Innovation Insight for the Cloud Center of Excellence

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Initiatives: Cloud Computing

A cloud center of excellence is a best practice for facilitating successful cloud adoption. Enterprise architecture and technology innovation leaders should create a CCOE to facilitate execution of their organization’s cloud strategy.

Additional Perspectives
- Summary Translation: Innovation Insight for the Cloud Center of Excellence
  (11 September 2020)

Overview

Key Findings
- Many IT organizations struggle with unstructured and ungoverned cloud adoption, not only as a result of “shadow IT” adoption, but also because business-unit IT may be moving faster to adopt cloud than central IT is prepared to support.

- A cloud center of excellence (CCOE) is the best practice for facilitating successful cloud adoption in midsize and enterprise organizations, regardless of the organization’s cloud strategy or structure. It is particularly effective in organizations where IT is distributed into the business units, but is also useful when IT is centralized. It is most important for agility-focused cloud adoption, but is also useful for cost-efficiency-focused adoption.

- The CCOE is an enterprise architecture (EA) discipline that provides cloud brokerage capabilities, structures cloud governance and leads the organization’s cloud community of practice. It may consist of a single architect tasked to the role of leading the CCOE or may be staffed by a small team of cloud architects. It is not an IT operations or support team — it is an IT function.

Recommendations

Enterprise architecture and technology innovation leaders (EA&TI) responsible for cloud computing should:

- Take the lead in establishing a CCOE with an executive mandate and well-defined role. Appoint an enterprise architect as the organization’s chief cloud architect and assign that person to lead the CCOE.
Analysis

Most organizations adopt cloud computing organically, often beginning with ad hoc projects driven by the business, rather than with well-organized methodical adoption driven by central IT. Over time, central IT needs to bring ad hoc adoption under a more formal governance framework and drive the maturation of the organization's cloud computing journey. Later-adopting organizations that are just beginning their cloud computing journey often want to avoid this phase of ad hoc chaos; central IT usually wants to implement proper governance from the start.

Over more than a decade of Gartner client discussions, the vendor-neutral CCOE has emerged as the best practice for leading cloud computing adoption and maturation across geographies, verticals, company sizes, IT operating model maturity levels and cloud strategies.

Definitions

A cloud center of excellence is a centralized enterprise architecture function that leads and governs cloud computing adoption within an organization.

The CCOE provides central IT with a way to execute the CIO's cloud strategy, enable the business to choose the best solutions, provide governance through policies and cloud management tools, and gather and disseminate cloud best practices. The CCOE governs all types of cloud service models — infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS). It also provides significant input into the cross-functional cloud-oriented operating processes related to the use of these cloud services.

A CCOE is an enterprise architecture discipline, but it does not always report into the EA team. Most CCOEs are part of central IT, but sometimes business units create their own CCOE. CCOEs go by various names; for instance, the CCOE might be referred to as a “cloud business office,” “cloud competency center,” “cloud capability center,” “cloud innovation center” or “cloud brokerage team.” The CCOE's cloud architects are sometimes embedded in a broader cloud adoption team that also contains cloud engineers, cloud operators and cloud administrators, but the architects should retain a distinct nonoperational role. In government organizations, the CCOE may be embedded in a program management office (PMO); if so, the PMO functions and project/program manager role should be distinct. Neither the name nor the reporting structure matter, as long as the CCOE identifies its role as aligned to business-outcome-driven enterprise architecture and execution of a cloud strategy. It should be supported by a mandate from the CIO or other senior executive.
Note that the CCOE’s EA role is explicitly distinct from cloud operations. Regardless of where the CCOE is placed in the organization, the CCOE is not a “shared services” implementation function or an I&O function. Rather, it has oversight of governance and assurance of cloud computing. Its capabilities are a subset of IT’s general service broker capabilities.

A CCOE is also distinct from a cloud strategy or advisory council. This council is not a formal organization (as is the CCOE); it is a committee/council responsible for drafting and maintaining the cloud strategy as a living document and providing ongoing advisory to the CCOE. This is outlined in “Formulate a Cloud Strategy in the Context of Your Overall Strategy” and “The Cloud Strategy Cookbook, 2019.” The chief cloud architect may lead both the CCOE and the council, but this is not a requirement. The CCOE is focused on answering “how” to do cloud, while the council is more focused on addressing “why.”

The CCOE has three core pillars (see Figure 1):

- **Governance**: The CCOE creates cloud-computing-related policies and selects governance tools. Policy is created in collaboration with a cross-functional team and enforced by a mixture of tools and appropriate organizational processes. This approach provides appropriate risk management as well as financial management.

- **Brokerage**: The CCOE assists users in selecting cloud providers, architects cloud solutions and collaborates with the sourcing team for contract negotiation and vendor management.

- **Community**: The CCOE raises the level of cloud knowledge in the organization, and captures and disseminates best practices. This is accomplished through a knowledge base, source-code repository, cloud community of practice councils, training events, and outreach and collaboration throughout the organization.

**Figure 1: The Three Pillars of a Cloud Center of Excellence**
A detailed description of the structure of a CCOE, along with other organizational constructs for driving cloud computing adoption, is given in "How to Build a Cloud Center of Excellence (Part 1 — Designing for Cloud Adoption Success)."

Benefits and Uses

As an EA responsibility, the CCOE's high-level goals should be aligned to the purpose of business-outcome-driven EA. These goals usually include:

- Supporting cloud adoption, and teams inside and outside IT, through advising on solutions, building reference architectures and providing implementation guidance.
- Establishing lightweight governance that enables self-service while managing organizational risks.
- Accelerating digital transformation through cloud-enabled business-led innovation efforts, and advising on strategic business decisions that could be impacted by the use of cloud computing.

The CCOE provides brokerage, governance and community benefits, as summarized below. Details of the CCOE’s duties and how to implement a CCOE with these benefits are given in “How to Build a Cloud Center of Excellence (Part 2 — Implementing the Foundations for Cloud Adoption Success).”

Brokerage Benefits

A function of a CCOE is as an internal cloud service broker. In this capacity, it provides capabilities that help the organization choose, integrate and customize cloud solutions. Its brokerage benefits
The CCOE plays a critical role in cloud governance. The goal of governance is to manage organizational risks, promote the use of good practices, and successfully manage cloud providers and associated costs. However, good governance empowers the business and allows self-service and flexibility in the use of cloud services, so that both IT and the business gain the benefits of agility. Therefore, the CCOE assists with the alignment of IT and the business through the cloud strategy or advisory council. The CCOE must work through the strategy council to ensure input and communication regarding governance to the broad enterprise audience and stakeholders, not just IT.

Governance is distinct from the notion of “control.” Governance consists of two elements:

- **Guidelines** communicate good practices and where the risks are.
- **Guardrails** are mechanisms designed to prevent a bad outcome from occurring, even if someone does something wrong — intentionally or otherwise.

The CCOE’s governance benefits include the following:

- **The CCOE provides expertise on cloud provider solutions.** The CCOE provides consultative services that assist the rest of the organization in identifying potential cloud solutions for specific business needs and projects, and architecting appropriate solutions.

- **The CCOE establishes cloud architectural standards and recommendations.** The CCOE captures and documents good cloud practices and associated recommendations, creates architectural standards for common application stacks in IaaS and PaaS, and documents patterns for cloud-native applications and operations.

- **The CCOE determines the process for adopting cloud providers within the organization.** The CCOE collaborates with the sourcing and vendor management (SVM) team to create and maintain processes for justifying, assessing, sourcing and onboarding new cloud providers and cloud services.

- **The CCOE “future-proofs” cloud adoption.** The CCOE maintains knowledge of the broader cloud market and what solutions are potentially available to the organization that the organization hasn't yet adopted. The CCOE strives to influence cloud provider roadmaps. It collaborates with the SVM team to manage cloud providers against key performance indicators (KPIs). It works to ensure feasibility and execution of any cloud exit strategy (described in the overall cloud strategy) and other cloud contingency plans.

**Governance Benefits**

The CCOE’s governance benefits include the following:
The CCOE builds policies for guardrails, but the implementation of guardrails is generally the responsibility of cloud engineers or others in the organization. (For instance, the sourcing team may enforce guardrails on cloud purchases.) There is no “one size fits all” for the balance of guidelines and guardrails within organizations. Some organizations may find that good policies, augmented by automated warnings, are sufficient. Other organizations may have to rely heavily on guardrails. Moreover, the necessity of guardrails may be different for different teams. In general, automated enforcement is preferable to manual enforcement, and such automation should be implemented as early as is practical. For more information on striking the balance between guidelines and guardrails, see “Solution Path for Enabling Governance of Public Cloud Computing.”

The CCOE also often drafts and maintains some cloud reference architectures. Exactly how far that goes is dependent upon the EA/solution architecture division of responsibility within the company.

Community Benefits

The organization and its cloud-related skills often pose the biggest barrier to successful cloud adoption. Thus, the CCOE’s role in guiding the organization through cloud adoption, and possible cloud transformation, is just as vital as its brokerage and governance roles:

The CCOE helps manage cloud-related risks. The CCOE establishes cloud risk management and cloud security policies, selects a cloud security posture management (CSPM) tool and other tools for enforcing guardrails on cloud adoption, and guides the implementation of appropriate guardrails using the tools. It does this in conjunction with the organization's security, risk management and legal functions. The CCOE also assists the strategy council in aligning the organization's cloud strategy with existing and evolving security strategies and policies.

The CCOE helps govern cloud costs. The CCOE selects one or more cloud service expense management (CSEM) tools for automated cloud cost governance and reporting, and collaborates with the SVM and IT finance teams to interpret and take action on reports. The CCOE advises internal stakeholders on cloud cost optimization, and assists in forecasting cloud provider demand. It plays a collaborative role in helping ensure actual cloud spending is aligned against the forecasts and budgets.

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The CCOE is responsible for establishing the cloud community of practice (COP). The COP is a virtual community. It aims to bring together cloud stakeholders, facilitate collaboration, encourage cloud skills development throughout the organization, and make it more likely that
good practices discovered in one part of the organization get disseminated to IT functions throughout the organization.

- **The CCOE helps the organization adapt itself for cloud adoption.** The CCOE uses the COP to gain a foothold into broader organizational influence. The CCOE leads the COP, provides the means of collaboration to that community, and coordinates virtual and physical events to promote COP member interaction. It solicits and curates contributions to a cloud knowledge base and cloud-related code repository. The CCOE also facilitates cloud-related training and skills development. The CCOE sometimes also helps define cloud skills paths and the evolution of cloud roles within the IT organization.

### Risks

The most significant organizational concern with the implementation of a CCOE is the possibility that the CCOE will be ignored. This typically results from one of the following problematic root causes:

- **Problem: The CCOE lacks a mandate.** For the CCOE to be effective, it needs to have the power to enforce its policies. This typically requires the CCOE to have CIO sponsorship and for the CIO to have persuaded the business leadership to adhere to the CCOE’s policies.

- **Problem: The CCOE is impractical.** If the CCOE sets standards and guidelines that cannot be realistically implemented given the organization's resources and skills, it will be ignored out of necessity. The CCOE needs to focus upon what can be realistically achieved, not an ideal image that cannot be realized in the near future. If the immediately practical state is very different from the desired future state, the CCOE should lay out a maturity roadmap that helps the organization reach the desired future state on an incremental basis.

- **Problem: The CCOE is not properly “marketed.”** EA&TI leaders cannot assume that the mere creation of a CCOE will result in the business coming to the CCOE with cloud projects. In some cases, the business has a thirst for guidance and may overwhelm a fledgling CCOE with requests. In most cases, however, the CCOE needs to be publicized and evangelized. The earlier the organization is in its cloud computing adoption, and the less the business is aware of the benefits of cloud adoption, the more the CCOE will need to market itself. Some thought needs to be given to ensuring that the CCOE’s messages are attractive to the business and are focused on business outcome benefits as determined and documented by the organization’s cloud strategy.

### Recommendations

**EA&TI leaders should:**

- **Take the lead in establishing a CCOE.** Choose an EA&TI leader or member of the EA discipline as the organization’s chief cloud architect and assign them to lead the CCOE. That architect should be a change leader with a forward-thinking collaborative style of technical leadership, and
should have a strong understanding of the business and excellent relationships within the business. It is useful for that architect to have some previous experience with cloud computing, but it is possible to obtain cloud training after being appointed to the role. However, don’t allow the creation of a CCOE to delay cloud adoption. While the CCOE needs to be led internally, some organizations may benefit from engaging a cloud professional service provider to assist with CCOE foundations.

- **Work collaboratively with cloud computing stakeholders across the organization.** The chief cloud architect should chair or participate in a cross-functional cloud computing strategy or advisory council that brings together representatives who are directly involved in cloud-related uses and issues. The CCOE should lead the drive for transformation across the organization through influencing the cloud community of practice.

- **Provide cloud brokerage and governance.** Offer consultative capabilities to business stakeholders seeking the best cloud solutions for their business needs. Establish policies and standards for cloud computing, gathering good practices from across the organization. Focus on governance, not control. Provide guidelines to foster “doing the right thing,” but also implement guardrails to limit exposure to cloud-related risks.

**Recommended by the Authors**

- *Formulate a Cloud Strategy in the Context of Your Overall Strategy*
- *The Cloud Strategy Cookbook, 2019*
- *Evolve Your Infrastructure and Operations Organization to Remain Relevant in the Cloud Era*
- *Cloud Architects: What They Do and Why You Need One*
- *The Cloud Architect: Skills Guidance for Modern Technical Professionals*
- *How to Build a Cloud Center of Excellence (Part 1 — Designing for Cloud Adoption Success)*
- *How to Build a Cloud Center of Excellence (Part 2 — Implementing the Foundations for Cloud Adoption Success)*

**Recommended For You**

- *Cloud Computing Primer for 2020*
- *Cool Vendors in Cloud Computing*
- *‘Distributed Cloud’ Fixes What ‘Hybrid Cloud’ Breaks*
- *The Cloud Strategy Cookbook, 2019*
- *Cloud Architects: What They Do and Why You Need One*
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