RESEARCH BRIEF

THE FUTURE OF IT SKILLS

SERVER ADMINISTRATION

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The nature of work is changing. New trends in technology are creating new possibilities for automation and artificial intelligence. While the impact to overall job numbers is unclear, one thing is certain: technical skills will be in high demand.

This series from CompTIA examines those skills that companies are searching for. Even when job titles look familiar, it is important to understand how roles are changing in an environment defined by cloud computing and mobile devices.

In Building Digital Organizations, companies told CompTIA which skills are currently needed as digital transformation reshapes the nature of business. The direct impact of technology on business outcomes gives modern IT a dual nature, with strategic efforts being added on to traditional tactical work.

Server administration is certainly a skill with roots on the tactical side. It is arguably the oldest IT discipline, going back to the days when the sole IT function was to manage the equipment in the back room and utilize computing capability to meet business needs. Understandably, most companies have come to heavily rely on server admins in one way or another, but the tasks done by these workers are shifting thanks to changes in infrastructure models and overall technology usage.

The migration to cloud computing is the biggest factor driving change in the role of the server administrator. In the early days of cloud adoption, there was a great deal of uncertainty about whether the role would even continue to exist, thanks to the delegation of hardware maintenance to cloud providers and the ease of use in setting up cloud systems. However, organizations have found that there is plenty of work left over for server admins even as some work moves to the cloud.

Technical Skills	% of Companies in Need
Security	40%
Database/Information management	38%
PC support	36%
Storage/Backup	33%
Networks	31%
Cloud architecture	29%
Telecommunications	27%
Web development	27%
Server/Datacenter management	27%
Mobile device support	24%
Application development	23%
Big Data tools/analytics	23%
Virtualization	21%

Note: Percentages may reflect companies' top priorities, so overall need for individual skills is likely higher

Although virtualization is at the bottom of the list for in-demand skills, cloud computing requires a strong knowledge of virtual environments and is also driving a refinement of virtualization skill. Virtualization began as a tool for fully utilizing physical resources, but that still didn't necessarily translate into optimization. Admins could over-allocate a machine for a given application if the capacity was available; the capital expenditure was still sunk, so fine-tuning was unnecessary.

On a basic level, cloud computing has the same functionality without the hassle of maintaining physical equipment. Virtual instances or machines are created, and applications are run in those environments. In practice, cloud's "pay as you go" model drives more demand for optimization. Over-allocation is wasteful, and server admins are spending more time ensuring that their virtual servers are running as efficiently as possible.

While some of this additional time is spent in initial setup, the lion's share is spent in monitoring. It is no longer sufficient to know if an application is running or not. Admins need to know about the resources being consumed, how that consumption changes over time, which factors are affecting performance, and other variables that will allow them to improve output. This involves new monitoring tools and the ability to analyze data, and it may lead to changes in the application.

Another potential cause of application updates is automation. Server administrators can use the tools offered by cloud providers to automatically allocate resources as needed by the applications, and they can also connect applications to a greater degree than before thanks to APIs made available by developers. Some amount of new code may be needed for legacy applications to take advantage of these capabilities, but ultimately server admins will be the ones making the connections and enabling automation.

Put together, the work of optimization, monitoring, and automation becomes the responsibility of a cloud architect. At very large enterprises, a cloud architect will play a strategic role, determining the best models for each application and building the plans for seamless operations. At smaller firms, there will be a blend of strategic planning and tactical operations, and the lines will blur between pure cloud architects and modern server administrators.

Cloud computing is also driving more focus around vendor management. In a standard computing environment, the primary criteria for vendors were product specifications and customer support expertise. When IT is delivered as a service and admins are focused on performance and monitoring, there is more ongoing work to ensure that service level agreements are being met. Technical details need to be translated into business negotiations as vendors are chosen and evaluated.

Specialization is not exclusive to cloud computing, but it is a part of the server admin role that is growing as companies use more technology throughout their workflows. The more critical a system is, the more it needs special handling. In the on-prem world, this has traditionally been done with dedicated appliances. Today, whether appliances are still in use or application-specific work is done in a virtual/cloud environment, there is a growing need for specialized knowledge as applications need ideal conditions.

On the other end of the spectrum, server administrators need to have some general abilities. This is especially true in small firms, where individuals or teams of 2-3 people may be providing the full range of IT support. Many individuals start their IT career in a help desk role, and this front end support continues as back end skills are added. Networking is another typical skill for a jack-of-all-trades server admin, allowing for installation and maintenance of the full corporate infrastructure.

With all the new skills being added to the server administrator job role, it is important to note that hardware skills are often still required. Most companies are not planning for a 100% cloud-based architecture. Especially in the short term, systems will remain on-premises as businesses determine the best balance of security, cost, and performance. Even though hardware activities are on the decline, most admins will need to occasionally deal with racks, cables, and cards.

Modern IT is heavily focused on software and services, and these areas hold the most potential for differentiation and innovation. At the end of the day, though, technology runs on hardware. The exact responsibilities of server administrators are changing, but these individuals will still be needed by today's digital organizations.

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The Computing Technology Industry Association (CompTIA) is a non-profit trade association serving as the voice of the information technology industry.

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