Enterprise Cloud Maturity Model

Planning framework for enterprise-wide Cloud adoption

PDF generated August 28, 2015 by CBPN.
Table Of Contents

Enterprise Cloud ....................................................... 3
Enterprise Cloud Maturity Model ....................................................... 4
Enterprise Cloud Transformation - Enabling the Strategy Focused IT Organization .... 6
ODCA: Cloud Maturity Model - Business strategy enabled by Cloud ........ 11
HP - Enterprise DevOps maturity model ........................................... 12
Cloud Aware Applications ..................................................... 13
DRaaS ................................................................. 15
The overall content agenda of the CBPN is the development of the 'Enterprise Cloud Maturity Model' (ECMM), a framework for the strategic adoption of Cloud computing.

By synthesizing together a wide range of industry best practice documents the ECMM describes how the core building blocks of Cloud services can be identified and assembled to support a strategic expansion enabled by new technology innovation.

Download: Enterprise Cloud Maturity Model, version 1.00.
# Enterprise Cloud Maturity Model

by CBPN Admin - Thursday, August 27, 2015

[http://cloudbestpractices.net/guides/enterprise-cloud/ecmm/](http://cloudbestpractices.net/guides/enterprise-cloud/ecmm/)

## Introduction

<table>
<thead>
<tr>
<th>Category and Reference Documents</th>
<th>Maturity Level 0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Transformation and IT organization maturity (1,2)</td>
<td>Utility Provider – The IT organizations is predominately operational, only responsible for running the common IT infrastructure, such as email or servers for the accounting software, but playing no role in defining how they are strategically employed. Typically they report to the CFO as a cost centre</td>
<td>Process Optimizer – Increasingly the IT team starts to engage more proactively with the business, at the individual department level helping them better optimize their business processes.</td>
<td>Revenue Enabler – Technology becomes a core component of strategic planning, directly enabling product innovation and competitive advantage, reporting to the CEO.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IaaS DevOps (3)</td>
<td>Poor ad-hoc communication, no automation and unpredictable reactive processes</td>
<td>Siloed automation with no central infrastructure, processes are managed but not standardized</td>
<td>Collaboration and shared decision making, central automated processes across the application lifecycle, processes are standardized across the</td>
<td>Self-service automation, self-learning using analytics and self-remediation enabling processes, risk and cost optimization</td>
<td></td>
</tr>
</tbody>
</table>

---

4 / 16
Cloud Aware Applications (4) virtualized

Adaptive: Apps can self-migrate across multiple Cloud providers.

DraaS (5)

- Infrastructure as a Service: A self-service ‘DIY’ option where the customer utilizes IaaS as a resource for backup and recovery.
- Backup as a Service: A managed, utility service from a provider who backs up customer VMs.
- Disaster Recovery as a Service – A full service DR outsourcing, including up to global, enterprise scale.

Mobile Enterprise

Reference Documents

1. IT Process Institute – IT Strategy Alignment
2. ISACA – Enabling the Strategy-focused IT organization
3. HP DevOps Maturity Model
4. ODCA – Cloud Aware Applications
5. Gartner DRaaS Magic Quadrant
Adapting a large enterprise to exploit the new business opportunities presented by the On Demand Economy is no small feat, however considerable resources now exist to explain and map how Cloud computing can provide a platform for accelerating this capability.

Adopting Cloud computing services can be a simple, tactical exercise to meet some immediate infrastructure needs, or it can be the catalyst to embracing an entirely new strategy for IT as a whole. This can drive an entire transformation of how the organization works thanks to how it deploys technology.

The critical improvement is better ‘Business IT alignment’, meaning IT increasingly becomes a strategic asset for the organization, rather than simply a back office commodity. The traditionally operational CIO can also evolve to become a ‘CDO’ – Chief Digital Officer, a board level executive reporting to the CEO and proactively defining how technology can play an integral part in strategic planning, not just operational fulfillment.

The Strategy Focused IT Organization

Robert Gold documents a repeatable maturity model for this in his article Enabling the Strategy-Focused IT Organization. This covers the issues that arise that cause business management to perceive IT to be overly expensive and failing to align these costs with benefit to their business units, and so instead this chart describes how to build the shift to a more business-centric alignment.

Fundamentally Gold defines a scale where at one end IT is perceived and managed as a cost and at the other end where it is integral to the strategy of the organization and treated as a high priority board level topic, with a maturity model to grow the IT organization from one to the other.
Different practices, technologies and vendor products can be used as the building blocks for the individual elements of this framework, each directly linked to the capability improvements that Gold describes. So this maturity framework can drive a related procurement and adoption program, including quite specific expectations of different areas of investment.

For example in the Agility section Gold describes:

“Methods are applied to reduce development cycle time”.

This is the primary benefit of the new Cloud-centric software development method known as ‘DevOps’. Through new software architectures like ‘microservices’, the use of PaaS (Platform as a Service) and best practices like Continuous Deployment, pioneers like Netflix have greatly reduced their time to market for new application features and enhancements. Thus they can be called upon to achieve this particular improvement step.

He also articulates the common sense need to ensure cost reductions and other value for money steps are taken.

“Technologies are used in innovative ways to reduce IT costs”.

This also corresponds with the advice of industry experts. For example the McKinsey article Find Your Digital Sweet Spot describes how organizations should seek cost savings as well as front-facing customer improvements as part of their digital strategies.
IT Value Transformation – Breaking Innovation Gridlock

Achieving a more strategic organization requires that the most fundamental challenge of enterprise IT is addressed. Innovation Gridlock research from HP describes “a situation where the IT organization is blocked from driving new business innovation because the majority of funding is consumed in operating the current environment.”

With so much of their focus and resources consumed in simply maintaining the existing legacy estate then little is left over to deploy new innovation-enabling technologies, and so this gridlock is a constraint that needs addressed.

A headline resource from VMware to explain this in more detail is this study commissioned from the IT Process Institute, their white paper: ‘IT Value Transformation Roadmap’ (24 page PDF).

Specifically the paper makes the point that this evolution results in the CIO being recognized for delivering strategic IT value:

“What is strategic IT value? Strategic IT value is demonstrated when IT plays a key role in a company’s achievement of overall business strategy. In other words, when IT is keenly focused on business outcomes and plays a significant role in optimizing and improving core value-chain processes. Or, when the IT organization drives innovation that enables new technology-enabled product and service revenue streams. When IT is effective, results can be measured by improved customer satisfaction and market share gains.”

In contrast many CIOs can find themselves boxed into somewhat of an operational corner – Responsible for keeping the lights on but perceived as poor value-for-money and as a result unable to attract new funding to modernize the deadweight legacy systems, a paradox and trap.

The IT Process Institute describe how CIOs can break this constraint cycle and shift from a cost focus to delivering strategic value for the business, through this three-step progression, and by doing so, breaking the Innovation Gridlock.

In this document they offer a blueprint for a Cloud Maturity Model, a ladder of maturing capability that you can compare your organization to, and use as a framework to plan your own business transformations, where:

“This cloud computing strategy brief presents a virtualization- and private-cloud-centric model for IT value transformation. It combines key findings from several primary research studies into a three-stage transformation road map.”
In short this is an ideal strategy blueprint for any existing VMware customers – It proposes a 3-Step maturity model that begins with virtualization and grows into full utilization of Cloud computing across three stages of:

1. **IT Production** – Focus on delivering the basics and proving value for money.
2. **Business Production** – Utilize technology to better optimize business processes.
3. **ITaaS** – Fully embrace utility IT as a Service, and leverage technology for enabling new service innovation.

This corresponds with an increasing maturity in the use of virtualization, SaaS and other Cloud architecture principles and external services, that begins with where many customers are now, mostly half way through phase one, completing their adoption of internal virtualization.

**Technology is embedded in the firms value proposition**

The same improvement steps are repeated in the IT Strategy Alignment work also from the IT Process Institute, where they build on previous research from McKinsey that describes three main ‘IT archetypes’, three distinct stages of assessing IT organization maturity:

1. **Utility Provider** – The IT organizations is predominately operational, only responsible for running the common IT infrastructure, such as email or servers for the accounting software, but playing no role in defining how they are strategically employed. Typically they report to the CFO as a cost centre.
2. **Process Optimizer** – Increasingly the IT team starts to engage more proactively with the business, at the individual department level helping them better optimize their business processes.
3. **Revenue Enabler** – Technology becomes a core component of strategic planning, directly enabling product innovation and competitive advantage, reporting to the CEO.

This corresponds with the same end goal of Robert Golds matrix, where the pinnacle of achievement is that “technology is embedded in the firms value proposition”.

It is eloquently described by the world’s most regarded management guru Michael Porter, who recently described that we are entering a third era of how IT can be applied to achieve competitive advantage, the
era of the Internet of Things.

Previously technology wasn’t an integral part of products, it was used only to automate their surrounding operations like sales and distribution.

Now, through embedded sensors, processors, software and connectivity, technology is becoming part of products directly, and from this new opportunities for competitive advantage emerge. Businesses that integrate technology directly into their products, like ‘Wearables’, are achieving this ultimate position of technology maturity, embedding it into their firms value proposition.

Investing in Cloud computing will build a platform for the IT organization to progress through these maturity scales, first enabling greater process optimization and then ultimately becoming a strategic asset that underpins new growth for the organization.
ODCA: Cloud Maturity Model - Business strategy enabled by Cloud

by CBPN Admin - Thursday, April 30, 2015

http://cloudbestpractices.net/listing/odca-cloud-maturity/

The Open Data Centre Alliance offers a comprehensive framework for enterprise organizations to assess and plan their Cloud roadmaps, their Cloud Maturity Model:

This describes a journey from CMM Level 0:

- Legacy apps all on dedicated infrastructure
- No use of IaaS
- No ALM processes
- Business context is missing

..to a fully mature CMM Level 5 capability, featuring:

- Cloud Aware Applications deployed according to governed business requirements, across public, private and hybrid platforms
- Federated multi-cloud via open standards
- Automated deployment and management

An ideal companion document is their Business Strategy Enabled By Cloud guide. This then provides an enterprise planning framework for setting a Cloud strategy that references this maturity model and utilizes it to plan a Cloud Roadmap for maturing the capabilities of the organization, encompassing:

- Maturity model to define business strategy linkage and plan capabilities
- Skills and team models – Who will drive implementation?
- Cloud adoption blueprints – How will this be achieved?
- Organizational change – Transforming the IT organization
- Governance and performance reporting
- Portfolio analysis and application/data categorization
- Rolling out the plan – Communications program
HP - Enterprise DevOps maturity model

by CBPN Admin - Sunday, August 09, 2015

http://cloudbestpractices.net/listing/hp-enterprise-devops-maturity-model/

Enterprise DevOps is the adoption of new, faster software development methods into the enterprise, and HP offers a maturity model for assessing and planning this scenario.

HP says that other DevOps maturity models focus only around building a Continuous Development pipeline, whereas theirs provides a more holistic option as it considers the full application lifecycle, breaking down all the component work activities and measures maturity across three main dimensions of:

- **Process maturity** – How the organization manages projects successfully.
- **Automation maturity** – The automation platform for managing software development and deployment.
- **Collaboration maturity** – How effectively the different departments and teams work together

This provides executives with a holistic framework as often tools and techniques can be over-emphasized given the large challenges that also exist because of organizational complexity, and maturing those is equally important to progress to an overall CMMI Level 5.

It also accurately observes that the software development process could span outsourced suppliers.
Cloud Aware Applications

by CBPN Admin - Sunday, August 09, 2015

http://cloudbestpractices.net/listing/cloud-aware-applications/

Going Cloud Native

In the ODCA white paper Architecting Cloud Aware Applications the authors describe a general framework for assessing the maturity of your applications against a scale of ‘Cloud Awareness’, as well as a set of characteristics defining this ability and how they can be achieved.

The paper identifies what is probably the most critical inflection point of the Cloud computing trend: This is that yes, you can migrate existing legacy applications that are built with a traditional three-tier architecture ‘as is’ to a Cloud provider simply by virtualizing and hosting it, but that also there is also a new class of application, one that has been re-engineered as part of migrating to the Cloud, to become more naturally part of it. I.e. A Cloud Aware Application architecture is now a specific alternative to a three-tier one.

As the name suggests the core principle is that applications are increasingly becoming abstracted from and then self-aware of the infrastructure they utilize to operate, what JP Morgenthal describes as the next developer revolution, a shift to building ‘Cloud Native’ applications.

The ODCA paper identifies a number of foundation decoupling steps:

Network abstraction: Don’t hard-code IP addresses, use HTTPS.

Utilize auto-scaling: Make use of the Cloud providers ability to scale resources.

REST, OAuth single sign-on and secure APIs: Be openly integrated with other Cloud applications, securely.

Separate application configuration data and store it in the Cloud, using technologies like Apache Zookeeper
In general increasingly relying on the Cloud for a number of underlying sub-components, rather than programming them yourself, engendering portability across multiple Cloud providers.

**Maturity Model**

They describe a Level 0 starting point of simple virtualization, the point where most enterprise users are today on this journey.

This then progresses through a process of de-coupling application software from the underlying hardware it operates across, and then for it to become increasingly autonomous in managing its own system needs, such as auto-scaling resources up and down in response to demand, like storage, bandwidth and compute.

This guide includes a maturity model which describes an application architecture transformation journey of four key stages:

0 – Virtualized: The aa (as most are today)

1 – Loosely Coupled: Application is composed of loosely coupled services.

2 – Abstracted: Services are stateless and infrastructure agnostic.

3 – Adaptive: Apps can self-migrate across multiple Cloud providers.

The paper concludes by saying that organizations need to invest in the new skills required for developers to evolve applications this way, freeing them from spending large amounts of time working on low-level, low-value technical tasks so that they can deliver massively scalable, complex applications that are simple to modify and can easily integrate with their existing systems.

**Netflix – Microservices Continuous Deployment**

The headline example that the paper references to illustrate these principles is a Netflix case study, using them as a reference model to describe Microservices, a foundation component of this new architecture, and how they harness the approach to greatly improve resiliency and software deployment throughput.
DRaaS

by CBPN Admin - Tuesday, August 25, 2015

http://cloudbestpractices.net/guides/disaster-recovery/

Disaster Recovery as a Service

DRaaS refers to utilizing Cloud providers for your backup and business continuity needs.

Gartner DRaaS Magic Quadrant

Based around the Gartner Magic Quadrant model, that can be downloaded courtesy of Actifio, this guide details a blueprint for best practices and a vendor directory listing.

The primary distinction the MQ makes is to define three classes of Service Models: DRaaS, IaaS and BaaS, which are delineated by how much the customer manages the process on their own, versus outsourcing to a managed service.

- Infrastructure as a Service: A self-service ‘DIY’ option where the customer utilizes IaaS as a resource for backup and recovery
- Backup as a Service. A managed, utility service from a provider who backs up customer VMs.
- Disaster Recovery as a Service – A full service DR outsourcing, including up to global, enterprise scale

Download: DRaaS Solution Guide
Cloud Best Practices

Global best practice standards for adopting Cloud Computing

PDF generated August 28, 2015 at 8:55 AM by CBPN.