkbox if you want CPU Wait included in the CPU Usage calculation.

- Number of CPUs: Displays the number of CPUs. This is a read-only field.

cdm > **Processor** > **Processor Queue Length**

- Publishing Data: Select this checkbox to send the QoS data.

- Publishing Alarms: Select this checkbox to publish alarms.

- Maximum Queue Length: The maximum number of items in the queue before an alarm is sent.

- Alarm Message: The alarm message sent when the queue has been exceeded.

Individual CPU Configuration

The following five configuration fields simply provide a **Publishing Data** checkbox; select the checkbox to send QoS data for each respective metric. Other fields are read-only.

Navigation: **cdm** > **Processor** > **Individual CPU** > **Individual CPU Idle**

Navigation: **cdm** > **Processor** > **Individual CPU** > **Individual CPU System**

Navigation: **cdm** > **Processor** > **Individual CPU** > **Individual CPU Usage**

Navigation: **cdm** > **Processor** > **Individual CPU** > **Individual CPU User**

Navigation: **cdm** > **Processor** > **Individual CPU** > **Individual CPU Wait**

The following field provides three configurable attributes.

Navigation: **cdm** > **Processor** > **Individual CPU** > **Maximum CPU Usage**

- Publishing Data: Select this checkbox to send the QoS data.

- Threshold: The value in percent of the CPU usage. When the CPU usage exceeds this value, an alarm message is sent.

- Alarm Message: The alarm message to be sent when the CPU usage on the disk exceeds the threshold.

Total CPU Configuration

Navigation: **cdm** > **Processor** > **Total CPU** > **Total CPU Idle**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Navigation: **cdm** > **Processor** > **Total CPU** > **Total CPU System**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Navigation: **cdm** > **Processor** > **Total CPU** > **Total CPU Usage**

■ Publishing Data: Select this checkbox to send the QoS data.

■ Enable High Threshold: Select this checkbox to enable the high threshold for disk usage. This threshold is evaluated first and if it is not exceeded, then the low threshold is evaluated.

■ Threshold: The value in percent of the CPU usage. When the CPU usage gets below this value, an alarm message is sent.

■ Alarm Message: The alarm message to be sent when the CPU usage on the disk is below the high threshold.

■ Enable Low Threshold: Select this checkbox to enable the low threshold for disk usage. This threshold is evaluated only if the high threshold has not been exceeded.

■ Threshold: The value in percent of the CPU usage. When the CPU usage gets below this value, an alarm message is sent.

■ Alarm Message: The alarm message to be sent when the CPU usage on the disk breaches the low threshold.

Navigation: **cdm** > **Processor** > **Total CPU** > **Total CPU User**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.

Navigation: **cdm** > **Processor** > **Total CPU** > **Total CPU Wait**

■ Publishing Data: Select this checkbox to send the QoS data. Other fields are read-only.