



Real-life solutions to the skills shortage problem for data center and infrastructure management for On-Demand companies

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Businesses around the world are experiencing exponential data growth: richer, more sophisticated apps and content; stricter control and compliance; distributed audiences and users; and surmounting global competition. The evolving dynamics are fueling rapid growth and complexity in the data center infrastructure.

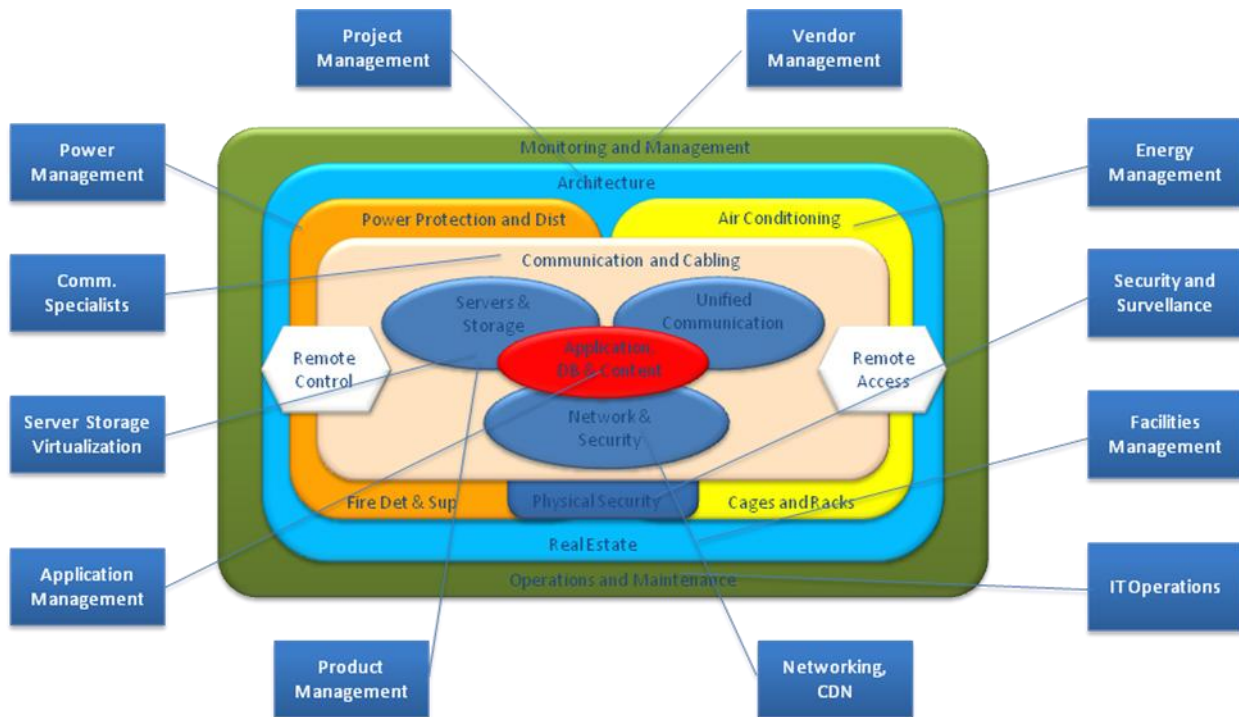
The CIO and the IT operations team are faced with the challenge to maintain 24x7 on-demand availability of content and applications to users around the globe. They have to continue to demonstrate business alignment and the flexibility to adapt to business requirements. At the same time they need to be cost-effective and execute within budget – cost of operations and cost of power continue to be big components of the overall IT budget. All of this coupled with accelerated changes in technology, the CIO needs to deliver performance, availability and security.

In today's data center, mission critical applications primarily consist of ERP systems, database management systems, web applications and unified communication systems. A well managed data center infrastructure enables business innovation, reduced cost of doing business, improved customer satisfaction and competitive advantage. On the contrary, a poorly managed infrastructure is generally reactive and unplanned and thus results in higher costs, lost business opportunity and lost customer loyalty.

The key technologies that are affecting the data center infrastructure and related staffing includes: virtualization that improves resource productivity and introduces automation but increases complexity at the same time; SOA that has very little manageability built into the application; unstructured data that is growing exponentially; unified communications connecting users anytime and anyplace; and energy management and conservation in the data center.

Data center staffing also is dependent on various company attributes. For example, distributed operations require similar skills in many locations and the nature of the industry the company belongs to can impact data center budgets; business growth rate, which drives fluctuation in staffing needs; and the size of the company, which governs the economies of scale.

The data center requires skills both for the facility infrastructure and IT infrastructure. Going forward we expect and leverage a lot of synergies between the two areas because of interdependence that can lead to efficiencies in the data center. Some of the roles required in the data center are highlighted in fig 1.



According to a recent report from Symantec, “Symantec State of the Data Center,” staffing issues were attributed to the following factors:

- Finding qualified applicants
- Retaining existing employees
- Employees are retiring
- Employee skills tend to be too narrow
- Many employee skills do not match the needs of the position

A framework of people, process and technology make up the foundation for efficient data center operations. For example, by incorporating the right processes and relevant automation technologies, the staffing issue reduces considerably.

Each of these areas has certain attributes (as highlighted in Fig. 2) that need to be defined, executed and measured to successfully implement the framework. Working together hand-in-hand, this framework of people, process and technology, helps organizations achieve smoothly running and efficient data center operations.



Process

Most IT organizations today are technology providers, delivering to their end-users solutions that are custom and built-to-order, adding to the world of technology islands that generally characterizes end-user environments. These IT organizations seem to have a catalog of parts that they use to build custom solutions for each particular project or initiative. Within the data center environment, IT managers have the capability to outline their approach and build pre-defined configurations that can be delivered as off-the-shelf service. With this transformation, data center managers can now offer a managed service (infrastructure-as-a-service) based on these standardized configurations.

Taking the factory approach of manufacturing and offering products based on templates, IT managers can now do better capacity planning, demand forecasting and budgeting to improve predictability and accountability. With this approach now IT managers can be like a portfolio manager with a pool of pre-defined offerings based on underlying instruments and demand.

It is a well known fact that process drives workflow and in turn tasks/activities. These tasks and activities can be automated using tools and technologies. Some of the standards bodies like ITIL, COBIT and others are rewriting standards to incorporate virtual environments, so that IT managers can implement standards across their virtual infrastructures.



Change management is an important and critical process in regulated industries that have to deal with reams of paperwork and lengthy approvals such as the financial and healthcare sectors.

Creating metrics, tracking them and improving them based on feedback always drives efficiencies as well.

Tools

Data center managers are always torn between the choices of adopting new technology to improve efficiency vs. not introducing any new technology to avoid increased complexity in their IT environment. Technologies like virtualization have been established as a concept that data center managers can no longer avoid, but the tools to manage that infrastructure are still immature and unproven.

The key to bringing efficiency in the data center is to automate...automate...automate! Automation helps break technology islands, eliminates human error, makes problem identification and troubleshooting of issues easier, and increases standardization. Automation can help implement standards and drive service quality.

There are many areas where automation could be introduced, but the choice among a multitude of competing solutions makes the decision and implementation too confusing. So data center managers should work with credible vendors and conduct pilot projects to see the utility of these tools and platforms before deciding on the right automation technologies.

A few areas where automation could be introduced include:

- Infrastructure provisioning and configuration
- Ongoing monitoring, root cause analysis and problem-correlation
- Tracking and management of power distribution and cooling
- Customer trouble-ticketing and reporting
- Facility planning and management

People

In general today there is a scarcity of qualified sys admins, network admins and DBAs. On top of that, today's data center requires the limited IT operations staff to further refine their thinking on capacity planning, application performance/tuning, troubleshooting and security of the new infrastructure.

The lines between traditional IT functions are blurring and are creating unnecessary confusion. Data centers should introduce roles like product managers and relationship managers. Product managers define, create and price offerings and create and track end-to-end SLAs and service performance. They are responsible for P&L and become

the central resource to track the progress of the product offering. Relationship managers become the key interface with the customer, help balance expectations, seek feedback and negotiate SLAs.

In parallel there should be an operational role similar to a factory manager (service delivery and operations). This role chooses the technology and tools in conjunction with the right process to deliver the service offering that the product manager defines.

Many companies also create governance councils that comprise a cross functional team that sets architecture guidelines, product roadmaps, capacity planning and investment financing. Their vision translates into the right product offerings keeping the end-customers requirements in mind.

A few suggestions and strategies to overcome the people shortage issues can be classified as follows:

- **Attract and hire** – Organizations continuously need to market their company as the best place to work to attract the right candidates. Data center managers need to work closely with HR to create clear job descriptions and classifications, get involved in hiring from start to finish, balance the hiring cycle with candidate availability, and assess cultural fit. On a regular basis companies should benchmark themselves with their peers in the areas of roles, responsibilities and relevant compensation, so that they can improve their hiring practices and attract the right talent.
- **Retain and grow** – Employees at any time should know the impact of their work towards the overall success of the business. Creating transparency across the business is the management team's job to get a motivated team. Ongoing education and training leading to certification on key industry standards as well as driving technology and management initiatives can influence the candidate's desire to continue with the company. In today's world, personal growth is equally important to employees. They should have clear understanding of their growth/career path in the organization and if their job helps them create a work/life balance. They want to feel trusted, appreciated, needed and on top of it all they want recognition.
- **Partner to outsource** – There will always be gaps in the organization and data center managers may not be able to fill those gaps in time to meet business demands. Data center managers should consider outsourcing strategies to fill those gaps – whether they decide to get managed hosting services for a particular need or they get collocation services for certain projects/initiatives. This would eliminate the need for those skills. Additionally they should consider working with a partner that can provide monitoring and management services to get enough coverage on technology, shifts and skills. All these partner



relationships need to be SLA driven and must be measured by tracking key performance indicators.

Conclusion

By carefully considering the right framework of people, process and tools to support the changing landscape within the data center, companies can be well positioned to keep pace with the demands of the evolving business, meet end-customers' expectations, cope with changing technologies, and deal with operational pressures while executing within tight budgets.

Author Biography:

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