

Managing Cloudized IT Environments

Rania Al-Maghraby, MSc, ITIL, TOGAF

Management Consultant, The OneWayForward Inc., Egypt
rania@onewayforward.info

March 2016



The OneWayForward Inc. Publishing
<http://www.onewayforward.com>

A Sole Proprietary Management Consultation Firm

Mailing Address: Post Box #112, Sheikh Zayed Post Office, 6th of October, Giza, Egypt, Postal Code: 12588

Website: <http://www.OneWayForward.com>, Email: contact@onewayforward.com, Mobile: +2 (0) 111 360 55 33

Commercial License # 42678, Commercial Register # 15731, Tax ID # 376-625-759, 6th of October, Giza, Egypt
US Tax ITIN: 923-99-9817

"The wise is who holds himself accountable and works for what's after death; and the helpless is who follows his inclination, wishing from God false wishes."

Mohammad (PBUH)

Table of Contents

<i>Abstract</i> -----	4
<i>Introduction</i> -----	4
<i>Service Strategy</i> -----	5
<i>Service Design</i> -----	7
<i>Service Transition</i> -----	9
<i>Service Operation</i> -----	10
<i>Continual Service Improvement</i> -----	12
<i>References</i> -----	12

Managing Cloudized IT Environments

Abstract

With the increasing trend of adopting cloud technologies, IT departments, as IT service providers, are now virtualizing their environment to benefit from cloud promises. With this come challenges of how to adapt IT service management practices to preserve service levels and meet customer expectations and our commitments within the new environment. This paper explores how various ITSM processes can be applied to cloud IT environments, and what adjustments will need to be made to each process so that maximum benefit is gained from cloud offerings, while maintaining the business bottom line. We follow the service lifecycle phases as defined in ITIL framework, addressing each process individually, summarizing key points to adapt it to cloudization.

Keywords: *ITSM, Cloud Computing, Virtualization, ITIL, IT Service Management, IT Management, ISO20000*

Introduction

Cloud computing is no longer a new buzzword, it's getting main stream trend already, and adoption of cloud technologies is a decision that an increasing number of organizations are making. Migration to the cloud is expected to pay off quickly and significantly in terms of costs and operational resilience, making it a logical step for any organization looking forward.

In cases, this can be a decision made at a corporate senior management level, but it's more common that IT departments are the initiators of these movements by taking the first steps to virtualize their environment, moving to the cloud, and making the business case to promote this movement across other parts of the business. As a champion and enabler of cloud adoption in organizations, the IT department should be fully aware of the implications of shifting IT assets and operations from physical in-house environment to cloudized environment, to be able to truly gain benefits, and also to be persuasive in front of the business customer, equipped with convincing rationale.

To this end, the IT department/IT service provider needs to consider what changes or modifications need to be made to their established ITSM processes and practices, so that the move can be made smoothly, with minimal disruption to all stakeholders of those processes.

In the remainder of this paper, we will explore what are the implications of moving to the cloud on each of the ITSM processes in each phase of the service lifecycle according the ITIL framework, considering how it can be adapted and still be relevant to capitalize upon cloud benefits. Not all details of the process is presented here, only considerations related to cloudization.

Most of the discussion is intended to be neutral and not based on specific cloud provider technology. However, specific implementation will need to consider specific features enabling your cloud environment. In addition, CSFs and KPIs of each process will need to be adjusted for new measurement methods applicable to the cloud environment.

Service Strategy

The following are the processes performed in the Service Strategy stage of the service lifecycle, and main implications of cloudization on each of them:

Service Portfolio Management

- Evaluation, selection, and authorization of services will take in consideration capabilities of what can be done using cloud technologies. This usually means more flexibility and more initiatives taken.
- Prioritization and resource allocation will benefit from elasticity of increasing/decreasing capacity on demand (auto-scaling), which will alleviate lots of constraints on resources and increase number of initiatives to be pursued.

Financial Management

- Regardless of whether the IT department is in charge of their financial decision or is it the responsibility of a higher organizational role, the main driver of moving to the cloud is cost saving.
- CAPEX can be almost eliminated, making the company own no resources and just hiring on demand, and OPEX will be significantly reduced because overhead costs (cooling, power, floor space, maintenance, etc.) will no longer be taken care of by the IT department.
- The term 'Cloud Economics' is now being used to include all cloud related budgeting, accounting, and financial matters, usually inferring that cloud technologies are of economical value (pay on demand, zero CAPEX, low OPEX, etc.)

Business Relationship Management

- The main point is to get all business stakeholders buying into the cloud environment, and align the articulated benefits from the move to the cloud with their individual objectives, showing how that move is for better fulfillment of their needs.
- Organizational, behavioral change, getting staff familiar with new tools, interfaces, systems, etc.
- How more business needs can be accommodated in light of the new environment.
- The customer base can be widened by utilizing globally distributed network of resource centers offered by the cloud provider, facilitating reaching to more regions/customers at a satisfactory level of service performance (business development).

Strategy Management

- Define 'Cloud Strategy' to be part of the ITSM strategy, aligned with the overall business strategy. Cloud Strategy should define which cloud technologies will be used, cloud supplier strategy (in conjunction with Supplier Management process), what of our services/service components will be migrated to the cloud and why, performance criteria, etc.

Demand Management

- With expected flexibility and elasticity of the cloud environment, more demand can be accommodated.
 - It's no longer an issue when demand is fluctuating, expectedly or unexpectedly, as resources are commissioned and decommissioned automatically.
 - Still need to study patterns of business activity to be well prepared for fulfilling them, although not worrying about scaling the underlying resources.
-

Service Design

The following are the processes performed in the Service Design stage of the service lifecycle, and main implications of cloudization on each of them:

Design Coordination

- Define the 'Cloud Architecture', a new layer in the service architecture layers (in addition to the infrastructure layer, application layer, data layer, environment layer, etc.), and consider impacts of cloud technologies on how the other architecture layers are being implemented for each service.
- Design your cloud environment with all connected components. Consider consolidation between your local environment and cloud environment as needed.

Service Level Management

- Service level monitoring and reporting will be based on the monitoring and reporting tools offered by the cloud provider. This should be one of the selection criteria used for choosing your provider from the beginning.
- As the IT department is now a customer for the cloud provider, you will have some of your SLA terms with your customers governed/determined by the agreed terms in your SLA with the cloud provider. Make sure of this alignment.

Service Catalogue Management

- Since the service catalogue contains all details about live services, design and content of the service catalogue will need to be reviewed to reflect new information about each service.
- The technical view of the service catalogue will need to detail the technical information of the cloud environment underlying each service as you designed it.
- The service catalogue itself can be cloud-based, i.e. implemented and hosted on the cloud, sourced from there to various presentation channels.

Availability Management

- Availability plan will benefit to a large extent from the resilience of the cloud and replicated resources on various cloud hosting locations.
- This is one of the key features that the cloud provider will be the main accountable for. However, the IT department is still in charge of making their own arrangements in the unlikely case of cloud failure at the supplier side, or technical failure at the IT department side preventing them from reaching to the cloud.

Information Security Management

- Security is two-fold property of the cloud, an aspect that's receiving most debate in the arena of cloud adoption. While cloud providers are promising ultimate security mechanisms to protect their customer assets, failure can always happen. Besides, some suspect information disclosure to the cloud provider or by the cloud provider to other parties.
- On the other side, because of the larger specialized capabilities employed at the cloud provider side, customers can be assured that they are at least more secure than their local in-house environments.
- IT departments migrating to the cloud can use their technical and professional judgment as to what to move to/interface with the cloud and what to preserve locally in secured facility, and incorporate this in their information security policy and risk management plan.

Supplier Management

- The cloud provider is one of the key suppliers, and relationship with the cloud provider should managed closely. Mode of contracting will depend on the size of both the cloud provider and the IT organization, where standard agreement can be used, or special customized deals can be negotiated.
- Criteria should be defined for selection of cloud providers and for monitoring and managing performance of their services.
- More than one cloud provider can be used for building your cloud environment, based on capabilities and strengths of each.
- Other suppliers need to be evaluated and managed based on how capable are they for enabling and supporting your operation in the new cloud environment.

Capacity Management

- Auto-scaling of the cloud environment will enable the IT department to balance capacity with demand automatically based on pre-defined settings in the cloud management system offered by the cloud provider.
- This applies to different levels of capacity management; business, service, and component capacity management, for services that have been migrated to the cloud.

IT Service Continuity Management

- Normally, cloud providers utilize redundancy mechanisms in their cloud infrastructure, which guarantees service continuation in case of disruption, by switching instantly to backup/mirror systems in an automatic, transparent manner.
 - The IT department still need to make their own arrangements in the continuity plan and risk management plan for the unlikely case of cloud failure at the supplier side, or technical failure at the IT department side preventing them from reaching to the cloud.
-

Service Transition

The following are the processes performed in the Service Transition stage of the service lifecycle, and main implications of cloudization on each of them:

Transition Planning and Support

- Scheduling and allocation of resources for initiatives to be transitioned is carried out by configuring the cloud environment accordingly to prepare in advance for provisioning of needed resources.

Change Management

- The IT department still have complete control over their IT resources and decisions related to the cloud environment. Change evaluation and authorization chain will remain largely the same, expected to be facilitated and more enabled by flexibility of the cloud.

Service Asset and Configuration Management

- IT departments, by migrating to the cloud, are choosing to refrain from owning physical assets, and replace that by hiring resources owned by the cloud provider on demand, supporting their green agenda on one hand, and alleviating their burdens on the other hand.
 - Consider how to dispose from no longer needed data centers and other assets in a constructive way.
 - IT departments will still need to own some assets for their critical resources (see Availability Management and Continuity Management above).
 - Alternatives to CMDB and CMS will be offered through the cloud provider for management purposes. You will still need to manage all of your assets and configuration items (whether they are physical in your place or virtual on the cloud) in a consolidated system.
-

Release and Deployment Management

- Depending on whether development activities were based on traditional environment or based on the cloud environment, releases are packaged in the development environment and made ready for deployment to the cloud.
- Similar to traditional environment, deployment on the cloud can be made one shot or phased deployment, depending on the criticality of the service, and urgency of the customer needs. Stability shouldn't be a source of worry in cloud environments as they are supposed to be reliable.
- Baselines, backup, and remediation plans need to take in consideration specific actions applicable to the cloud environment.

Service Validation and Testing

- Validation and testing should be carried out in a testing environment that's identical to the live production environment in which services will be used in actual operation. For services that are deployed on cloud resources, or having components deployed therein, testing should be performed in the same cloud environment before launching the service in operation.
- Some cloud providers offer certain tools intended to allow for cooperation between developers and testers on cloud, simulating various user system platforms without actually having to purchase and setup those platforms in your own location.

Change Evaluation

- The IT department still have complete control over their IT resources and decisions related to the cloud environment. Change evaluation and authorization chain will remain largely the same, expected to be facilitated and more enabled by flexibility of the cloud.

Knowledge Management

- Capitalizing on your learning curve from use of cloud technologies to build a related knowledgebase along with your existing knowledge sources.
- Benefit from the knowledgebase and support tools presented to you by the cloud provider.
- Consider basing your knowledge management system itself on cloud components.

Service Operation

The following are the processes performed in the Service Operation stage of the service lifecycle, and main implications of cloudization on each of them:

Incident Management

- Escalation to second/third line support will mean escalation to cloud provider support team, as they are in charge of the actual physical resources in their centers.
- All incident records need to be maintained in systems consolidating local environment with cloud environment.

Problem Management

- In some cases root cause analysis may need to be escalated to cloud provider support team for physical investigation.
- All problem and known error records need to be maintained in systems consolidating local environment with cloud environment.

Event Management

- Logs and monitoring tools will be provided by the cloud provider for event management and analysis.
- Reporting dashboards of the cloud environment are also analysis tools available from the cloud provider. These are sometimes offered as programmable APIs to construct your own customized charts.

Request Fulfillment

- Cloud offerings can make fulfillment of service requests much faster and more efficient. Refer to Support Functions below for service desk notes. The whole process can be automated for directly fulfilling standard service requests through cloud APIs.

Access Management

- Many cloud providers allow organizations to create directory for identity management of their various users, with settings of access privileges and security credentials.
- Create various user profiles for each role of your stakeholders: technical staff, sales, customer, senior management, etc.

Support Functions

- Less IT technical staff will be needed after migrating to the cloud. This is considered to be one of the savings reaped from the cloud.
- Consider the morale and cultural aspects when sizing down IT staff. It's advised that personnel are moved to other functions in the organization based on their set of skills rather than being laid off.
- The service desk function is still as vital as it's always used to be as a single point of contact for users. The mechanisms and tools applied for performing their roles will utilize cloud provider support interfaces, as per an updated process for the service desk function. This should mean more incidents/requests closed on first call.

Continual Service Improvement

The following are the processes performed in the Continual Service Improvement stage of the service lifecycle, and main implications of cloudization on each of them:

7-step Improvement Process

- Utilize performance dashboards offered by the cloud provider (see Event Management above) to view main KPIs of your cloud environment: costs, resource utilization, workload, incidents, etc. Identify where you can improve your services, lower your costs, enhance resource utilization, etc.
- Utilize the knowledgebase you built (see Knowledge Management above) for lessons learned from using the cloud to identify improvement opportunities to better benefit from the cloud and capitalize on its capabilities.
- Refer to customer satisfaction surveys to gauge how well is the cloud improving your performance in front of your customers, as compared to your previous performance based on the traditional environment.

References

- [1] ITIL Foundation Handbook, TSO, 2012.
- [2] Amazon Web Services (AWS) Partner Network (APN) resources.