vizioncore

# vFoglight™ 5.2.4

## Managing Operating Systems Reference Guide

DELL

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**Reference Guide**
**March 2009**
**Version 5.2.4**

# Table of Contents

# Introduction to this Guide

This chapter provides information about what is contained in the *vFoglight Reference Guide*. It also provides information about the vFoglight documentation suite and Vizioncore.

This chapter contains the following sections:

# About vFoglight

vFoglight helps IT organizations understand the virtual infrastructure by managing the relationships and interaction between all the components in the environment, including data centers, data stores, clusters, resource pools, hosts and virtual machines. With vFoglight, administrators can quickly determine the root-cause of an incident or problem, track virtual machine (VM) movements and understand their impact, and identify contention for resources between virtual machines.

# About this Guide

This Reference Guide contains information about the views, rules, and data model that are included with the OS Cartridges.

The Reference Guide is organized as follows:

**Chapter 1, Introduction to Views, Rules, and Data**—This section provides a conceptual overview of Views, Rules and Data.

**Chapter 2, Views**—This section describes the predefined views shipped with the Cartridge for Operating Systems.

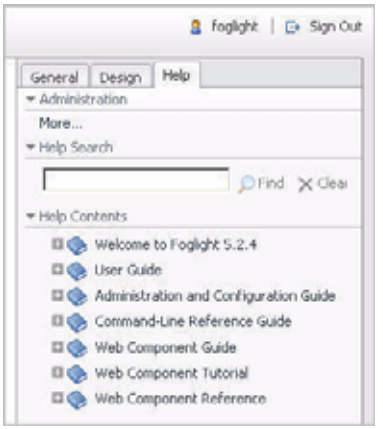
**Chapter 3, Rules—**This section provides an outline of the built-in rules that monitor the health of your operating system environment. Descriptions of the rules are organized into logical groupings.

**Chapter 4, Data—**The Cartridge for Operating Systems collects data and stores it in specific tables. In this chapter, descriptions of the tables are organized into logical groupings by agent.

# vFoglight Documentation Suite

The vFoglight documentation suite is made up of the core documentation set, plus the documentation set for each vFoglight cartridge that you deploy. Documentation is provided in a combination of online help, PDF and HTML.

- **Online Help:** You can open the online help by selecting the Help tab from vFoglight's action panel.




- **PDF:** The *Getting Started Guide*, *What's New Guide*, *System Requirements and Platform Support Guide*, *Installation and Setup Guide* set, *Administration and Configuration Guide*, *vFoglight User Guide*, *Command-Line Reference Guide*, *Web Component Guide*, and *Web Component Tutorial*, are provided as PDF files. The PDF guides are included in the zip file downloaded from Vizioncore. Adobe® Reader® is required.
- **HTML:** Release Notes are provided in HTML.

## Core Documentation Set

The core documentation set consists of the following files:

- *Release Notes* (HTML)
- *Getting Started Guide* (PDF)
- *What's New Guide* (PDF)
- *System Requirements and Platform Support Guide* (PDF)
- *Installation and Setup Guide* set (all in PDF format):
  - Installation and Setup Guide—*Installing on Windows with an Embedded MySQL Database*
  - Installation and Setup Guide—*Installing on Windows with an External MySQL Database*

    - Installation and Setup Guide—*Installing on Windows with an External Oracle Database*
- *Administration and Configuration Guide* (PDF and online help)
- *vFoglight User Guide* (PDF and online help)
- *Advanced Configuration Guide* set
    - *Command-Line Reference Guide* (PDF and online help)
    - *Web Component Guide* (PDF and online help)
    - *Web Component Tutorial* (PDF and online help)
    - *Web Component Reference* (online help)

## Cartridge Documentation Sets

When you deploy a cartridge, the documentation set for the cartridge is installed. The online help for the cartridge is integrated automatically with the core vFoglight help. When you open the help, the name of the cartridge is displayed in a top level entry within the table of contents.

Some cartridges include additional PDF guides, which may be one or more of the following: a *Getting Started Guide*, an *Installation Guide*, a *User Guide*, and a *Reference Guide*.

## Feedback on the Documentation

We are interested in receiving feedback from you about our documentation. For example, did you notice any errors in the documentation? Were any features undocumented? Do you have any suggestions on how we can improve the documentation? All comments are welcome. Please submit your feedback to the following email address:

info@vizioncore.com

**Please do not submit Technical Support related issues to this email address**.

# Text Conventions

The following table summarizes how text styles are used in this guide:

| Convention | Description |
|---|---|
| `Code` | Monospace text represents code, code objects, and command-line input. This includes:<br>• Java language source code and examples of file contents<br>• Classes, objects, methods, properties, constants, and events<br>• HTML documents, tags, and attributes |
| *`Variables`* | Monospace-plus-italic text represents variable code or command-line objects that are replaced by an actual value or parameter. |
| **Interface** | Bold text is used for interface options that you select (such as menu items) as well as keyboard commands. |
| *Files, components, and documents* | Italic text is used to highlight the following items:<br>• Pathnames, file names, and programs<br>• The names of other documents referenced in this guide |

# About Vizioncore Inc.

Vizioncore was formed in July 2002 as a consulting and software-development company with the mission to create easy-to-use software solutions that performed reliable and repeatable automation of datacenter functions specifically for the Citrix platform.  A main corporate goal was to enable business partners to offer solutions that targeted real-world IT issues and provided the best possible installation and automation for their clients' systems.

Vizioncore's solutions have proved successful in organizations from small to mid-sized businesses to large enterprises, in a wide variety of vertical industries, including Financial Services, Government, Healthcare, Manufacturing, and High Tech. Vizioncore, Inc. can be found in offices around the globe and at www.vizioncore.com.

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3. Click Contact Us on the left side of the page.Note: Toll-free numbers are for use within the country for which they are listed.
4. Select the appropriate service or support link based on your need.
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| | Corporate Customer Service (dial within U.K. only) | 0870 907 4499 |
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| | Switchboard | 02 577 821 |
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| | Customer Service | 001-877-384-8979 or 001-877-269-3383 |
| | Main | 50-81-8800 or 01-800-888-3355 |
| Montserrat | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | Toll-free: 1-866-278-6822 |
| Netherlands Antilles<br>Netherlands (Amsterdam)<br>International Access Code: 00<br>Country Code: 31<br>City Code: 20 | E-mail Address | la-techsupport@dell.com |
| | Web Address | support.euro.dell.com |
| | Technical Support | 020 674 45 00 |
| | Technical Support Fax | 020 674 47 66 |
| | Home/Small Business Customer Service | 020 674 42 00 |
| | Relational Customer Service | 020 674 43 25 |
| | Home/Small Business Sales | 020 674 55 00 |
| | Relational Sales | 020 674 50 00 |
| | Home/Small Business Sales Fax | 020 674 47 75 |
| | Relational Sales Fax | 020 674 47 50 |
| | Switchboard | 020 674 50 00 |
| | Switchboard Fax | 020 674 47 50 |
| New Zealand<br>International Access Code: 00<br>Country Code: 64 | Web Address | Support.ap.dell.com |
| | E-mail Address | Support.ap.dell.com/contactus |
| | Technical Support, Customer Service, Sales | 0800 441 567 |
| Nicaragua | Web Address | www.dell.com/ni |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | 001-800-220-1377 |
| Norway (Lysaker)<br>International Access Code: 00<br>Country Code: 47 | Web Address | Support.euro.dell.com |
| | Technical Support | 671 16882 |
| | Relational Customer Service | 671 17575 |
| | Home/Small Business Customer Service | 231 62298 |
| | Switchboard | 671 16800 |
| | Fax Switchboard | 671 16865 |
| Panama | Web Address | www.dell.com/pa |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | 011-800-507-1264 |
| Peru | Web Address | www.dell.com/pe |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | 0800-50-669 |

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| Poland (Warsaw)<br>International Access Code: 011<br>Country Code: 48<br>City Code: 22 | Web Address<br>E-mail Address<br>Customer Service Phone<br>Customer Service<br>Sales<br>Customer Service Fax<br>Reception Desk Fax<br>Switchboard | support.euro.dell.com<br>pl_support_tech@dell.com<br>57 95 700<br>57 95 999<br>57 95 999<br>57 95 806<br>57 95 998<br>57 95 999 |
| Portugal<br>International Access Code: 00<br>Country Code: 351 | Web Address<br>Technical Support<br>Customer Service<br>Sales<br><br>Fax | Support.euro.dell.com<br>707200149<br>800 300 413<br>800-300-410 or 800-300 -411 or<br>800-300-412 or 21-422-07-10<br>21-424-01-12 |
| Puerto Rico | Web Address<br>E-mail Address<br>Technical Support, Customer Service, Sales | www.dell.com/pr<br>la-techsupport@dell.com<br>1-877-537-3355 |
| St. Kitts and Nevis | Web Address<br>E-mail Address<br>Technical Support, Customer Service, Sales | www.dell.com/kn<br>la-techsupport@dell.com<br>toll-free: 1-866-540-3355 |
| St. Lucia | Web Address<br>E-mail Address<br>Technical Support, Customer Service, Sales | www.dell.com/lc<br>la-techsupport@dell.com<br>toll-free: 1-866-464-4352 |
| St. Vincent and the Grenadines | Web Address<br>E-mail Address<br>Technical Support, Customer Service, Sales | www.dell.com/vc<br>la-techsupport@dell.com<br>toll-free: 1-866-464-4353 |
| Singapore<br>International Access Code: 005<br>Country Code: 65 | NOTE: The phone numbers in this section should be called from within Singapore or Malaysia only.<br><br>Web Address<br>Technical Support - Dimension, Inspiron, and Electronics and Accessories<br>Technical Support - OptiPlex, Latitude, and Dell Precision<br>Technical Support - PowerApp, PowerEdge, PowerConnect, and PowerVault<br>Customer Service<br>Transaction Sales<br>Corporate Sales | <br><br>support.ap.dell.com<br>toll-free: 1 800 394 7430<br><br>toll-free: 1 800 394 7488<br><br>toll-free: 1 800 394 7478<br><br>toll-free: 1 800 394 7430 (option 6)<br>toll-free: 1 800 394 7412<br>toll-free: 1 800 394 7419 |
| Slovakia (Prague)<br>International Access Code: 00<br>Country Code: 421 | Web Address<br>E-mail Address<br>Technical Support<br>Customer Service<br>Fax<br>Tech Fax<br>Switchboard (Sales) | support.euro.dell.com<br>czech_dell@dell.com<br>02 5441 5727<br>420 22537 2707<br>02 5441 8328<br>02 5441 8328<br>02 5441 8328<br>02 5441 7585 |
| South Africa (Johannesburg)<br>International Access Code: 09/091<br>Country Code: 27<br>City Code: 11 | Web Address<br>E-mail Address<br>Gold Queue<br>Technical Support<br>Customer Service<br>Sales | support.euro.dell.com<br>dell_za_suppor@dell.com<br>011 709 7713<br>011 709 7710<br>011 709 7707<br>011 709 7700 |

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| Spain (Madrid)<br><br>International Access Code: 00<br>Country Code: 34<br>City Code: 91 | Web Address | Support.euro.com |
| | Home and Small Business | |
| | Technical Support | 902 100 130 |
| | Customer Service | 902 118 540 |
| | Sales | 902 118 541 |
| | Switchboard | 902 118 541 |
| | Fax | 902 118 539 |
| | Corporate | |
| | Technical Support | 902 100 130 |
| | Customer Service | 902 115 236 |
| | Switchboard | 91 722 92 00 |
| | Fax | 91 722 95 83 |
| Sweden (Upplands Vasby)<br><br>International Access Code: 00<br>Country Code: 46<br>City Code: 8 | Web Address | support.euro.dell.com |
| | Technical Support | 08 590 05 199 |
| | Relational Customer Service | 08 590 05 642 |
| | Home/Small Business Customer Service | 08 587 70 527 |
| | Employee Purchase Program (EPP) Support | 020 140 14 44 |
| | Technical Support Fax | 08 590 05 594 |
| Switzerland (Geneva)<br><br>International Access Code: 00<br>Country Code: 41<br>City Code: 22 | Web Address | Support.euro.dell.com |
| | E-mail Address | Tech_support_central_Europe@dell.com |
| | Technical Support – Home and Small Business | 0844 811 411 |
| | Technical Support – Corporate | 0844 822 844 |
| | Customer Service – Home and Small Business | 0848 802 202 |
| | Customer Service – Corporate | 0848 821 721 |
| | Fax | 022 799 01 90 |
| | Switchboard | 022 799 01 01 |
| Taiwan<br><br>International Access Code: 002<br>Country Code: 886 | Web Address | support.ap.dell.com |
| | E-mail Address | support.dell.com.cn/email |
| | Technical Support - OptiPlex, Latitude, Inspiron, Dimension, and Electronics and Accessories | toll-free: 0080 186 1011 |
| | Technical Support - Servers and Storage | toll-free: 0080 160 1256 |
| | Customer Service | toll-free: 0080 160 1250 (option 5) |
| | Transaction Sales | toll-free: 0080 165 1228 |
| | Corporate Sales | toll-free: 0080 165 1227 |
| Thailand<br><br>International Access Code: 001<br>Country Code: 66 | Web Address | Support.ap.dell.com |
| | Technical Support (OptiPlex, Latitude, and Dell Precision) | toll-free: 1800 0060 07 |
| | Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault) | toll-free: 1800 0600 09 |
| | Customer Service | toll-free: 1800 006 007 (option 7) |
| | Corporate Sales | toll-free: 1800 006 009 |
| | Transaction Sales | toll-free: 1800 006 006 |
| Trinidad/Tobago | Web Address | www.dell.com/tt |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | toll-free: 1-888-799-5908 |
| Turks and Caicos Islands | Web Address | www.dell.com/tc |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | toll-free: 1-877-441-4735 |

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|---|---|---|
| U.K.(Bracknell)<br>International Access Code: 00<br>Country Code: 44<br>City Code: 1344 | Web Address | upport.euro.dell.com |
| | E-mail Address | dell_direct_support@dell.com |
| | Customer Service Website | support.euro.dell.com/uk/en/ECare/form/home.asp |
| | **Sales** | |
| | Home and Small Business Sales | 0870 907 4000 |
| | Corporate/Public Sector Sales | 01344 860 456 |
| | **Customer Service** | |
| | Home and Small Business | 0870 906 0010 |
| | Corporate | 01344 373 185 |
| | Preferred Accounts (500-5000 employees) | 0870 906 0010 |
| | Global Accounts | 01344 373 186 |
| | Central Government | 01344 373 196 |
| | Local Government & Education | 01344 373 199 |
| | Health | 01344 373 194 |
| | **Technical Support** | |
| | Corporate/Preferred Accounts/PCA (1000+ employees) | 0870 908 0500 |
| | Other Dell Products | 0870 353 0800 |
| | **General** | |
| | Home and Small Business Fax | 0870 907 4006 |
| Uruguay | Web Address | www.dell.com/uy |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | toll-free: 000-413-598-2521 |
| U.S.A. (Austin, Texas)<br>International Access Code: 011<br>Country Code: 1 | Automated Order-Status Service | toll-free: 1-800-433-9014 |
| | AutoTech (portable and desktop computers) | toll-free: 1-800-247-9362 |
| | Hardware and Warranty Support (Dell TV, Printers, and Projectors ) for Relationship customers | toll-free: 1-877-459-7298 |
| | Consumer (Home and Home Office) Support for Dell products | toll-free: 1-800-624-9896 |
| | Customer Service | toll-free: 1-800-624-9897 |
| | Employee Purchase Program (EPP) Customers | toll-free: 1-800-695-8133 |
| | Financial Services Web Address | www.dellfinancialservices.com |
| | Financial Services (lease/loans) | toll-free: 1-877-577-3355 |
| | Financial Services (Dell Preferred Accounts [DPA]) | toll-free: 1-800-283-2210 |
| | **Business** | |
| | Customer Service | toll-free: 1-800-624-9897 |
| | Employee Purchase Program (EPP) | toll-free: 1-800-695-8133 |
| | Customer s Support for printers, projectors, PDAs, and MP3 players | toll-free: 1-877-459-7298 |
| | **Public (government, education, and healthcare)** | |
| | Customer Service and Support | toll-free: 1-800-456-3355 |
| | Employee Purchase Program (EPP) Customers | toll-free: 1-800-695-8133 |
| | Dell Sales | toll-free: 1-800-289-3355 or toll-free: 1-800-879-3355 |
| | Dell Outlet Store (Dell refurbished computers) | toll-free: 1-888-798-7561 |
| | Software and Peripherals Sales | toll-free: 1-800-671-3355 |
| | Spare Parts Sales | toll-free: 1-800-357-3355 |
| | Extended Service and Warranty Sales | toll-free: 1-800-247-4618 |
| | Fax | toll-free: 1-800-727-8320 |
| | Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired | toll-free: 1-877-DELLTTY (1-877-335-5889) |

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| U.S. Virgin Islands | Web Address | www.dell.com/vi |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | toll-free: 1-877-702-4360 |
| Venezuela | Web Address | www.dell.com/ve |
| | E-mail Address | la-techsupport@dell.com |
| | Technical Support, Customer Service, Sales | 0800-100-4752 |

# 1

# Introducing Views, Rules, and Data

Review this chapter if you are unfamiliar with views, rules, and data in vFoglight.

This chapter contains the following sections:

# Overview of Views

vFoglight displays monitoring data in views that group, format, and display data. The main types are described below.

Dashboards are top-level views that do not receive data from other views. Dashboards usually contain a number of lower-level views. The dashboards supplied with vFoglight, as well as those created by users, are available in the navigation panel.

Lower-level views in vFoglight can be added to dashboards or can be accessed by drilling down from a dashboard. They receive and display data directly from the vFoglight Management Server or from other views. Some views filter or select data that appears in other views in the same dashboard. Some are tree views with expandable nodes for selecting servers, applications, or data.

# Overview of Rules

vFoglight allows you to create flexible rules that can be applied to complex, interrelated data from multiple sources within your distributed system. You can associate several different actions with a rule, configure a rule so that it does not fire repeatedly, and associate a rule with schedules to define when it should and should not be evaluated.

Different types of data can be used in rules, including registry variables, raw metrics, derived metrics, and topology object properties.

There are two types of rules in vFoglight: simple rules and multiple-severity rules. A simple rule has a single condition, and can be in one of three states: *Fire*, *Undefined*, or *Normal*. A multiple-severity rule can have up to five severity levels: *Undefined*, *Fatal*, *Critical*, *Warning*, and *Normal*.

Rule conditions are regularly evaluated against monitoring data (metrics and topology object properties collected from your monitored environment and transformed into a standard format). Therefore, the state of the rule can change if the data changes. For example, if a set of monitoring data matches a simple rule's condition, the rule enters the *Fire* state. If the next set does not match the condition, the rule exits the *Fire* state and enters the *Normal* state.

A rule condition is a type of expression that can be true or false. When it evaluates to true, the rule is said to fire, causing any actions that are associated with the rule or severity level to be performed. You can configure a rule to perform one or more actions upon entering or exiting each state. When a multiple-severity rule fires, an alarm also appears in vFoglight.

See "Introduction to Rules" and "Creating and Editing Rules" in the vFoglight *Administration and Configuration Guide* for more information.

# Overview of Data

The ’ agents collect and store data in the vFoglight database. This data can be viewed graphically (as described in the Views chapter) and in tabular format. The data tables for each of the supported agents are described in this chapter.

Access to the data tables is through the Data Browser, which is part of vFoglight. For further information, refer to the *vFoglight User Guide*.

2

# Views

The Cartridge for Operating Systems ships with predefined views to help you monitor your operating system environment.

This chapter contains the following sections:

# AIX_MPStat Views

Views in this section include:

- AIX_MPStat_Counters
- AIX_MPStat_Overview
- AIX_MPStat_Utilization

## AIX_MPStat_Counters

### Purpose

The AIX_MPStat_Counters view displays the number of context switches and system calls per second for each CPU instance that is monitored.

### Description of the View

| | |
|---|---|
| Data displayed | **Context Switches.** The number of times per second that the CPU performed a voluntary switch between contexts of two processes.<br><br>**System Calls.** The number of system calls per second. |
| Where to go next | n/a |

## AIX_MPStat_Overview

### Purpose

The AIX_MPStat_Overview displays the percentage of idle, system, user, and wait times for each CPU instance that is monitored.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU Instance.** The instance number of the monitored CPU.<br><br>**Idle Time.** The percentage of time that the CPU spent idling.<br><br>**System Time.** The percentage of time that the CPU spent running the operating system.<br><br>**UserTime.** The percentage of time that the CPU spent running user space.<br><br>**Wait Time.** The percentage of time the CPU spent waiting for I/O transactions to finish. |
| Where to go next | n/a |

## AIX_MPStat_Utilization

### Purpose

The AIX_MPStat_Utilization view displays the percentage utilized of each CPU instance that is monitored.

### Description of the View

| | |
|---|---|
| Data displayed | **CPUInstance.** The instance number of the monitored CPU.<br><br>**CPU_Utilization.** The percentage of CPU that is utilized. |
| Where to go next | n/a |

# AIX_System Views

Views in this section include:

- AIX_System_CPU_Load
- AIX_System_CPU_Utilization
- AIX_System_Load
- AIX_System_Overview
- AIX_System_Swap_Available
- AIX_System_Virtual_Memory

## AIX_System_CPU_Load

### Purpose

The AIX_System_CPU_Load view is a detailed view of the number of processes in the run queue.

Use this view to investigate the following:

- A high number of processes in the run queue means the CPU is busy. A consistently high number can indicate that host needs more CPU power.
- A high number of processes waiting for I/O can mean a problem or bottleneck in disk I/O.
- A high number of processes in the swap queue might indicate that the CPU has a critical shortage of memory.

Description of the View

| | |
|---|---|
| Data displayed | **Runnable Procs Swapped.** The number of processes in the swap queue that are capable of being run.<br><br>**Procs In Run Queue.**The number of processes waiting to run in the run queue.<br><br>**Procs Waiting for IO.** The number of processes that are ready to run but are not able to because of a bottleneck or problem in the disk I/O. |
| Where to go next | n/a |

## AIX_System_CPU_Utilization

### Purpose

The AIX_System_CPU_Utilization view provides an overview of the CPU workload for a monitored AIX system. You can use it to monitor the status of CPU usage within an AIX system.

Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization and CPU User Time.** The percentage of time the CPU executes code and user programs (includes both system and user time).<br><br>**CPU System Time.** The percentage of time that the CPU is executing system or kernel processes.<br><br>**CPU Wait Time.** The percentage of time the CPU waits for disk I/O.<br><br>**Procs In Run Queue.** The number of processes in the swap queue. |
| Where to go next | Drill down on the **Procs In Run Queue** line. Links to “AIX_System_Load” on page 43. |

## AIX_System_Load

### Purpose

The AIX_System_Load view is a breakdown of the overall load on a selected AIX system. You can use it to monitor the status of the number of context switches, interrupts, and system calls for a monitored AIX system.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU System.** The percentage of time the CPU is running system and kernel processes.<br><br>**Context Switch.** The number of processes that a switch uses for processing.<br><br>**Interrupts.** The number of interrupts that have occurred.<br><br>**System Calls.** The number of system calls that have been invoked. |
| Where to go next | n/a |

## AIX_System_Overview

### Purpose

The AIX_System_Overview is a high-level overview of the AIX system that is being monitored. You can use it to view the overall health of the system.

**Note** Check the Wait Time and Scan Rate values.

The Wait Time indicates the percentage of time that the CPU waits on disk I/O transactions. If this value exceeds 15%, or double the CPU Utilization line, the I/O system is causing a bottleneck.

When the Scan Rate remains under 100 pages/second, the RAM is sufficient. When the Scan Rate exceeds 100 pages/second, the kernel is attempting to reclaim and free memory. This can degrade system performance.

Description of the View

| | |
|---|---|
| Description | **CPU Utilization.** The percentage of time the CPU executes code (includes both system and user time).<br><br>**CPU Wait Time.** The percentage of time the CPU waits for disk I/O.<br><br>**Ethernet Collision Rate.** The number of ethernet collisions as a percentage of all ethernet packets sent.<br><br>**Scan Rate.** The number of pages scanned per second by the page daemon as it looks for pages that processes use infrequently.<br><br>**Swap Percent.** The percentage of swap space that is available.<br><br>**Physical Memory Used Pct.** The percentage of physical memory that is used. |
| Where to go next | Drill down on:<br>• **CPU Utilization** line. Links to "AIX_System_CPU_Utilization" on page 42.<br>• **Scan Rate** line. Links to "AIX_System_Virtual_Memory" on page 46.<br>• **Swap Percent Available** line. Links to "AIX_System_Virtual_Memory" on page 46. |

## AIX_System_Swap_Available

### Purpose

The AIX_System_Swap_Available view displays the amount of available swap space for a monitored AIX system. You can use it to view the swap space in kilobytes (Kb).

### Description of the View

| | |
|---|---|
| Data displayed | **Available Swap.** The amount of swap space that is available. |
| Where to go next | n/a |

## AIX_System_Virtual_Memory

### Purpose

The AIX_System_Virtual_Memory view is a breakdown of how memory is being used by a monitored AIX system. You can use it to monitor the status of the number of pages being paged in and out as well as the number of swaps in and out.

Use this view to check the following:

- Pages Paged Out and the Pages Paged In values. If they coincide, the system is executing normal page in/page out operations.
- Number of Swap Outs. If memory becomes scarce, the kernel swaps out sleeping processes, then swaps out active processes that use large amounts of memory. If swap outs occur, swap space is critically low. Add more swap space or shut down one or more applications.

Description of the View

| | |
|---|---|
| Data displayed | **Pages Paged In.** The number of pages paged into active memory from the disk swap space or file system.<br><br>**Pages Paged Out.** The number of pages paged out to active memory from the disk swap space or file system.<br><br>**Swap In.** The number of processes returned to active memory from disk swap space.<br><br>**Swap Out.** The number of processes stored to active memory from disk swap space.<br><br>**Swap Percent Available.** The percentage of available swap space. |
| Where to go next | Drill down on:<br>• **Swap Percent Available** line. Links to "AIX_System_Swap_Available" on page 45. |

# ApacheSvr Views

Views in this section include:



## ApacheSvr Overview

### Purpose

The Apache Overview view shows the hits, errors, transactions and kilobytes encountered per second. The Apache Server agent assists your investigation of transactions and throughput, as it monitors the volume of data flowing to and from a web server by rate and interval as well as by request type. The transactions monitored are set in the agent startup parameters.

Description of the View

| | |
|---|---|
| Data displayed | **HitRate.** Number of hits per second.<br><br>**ErrorRate.** Number of errors per second.<br><br>**TransactionRate.** Number of transactions per second.<br><br>**Transaction Throughput.** Transaction throughput (number of bytes per transaction) per second. |
| Where to go next | Drill down on:<br>• **Hit** line. Links to "ApacheSvr Hit_Summary" on page 49.<br>• **Error** line. Links to "ApacheSvr Error_Breakdown" on page 56.<br>• **Transactions** line. Links to "ApacheSvr Transaction_Breakdown" on page 52.<br>• **KB/Sec** line. Links to "ApacheSvr Throughput_Summary" on page 53. |

## ApacheSvr Hit_Summary

### Purpose

The Apache Hit Summary view shows the total hits per collection period, the hosts that connected to the web server during the collection period, and the URLs requested during the collection period.

### Description of the View

| | |
|---|---|
| Data displayed | **IntervalHits.** Number of hits during the collection period.<br><br>**IntervalHosts.** Number of individual hosts making requests during the collection period.<br><br>**IntervalURLs.** Number of URLs monitored during the collection period. |
| Where to go next | Drill down on any line. Links to “ApacheSvr Hit_Breakdown” on page 50. |

## ApacheSvr Hit_Breakdown

### Purpose

The Apache Hit Breakdown view shows the type of hits encountered.

Description of the View

| | |
|---|---|
| Data displayed | **AUDHits.** Number of audio hits counted during the collection period.<br><br>**CGIBINHits.** Number of CGIBIN hits counted during the collection period.<br><br>**HTMLHits.** Number of HTML hits counted during the collection period.<br><br>**ImageHits.** Number of image hits counted during the collection period.<br><br>**JavaHits.** Number of Java hits counted during the collection period.<br><br>**MMHits.** Number of multimedia hits counted during the collection period.<br><br>**OTHERHits.** Number of miscellaneous hits counted during the collection period.<br><br>**TEXTHits.** Number of text hits counted during the collection period.<br><br>**ZIPPEDHits.** Number of zipped hits counted during the collection period. |
| Where to go next | n/a |

## ApacheSvr Transaction_Summary

### Purpose

The Apache Transaction Summary view shows the number of transactions processed and kilobytes generated per second.

Description of the View

| | |
|---|---|
| Data displayed | **TransactionRate.** Number of Kbs per second.<br><br>**Transaction ThroughputRate.** Transaction throughput (number of bytes per transaction) per second. |
| Where to go next | Drill down on:<br>• **Transaction KB/Sec** line. Links to "ApacheSvr Transaction_Throughput_Breakdown" on page 52.<br>• **Transaction Sec** line. Links to "ApacheSvr Transaction_Breakdown" on page 52. |

## ApacheSvr Transaction_Throughput_Breakdown

### Purpose

The Apache Transaction Throughput Breakdown view shows the number of transactions processed and the average size of each transaction.

### Description of the View

| | |
|---|---|
| Data displayed | **IntervalTransactions.** Number of transactions during the collection period.<br><br>**TransactionSize.** Average size of transactions, averaged over the collection period. |
| Where to go next | n/a |

## ApacheSvr Transaction_Breakdown

### Purpose

The Apache Transaction Breakdown view shows the number of transactions and kilobytes per second for each monitored tag.

### Description of the View

| | |
|---|---|
| Data displayed | **TransactionTag.** Number of transactions, categorized by transaction type.<br><br>**TransactionRate.** Number of transactions per second.<br><br>**TransactionThroughputRate.** Transaction throughput (number of bytes per transaction) per second. |
| Where to go next | Drill down on any bar. Links to “ApacheSvr Transaction_Detail” on page 53. |

## ApacheSvr Transaction_Detail

### Purpose

The Apache Transaction Detail view shows the number of transactions and kilobytes per second for a particular transaction.

### Description of the View

| | |
|---|---|
| Data displayed | **TransactionTag.** Number of transactions, categorized by transaction type.<br><br>**IntervalTransactions.** Number of transactions during the collection period.<br><br>**TransactionThroughputRate.** Transaction throughput (number of bytes per transaction) per second. |
| Where to go next | n/a |

## ApacheSvr Throughput_Summary

### Purpose

The Apache Throughput Summary view shows the number of transactions processed and kilobytes generated per second.

### Description of the View

| | |
|---|---|
| Data displayed | **ThroughputRate.** Number of Kbs per second.<br><br>**Throughput.** Number of Kbs transacted during the collection period. |
| Where to go next | Drill down on any line. Links to “ApacheSvr Throughput_Breakdown” on page 54. |

## ApacheSvr Throughput_Breakdown

### Purpose

The Apache Throughput Breakdown view shows the type of throughput encountered.

Description of the View

| | |
|---|---|
| Data displayed | **AUDBytes.** Number of audio bytes transferred during the collection period. Audio files include .au and .wav files.<br><br>**CGIBINBytes.** Number of CGIBIN bytes transferred during the collection period. CGIBIN files include /bin and /cgi-bin files.<br><br>**HTMLBytes.** Number of HTML bytes transferred during the collection period. HTML files include .html and .htm files.<br><br>**ImageBytes.** Number of image bytes transferred during the collection period. Image files include .gif, .jpg and .bmp files.<br><br>**JavaBytes.** Number of Java bytes transferred during the collection period. Java files include .class files.<br><br>**MMBytes.** Number of multimedia bytes transferred during the collection period. Multimedia files include .mpg and .mov files.<br><br>**OTHERBytes.** Number of miscellaneous bytes transferred during the collection period.<br><br>**TEXTBytes.** Number of text bytes transferred during the collection period. Text files include .txt and .doc files.<br><br>**ZIPPEDBytes.** Number of zipped bytes transferred during the collection period. Zip files include .z and .gz files. |
| Where to go next | n/a |

# ApacheSvr Error_Breakdown

## Purpose

The Apache Error Breakdown view shows the type of errors encountered.

## Description of the View

| | |
|---|---|
| Data Displayed | **BAD_GATEWAY.** While acting as a gateway or proxy, the server received an invalid response from the upstream server it accessed while attempting to fulfill the request.<br><br>**BAD_REQ.** The server could not understand the request, due to incorrect syntax. Do NOT repeat the request without modifications.<br><br>**FORBIDDEN.** The server understood the request but will not fulfill it. Authorization will not help, and the request should NOT be repeated. If the request method was not HEAD, and the server can issue a reason for non-fulfillment, the reason for the refusal is included in the message. This message is commonly used when the server does not reveal a reason for the non-fulfillment, or when no other message is applicable.<br><br>**INTERNAL_ERR.** The server encountered an unexpected condition which prevented it from fulfilling the request.<br><br>**MOVED_PERM.** The requested resource has been assigned a new, permanent URI. For future requests for this resource, use one of the URIs returned in this message. Where possible, monitored hosts with link-editing capabilities automatically re-link references to the request-URI to one or more of the new references returned with the message. This message is cachable unless otherwise indicated.<br>If the new URI is a location, its URL displays in the Location field of the message. Unless the request method was HEAD, the message contains a short hypertext note with a hyperlink to the new URI(s). |

Data Displayed

**MOVED_TEMP.** The requested resource resides temporarily under a different URI. Since the redirection might be altered, the monitored host continues to use the request-URI for future requests. This message is cachable only if so indicated by a Cache-Control or Expires header field.
If the new URI is a location, its URL displays in the Location field of the message. Unless the request method was HEAD, the message contains a short hypertext note with a hyperlink to the new URI(s).
If you receive this message in response to a request other than GET or HEAD, the agent does not automatically redirect the request unless you confirm it because redirecting the request might change the conditions under which the request was issued.

**NOT_FOUND.** The server did not find anything matching the Request-URI. This message does not indicate whether the condition is temporary or permanent.
If the server does not disclose this information, it might use a Forbidden message instead.
The server displays a Gone message if it knows, through some internally configurable mechanism, that an old resource is permanently unavailable and has no forwarding address.

**NOT_IMPL.** The server does not support the function necessary to fulfill the request. The server displays this message when it does not recognize the request method and is not capable of supporting it for any resource.

**NOT_MODIFIED.** The server displays this message if the monitored host has performed a conditional GET request and access is allowed, but the document has not been modified.

**NO_CONTENT.** The server fulfilled a request to load e-mail, but has no new messages to return.
This message allows input for actions to take place without changing the active document view. The message can include new information in the form of entity headers that apply to the document currently in view.

| | |
|---|---|
| Data Displayed | **OK.** The request succeeded. The information included in this message depends on the request method:<br>GET returns the entire web page, along with statistical information.<br>HEAD returns the entity header fields corresponding to the requested resource.<br>POST returns information describing or containing the result of the action.<br>TRACE returns the request message as received by the end server.<br><br>**POST.** The server fulfilled a request to post a transaction<br>**SERVICE_UNAVAIL.** The server is unable to process the request due to a temporary overload or due to server maintenance. If known, the server might indicate the length of the delay in a Retry-After header; otherwise the server returns an Internal Server Error message.<br>If the server is overloaded, it might refuse the connection, rather than return this message.<br>**UNAUTHORIZED.** The request requires user authentication. The message includes a WWW-Authenticate header field challenging the requested resource. You can repeat the request with a suitable authorization header field. If the request included authorization credentials, the server refused the request on those credentials. |

# AppMonitor Views

Views in this section include:

- AppMonitor Agent Messages
- AppMonitor App_Availability
- AppMonitor App_Overview
- AppMonitor App_Performance
- AppMonitor Proc_Performance
- AppMonitor Proc_Uptime
- AppMonitor Process_Memory_Profile

## AppMonitor Agent Messages

### Purpose

The AppMonitor Agent Messages view lists the messages sent by the AppMonitor agent after it checks the application's agent properties.

### Description of the View

| | |
|---|---|
| Data displayed | **Message.** The message text.<br><br>**Severity.** The message severity: Warning or Fatal.<br><br>**Time.** The time the message was logged. |
| Where to go next | n/a |

## AppMonitor App_Availability

### Purpose

The AppMonitor App_Availability view provides a high-level overview of the instances of a process. You can use it to view the number of instances of a process that are expected and the number and percentage that are found.

Description of the View

| | |
|---|---|
| Data displayed | **Instances Expected.** The number of instances expected of the monitored application.<br><br>**Instances Found.** The number of instances found of the monitored application.<br><br>**Percent Found.** The percentage found of the monitored application.<br><br>**Process Name.** The name of the monitored process. |
| Where to go next | Drill down on:<br>• **Instances Expected** bar. Links to "AppMonitor Proc_Uptime" on page 63.<br>• **Instances Found** bar. Links to "AppMonitor Proc_Uptime" on page 63.<br>• **Percent Found** bar. Links to "AppMonitor Proc_Uptime" on page 63. |

## AppMonitor App_Overview

### Purpose

The AppMonitor App_Overview is a high-level overview of each application in a group. For further information on dividing applications into groups, see the Cartridge for Operating Systems *User Guide*.

Description of the View

| | |
|---|---|
| Data displayed | **Application Name.** The name of the application containing the processes that is being monitored.<br><br>**Availability.** The availability of the monitored application.<br><br>**CPU.** The CPU performance of the monitored application.<br><br>**Memory.** The memory performance of the monitored application. |
| Where to go next | Drill down on:<br>• **Availability** bar. Links to “AppMonitor App_Availability” on page 59.<br>• **CPU** bar. Links to “AppMonitor App_Performance” on page 61.<br>• **Memory** bar. Links to “AppMonitor App_Performance” on page 61. |

## AppMonitor App_Performance

### Purpose

The AppMonitor App_Performance view shows the CPU and memory usage for each process on a specified application.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization.** The percentage of CPU resources that is used by the processes in an application.<br><br>**Memory.** The percentage of memory that is used by the processes in an application.<br><br>**Process Name.** The name of the monitored process. |
| Where to go next | Drill down on:<br>• **CPU Utilization** bar. Links to "AppMonitor Proc_Performance" on page 62.<br>• **Memory** bar. Links to "AppMonitor Proc_Performance" on page 62. |

## AppMonitor Proc_Performance

### Purpose

The AppMonitor Proc_Performance view shows the percentage of memory and CPU that are used by each instance of a process.

### Description of the View

| | |
|---|---|
| Data displayed | **Percent Memory.** The percentage of memory resources that is used by the processes in an application.<br><br>**Percent CPU.** The percentage of CPU resources that is used by the processes in an application.<br><br>**Process Name (PID).** The number the system assigns to the process. |
| Where to go next | Drill down on Memory bar. Links to "AppMonitor Process_Memory_Profile" on page 63. |

## AppMonitor Proc_Uptime

### Purpose

The AppMonitor Proc_Uptime view shows the number of hours that a specific process has been active.

### Description of the View

| | |
|---|---|
| Data displayed | **Uptime.** The number of hours a monitored application has been active.<br><br>**Process Name (PID).** The number the system assigns to the process. |
| Where to go next | n/a |

## AppMonitor Process_Memory_Profile

### Purpose

The AppMonitor Process_Memory_Profile view shows the memory usage of instances of a process.

### Description of the View

| | |
|---|---|
| Data displayed | **Resident Set Size.** The amount of a process that is in memory for the monitored applications.<br><br>**Virtual Set Size.** The total size of a process (including memory and swap) for the monitored applications.<br><br>**Process Name (PID).** The number the system assigns to the process. |
| Where to go next | N/A |

# AppMonitor Analysis Views

## Application Monitor

The Application Monitor Analysis view shows the real-time availability and resource usage of application processes. The display is dynamically updated.

The interface consists of three information panels:

- Aggregate process use for a selected application. This portion of the window also includes rolled-up alarm state information.
- Use by process group showing all available applications.
- Process group history displayed graphically by month, week and selected time frame (usually the last four hours).

### Description of the View

| | |
|---|---|
| Data displayed | **Availability.** The availability of the selected application.<br>**CPU.** The current CPU usage of the selected application, expressed as a percentage.<br>**Memory.** The amount of total memory used by the selected application, expressed as a percentage.<br>**Resident.** The amount of resident memory used by the selected application, expressed in MB.<br>**Virtual.** The amount of virtual memory used by the selected application, expressed in MB. |

# DiskIO Views

Views in this section include:



## DiskIO_Controller_Latency

### Purpose

The DiskIO_Controller_Latency view shows the throughput rate and service time for each monitored controller.

**Note** The utilization represents the percentage of elapsed time that the disks connected to the controller were busy. The controller utilization percent is computed by summing the utilization of the individual disks and dividing by the number of disks on the controller. The controller utilization percent describes how close the aggregate of disks are to capacity.

### Description of the View

| | |
|---|---|
| Data displayed | **Controller Name.** The name of the controller that is being monitored.<br><br>**Utilization.** The utilization percent for each monitored controller.<br><br>**Service Time.** The service time for each monitored controller. |
| Where to go next | n/a |

## DiskIO_Controller_Overview

### Purpose

The DiskIO_Controller_Overview is a high-level overview of a selected controller. You can use it to view the controller utilization and throughput time activity for each monitored controller.

### Description of the View

| | |
|---|---|
| Data displayed | **Controller Name.** The name of the controller that is being monitored.<br><br>**Read.** The number of kilobytes read for each monitored controller.<br><br>**Written.** The number of kilobytes written for each monitored controller.<br><br>**Throughput Rate.** The throughput rate for each monitored controller. |
| Where to go next | Drill down on any of the bars. Links to “DiskIO_Controller_Throughput” on page 67. |

## DiskIO_Controller_Queues

### Purpose

The DiskIO_Controller_Queues view shows the average number of requests for each monitored controller.

### Description of the View

| | |
|---|---|
| Data displayed | **Controller Name.** The name of the controller that is being monitored.<br><br>**Run Queue.** The average length of the queue containing I/O requests that have started processing but have not yet finished. |
| Where to go next | Drill down on the **Run Queue** bar. Links to “DiskIO_Controller_Throughput” on page 67. |

## DiskIO_Controller_Throughput

### Purpose

The DiskIO_Controller_Throughput view displays the amount of I/O read and written for each monitored controller.

### Description of the View

| | |
|---|---|
| Data displayed | **Controller Name.** The name of the controller that is being monitored.<br><br>**Total.** The total number of kilobytes that are throughput for each monitored controller.<br><br>**Read.** The number of kilobytes read for each monitored controller.<br><br>**Written.** The number of kilobytes written for each monitored controller. |
| Where to go next | Drill down on any of the bars. Links to "DiskIO_Controller_Latency" on page 65. |

## DiskIO_Disk_Latency

### Purpose

The DiskIO_Disk_Latency view shows the throughput rate and service time for each monitored disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Utilization.** The utilization percentage for each monitored disk.<br><br>**Service Time.** The service time for each monitored disk.<br><br>**Disk Name.** The disk name. |
| Where to go next | Drill down on any of the bars. Links to "DiskIO_Controller_Overview" on page 66. |

## DiskIO_Disk_Overview

### Purpose

The DiskIO_Disk_Overview is a high-level overview of a monitored disk. You can use it to view the disk utilization and throughput time activity for each monitored disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Read.** The number of kilobytes read for each monitored disk.<br><br>**Written.** The number of kilobytes written for each monitored disk.<br><br>**Throughput.** The throughput rate for each monitored disk.<br><br>**Disk Name.** The disk name. |
| Where to go next | Drill down on any of the bars. Links to “DiskIO_Disk_Throughput” on page 70. |

## DiskIO_Disk_Queues

### Purpose

The DiskIO_Disk_Queues view shows the average number of requests for each monitored disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Run Queue.** The average length of the queue containing I/O requests that have started processing but have not yet finished.<br><br>**Disk Name.** The disk name. |
| Where to go next | Drill down on the **Run Queue** bar. Links to “DiskIO_Disk_Throughput” on page 70. |

## DiskIO_Disk_Throughput

### Purpose

The DiskIO Disk_Throughput view displays the amount of I/O read and written for each monitored disk.

**Note** Determine the type of work that the disk is performing. If the work is reading or writing exclusively, it is recommended that you stripe the disk to rebalance the work.

### Description of the View

| | |
|---|---|
| Data displayed | **Total.** The total number of kilobytes that are throughput for each monitored disk.<br><br>**Read.** The number of kilobytes read for each monitored disk.<br><br>**Written.** The number of kilobytes written for each monitored disk.<br><br>**Disk Name.** The disk name. |
| Where to go next | Drill down on any bar. Links to “DiskIO_Disk_Latency” on page 68. |

## DiskIO_Volume_Latency

### Purpose

The DiskIO_Volume_Latency view shows the throughput rate and service time for each monitored volume.

Description of the View

| | |
|---|---|
| Data displayed | **Utilization.** The utilization percent for each monitored volume.<br><br>**Service Time.** The service time for each monitored volume.<br><br>**Volume Name.** The volume name. |
| Where to go next | Drill down on any bar. Links to “DiskIO_Disk_Overview” on page 69. |

## DiskIO_Volume_Overview

### Purpose

The DiskIO_Volume_Overview is a high-level overview of a selected volume. You can use it to view the utilization and throughput time activity for each monitored volume.

### Description of the View

| | |
|---|---|
| Data displayed | **Read.** The number of kilobytes read for each monitored volume.<br><br>**Written.** The number of kilobytes written for each monitored volume.<br><br>**Throughput Rate.** The throughput rate for each monitored volume.<br><br>**Volume Name.** The volume name. |
| Where to go next | Drill down on any bar. Links to “DiskIO_Volume_Throughput” on page 72. |

## DiskIO_Volume_Queues

### Purpose

The DiskIO_Volume_Queues view shows the average number of requests for each monitored volume.

### Description of the View

| | |
|---|---|
| Data displayed | **Run Queue.** The average length of the queue containing I/O requests that have started processing but have not yet finished.<br><br>**Volume Name.** The volume name. |
| Where to go next | Drill down on the **Run Queue** bar. Links to "DiskIO_Volume_Throughput" on page 72. |

## DiskIO_Volume_Throughput

### Purpose

The DiskIO_Volume_Throughput view displays the amount of I/O read and written for each monitored volume.

### Description of the View

| | |
|---|---|
| Data displayed | **Total.** The total number of kilobytes that are throughput for each monitored volume.<br><br>**Read.** The number of kilobytes read for each monitored volume.<br><br>**Written.** The number of kilobytes written for each monitored volume.<br><br>**Volume Name.** The volume name. |
| Where to go next | Drill down on any bar. Links to "DiskIO_Volume_Latency" on page 70. |

# FileSystem Views

Views in this section include:

- FileSystem_Capacity
- FileSystem_Inodes
- FileSystem_Overview

## FileSystem_Capacity

### Purpose

The FileSystem_Capacity view shows the amount of space that is available and the amount that is used for the monitored file system. You can use it to determine the amount of capacity that is available for the file system.

### Description of the View

| | |
|---|---|
| Data displayed | **Space Available.** The amount of space available on the monitored file system.<br><br>**Space Used.** The amount of space used on the monitored file system. |
| Where to go next | Drill down on any bar. Links to “FileSystem_Inodes” on page 73. |

## FileSystem_Inodes

### Purpose

The FileSystem_Inodes view is an overview of the inode availability for a monitored file system. You can use this view to help detect file systems that are possibly running out of inodes.

### Description of the View

| | |
|---|---|
| Data displayed | **Inodes Available.** The number of inodes that can be added to a monitored file system.<br><br>**Inodes Used.** The number of inodes used on the monitored file system. |
| Where to go next | n/a |

## FileSystem_Overview

### Purpose

The FileSystem_Overview is a high-level overview of the capacity used and available on the monitored file system.

**Note** This overview shows only the top five monitored file systems ranked by available space.

### Description of the View

| | |
|---|---|
| Data displayed | **Space Available.** The capacity that is available on the monitored file system.<br><br>**Space Used.** The amount of capacity that is used on the monitored file system. |
| Where to go next | n/a |

# HPUX_MPStat Views

Views in this section include:

- HPUX MPStat_Overview
- HPUX MPStat_RunQueue
- HPUX MPStat_Utilization

## HPUX MPStat_Overview

This view is similar to the AIX_MPStat_Overview. For details, refer to "AIX_MPStat_Overview" on page 39.

## HPUX MPStat_RunQueue

### Purpose

The HPUX MPStat_RunQueue view displays the number of processes in the run queue for each CPU instance that is monitored.

### Description of the View

| | |
|---|---|
| Data displayed | **Procs In Run Queue.** The length of the queue containing requests that have started processing but have not yet finished. |
| Where to go next | n/a |

## HPUX MPStat_Utilization

This view is similar to the AIX_MPStat_Utilization view. For details, refer to "AIX_MPStat_Utilization" on page 40.

# HPUX_System Views

Views in this section include:

- HPUX System CPU_Load
- HPUX System CPU_Utilization
- HPUX System_Load
- HPUX System_Overview
- HPUX System_Swap_Available
- HPUX System Virtual_Memory

## HPUX System CPU_Load

This view is similar to the AIX_System CPU_Load view. For details, refer to “AIX_System_CPU_Load” on page 41.

## HPUX System CPU_Utilization

This view is similar to the AIX_System_CPU_Utilization view. For details, refer to “AIX_System_CPU_Utilization” on page 42.

## HPUX System_Load

This view is similar to the AIX_System_Load view. For details, refer to “AIX_System_Load” on page 43.

## HPUX System_Overview

This view is similar to the AIX_System_Overview. For details, refer to “AIX_System_Overview” on page 44.

## HPUX System_Swap_Available

This view is similar to the AIX_System_Swap_Available view. For details, refer to “AIX_System_Swap_Available” on page 45.

## HPUX System Virtual_Memory

This view is similar to the AIX_System_Virtual_Memory view. For details, refer to “AIX_System_Virtual_Memory” on page 46.

# Linux_MPStat Views

Views in this section include:

- Linux MPStat_Overview
- Linux MPStat_Utilization

## Linux MPStat_Overview

This view is similar to the AIX_MPStat_Overview. For details, refer to “AIX_MPStat_Overview” on page 39.

**Note** Unlike the AIX_MPStat_Overview, the Linux MPStat_Overview does not display the Wait Time metric.

## Linux MPStat_Utilization

This view is similar to the AIX_MPStat_Utilization view. For details, refer to “AIX_MPStat_Utilization” on page 40.

# Linux_System Views

Views in this section include:

- Linux System CPU_Load
- Linux System CPU_Utilization
- Linux System_Load
- Linux System_Overview
- Linux System Swap_Available
- Linux System Virtual_Memory

## Linux System CPU_Load

### Purpose

The Linux System CPU_Load view is a detailed view of the number of processes in the run queue.

Use this view to investigate the following:

- A high number of processes in the run queue means the CPU is busy. A consistently high number can indicate that host needs more CPU power.
- A high number of processes waiting for I/O can mean a problem or bottleneck in disk I/O.

A high number of processes in the swap queue might indicate that the CPU has a critical shortage of memory.

### Description of the View

| | |
|---|---|
| Data displayed | **Runnable Procs Swapped.** The number of processes in the swap queue that are capable of being run.<br><br>**Procs In Run Queue.** The number of processes waiting to run in the run queue.<br><br>**Blocked Procs.** The number of processes that are ready to run but are not able to run because of a bottleneck or problem in the disk I/O. |
| Where to go next | n/a |

## Linux System CPU_Utilization

### Purpose

The Linux System CPU_Utilization view provides an overview of the CPU workload for a monitored Linux system. You can use it to monitor the status of CPU usage within a Linux system.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization** and **CPU User Time**.The percentage of time the CPU executes code and user programs. This time includes both system and user time.<br><br>**CPU System Time.** The percentage of time that the CPU is executing system or kernel processes.<br><br>**Procs In Run Queue.**The number of processes in the swap queue. |
| Where to go next | Drill down on the **Procs In Run Queue** line. Links to “Linux System CPU_Load” on page 79. |

## Linux System_Load

### Purpose

The Linux System_Load view is a breakdown of the overall load on a selected Linux system. You can use it to monitor the status of the number of context switches and interrupts.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU System.** The percentage of time the CPU is running system and kernel processes.<br><br>**Context Switch.** The number of processes that a switch uses for processing.<br><br>**Interrupts.** The number of interrupts that have occurred. |
| Where to go next | n/a |

## Linux System_Overview

### Purpose

The Linux System_Overview is a high-level overview of the Linux system that is being monitored. You can use it to view the overall health of the system.

Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization.** The percentage of time the CPU executes code. This time includes both system and user time.<br><br>**Ethernet Collision Rate.** The number of ethernet collisions as a percentage of all ethernet packets sent.<br><br>**Physical Memory Pct.** The percentage of available physical memory.<br><br>**Swap Percent.** The percentage of swap space that is available. |
| Where to go next | Drill down on the:<br>• **CPU Utilization** line. Links to “Linux System CPU_Utilization” on page 80..<br>• **Ethernet Collision Rate** line.<br>• **Physical Memory Pct** line. “Linux System Virtual_Memory” on page 82.<br>• **Swap Percent Available** line. “Linux System Virtual_Memory” on page 82. |

## Linux System Swap_Available

This view is similar to the AIX_System_Swap_Available view. For details, refer to “AIX_System_Swap_Available” on page 45.

## Linux System Virtual_Memory

This view is similar to the AIX_System_Virtual_Memory view. For details, refer to “AIX_System_Virtual_Memory” on page 46.

# NetMonitor Views

Views in this section include:

- NetMonitor Net_Overview
- NetMonitor Device_Avail
- NetMonitor Device_Status
- NetMonitor Response_Detail
- NetMonitor Route_Detail
- NetMonitor Device_Response

## NetMonitor Net_Overview

### Purpose

The NetMonitor Net_Overview view displays the average percent availability and the average response time for each server group.

### Description of the View

| | |
|---|---|
| Data displayed | **Availability.** Availability of a specific server group.<br><br>**Response Time.** The average response time for all the devices belonging to a specific server group.<br><br>**Group Name.** The name of the server group containing the monitored devices. |
| Where to go next | Drill down on:<br>• **Device Availability** graph. Links to “NetMonitor Device_Avail” on page 84.<br>• **Device Response** graph. Links to “NetMonitor Device_Response” on page 87. |

## NetMonitor Device_Avail

### Purpose

The NetMonitor Device Availability view displays availability and packet loss for each device in the group. Packet loss indicates the level of network congestion.

Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name or IP address of the monitored network device specified in the agent startup parameters.<br><br>**Availability.** The availability of the monitored device, based on the number of packets echoed back.<br><br>**PacketLoss.** The percentage of packet loss. By default, vFoglight sends five packets to the monitored network device. It expects each one to be echoed back. Specify this information in the agent startup parameters. |
| Where to go next | Drill down on any bars. Links to “NetMonitor Device_Status” on page 85. |

## NetMonitor Device_Status

### Purpose

The NetMonitor Device_Status view displays whether the device is responding to ICMP packets.

### Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name or IP address of the monitored network device specified in the agent startup parameters.<br><br>**Status.** The status of the monitored device.<br>1 Device available<br>0 100% packet loss. Device is present and working, but no packets come back.<br>-1 Device was not found on this data pass.<br>-2 Device was never found. The device will not be monitored again |
| Where to go next | n/a. |

## NetMonitor Response_Detail

### Purpose

The NetMonitor Response_Detail view shows the minimum, maximum and average response times of a specific device.

### Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name or IP address of the monitored network device specified in the agent startup parameters.<br><br>**MaxTime.** The maximum time a packet takes to be echoed back.<br><br>**MinTime.** The minimum time a packet takes to be echoed back.<br><br>**AvrResponseTime.** The round-trip response time between the vFoglight Host and the network device. |
| Where to go next | n/a |

## NetMonitor Route_Detail

### Purpose

The NetMonitor Route_Detail view displays the duration of the hop for each hop on the route to the device. A hop is the route between one network device and the next on a packet route.

### Description of the View

| | |
|---|---|
| Data displayed | **HopDestination.** A hop is the route between one net-work device and the next on a packet's route to its destination. A hop destination is a device through which the packet passes on the route.<br><br>**HopLength.** The length of the hop from one device to the next. |
| Where to go next | n/a |

## NetMonitor Device_Response

### Purpose

The NetMonitor Device_Response view lists each device that belongs to a server group and shows an average of all response times for each packet that each device received.

Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name or IP address of the monitored network device specified in the agent startup parameters.<br><br>**ResponseTime.** The round-trip response time between the vFoglight Host and the network device.<br><br>**TotalNumOfHops.** The number of hops between the vFoglight Host and the packet's destination, including the destination. |
| Where to go next | Drill down on:<br>• **Response Time** bar. Links to "NetMonitor Response_Detail" on page 86.<br>• **Hops to Device** bar. Links to "NetMonitor Route_Detail" on page 87. |

# NetworkServices Views

Views in this section include:

- NetworkService Overview
- NetworkService Availability

## NetworkService Overview

### Purpose

The Network Services Overview graph displays the average availability percentage of monitored hosts.

### Description of the View

| | |
|---|---|
| Data displayed | **Hosts.** Name of the host.<br><br>**Time.**<br><br>**MeanAvailability.** Average time intervals between two adjacent failures over the last 6 hours, in seconds. |
| Where to go next | Drill down on any host. Links to “NetworkService Availability” on page 89. |

## NetworkService Availability

### Purpose

The Availability graph shows the services which are available on the specified hosts. The values are derived from the Service, Time, and Availability fields in the ServiceInfo table.

Description of the View

| | |
|---|---|
| Data displayed | **Service.** Name of the service type.<br><br>**Time.**<br><br>**Availability.** Availability code:<br>100 = available<br>0 = unavailable<br>-1 = system error |
| Where to go next | Drill down on any available bars. Links to “NetworkService Overview” on page 89. |

# NIC Views

Views in this section include:

- NIC_Overview
- IO_Stats
- Packet_Stats
- Error_Stats
- Collision_Stats

## NIC_Overview

### Purpose

The NIC_Overview graph assists your investigation of network traffic, network errors and network collisions.

### Description of the View

| | |
|---|---|
| Data displayed | **NICname.** Name of the monitored card.<br><br>**CollisionRate.** The percentage of output packets that collided during the collection period.<br><br>**ErrorRate.** Percentage of all packets that the NIC could not send or receive. This figure is the sum of Nocanput, Defer, Input Error, and Output Error totals.<br><br>**NICUtilization.** The percentage of bandwidth being used on the card. |
| Where to go next | Drill down on:<br>• **NIC Utilization** bar. Links to “IO_Stats” on page 92.<br>• **Error Rate** bar. Links to “Error_Stats” on page 94.<br>• **Collison Rate** bar. Links to“Collision_Stats” on page 94. |

## IO_Stats

### Purpose

The IO Stats graph shows the input and output for a NIC.

### Description of the View

| | |
|---|---|
| Data displayed | **NICname.** Name of the monitored card.<br><br>**Input.** Kilobytes per second received during the collection period.<br><br>**Output.** Kilobytes per second sent during the collection period. |
| Where to go next | Drilling down on Input or Output takes you to the PacketStats view. Links to “Packet_Stats” on page 93. |

# Packet_Stats

## Purpose

The Packet_Stats graph shows the number of packets sent and received per second.

## Description of the View

| | |
|---|---|
| Data displayed | **Input Packets.** Number of packets received per second.<br><br>**Output Packets.** Number of packets sent per second. |
| Where to go next | N/A. |

## Error_Stats

### Purpose

The Error_Stats graph shows the number of input and output errors during the collection period.

### Description of the View

| | |
|---|---|
| Data displayed | **Input Errors.** Number of input errors that occurred during the collection period.<br><br>**Output Errors.** Number of output errors that occurred during the collection period.<br><br>**Input Failures.** Number of incoming packets dropped during the collection period due to insufficient buffer space.<br><br>**Output Failures.** Number of packet defers that occurred during the collection period. |
| Where to go next | n/a |

## Collision_Stats

### Purpose

The Collision_Stats graph shows the number of collisions and output packets for a NIC.

Description of the View

| | |
|---|---|
| Data displayed | **NICName.** Name of the monitored card.<br><br>**Collisions.** Number of collisions that occurred during the collection period.<br><br>**Output Packets.** Number of input errors that occurred during the collection period. |
| Where to go next | n/a |

# Process Views

Views in this section include:



## Proc_CPU_Hogs

### Purpose

The Proc_CPU_Hogs view shows the percentage of CPU resources used by each process. You can use it to determine if a process is in a runaway state. Processes are identified by:

- Command line
- User
- PID

For example, (root, 11120)

### Description of the View

| | |
|---|---|
| Data displayed | **Pct_CPU.** Identifies those processes that utilize the highest percentage of CPU. |
| Where to go next | n/a |

## Proc_IO_Hogs

### Purpose

The Proc_IO_Hogs view displays the user processes that are monopolizing I/O resources.

### Description of the View

| | |
|---|---|
| Data displayed | **I/O Rate.** Identifies those user processes that utilize the highest percentage of I/O. |
| Where to go next | n/a |

## Proc_MEM_Hogs

### Purpose

The Proc_MEM_Hogs view shows the processes that monopolize CPU resources. Use this view to identify those processes that use the most memory.

### Description of the View

| | |
|---|---|
| Data displayed | **Pct_Memory.** Identifies those processes that utilize the highest percentage of memory. |
| Where to go next | Drill down on the **Process** bar graph. Links to “Proc_RSS_Hogs” on page 98. |

## Proc_RSS_Hogs

### Purpose

The Proc_RSS_Hogs view displays the memory profile of the top *n* processes with the highest resident set size (RSS). RSS is the amount of physical and virtual memory that a process currently uses. The set size also describes the amount of the process that is resident in memory.

### Description of the View

| | |
|---|---|
| Data displayed | **RSS_1Kbytes.** Identifies those processes that utilize the highest percentage of resident set size. |
| Where to go next | Drill down on the **Process** bar graph. Links to “Proc_VSS_Hogs” on page 100. |

# Process_Stats

## Purpose

The Process_Stats view shows the number of processes in the following states:

- zombie
- stopped
- waiting
- runnable

Use this view to identify any zombie processes.

## Description of the View

| | |
|---|---|
| Data displayed | **Procs.** The total number of processes running on a host.<br><br>**Runnable.** The number of processes in the run queue.<br><br>**Stopped.** The number of stopped processes.<br><br>**Waiting.** The number of processes waiting for I/O.<br><br>**Zombie.** The number of processes in a zombie state. |
| Where to go next | Drill down on any line. Links to “Proc_CPU_Hogs” on page 96. |

## Proc_Sys_Hogs

### Purpose

The Proc_Sys_Hogs view shows the processes that monopolize system resources.

### Description of the View

| | |
|---|---|
| Data displayed | **System Time.** Identifies those processes that utilize the highest percentage of system time. |
| Where to go next | n/a |

## Proc_VSS_Hogs

### Purpose

The Proc_VSS_Hogs view shows the memory profile of the top *n* processes with the highest virtual set size (VSS).

### Description of the View

| | |
|---|---|
| Data displayed | **VSS_1Kbytes.** Identifies those processes that utilize the highest percentage of VSS. |
| Where to go next | n/a |

# SNMP Views

Views in this section include:

- SNMP Device Overview
- SNMP Device Interface Statistics
- SNMP Interface Throughput Detail
- SNMP Throughput Detail
- SNMP Interface Statistics
- SNMP TCP Connections
- SNMP TCP Connections Closed
- SNMP TCP Opens
- SNMP TCP Overview
- SNMP TCP Turnaround
- SNMP IP Statistics
- SNMP Operational Status

## SNMP Device Overview

### Purpose

The SNMP Device Overview graph shows the maximum, minimum, and average percentage of utilization for each monitored device.

### Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name of the monitored SNMP device.<br><br>**AvrInterfaceUtilization.** The average utilization for all the interfaces on a single device.<br><br>**MaxInterfaceUtilization.** The interface with the maximum utilization on a single device.<br><br>**MinInterfaceUtilization.** The interface with the minimum utilization on a single device. |
| Where to go next | Drill down on a bar. Links to "SNMP Device Interface Statistics" on page 102. |

## SNMP Device Interface Statistics

### Purpose

The SNMP Device Interface Statistics graph shows the bandwidth utilization of the interface.

### Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name of the SNMP device being monitored.<br><br>**InterfaceUtilization.**The percentage of bandwidth used during the collection period. |
| Where to go next | Drill down on any bar. Links to "SNMP Interface Throughput Detail" on page 103. |

## SNMP Interface Throughput Detail

### Purpose

The SNMP Interface Throughput graph shows throughput rate bits per second for each interface.

### Description of the View

| | |
|---|---|
| Data displayed | **DeviceNameInterface.** A string composed of the device name and the interface names.<br><br>**Bits_Sec.** The sum of the input and output bits per second during the collection period. |
| Where to go next | Drill down on any bar. Links to “SNMP Throughput Detail” on page 103. |

## SNMP Throughput Detail

### Purpose

The SNMP Throughput Detail graph shows the input and output bytes for each interface.

### Description of the View

| | |
|---|---|
| Data displayed | **DeviceNameInterface.** A string composed of the device name and the interface names.<br><br>**InputBytes.**The number of octets received on the interface during the collection period, including framing characters.<br><br>**OutputBytes.** The number of octets transmitted out of the interface during the collection period, including framing characters. |
| Where to go next | Drill down on any bar. Links to “SNMP Interface Statistics” on page 104. |

## SNMP Interface Statistics

### Purpose

The SNMP Interface Statistics graph shows the number of broadcast, discarded, error, and unicast packets for each interface.

Description of the View

| | |
|---|---|
| Data displayed | **DeviceNameInterface.** A string composed of the device name and the interface names.<br><br>**Broadcast_Pkts_Sec.** The sum of the Input Broadcast Packets and Output Broadcast Packets per second during the collection period.<br><br>**Discarded_Pkts_Sec.** The sum of the Input Discarded Packets and Output Discarded Packets per second during the collection period.<br><br>**Error_Pkts_Sec.** The sum of the Input Error Packets and Output Error Packets per second during the collection period.<br><br>**Unicast_Pkts_Sec.** The sum of the Input Unicast Packets and Output Unicast Packets per second during the collection period. |
| Where to go next | Drill down on any bar. Links to “SNMP IP Statistics” on page 109. |

## SNMP TCP Connections

### Purpose

The TCP Connections Detail graph shows the number of established TCP connections during the collection period.

### Description of the View

| | |
|---|---|
| Data displayed | **Established_Connections.** The number of connections established during the collection period. |
| Where to go next | n/a |

## SNMP TCP Connections Closed

### Purpose

The TCP Connections Closed graph shows the number of TCP connections closed, dropped, and reset for each interface during the collection period.

### Description of the View

| | |
|---|---|
| Data displayed | **Connections_Closed_Sec.** The number of TCP connections closed per second during the collection period.<br><br>**Listen_Drops_Sec.** The number of TCP connections dropped per second during the collection period.<br><br>**Resets_Output_Sec.** The number of output TCP connections reset per second during the collection period. |
| Where to go next | n/a |

## SNMP TCP Opens

### Purpose

The TCP Opens graph shows the number of incoming and outgoing TCP connections for each interface during the collection period.

### Description of the View

| | |
|---|---|
| Data displayed | **Incoming_Opens_Sec.** The number of TCP connections opened per second during the collection period.<br><br>**Outgoing_Opens_Sec.** The number of outgoing TCP connections opened per second during the collection period. |
| Where to go next | n/a |

# SNMP TCP Overview

## Purpose

The TCP Overview graph displays the number of input and output TCP segments for each interface during the collection period.

## Description of the View

| | |
|---|---|
| Data displayed | **Input_Segments_Sec.** The number of TCP segments input per second during the collection period.<br><br>**Output_Segments_Sec.** The number of outgoing TCP segments per second during the collection period. |
| Where to go next | n/a |

# SNMP TCP Turnaround

## Purpose

The TCP Turnaround graph shows the incoming and closed TCP connections for each device.

## Description of the View

| | |
|---|---|
| Data displayed | **Incoming_Opens_Sec.** The number of TCP connections opened per second during the collection period.<br><br>**Connection_Closed_Sec.** The number of TCP connections closed per second during the collection period. |
| Where to go next | n/a |

# SNMP IP Statistics

The SNMP agent assists your investigation of the IP statistics of an interface with the IP Statistics graph.

## Purpose

The Throughput Detail shows the input and output rates by datagram type.

## Description of the View

| | |
|---|---|
| Data displayed | **DeviceName.** The name of the monitored SNMP device.<br><br>**IP_Input_Datagrams_Sec.** Total number of input datagrams received from interfaces during the collection period, included those received in error.<br><br>**IP_Input_Discards_Sec.** The number of input IP datagrams for which no problem was encountered, but which were discarded for other reasons, such as lack of buffer space. This counter does not include any datagrams discarded while awaiting re-assembly.<br><br>**IP_Input_Errors_Sec.** The sum of the Input Address Errors and IP Input Header Errors per second during the collection period.<br><br>**IP_Output_Discards_Sec.** The number of IP output datagrams discarded per second during the collection period.<br><br>**IP_Output_Requests_Sec.** The number of output request datagrams per second during the collection period. |
| Where to go next | n/a |

# SNMP Operational Status

## Purpose

The SNMP Operational Status graph shows the status of each monitored interface: up, down, or in test.

## Description of the View

| | |
|---|---|
| Data displayed | **DeviceNameInterface.** A string composed of the device name and the interface names.<br><br>**OperationalStatus.** The current operational state of the interface: 1 = up, 2 = down,<br>3 = testing. You cannot pass operational packets in the testing state. |
| Where to go next | n/a |

# Sun_MPStat Views

Views in this section include:



## Sun_MPStat Context_Switches

### Purpose

The Sun_MPStat Context_Switches view displays the number of times per second that the CPU performed switches between the contexts of two processes.

### Description of the View

| | |
|---|---|
| Data displayed | **Voluntary.** The number of times that the CPU performed a voluntary switch between the contexts of two processes.<br><br>**Involuntary.** The number of times that the CPU performed an involuntary switch between the contexts of two processes. |
| Where to go next | n/a |

## Sun_MPStat Cross_Calls

### Purpose

The Sun_MPStat Cross_Calls view displays the number of cross calls across processors. Cross calls occur when one CPU wakes up another CPU by interruption. This view also displays the number of migrations of kernel threads across CPUs.

### Description of the View

| | |
|---|---|
| Data displayed | **Cross Calls.** The number of interprocessor cross calls per second.<br><br>**Thread Migrations.** The number of migrations of kernel threads across multiple CPUs. |
| Where to go next | n/a |

## Sun_MPStat_Faults

### Purpose

The Sun_MPStat_Faults view displays the number of major and minor faults per CPU instance.

### Description of the View

| | |
|---|---|
| Data displayed | **Major.** The number of times that the system had to retrieve a page from disk.<br><br>**Minor.** The number of times that the system had to retrieve a page from memory. |
| Where to go next | n/a |

## Sun_MPStat_Interrupts

### Purpose

The Sun MPStat_Interrupts view displays the number of hardware interrupts and the number of hardware interrupts as threads, per second.

### Description of the View

| | |
|---|---|
| Data displayed | **Device Interrupts.** The number of hardware interrupts per second.<br><br>**Interrupts as Threads.** The number of device interrupts as threads per second. |
| Where to go next | n/a |

## Sun_MPStat_Locks

### Purpose

The Sun_MPStats_Locks view displays the number of mutex spins and read/write lock spins.

### Description of the View

| | |
|---|---|
| Data displayed | **Mutex.** The number of times that the CPU attempted to hold a mutex but failed because it was held by another process.<br><br>**Read/Write.** The number of times that the CPU attempted a read/write lock but failed because the lock was held by another process. |
| Where to go next | n/a |

## Sun_MPStat_Overview

This view is similar to the AIX_MPStat_Overview. For details, refer to “AIX_MPStat_Overview” on page 39.

## Sun_MPStat_Utilization

This view is similar to the AIX_MPStat_Utilization view. For details, refer to “AIX_MPStat_Utilization” on page 40.

# Sun_System Views

Views in this section include:



## Sun_Caches

### Purpose

The Sun_Caches view displays the percentage of hit rates for the buffer, inodes, and name caches.

Description of the View

| | |
|---|---|
| Data displayed | **Buffer Cache Hit Rate.** The number of times a lookup in the buffer cache results in finding the requested buffer, divided by the total number of lookups.<br><br>**Inode Cache Hit Rate.** The total number of times a lookup in the inode cache results in finding the requested inode, divided by the total number of lookups.<br><br>**Name Cache Hit Rate.** The total number of times a lookup in the directory name cache results in finding the vnodes corresponding to the requested name, divided by the total number of lookups. |
| Where to go next | n/a |

## Sun_CPU_Load

This view is similar to the AIX_System_CPU_Load view. For details, refer to “AIX_System_CPU_Load” on page 41.

## Sun_CPU_Utilization

This view is similar to the AIX_System_CPU_Utilization view. For details, refer to “AIX_System_CPU_Utilization” on page 42.

## Sun_System_Load

This view is similar to the AIX_System_Load view. For details, refer to “AIX_System_Load” on page 43.

## Sun_System_Overview

This view is similar to the AIX_System_Overview. For details, refer to “AIX_System_Overview” on page 44.

**Note** In addition to the CPU Utilization, CPU Wait Time, Ethernet Collision Rate, Scan Rate, and Swap Percent metrics that appear in the AIX_System_Overview view (see “Description of the View” on page 45), the Sun_System_Overview view also shows the following data:

| | |
|---|---|
| Description | **Physical Memory Used Pct.** The percentage of physical memory that is used. |

## Sun_Swap_Avail

This view is similar to the AIX_System_Swap_Available view. For details, refer to “AIX_System_Swap_Available” on page 45.

## Sun_Virtual_Memory

This view is similar to the AIX_System_Virtual_Memory view. For details, refer to “AIX_System_Virtual_Memory” on page 46.

# Sun_TCP Views

Views in this section include:

- Sun_TCP Overview
- Sun_TCP Errors
- Sun_TCP Opens
- Sun_TCP Retransmissions

## Sun_TCP Overview

### Purpose

The Sun_TCP Overview graph displays the number of TCP/IP Input and Output bytes.

### Description of the View

| | |
|---|---|
| Data displayed | **Input_Bytes.** Number of bytes received.<br><br>**Output_Bytes.** Number of bytes sent. |
| Where to go next | n/a |

## Sun_TCP Errors

### Purpose

The Sun_TCP Errors graph displays failed transmission attempts, Half Open Listen Drops, Listen Drops, and Resets Output.

### Description of the View

| | |
|---|---|
| Data displayed | **Failed_Transmission_Attempts.** An attempt to transmit a packet failed.<br><br>**Half_Open_Listen_Drops.** A connection was dropped when the listen processing was half done.<br><br>**Listen_Drops.** Number of listen requests that could not be processed.<br><br>**Resets_Output.** Number of outgoing RST packets. |
| Where to go next | Drill down on any line. Links to “Sun_TCP Retransmissions” on page 118. |

## Sun_TCP Opens

### Purpose

The Sun_TCP Opens graph displays the incoming and outgoing Opens.

### Description of the View

| | |
|---|---|
| Data displayed | **Input_Bytes.** Number of bytes received.<br><br>**Output_Bytes.** Number of bytes sent. |
| Where to go next | n/a |

## Sun_TCP Retransmissions

### Purpose

The Sun_TCP Retransmissions graph displays the percentages of Input and Output Retransmissions.

Description of the View

| | |
|---|---|
| Data displayed | **Input_Retrans_Percent.** Number of duplicate segments received.<br><br>**Output_Retrans_Percent.** Number of segments retransmitted. |
| Where to go next | Drill down on any line. Links to “Sun_TCP Overview” on page 117. |

# TerminalServer Views

Views in this section include:

- Sessions Information
- Top Sessions

## Sessions Information

### Purpose

The Sessions Information graph displays the current active and inactive sessions.

### Description of the View

| | |
|---|---|
| Data displayed | **ActiveSessions.** Sessions currently used.<br><br>**InactiveSessions.** Inactive sessions.<br><br>**Time.** Number of duplicate segments received.<br><br>**TotalSessions.** Total number of sessions. |
| Where to go next | n/a |

## Top Sessions

### Purpose

The Top Sessions graph displays the sessions which are consuming most of the system resources. The number of sessions displayed is determined by the number of top sessions set in the agent properties.

Description of the View

| | |
|---|---|
| Data displayed | **SessionsName.** Session name.<br><br>**Time.** Number of duplicate segments received.<br><br>**TotalMemoryKBytes.** Total memory being used.<br><br>**TotalSessionsBytes.** Total bytes in the session. |
| Where to go next | n/a |

# User Views

Views in this section include:

- CPU Hogs
- I/O Hogs
- Memory Hogs
- Process Hogs
- System Hogs
- Virtual Memory Hogs

## CPU Hogs

### Purpose

Displays the top users by CPU usage.

### Description of the View

| | |
|---|---|
| Data displayed | **UserName.** The login name of a user.<br><br>**Pct_CPU.** The percentage of CPU time devoted to a user. |
| Where to go next | n/a |

## I/O Hogs

### Purpose

The User I/O Hogs graph shows the top users by I/O usage.

### Description of the View

| | |
|---|---|
| Data displayed | **UserName.** The login name of a user.<br><br>**I/O_Rate_KBytes.** The number of kilobytes per second of data read and written by the user over the last interval. |
| Where to go next | n/a |

## Memory Hogs

### Purpose

The User Memory Hogs graph shows the top users by resident set size.

### Description of the View

| | |
|---|---|
| Data displayed | **UserName.** The login name of a user.<br><br>**RSS_1Kbytes.** The resident set size of the process. |
| Where to go next | n/a |

## Process Hogs

### Purpose

The User Process Hogs graph shows the top users based on the number of processes the users are running.

### Description of the View

| | |
|---|---|
| Data displayed | **UserName.** The login name of a user.<br><br>**Num_Procs.** The number of processes owned by a user. |
| Where to go next | n/a |

## System Hogs

### Purpose

The User System Hogs graph shows the top users by percentage of system time.

### Description of the View

| | |
|---|---|
| Data displayed | **UserName.** The login name of a user.<br><br>**Pct_System_time.** The number of seconds of system time divided by the number of seconds elapsed in the last interval multiplied times 100. If a process uses 1 second of system time in a 10 second interval, this field will read 10.0. |
| Where to go next | n/a |

# Virtual Memory Hogs

## Purpose

The User Virtual Memory Hogs graph shows the top users based on the their virtual set size.

## Description of the View

| | |
|---|---|
| Data displayed | **UserName.** The login name of a user.<br><br>**VSS_1Kbytes.** The size of the process image. |
| Where to go next | n/a |

# WebMonitor Views

Views in this section include:

- WebMonitor_Overview
- WebMonitor Page_Availability
- WebMonitor Page_ResponseTime

## WebMonitor_Overview

### Purpose

The WebMonitor_Overview displays statistics for each Web server. You can use it to determine average availability, connect, and response times. vFoglight averages these figures across all the pages that are monitored for each Web server.

### Description of the View

| | |
|---|---|
| Data displayed | **Mean Availability.** The average availability of each monitored Web server.<br><br>**Mean Response Time.** The average response time for each monitored Web server. |
| Where to go next | Drill down on:<br>• **Mean Availability** bar. Links to "WebMonitor Page_Availability" on page 126.<br>• **Mean Response Time** bar. Links to "WebMonitor Page_ResponseTime" on page 127. |

## WebMonitor Page_Availability

### Purpose

The WebMonitor Page_Availability view displays the availability of a specific Web page.

### Description of the View

| | |
|---|---|
| Data displayed | **Page Availability.** The percentage availability of a specific Web page. |
| Where to go next | n/a |

## WebMonitor Page_ResponseTime

### Purpose

The WebMonitor Page_ResponseTime view displays the response time for a specific Web page.

### Description of the View

| | |
|---|---|
| Data displayed | **Connect Time.** The connection time for the Web server.<br><br>**Page Fetch Time.** The amount of time that it takes the server to retrieve the monitored page.<br><br>**Total Response Time.** The total amount of time for a specific Web page to respond to the connection. |
| Where to go next | n/a |

# Windows_System Views

Views in this section include:

- Windows_System_NT_CPU_Load
- Windows_System_NT_CPU_Utilization
- Windows_System_NT_Disk_Overview
- Windows_System_NT_Disk_Queues
- Windows_System_NT_Disk_Space_Available
- Windows_System_NT_Disk_Throughput
- Windows_System_NT_FileSystem_Capacity
- Windows_System_NT_FileSystem_Space_Overview
- Windows_System_NT_Logical_Disk_Overview
- Windows_System_NT_Logical_Disk_Queues
- Windows_System_NT_Logical_Disk_Throughput
- Windows_System_NT_NIC_Error_Stats
- Windows_System_NT_NIC_IO_Stats
- Windows_System_NT_NIC_Overview
- Windows_System_NT_NIC_Packet_Stats
- Windows_System_NT_System_Overview
- Windows_System_NT_Proc_CPU_Hogs
- Windows_System_NT_Proc_IO_Hogs
- Windows_System_NT_Proc_MEM_Hogs
- Windows_System_NT_Processor_Utilization
- Windows_System_NT_Swap_Avail
- Windows_System_NT_Virtual_Memory

## Windows_System_NT_CPU_Load

### Purpose

The Windows_System_NT_CPU_Load view displays the process load statistics on a designated host.

### Description of the View

| | |
|---|---|
| Data displayed | **Procs In Run Queue.** The number of processes in the run queue.<br><br>**Processes.** The number of processes either running or waiting in the run queue. |
| Where to go next | n/a |

## Windows_System_NT_CPU_Utilization

### Purpose

The Windows_System_NT_CPU_Utilization view provides an overview of the CPU workload for a selected Windows system. You can use it to investigate CPU usage for a monitored Windows system.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization.** The total percentage of time the CPU executes system code and user programs. This time includes both system and user time.<br><br>**CPU System Utilization.** The percentage of time the CPU executes system code.<br><br>**CPU User Utilization.** The percentage of time the CPU executes user programs.<br><br>**Processes.** The number of processes either running or waiting in the queue.<br><br>**Procs In Run Queue.** The number of processes that are waiting in the run queue. |
| Where to go next | Drill down on the:<br>• **CPU Utilization** line. Links to "Windows_System_NT_Proc_CPU_Hogs" on page 138.<br>• **CPU System Utilization** line. Links to "Windows_System_NT_Proc_CPU_Hogs" on page 138.<br>• **CPU User Utilization** line. Links to "Windows_System_NT_Proc_CPU_Hogs" on page 138. |

## Windows_System_NT_Disk_Overview

### Purpose

The Windows_System_NT_Disk_Overview displays a high-level overview of statistics for each monitored disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Utilization.** The percentage of utilization for each monitored disk.<br><br>**Reads.** The rate of read operations on a monitored disk.<br><br>**Writes.** The rate of write operations on a monitored disk. |
| Where to go next | Drill down on:<br>• **Utilization** bar. Links to "Windows_System_NT_Disk_Queues" on page 131.<br>• **Reads** or **Writes** bars. Links to "Windows_System_NT_Disk_Throughput" on page 132. |

## Windows_System_NT_Disk_Queues

### Purpose

The Windows_System_NT_Disk_Queues view displays the read and write queue lengths for each monitored disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Read Queue Length.** The average number of read requests that were queued for the selected disk.<br><br>**Write Queue Length.** The average number of write requests that were queued for the selected disk. |
| Where to go next | n/a |

## Windows_System_NT_Disk_Space_Available

### Purpose

The Windows_System_NT_Disk_Space_Available view displays the disk space that is available on a monitored disk for a designated host.

### Description of the View

| | |
|---|---|
| Data displayed | **Megabytes Free.** The amount of space that is available on a specific disk. |
| Where to go next | n/a |

## Windows_System_NT_Disk_Throughput

### Purpose

The Windows_System_NT_Disk_Throughput view displays the percentage of throughput for each disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Kbytes Read.** The rate at which data was transferred to the disk during a read operation.<br><br>**Kbytes Written.** The rate at which data was transferred to the disk during a write operation. |
| Where to go next | n/a |

## Windows_System_NT_FileSystem_Capacity

### Purpose

The Windows_System_NT_FileSystem_Capacity view displays the file system capacity that is used and available.

### Description of the View

| | |
|---|---|
| Data displayed | **Space Used.** The amount of capacity that is used in a file system.<br><br>**Space Available.** The amount of capacity that is available in a file system. |
| Where to go next | n/a |

## Windows_System_NT_FileSystem_Space_Overview

### Purpose

The Windows_System_NT_FileSystem_Space_Overview displays the file system percentage that is used and available.

### Description of the View

| | |
|---|---|
| Data displayed | **Space Used.** The percentage of space that is used in a file system.<br><br>**Space Available.**The percentage of space that is available in a file system. |
| Where to go next | Drill down on the **Space Used** bar. Links to "Windows_System_NT_FileSystem_Capacity" on page 132.<br>Drill down on the **Space Available** bar. Links to "Windows_System_NT_Disk_Space_Available" on page 132. |

## Windows_System_NT_Logical_Disk_Overview

### Purpose

The Windows_System_NT_Logical_Disk_Overview displays the percentage of utilization for each disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Utilization.** The percentage of utilization for each monitored disk.<br><br>**Transfer Time.** The average amount of time for a disk transfer.<br><br>**Reads.** The rate of read operations on a monitored disk.<br><br>**Writes.** The rate of write operations on a monitored disk. |
| Where to go next | Drill down on:<br>• **Utilization** bar. Links to "Windows_System_NT_Logical_Disk_Queues" on page 134.<br>• **Transfer Time, Reads**, or **Writes** bars. Links to "Windows_System_NT_Logical_Disk_Throughput" on page 135. |

## Windows_System_NT_Logical_Disk_Queues

### Purpose

The Windows_System_NT_Logical_Disk_Queues view displays the read and write queue length for each monitored disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Disk Name.** The name of the NT disk, such as C:, D:, or E:.<br><br>**Read Queue Length.** The average number of read requests that were queued for the selected disk.<br><br>**Write Queue Length.** The average number of write requests that were queued for the selected disk. |
| Where to go next | n/a |

## Windows_System_NT_Logical_Disk_Throughput

### Purpose

The Windows_System_NT_Logical_Disk_Throughput view displays the percentage of throughput for each disk.

### Description of the View

| | |
|---|---|
| Data displayed | **Disk Name.** The name of the NT disk, such as C:, D:, or E:<br><br>**Kbytes Read.** The rate at which data was transferred to the disk during a read operation.<br><br>**Kbytes Written.** The rate at which data was transferred to the disk during a write operation. |
| Where to go next | n/a |

## Windows_System_NT_NIC_Error_Stats

### Purpose

The Windows_System_NT_NIC_Error_Stats view displays the input and output drops for each network interface card.

### Description of the View

| | |
|---|---|
| Data displayed | **Packets Dropped.** The number of inbound/outbound packets that could not be transmitted because the packets contained errors. |
| Where to go next | n/a |

## Windows_System_NT_NIC_IO_Stats

### Purpose

The Windows_System_NT_NIC_IO_Stats view displays the number of bytes received and sent for each network interface card.

### Description of the View

| | |
|---|---|
| Data displayed | **Bytes Received** and **Bytes Sent.** The rate at which the network interface card receives/sends bytes of data. |
| Where to go next | Drill down on any of the bars. Links to "Windows_System_NT_NIC_Error_Stats" on page 135. |

## Windows_System_NT_NIC_Overview

### Purpose

The Windows_System_NT_NIC_Overview displays the percentage of bandwidth that is utilized for a designated host.

### Description of the View

| | |
|---|---|
| Data displayed | **Bandwidth Utilization.** The percentage of network bandwidth. |
| Where to go next | Drill down on the Network Interface bar. Links to "Windows_System_NT_NIC_Packet_Stats" on page 136. |

## Windows_System_NT_NIC_Packet_Stats

### Purpose

The Windows_System_NT_NIC_Packet_Stats view displays the input and output packets (seconds) for each network interface card.

### Description of the View

| | |
|---|---|
| Data displayed | **Input Packet** and **Output Packet.** The rate at which packets are received/sent on the network interface |
| Where to go next | Drill down on either bar. Links to “Windows_System_NT_NIC_IO_Stats” on page 136. |

## Windows_System_NT_System_Overview

### Purpose

The Windows_System_NT_System_Overview is a high-level overview of the Windows system that is being monitored. You can use it to view the overall health of the system.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization.** The percentage of time the CPU executes code. This time includes both system and user time.<br><br>**Free Memory.** The amount of memory available divided by the total size of the physical memory.<br><br>**Free Paging File.** The percentage of the page file instance that is currently in use.<br><br>**Page Reads Per Sec.** The number of page reads per second.<br><br>**Processes.** The number of processes either running or waiting in the queue.<br><br>**System Cache.** The percentage of time the CPU executes code and user programs. This time includes both system and user time. |
| Where to go next | Drill down on:<br>• **CPU Utilization** line. Links to "Windows_System_NT_CPU_Utilization" on page 129.<br>• **Free Memory** line. Links to "Windows_System_NT_Virtual_Memory" on page 140.<br>• **Free Paging File** line. Links to "Proc_MEM_Hogs" on page 97.<br>• **Processes** line. Links to "Proc_CPU_Hogs" on page 96. |

## Windows_System_NT_Proc_CPU_Hogs

### Purpose

The Windows_System_NT_Proc_CPU_Hogs view shows the percentage of processes that are using the highest percentage of CPU.

### Description of the View

| | |
|---|---|
| Data displayed | **CPU Utilization.** The CPU performance of monitored processes. |
| Where to go next | n/a |

## Windows_System_NT_Proc_IO_Hogs

### Purpose

The Windows_System_NT_Proc_IO_Hogs view displays the processes that have the highest I/O rate.

### Description of the View

| | |
|---|---|
| Data displayed | **IO Rate.** The I/O rate in kbytes for a specified process. |
| Where to go next | n/a |

## Windows_System_NT_Proc_MEM_Hogs

### Purpose

The Windows_SystemNT_Proc_MEM_Hogs view shows the top memory processes on a designated host.

### Description of the View

| | |
|---|---|
| Data displayed | **Resident Set Size.** The amount of the process that is in memory for the monitored host.<br><br>**Virtual Set Size.** The total size of the process (including memory and swap) for the monitored applications. |
| Where to go next | n/a |

## Windows_System_NT_Processor_Utilization

### Purpose

The Windows_System_NT_Processor_Utilization view displays statistics for each processor.

### Description of the View

| | |
|---|---|
| Data displayed | **Processor Time.** The percentage of time that the processor spent performing processing activities.<br><br>**Privileged Time.** The percentage of time that the processor spent in privileged mode.<br><br>**User Time.** The percentage of time that the processor spent in user mode.<br><br>**Interrupt Time.** The percentage of time that the processor spent handling hardware interrupts.<br><br>**Interrupts.** The number of CPU interrupts per second. |
| Where to go next | n/a |

## Windows_System_NT_Swap_Avail

This view is similar to the AIX_System_Swap_Available view. For details, refer to “AIX_System_Swap_Available” on page 45.

## Windows_System_NT_Virtual_Memory

### Purpose

The Windows_System Virtual_Memory view is a breakdown of how memory is being used by a monitored Windows host. You can use it to monitor the status of the number of pages being paged in and out as well as the number of swaps in and out.

Description of the View

| | |
|---|---|
| Data displayed | **Pages Paged In.** The number of pages paged in to active memory from the disk swap space or file system.<br><br>**Pages Paged Out.** The number of pages paged out to active memory from the disk swap space or file system.<br><br>**Free Memory.** The amount of free memory available for a designated host.<br><br>**Page Space Available.** The percentage of page space that is available on the designated host.<br><br>**System Cache.** The total number of kilobytes that are available in resident memory for the designated host. |
| Where to go next | Drill down on the **Free Memory** line. Links to “Proc_MEM_Hogs” on page 97. |

3

# Rules

The Cartridge for Operating Systems includes some built-in rules that monitor the health of your operating system environment. In this guide, the description of the rules are organized into logical groupings. To locate a rule, select the area from the following contents.

This chapter contains the following sections:

# AIX_Console Rules

Rules in this section:

- Console

## Console

### Purpose

This rule monitors failed attempts to switch users (su) using an incorrect password.

### Scope

AIX_Console _SULog

### Rule Definition

| Condition | State |
|---|---|
| Number of failed attempts is 4 | Fatal |
| Number of failed attempts is 3 | Critical |
| Number of failed attempts is 2 | Warning |
| Number of failed attempts is 1 | Normal |

# AIX_System Rules

Rules in this section:



## CPU_Utilization

### Purpose

This rule determines if a system is constrained by the load on the CPU. Insufficient CPU power reduces throughput and increases interactive response time.

### Scope

AIX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| CPU utilization exceeds 90% AND the number of processes in the run queue exceeds 11 | Fatal |
| CPU utilization exceeds 80% AND the number of processes in the run queue exceeds 8 | Critical |
| CPU utilization exceeds 70% AND the number of processes in the run queue exceeds 5 | Warning |
| CPU utilization is less than 70% AND the number of processes in the run queue is less than 5 | Normal |

## CPU_Wait

### Purpose

This rule determines when the CPU wait time is consistently high. Consistently high wait times can indicate a disk bottleneck.

### Scope

AIX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| If the amount of time processes are spending waiting for some IO (disk read or write) to complete exceeds 30% | Critical |
| If the amount of time processes are spending waiting for some IO (disk read or write) to complete is less than 30% | Normal |

## Memory_Shortage

### Purpose

This rule monitors the use of physical memory by a system. When RAM is short, the UNIX kernel searches for memory to free and creates additional overhead for the CPU. As memory becomes more scarce, the kernel starts to page inactive memory pages to disk. Paging can create significant CPU overhead.

### Scope

AIX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| The average scan rate AND the number of page outs both exceed 400 | Fatal |

Rule Definition

| Condition | State |
|---|---|
| The average scan rate AND the number of page outs both exceed 300 | Critical |
| The average scan rate AND the number of page outs both exceed 200 | Warning |
| The average scan rate AND the number of page outs are less than 200 | Normal |

## Swap_Space

### Purpose

This rule determines when a system is running short of swap space. Lack of swap space degrades system performance and critically low swap space can crash your VM kernel.

### Scope

AIX_System_Client

Rule Definition

| Condition | State |
|---|---|
| The amount of swap space available is 2% or less | Fatal |
| The amount of swap space available is 5% or less | Critical |
| The amount of swap space available is 10% or less | Warning |
| The amount of swap space available exceeds 10% | Normal |

# AppMonitor Rules

Rules in this section:



## AgentMsgs

### Purpose

The AppMonitor Agent messages rule determines if the AppMonitor agent startup parameters are not set correctly. For example, alerts are triggered if there are no secondary agent startup parameters or if duplicate secondary agent startup parameter entries are detected.

### Scope

AppMonitor_AgentMsgs

### Rule Definition

| Condition | State |
|---|---|
| Severity level of an application is “Fatal” | Fatal |
| Severity level of an application is “Critical” | Critical |
| Severity level of an application is “Warning” | Warning |
| No agent messages with a severity | Normal |

## Process_Availability

### Purpose

This rule determines when the process of an application becomes fully or partially unavailable. Partial availability is the percentage of processes found divided by the number of processes expected.

### Scope

AppMonitor_ProcessTotals

### Rule Definition

| Condition | State |
|---|---|
| The number of available processes found is 30% or less | Fatal |
| The number of available processes found is 60% or less | Critical |
| The number of available processes found is 90% or less | Warning |
| The number of available processes found exceeds 90% | Normal |

# DiskIO Rules

Rules in this section:

- Volume_Busy

## Volume_Busy

### Purpose

This rule detects volumes that cause performance bottlenecks. Bottlenecks occur when a disk is highly utilized and performs a high rate of read and write transactions.

**Note** Volume bottlenecks are the largest contributor to performance degradation. Investigate all critical warnings immediately.

### Scope

DiskIO_Volumes

### Rule Definition

| Condition | State |
|---|---|
| Disk volume utilization exceeds 30% AND the service time exceeds 50 milliseconds | Critical |
| Disk volume utilization exceeds 20% AND the service time exceeds 30 milliseconds | Warning |
| Disk volume utilization is less than 20% AND the service time exceeds 30 milliseconds | Normal |

# FileSystem Rules

Rules in this section:



## Capacity_Status

### Purpose

This rule determines whether a file system is running low on space. Possible values are: 0 = good, 1 = warning, 2 = critical, and 3 = fatal. These values are set based on the fatal, critical, and warning thresholds that you configure for a FileSystemList. For more information, see the Cartridge for Operating Systems *User Guide*.

### Scope

FileSystem_FSStats

### Rule Definition

| Condition | State |
|---|---|
| Capacity status value has reached a threshold of 3 | Fatal |
| Capacity status value has reached a threshold of 2 | Critical |
| Capacity status value has reached a threshold of 1 | Warning |
| Capacity status value has reached a threshold of 0 | Normal |

## Inodes

### Purpose

This rule determines whether a file system is running low on inodes.

### Scope

FileSystem_FSStats

### Rule Definition

| Condition | State |
|---|---|
| The percentage of inodes available divided by those used and available is 5 or less | Critical |
| The percentage of inodes available divided by those used and available is 10 or less | Warning |
| The percentage of inodes available divided by those used and available exceeds 10 | Normal |

# HPUX_Console Rules

Rules in this section:



## Console

### Purpose

This rule traps messages from the /var/adm/syslog/syslog.log based on user-specified search words and writes them to the ErrorVerbose table.

### Scope

HPUX_Console_ErrorVerbose

### Rule Definition

| Condition | State |
|---|---|
| Error severity that was trapped is “Fatal” | Fatal |
| Error severity that was trapped is “Critical” | Critical |
| Error severity that was trapped is a “Warning” | Warning |
| Error severity that was trapped is “Informational” | Normal |

# HPUX _System Rules

Rules in this section:

- CPU_Utilization
- CPU_Wait
- Memory_Shortage
- Swap_Space

## CPU_Utilization

### Purpose

This rule determines if a system is constrained by the load on the CPU. Insufficient CPU power reduces throughput and increases interactive response time.

### Scope

HPUX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| CPU utilization exceeds 90% AND the number of processes in the run queue divided by the number of CPUs exceeds 11 | Fatal |
| CPU utilization exceeds 80% AND the number of processes in the run queue divided by the number of CPUs exceeds 8 | Critical |
| CPU utilization exceeds 70% AND the number of processes in the run queue divided by the number of CPUs exceeds 5 | Warning |
| CPU utilization is less than 70% AND the number of processes in the run queue divided by the number of CPUs is less than 5 | Normal |

## CPU_Wait

### Purpose

This rule determines when the CPU wait time is consistently high, which can indicate a disk bottleneck.

### Scope

HPUX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| If the amount of time processes are spending waiting for some IO (disk read or write) to complete exceeds 30% | Critical |
| If the amount of time processes are spending waiting for some IO (disk read or write) to complete is less than 30% | Normal |

## Memory_Shortage

### Purpose

This rule monitors the use of physical memory by a system. When RAM is short, the UNIX kernel searches for memory to free and creates additional overhead for the CPU. As memory becomes more scarce, the kernel starts to page inactive memory pages to disk. Paging can create significant CPU overhead.

### Scope

HPUX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| The average scan rate AND the number of page outs both exceed 400 | Fatal |

### Rule Definition

| Condition | State |
|---|---|
| The average scan rate AND the number of page outs both exceed 300 | Critical |
| The average scan rate AND the number of page outs both exceed 200 | Warning |
| The average scan rate AND the number of page outs are less than 200 | Normal |

## Swap_Space

### Purpose

This rule determines when a system is running short of swap space. Lack of swap space degrades system performance and critically low swap space can crash your VM kernel.

### Scope

HPUX_System_Client

### Rule Definition

| Condition | State |
|---|---|
| Amount of swap space available is 2% or less | Fatal |
| Amount of swap space available is 5% or less | Critical |
| Amount of swap space available is 10% or less | Warning |
| Amount of swap space available exceeds 10% | Normal |

# Linux_System Rules

Rules in this section:



## CPU_Utilization

### Purpose

This rule determines if a system is constrained by the load on the CPU. Insufficient CPU power reduces throughput and increases interactive response time.

### Scope

Linux_System_Client

### Rule Definition

| Condition | State |
|---|---|
| CPU utilization exceeds 90% AND the number of processes in the run queue exceeds 11 | Fatal |
| CPU utilization exceeds 80% AND the number of processes in the run queue exceeds 8 | Critical |
| CPU utilization exceeds 70% AND the number of processes in the run queue exceeds 5 | Warning |
| CPU utilization is less than 70% AND the number of processes in the run queue is less than 5 | Normal |

## Page_Rate

### Purpose

This rule determines when an excessive number of pages have been paged into active memory. Memory is managed in pages. Processes that must be executed are paged into memory.

### Scope

Linux_System_Client

### Rule Definition

| Condition | State |
|---|---|
| The number of pages paged into active memory exceeds 300 | Warning |
| The number of pages paged into active memory is less than 300 | Normal |

## Swap_Space

### Purpose

This rule determines when a system is running short of swap space. Lack of swap space degrades system performance and critically low swap space can crash your VM kernel.

### Scope

Linux_System_Client

### Rule Definition

| Condition | State |
|---|---|
| Amount of swap space available is 2% or less | Fatal |
| Amount of swap space available is 5% or less | Critical |
| Amount of swap space available is 10% or less | Warning |

Rule Definition

| Condition | State |
|---|---|
| Amount of swap space available exceeds 10% | Normal |

# LogFilter Rules

Rules in this section:

- LogFilter

## LogFilter

### Purpose

This rule is triggered when the keywords defined in the FilterTrapFile agent property match a monitored log file. For more information, see the Cartridge for Operating Systems *User Guide*.

### Scope

LogFilter_ErrorVerbose

### Rule Definition

| Condition | State |
|---|---|
| The error severity “Fatal” is found in the monitored logs | Fatal |
| The error severity “Critical” is found in the monitored logs | Critical |
| The error severity “Warning” is found in the monitored logs | Warning |
| The error severity “Cleared” is found in the monitored logs | Normal |

# NetMonitor Rules

Rules in this section:



## Device_Not_Found

### Purpose

This rule warns the system administrator if a device that is listed on the Device List cannot be mapped to an IP address through NIS or /etc/hosts.

### Scope

NetMonitor_ServiceLevels

### Rule Definition

| Condition | State |
|---|---|
| The device cannot be mapped to an host address and cannot be monitored | Warning |
| The device is mapped to an host address and can be monitored | Normal |

## Device_Unavailable

### Purpose

This rule notifies the system administrator when a device becomes unavailable.

### Scope

NetMonitor_ServiceLevels

### Rule Definition

| Condition | State |
|---|---|
| The network device is not available from the host due to severe network congestion, a network failure, or the disconnection/ powerdown of the device | Fatal |
| The network device is available from the host | Normal |

## NIS

### Purpose

The rule determines when a Null Status is returned, send a message to the email administrator.

### Scope

NetMonitor_ServiceLevels

### Rule Definition

| Condition | State |
|---|---|
| The network device is not available from the host | Warning |
| The network device is available from the host | Normal |

## Service Level

### Purpose

This rule determines when packet loss, and therefore availability of the device, drop below acceptable levels.

### Scope

NetMonitor_ServiceLevels

### Rule Definition

| Condition | State |
|---|---|
| The network device availability is less than 30% | Fatal |
| The network device availability is less than 60% | Critical |
| The network device availability is less than 80% | Warning |
| The network device availability is 100% | Normal |

# NIC Rule

Rule in this section:



## Collision

### Purpose

The percentage of output packets that collided during the collection period has reached a threshold when this rule has fired.

**Note** CollisionRateCritical and CollisionRateWarning are variables. They can be viewed in the vFoglight Registry WORLD domain in the Default host context under the NIC agent.

### Scope

NIC_NICStats

### Rule Definition

| Condition | State |
|---|---|
| Indicates a greater than 20% high collision rate | Critical |
| Indicates a greater than 10% high collision rate | Warning |
| Indicates a normal high collision rate | Normal |

# Process Rules

Rules in this section:



## High_System_Usage

### Purpose

This rule detects individual processes that consistently monopolize CPU resources.

### Scope

Process_TopCPU

### Rule Definition

| Condition | State |
|---|---|
| CPU usage exceeds 80% after four sample periods | Fatal |
| CPU usage exceeds 80% after two sample periods | Critical |
| CPU usage exceeds 80% | Warning |

## Runaway_Process

### Purpose

This rule detects processes that consistently monopolize CPU resources and have reached a runaway state.

### Scope

Process_TopCPU

### Rule Definition

| Condition | State |
|---|---|
| A process is consuming more than 80% of the available CPU | Warning |
| The process is no longer a runaway process | Normal |

## Zombie

### Purpose

This rule detects defunct, or Zombie, processes that are no longer active. The process table entry remains in the system until the parent process quits or performs a wait call for the child. When a large number of defunct processes exist, the process table might be full. As a result, the parent cannot spawn new processes. Zombie processes can eventually lead to system-wide failures or crashes.

### Scope

Process_Stats

### Rule Definition

| Condition | State |
|---|---|
| The number of zombie processes exceeds 10 | Warning |

# SNMP Rules

Rules in this section:



## Interface_Broadcasts

### Purpose

The SNMP Interface Broadcasts rule determines if an interface is receiving too many broadcasts from the network due to a broadcast storm. When a broadcast storm occurs, network communication between systems or devices degrades because network traffic is burdened with broadcast packets.

### Scope

SNMP_Interface

### Rule Definition

| Condition | State |
|---|---|
| The agent received 36000 input broadcast packets since the previous polling interval | Critical |

Rule Definition

| Condition | State |
|---|---|
| The agent received 12000 input broadcast packets since the previous polling interval | Warning |
| The agent received fewer than 12000 input broadcast packets since the previous polling interval | Normal |

## Interface_Discards

### Purpose

The SNMP Interface Discards rule determines if there is an increasing number of discarded packets, whether or not errors have been detected. Discarded packets can indicate that the interface or system is running out of buffer allocations or free memory.

### Scope

SNMP_Interface

Rule Definition

| Condition | State |
|---|---|
| The sum of the number of inbound packets plus the number of outbound packets is greater than 200 | Critical |
| The sum of the number of inbound packets plus the number of outbound packets is greater than 50 | Warning |
| The sum of the number of inbound packets plus the number of outbound packets is less than 50 | Normal |

## Interface_Errors

### Purpose

The SNMP Interface Errors rule determines if an interface is sending or receiving too many error packets. Error packets are discarded and cause retransmissions or lost data.

### Scope

SNMP_Interface

### Rule Definition

| Condition | State |
|---|---|
| The sum of the number of inbound error packets plus the number of outbound error packets is greater than 250 | Critical |
| The sum of the number of inbound error packets plus the number of outbound error packets is greater than 125 | Warning |
| The sum of the number of inbound error packets plus the number of outbound error packets is less than 50 | Normal |

## Interface_Utilization

### Purpose

The SNMP Interface Utilization Rule determines if an interface is approaching its bandwidth limit. As utilization increases, the interface and the attached network segment becomes a bottleneck.

### Scope

SNMP_Interface

Rule Definition

| Condition | State |
|---|---|
| The utilization on a device is 90% | Fatal |
| The utilization on a device is 75% | Critical |
| The utilization on a device is 50% | Warning |
| The utilization on a device is normal | Normal |

## IP_Discards

### Purpose

The SNMP IP Discards rule determines if the number of IP discarded datagrams is increasing, whether or not errors have been detected. Discarded datagrams can indicate that the system is running out of buffer space.

### Scope

SNMP_IP

Rule Definition

| Condition | State |
|---|---|
| The sum of the number of discarded input datagrams plus the number of discarded output datagrams is greater than 200 | Critical |
| The sum of the number of discarded input datagrams plus the number of discarded output datagrams is greater than 50 | Warning |
| The sum of the number of discarded input datagrams plus the number of discarded output datagrams is less than 50 | Normal |

## IP_Input_Errors

### Purpose

The SNMP IP Input Errors rule determines if the IP layer is receiving too many error datagrams. Error datagrams are discarded and cause retransmissions or lost data.

### Scope

SNMP_IP

### Rule Definition

| Condition | State |
|---|---|
| The total number of input errors exceeds 250 | Critical |
| The total number of input errors exceeds 125 | Warning |
| The total number of input errors is less than 125 | Normal |

## TCP_RST_Output

### Purpose

The SNMP TCP RST Output rule monitors the RST packet output rate. High RST packet output is a result of attempted connections to TCP services that are not listening on the expected port.

### Scope

SNMP_TCP

### Rule Definition

| Condition | State |
|---|---|
| RST packet output has reached 2 per second. | Warning |
| RST packet output has returned to 2 per second. | Normal |

## TCP_Retransmission

### Purpose

The SNMP TCP Retransmission rule monitors the TCP retransmission rate. Network performance may be adversely impacted by extra traffic generated by the retransmitted packets.

### Scope

SNMP_TCP

### Rule Definition

| Condition | State |
|---|---|
| TCP retransmission rate has reached 25%. Network performance is being adversely impacted by the extra traffic generated by the retransmitted packets. Check network hardware and TCP parameters affecting retransmission. | Critical |
| TCP retransmission rate has reached 15%. Network performance is being adversely impacted by the extra traffic generated by the retransmitted packets. Check network hardware and TCP parameters affecting retransmission. | Warning |
| TCP retransmission rate has returned to 8% | Normal |

## TCP_Listen_Drops

### Purpose

The SNMP TCP Listen Drops rule monitors the listen queue dropout rate.

### Scope

SNMP_TCP

Rule Definition

| Condition | State |
|---|---|
| TCP listen queue dropout rate is 1 per second. Either speed up the listen queue processing or make the listen queue deeper on TCP server applications. | Warning |
| TCP listen queue dropout rate has returned to 1 per second. | Normal |

## TCP_Turnaround

### Purpose

The SNMP TCP Turnaround rule monitors the TCP connection turnaround rate. This means that a significant amount of incoming connections are not being matched by closed connections.

### Scope

SNMP_TCP

Rule Definition

| Condition | State |
|---|---|
| Incoming TCP connections outnumber connections being closed by at least 10 to 1. This represents a significant amount of incoming connections not being matched by closed connections. This may be a Denial of Service (DOS) attack. | Critical |
| Incoming TCP connections outnumber connections being closed by at least 5 to 1. This may be normal application startup activity or it could signify a Denial of Service (DOS) attack. | Warning |
| TCP connection turnaround rate has returned to normal. | Normal |

# Sun_Console Rules

Rules in this section:

- Console

## Console

### Purpose

This rule traps messages from the /var/adm/syslog/syslog.log based on user-specified search words and writes them to the ErrorVerbose table. For more information, see “ErrorVerbose Table” on page 225.

### Scope

Sun_Console_ErrorVerbose

### Rule Definition

| Condition | State |
|---|---|
| Severity of the error that was trapped is “Fatal” | Fatal |
| Severity of the error that was trapped is “Critical” | Critical |
| Severity of the error that was trapped is a “Warning” | Warning |
| Severity of the error that was trapped is “Informational” | Normal |

# Sun_MPStat Rules

Rules in this section:

- Mutex_Contention

## Mutex_Contention

### Purpose

This rule monitors mutex spins.

### Scope

Sun_MPStat_Data

### Rule Definition

| Condition | State |
|---|---|
| The number of mutex spins exceeds 500 | Warning |

# Sun_System Rules

Rules in this section:



## CPU_Utilization

### Purpose

This rule determines if a system is constrained by the load on the CPU. Insufficient CPU power reduces throughput and increases interactive response time.

### Scope

Sun_System_Client

### Rule Definition

| Condition | State |
|---|---|
| CPU utilization exceeds 90% AND the number of processes in the run queue divided by the number of CPUs exceeds 11 | Fatal |
| CPU utilization exceeds 80% AND the number of processes in the run queue divided by the number of CPUs exceeds 8 | Critical |
| CPU utilization exceeds 70% AND the number of processes in the run queue divided by the number of CPUs exceeds 5 | Warning |
| CPU utilization is less than 70% AND the number of processes in the run queue divided by the number of CPUs is less than 5 | Normal |

## CPU_Wait

### Purpose

This rule determines when the CPU wait time is consistently high, which can indicate a disk bottleneck.

### Scope

Sun_System_Client

### Rule Definition

| Condition | State |
|---|---|
| CPU wait time divided by the number of CPUs exceeds 30% AND the number of processes waiting for I/O exceeds 1 | Critical |
| CPU wait time divided by the number of CPUs is less than 30% AND the number of processes waiting for I/O is less than 1 | Normal |

## Inode_Cache

### Purpose

This rule detects a low UFS inode cache hit rate. A low UFS inode cache hit rate causes additional CPU and disk use and can degrade overall performance.

### Scope

Sun_System_Client

### Rule Definition

| Condition | State |
|---|---|
| Cache hit rate is less than 50 | Warning |
| Cache hit rate exceeds 50 | Normal |

## Memory_Shortage

### Purpose

This rule monitors the use of physical memory by a system. When RAM is short, the UNIX kernel searches for memory to free and creates additional overhead for the CPU. As memory becomes more scarce, the kernel starts to page inactive memory pages to disk. Paging can create significant CPU overhead.

### Scope

Sun_System_Client

### Rule Definition

| Condition | State |
|---|---|
| The average scan rate AND the number of page outs both exceed 400 | Fatal |
| The average scan rate AND the number of page outs both exceed 300 | Critical |
| The average scan rate AND the number of page outs both exceed 200 | Warning |
| The average scan rate AND the number of page outs are less than 200 | Normal |

## Name_Cache

### Purpose

This rule detects a low Directory Name Lookup Cache (DNLC) hit rate. A low DNLC hit rate causes additional CPU and disk usage and can degrade overall performance.

### Scope

Sun_System_Client

Rule Definition

| Condition | State |
|---|---|
| The cache hit rate is less than 80 | Warning |
| The cache hit rate is 80 or greater | Normal |

## Page_Rate

### Purpose

This rule determines when an excessive number of pages have been paged into active memory. Memory is managed in pages. Processes that must be executed are paged into memory.

### Scope

Sun_System_Client

Rule Definition

| Condition | State |
|---|---|
| The number of pages paged into memory is 300 or greater | Warning |
| The number of pages paged into memory is less than 300 | Normal |

## Swap_Space

### Purpose

This rule determines when a system is running short of swap space. Lack of swap space degrades system performance and critically low swap space can crash your VM kernel.

### Scope

Sun_System_Client

Rule Definition

| Condition | State |
|---|---|
| Swap space available is 2% or less | Fatal |
| Swap space available is 5% or less | Critical |
| Swap space available is 10% or less | Warning |
| Swap space available exceeds 10% | Normal |

# Sun_TCP Rules

Rules in this section:

- Drops
- Dup_Input
- Retransmission_Input
- RST_Output

## Drops

### Purpose

The Drops rule monitors the number of listen drops. When listens are dropped, the accept processing of server processes on the computer needs to be improved.

### Scope

Sun_TCP_Counters

### Rule Definition

| Condition | State |
|---|---|
| The number of TCP listen drops is greater than or equal to .5 per second | Warning |
| The number of TCP listen drops is .5 per second | Normal |

## Dup_Input

### Purpose

The Dup Input rule monitors the monitored host segment retransmission percentage.

### Scope

Sun_TCP_Counters

Rule Definition

| Condition | State |
|---|---|
| Duplicate TCP input packet rate has reached 25 | Warning |

## Retransmission_Input

### Purpose

The Retransmission rule monitors the segment retransmission percentage.

### Scope

Sun_TCP_Counters

Rule Definition

| Condition | State |
|---|---|
| TCP retransmission rate has reached 25% | Critical |
| TCP retransmission rate has reached 15% | Warning |

## RST_Output

### Purpose

The RST_Output rule monitors the number of RST packets sent out by the computer. It is normal for SunOS to send out RST packets at the end of a TCP connection.

### Scope

Sun_TCP_Counters

Rule Definition

| Condition | State |
| --- | --- |
| RST packet output has reached 2 per second | Warning |

# TerminalServer Rule

Rules in this section:



## Session Memory

### Purpose

The Session Memory rule monitors system memory and sends notification when a session consumes an unusually high amount of system memory.

### Scope

TerminalServer_TopMemoryConsumerSessions

### Rule Definition

| Condition | State |
|---|---|
| A session consumes more than 95% of system memory | Fatal |
| A session consumes more than 80% but less than 95% of system memory | Critical |
| A session consumes more than 65% but less than 80% of system memory | Warning |
| A session consumes less than 65% of system memory | Normal |

# User Rule

Rules in this section:

- User_CPU

## User_CPU

### Purpose

The User_CPU rule detects user CPU overuse.

### Rule Definition

| Condition | State |
|---|---|
| Raises the CPU usage from Normal to a higher than normal state. | Warning |

# WebMonitor Rules

Rules in this section:

- Page_Availability
- Server_Availability

## Page_Availability

### Purpose

This rule determines when a URL page times out.

### Scope

WebMonitor_PageStats

### Rule Definition

| Condition | State |
|---|---|
| A Web page is not available | Warning |
| Web page is available | Normal |

## Server_Availability

### Purpose

This rule determines when packet loss occurs to the device and when the availability of the device falls below acceptable levels.

### Scope

WebMonitor_ServerStats

Rule Definition

| Condition | State |
|---|---|
| Web server is unavailable | Warning |
| Web server is available | Normal |

# Windows_System Rules

Rules in this section:



## Capacity

### Purpose

This rule determines if there is adequate disk space remaining on the Windows system.

### Scope

Windows_System_FileSys_Table

### Rule Definition

| Condition | State |
|---|---|
| Used capacity exceeds 98% | Fatal |
| Used capacity exceeds 95% | Critical |
| Used capacity exceeds 90% | Warning |

Rule Definition

| Condition | State |
|---|---|
| Used capacity is less than 90% | Normal |

## CPU_Utilization

### Purpose

This rule determines if the Windows system is constrained by the CPU load. Insufficient CPU reduces throughput and increases interactive response time.

### Scope

Windows_System_System_Table

Rule Definition

| Condition | State |
|---|---|
| CPU utilization exceeds 90% AND the run queue length is 2 | Fatal |
| CPU utilization exceeds 80% AND the run queue length is 2 | Critical |
| CPU utilization exceeds 70% AND the run queue length is 2 | Warning |
| CPU utilization is less than 70% AND the run queue length is less than 2 | Normal |

## Disk_Utilization

### Purpose

This rule determines if the Windows system is constrained by the throughput of available disk drives. Insufficient disk throughput reduces overall system throughput and interactive response time.

### Scope

Windows_System_Physical_Disk_Table

### Rule Definition

| Condition | State |
|---|---|
| Disk utilization exceeds 70% AND the read and write queue lengths exceed 2 over four sample periods | Fatal |
| Disk utilization exceeds 60% AND the read and write queue lengths exceed 2 over three sample periods | Critical |
| Disk utilization exceeds 50% AND the read and write queue lengths exceed 2 over two sample periods | Warning |
| Disk utilization is less than 50% AND the read and write queue lengths are 2 or less | Normal |

## EventLog

### Purpose

This rule monitors the Windows event logs for messages.

### Scope

Windows_System_EventLog

### Rule Definition

| Condition | State |
|---|---|
| The event log contains a user severity of “Fatal” | Fatal |
| The event log contains a user severity of “Critical” | Critical |
| The event log contains a user severity of “Warning” | Warning |

Rule Definition

| Condition | State |
|---|---|
| The event log contains a user severity of “Normal” | Normal |

## High_System_Usage

### Purpose

This rule determines if the Windows system is constrained by the CPU load. Insufficient CPU reduces throughput and increases interactive response time.

### Scope

Windows_System_Top_CPU_Table

Rule Definition

| Condition | State |
|---|---|
| CPU percentage load exceeds 95% over three sample periods | Fatal |
| CPU percentage load exceeds 90% over two sample periods | Critical |
| CPU percentage load exceeds 80% | Warning |
| CPU percentage load is 80% or less | Normal |

## IO_Interrupts

### Purpose

This rule determines if the Windows system is experiencing a high amount of I/O interrupts. A high interrupt rate can indicate a bad disk controller or network interface.

### Scope

Windows_System_System_Table

Rule Definition

| Condition | State |
|---|---|
| Number of interrupts/second exceeds 3500 over two sample periods | Warning |
| Number of interrupts/second is 3500 or less | Normal |

## Memory_Shortage

### Purpose

This rule determines if the Windows system is constrained by the memory load. Insufficient memory reduces throughput and increases interactive response time.

### Scope

Windows_System_System_Table

Rule Definition

| Condition | State |
|---|---|
| Page in rate/second exceeds 30 AND the free memory percentage is less than 5 | Fatal |
| Page in rate/second exceeds 20 AND the free memory percentage is less than 10 | Critical |
| Page in rate/second exceeds 10 AND the free memory percentage is less than 10 | Warning |
| Page in rate/second is less than 10 AND the free memory percentage exceeds 10 | Normal |

## Page_Space_Available

### Purpose

This rule determines if the Windows system has sufficient page file space. Insufficient page space can cause processes to be swapped from disk to memory. This can result in a shortage of virtual memory.

### Scope

Windows_System_System_Table

### Rule Definition

| Condition | State |
|---|---|
| Free page file percent is less than 5 | Fatal |
| Free page file percent is less than 10 | Critical |
| Free page file percent is less than 20 | Warning |
| Free page file percent exceeds 20 | Normal |

## ProcessorUtilization

### Purpose

This rule determines if the Windows system has sufficient processor utilization. Insufficient utilization can result in bottlenecks.

### Scope

Windows_System_Processor_Table

### Rule Definition

| Condition | State |
|---|---|
| Processor time exceeds 90% | Fatal |

### Rule Definition

| Condition | State |
|---|---|
| Processor time exceeds 80% | Critical |
| Processor time exceeds 70% | Warning |
| Processor time is less than 70 | Normal |

## Services

### Purpose

This rule determines if a monitored Windows service and/or device driver has changed in state. If the state of the service and/or device driver has changed or is restarted, a notification is sent to the Administrator.

### Scope

Windows_System_Services_Table

### Rule Definition

| Condition | State |
|---|---|
| The status of a service is either “Stopped” or “Paused” | Critical |
| The status of a service is “Start Pending” or “Stop Pending”, “Continue Pending” or “Pause Pending” | Warning |
| The status of a service is “Running” | Normal |

## ServicesRex

### Purpose

This rule determines if a monitored Windows service and/or device driver has changed in state.

### Scope

Windows_System_Services_Table

### Rule Definition

| Condition | State |
|---|---|
| The status of a service is either “Stopped” or “Paused”. When the rule matches these states, a “Restart” action is initiated | Critical |
| The status of a service is “Running” | Normal |

# 4

# Data

The Cartridge for Operating Systems collects data and stores it in specific tables. In this guide, the descriptions of the tables are organized into logical groupings by agent.

This chapter contains the following sections:

# AIX_Console Data

Data tables in this section:



## ErrorLog Table

### Purpose

The AIX_Console agent monitors the /var/adm/sulog and writes messages to the ErrorLog table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Class | Identity | Error class:<br>• H (hardware)<br>• S (software)<br>• U (undetermined class) |
| ErrorCode | Identity | AIX system error identifier. |
| Message | Identity | Description of the error. |
| Resource | Identity | The name of the resource in which the error occurred. |
| Severity | Identity | The error severity: INFO, PEND, PERF, PERM, TEMP, and UNKN. |
| TimeStamp | Identity | The real time of the error formatted as MMDDhhmmYY. |

## SULog Table

### Purpose

The AIX_Console agent monitors the /dev/error log and writes messages to the SULog table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Device | Identity | Device from which the su command was executed. |
| FailedAttempts | Metric | The total number of successive unsuccessful attempts by the user to this account. |
| Status | Identity | The result of the su command activity: SUCCEEDED or FAILED. |
| TimeStamp | Identity | The real time at which the su command occurred, in the format MM/DD hh:mm. |
| ToAccount | Identity | The account name to which the su command was attempted. |
| TotalAttempts | Metric | The total number of successive attempts by the user to this account. |
| User | Identity | The user name who attempted the su command. |

# AIX_MPStat Data

Data tables in this section:



## Data Table

### Purpose

The AIX_MPStat agent collects statistics about every CPU in the monitored AIX system and stores it in the Data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CPUInstance | Identity | The instance Number of each CPU in the system, as assigned by the kernel. |
| CPU_Utilization | Metric | The percentage of CPU utilized. |
| ContextSwitches | Metric | The number of times per second that the CPU performed a voluntary switch between the contexts of two processes. |
| IdleTime | Metric | The percentage of time the CPU spent idling. |
| SystemCalls | Metric | The number of system calls per second. |
| SystemTime | Metric | The percentage of time the CPU spent in running the operating system. |
| UserTime | Metric | The percentage of time the CPU spent running user space. |
| WaitTime | Metric | The percentage of time the CPU spent waiting for I/O transactions to finish. |

# AIX_System Data

Data tables in this section:

- Client Table

## Client Table

### Purpose

The AIX_System agent collects data about the overall performance of the monitored AIX system and stores the collected data in the Client table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Available_Swap | Metric | The available swap space.<br><br>When available memory falls, inactive programs and inactive parts of programs are stored on disk. This process is called swapping and paging. The disk space reserved for swapping and paging is called swap space.<br><br>A shortage of swap space often indicates a memory shortage. |
| Avr_5_Min_Load | Metric | The sum of the run queue length and the number of jobs running on the CPU, averaged over five minutes. The higher the average load, the more CPU power the host needs to run efficiently.<br><br>If a process is ready to run but no CPU is available, the process waits in the run queue. |
| Blocked_Procs | Metric | The number of processes in a blocked queue.<br><br>Processes in a blocked queue are ready to run, but cannot because of a shortage of resources or paging I/O. A blocked queue can indicate a disk I/O bottleneck. |

| Field | Type | Description |
|---|---|---|
| CPU_Idle_Time | Metric | The percentage of time the CPU is idle.<br><br>A high percentage of idle time indicates that CPU power can meet current demands and might indicate that the system is wasting available CPU resources. |
| CPU_System_Time | Metric | The percentage of time the CPU is executing system or kernel processes.<br><br>All I/O processes require system time. Server applications that require a lot of I/O also require significant system time. A high percentage of system time might also indicate that user code is running inefficiently. If you cannot pinpoint the reason, use other agents to investigate further. |
| CPU_User_Time | Metric | The percentage of time the CPU executes user programs. CPU user time above 75% could indicate a possible runaway process. |
| CPU_Utilization | Metric | The percentage of time the CPU executes code including system and user time. |
| CPU_Wait_Time | Metric | The percentage of time the CPU waits for disk I/O.<br><br>A high percentage of CPU wait time, combined with a high percentage of CPU idle time, indicates an I/O bottleneck. |
| Context_Switches_ Rate | Metric | The number of times per second that the CPU switched between executing different processes. |
| Ethernet_Collision_ Rate | Metric | The number of ethernet collisions as a percentage of all ethernet packets sent. Collisions are normal, but a rate that exceeds 15% average over a five-minute interval indicates an overloaded network. |
| Free_Frames | Metric | The number of pages of kernel memory on the free list. |

| Field | Type | Description |
|---|---|---|
| Interrupts | Metric | The number of interrupts handled by the system.<br>An above average number of interrupts may mean a device is issuing spurious interrupts or that a high level of I/O is taking place. |
| Mem_Cycle_Rate | Metric | The number of revolutions of pageout hands through the entire page list. |
| Number_Of_Cpus | Metric | The number of CPUs on the host system that are in the online state. |
| Number_Of_Users | Metric | Each name that is logged in at least once.<br><br>Correlate the number of users with CPU or other utilization parameter information to perform useful trend analysis or capacity planning. |
| Pages_Freed_Rate | Metric | The number of pages freed by the pageout process. |
| Pages_Paged_In | Metric | The number of pages paged in per second from the disk swap space or file system to active memory.<br><br>Memory is managed in pages. Processes that must be executed are paged into memory. |
| Pages_Paged_Out | Metric | The number of pages paged out per second to the disk swap space or file system from active memory.<br><br>Memory is managed in pages. The kernel keeps pages that have been recently accessed in memory, and pages out less active pages to disk. |
| Physical_Memory_Used_MB | Metric | The physical memory, measured in megabytes. |
| Physical_Memory_Used_Pct | Metric | The percentage of physical memory used. |

| Field | Type | Description |
|---|---|---|
| Procs_In_Run_ Queue | Metric | The number of processes waiting to run in the run queue.<br><br>A high number of processes in the run queue means the CPU is busy. A consistently high number can indicate that host needs more CPU power. |
| Procs_ Waiting_For_IO | Metric | The number of processes that are ready to run, but cannot because of a problem or bottleneck in disk I/O.<br><br>Use the Disk IO agent to gather more detailed information. For more information, see the Cartridge for Operating Systems *User Guide*. |
| Runnable_Procs_ Swapped | Metric | The number of runnable processes in the swap queue.<br><br>If the CPU has a critical shortage of memory it stores waiting processes in a swap queue. |
| Scan_Rate | Metric | The number of pages scanned per second by the page daemon as it looks for pages that processes use infrequently. This operation occurs when memory reaches a certain low level.<br><br>A scan rate of 300 pages per second, averaged over a five-minute interval indicates a memory shortage. A high scan rate also affects performance because scanning consumes CPU resources. |
| Swap_Ins | Metric | The number of processes returned per second from disk swap space to active memory.<br><br>A high number of swap-ins may not indicate memory shortage, since some systems use page-ins to start programs. These page-ins are called demand pagings. They can be indistinguishable from swap-ins. Therefore, a high number of swap-outs is a better indication of memory overload. |

| Field | Type | Description |
|---|---|---|
| Swap_Outs | Metric | The number of processes stored per second from active memory to disk swap space.<br><br>**Swap-outs** are based on sleep time or memory shortage.<br><br>**Sleep time:** If a process has not been used for more than 20 seconds, it is likely to be swapped out even when there is adequate free memory available.<br><br>**Memory shortage:** When the amount of memory is critical, and a process has been idle, the system will swap out all its pages at once, rather than wait for the paging algorithm to collect them. In extreme memory shortages, the kernel might swap out runnable processes, which also consumes a substantial portion of system resources. The system resources are therefore devoted to memory housekeeping rather than useful work. |
| Swap_Percent_ Available | Metric | The percentage of available swap space.<br><br>Allocate enough swap space to support all the processes or applications running on the host. |
| System_Calls_Rate | Metric | The number of system calls invoked. |

# ApacheSvr Data

Data tables in this section:



## ReqCodes Table

### Purpose

The ApacheSvr agent monitors web sites and collects data on errors encountered and stores it in the ReqCodes table.

| Field | Type | Description |
|---|---|---|
| ACCEPTED | Metric | The request has been accepted for processing, but processing is not complete. The request might or might not be acted upon, as it might be disallowed when processing takes place. A message from an asynchronous operation such as this cannot be re-sent.<br>This message is intentionally non-committal. Its purpose is to allow a server to accept a request for some other process without requiring that the connection to the server persist until the process is completed. The code number returned with this response includes an indication of the request's current status and either a pointer to a status monitor, or an estimate of when you can expect the request to be fulfilled. |
| BAD_GATEWAY | Metric | While acting as a gateway or proxy, the server received an invalid response from the upstream server it accessed while attempting to fulfill the request. |
| BAD_REQ | Metric | The server could not understand the request, due to incorrect syntax. Do NOT repeat the request without modifications. |

| | | |
|---|---|---|
| CREATED | Metric | The request was fulfilled, and a new resource was created as a result. This new resource can be referenced by the URIs returned in the message. The most specific URL is shown in the Location header field. The server of origin must create the resource before returning this message; otherwise, the server returns a message of Accepted. |
| FORBIDDEN | Metric | The server understood the request but will not fulfill it. Authorization will not help, and the request should NOT be repeated. If the request method was not HEAD, and the server can issue a reason for non-fulfillment, the reason for the refusal is included in the message.<br>This message is commonly used when the server does not reveal a reason for the non-fulfillment, or when no other message is applicable. |
| INTERNAL_ERR | Metric | The server encountered an unexpected condition which prevented it from fulfilling the request. |
| MOVED_PERM | Metric | The requested resource has been assigned a new, permanent URI. For future requests for this resource, use one of the URIs returned in this message. Where possible, monitored hosts with link-editing capabilities automatically re-link references to the request-URI to one or more of the new references returned with the message. This message is cachable unless otherwise indicated.<br>If the new URI is a location, its URL displays in the Location field of the message. Unless the request method was HEAD, the message contains a short hypertext note with a hyperlink to the new URI(s). |

| | | |
|---|---|---|
| MOVED_TEMP | Metric | The requested resource resides temporarily under a different URI. Since the redirection might be altered, the monitored host continues to use the request-URI for future requests. This message is cachable only if so indicated by a Cache-Control or Expires header field.<br>If the new URI is a location, its URL displays in the Location field of the message. Unless the request method was HEAD, the message contains a short hypertext note with a hyperlink to the new URI(s).<br>If you receive this message in response to a request other than GET or HEAD, the agent does not automatically redirect the request unless you confirm it because redirecting the request might change the conditions under which the request was issued. |
| NOT_FOUND | Metric | The server did not find anything matching the Request-URI. This message does not indicate whether the condition is temporary or permanent.<br>If the server does not disclose this information, it might use a Forbidden message instead.<br>The server displays a Gone message if it knows, through some internally configurable mechanism, that an old resource is permanently unavailable and has no forwarding address. |
| NOT_IMPL | Metric | The server does not support the function necessary to fulfill the request. The server displays this message when it does not recognize the request method and is not capable of supporting it for any resource. |
| NOT_MODIFIED | Metric | The server displays this message if the monitored host has performed a conditional GET request and access is allowed, but the document has not been modified. |

| | | |
|---|---|---|
| NO_CONTENT | Metric | The server fulfilled a request to load e-mail, but has no new messages to return.<br>This message allows input for actions to take place without changing the active document view. The message can include new information in the form of entity headers that apply to the document currently in view. |
| OK | Metric | The request succeeded. The information included in this message depends on the request method:<br>GET returns the entire web page, along with statistical information.<br>HEAD returns the entity header fields corresponding to the requested resource.<br>POST returns information describing or containing the result of the action.<br>TRACE returns the request message as received by the end server. |
| POST | Metric | The server fulfilled a request to post a transaction. |
| SERVICE_UNAVAIL | Metric | The server is unable to process the request due to a temporary overload or due to server maintenance. If known, the server might indicate the length of the delay in a Retry-After header; otherwise the server returns an Internal Server Error message.<br>If the server is overloaded, it might refuse the connection, rather than return this message. |
| UNAUTHORIZED | Metric | The request requires user authentication. The message includes a WWW-Authenticate header field challenging the requested resource. You can repeat the request with a suitable authorization header field. If the request included authorization credentials, the server refused the request on those credentials. |

## ReqTypes Table

### Purpose

The ApacheSvr agent monitors web sites and collects data on throughput encountered and stores it in the ReqCodes table.

### Table Description

| Field | Type | Description |
|---|---|---|
| AUDBytes | Metric | Number of audio bytes transferred during the collection period. Audio files include .au and .wav files. |
| AUDHits | Metric | Number of audio hits counted during the collection period. |
| CGIBINSBytes | Metric | Number of CGIBIN bytes transferred during the collection period. CGIBIN files include /bin and /cgi-bin files. |
| CGIBINHits | Metric | Number of CGIBIN hits counted during the collection period. |
| HTMLBytes | Metric | Number of HTML bytes transferred during the collection period. HTML files include .html and .htm files. |
| HTMLHits | Metric | Number of HTML hits counted during the collection period. |
| ImageBytes | Metric | Number of image bytes transferred during the collection period. Image files include .gif, .jpg and .bmp files. |
| ImageHits | Metric | Number of image hits counted during the collection period. |
| JavaBytes | Metric | Number of Java bytes transferred during the collection period. Java files include .class files. |
| JavaHits | Metric | Number of Java hits counted during the collection period. |
| MMBytes | Metric | Number of multimedia bytes transferred during the collection period. Multimedia files include .mpg and .mov files. |
| MMHits | Metric | Number of multimedia hits counted during the collection period. |

| Field | Type | Description |
|---|---|---|
| OTHERBytes | Metric | Number of miscellaneous bytes transferred during the collection period. |
| OTHERHits | Metric | Number of miscellaneous hits counted during the collection period. |
| TEXTBytes | Metric | Number of text bytes transferred during the collection period. Text files include .txt and .doc files. |
| TEXTHits | Metric | Number of text hits counted during the collection period. |
| ZIPPEDBytes | Metric | Number of zipped bytes transferred during the collection period. Zip files include .z and .gz files. |
| ZIPPEDHits | Metric | Number of zipped hits counted during the collection period. |

## Stats Table

### Purpose

The ApacheSvr agent monitors web sites and collects data on the number of transactions processed and kilobytes generated per second and stores it in the ReqCodes table.

### Table Description

| Field | Type | Description |
|---|---|---|
| ErrorRate | Metric | Number of errors per second. |
| HitRate | Metric | Number of hits per second |
| IntervalErrors | Metric | Number of errors during the collection period. |
| IntervalHits | Metric | Number of hits during the collection period. |

| | | |
|---|---|---|
| IntervalHosts | Metric | Number of individual hosts making requests during the collection period. |
| IntervalTransactions | Metric | Number of transactions during the collection period. |
| IntervalURLs | Metric | Number of URLs monitored during the collection period. |
| Throughput | Metric | Number of Kbs transacted during the collection period. |
| ThroughputRate | Metric | Number of Kbs per second. |
| TransactionRate | Metric | Number of transactions per second. |
| TransactionSize | Metric | Average size of transactions, averaged over the collection period. |
| TransactionThroughput | Metric | Number of bytes per transaction. |
| TransactionThroughput Rate | Metric | Transaction throughput (number of bytes per transaction) per second. |

## Transaction Table

### Purpose

The ApacheSvr agent monitors web sites and collects data on the number of transactions and kilobytes per second for a particular transaction.

### Table Description

| Field | Type | Description |
|---|---|---|
| IntervalTransactions | Metric | Number of transactions during the collection period. |
| TransactionRate | Metric | Number of transactions per second. |
| TransactionTag | Identity | Number of transactions, categorized by transaction type. |
| TransactionThroughput | Metric | Number of bytes per transaction. |

| | | |
|---|---|---|
| TransactionThroughput Rate | Metric | Transaction throughput (number of bytes per transaction) per second. |

# AppMonitor Data

Data tables in this section:



## AgentMsgs

### Purpose

The AppMonitor agent collects data about application agent messages and stores the collected data in the AgentMsgs table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Message | Metric | The message returned by the AppMonitor agent when it encounters an error or problem. |
| MessageId | Identity | The message identification. |
| Severity | Metric | The severity of the error that was trapped: informational, warning, critical. The error is defined by the agent properties |

## AppAvailability Table

### Purpose

The AppMonitor agent collects data about application availability and stores the collected data in the AppAvailability table.

Table Description

| Field | Type | Description |
|---|---|---|
| Application | Identity | The name of the application containing the processes being monitored. |
| Availability | Metric | The availability of the application being monitored. |

## ApplicationTotals Table

### Purpose

The AppMonitor agent collects data about the overall performance of each application in a group and stores the collected data in the ApplicationTotals table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Application | Identity | The name of the application containing the processes being monitored. |
| Availability | Metric | The percentage availability of the application being monitored. |
| Percent_CPU | Metric | The percentage of CPU resources used by all the processes in an application group. |
| Percent_Memory | Metric | The percentage of memory used by all the processes in an application group. |
| RSS_1Kbytes | Metric | The amount of the process in memory, measured in kilobytes. |
| VSS_1Kbytes | Metric | The total size of the process (memory and swap). |

## ProcessTotals Table

### Purpose

The AppMonitor agent collects data about the number and percentage of the processes found and expected, and stores the collected data in the ProcessTotals table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Application | Identity | The name of the application containing the monitored processes. The application is specified in the AppMonitor agent properties. For more information, see the Cartridge for Operating Systems *User Guide*. |
| InstancesExpected | Metric | The total number of instances configured for an application. For example, if three people run the same program simultaneously, three instances/processes are running. |
| InstancesFound | Metric | The number of instances available to run an application. |
| PctFound | Metric | The percentage of instances available to run an application. |
| Percent_CPU | Metric | The percentage of CPU resources used by all processes in an application. |
| Percent_Memory | Metric | The percentage of memory used by all processes in an application.<br>**Note** Values in this field can go above 100 percent because of memory sharing and the way in which the operating system accounts for memory. |
| Process | Identity | The name of the process being monitored, as specified in the AppMonitor agent properties. For more information, see the Cartridge for Operating Systems *User Guide*. |
| RSS_1Kbytes | Metric | The amount of the process in memory, measured in kilobytes. |
| VSS_1Kbytes | Metric | The total size of the process (memory and swap). |

# ProcessDetail Table

## Purpose

The AppMonitor agent can collect detailed data about the processes defined in the application/process list. This data is stored in the ProcessDetail table.

**Note** To populate this table, you must indicate that the AppMonitor agent should collect detail process information. For further information, see the Cartridge for Operating Systems *User Guide*.

## Table Description

| Field | Type | Description |
|---|---|---|
| Percent_CPU | Metric | The percentage of CPU resources used by a process. |
| Percent_Memory | Metric | The percentage of memory used by a process. |
| Process | Identity | The name of the monitored process, as specified in the AppMonitor agent properties. For more information, see the Cartridge for Operating Systems *User Guide*. |
| Process_ID | Metric | The number the system assigns to the process. |
| Process_Unique | Identity | The name of the process and the process ID. |
| RSS_1Kbytes | Metric | The amount of the process in memory, measured in kilobytes. |
| Uptime | Metric | The number of hours the process has been running. |
| VSS_1Kbytes | Metric | The total size of the process (memory and swap). |

# DiskIO Data

Data tables in this section:



## Controllers Table

### Purpose

The DiskIO agent collects data about the overall performance of each monitored controller and stores the collected data in the Controllers table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Ctlr_ AverageQLength | Metric | For all disks on the controller, the average length of the queue containing I/O requests that have begun processing but have not yet finished. |
| Ctlr_KB_Read | Metric | For all disks on the controller, the number of kilobytes read in a sampling period. |
| Ctlr_KB_ Throughput | Metric | The number of kilobytes of data read plus the number of kilobytes of data written to all of the disks on the controller in a sampling period. |
| Ctlr_KB_ Throughput_Rate | Metric | The rate at which the system reads and writes data to all of the disks on the controller in kilobytes per second. |
| Ctlr_KB_Written | Metric | The number of kilobytes written to the controller in a sampling period. |
| Ctlr_Name | Identity | The controller name. |

| Field | Type | Description |
|---|---|---|
| Ctlr_Reads | Metric | The average number of read transactions per second on a controller. |
| Ctlr_Service_Time | Metric | The average number of milliseconds the system takes to complete a transaction to one of the disks on the controller. |
| Ctlr_Utilization | Metric | The percentage of elapsed time that the aggregate of all the disks on the controller were busy.<br><br>For example, if a controller has two disks, and over an interval one was 100% busy and the other was 0% busy, the Ctrl_Utilization would be 50%. This is not an indication of utilization of controller capacity. |
| Ctlr_Writes | Metric | The average number of write transactions per second on a controller. |

## Disks Table

### Purpose

The DiskIO agent collects data about the overall performance of each monitored disk and stores the collected data in the Disks table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Disk_ AverageQLength | Metric | The length of the queue containing I/O requests that have begun processing but have not yet finished. |
| Disk_KB_Read | Metric | The number of kilobytes read in a sampling period. |
| Disk_KB_ Throughput | Metric | The number of kilobytes the disk reads plus the number of kilobytes the disk writes in a sampling period. |

| Field | Type | Description |
|---|---|---|
| Disk_KB_ Throughput_Rate | Metric | The rate at which the system reads and writes data to disk, measured in kilobytes per second. |
| Disk_KB_Written | Metric | The number of kilobytes written in a sampling period. |
| Disk_Name | Identity | The disk name. |
| Disk_Reads | Metric | The average number of read transactions per second on a disk. |
| Disk_Service_Time | Metric | The average number of milliseconds the system takes to complete a transaction on a disk. |
| Disk_Utilization | Metric | The percentage of disk utilization. |
| Disk_Writes | Metric | The average number of write transactions per second on a disk. |

## Volumes Table

### Purpose

The DiskIO agent collects data about the overall performance of each monitored volume and stores the collected data in the Volumes table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Volume_ AverageQLength | Metric | The length of the queue containing I/O requests that have begun processing but have not yet finished. |
| Volume_KB_Read | Metric | The number of kilobytes read in a sampling period. |
| Volume_KB_ Throughput | Metric | The number of kilobytes the volume reads plus the number of kilobytes the volume writes in a sampling period. |

| Field | Type | Description |
|---|---|---|
| Volume_KB_ Throughput_Rate | Metric | The rate at which the system reads and writes data to volume in kilobytes per second. |
| Volume_KB_ Written | Metric | The number of kilobytes written in a sampling period. |
| Volume_Name | Identity | The volume name. |
| Volume_Reads | Metric | The average number of read transactions per second on a volume. |
| Volume_Service_ Time | Metric | The average number of milliseconds the system takes to complete a transaction on a volume. |
| Volume_Utilization | Metric | The percentage of volume utilization. |
| Volume_Writes | Metric | The average number of write transactions per second on a volume. |

# FileSystem Data

Data tables in this section:



## DirStats Table

### Purpose

The FileSystem agent collects data about the directories you want monitored and stores the collected data in the DirStats table.

### Table Description

| Field | Type | Description |
|---|---|---|
| MonitorDirectory | Identity | The name of the directory. |
| Space_Used | Metric | The amount of space used in the directory. For each directory that is a mount point the Space_Used=0 |

## FSStats Table

### Purpose

The FileSystem agent collects data about the capacity and space used and available for a monitored file system, and stores the collected data in the FSStats table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Capacity_Available | Metric | The percentage of space available in the file system. |

| Field | Type | Description |
|---|---|---|
| Capacity_Used | Metric | The percentage of used file system space. |
| Capacity_Status | Metric | The current status of file system space. |
| InodesAvailable | Metric | The number of files that can be added to a file system.<br><br>An inode is a data structure that describes a file. The number of inodes allocated when a file system is created determines the maximum number of files the file system can contain.<br><br>**Note** For the reiserfs file system type, the number of inodes available is either -1 or 0. |
| InodesUsed | Metric | The number of inodes used on the file system.<br><br>**Note** For the reiserfs file system type, the number of inodes used is either -1 or 0. |
| Mount_Device | Identity | The name of the device where the file system is mounted. |
| Mount_Point | Identity | The point in the directory structure where the file system is mounted. All subdirectories in the mounted directory belong to that file system. |
| Space_Avail | Metric | The amount of space available in a file system. |
| Space_Used | Metric | The amount of space used in a file system. |
| Total_Space | Metric | The total amount of space in a file system. |

# HPUX_Console Data

Data tables in this section:



## ErrorVerbose Table

### Purpose

The HPUX_Console agent monitors the /var/adm/syslog/syslog.log and writes messages to the ErrorVerbose table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Error_Message | Identity | The error that you instructed the HPUX_Console agent to trap. The error is defined by the agent properties. |
| Severity | Identity | The severity of the error that was trapped: informational, warning, critical. The error is defined by the agent properties. |
| User_Message | Identity | The message the Console agent sends to the ErrorVerbose table if it encounters the error it was instructed to trap. This error is defined by the agent properties. |

# HPUX_MPStat Data

Data tables in this section:

- Data Table

## Data Table

### Purpose

The HPUX_MPStat agent collects data about every CPU in the monitored HP-UX system and stores the collected data in the Data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CPUInstance | Identity | The instance Number of each CPU in the system, as assigned by the kernel. |
| CPU_Utilization | Metric | The percentage of CPU utilized. |
| IdleTime | Metric | The percentage of time the CPU spent idling. |
| RunQueueLength | Metric | The length of the queue containing requests that have begun processing but are not yet done for each CPU instance monitored. |
| SystemTime | Metric | The percentage of time the CPU spent in running the operating system. |
| UserTime | Metric | The percentage of time the CPU spent in running user space. |
| WaitTime | Metric | The percentage of time the CPU spent waiting for I/O transactions to finish. |

# HPUX_System Data

Data tables in this section:



## Client Table

### Purpose

The HPUX_System agent collects data about the overall performance of the monitored HP-UX system and stores the collected data in the Client table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Available_Swap | Metric | The available swap space.<br><br>When available memory falls, inactive programs and inactive parts of programs are stored on disk. This process is called swapping and paging. The disk space reserved for swapping and paging is called swap space.<br><br>A shortage of swap space often indicates a memory shortage. |
| Avr_5_Min_Load | Metric | The sum of the run queue length and the number of jobs running on the CPU, averaged over five minutes. The higher the average load, the more CPU power the host needs to run efficiently.<br><br>If a process is ready to run, but no CPU is available, the process waits in the run queue. |
| Blocked_Procs | Metric | The number of processes in a blocked queue.<br><br>Processes in a blocked queue are ready to run, but cannot due to a shortage of resources or paging I/O. A blocked queue can indicate a disk I/O bottleneck. |

| Field | Type | Description |
|---|---|---|
| CPU_Idle_Time | Metric | The percentage of time the CPU is idle.<br><br>A high percentage of idle time indicates that CPU power can meet current demands and might indicate that the system is wasting available CPU resources. |
| CPU_System_Time | Metric | The percentage of time the CPU is executing system or kernel processes.<br><br>All I/O processes require system time. Server applications that require a lot of I/O also require significant system time. A high percentage of system time might also indicate that user code is running inefficiently. If you cannot pinpoint the reason, use other agents to investigate further. |
| CPU_User_Time | Metric | The percentage of time the CPU executes user programs.<br><br>CPU user time above 75% could indicate a possible runaway process. |
| CPU_Utilization | Metric | The percentage of time the CPU executes code including system and user time. |
| CPU_ Wait_Time | Metric | The percentage of time the CPU waits for disk I/O.<br>A high percentage of CPU wait time, combined with a high percentage of CPU idle time indicates an I/O bottleneck. |
| Context_Switches_ Rate | Metric | The number of times per second that the CPU switched between executing different processes. |
| Ethernet_Collision_ Rate | Metric | The number of ethernet collisions as a percentage of all ethernet packets sent.<br><br>Collisions are normal, but a rate that exceeds15% average over a five-minute interval indicates an overloaded network. |
| Interrupts | Metric | The number of CPU interrupts per second. |

| Field | Type | Description |
|---|---|---|
| Number_ Of_Cpus | Metric | The number of CPUs on the host system that are in the online state. |
| Number_ Of_Users | Metric | Each name that is logged in at least once.<br><br>Correlate the number of users with CPU or other utilization parameter information to perform useful trend analysis or capacity planning. |
| Pages_ Paged_In | Metric | The number of pages paged in to active memory per second from the disk swap space or file system.<br><br>Memory is managed in pages. Processes that must be executed are paged into memory. |
| Pages_ Paged_Out | Metric | The number of pages paged out from active memory per second to the disk swap space or file system.<br><br>Memory is managed in pages. The kernel keeps pages that have been recently accessed in memory, and pages out less active pages to disk. |
| Physical_Memory_ Used_MB | Metric | The amount of physical memory used, displayed as megabytes. |
| Physical_Memory_ Used_Pct | Metric | The percent of physical memory used, displayed as a percentage of total memory. |
| Procs_In_Run_ Queue | Metric | The number of processes waiting to run in the run queue.<br><br>A high number of processes in the run queue means the CPU is busy. A consistently high number can indicate that host needs more CPU power. |

| Field | Type | Description |
|---|---|---|
| Procs_ Waiting_For_IO | Metric | The number of processes that are ready to run, but cannot due to a problem or bottleneck in disk I/O.<br><br>Use the DiskIO agent to gather more detailed information. For more information, see the Cartridge for Operating Systems *User Guide*. |
| Runnable_Procs_ Swapped | Metric | The number of runnable processes in the swap queue.<br><br>If the CPU has a critical shortage of memory, it stores waiting processes in a swap queue. |
| Scan_ Rate | Metric | The number of pages scanned per second by the page daemon as it looks for pages that processes use infrequently. This operation occurs when memory reaches a certain low level.<br><br>A scan rate of 300 pages per second, averaged over a five-minute interval indicates a memory shortage. A high scan rate also affects performance because scanning consumes CPU resources. |
| Swap_Ins | Metric | The number of processes returned per second from disk swap space to active memory.<br><br>A high number of swap-ins may not indicate memory shortage, since some systems use page-ins to start programs. These page-ins are called demand pagings. They can be indistinguishable from swap-ins. Therefore, a high number of swap-outs is a better indication of memory overload. |

| Field | Type | Description |
|---|---|---|
| Swap_ Outs | Metric | The number of processes stored per second from active memory to disk swap space.<br><br>**Swap-outs** are based on sleep time or memory shortage.<br><br>**Sleep time:** If a process has not been used for more than 20 seconds, it is likely to be swapped out, even when there is adequate free memory available.<br><br>**Memory shortage:** When the amount of memory is critical, and a process has been idle, the system will swap out all its pages at once, rather than wait for the paging algorithm to collect them. In extreme memory shortages, the kernel might swap out runnable processes, which also consumes a substantial portion of system resources. The system resources are therefore devoted to memory housekeeping rather than useful work. |
| Swap_ Percent_ Available | Metric | The percentage of available swap space. Allocate enough swap space to support all the processes or applications running on the host. |
| System_Calls_Rate | Metric | The number of system calls invoked. |

# Linux_MPStat Data

Data tables in this section:

- Data Table

## Data Table

### Purpose

The Linux_MPStat agent collects data about every CPU in the monitored Linux system and stores the collected data in the Data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CPUInstance | Identity | The instance Number of each CPU in the system, as assigned by the kernel. |
| CPU_Utilization | Metric | The percentage of CPU utilized. |
| IdleTime | Metric | The percentage of time the CPU spent idling. |
| SystemTime | Metric | The percentage of time the CPU spent in running the operating system. |
| UserTime | Metric | The percentage of time the CPU spent in running user space. |

# Linux_System Data

Data tables in this section:



## Client Table

### Purpose

The Linux_System agent collects data about the overall performance of the monitored Linux system and stores the collected data in the Client table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Available_Swap | Metric | The available swap space.<br><br>When available memory falls, inactive programs and inactive parts of programs are stored on disk. This process is called swapping and paging. The disk space reserved for swapping and paging is called swap space.<br><br>A shortage of swap space often indicates a memory shortage. |
| Avr_5_Min_Load | Metric | The sum of the run queue length and the number of jobs running on the CPU, averaged over five minutes. The higher the average load, the more CPU power the host needs to run efficiently.<br><br>If a process is ready to run, but no CPU is available, the process waits in the run queue. |
| Blocked_Procs | Metric | The number of processes in a blocked queue.<br><br>Processes in a blocked queue are ready to run, but cannot due to a shortage of resources or paging I/O. A blocked queue can indicate a disk I/O bottleneck. |

| Field | Type | Description |
|---|---|---|
| CPU_Idle_Time | Metric | The percentage of time the CPU is idle.<br><br>A high percentage of idle time indicates that CPU power can meet current demands and might indicate that the system is wasting available CPU resources. |
| CPU_System_Time | Metric | The percentage of time the CPU is executing system or kernel processes.<br><br>All I/O processes require system time. Server applications that require a lot of I/O also require significant system time. A high percentage of system time might also indicate that user code is running inefficiently. If you cannot pinpoint the reason, use other agents to investigate further. |
| CPU_User_Time | Metric | The percentage of time the CPU executes user programs.<br><br>CPU user time above 75% could indicate a possible runaway process. |
| CPU_Utilization | Metric | The percentage of time the CPU executes code including system and user time. |
| Context_Switches_ Rate | Metric | The number of times per second that the CPU switched between executing different processes. |
| Ethernet_Collision_ Rate | Metric | The number of ethernet collisions as a percentage of all ethernet packets sent.<br><br>Collisions are normal, but a rate that exceeds15% average over a 5-minute interval indicates an overloaded network. |
| Interrupts | Metric | The number of CPU interrupts per second. |
| Number_ Of_Cpus | Metric | The number of CPUs on the host system that are in the online state. |

| Field | Type | Description |
|---|---|---|
| Number_ Of_Users | Metric | Each name that is logged in at least once.<br><br>Correlate the number of users with CPU or other utilization parameter information to perform useful trend analysis or capacity planning. |
| Pages_ Paged_In | Metric | The number of pages paged in per second from the disk swap space or file system to active memory.<br><br>Memory is managed in pages. Processes that must be executed are paged into memory. |
| Pages_ Paged_Out | Metric | The number of pages paged out per second to the disk swap space or file system from active memory.<br><br>Memory is managed in pages. The kernel keeps pages that have been recently accessed in memory, and pages out less active pages to disk. |
| Pages_ Swapped_ In | Metric | The number of pages returned per second from swap space to active memory. |
| Pages_ Swapped_ Out | Metric | The number of pages stored per second from active memory to swap space. |
| Physical_Memory_ Used_MB | Metric | The amount of physical memory used, displayed as megabytes. |
| Physical_Memory_ Used_Pct | Metric | The amount of physical memory used, displayed as a percentage of total memory. |
| Procs_In_Run_ Queue | Metric | The number of processes waiting to run in the run queue.<br><br>A high number of processes in the run queue means the CPU is busy. A consistently high number can indicate that host needs more CPU power. |
| Procs_Waiting_For _IO | Metric | The number of processes that are ready to run, but cannot due to a problem or bottleneck in disk I/O. |

| Field | Type | Description |
|---|---|---|
| Runnable_Procs_ Swapped | Metric | The number of runnable processes in the swap queue.<br><br>If the CPU has a critical shortage of memory, it stores waiting processes in a swap queue. |
| Swap_ Percent_ Available | Metric | The percentage of available swap space. Allocate enough swap space to support all the processes or applications running on the host. |

# LogFilter Data

Data tables in this section:



## ErrorVerbose Table

### Purpose

The LogFilter agent traps messages and stores the collected data in the ErrorVerbose table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Error_Message | Identity | The error you instructed the LogFilter agent to trap. |
| LogName | Identity | The name of the monitored log. |
| Severity | Identity | The severity of the trapped error: informational, warning, critical, or fatal. |
| User_Message | Identity | The message the LogFilter agent sends to the log if it encounters a trapped error. |

# NetMonitor Data

Data tables in this section:



## RouteDetails Table

### Purpose

The RouteDetails table is collected only if TraceRoute is checked in the Host List tab of the NetMonitor agent dialog.

### Table Description

| Field | Type | Description |
|---|---|---|
| DeviceName | Identity | The name or IP address of the monitored network device specified in the agent startup parameters. |
| HopDestination | Identity | A hop is the route between one net-work device and the next on a packet's route to its destination. A hop destination is a device through which the packet passes on the route. |
| HopLength | Metric | The length of the hop from one device to the next. |
| HopNumber | Metric | The number that identifies a hop on a packet's route. For example, the hop from a packet's origin to the next device is hop #1. |
| ServerGroup | Identity | The name of the server group containing the monitored devices specified in the agent startup parameters. |

## ServiceLevel Table

### Purpose

The NetMonitor agent monitors availability and packet information for each device and stores it in the ServiceLevel table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Availability | Metric | The availability of the monitored device, based on the number of packets echoed back. |
| AvrHopLength | Metric | The average length of the hops on a packet's route to its destination. |
| DeviceName | Identity | The name or IP address of the monitored network device specified in the agent startup parameters. |
| MaxHopLength | Metric | A hop is the route between one net-work device and the next on a packet's route to its destination. Hops are measured in milliseconds. Max Hop is the longest hop on the packet's route. |
| MaxTime | Metric | The maximum time a packet takes to be echoed back. |
| MinHopLength | Metric | The shortest hop on the packet's route. |
| MinTime | Metric | The minimum time a packet takes to be echoed back. |
| PacketLoss | Metric | The percentage of packet loss. By default, vFoglight sends five packets to the monitored network device. It expects each one to be echoed back. Specify this information in the agent startup parameters. |
| ResponseTime | Metric | The round-trip response time between the vFoglight Host and the network device. |
| ServerGroup | Identity | The name of the server group containing the monitored devices, specified in the agent startup parameters. |

| Field | Type | Description |
|---|---|---|
| Status | Metric | The status of the monitored device:<br>1 Device available<br>0 100% packet loss. Device is present and working, but no packets come back.<br>-1 Device was not found on this data pass.<br>-2 Device was never found. The device will not be monitored again. |
| TotalNumOfHops | Metric | The number of hops between the vFoglight Host and the packet's destination, including the destination. |

## Totals Table

### Purpose

The NetMonitor agent monitors average percent availability and stores it in the ServiceLevel table.

### Table Description

| Field | Type | Description |
|---|---|---|
| AverageAvailability | Metric | The average availability for all the devices listed on the Device List. |
| AverageResponseTime | Metric | The average response time for all the devices listed on the Device List. |
| ServerGroup | Identity | The name of the server group containing the monitored devices, specified in the agent startup parameters. |

# NIC Data

Data tables in this section:

- NICStats Table

## NICStats Table

### Purpose

The NIC agent monitors information about input and output data for a NIC device and is stored in the NICStats table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CollisionRate | Metric | The percentage of output packets that collided during the collection period. |
| ErrorPercent | Metric | Percentage of all packets that the NIC could not send or receive. This figure is the sum of Nocanput, Defer, Input Error, and Output Error totals. |
| InputPacketRate | Metric | Number of packets received per second. |
| InputRate | Metric | Kilobytes per second received during the collection period. |
| IntervalCollisions | Metric | Number of collisions that occurred during the collection period. |
| IntervalDefer | Metric | Number of packet defers that occurred during the collection period. |
| IntervalInputErrors | Metric | Number of input errors that occurred during the collection period. |
| IntervalInputKBytes | Metric | Number of kilobytes received during the collection period. |

| Field | Type | Description |
|---|---|---|
| IntervalInputPackets | Metric | Number of input packets received during the collection period. |
| IntervalNocanput | Metric | Number of incoming packets dropped during the collection period due to insufficient buffer space. |
| IntervalOutputErrors | Metric | Number of output errors that occurred during the collection period. |
| IntervalOutputKbytes | Metric | Number of kilobytes sent during the collection period. |
| IntervalOutputPackets | Metric | Number of output packets sent during the collection period. |
| NICName | Metric | Name of the monitored card. |
| NICUtilization | Metric | The percentage of bandwidth being used on the card. |
| OutputPacketRate | Metric | Number of packets sent per second. |
| OutputRate | Metric | Kilobytes per second sent during the collection period. |

# Process Data

Data tables in this section:



## Stats Table

### Purpose

The Process agent collects data about processes running in various states and stores the collected data in the Stats table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Number_of_Procs | Metric | The total number of processes running on the host. |
| On_CPU | Metric | The number of processes currently being executed. |
| Runnable | Metric | The number of processes in the run queue. |
| Stopped | Metric | The number of stopped processes. |
| Waiting | Metric | The number of processes waiting for I/O. |
| Zombie | Metric | The number of processes in a zombie state. |

## TopCPU Table

### Purpose

The Process agent collects data about the processes using the highest CPU and stores the collected data in the TopCPU table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CmdUser | Identity | Provides the most complete identification of each process. It is called the subject field in the Process views. |
| Command | Identity | The full path name to the executable that spawned the subject field. |
| Pct_CPU | Metric | The percentage of CPU time used by the process. |
| Process_ID | Identity | The unique process identification number that the kernel assigned when the process was created. |
| User_Name | Identity | The name of the user who owns the process. |

## TopIO Table

### Purpose

The Process agent collects data about the processes using the highest IO resources and stores the collected data in the TopIO table. This table is sorted by the amount of I/O performed by the processes shown in the last interval.

**Note** Process level I/O stats are not available on Linux kernels older than version 2.6.19.

### Table Description

| Field | Type | Description |
|---|---|---|
| CmdUser | Identity | Provides the most complete identification of each process. It is the subject field in the Process views. |
| Command | Identity | The full path name to the executable that spawned a subject field. |
| IO_Rate_Kbytes | Metric | The number of kilobytes per second of data read and written by the process over the last interval. |
| Process_Id | Identity | The unique process identification number assigned by the kernel when the process was created. |
| User_Name | Identity | The user name of the individual who owns the process. |

## TopMEM Table

### Purpose

The Process agent collects data about the processes using the highest system resources, and stores the collected data in the TopMEM table. The table is sorted by percentage of memory.

### Table Description

| Field | Type | Description |
|---|---|---|
| CmdUser | Identity | Provides the most complete identification of each process. It is the subject field in the Process views. |
| Command | Identity | The full path name to the executable that spawned a subject field. |

| Field | Type | Description |
|---|---|---|
| Pct_Memory | Metric | The percentage of physical memory that a process uses.<br>**Note** Values in this field can go above 100 percent because of the way the operating system accounts for memory and to memory sharing. |
| Process_ID | Identity | The unique process identification number that the kernel assigned when the process was created. |
| RSS_1Kbytes | Metric | The resident set size of the process. |
| User_Name | Metric | The user name of the individual who owns the process. |
| VSS_1Kbytes | Identity | The size of the process image. |

## TopSys Table

### Purpose

This table is sorted by the amount of System Time used by the processes shown in the last interval. System Time refers to the amount of CPU time used by the process while in the system state; that is, when the operating system was performing a function on behalf of that process.

### Table Description

| Field | Type | Description |
|---|---|---|
| CmdUser | Identity | Provides the most complete identification of each process. It is the subject field in the Process views. |
| Command | Identity | The full path name to the executable that spawned a subject field. |

| Field | Type | Description |
|---|---|---|
| Pct_System_Time | Metric | The number of seconds of system time divided by the number of seconds elapsed in the last interval multiplied by 100. If a process uses one second of system time in a 10 second interval, this field will read 10.0. |
| Process ID | Identity | The unique process identification number assigned by the kernel when the process was created. |
| UserName | Identity | The user name of the individual who owns the process. |

## TopVIRT Table

### Purpose

The Process agent collects data about the processes using the highest virtual set size and stores the collected data in the TopVIRT table. This table is sorted by image size.

### Table Description

| Field | Type | Description |
|---|---|---|
| CmdUser | Identity | Provides the most complete identification of each process. It is the subject field in the Process views. |
| Command | Identity | The full path name to the executable that spawned a subject field. |
| Pct_Memory | Metric | The percentage of physical memory used by a process. |
| Process_ID | Identity | The unique process identification number assigned by the kernel when the process was created. |
| RSS_1Kbytes | Metric | The resident set size of the process. |
| User_Name | Identity | The user name of the individual who owns the process. |

| Field | Type | Description |
|---|---|---|
| VSS_1Kbytes | Metric | The size of the process image. |

# SNMP Data

Data tables in this section:



## IP Table

### Purpose

The SNMP agent collects data about the IP statistics of an interface and stores the collected data in the SNMP data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| DeviceName | Identity | The name of the SNMP device. |
| IPInputAddressErrors | Metric | The number of input datagrams discarded because the IP address in the IP header's destination field was invalid. This count includes invalid address, such as 0.0.0.0, and addresses of unsupported classes, such as class E.<br><br>For entities that are not IP gateways and, therefore, do not forward datagrams, this counter includes datagrams discarded because the destination address was not a local address. |
| IPInputDatagrams | Metric | Total number of input datagrams received from interfaces during the collection period, included those received in error. |

| Field | Type | Description |
|---|---|---|
| IPInputDatagrams_Sec | Metric | The number of IP Input Datagrams received per second during the collection period. |
| IPInputDiscards | Metric | The number of input IP datagrams for which no problem was encountered, but which were discarded for other reasons, such as lack of buffer space. This counter does not include any datagrams discarded while awaiting re-assembly. |
| IP_Input_Discards_Sec | Metric | The number of IP input datagrams discarded per second during the collection period. |
| IP_Input_Errors_Sec | Metric | The sum of the Input Address Errors and IP Input Header Errors per second during the collection period. |
| IPInputHeaderErrors | Metric | The number of input datagrams discarded during the collection period because of errors in their IP headers, including bad check sums, version number mismatches, format errors, exceeded time-to-live, or IP option processing errors. |
| IPOutputDiscards | Metric | The number of output IP datagrams for which no problem was encountered, but which were discarded for other reasons, such as lack of buffer space. |
| IP_Output_Discards_Sec | Metric | The number of IP output datagrams discarded per second during the collection period. |
| IPOutputRequests | Metric | The number of output IP datagrams that local IP user protocols including ICMP supplies to IP in requests for transmission. |
| IP_Output_Requests_Sec | Metric | The number of output request datagrams per second during the collection period. |

## Interface Table

### Purpose

The SNMP agent collects data about the interface for each monitored device and stores the collected data in the Interface data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Bandwidth | Metric | An estimate of the current bandwidth of the interface in bits per second during the collection period. For interfaces that do not vary in bandwidth or for those that you cannot estimate, this field contains the nominal bandwidth |
| Bits_Sec | Metric | The sum of the input and output bits per second during the collection period. |
| Broadcast_Pkts_Sec | Metric | The sum of the Input Broadcast Packets and Output Broadcast Packets per second during the collection period. |
| DeviceName | Metric | The name of the SNMP device being monitored. |
| DeviceNameInterface | Metric | A string composed of the device name and the interface names. |
| Discarded_Pkts_Sec | Metric | The sum of the Input Discarded Pkts and Output Discarded Pkts per second during the collection period. |
| Error_Pkts_Sec | Metric | The sum of the Input Error Pkts and Output Error Pkts per second during the collection period. |
| InputBroadcastPkts | Metric | The number of subnetwork broadcast or subnetwork multicast packets delivered to a high-layer protocol during the collection period. |
| InputBytes | Metric | The number of octets received on the interface during the collection period, including framing characters. |

| | | |
|---|---|---|
| InputDiscardedPkts | Metric | The number of in-bound packets during the collection period for which no problem was encountered, but which were discarded for other reasons, such as lack of buffer space. |
| InputErrorPkts | Metric | The number of in-bound packets during the collection period that contained errors and were not delivered to a higher-layer protocol. |
| InterfaceDescription | Metric | Text string containing information about the interface. This string includes the name of the manufacturer, the product name, and the version of the hardware interface. |
| InterfaceUtilization | Metric | The percentage of bandwidth used during the collection period. |
| OperationalStatus | Metric | The current operational state of the interface: 1 = up, 2 = down,<br>3 = testing. You cannot pass operational packets in the testing state. |
| OutputBroadcastPkts | Metric | The number of packets during the collection period that high-level protocols requested be transmitted to a subnetwork broadcast or subnetwork multicast address, including those that were discarded or not sent. |
| OutputBytes | Metric | The number of octets transmitted out of the interface during the collection period, including framing characters. |
| OutputDiscardedPkts | Metric | The number of out-bound packets during the collection period for which no problem was encountered, but which were discarded for other reasons, such as lack of buffer space. |
| OutputErrorPkts | Metric | The number of out-bound packets that could not be transmitted during the collection period because of errors. |
| OutputUnicastPkts | Metric | The number of packets during the collection period that high-level protocols requested be transmitted to a subnetwork Unicast address, including those that were discarded or not sent. |

| | | |
|---|---|---|
| Type | Metric | The type of interface, distinguished by physical/link protocol(s), immediately below the network layer in the protocol stack. |
| Unicast_Pkts_Sec | Metric | The sum of the Input Unicast Pkts and Output Unicast Pkts per second during the collection period. |

## System Table

### Purpose

The SNMP agent collects data about maximum, minimum, and average percentage of utilization for each monitored device and stores the collected data in the System data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| AvrInterfaceUtilization | Metric | The average utilization for all the interfaces on a single device. |
| Description | Identity | Description of the entity in printable ASCII characters, that includes the full name and version of the system's hardware type, software operating system, and networking software. |
| DeviceName | Identity | The name of the monitored SNMP device. |
| MaxInterfaceUtilization | Metric | The interface with the maximum utilization on a single device. |
| MinInterfaceUtilization | Metric | The interface with the minimum utilization on a single device. |
| Status | Identity | 0 = No data available<br>1 = Data being gathered<br>2 = Down<br>3 = Testing |

| | | |
|---|---|---|
| Uptime | Property | The time since the network management portion of the system was last initialized. |

## TCP Table

### Purpose

The SNMP agent collects data about incoming and closing TCP connections for each device and stores the collected data in the TCP data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Connections_Closed_Sec | Metric | The number of TCP connections closed per second during the collection period. |
| DeviceName | Identity | The name of the SNMP device being monitored. |
| Established_Connections | Metric | The number of connections established during the collection period. |
| Incoming_Opens_Sec | Metric | The number of TCP connections opened per second during the collection period. |
| Input_Segments_ Sec | Metric | The number of TCP connections input per second during the collection period. |
| Listen_Drops_Sec | Metric | The number of TCP connections dropped per second during the collection period. |
| Outgoing_Opens_ Sec | Metric | The number of outgoing TCP connections per second during the collection period. |
| Output_Retrans_ Percent | Metric | The retransmission rate during the collection period. |

| | | |
|---|---|---|
| Output_Segments_ Sec | Metric | The number of outgoing TCP segments per second during the collection period. |
| Resets_Output_Sec | Metric | The number of output TCP connections reset per second during the collection period. |

# Sun_Console Data

Data tables in this section:

- ErrorVerbose Table

## ErrorVerbose Table

### Purpose

The Sun_Console agent monitors the /var/adm/messages log and writes messages to the ErrorVerbose table.

For a description of the table, see “ErrorVerbose Table” on page 225.

# Sun_MPStat Data

Data tables in this section:



## Data Table

### Purpose

The Sun_MPStat agent collects data about every CPU in the monitored Solaris system and stores the collected data in the Data table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CPUInstance | Identity | The instance Number of each CPU in the system, as assigned by the kernel. |
| CPU_Utilization | Metric | The amount of CPU non-idle time expressed as a percentage. |
| ContextSwitches | Metric | The number of times per second that CPU performed a voluntary switch between the contexts of two processes. |
| CrossCalls | Metric | The number of inter-processor cross calls per second. Cross calls occur when one CPU wakes up another CPU by interrupting it. |
| IdleTime | Metric | The percentage of time the CPU spent idling. |
| Interrupts | Metric | The number of hardware interrupts per second. |
| IntsAsThreads | Metric | The number of hardware interrupts as threads per second. |
| InvContextSwitches | Metric | The number of times per second that the CPU switched between the contexts of two processes because the time slice for the process expired. |

| Field | Type | Description |
|---|---|---|
| MajorFaults | Metric | The number of major page faults; that is, the number of times the system had to go to disk to retrieve a page. |
| MinorFaults | Metric | The number of times a page faulted, but was found in memory. |
| MutexSpins | Metric | The number of times the CPU attempted to hold a mutex, but failed because it was already held by another process. |
| RWLockSpins | Metric | The number of times the CPU attempted a read/write lock, but failed because the lock was held by another process. |
| SystemCalls | Metric | The number of system calls per second. |
| SystemTime | Metric | The percentage of time the CPU spent running the operating system. |
| ThreadMigrations | Metric | The number of migrations of kernel threads across multiple CPUs. |
| UserTime | Metric | The percentage of time the CPU spent running user space. |
| WaitTime | Metric | The percentage of time the CPU spent waiting for I/O transactions to finish. |

# Sun_System Data

Data tables in this section:

- Client Table

## Client Table

### Purpose

The Sun_System agent collects data about the overall performance of the monitored Solaris system and stores the collected data in the Client table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Available_Swap | Metric | The available swap space.<br><br>When available memory falls, inactive programs and inactive parts of programs are stored on disk. This process is called swapping and paging. The disk space reserved for swapping and paging is called swap space.<br><br>A shortage of swap space often indicates a memory shortage. |
| Avr_5_Min_Load | Metric | The sum of the run queue length and the number of jobs running on the CPU, averaged over five minutes. The higher the average load, the more CPU power the host needs to run efficiently.<br><br>If a process is ready to run, but no CPU is available, the process waits in the run queue. |

| Field | Type | Description |
|---|---|---|
| Blocked_Procs | Metric | The number of processes in a blocked queue.<br><br>Processes in a blocked queue are ready to run, but cannot because of a shortage of resources or paging I/O. A blocked queue can indicate a disk I/O bottleneck. |
| Buffer_Cache_Hit_Rate | Metric | The number of times a lookup in the buffer cache results in finding the requested buffer in the cache, divided by the total number of lookups.<br><br>Hit rates that drop below 90% might cause the system to perform a greater amount of disk I/O. |
| Context_Switches_Rates | Metric | The number of context switches per second.<br><br>A context switch consists of storing one CPU state and restoring a previously stored state for another process. Context switches are usually computationally expensive. A large number of interrupts could cause above average context switching. |
| CPU_Idle_Time | Metric | The percentage of time the CPU is idle.<br><br>A high percentage of idle time indicates that CPU power can meet current demands and might indicate that the system is wasting available CPU resources. |
| CPU_System_Time | Metric | The percentage of time the CPU is executing system or kernel processes.<br><br>All I/O processes require system time. Server applications that require a lot of I/O also require significant system time. A high percentage of system time might also indicate that user code is running inefficiently. If you cannot pinpoint the reason, use other agents to investigate further. |
| CPU_User_Time | Metric | The percentage of time the CPU executes user programs. CPU user time above 75% could indicate a possible runaway process. |

| Field | Type | Description |
|---|---|---|
| CPU_Utilization | Metric | The percentage of time the CPU executes code including system and user time. |
| CPU_ Wait_Time | Metric | The percentage of time the CPU waits for disk I/O. A high percentage of CPU wait time, combined with a high percentage of CPU idle time, indicates an I/O bottleneck. |
| Ethernet_Collision_ Rate | Metric | The number of ethernet collisions as a percentage of all ethernet packets sent.<br><br>Collisions are normal, but a rate that exceeds a 15% average over a five-minute interval indicates an overloaded network. |
| Inode_ Cache_Hit_Rate | Metric | The number of times a lookup in the inode cache results in finding the requested inode in the cache divided by the total number of lookups.<br><br>This value indicates the size of the inode cache and should always be as large as possible. This value should not remain below 50% for extended periods of time. |
| Interrupts | Metric | The number of interrupts handled by the system.<br><br>An above average number of interrupts may mean a device is issuing spurious interrupts or that a high level of I/O is taking place. |
| Name_ Cache_Hit_Rate | Metric | The number of times a lookup in the directory name lookup cache results in finding the vnodes corresponding to the requested name in the cache, divided by the total number of lookups.<br><br>A value below 75% might indicate that the system is performing a greater amount of disk I/O. |
| Number_ Of_Cpus | Metric | The number of CPUs on the host system that are in the online state. |

| Field | Type | Description |
|---|---|---|
| Number_ Of_Users | Metric | Each name that is logged in at least once.<br><br>Correlate the number of users with CPU or other utilization parameter information to perform useful trend analysis or capacity planning. |
| Pages_ Paged_In | Metric | The number of pages paged in from active memory per second from the disk swap space or file system.<br><br>Memory is managed in pages. Processes that must be executed are paged into memory. |
| Pages_ Paged_Out | Metric | The number of pages paged out from active memory per second to the disk swap space or file system.<br><br>Memory is managed in pages. The kernel keeps pages that have been recently accessed in memory, and pages out less active pages to disk. |
| Physical_Memory_ Used_MB | Metric | The number in megabytes indicating the amount of physical memory used.<br><br>An increasing amount of physical memory being used may indicate a process that is leaking memory. |
| Physical_Memory_ Used_Pct | Metric | The amount of physical memory in use expressed as a percentage.<br><br>If the percentage of physical memory used exceeds 85% swapping is likely to occur, which drastically increases processing time. |
| Procs_In_Run_ Queue | Metric | The number of processes waiting to run in the run queue.<br><br>A high number of processes in the run queue means the CPU is busy. A consistently high number can indicate that host needs more CPU power. |

| Field | Type | Description |
|---|---|---|
| Procs_ Waiting_For_IO | Metric | The number of processes that are ready to run, but cannot due to a problem or bottleneck in disk I/O.<br><br>Use the DiskIO agent to gather more detailed information. For more information, see the Cartridge for Operating Systems *User Guide*. |
| Runnable_Procs_ Swapped | Metric | The number of runnable processes in the swap queue.<br><br>If the CPU has a critical shortage of memory, it stores waiting processes in a swap queue. |
| Scan_ Rate | Metric | The number of pages scanned per second by the page daemon as it looks for pages that processes use infrequently. This operation occurs when memory reaches a certain low level.<br><br>A scan rate of 300 pages per second, averaged over a five-minute interval indicates a memory shortage. A high scan rate also affects performance because scanning consumes CPU resources. |
| Swap_Ins | Metric | The number of processes returned per second from disk swap space to active memory.<br><br>A high number of swap-ins may not indicate memory shortage, since some systems use page-ins to start programs. These page-ins are called demand pagings. They can be indistinguishable from swap-ins. Therefore, a high number of swap-outs is a better indication of memory overload. |

| Field | Type | Description |
|---|---|---|
| Swap_ Outs | Metric | The number of processes stored per second from active memory to disk swap space.<br><br>**Swap-outs** are based on sleep time or memory shortage.<br><br>**Sleep time:** If a process has not been used for more than 20 seconds, it is likely to be swapped out, even when there is adequate free memory available.<br><br>**Memory shortage:** When the amount of memory is critical, and a process has been idle, the system will swap out all its pages at once, rather than wait for the paging algorithm to collect them. In extreme memory shortages, the kernel might swap out runnable processes, which also consumes a substantial portion of system resources. The system resources are therefore devoted to memory housekeeping rather than useful work. |
| Swap_ Percent_ Available | Metric | The percentage of available swap space.<br><br>Allocate enough swap space to support all the processes or applications running on the host. |
| System_Calls_Rate | Metric | The number of system calls made per second. |

# Sun_TCP Data

Data tables in this section:

- Counters Table

## Counters Table

### Purpose

The Sun TCP agent stores data in the Counters table in the vFoglight Data Repository.

### Table Description

| Field | Type | Description |
|---|---|---|
| Failed_Transmission_Attempts | Metric | An attempt to transmit a packet failed. |
| Half_Open_Listen_Drops | Metric | A connection was dropped when the listen processing was half done. |
| Incoming_Opens | Metric | Number of incoming connection establishment requests. |
| Input_Bytes | Metric | Number of bytes received. |
| Input_Retrans_Percent | Metric | Number of duplicate segments received. |
| Listen_Drops | Metric | Number of listen requests that could not be processed. |
| Outgoing_Opens | Metric | Number of outgoing connection establishment requests. |
| Output_Bytes | Metric | Number of bytes sent. |
| Output_Retrans_Percent | Metric | Number of segments retransmitted. |
| Resets_Output | Metric | Number of outgoing RST packets. |

# TerminalServer Data

Data tables in this section:



## SessionInfo Table

### Purpose

The SessionInfo table displays the current active and inactive sessions and stores the collected data in the SessionInfo table.

| Field | Type | Description |
|---|---|---|
| ActiveSessions | Metric | Sessions currently used. |
| InactiveSessions | Metric | Inactive sessions. |
| ProcessesInSessions | Metric | Total processes on all sessions. |
| TotalCacheHitRatio | Metric | Sessions cache hit ratio. |
| TotalMemoryUsed_MBytes | Metric | Memory used by all sessions. |
| TotalSessions | Metric | Total number of sessions. |
| TotalSessionsBytes | Metric | Bytes sent and received by session. |
| TotalSessionsErrors | Metric | Errors generated by sessions. |

## TopMemoryConsumerSessions

### Purpose

The Terminal Server agent displays the sessions which are consuming most of the system memory resources and stores the collected data in the TopMemoryConsumerSessions data table.

| Field | Type | Description |
|---|---|---|
| PercentMemoryUsed | Metric | The total percent memory used by the session. |
| SessionsName | Identity | Session name. |
| TotalErrors | Metric | Errors generated by the sessions. |
| TotalMemory_KBytes | Metric | Total memory being used. |
| TotalSessionBytes | Metric | Total bytes sent and received. |
| UserName | Identity | User currently logged on. |

## TopProcessesInSessions

### Purpose

The Terminal Server agent displays the sessions which are consuming most of the system process resources and stores the collected data in the TopProcessessInSessions table.

| Field | Type | Description |
|---|---|---|
| ProcessName | Identity | Process name. |
| SessionsName | Identity | Session name. |
| TotalErrors | Metric | Total errors generated. |

| | | |
|---|---|---|
| TotalMemory_KBytes | Metric | Total memory in kilobytes. |
| TotalSession_KBytes | Metric | Total bytes in the session. |
| UserName | Identity | User who started the process. |

# User Data

Data tables in this section:



## TopCPU Table

### Purpose

The User agent displays the top users by CPU usage and stores the collected data in the TopCPU table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Pct_CPU | Metric | The percentage of CPU time devoted to a user. |
| UserName | Identity | The login name of a user. |

## TopMEM Table

### Purpose

The User agent displays information about the top users by resident set size and stores the collected data in the TopMEM table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Pct_MEM | Metric | The percentage of physical memory devoted to a user. Note: values in this field can go above 100 percent, due to the way the OS accounts for memory, and to memory sharing. |
| RSS_1Kbytes | Metric | The resident set size of the process. |
| UserName | Identity | The login name of a user. |
| VSS_1Kbytes | Metric | The size of the process image. |

## TopPROC Table

### Purpose

The User agent displays information about the top users based on the number of processes the users are running and stores the collected data in the TopPROC table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Num_Procs | Metric | The number of processes owned by a user. |
| UserName | Identity | The login name of a user. |

## TopVIRT Table

### Purpose

The User agent displays information about the top users based on the their virtual set size and displays the data in the TopVIRT table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Pct_Virtual | Metric | The sum of the image size for the user, divided by the total swap. |
| RSS_1Kbytes | Metric | The resident set size of the process. |
| UserName | Identity | The login name of the user. |
| VSS_1Kbytes | Metric | The size of the process image. |

## TopIO Table

### Purpose

The User agent describes the amount of I/O performed by the processes shown in the last interval and displays the data in the TopIO table.

**Note** User level I/O stats are not available on Linux kernels older than version 2.6.19.

### Table Description

| Field | Type | Description |
|---|---|---|
| IO_Rate_Kbytes | Metric | The number of kilobytes per second of data read and written by the user over the last interval. |
| UserName | Identity | The login name of a user. |

# TopSys Table

## Purpose

The User agent displays the amount of System Time used by the processes shown in the last interval and displays the data in the TopSys table .

## Table Description

| Field | Type | Description |
|---|---|---|
| Pct_System_Time | Metric | The number of seconds of system time divided by the number of seconds elapsed in the last interval multiplied times 100. If a process uses 1 second of system time in a 10 second interval, this field will read 10.0. |
| UserName | Identity | The login name of a user. |

# WebMonitor Data

Data tables in this section:



## PageStats Table

### Purpose

The WebMonitor agent collects data about specific Web pages and stores the collected data in the PageStats table.

### Table Description

| Field | Type | Description |
|---|---|---|
| ConnectTime | Metric | The server connect time. |
| Message | Property | The message returned by a Web server or by the WebMonitor agent when it encounters an error or problem. |
| PageAvailability | Metric | The availability of the monitored Web page based on page request. |
| PageFetchTime | Metric | The time it takes the server to fetch the monitored page. |
| PageURL | Identity | The URL of the monitored page. |
| Server | Identity | The name of the monitored Web server as defined in the WebMonitor agent properties. |
| ServerAvailability | Metric | The availability of the monitored Web server based on server request. |
| ServerStatus | Metric | The server status numerical code returned by the Web server (>= 100) or by the WebMonitor agent (<0). |

| Field | Type | Description |
|---|---|---|
| TotalResponseTime | Metric | The total time the URL takes to respond. |

## ServerStats Table

### Purpose

The WebMonitor agent collects data about specific Web servers and stores the collected data in the ServerStats table.

### Table Description

| Field | Type | Description |
|---|---|---|
| MeanAvailability | Metric | The average availability of the monitored Web server. |
| MeanConnectTime | Metric | The average time it took to establish a communications link to the Web server. |
| MeanPageGetTime | Metric | The average time it took the server to get the monitored page. |
| MeanResponseTime | Metric | The average response time of the monitored Web server. |
| Message | Property | The message returned by a Web server or by the WebMonitor agent when it encounters an error or problem. |
| Server | Identity | The name of the monitored Web server as defined in the WebMonitor agent properties. |

# Windows_System Data

Data tables in this section:



## EventLog Table

### Purpose

The Windows_System agent collects messages from three Windows logs: system, security, and application, and stores them in the EventLog table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Event_Category | Identity | The type of event that occurred. The value listed in the column indicates messages are from either the system or application logs; however, the security log usually identifies events with a category, such as policy change, privilege use, or log on/log off. |
| Event_Computer | Identity | The computer on which the event occurred. |
| Event_ID | Identity | The number assigned to the event. The number identifies the source of the event, which can be a system component, driver, or application. For example, the number 2013 might identify events coming from the server. |
| Event_Message | Identity | Description of the event. |
| Event_Severity | Identity | The type of event that occurred. Events are either errors, warnings, or general information. In the case of security log events, events are either successful or failed. |
| Event_Source | Identity | The source that issued the event message. The source can be a system component, application, or device driver. |
| Event_User | Identity | The user who issued the event message. |
| User_Severity | Identity | The severity of the user message as defined in the agent properties. Levels of severity include information, warning, critical, or fatal. |

## FileSrvr Table

### Purpose

The Windows_System agent collects data on the monitored Windows file server and stores it in the FileSrvr table.

Table Description

| Field | Type | Description |
|---|---|---|
| Bytes_Read | Metric | The rate that bytes are coming into the server from the network. It includes all application data as well as network protocol information, such as packet headers. |
| Bytes_Written | Metric | The rate that bytes are leaving the server and going to the network. It includes all application data as well as network protocol information, such as packet headers. |
| File_Reads | Metric | The rate that applications are asking the server for data. Each call to a file system or similar application program interface (API) call counts as one operation. |
| File_Writes | Metric | The rate that applications are sending data to the server. Each call to a file system or similar application program interface (API) call counts as one operation. |
| Network_Errors | Metric | The total network errors during file reads and writes that required re-transmission of data. |

## FileSys Table

### Purpose

The Windows_System agent collects data on the file system space and capacity used and available, and stores it in the FileSys table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Capacity_Available | Metric | The percentage of space available in the file system. |
| Capacity_Used | Metric | The percentage of used file system space. |

| Field | Type | Description |
|---|---|---|
| FileSystem_Name | Metric | Name of the file system. |
| Space_Available | Metric | The amount of space available in a file system. |
| Space_Used | Metric | The amount of space used in a file system. |
| Total | Metric | The total amount of space in a file system. |

## Logical Disk Table

### Purpose

The Windows_System agent collects data about the logical disks and stores it in the Logical Disk table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Disk_Name | Identity | The name of the Windows disk, such as C:, D:, E:. |
| Kbytes_Read | Metric | The rate bytes are transferred from the disk during read operations in a sampling period. |
| Kbytes_Written | Metric | The rate bytes are transferred to the disk during write operations in a sampling period. |
| Megabytes_Free | Metric | The unallocated space on the disk drive in megabytes. |
| Read_Queue_ Length | Metric | The average number of read requests that were queued for the selected disk during the sample interval. |
| Reads | Metric | The rate of read operations on the disk in seconds. |
| Transfer_Time | Metric | The average amount of time (in milliseconds) for a disk transfer. |

| Field | Type | Description |
|---|---|---|
| Utilization | Metric | The percentage of elapsed time that the selected disk drive serviced read or write requests. |
| Write_Queue_ Length | Metric | The average number of write requests that were queued for the selected disk during the sample interval. |
| Writes | Metric | The rate of write operations to the disk. |

## Network Interface Table

### Purpose

The Windows_System agent collects data on the network interface card and stores it in the Network Interface table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Bandwidth_ Utilization | Metric | The estimate of the current bandwidth for the interface in bytes per second. For interfaces that do not vary in bandwidth or for those that you cannot accurately estimate, this value is the nominal bandwidth. |
| Bytes_Received_ Per_Sec | Metric | The rate that the interface receives bytes including framing characters. |
| Bytes_Sent_Per_ Sec | Metric | The rate that the interface sends bytes including framing characters. |
| Input_Drops | Metric | The number of inbound packets that could not be delivered to higher layer protocols because the packets contained errors. |
| Interface_ Bandwidth | Metric | The bandwidth that the interface uses to send packets. |

| Field | Type | Description |
|---|---|---|
| Interface_Name | Identity | The name of the interface packet. |
| Output_Drops | Metric | The number of outbound packets that could not be transmitted because the packets contained errors. |
| Packets_Received | Metric | The rate that packets are sent on the network interface. |
| Packets_Sent | Metric | The number of packets sent on the network interface. |

## Physical Disk Table

### Purpose

The Windows_System agent collects data on the physical disks and stores it in the Physical Disk table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Disk_Name | Identity | The instance that represents the disk drive. |
| Kbytes_Read | Metric | The rate that bytes are transferred from the disk during read operations. |
| Kbytes_Written | Metric | The rate that bytes are transferred to the disk during write operations. |
| Read_Queue_ Length | Metric | The average number of read requests that were queued for the selected disk during the sample interval. |
| Reads | Metric | The rate of read operations on the disk in seconds. |
| Transfer_Time | Metric | The average amount of time (in milliseconds) for a disk transfer. |

| Field | Type | Description |
|---|---|---|
| Utilization | Metric | The percentage of elapsed time that the selected disk drive is busy servicing read or write requests. |
| Write_Queue_ Length | Metric | The average number of write requests that were queued for the selected disk during the sample interval. |
| Writes | Metric | The rate of write operations to the disk. |

## Processor Table

### Purpose

The Windows_System agent collects data on each processor in the monitored Windows system and stores it in the Processor table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Interrupts | Metric | The number of CPU interrupts per second. |
| Pct_Interrupt_Time | Metric | Percentage of time that the CPU spent handling hardware interrupts. |
| Pct_Privileged_ Time | Metric | Percentage of time that the CPU spent in privileged mode. |
| Pct_Processor_ Time | Metric | Percentage of time that the CPU spent doing useful work. |
| Pct_User_Time | Metric | Percentage of time that the CPU spent in user mode. |
| Processor | Identity | The processor number that is being monitored. |

## Server Table

### Purpose

The Windows_System agent collects data on server functions and stores it in the Server table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Queue_Length | Metric | The current length of the server work queue for this CPU. A sustained queue length greater than four may indicate processor congestion. |
| Thread_Utilization | Metric | The percentage of threads that are allocated for server functions that are active. |
| Work_Item_ Shortages | Metric | Every request from a monitored host is represented in the server as a work item. The server maintains a pool of available work times per CPU to speed processing.<br><br>A sustained value greater than zero indicates the need to increase the max work items registry value for the server service. This value is always zero for the blocking queue instance. |

## Services Table

### Purpose

The Windows_System agent collects data on each service available in the monitored Windows system, and stores it in the Services table.

### Table Description

| Field | Type | Description |
|---|---|---|
| Restart | Metric | Flag to indicate if the service should be restarted. |
| Service_Name | Identity | Service name as displayed in the Windows service manager. |
| State | Metric | Numeric value of state. |
| Status | Metric | Current state of the service. Service states include the following: stopped, start-pending, stop-pending, running, continue_pending, pause_pending, paused, and unknown. |

## System Table

### Purpose

The Windows_System agent collects data about the overall performance of the monitored Windows system and stores it in the System table.

### Table Description

| Field | Type | Description |
|---|---|---|
| CPU_Idle_ Utilization | Metric | The percentage of time that the CPU is idle.<br><br>A high percentage of idle time indicates that CPU power can meet current demands and might indicate that the system is wasting available CPU resources. |

| Field | Type | Description |
|---|---|---|
| CPU_System_ Utilization | Metric | The percentage of time that the CPU is executing system or kernel processes.<br><br>All I/O processes require system time. Server applications that require significant amounts of I/O also require significant system time. A high percentage of system time might also indicate that user code is running inefficiently. |
| CPU_User_ Utilization | Metric | The percentage of time the CPU executes user programs. CPU user time above 75% might indicate a possible runaway process. |
| CPU_Utilization | Metric | The percentage of time that the CPU executes code, including system and user time. |
| Committed_Percent | Metric | The size of virtual memory in kilobytes that has been committed rather than reserved. Committed memory must have disk storage available or must be contained in main memory. This count is an instantaneous (not an average) over-time interval. |
| Context_Switches_ Per_Sec | Metric | The rate of switches from one thread to another. Thread switches can occur inside a single process or across processes. Context switches occur because one thread requests information from another or one thread is preempted by a higher priority thread.<br><br>Windows uses process boundaries for subsystem protection as well as for user and privileged protection modes. These subsystem processes provide additional protection. Therefore, some work performed by Windows on behalf of an application might display in other subsystem processes. Switching to the subsystem process causes one context switch in the application thread. Switching back causes another context switch in the subsystem thread. |
| Data_Map_Hits_ Percent | Metric | The percentage of data maps in the cache that could be resolved without retrieving a page from disk because the page was already in physical memory. |

| Field | Type | Description |
|---|---|---|
| Free_Memory_ Percent | Metric | The amount of memory available divided by the total size of the physical memory. The available memory is the size of the physical memory currently on the zeroed, free, and standby lists. |
| Free_Paging_File_ Percent | Metric | Percentage of the page file instance that is in use. |
| Interrupts_Per_Sec | Metric | The number of device interrupts that the processor is experiencing. A device interrupts the processor when it has completed a task or when it requires attention. Normal thread execution is suspended during interrupts.<br><br>An interrupt might cause the processor to switch to another higher priority thread. Clock interrupts are frequent and periodic and create a background of interrupt activity. |
| Memory_Allocation _Failures | Metric | The number of times that the kernel could not allocate memory. |
| Memory_Demand | Metric | The percentage of physical bytes committed, divided by the total physical bytes. |
| Pages_In_Per_Sec | Metric | The number of pages read from the disk to resolve memory references to pages that were not in memory at the time of the reference. This counter includes paging traffic on behalf of the system cache to access file data for applications.<br><br>Observe this counter if you are concerned about excessive memory pressure (called thrashing) and the excessive paging that might result. |
| Pages_Out_Per_Sec | Metric | A count of the number of pages that are written to disk because the pagers have been modified in main memory. |
| Processes | Metric | The number of processes either running or waiting in the run queue. |

| Field | Type | Description |
|---|---|---|
| Run_Queue_Length | Metric | The number of processes waiting in the run queue. A sustained run queue length greater than two typically indicates processor congestion. This count is instantaneous, not an average over-time interval. |
| System_Cache | Metric | The total number of kilobytes, including the file system cache, operating system code, paged pool, and pageable memory used by device drives, that is resident in physical memory. |
| System_Calls_Per_Sec | Metric | The frequency of calls to Windows system service routines. These routines perform all basic scheduling and synchronization of activities on the system and also provide access to non-graphical devices, memory management, and name space management. |
| Threads | Metric | The number of object threads in the computer at the time of data collection. This number is an instantaneous count, not an average over a time interval count. A thread is the basic executable entity that can execute the instruction in a processor. |

## TCPConnections Table

### Purpose

The Windows_System agent collects data about the TCP connections for a monitored Windows system and stores it in the TCPConnections table.

### Table Description

| Field | Type | Description |
|---|---|---|
| TCP_Active | Metric | The number of times that TCP connections transitioned directly from CLOSED to SYN-SENT. |
| TCP_Established | Metric | Connections currently in ESTABLISHED or CLOSE-WAIT. |

| Field | Type | Description |
|---|---|---|
| TCP_Failures | Metric | The number of times that TCP connections transitioned directly from SYN-SENT or SYN-RCVD to CLOSED, plus those that transitioned from SYN-RCVD to LISTEN. |
| TCP_Passive | Metric | The number of times that TCP connections transitioned directly from LISTEN to SYN-RCVD. |
| TCP_Reset | Metric | The number of times that TCP connections transitioned directly from ESTABLISHED or CLOSE-WAIT to CLOSED. |

## Top_CPU Table

### Purpose

The Windows_System agent collects data about the processes using the highest CPU, and stores the collected data in the Top_CPU table.

For details on this table, see “TopCPU Table” on page 244.

## Top_IO Table

### Purpose

The Windows_System agent collects data about the processes using the highest IO resources and stores the collected data in the Top_IO table. This table is sorted by the amount of I/O performed by the processes shown in the last interval.

For details on this table, see “TopIO Table” on page 244.

## Top_MEM Table

### Purpose

The Windows_System agent collects data about the processes using the highest system resources, and stores the collected data in the Top_MEM table. The table is sorted by percentage of memory.

Table Description

| Field | Type | Description |
|---|---|---|
| CmdUser | Identity | Provides the most complete identification of each process. It is the subject field in the Process views. |
| Command | Identity | The full path name to the executable that spawned a subject field. |
| Process_ID | Metric | The unique process identification number that the kernel assigned when the process was created. |
| Resident_SetSize | Metric | The resident set size of the process. |
| User_Name | Identity | The user name of the individual who owns the process. |
| Virtual_SetSize | Metric | The size of the process image. |

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