PerfStat Monitor

Installation and Administration Guide

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PerfStat Terms and Technologies

This section explains the terms and technologies needed to fully understand future sections of this guide.

Serialization	The process of writing a data structure to a data file stored on disk.
Deserialization	The process of retrieving data from disk and placing it into a data structure.
User Role	The role or user type defines the permissions a user has within the application. There are two roles or types: admin and user. There is also a super-user called the perfstat user.
Perfstat User	The super user for the perfstat application. There can be only one perfstat user. The perfstat user can control all admin and users.
Admin Role	The admin role allows that user to add hosts and users. Admin have control over all hosts and users they add to the system. You can have many admin users.
User Role	The user role does not permit other user or host configurations. You can only manage your own user preferences.
Backend	Refers to the non graphical programs. Handles client/server communication, host->service->metric status, and stores all the application data.
Front-end	Refers to the graphical programs the comprise the web interface.
Perfd	Perfstat server daemon. Handles client communications and data storage.
Perfctl	Perfstat control daemon. Handles the scheduling of server and client programs within the perfstat application.
Objects	Perfstat objects contain all property data for the perfstat application.
Metric	A dataset that PerfStat is collecting. An example would be cpu utilization.
Service	A group of related metrics and/or sub services that PerfStat is monitoring. An example would be cpu.
Sub Service	A grouping of related services which have the same metrics. An example would be file systems.

Host	Anything node that PerfStat monitors. All hosts must be unique in the PerfStat system.
Host Group	A Group of related hosts. Users create host groups and decide what hosts go into what groups.
Shared Host Group	A Host Group which is shared to multiple users. By default Host Groups will only be seen by the user that creates them except for the All Hosts group.
All Hosts	A Host Group that contains all Hosts under an admin
Graph Metric	An object whose properties include: name, color, and graph info. Graph Metrics are the foundation of the performance portion of the perfstat application.
Graph	Groups Graph Metric(s) together in order to generate a graph. Perfstat graphs can be pie, bar, or line. You can create host graphs and host group graphs.
Report	Combines asset info, performance info, and status info into a report. Reports can be manually generated or automated.
Shared Reports	Reports that are shared to other users of the PerfStat system
Indexes	Perfstat indexes create relationships between objects, similar to database indexes.
Libraries	Perfstat libraries contain all the information needed to build or manipulate an object.

How PerfStat Works

This section explains briefly what PerfStat does, some of its features, and architecture.

What PerfStat does

PerfStat is a Performance and Statistics Monitoring framework for enterprise servers, applications, and devices. PerfStat is a two tier client/server architecture. Clients gather data and send that data to the server for collection and analysis.

PerfStat has the following features:

- Performance Monitoring
- Report Monitoring
- Status Monitoring
- Asset Monitoring

Performance Monitoring

Performance Monitor provides an interface for displaying real time pie, bar, and line graphs for all data gathered by clients. There are two types of graphs: Host graphs and Host Group graphs. Host graphs include data from a given host while Host Group graphs average data across all hosts in a particular Host Group.

Report Monitoring

Report Monitor provides an interface for users to configure reports based on all data collected by PerfStat. Users can create their own unique reports or they can create shared reports which other users of PerfStat can view.

Status Monitoring

Status Monitor provides an interface that displays real-time status for all services monitored by PerfStat. Status is shown as OK, WARN, CRIT, or NOSTATUS. You can configure alerting via SMTP for quick and simple problems notification. Alerts are also logged in an event log so you can get a historical look-back for all services monitored by PerfStat.

Asset Monitoring

Asset Monitor collects informational data about a given client. It shows information relating to a client or nodes OS, cpu(s), memory, and patches. There is also an optionally configured Change Log where a user can document all updates and changes to a given host or node.

PerfStat Server

The PerfStat server collects, stores, and displays all data gathered by PerfStat. The server consists of backend programs which collect, store, and organize data as well as a front-end web-based application which displays the data.

PerfStat Client

The PerfStat client gathers data and sends it to the PerfStat server via a configurable network port. The client is designed to be lightweight and simply gets and sends data. No data processing is done at the client.

Database Layer

In the PerfStat application framework there are several different data types and two different methods for storing data which makeup the database layer. As mentioned before ALL data is stored and handled by the PerfStat server. This section will cover the different data types and the mechanisms for storing those data types.

Data Types

In PerfStat there are three different data types:

- Informational Data
- Performance Data
- Application Data

Informational Data	This data type consists of information about hosts being monitored in the PerfStat system. Informational data includes information about the OS, CPU(s), Memory, and installed patches. Informational data is gathered on the client and sent to the server via the network. Once on the PerfStat server, informational data is stored in the PerfStat Object database.
Performance Data	This data type consists of raw performance data for a given host. This data includes things like CPU utilization, Memory utilization, IO utilization, and etc. Any raw data gathered on a client and used for the purpose of monitoring would fall into this category. Once on the PerfStat server, performance data is stored in a Round Robin Database (RRD).
Application Data	This data type consists of PerfStat application data. This data includes user information, the PerfStat global configuration, host group configurations, reports, host information, all of the metrics/services being monitored by PerfStat, and etc.

Databases

In PerfStat there are two separate databases. Both live on the PerfStat server and help makeup the backend application. They are:

- PerfStat Object Database
- RRDtool

PerfStat Object Database	The PerfStat object database is a fast and lightweight database used for storing all performance objects such as host metrics or services, application data, configuration data, user data, and basically everything except the raw performance data. This database is the brains behind the entire PerfStat framework and makes everything possible. The PerfStat Object Database was designed so that the application would be fast, dynamic, as well as easy to install and administer.
RRDtool	The rrdtool stores all of PerfStat's performance data. These are the raw numbers which PerfStat reports and monitors on. Performance data is stored in a Round Robin Archive (RRD). The rrdtool is used in many well known performance monitoring products such as MRTG. More information about the rrdtool can be found at the following URL: http://people.ee.ethz.ch/~oetiker/webtools/rrdtool

Application Layer

In the PerfStat framework, the application layer is the mechanism for Interacting with the data. It is the user interface and front-end for PerfStat. The application layer is comprised of CGI programs, libraries, a web server, and a web browser. The application layer is part of the PerfStat Server.

CGI Programs

The PerfStat application contains many CGI programs which get and and retrieve data displaying back html. The application was designed dynamic, lightweight, and very responsive. There are no bulky JAVA programs or server-side apps, everything is done through CGI and get converted into direct html.

Libraries

The fore mentioned CGI programs require several libraries. Most are PerfStat specific libraries but there are a few libraries required for performing graphing functions. The following libraries are required:

- PerfStat Application Libraries
- GD Libraries
- PNG Libraries

PerfStat Application Libraries	These are libraries we have developed to facilitate many of the application features. These libraries help manage and manipulate data and tie into our Object Database.
GD Libraries	These libraries enable our application to create GD bar and pie graphs. They are pre-compiled and are installed under /usr/local/lib
PNG Libraries	These libraries tie into the GD libraries and allow us to create PNG images for all out graphs. PNG images take up very little space and are our preferred image format for displaying graphs.

Web Server

The PerfStat application requires a web server. The web server is not Built into the PerfStat product and needs to be installed separately. We Do not do anything special with the web server and support Apache 1.x And 2.x. The default apache install will work with PerfStat.

Web Browser

The PerfStat interface is web based and so it requires a web browser in Order to run the application. We support IE 6.x and Mozilla 1.x.

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Installing the PerfStat Client

The PerfStat client is lightweight and consists of a scheduler daemon, data gathering programs, and a program which sends the gathered data to the PerfStat server.

Support

The PerfStat client is supported on the following platforms:

- Solaris 8 and 9
- Redhat ES 3 and 4
- Windows 2000 and 2003
- HPUX 11i

Install PerfStat Client on Unix	
Step	**Procedure**
1	Copy the PERFclt-<VER> to the /tmp directory
2	Run the following command(s) to install the pkg (Solaris): gunzip PERFclt-<VER>.tar.gz tar xvf PERFclt-<VER>.tar pkgadd -d /tmp/ PERFclt-<VER> Run the following command(s) to install rpm (Linux): rpm –ivh /tmp//tmp/ PERFclt-<VER>.rpm
3	Create perfstat user by running the following command: useradd -d /opt/PERFCLT psuser
4	Create perfstat group by running the following command: groupadd psgroup
5	Add perfstat user as a member of the perfstat group by running the following command: usermod -g psgroup psuser
6	Run the following command to change directory into the perfstat client install directory: cd /usr/PERFclt/install
7	Run the following command to install and configure the perfstat client: ./perfinstall.sh /opt/PERFclt Follow the prompts and enter information when prompted or press “enter” to select default. Run the following command to start: su – psuser;./perf.sh start

Install PerfStat Client on Windows	
Step	**Procedure**
1	Copy the W32Client-<VER>.msi to the C:\TEMP directory
2	Double click the W32Client-<VER>.msi
3	Follow the prompts and click “next” to continue.
4	After completing install run the following command from the cmd prompt: cd C:\path\to\perfhome\bin perfctl.exe –install auto
5	Run the following command to install and configure the perfstat client: Double click C:\path\to\perfhome\bin\perfconfig.exe Configure PERFSERVER (IP) and Server Port (port number) along with anything else you want to change. Click the Stop and Star service to restart PerfStat client so that changes will take effect. Note: you can also restart perfstat service from the Service Management window.

Installing the PerfStat Server

The PerfStat server stores and displays all data gathered by the PerfStat client(s). The PerfStat server requires both Apache and ActiveState Perl before installing.

Support

The PerfStat server is supported on the following platforms:

- Solaris 8 and 9
- Redhat ES 3 and 4
- Apache 1.x or 2.x
- ActiveState Perl 5.8.x

Install PerfStat Server on Unix	
Step	**Procedure**
1	Copy the PERFsvr-<VER> to the /tmp directory
2	Run the following command(s) to install the pkg (Solaris): gunzip PERFsvr-<VER>.tar.gz tar xvf PERFsvr-<VER>.tar pkgadd -d /tmp/ PERFsvr-<VER> Run the following command(s) to install rpm (Linux): rpm –ivh /tmp//tmp/ PERFsvr-<VER>.rpm
3	Create perfstat user by running the following command: useradd -d /opt/PERFCLT psuser
4	Create perfstat group by running the following command: groupadd psgroup
5	Add perfstat user as a member of the perfstat group by running the following command: usermod -g psgroup psuser
6	Run the following command to change directory into the perfstat client install directory: cd /usr/PERFclt/install
7	Run the following command to install and configure the perfstat client: ./perfinstall.sh /opt/PERFclt Follow the prompts and enter information when prompted or press “enter” to select default. Run the following command to start: su – psuser;./perf.sh start

Configure Apache and ActiveState Perl	
Step	**Procedure**
1	Edit the httpd.conf file located under /path/to/apache/conf/httpd.conf. You should have the following settings under the “allow server status reports” section of the httpd.conf file: alias /perfstat "/<perfhome>/cgi" <Location /perfstat> AddHandler cgi-script pl order allow,deny allow from all Options +ExecCGI </Location>
2	Create symbolic link pointing /usr/bin/perl to /path/to/activestate/bin/perl: ln –s /path/to/activestate/bin/perl /usr/bin/perl Note: if a /usr/bin/perl binary exits from a previous install, simply move the binary: mv /usr/bin/perl /usr/bin/perl.old
3	Test installation by opening a web browser and entering http://<perfstat servername>/perfstat. Log in using the following credentials: User: perfstat Password: password

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Event Monitoring

Events are the key to status monitoring. Any change in status is considered an event. The four status types or events in PerfStat are: OK, CRIT, WARN, and NOSTATUS. If event logging is enabled metric events will be written to a log for the service those metrics events relate to. For example, all cpu metrics (usr%, sys%, idl%, etc) will be logged to an event log called cpu. Each service has an event log containing events for all that services metrics. Note: Event logging must be enabled in order to do alerting.

Enable Event Logging

Event logging can be enabled or disabled globally. To enable event logging globally use the following procedure:

Step	Procedure
1	Ensure EVENTLOG is enabled in perf-conf and set to "Y" by running the following command: /perfhome/bin/tools/perfconfig -list
2	To change any of the perf-conf settings run the following command: /perfhome/bin/tools/perfconfig -server

Note: if you are logged in as root you will need to run the perfconfig command with "-root" flag. You can also simply cat the /perfhome/etc/perf-conf file.

Configure Event Log Size

The event log size is defined by the number of lines in the event log. The event log will grow to the size (lines) of the LOGSIZE value in the perf-conf configuration file and then will truncate old log entries to make room for new log entries when it reaches that size.

Use the following procedure to configure the event log size:

Step	Procedure
1	Set LOGSIZE to the maximum size (lines) that you want the event logs to be by running the following command: /perfhome/bin/tools/perfconfig –server

Note: if you are logged in as root you will need to run the perfconfig command with "-root" flag. You can also simply vi the /perfhome/etc/perf-conf file.

Configure Event Thresholds (Optional)

In the PerfStat application you can configure WARN and CRIT thresholds. The thresholds are the levels at which an event is triggered. There are four types of events in PerfStat: WARN, CRIT, OK, and NOSTATUS.

WARN

A WARN event is generated when the value for a metric is at or above the WARN threshold and below the CRIT threshold

CRIT

A CRIT event is generated when the value for a metric is at or above the CRIT threshold

OK

A OK event is generated when a metric has a status of WARN or CRIT and the value falls below that of the WARN level

NOSTATUS

A NOSTATUS event is generated when the PerfStat application has not received data for that metric and the Status Interval (set in perf-conf) expires

The procedure below shows how to configure event Thresholds:

Step	Procedure
1	Select "App Configs->Host Config" within the PerfStat application
2	Under the "Manage Hosts" section select "Config" to configure thresholds for a host
3	Under the "Configure Services" section select the service you would like to configure thresholds for
4	Under the service section configure the warn threshold, crit threshold, and/or threshold unit for a metric
5	Under the service section select "Update" to save your changes

Disable Service Events (Optional)

In the PerfStat application you can disable events at the service level by configuring the /perfhome/etc/events-disable file. This allows you to get more granular with your event logging policy. Disabled events can not be alerted on.

Use the procedure below to disable all events for a particular service:

Step	Procedure
1	Using an editor such as vi open the /perfhome/etc/events-disable file.
2	Disable event(s) using the template within the file. The events-disable file uses the following format: hostname:<service1>:<service2>

Note: A host followed by a comma separated list of services. You can also use the wildcard (*) to indicate all services such as follows:

hostname:*

Disable Metric Events (Optional)

In the PerfStat application you can disable events at the metric level. This allows for the most granular event policy.

Use the procedure below to disable metric(s) within a given service:

Step	Procedure
1	Select "App Configs->Host Config" within the PerfStat application
2	Under the "Manage Hosts" section select "Metrics" to disable thresholds for a host
3	Under the "Configure Services" section select the service you would like to configure thresholds for
4	Under the service section un-check the “Events” checkbox next to the metric you wish to disable events for
5	Under the service section select "Update" to save your changes

Alert Notification

The perfstat application can send SMTP alerts. Any device that can receive email can also receive an alert from the perfstat application. Alerts are enabled by enabling event logging, configuring global alerts based on event status, and further configured by creating notify rules.

An example of an email alert is as follows:

Subject: WARN: insync1.iion.com: io.Total: aWait

Body: Sat Apr 1 04:00:53 2006 io.Total:aWait WARN Average Wait Time Value: 111.16 Boundary: 100 Unit: Msec

Enable Event Logging

Event logging can be enabled or disabled globally. To enable event logging globally use the following procedure:

Step	Procedure
1	Ensure EVENTLOG is enabled in perf-conf and set to "Y" by running the following command: /perfhome/bin/tools/perfconfig -list
2	To change any of the perf-conf settings run the following command: /perfhome/bin/tools/perfconfig -server

Note: if you are logged in as root you will need to run the perfconfig command with "-root" flag. You can also simply cat the /perfhome/etc/perf-conf file.

Enable Global Alerts

Alerting can be enabled/disabled globally and it can be enabled/disabled based on event status. For example, you would normally enable CRIT and WARN alerts however you would probably disable alerting on OK status since usually alerting is done only when problems occur.

Use the following procedure to enable/disable global alerts:

Step	Procedure
1	Ensure EMAIL and one of the email status types is enabled and set to "Y" in the perf-conf file by running the following command: /perfhome/bin/tools/perfconfig -list Note: at a minimum you must enable EMAIL and EMAIL_ALL, or EMAIL_CRIT, or EMAIL_WARN, or EMAIL_NOSTATUS to receive any alerts.
2	To change any of the perf-conf settings run the following command: /perfhome/bin/tools/perfconfig -server Note: if you are logged in as root you will need to use "-root" flag. You can also simply cat the /perfhome/etc/perf-conf file.
3	If you make any changes to the perf-conf you must restart perfstat by running the following command: /perfhome/perf.sh restart

Creating Notification Rules

Notification Rules are the nucleus of alert monitoring. An alert is only sent If event logging is enabled, a global alert is set to Y, and there is a match on a notification rule. A notification rule is a string which consists of the following information:

- Hostname
- Hour List
- Day List
- Services List
- Email List

Hostname	The name of the host which alerts are being configured for
Hour List	A comma separated list of hours 0-23 when alerts will be sent
Day List	A comma separated list of days 1-31 when alerts will be sent
Services List	A comma separated list of services you want to alert on
Email List	A comma separated list of email address you want the alert to be sent to

Note: the options "*" wildcard is a catch all that can be used for the following fields when configuring a notification rule: Hour List, Day List, and Services List.

Use the below procedure to create a notification rule for a given host:

Step	Procedure
1	Select "App Configs->Host Config->Alerts" for the host you want to create a notification rule for within the PerfStat application
2	Under “Add Rule” section enter the notification rule using the following format: <hostname>:<hour list>:<day list>:<services list>:<email list>
3	Press “Enter” to save the notification rule

Below are two examples of notification rules:

The first will send alerts during 9am-12pm and 1pm-5pm. It will alert on the first and third week of every month. The following services will be alerted on: cpu, mem, io, and fs. Alerts will be sent to myemail@mydomain.com:

9-12,1-5:1-7,15-21:cpu,mem,io,fs:myemail@mydomain.com
The second will send alerts for the selected host during all hours, of all days, for all services to myemail@mydomain.com and youremail@yourdomain.com:

::*:myemail@mydomain.com,youremail@yourdomain.com

Host Groups

Host Groups are the key organizational element in the PerfStat framework. Host Groups are a grouping of hosts configured by a user within PerfStat. Each user creates its own host groups that are unique to that user. In the event that a user wants to share a host group with another user of the PerfStat system they can make a Shared Host Group. Host Groups are not only used for organizational purposes but also performance monitoring and status monitoring.

Add Host Group

Host Groups are created by users of the PerfStat framework. Each user can create its own host groups that independent of other users. The idea is that not everybody wants to see the data presented the same way. PerfStat Host Groups give you the flexibility to accomplish that.

Use the following procedure to add a new host group:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the "Add Host Group" section add a Host Group Name and a Description
3	Left click "Enter" to create new Host Group

Configure Host Group

A host group consists of a name, description, and list of hosts associated with the given host group. Use the following procedure to change the host group name and/or description:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the “My Host Groups” section, find the host group you want to configure and left click config.
3	Under the “Config Host Group” section, enter a new host group and/or description
4	Left click “Enter” to update the host group

Use the following procedure to add hosts to a host group:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the “My Host Groups” section, find the host group you want to configure and left click config.
3	Under the “Add Host “ section, select the host you would like to add from the list of available hosts
4	Left click “Enter” to update the host group

Use the following procedure to remove hosts from a host group:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the “My Host Groups” section, find the host group you want to configure and left click config
3	Under the “Host List “ section, find the host you would like to remove from the host group
4	Left click “Remove from List” to update the host group

Delete Host Group

Use the following procedure to delete a host group:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the "My Host Groups" section, find the host group you want to delete
3	Left click "Delete" to remove Host Group

Create Shared Host Group

A shared host group is a host group that can be viewed by more than one user. Use the following procedure to create a shared host group:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the "My Host Groups" section, find the host group you want to share
3	Left click "Share" to share Host Group
4	Under the “Add Shared User” section, select a user you want to share your host group with
5	Left click "Enter" to share Host Group with selected user

Un-Share Host Group

Use the following procedure to stop sharing a host group with a particular user:

Step	Procedure
1	Select "App Configs->Host Groups" within the PerfStat application
2	Under the "My Host Groups" section, find the host group you want to share
3	Left click "Share" to share Host Group
4	Under the “Shared User List” section, find the user you want to remove from shared host group
5	Left click "Remove from List" to stop sharing Host Group with selected user

Hosts

Hosts are what the PerfStat framework is built around. A host is any device or node that is being monitored by PerfStat and is running the PerfStat client. A host could be a server, network device, or even a storage array.

Adding Hosts (Manually)

Any host that is to be monitored by PerfStat must be first added to the framework. The PerfStat client can be installed on the following operating systems: Windows, Solaris, Linux, or HPUX. There are two options for adding a new host: manual or automated.

Use the following procedure to add a host manually:

Step	Procedure
1	Select "App Configs->Host Config" within the PerfStat application
2	Under the "Add Host" section enter the Host Name, IP Address, and select the OS Type from the drop down list
3	Left click “Enter” to add host

Adding Hosts (Automatically)

In the event that you are adding many hosts at once, you may choose to have PerfStat automatically add them. Once you enable AUTO_DETECT in the /perfhome/etc/perf-conf file, the PerfStat server will automatically add any host to the system for which is gets a request.

Note: it is recommended you only enable AUTO_DETECT when adding several hosts at once and AFTER they have been added it is recommended you disable the AUTO_DETECT OPTION.

Use the following procedure to enable AUTO_DETECT and allow PerfStat to add hosts automatically:

Step	Procedure
1	Use vi to edit /perfhome/etc/perf-conf file on the PerfStat server
2	Set AUTO_DETECT=Y
3	Set ADMIN_NAME=<username> Note: all hosts that get added will be under the ADMIN_NAME. This user must be an admin. The default admin user is perfstat.
4	Restart PerfStat server /perfhome/perf.sh restart

Modify a Host

In the event that the hostname or IP for your host change it will be necessary to update PerfStat. Note: if the OS type changes you will need to add the host as a new host.

Use the following procedure to modify a host:

Step	Procedure
1	Select "App Configs->Host Config" within the PerfStat application
2	Under the “Manage Hosts” section, find the host you would like to modify and left click “edit”
3	Change the hostname and/or IP address
4	Press the “Enter” key to save changes

Delete a Host

In the event you want to delete a host from PerfStat use the following procedure:

Step	Procedure
1	Select "App Configs->Host Config" within the PerfStat application
2	Under the “Manage Hosts” section, find the host you would like to modify and left click “delete”
3	You will be prompted whether you really want to delete the host. Click “ok” to delete host or “cancel” to preserve host.

Note: Deleting a host will not only remove the host from PerfStat but will also remove any data collected from that host. Backup the /perfhome/rrd/<hostname> directory to save the hosts data prior to deleting.

Perf-Conf File

The main configuration file for PerfStat is the perf-conf file. The same configuration file is used for both server and client settings. The PerfStat server will have both server and client settings (since it is a client as well). The PerfStat client will only have client settings. The perf-conf file is located under /perfhome/etc. It can be edited with vi or there is a CLI interface for configuring perf-conf called perfconfig. The perfconfig program is located under /perfhome/bin/tools.

Note: any changes to the perf-conf file require a restart of PerfStat client or server.

Global Settings

The global settings are application specific and are required for both the client and the server. The table below explains the global settings in the perf-conf file:

PERFHOME	This is the path location to where the PerfStat application server or client is installed.
USER	PerfStat cannot run as root on Unix systems, therefore you must create a user and run the PerfStat application as that user.
GROUP	The PerfStat user should also be part of a PerfStat group, allowing for more granular permissions.
VER	This should NOT be changed. VER refers to the version number of PerfStat.
DEBUG	If you want more information in the PerfStat logs you will need to enable DEBUG. To enable DEBUG set it to “1”.

Server Settings

The server settings are only used for configuring the PerfStat server. A client will never have this section in its perf-conf file. The table below explains the server settings:

SERVER	This value specifies if PerfStat is running as server. If it is then this must be set to “Y” (YES).
SERVERIP	This is the IP address of the PerfStat server. The application will bind to the specified IP.
SERVERPORT	This is the port you want the PerfStat server to listen and communicate to clients on. The application will bind to the specified port.
MAXBYTES	Allows you to set the maximum bytes that the PerfStat server will accept per connection. This is a security feature to prevent a client from sending to much data. We recommend a setting of “8192” (8KB). This value may need to be increased as more things to monitor.
PING_INTERVAL	This is the interval at which the PerfStat server will ping clients and test their connectivity. The setting is in minutes. By default it is set to “5” (minutes).
STATUS_INTERVAL	This is the interval PerfStat uses to determine if a client’s status has gone to NOSTATUS. The setting is in minutes. Again NOSTATUS means a client hasn’t reported into the PerfStat server in however many minutes this value is set to. The default is “30” (minutes). So by default if a client doesn’t report to the server for 30 minutes it will be marked as NOSTATUS.
ALERT_INTERVAL	This is the interval at which PerfStat checks to see if there are any alerts to send. This setting is in seconds. Alerts are event status changes that get emailed via SMTP. The default setting is “15” (seconds.
AUTO_DETECT	This value allows the PerfStat server to auto discover hosts. It requires you to set ADMIN_NAME in there perf-conf file as well. The default setting is “N” (NO).
ADMIN_NAME	This value is used in conjunction with setting AUTO_DETECT to “Y”. If AUTO_DETECT is enabled you must set an admin name. All systems added to PerfStat must belong to an admin user of the application. The default is “perfstat” but if you create other admin you can have hosts added to them instead.

Client Settings

Again both the PerfStat server and client have client settings in the perf-conf file since the PerfStat server is also a client. The settings vary a bit from OS to OS. The client settings are the paths to programs needed to collect OS information. The tables below explain the client settings based on OS:

Redhat ES 3 and 4	
PS_CMD	The path to the ps command
VMSTAT _CMD	The path to the vmstat command
IOSTAT_CMD	The path to the iostat command
NETSTAT_CMD	The path to the netstat command
DF_CMD	The path to the df command
UNAME_CMD	The path to the uname cmd
RPM_CMD	The path to the rpm command

Solaris 8 and 9	
PS_CMD	The path to the ps command
VMSTAT_CMD	The path to the vmstat command
SWAP_CMD	The path to the swap command
PRTCONF_CMD	The path to the prtconf command
IOSTAT_CMD	The path to the iostat command
NETSTAT_CMD	The path to the netstat command
IFCONFIG_CMD	The path to the ifconfig command
KSTAT_CMD	The path to the kstat command
INODE_CMD	The path to the inode command
FS_CMD	The path to the df command
UNAME_CMD	The path to the uname command
PRTDIAG_CMD	The path to the prtdiag command

EMAIL Settings

The email settings are optional and are only configured on the PerfStat server. EMAIL settings control where you send alerts and what types of alerts you want to send. The table below explains the email settings:

EMAIL	This turns email alerting on or off. The default settings is “Y” (YES).
ALERT_ALL	This setting turns on alerting for all status types. Again the four status types are CRIT, WARN, OK, and NOSTATUS. If you enable this any time a status changes it will get parsed against the notification rules. ALERT_ALL overrides all other alert status settings.
ALERT_CRIT	This setting turns on alerting for CRIT status changes only. The default is “Y” (YES).
ALERT_WARN	This setting turns on alerting for WARN status changes. The default is “N” (NO).
ALERT_NOSTATUS	This setting turns on alerting for NOSTATUS changes only. The default is “N” (NO).
SMTP_SERVER	This is the IP address of your SMTP server. Note: the SMTP_SERVER must be configured as a mail relay.
EMAIL_FROM	This is the email address all email alert will be sent from. It is usually set to psuser@<perfstat servername).com.
TRAP_SCRIPT	This setting allows you to integrate PerfStat alerts into another monitoring system like TNG for example. You can run another program and pass it values from PerfStat when alerts are generated. The following values can be sent from PerfStat: %ALERT – status level crit,warn.ok, or nostatus %EVENT – name of the event (service.metric) %NAME – human readable name for event %VALUE – the value of that event %BOUNDARY – boundary the event went above %THRESHOLD – the threshold for the event

EVENT LOG

The event log settings control if event logging is enabled and the size of the event logs. Event log settings are optional and are only configured on the PerfStat server. If enabled events will be logged any time their status changes to a log. This gives you a historical look back for events. The table below explains the event log settings:

EVENTLOG	This setting enables or disables event logging. By default it is set to “Y” (YES).
LOGSIZE	This setting controls the log size for the event logs. Once an event log reaches the LOGSIZE, the oldest events are truncated by the newest events. The size is in number of lines of the event log file. By default it is set to 100 (lines).

Users

The PerfStat framework is a multi-user environment. Each user has the ability to customize the interface to meet their specific needs. A user created in PerfStat can be one of two roles: an admin or a user. The built-in admin account is called “perfstat”.

User Roles

User roles are the cornerstone of any multi-user environment. PerfStat is no different in that regard. Where we have excelled is by allowing each user to customize the interface uniquely to meet their needs. The table below explains the difference between the two roles (user and admin):

Action	User	Admin
View Host Groups	X	X
Create/Modify Host Groups	X	X
View Reports	X	X
Create/Modify Reports	X	X
Create/Modify shared host groups	X	X
Create/Modify shared Reports	X	X
Add/Delete Users		X
Add/Delete/Modify hosts		X
Modify Metric Thresholds		X
Configure Alert Templates		X
Configure Metric Templates		X
Configure Notification Rules		X

Add User

Adding a user in PerfStat must be done by an admin user. A user only has access to view hosts that it’s admin user has added. This makes it possible to isolate your IT infrastructure within PerfStat. In the event you want everyone to see all the hosts you can create all the hosts under the built-in “perfstat” user and then create users under that “perfstat” user. Use the following procedure to add hosts:

Step	Procedure
1	Log into PerfStat as an admin user
2	Select "App Configs->User Config" within the PerfStat application
3	Depending on if you are creating an admin or a user, add username and password under “Add Admin” or “Add User” section.
4	Left click “enter” under the appropriate section chosen above to add user.

Modify User

In PerfStat a user can be modified by itself or by the admin that user is under. Admin users can only be modified by themselves or by the “perfstat” user. You can modify a user’s password or the Show All Hosts preference. When set to “true” the Show All Hosts preference will show every host under that admin in a Host Group called “All Hosts”. Use the below procedure to modify a user:

Step	Procedure
1	Log into PerfStat as user
2	Select "App Configs->User Config" within the PerfStat application
3	Under “Manage Admin” or “Manage User” section find user you want to modify and left click config.
4	Enter a new password and/or change the “Show All Hosts” preference
5	Left click “Enter” to save changes

Delete User

Only an admin user can delete users of PerfStat. Use the procedure below to delete a user:

Step	Procedure
1	Log into PerfStat as an admin user
2	Select "App Configs->User Config" within the PerfStat application
3	Under “Manage Admin” or “Manage User” section find user you want to delete.
4	Left click “delete” to delete that user from the PerfStat system.
5	You will be asked to acknowledge click “ok” to delete or cancel to abort delete.

Note: deleting a user will wipeout all of the user’s settings including any host groups and reports that the user created.

Using PerfStat 4

Sections:

Performance Monitor

The graphing engine of the PerfStat framework is performance monitor. You can create pie, bar, and line graphs as well as graphs based on hosts as well as host groups. All performance monitor graphs are real-time and on-demand. Below is a summary of the performance monitor features:

Features	
Feature	Descriptions
Host Graphs	Host graphs are in real-time. You can have pie, bar, and line graphs.
Host Group Graphs	Host group graphs are in real-time. You can have pie or bar graphs.
Graph Intervals	Graphs can be hourly, daily, weekly, or monthly.
Column Layout	The column layout will put graphs into columns. You can have 1, 2, 3, or 4 columns.
Graph Size	You can have four types of graph sizes: small, medium, large, or custom.
Custom Size	You can create a custom size between 50% to300% of the medium size (medium is default graph size)

Create Host Graph

Host graphs are real-time pie, bar, or line graphs. when creating a host graph you can choose the graph type, graph interval, and graph layout. Use the following procedure to create a host graph:

Step	Procedure
1	Select "Performance Monitor" in the PerfStat application
2	Select a host group from the panel on the left. Your choices are: “All Hosts”, “My HostGroups”, or “Shared HostGroups”.
3	Under “Selected Host Group” section ensure the appropriate host group is selected. If not you can select a different host group from the select box.
4	Left click “Drill Down to Host Graphs”
5	Under the “Select Host” section ensure the correct host is selected from the select box.
6	Under the “Select Graph(s)” section, left click the graphs you would like to view by left clicking the “+” next to each service and then left click the graph. Once you have done that the graphs should display under the “Select Interval(s) and Graph Type(s)” section. Note: for convenience you can use the “open all”, “close all”, “select all”, or “remove all” options.
7	Under the “Intervals” section, select the interval(s) you would like to view by checking the appropriate checkbox. The options are hourly, daily, weekly, or monthly.
8	Under the “Graph Type” section, select the graph type(s) you would like to view from the appropriate checkbox. The options are: line, bar, or pie.
9	Under the “Create Graph(s)” section select the column layout from the appropriate select box. The options are one, two, three, or four columns.
10	Under the “Create Graph(s)” section select the graph size from the appropriate select box. The options are custom, small, medium, or large.
11	If you chose a custom graph size in step 10 enter the custom size you would like from 50% to 300%. Note: this is a percent of the medium size.
12	Left click “Create” to build the graph(s) with the configuration you have defined.

Create Host Group Graph

Host Group graphs are real-time pie or bar graphs.
When creating a host group graph you can choose the graph type, graph interval, and graph layout. Use the following procedure to create a host group graph:

Step	Procedure
1	Select "Performance Monitor" in the PerfStat application
2	Select a host group from the panel on the left. Your choices are: "All Hosts", "My HostGroups", or "Shared HostGroups".
3	Under "Selected Host Group" section ensure the appropriate host group is selected. If not you can select a different host group from the select box.
4	Under the "Select Graph(s)" section, left click the graphs you would like to view by left clicking the "+" next to each service and then left click the graph. Once you have done that the graphs should display under the "Select Interval(s) and Graph Type(s)" section. Note: for convenience you can use the "open all", "close all", "select all", or "remove all" options.
5	Under the "Intervals" section, select the interval(s) you would like to view by checking the appropriate checkbox. The options are hourly, daily, weekly, or monthly.
6	Under the "Graph Type" section, select the graph type(s) you would like to view from the appropriate checkbox. The options are: bar or pie.
7	Under the "Create Graph(s)" section select the column layout from the appropriate select box. The options are one, two, three, or four columns.
8	Under the "Create Graph(s)" section select the graph size from the appropriate select box. The options are custom, small, medium, or large.
9	If you chose a custom graph size in step 8 enter the custom size you would like from 50% to 300%. Note: this is a percent of the medium size.
10	Left click "Create" to build the graph(s) with the configuration you have defined.

Change Users

This option is only available to the perfstat user and other admin users of PerfStat. The perfstat user can change to any admin or users that were created. Other admin users can change to the users they created but not other users. This could be very useful in an ASP model where the PerfStat framework is logically but not physically segregated.

Use the procedure below to change to another admin (perfstat only):

Step	Procedure
1	Log in a “perfstat” user
2	Select "Performance Monitor” in the PerfStat application
3	On the left select an admin from the admin select box. Once changing admin you should see all the host groups that admin created (if any).
4	Once you change to a different admin user you can then become any user that admin created. On the left select a user from the user select box. Once changing users you should see all the host groups that user created (if any).

Use the procedure below to change to another user (perfstat or admin user):

Step	Procedure
1	Log in a “perfstat” or admin user
2	Select "Performance Monitor” in the PerfStat application
3	On the left select a user from the user select box. Once changing users you should see all the host groups that user created (if any).

Report Monitor

In PerfStat, reporting brings all the information together into a seamless report. Reports are created by any user in PerfStat and unless they are shared, those reports are only viewable to the user that created them (similar to host groups). Any data that is collected on the PerfStat server can be incorporated into a report. You can also enter comments into reports to further explain things. Reports are dynamic and will update as data updates.

Create Report

The first step to using a report is creating one. You create a blank report and then add things to the report by configuring the report layout. Use the following procedure to create a report:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the “Add Report” section, enter the report name and description.
3	Left click “enter” to create report.

Note: the procedure above creates a blank report, you will have to configure the report layout to set it up.

Configure Report Layout

Once you have created a report or if you want to modify an an existing report you will need to configure the report layout. The following five report fields can be combined to create a report:

Report Fields	Description
Text Comment	A text comment is a helpful field for documenting the report. You can place comments in report to better explain the report.
Host Group Graphs	These are graphs at the host group level (pie or bar). All the data for all the hosts in the host group is averaged for every metric. Each metric in the graph is the average of that metric for all hosts in host group.
Host Assets	This field contains informational data about every host in PerfStat. Information about cpu, memory, OS, and patches are all part of host assets.
Host Events	If event logging is enabled you can add host events to your report. Events occur anytime status changes. When a status change occurs that event is logged (if logging is enabled) into a log for the appropriate service.
Host Graphs	These are graphs at the host level (pie, bar, or line). There are three different types of host graphs: single service, single subservice, or aggregate subservice. Below is an example of each: Single service – CPU->Utilization Single subservice – FS->/usr->Utilization Aggregate service – TCP->ALL/Total->Utilization Anything that is a subservice would be single subservice or aggregate service otherwise the type would be single service.

Use the following procedure to configure a report's layout:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the "Report List" section, find the report you want to modify and left click "layout".
3	Under the "Report Layout" section, setup the layout and left click update to save.
4	Under the "Add Report Content" section, add the desired fields to your report using the selection box. Each field will ask for different information. When you have added all the information left click "Add" to add the customized field to the report.
5	Follow step 4 until you have added everything you want to see in the report.
6	Under the "Content List" section, you can re-edit any report fields you have added and edit the ordering in which they appear in the report. To change the ordering left click the "up" or "down" arrows on the right.

View Report

Once you have created a report and added content to that report you can view the report. Use the following procedure to view a report:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the "Report List" section, find the report you would like to view
3	Left click "view" to view the report

Modify Report

If you need to change the report name or description you will need to use the following procedure to modify it:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the “Report List” section, find the report you would like to view
3	Left click “edit” to view the report
4	Under the “Edit Report Descriptors” section, enter the name and/or description of the report.
5	Left click “enter” to update report.

Create Shared Report

A shared report works similarly to a shared host group. You can share a report to one or more users within PerfStat. Users that have access to a shared report will only be able to view the report NOT make changes. In order to create a shared report you must first create a report and then share it. Use the following procedure to create a shared report:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the “Report List” section, find the report you would like to view
3	Left click “share” to share the report
4	Under the “Add Shared User” section, select a user to share the report with from the selection bar.
5	Left click “enter” to share report.

Un-Share Report

In the event you want to stop sharing a report with a user, use the following procedure:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the “Report List” section, find the report you would like to view
3	Left click “share” to share the report
4	Under the “Shared User List” section, find the user you want to stop share the report.
5	Left click “Remove from List” to stop sharing report with that user.

Delete Report

Use the following procedure to delete a report:

Step	Procedure
1	Select "Report Monitor->My Reports" within the PerfStat application
2	Under the “Report List” section, find the report you would like to delete
3	Left click “delete” to delete the report
4	You will be asked to acknowledge click “ok” to delete or cancel to abort delete.

Note: Before deleting a report it is recommended you un-share the report if it is shared.

Status Monitor

In PerfStat, status monitor handles reporting event status, real-time metric values, event logs, and information about the PerfStat server. Like performance monitor status monitor allows you to see event status at both the host and the host group level. Event status changes occur at the metrics level and are then rolled up all the way to the host group level. Status monitor has the following types of event status: CRIT, WARN, OK, and NOSTATUS.

Event Status Layers

There are several layers of event status. Below are all the layers and their description:

Event Status Layers	
Metric Layer	The metric layer is where event status starts. It reflects the status of an individual metric like CPU USR %.
Service Layer	Metrics are grouped into services. The service layer reflects the status of all metrics in the service group.
Host Layer	A host has a collection of service groups. At this layer all service groups under a given host are shown.
Host Group Layer	This is the top layer and shows status of every service group in host group.

Event Rules

Since event status is layered and there are multiple types of status, rules are needed to figure out what status to display for a given service group, host, and host group. Below is a table explaining the event status hierarchy:

Event Status Hierarchy	
Status Type	**Description**
NOSTATUS	If any metric is NOSTATUS then service group, host, and host group will all reflect NOSTATUS for the service.
CRIT	If any metric in a service group is CRIT and none are NOSTATUS then service group, host, and host group will all reflect CRIT for the service.
WARN	If any metric in a service group is WARN and none are NOSTATUS or CRIT then service group, host, and host group will all reflect WARN for the service.
OK	If any metric in service group is OK and none are NOSTATUS, CRIT, or WARN then service group, host, and host group will all reflect OK for the service.

View Host Group Status

Use the following procedure to view host group status:

Step	Procedure
1	Select "Status Monitor" within the PerfStat application
2	Select a host group from the panel on the left. Your choices are: “All Hosts”, “My HostGroups”, or “Shared HostGroups”.
3	Under the “Host Group Status” section you should see the status for all Host Group(s).

View Host Status

Use the following procedure to view host status:

Step	Procedure
1	Select "Status Monitor" within the PerfStat application
2	Select a host group from the panel on the left. Your choices are: “All Hosts”, “My HostGroups”, or “Shared HostGroups”.
3	Under the “Host Group Status” section find the host group your host is under and left click the host group.
4	Under the “Host Status” sections find the host you want to view status for.
5	Left click on the host to view that hosts status

View Service Status

Use the following procedure to view service status:

Step	Procedure
1	Select "Status Monitor" within the PerfStat application
2	Select a host group from the panel on the left. Your choices are: “All Hosts”, “My HostGroups”, or “Shared HostGroups”.
3	Under the “Host Group Status” section find the host group your host is under and left click the host group.
4	Under the “Host Status” sections find the host you want to view status for.
5	Left click on the host to view that hosts status
6	Under the “Service Status” section you can left click the “+” next to any service with sub-services to view them

View Metric Status

Step	Procedure
1	Select "Status Monitor" within the PerfStat application
2	Select a host group from the panel on the left. Your choices are: “All Hosts”, “My HostGroups”, or “Shared HostGroups”.
3	Under the “Host Group Status” section find the host group your host is under and left click the host group.
4	Under the “Host Status” sections find the host you want to view status for.
5	Left click on the host to view that hosts status
6	Under the “Service Status” section you can left click the “+” next to any service with sub-services to view them
7	Left click any of the services or sub-services to view status for all metrics in the service or sub-service group.

View Event Log

Step	Procedure
1	Select "Status Monitor" within the PerfStat application
2	Select a host group from the panel on the left. Your choices are: “All Hosts”, “My HostGroups”, or “Shared HostGroups”.
3	Under the “Host Group Status” section find the host group your host is under and left click the host group.
4	Under the “Host Status” sections find the host you want to view status for.
5	Left click on the host to view that hosts status
6	Under the “Service Status” section you can left click the “+” next to any service with sub-services to view them
7	Left click any of the services or sub-services to view status for all metrics in the service or sub-service group.
8	Left click “View Event Log” under the service itself

View Status for PerfStat Server

If the PerfStat server is not running then nothing will get updated so it is important to track the status of the PerfStat server. The status of the PerfStat server, uptime, and configuration information are all displayed. Use the following procedure to view the PerfStat server status:

Step	Procedure
1	Select "Status Monitor" within the PerfStat application
2	Select “PerfStat Server” from the panel on the left.
3	You should see the server status and some configuration settings.

Change Users

This option is only available to the perfstat user and other admin users of PerfStat. The perfstat user can change to any admin or users that were created. Other admin users can change to the users they created but not other users. This could be very useful in an ASP model where the PerfStat framework is logically but not physically segregated.

Use the procedure below to change to another admin (perfstat only):

Step	Procedure
1	Log in a “perfstat” user
2	Select "Status Monitor” in the PerfStat application
3	On the left select an admin from the admin select box. Once changing admin you should see all the host groups that admin created (if any).
4	Once you change to a different admin user you can then become any user that admin created. On the left select a user from the user select box. Once changing users you should see all the host groups that user created (if any).

Use the procedure below to change to another user (perfstat or admin user):

Step	Procedure
1	Log in a “perfstat” or admin user
2	Select "Status Monitor” in the PerfStat application
3	On the left select a user from the user select box. Once changing users you should see all the host groups that user created (if any).

Asset Monitor

The asset monitor provides information about the hosts being monitored by PerfStat. It gathers information about a hosts CPU(s), Memory, OS, and Patch levels. It also stores a change log for every host so that a user can document changes that occur to a host. Things like software or OS updates are recommended to document ion change log.

Features	
Feature	Description
CPU Info	The following CPU information is captured: CPU model, speed, and number of CPU(s).
Memory Info	Asset Monitor gathers the amount of physical memory installed in the system.
OS Info	The following OS information is gathered: OS, OS Version, and Kernel Version.
Patch List	Asset monitor displays the patches installed on a particular host.
Change Log	A very powerful feature that lets a user log all changes that occur to a host. When troubleshooting issues or planning upgrades this information is extremely valuable.

View Host Information

Use the following procedure to view information for a particular host:

Step	Procedure
1	Select "Asset Monitor" in the PerfStat application
2	In the left panel select “My HostGroups” or “Shared HostGroups”
3	Under the “Host Groups Assets” section find the host group your host is under and left click the host group.
4	The host group will expand and you will see the view and log options next to all the hosts. Find the host for which you want to see asset information.
5.	Left click the view option to see that hosts asset information.

Configure Change Log

The purpose of the change log is for documenting planned changes to a host. Things like: software updates, code pushes, OS updates, hardware changes, etc should all be documented in change log. The change log should provide the history of all changes on a given host. Use the following procedure to create a change log entry for a given host:

Step	Procedure
1	Select "Asset Monitor" in the PerfStat application
2	In the left panel select “My HostGroups” or “Shared HostGroups”
3	Under the “Host Groups Assets” section find the host group your host is under and left click the host group.
4	The host group will expand and you will see the view and log options next to all the hosts. Find the host for which you want to see asset information.
5	Left click the log option to update or modify the change log for the given host.
6	Under the “Add Item” section enter the date, username, and description of what is being changed.
7	Left click “enter” to update your change in the change log for the given host.
8	You can modify or delete the entries by selecting the change under the “Change Log” section and left clicking “edit” or “delete”

Note: All users of PerfStat NOT just admin users have access to update the change log for any host they are configured to see.

Troubleshooting 5

Sections:

Support

Below is a compatibility matrix for both the PerfStat server and the client.

PerfStat Server

The PerfStat server requires a web server, Perl, and Redhat Linux or Solaris. The table below is the support matrix for the PerfStat server:

PerfStat Server Support Matrix	
Software	Version
Redhat Linux (x86)	ES 3 and ES 4
Solaris (Sparc)	8 and 9
Apache	1.x and 2.x
Perl	ActiveState Perl 5.8.0

PerfStat Client

The PerfStat client only requires Redhat Linux, Solaris, Windows, or HPUX. It was designed to be lightweight and easy to install so nothing outside of the OS is required. Below is the support matrix for the PerfStat Client:

PerfStat Client Support Matrix	
Software	Version
Redhat Linux (x86)	ES 3 and ES 4
Solaris (Sparc)	8 and 9
Windows (x86)	2000 and 2003
HPUX (RISC)	11i

PerfStat Server

There are two pieces to look at when troubleshooting the PerfStat server. There is the backend daemon and associated programs as well as the front-end application. Both log to a different log file so it is easy to troubleshoot. Additional you can place the daemon in DEBUG mode to get additional information.

Server Daemon

The PerfStat server daemon is called perfd located under /perfhome/bin. The perfd daemon is the heart of the PerfStat server. The main function of the server daemon is to receive and store data. All connections are initiated by the PerfStat client. The server daemon follows the following process:

Server Daemon Process	
1	Checks to ensure incoming connection is allowed based on user configuration.
2	Checks integrity of data being sent
3	Stores data into RRD file for given service by calling rrdAPI program
4	Handles event notification and logging based on user configuration
5	Updates PerfStat DB with current status for all metrics received.
5	Handles alert notification based on user configuration

Server Programs

Besides the daemon (perfd) there are a few other programs that do specific server side duties. All these programs are located under /perfhome/bin. The table below explains those programs and their function:

Server Programs	
alert	A server program that runs at a user defined interval and is responsible for sending email alerts and/or user defined traps.
conn	A server program that runs at a user defined interval and is responsible for testing a client's connection from the perspective of the PerfStat server. The two types of connection tests are ping and port tests. By default a ping test will be done but a port test must be configured by the user (that is currently a manual process).
status	A server program that runs at a user defined interval and is responsible for checking client status. This program checks to ensure the server has received status from a client/service in a user defined window. If it hasn't, it marks that client/service as "NOSTATUS", meaning the client has gone AWOL.

Server Log

The server daemon (perfd) logs to a log file called perfd.log. The log file is located under /perfhome/var/logs. By default the log is only updated in the event of a problem or update to the system, like a new host coming online. You can increase the verbosity by enabling DEBUG.

Use the following procedure to enable DEBUG:

Step	Procedure
1	Run the following command as psuser or whatever user perfstat run under: /perfhome/bin/tools/perfconfig –global Note: you can also use vi and edit the /perfhome/etc/perf-conf yourself if you like.
2.	Press enter until you get to the DEBUG setting. Set "DEBUG=1" and press enter and then save your changes
3	Restart the perfstat server: /perfhome/perf.sh restart

Below is an example of the perfd.log format and a sample error:

[Timestamp] [Client Program] [Alert Level] [Message]

[Sat Feb 12 13:23:56 2005] perfd.pl: ERROR: 4 data points sent, RRD configuration expected 6 for Host: testhost.test.com Service: cpu

In the above example we see that on Feb 12 the perfd.pl server daemon encountered an error event, 4 data points sent, RRD configuration expected 6 for Host: testhost.test.com Service: cpu

The table below explains the log alert types:

PERFD Log Alert Types	
Alert	Description
DEBUG	This is extra logging that will only be written we DEBUG is enabled.
INFO	This is information about system updates. An example would be a new host being discovered.
WARNING	An error but isn't critical and usually requires no action to be taken.
ERROR	Critical error usually requiring action to fix.

PerfStat Client

The PerfStat client consists of a scheduler daemon, Data gathering programs, and a program which sends the data (once gathered) to the PerfStat server. The client logs to its own log file. Additional you can place the daemon in DEBUG mode to get additional information.

Client Daemon

The PerfStat client daemon is called perfctl located under /perfhome/bin. The perfctl daemon is a scheduler which is responsible for running all data gathering programs at user specified intervals. In addition when the perfctl program is running under server mode it is also responsible for scheduling the PerfStat server tasks.

Client Programs

Besides the perfctl program there are several other programs that make up the PerfStat client. The table below explains those programs and their function:

Client Programs	
Program	Function
perfctl	The client scheduler daemon. Responsible for scheduling all data gathering programs and also performing scheduling for PerfStat server when running in server mode.
perf	Client transport program which takes gathered data and sends it to PerfStat server.
cpu	Gathers cpu data
fs	Gathers file system data
io	Gathers input/output data
memory	Gathers memory data
procs	Gathers data on running processes
socket	Gathers data about network sockets
tcp	Gathers data about network interface(s)
uptime	Gathers data about system uptime

Client Log

The client daemon logs to to a log file called perfctl.log. The log file is located under /perfhome/var/logs. By default the log is only updated in the event of a problem or update to the system, like a new host coming online. You can increase the verbosity by enabling DEBUG.

Use the following procedure to enable DEBUG:

Step	Procedure
1	Run the following command as psuser or whatever user perfstat run under: /perfhome/bin/tools/perfconfig –global Note: you can also use vi and edit the /perfhome/etc/perf-conf yourself if you like.
2.	Press enter until you get to the DEBUG setting. Set “DEBUG=1” and press enter and then save your changes
3	Restart the perfstat client: /perfhome/perf.sh restart

Below is an example of the perfctl.log format and a sample error:

[Timestamp] [Client Program] [Alert Level] [Message]

[Sat Apr 9 20:37:34 2005] io.pl: WARNING: Data for io service was not collected during this sampling!

In the above example we see that on Apr 9 the io.pl client program/service encountered a warning event, no data was gathered for the io service during that sampling period.

The table below explains the log alert types:

PERFCTL Log Alert Types	
Alert	Description
DEBUG	This is extra logging that will only be written we DEBUG is enabled.
INFO	This is information about system updates. An example would be a new host being discovered.
WARNING	An error but isn’t critical and usually requires no action to be taken.
ERROR	Critical error usually requiring action to fix.

PerfStat Application

The PerfStat application is responsible for displaying client data based on user configurations. The application is a collection of cgi programs located under the /perfhome/cgi directory. Most of these programs are not compiled therefore ActiveState Perl 5.8 must be installed on the PerfStat server. The cgi programs are interpreted via a web browser. The PerfStat application supports the Apache Web Server.

CGI Log

The PerfStat application has a separate log located under /perfhome/var/logs/cgi.log. By analyzing the cgi.log you should be able to tell if the issue is related to the application. The cgi log uses the following format:

[Timestamp] [Client Program] [Alert Level] [Message]

[Fri Feb 4 16:52:16 2005] index.pl: ERROR: Couldn't open file handle to /perfstat/dev/1.52/server/var/events/cashcow.perfstat.com/conn.ping.log: No such file or directory

In the above example we see that on Feb 4 the index.pl cgi program encountered an error event, Couldn't open file handle to /perfstat/dev/1.52/server/var/events/testhost.test.com/conn.ping.log: No such file or directory

The table below explains the log alert types:

Application Log Alert Types	
Alert	Description
DEBUG	This is extra logging that will only be written we DEBUG is enabled.
INFO	This is information about system updates. An example would be a new host being discovered.
WARNING	An error but isn't critical and usually requires no action to be taken.
ERROR	Critical error usually requiring action to fix.

General Troubleshooting

The table below outlines some general things to check when troubleshooting:

General Troubleshooting	
Step	Procedure
1	View the /perfhome/etc/perf-conf file and ensure the following are set correctly: PERFHOME, USER, GROUP, PERFSERVER, and CLIENTPORT.
2	View the /perfhome/cgi/app_globals.pl file and ensure “$perfhome” is set to the correct path.
3	View the /perfhome/perf.sh file and ensure “PERFHOME” is set to the correct path.
4	Check permissions and ensure the /perfhome directory is owned by the perfstat user/group and the permissions are 770.
5	Ensure ActiveState Perl is installed (server only)
6	Ensure /usr/bin/perl is a symbolic link to ActiveState Perl (server only).
7	Ensure Apache conf settings are correct in httpd.conf. You should have the following settings under the “allow server status reports” section of the httpd.conf file (server only): alias /perfstat "/<perfhome>/cgi" <Location /perfstat> AddHandler cgi-script pl order allow,deny allow from all Options +ExecCGI </Location>
8	Ensure appropriate GD and PNG libraries are installed under /usr/local/lib. You can verify them by checking /perfhome/lib/GD/<OS>/<OS Version> (server only)