**Server Capacity Planning-An Overview.**

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Globalization and digitalization are the new age in the world economy. This has led to the boom of technology related growth and development along with the expansion of businesses and its IT resources. Business earlier was focused on making profits and growth, but now the focus is on the growth along with the cost-effective investments and optimal resource utilization. With this business approach, the huge impact and expectations has been placed on the IT departments to be updated, fast, reliable, and resourceful under strict budget. When it comes down to the optimal utilization, capacity planning on servers makes a huge impact in spending budget and efficient resource management. In an EMA survey “reclaiming and/or re-purposing hardware and software that is underutilized” was cited as a top priority by 57% of IT executives responding.” (as cited by helpsystems.com).

Helpsystems.com (2021) states that, “the new trend is to pool the servers as one collective resource a concept called ‘utility computing’. It is based on the fact that servers can be allocated dynamically based on the application and data needs.” Capacity planning tools helps understand and calculate the workloads of servers and projects the future capacity which the server can handle. By doing this analysis the optimum utilization of the servers can be done with less downtimes and improved performance.

**Understanding the Server Capacity Planning**

Described in the TechTarget, (2021) Planning phase is the most important step in capacity planning. Planning for the machine to accommodate its future storage need is the vital step. Before deploying any servers two aspects need to be considered first, understand the scope of the server-will it be virtualized or will it be a standalone machine. Next, Plan for the future to meet the demands.

When it comes to resource allocation certain factors need to be well-thought-out which includes, the process is dynamic and resources can be allocated based on the needs even at real-time. Always monitor and understand the demand of the server along with a good understanding of the applications, platforms and operating systems.

Server Capacity Planning can be described in three steps

* Determine service level requirements: This includes defining workloads, understand and determine the unit of work, finally identifying the service levels for each workload.
* Analyze current system capacity: It comprises measuring service levels and compare to objectives, measuring overall resource usage, measuring resource usage by workloads and Identifying components of response time.
* Plan for the future: Determining the future processing requirements and plan for the future system configuration.

**Server Capacity Planning Tools**

By monitoring the CPU usage, hardware storage allocations and memory, the root cause for the server interruption can be identified and the server tools helps best in aiding these jobs. Once the problem is identified it will help the system administrators in the proper allocation of the servers. As explained by Solarwinds.com, “Server capacity planning tools focus on optimal speeds and quality of transactions between servers and applications. If the resources are not being optimally used, the businesses can bottleneck and reductions in service delivery.”

Steven Copper (2020), in the article “6 Best Network Capacity Planning Tools”, has listed few tools that are used in the market, they are

* SolarWinds network Bandwidth Analyzer Pack.
* SolarWinds Flow Tool Bundle
* Paessler PRTG Network Monitor
* ManageEngine Op Manager Plus
* Nagios XI
* What’s Up Gold with Network Traffic Analysis Add-on

**Server Capacity Planning best practices**

Planning and mapping the server environment will help the engineers utilize the optimal resources. There are number of software tools that can help the system administrator determine how well the server is operating. These tools can give in depth analysis and monitoring capabilities for the admins to watch the resources like CPU, memory, disk, processes, workload, network and data storage.

Klyeman (2011), in his article, “Improving server Capacity Planning” explains that best practices in Capacity planning is to understand the present /future needs and knowledge of the process which includes,

1. Understanding that deployments will use the capacity for build phase and test phase, will ensure proper sizing of the machine.
2. To avoid over or under allocation of the capacity, it is advisable to understand the OS, application and the databases for which the server will be utilized.
3. Fluctuations in terms of server demands can happen anytime, having a clear picture of the workload distribution will help overcome these challenges.
4. When there is a need for maintenance expense, have a through study between maintenance expenses Vs purchase of new equipment’s. This will help in cost effective spending.

**Conclusion**

Server Capacity planning is an effective and efficient process that need be progressed along with the ever-evolving digitalization and growth. By reducing the server downtime and by preparing for the future server planning promotes the overall performance. Also, it effectively reduces the over-provisioning for servers, helps identify and utilize underutilized servers which can bring the overall expenditure of IT departments under control. In conclusion, server capacity planning is the concept of using the resources efficiently thereby boosting production, performance, and economic growth of the organizations.

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