

# Server Monitoring

## Description

Server Monitoring

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Server Monitoring

### Introduction To Server Monitoring

Server Monitoring Is The Process Of Continuously Monitoring The Health And Performance Of Computer Servers. These Servers Could Include Physical Servers Or Virtual Servers, Also Known As Virtual Machines (Vms) And Be Located On-Premises Or In Cloud(Private/Public). Server Monitoring Tools Perform Continuously Monitoring Of Hundreds Of Server Parameters Relating To Server Components Like Cpu Utilization, Temperature, Memory, Disk Etc., And Provide Alerts When They Cross Acceptable Thresholds.

Servers Form Part Of The Critical It Infrastructure Of Any Organization, Since Business Critical Enterprise Applications Are Hosted In Them. These Servers May Also Typically Store And Process Information That Need To Be Provided To Other Applications And Users On-Demand, And Support Hundreds Or Even Thousands Of Requests Simultaneously.

Since Businesses Are Increasingly Using Virtual Servers On Premises, In Data-Centers And Further In Public Cloud For Running Their Applications, It Would Be Safe To Assume That A Typical Business Today Would Therefore Be Deploying A Hybrid Model That Consists Of Not Only Physical Servers, But Also Virtual Servers Hosted In Private And Public Cloud, Making It Increasingly Challenging For It Operation Teams To Effectively Monitor Them With Their Current Toolsets.

In This Article, We Will Cover How Server Monitoring Tools Work, The Benefits They Are Expected To Bring To Every Organization, And How To Go About Selecting The Right Server Monitoring Tool For Your Organization.

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## Introduction To Server Monitoring

### Why Is Server Monitoring Important?

Since Servers Are An Important Part Of Any Organization's It Infrastructure, It Is Vital To Monitor Their Health And Performance. For Example, If An Application Server Is Performing Poorly Or Experiencing Outages It Could Result In Irate Customers. Or If A Server Is Encountering Disk Errors, Data May Be Getting Corrupted Or Lost.

The Purpose Of Server Monitoring Is To Observe Servers So As To Provide Key Metrics To It Operation Teams About How They Are Performing. This Would Involve Checks To Verify Availability (Verifying Whether The Server Is Alive And Reachable) And Measure Response Time (Ensuring That It Is Within Acceptable Limits), While Checking Other Parameters To Determine Whether Errors Are Occurring In Any Of Its Resources (Say In A Physical Server Whether There Are Too Many Disk Errors, Or The Cpu

Temperature Is Going Too High). In The Process, Server Monitoring Can Also Help Predict Problems And Alert It Operations When Specific Parameters Are Exceeding Allowable Thresholds And Provide Alerts, When The Disk Is More Than 80% Full Or If Cpu Utilization Is Consistently Very High (Say Above 70%).

Since Server Monitoring Is Being Done On A Continuous Basis, It Is Also Feasible To Store Monitored Data, So That It Operations Can Go Back To Specific Periods To Time To Know When And How The Problem First Occurred. It Would Also Be Possible To Provide Analytics Of The Health And Performance Of Servers Over A Given Period Of Time.

Server Performance Monitoring Enable It Operations To Predict Degradations And Other Performance Issues And Respond Quickly, To Ensure That End User Experience Is Not Adversely Affected. Resource Utilization Monitoring Can Be Useful In Showing Where Upgrades Are Needed Enabling Better Capacity Management.

In Specific Industries Such As Financial Services And Healthcare, Compliance Can Be A Key Issue, When They Are Required To Commit To Providing An Agreed Level Of Uptime And Performance. There Could Be Contractual Penalties For Failures And Performance Issues.

### **What Are Challenges In Server Monitoring?**

It Operations In Most Organizations Are Typically Occupied With Day-To-Day Activities Required To Administer And Keep Servers Running. Their Key Focus Would Primarily Be To Ensure Uninterrupted Availability Of Resources Required For Optimal User Experience. This Involves Ensuring Uptime And Reliability, Reliable Performance, And Error-Free Operation.

At A Typical Organization Therefore, It Operations Would Be Involved In Periodic Monitoring Of Servers, Apart From Installation Of Software Updates, Setup Of New Systems, As Well As Problem Troubleshooting. It Typically Also Includes Provisioning And Capacity Planning To Ensure There Are Sufficient Resources To Meet Upcoming User Requirements.

Thus, Typical Challenges In Performing The Above Tasks Include:

- Diversity of platforms and environment –hardware platforms, operating systems and applications, means that expertise is distributed and teams are leaner
- Managing hybrid environments – on-premises and cloud-based
- Digital transformation and migration support can take up a large chunk of effort and time
- IT teams may have minimal or no bandwidth to monitor the performance of servers and have to use multiple tools with increased reliance on automation
- IT teams lack expertise for troubleshooting and performing root cause analysis (RCA)

## **What Is A Virtual Machine**

A Virtual Machine (Vm) Is A Compute Entity That Uses Software Instead Of A Physical Computer Server To Run Programs. Virtual Machines Provide Server Virtualization, Enabling It Teams To Consolidate Their Computing Resources And Improve Efficiency.

Virtualized Environments Have Gained Popularity As Compared To Traditional Physical Server Environments, Since They Enable Optimization Of Energy, Maintenance And Administration. Thus, Migrating Servers To A Virtual Environments Prove Advantageous In Terms Of Savings And Roi.

A Hypervisor, Also Known As A Virtual Machine Monitor, Is The Software That Creates And Runs Virtual Machines (Vms). Hypervisors Typically Provide Support For All Popular Operating Systems. Hypervisor Vendors Typically Provide Debugging Tools And Basic Level Of Monitoring Capabilities.

Virtual Machines Maybe Owned As Part Of An Organization's Computing Infrastructure Or Rented From Specialized Providers (Also Known As Private Cloud Providers), That Offer Hundreds Of Thousands Of Physical Servers, Which Located In Data Centers Around The World.

Further, Virtual Machines Are Available On Subscription Basis From Public Cloud Providers, Who Offer Hyper-Scale Facilities On A Global Basis. These Cloud Providers Typically Offer Monitoring Capabilities At Additional Cost.

## **What Are Challenges In Virtual Machine (Vm) Monitoring?**

Each Virtual Machine Runs Its Own Operating System And Functions Separately From The Other Vms, Even When They Are All Running On The Same Host. Thus, While Deploying Virtual Machines Provide Efficiency, Scale And Elasticity, They Also Introduce Considerable Complexity For It Teams In Terms Of Administration And Troubleshooting. Vm Environments Require Specialized Toolsets And Skills To Monitor And Troubleshoot Problems. The Parameters And Metrics That Need To Be Monitored In Virtual Machine Environments Are Different From That Of Physical Server Environments.

Thus, While Typical Organizations May Deploy A Combination Of Physical And Virtual Servers, Getting A Unified Visualization Of The Server Infrastructure Could Require Enhanced Toolset Capabilities.

## **What Is Server Performance Monitoring**

While Server Monitoring Is A Broad Term That Mainly Pertains To The Health Of A Server Or A Vm, Server Performance Monitoring Is Focused Specifically On Performance Metrics And Related Analytics. For A Physical Server, Metrics Primarily Include Cpu, Memory And Disk Utilization, As Well As Disk I/O And

Network Performance. For A Vm, Performance Metrics Additionally Includes Network Bandwidth Utilization, And Other Measures Of Resource Utilization.

## What Are Common Server Monitoring Systems

Server Monitoring Tools Are Of Two Types: On-Premises Software-Based Or Cloud-Based/Saas.

**On-Premises Software-Based Tools** Are Those Which Installed In An Organization's Server Systems. This Is A Traditional Software Model That Is Generally Priced With A License Fee And A Maintenance Plan For Ongoing Support. Because Every Organization's Environment Is Unique, On-Premises Software Installations Typically Need More Support From The Vendor. However, This Model Offer More Customization Options And May Be Preferred For Security Or Regulatory Reasons.

**Cloud-Based Tools** Are Those That Are Installed In Public Cloud. Because No Software Needs To Be Installed Directly Within The Organization's Infrastructure, These Tools Can Be Installed And Launched Quickly. Cloud-Based Monitoring Tools Are Licensed In A Pay As You Go, Subscription Model, Offering A High Level Of Flexibility.

## Getting Started With Server Monitoring

### What Are The Best Practices For Server Monitoring?

Every Organization's It Environment Is Expected To Be Unique. However, The Following Best Practices Could Help To Ensure That Server Monitoring Is Aligned To Business Expectations.

- **Operate servers within specified tolerance levels:** Server computers are usually operated on a 24×7 basis and are an important component in any business-critical infrastructure. Key metrics to monitor include CPU utilization and temperature, RAM utilization, and storage utilization to ensure that the server is in good health and performing within thresholds.
- **Be proactive in monitoring:** Server monitoring tools can alert you for software problems as well as hardware issues. Often issues are more likely to be occur in new installations or in cases where servers have crossed lifetime thresholds. It also helps to prioritise monitoring of critical servers, such that the monitoring granularity is higher – in seconds as opposed to minutes.
- **Triage alerts:** Have a playbook by which you can prioritize and manage the most critical alerts. Triage alerts can help ensure that the most critical issues get IT attention. The problem may then be assigned to a capable team member resolution. When incidents are escalated, make sure it gets to the appropriate person quickly to ensure better collaboration within the team.

- **Looks for historical trends and correlate events:** Consider historical behaviours to spot trends in the performance metrics over time. Often several problems could be related – for example, increased CPU temperature could mean a failing server fan, or increased disk I/O could signal higher number of bad sectors.
- **Use for capacity planning:** Monitoring provides data on server utilization, in order to predict short-term and long-term capacity needs, as well as optimize costs. If certain servers are not used they could be potentially shutdown or if they only minimally used may be the applications can be migrated to other servers. If on the other hand services begin to slow down, because the server utilization is higher than normal, additional servers may be deployed or more VMs may be spun-up.

## How To Find The Best Server Monitoring Tool?

When Considering A Server Monitoring Tool, You'll Want To Assess These Key Server Monitoring Capabilities:

**Ease Of Use:** Does The Tool Provide An Intuitive User Interface That Makes It Easy To Monitor Events, Perform Triage, And React To Problems Quickly?

**Breadth Of Coverage:** Does The Tool Have An Out-The-Box Support For All Server Types (Hardware And Software; On-Premises And Cloud) That Your Organization Uses Or Will Plan To Use In Future?

**Intelligent Alert Management:** Is It Possible To Set Up Thresholds Such That Multiple Alerts Are Avoided? How Are Alerts Delivered? Can The Alerts Be Received On Itsm Tools Deployed In The Organization?

**Critical Server Monitoring:** Is It Possible To Monitor Specific Servers Which Are Mission-Critical, At Higher Granularity And Accord Higher Priority While Triaging.

**Root Cause Analysis (Rca) Capabilities:** Does The Tool Automatically Include Context And Provide Correlation Capabilities (With Ai/ML Or Without) To Help Trouble-Shoot Problems Quickly?

**Flexibility For On-Premises Or Cloud Licensing:** Does The Tool Provide Support For The Type Of Deployment That Your Organization Needs?

**Support Policy:** What Types Of Support Options Are Available And Are They Aligned To Your Organizational Needs And Expectations?

## Conclusion

Server Monitoring Is Important Requirement For Any It Operation. Since They Run Business-Critical Applications It Teams Will Need To Ensure That They Are Performing Well And Are Aware When Degradations Occur. A Good Server Monitoring Tool Is Critical To Ensuring That It Teams Can Quickly, Proactively And Effectively Resolve Problems In Servers Before They Affect Application Users.

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