Best Practices for Monitoring Performance & Health of Apache™ Web Servers
**Is Your Apache™ Web Server Monitored?**

Being the world’s most popular open source Web server, Apache HTTP Server™, serves the business needs of thousands of organizations by providing a full range of Web server features, including CGI, SSL, and virtual domains. There’s also Apache Tomcat™ which is an open source Web server and servlet container that provides software applications with services such as security, data services, transaction support, load balancing, and management of large distributed systems.

Many key Web-based business applications and services depend on your Apache Web servers, so it’s imperative to constantly and comprehensively monitor their health and performance. Without proper monitoring measures, you may lose visibility into the performance of your Web servers and it could be detrimental to business services, especially online services and transactions.

**What Do You Need to Monitor?**

- Uptime and performance statistics of your Apache Web servers
- Web applications that are supported by your Apache Web servers
- Performance and user experience of your Web pages that are supported by Apache Web server
- End-user connections to Apache Web server
- Traffic, load, and utilization metrics of Apache Web server
- HTTP and HTTPS sessions and transactions used by Apache Web server

Other components that could affect the performance of Apache Web servers are:

- The server hardware running Apache Web server
- VMs and host machines running Apache Web server
- Operating system where Apache Web server is installed

**IT Management & Business Effects of Improper Monitoring Measures**

- Failure and downtime of online internal and customer-facing business applications
- Inconsistent and degraded user experience on your Web pages
- Bottlenecks in Web server performance
- Difficulty in identifying and diagnosing the root cause of the fault or failure

To reap the best benefits of using Apache Web servers, you need to be able to facilitate the identification of issues and accelerate the process of fixing unexpected problems before they can affect Web users. In this document, we’ll discuss some best practices of using SolarWinds Server & Application Monitor (SAM) to gain...
comprehensive monitoring, alerting, and reporting capabilities and powerful pre-installed dashboards to help you easily monitor the status and performance of your Apache Web servers.

**Monitoring Apache Web Servers using SolarWinds Server & Application Monitor**

SolarWinds Server & Application Monitor is simple yet powerful Web server and Web application monitoring software that allows you to measure the performance of your Web servers, applications, and the user experience from an end-user's perspective using many out-of-the-box component monitors. These component monitors are flexible and customizable templates that assess the performance of your Apache Web servers by retrieving performance data from it, and allowing you to pin-point faults and issues from the root cause.

1. **Performance Monitoring of Apache Web Server**

**Node Details Page:**

SolarWinds SAM allows you to get in-depth visibility into the performance of your Web servers. The Web server that needs to be monitored must be added as a node in SAM, and you can just explore the node to get meaningful metrics on intuitive dashboards on the **Node Details** page.

With just a single pane of glass, you’ll be able to see performance statistics such as up/downtime, average response time and packet loss, list of applications running on the Web server, node details, and more.
The illustration above shows a node called Web Server 7 that’s running an application called Apache.

The statistics are displayed on customizable drag-and-discover charts that you can just click and adjust to see the performance of Apache Web server for a specified duration. All these dashboards are fully customizable, and you can edit them to retrieve any performance metric and counter as required.

**Application Details Page:**

Drilling down a little further to the application running on the Web server, you can get availability and performance statistics of the application on the Application Details page.

The illustration above shows the details, availability, fault, and performance statistics of the application Apache that’s running on the node Windows Server 7.

Key Apache Web server statistics monitored by SolarWinds SAM include:

- **ServerUptime**: This counter returns the time that the server has been up; Format of time: hours (h) minutes (m) seconds
- **IdleWorkers**: This counter returns the number of free workers ready to handle client connections
- **TotalAccess**: This counter returns the total number of accesses
- **TotalTraffic**: This counter returns the total number of kilobytes this server has served
- **ServerRequestPerSecond**: This counter returns the average rate of all requests per second
- **ServerKbytesPerSec**: This counter returns the average rate of kilobytes served per second
- **ServerKbytesPerRequest**: This counter returns the average number of bytes per request
- **BusyWorkers**: This counter returns the number of busy workers serving requests and should be as low as possible
Application Component Details Page:

SolarWinds SAM allows you to explore each of the monitored components of the application to discover component-specific health and performance metrics.

2. Availability & Fault Monitoring of Apache Web Servers

Server & Application Monitor makes it really quick and easy to monitor Apache Web servers and identify the availability status to find out if the server is up or down.

SAM summary page has a tree view of all your nodes, and you can easily drill down to the server node or application and down to the component level to see if the node is up or down. Additionally see some quick performance statistics by a simple mouse-over action over the node. You can click the respective node for deeper monitoring and performance charts.
Additional Performance Metrics

- **Service Status – SNMP**: This is used to monitor the status of services hosted and run by Apache Web server.

- **HTTP Monitor**: This tests a Web server’s ability to accept incoming sessions and transmit the requested page. The component monitor can optionally search the delivered page for specific text strings and pass or fail the test based on that search.

- **HTTPS Monitor**: This tests a Web server’s ability to accept incoming sessions over a secure channel and then transmit the requested page. The component monitor can also test the security certificate.

- **Tomcat Server Monitor**: This component monitor collects server resource information from Apache Tomcat servers by retrieving status information from http://{$IP}:{$PORT}/manager/status/?XML=true.

- **Web Link Monitor**: This component monitor collects the number of broken or invalid links on a Web page.

You can apply any of these component monitors directly as available, or customize and tailor them to collect monitoring statistics as required.
3. Monitoring Performance & Response Time of Web Pages

The performance of Web services is not just limited to monitoring the Web server and Web application, but also extends to monitor the website performance and user experience. The user experience on a client-facing website also holds key successful online business transactions.

**SolarWinds Web Performance Monitor** (WPM) helps you monitor every single Web transaction performed by the user on a website, record the transactions for playback and analysis, and test the website performance from the end-user’s perspective. SolarWinds WPM also allows you to simulate customers accessing your applications from multiple player locations all over the world.

Website performance monitoring is also important to ensure your Web services and online transactions are being responsive and timely, and performing as expected with consistency and high availability.

4. Monitoring Other Key Entities in Your Application Environment that Impact the Performance of Web Services

**Hardware Health Monitoring**

Using SolarWinds SAM, you can monitor the state of your server hardware and their key device sensors including temperature, fan speed and power supply, and be alerted if they cross pre-defined thresholds. The LUCID Web-based interface provides at-a-glance insight into the health of your network hardware so you can quickly see where you have potential issues.
Some key hardware health statistics monitored by SolarWinds SAM include:

- Fan status
- Power supply status
- Temperature
- Disk status
- Battery status
- Array controller status
- Physical memory status
- Chassis intrusion status
- CPU temperature and/or status

### Current Hardware Health

<table>
<thead>
<tr>
<th>SENSOR NAME</th>
<th>STATUS</th>
<th>VALUE</th>
</tr>
</thead>
</table>
| **Fan**
  - System Board FAN 1 RPM   | Ok     | 3600 rpm    |
  - System Board FAN 2 RPM   | Ok     | 3600 rpm    |
  - System Board FAN 3 RPM   | Ok     | 3600 rpm    |
  - System Board FAN 4 RPM   | Ok     | 3600 rpm    |
  - System Board FAN 5 RPM   | Ok     | 3600 rpm    |
| **Power Supply**
  - System Board Ambient Temp | Ok     | 64.4 °F     |
| **Temperature**
  - System Board Ambient Temp | Ok     | 64.4 °F     |
| **Disk**
  - Physical Disk 0:0:0      | Ok     | 136.125 GB  |
  - Physical Disk 0:0:1      | Ok     | 136.125 GB  |
| **Battery**                 |        |             |
| **Array**                   |        |             |
| **Memory**                  |        |             |
| **Intrusion**               |        |             |
  - Chassis intrusion         | Ok     |             |
| **CPU**
  - Intel(R) Xeon(R) CPU X5560 @ 2.60GHz Stepping 5 | Ok | |
  - Intel(R) Xeon(R) CPU X5560 @ 2.60GHz Stepping 5 | Ok | |
Monitoring Virtual Machines & Hosts Running Apache Web Server

It can so happen that your Apache Web server is running on a virtual machine (VM) or a host, and the failure of the Web service is caused because of the failure in performance of the VM or host machine.

You need to be able to monitor your entire VMware® virtual infrastructure from the highest to the lowest level:

\[ \text{vCenter} \rightarrow \text{data center} \rightarrow \text{cluster} \rightarrow \text{ESX hosts} \rightarrow \text{individual virtual machines} \]

With the built-in Integrated Virtual Infrastructure monitoring functionality, Server & Application Monitor allows you to track availability and performance metrics of VMs including CPU, memory, storage, and network bandwidth utilization.

- Automatically discover identify and monitor new virtual machines added to any VMware host server or updated during VMotion™.
- Native alerting and reporting capabilities extend seamlessly to your virtual infrastructure.

SolarWinds SAM is capable of monitoring VMware ESXi and ESX servers (versions 3.5 and higher), as well as Microsoft® Hyper-V®. You can drill down from your data center all the way to the individual VM (which is managed as a node in SAM) to monitor key statistics such as VM CPU consumption, VM network traffic, VM memory consumption, and more.
You can also leverage SAM’s intuitive interface to see performance metrics on simple drag-and-discover charts and customize VM- and host-specific performance reports.

**Monitoring Operating Systems Running Apache Web Server**

SolarWinds Server & Application Monitor provides comprehensive monitoring insight to your operating systems. As these are also closely coupled with your Apache Web servers, a fault or failure in the operating system may let down a Web service.

**Monitor Databases the Web Service is Utilizing**

Database issues can be the bottleneck in poor service performance. Server & Application Monitor collects and alerts on key performance metrics for all of the major database vendors including SQL, DB2, and Oracle®.

**Dedicated Apache Web Server Service Group**

Server & Application Monitor allows you to create a customizable group to aggregate all your Apache Web servers and applications under one roof. Monitoring your Apache Web servers is now easy as you can get all your performance and availability diagnostics on the same page in your SAM Web console.

**Real-Time Process Explorer**

SAM’s Real-Time Process Explorer (RTPE) gives real-time insight into your server performance. The advantage of the RTPE is that you don’t need to physically or remotely log in to a particular machine and run the Task Manager to retrieve that machine’s vital statistics. Information for both monitored and unmonitored processes is displayed directly through SAM. You can now monitor the performance of all your nodes that are running Apache Web servers.
With the Real-Time Process Explorer, you can monitor:

- Processes/Services by CPU Utilization
- Processes/Services by Memory Utilization
- Processes/Services by Virtual Memory Utilization
- Processes/Services by Disk I/O

**Alerting & Reporting**

Using SolarWinds SAM, you can also set intelligent Apache Web server alerts to notify you when the performance metrics meet custom thresholds. Additionally, you can leverage the advanced reporting functionality to schedule and generate reports showing Apache Web server availability and performance history. All reports can be easily modified, and custom reports are easily created.

**Key Features & Benefits of Server & Application Monitor**

**Agentless Application & Server Performance Monitoring**

- Monitors performance and user experience for virtually any application – Microsoft® Exchange, Active Directory®, IIS, any ODBC database, and more
- Monitors server hardware faults and operating systems across platforms – Windows®, UNIX®, Linux®, and more
- Provides expert guidance on what to monitor, why to monitor it, and optimal thresholds
- Includes customizable dashboards and reports showing trends, capacity, and performance
- Downloads quickly and deploys in less than an hour, is simple to use, and easy on your budget

SolarWinds (NYSE: SWI) provides powerful and affordable IT management software to customers worldwide - from Fortune 500 enterprises to small businesses. The company works to put its users first and remove the obstacles that have become “status quo” in traditional enterprise software. SolarWinds products are downloadable, easy to use and maintain, and provide the power, scale, and flexibility needed to address users’ management priorities. SolarWinds online user community, thwack, is a gathering-place where tens of thousands of IT pros solve problems, share technology, and participate in product development for all of the company’s products. Learn more today at [solarwinds.com](http://solarwinds.com).

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