WHITE PAPER

THE CLOUD CENTER OF EXCELLENCE

A Blueprint to Successful Enterprise Cloud Adoption

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CloudCheckr

"Cloud computing introduces a significant shift in how technology is obtained, used, and managed. It also shifts how organizations budget and pay for technology services. Cloud computing benefits organizations by giving them the ability to trade capital expense for variable expense, gain advantage from massive economies of scale, make agile capacity decisions, increase business speed and agility, stop spending money running and maintaining data centers, and go global in minutes."

— AMAZON WEB SERVICES

OVERVIEW

The cloud is entering a new era of widespread enterprise adoption. Leading vendors, such as **AWS**, **Microsoft Azure** and **Google Cloud Platform**, have opened the door to large-scale cloud migration with a raft of products that address the needs of modern enterprise IT.

And the reasons for making the move are compelling.

The cloud has become a gateway to innovation, providing access to cutting-edge technologies, fully managed infrastructure services, such as **PaaS** and **DBaaS**, and a highly developed ecosystem of ready-made, third-party niche solutions.

Enterprises are being liberated from many of the time-consuming and costly tasks of managing their infrastructure, freeing them up to focus on developing new applications. Not only that but, where previously it took weeks or months to procure new hardware, they can now provision new resources in a matter of a few clicks. What's more, with good cloud management, they can leverage modern and secure infrastructure at a significantly lower cost compared with traditional data centers.

At the same time, cloud adoption represents a major IT transformation, a shift in culture and a new way of financing your infrastructure. It presents new cost and security challenges, requiring governance and control across the organization. And it also needs a proactive team to take ownership and direction of the migration process.

A **cloud center of excellence (CCoE)** has rapidly become an indispensable method of performing just that role.

It acts as a task force to address the complex challenges of cloud migration. It will help you define a clear vision and strategy for your cloud migration project, driving the adoption agenda and coordinating with stakeholders across the organization. And it will also create a structured pathway to the cloud, helping your organization to avoid the pitfalls and realize the full potential of cloud adoption.

In this white paper, we consider what to look for when building your CCoE team, run through the planning phase of a cloud migration and examine the challenges and responsibilities of your CCoE.

However, the concept of a CCoE is still relatively new. So let's first look at the idea behind centers of excellence in more detail.

> "Centers of excellence (CoEs) accelerate the uptake of new technologies and optimize core capabilities with higher efficiency and lower costs."
>
> **– GARTNER**

WHAT IS A CENTER OF EXCELLENCE?

A **center of excellence (CoE)** is a team of executives, who lead the introduction of new capabilities into an organization—typically through new skills, technology, working practices or services.

It will champion the transformation process, providing guidance, support and training to employees throughout the transition and ensuring everyone is on-board and pulling in same direction.

The team will also aim to achieve economies of scale by eliminating duplication of workload and resources. It will set goals and priorities, such as target efficiencies, governance objectives, increased agility, new revenue opportunities and project deadlines. It will be responsible for introducing new structures or frameworks, standardizing processes, managing disruption and overcoming barriers to adoption.

And, lastly, a CoE will review and iterate throughout the change process, striving for continual improvement in line with business objectives.

"You can have the best processes and tools in place, but in the end it is all about the people – how they behave, cooperate and communicate. The skills of the team members should provide a good balance between knowledge of methods, business domain knowledge and soft skills."

– CHRISTOPH WOLF | Requirements Engineering Magazine

THE CCOE TEAM

A CoE dedicated to cloud transformation will be responsible for researching, planning and managing the complex logistics of cloud adoption. But what does a CCoE look like?

The CCoE team should come from a range of IT backgrounds, so it brings a broad perspective and balanced set of knowledge and skills to the table. It would typically include 3–5 people with day-to-day job roles, such as:

- IT manager
- IT financial manager
- Operations manager
- Systems architect
- Application developer
- Systems administrator
- Database administrator
- Network engineer

It should ideally include members who already have cloud experience. People with a broad set of related skills are particularly useful, owing to the multi-disciplinary nature of the cloud, which sits at the center of a range of emerging IT technologies. But make sure you communicate clearly defined roles to avoid potential demarcation issues.

Bringing different disciplines together in this way underlines the fundamental principle of **DevOps**. Hence the terms *CCoE* and *DevOps* are often used interchangeably.

As well as proponents of the cloud, it may also pay dividends to include one or two skeptics in your team. As they begin to embrace the new technology, they may ultimately prove instrumental in bringing about a cultural shift. But the candidates for your CCoE team must also have an open-minded attitude—whatever opinions they currently hold towards the cloud.

Good interpersonal and boardroom skills are also equally important, as your CCoE will need to bring out the best in others, handle objections, report results to senior management and explain the benefits of the cloud to stakeholders.

The role of a team member can be ongoing or temporary. They may also have another position within the organization or work for the CCoE in a full-time capacity.

RESEARCH AND PLANNING

Your CCoE will be engaged in a significant amount of research and planning before your organization fully embarks on its cloud migration journey.

First, it will need to understand the implications of moving from on-premise to dynamic, pay-as-you-go cloud infrastructure. For example, it will need to familiarize itself with new approaches to application architecture and security, as well as the cost optimization challenges of switching from a CAPEX to OPEX model of financing IT.

Next it will collaborate with IT and the company leadership to identify applications that are ripe for the cloud. Completely new applications will be high on the agenda, especially those with little or no integration with existing systems. Applications that experience fluctuating workloads also make good potential candidates for migration, as they can benefit from the scaling features of the cloud.

The team will also coordinate research into the different cloud vendors, taking into account factors such as feature requirements, platform compatibility, SLAs and pricing structures. It will be involved in decisions, such as whether to adopt a single-cloud, hybrid or multi-cloud approach and whether to rehost or rearchitect applications.

THE BIG THREE CLOUD VENDORS

The three leading IaaS platforms, AWS, Microsoft and Google, are mature and sophisticated cloud offerings, with a rich set of capabilities to suit virtually any enterprise IT requirement. However, each vendor excels in different ways.

For example, AWS is a particularly good choice for born-in-the-cloud applications and emerging technologies, such as **IoT**, **mobile** applications and **DevOps** tools. Microsoft, on the other hand, offers strong **hybrid** capabilities, whereas Google's fully managed **Kubernetes** service will appeal to users of container technology.

Moreover, each vendor takes a different approach to service delivery. AWS and Google are geared more towards a self-service model. By contrast, Microsoft is more hands on, handling much of its sales and support through its network of representatives.

Your CCoE will also explore use cases for new technologies, such as **containers** and **serverless computing**, and draw up requirements for security and identity management. In addition, it will support IT in the evaluation of fully managed solutions, such as **DBaaS**, weighing up the benefits of rapid deployment and low maintenance against the flexibility of self-managed solutions.

Finally, it will play an active role in identifying tools to manage your cloud and a suitable service partner that can provide technical expertise and support throughout your cloud journey.

KEY CHALLENGES AND RESPONSIBILITIES

Once your CCoE has completed an initial phase of research and planning, it will set to work on the complex logistics of building your cloud, gearing up your workforce and putting measures in place to manage your infrastructure. It will be the guiding force behind the following key steps involved in a successful cloud transformation:

Failover architecture and recovery planning: To minimize the impact of server downtime, you'll need a robust application environment and fail-safe disaster recovery plan. However, your specification will need to balance availability expectations with the cost of your backup infrastructure.

Infrastructure provisioning: Similarly, you'll need to provide users with reliable ways to provision secure, compliant, stable and cost-efficient application environments. For example, you should make use of **infrastructure-as-code (IAC)** tools such as **Chef** or **Puppet**, which can help bring consistency and rationality to complex enterprise IT environments, enhancing the portability of workloads and making it easier to monitor and compare performance across the enterprise.

Nevertheless, at the same time, it's important to allow people the freedom to use the cloud as they please—where, with proper guardrails in place, you can still give users the flexibility and independence they need to deal with the everyday practicalities of running IT.

Application development: To realize the full cost-saving and security benefits of the cloud, you'll need to take a new approach to application design based on a distributed architecture of loosely coupled microservices. This will enhance security by introducing new layers of isolation to your application. What's more, you'll also be able to scale components independently of one another, giving you more granular control over resource consumption.

Cloud training and awareness: You'll need to train staff in new technologies, educate them in the differences between cloud and traditional IT infrastructure, and develop and nurture cloud best practices. All three leading vendors offer training in their cloud platforms and certification to validate people's expertise.

Managed service providers can also play an invaluable role in equipping your workforce with the cloud skills they need. They can provide on-the-job training, allowing staff to gain practical experience of working in the cloud and put their new skills into immediate action.

You should also leverage internal PR to keep the wider workforce involved in the transformation process and raise cloud cost and security awareness.

Asset management: You can't manage what you don't know you have. So it's essential to have complete visibility over all your cloud assets. You should implement a tagging system to track ownership of resources. And you'll need monitoring tools to help prevent **cloud sprawl**—the uncontrolled proliferation of resources, which can leave your infrastructure vulnerable to attack and send your monthly cloud bills through the roof.

Cost optimization and allocation: Likewise, you'll need to optimize your cloud resources so they provide the right balance between performance and costs. You should also take advantage of cost-saving opportunities provided by **consolidated billing**, which helps you fully exploit usage thresholds, and discounted capacity offerings such as AWS **Reserved Instances**.

Cost allocation, in the form of chargebacks or showbacks, will also encourage people to use the cloud more responsibly—by making them accountable for their resource consumption.

Change management: Your CCoE will drive the cloud transformation agenda, working with the senior management team to develop strategic initiatives. It will also perform the role of intermediary between different departments, promoting collaboration and transparency, and aligning the action plans of individual departments to the company's general business objectives.

ROLES AND OBJECTIVES

Your CCoE will oversee a complex undertaking, involving a variety of departments and job functions. Each will represent a different cog in the wheel of the entire adoption process. However, many will also share similar cloud goals and responsibilities.

To build a well-coordinated action plan, your CCoE will need to understand how each department fits into the full migration picture. The following diagram shows the interrelationship between the different roles and cloud objectives across the enterprise:

→ DIAGRAM ON NEXT PAGE

CLOUD ADOPTION ACROSS THE ENTERPRISE

	PERFORMANCE	GOVERNANCE	TRANSFORMATION
SENIOR MANAGEMENT	› Business efficiency › Customer experience	› Risk management	› Product development › Business expansion › Organizational change management
FINANCE	› Cost reporting › ROI › Inventory management › Cloud best practices › Centralized billing › Cloud project budgeting › Cost monitoring	› Cost allocation › Chargebacks and showbacks	› Switch from CAPEX to OPEX
DEVELOPMENT	› Application architecture › User experience › Resource provisioning › Continuous integration (CI) › Continuous delivery (CD) › Cloud best practices	› Cost control	› Application architecture › Reference infrastructure › Cloud best practices › Resource tagging	› New application development › Rehosting and rearchitecting	› Open source › Workload migration
OPERATIONS	› System monitoring › System health › System reliability › Resource optimization › Lifecycle management › IT service catalog › Incident response	› Inventory management			
SECURITY		› Identity management › Compliance		
	› Security monitoring			
PR		› Cost awareness › Security awareness › Cloud best practices	› Cloud awareness
HR			› Identifying skills gaps › Training › Role redevelopment › Talent recruitment › Incentive packages (remuneration) › Career management
THIRD-PARTY SERVICES	› System monitoring › System health › Application performance monitoring › Resource optimization › Business insights › Cost control › Backup tools	› Hybrid and multi-cloud capabilities › Inventory management › Compliance and security › Cost allocation › Reference infrastructure › Cloud best practices	› Open source › Workload migration

One of the striking features of the diagram is the strong convergence of development and operations, highlighting the emerging significance of DevOps in the new cloud landscape. Another is the transformational role of HR, illustrating just how critical the people within your organization are to a successful cloud migration.

Likewise, third-party services, such as managed service providers, cloud management tools and open-source software, will be key to meeting your performance, governance and transformational goals.

GET TOOLED UP

Once you've mobilized forces, set up lines of communication and delegated duties, you can start turning your cloud migration plans into action.

Begin by breaking up larger tasks into smaller, more manageable assignments. That way, your company leadership will be able see to the results of your CCoE endeavors more quickly. At the same time, colleagues will build up their confidence and proficiency through practical cloud experience.

You'll also need to equip people with tooling to help them migrate your workloads, monitor system health and maintain secure, compliant and cost-efficient infrastructure.

But keep in mind that your transition to the cloud will be an iterative process where you'll continually learn as you review and adapt. And this means giving leaders the tools they need to track progress of your cloud migration journey.

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