Understanding Cloud Migration
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Migrating to a Cloud is similar to migrating data and applications between data centers with a few key differences…

- Applications must be selected using criteria including regulatory, business policy and technical design and performance issues

- Cloud environments typically support a limited variety of hardware and software… therefore operating system and middleware remediation and updates are generally required

- Customer specific networks need to be designed within the Cloud environment

- Structured IT discovery and dependency analysis is a pre-requisite for a successful Cloud migration
Successfully operating in a Cloud requires three major activities from initial workload selection to migration to steady state operations.

Select workloads appropriate for a public, private or hybrid Cloud environment
- Assess regulatory, data privacy and business policy issues
- Select workloads based on platform requirements, application maturity, criticalness and Cloud aware applications

Discover the current infrastructure and prepare the Cloud environment
- Identify platform, middleware and application requirements and dependencies
- Remediate / update / transform the OS and middleware stack and applications
- Assess bandwidth and access requirements and design the Cloud network

Migrate and manage the Cloud
- Provision server, storage, network and systems management tools
- Migrate using industry standard tools
- Integrate the Cloud provided systems management tools
Creating a balanced cost/benefit view for selecting workloads to move to cloud can help determine a company’s overall readiness for cloud adoption.

**What is your best cloud fit?**
- SaaS, IaaS, PaaS, PaaS
- Provider / Consumer
- Business/IT Alignment

**Are you ready to implement a cloud?**

**What is the business / IT relationship?**

**Which workloads provide greatest benefit?**

"Gain-versus-pain" sample output

Which workloads can gain advantage from cloud quickly?
Automated discovery tools can help to identify the installed servers, middleware and dependencies to help design the Cloud environment and plan the migration.

**Plan the Cloud infrastructure requirements**
- Determine the current server capacity requirements
- Identify the current middleware and compare to availability in the Cloud
- Help discover server dependencies to create affinity groups and move waves

**Quick to deploy and produce results**
- A simple script is copied onto each server and requires no agents
- Script produces data files provided to IBM for post processing
  - Basic server configuration and installed middleware
  - Graphical depictions of server-to-server dependencies
  - Multilevel server dependency analysis

**Deployed WW and supported globally**
- 180+ engagements, 150,000 servers in more than 30 countries
- Multiple language support available
Clients should document and assess their currently installed technology and the technology that is available in the Cloud.

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<tr>
<th>Assessment Areas</th>
<th>Remediation Strategy</th>
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<tr>
<td>Will the current OS versions be provisioned in the Cloud?</td>
<td>• Document available OS and upgrade as required</td>
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<tr>
<td>Can the current middleware be provisioned in the Cloud?</td>
<td>• Assess Cloud vendors bare metal capability</td>
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<td>What level of computing resources (CPU, memory, I/O and disk) are required to support the workload?</td>
<td>• Perform a resource utilization study including peak, mean and time of day analysis</td>
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<td>• Apply clients IT standards to resource requirements</td>
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<tr>
<td>Can the current storage design be provisioned and supported in the Cloud?</td>
<td>• Assess and redesign as required</td>
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<td>• Assess storage tiering and virtualization approaches</td>
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<tr>
<td>Which system ports are reserved by the Cloud provider?</td>
<td>• Document available ports</td>
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<td>• Re-assign ports as required</td>
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<tr>
<td>Does sufficient bandwidth exist to accomplish image and data migration in the time required?</td>
<td>• Provision additional bandwidth</td>
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<td>• Adjust migration schedule</td>
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A Virtual Private Cloud (VPC) within a public network will help to ensure data and application security

**VPC within a public Cloud**
- Control and limit inbound and outbound internet connectivity
- Configure load balancing to manage inbound requests
- Control access to applications and networks
- Create security zoning for similar security requirements
- Consider dedicated vs virtualized network components such as load balancing, firewall and VLAN implementations
Workload can be moved using combinations of several move methods depending on the infrastructure complexity and volume of data to be migrated.

**Cloud Migration Methods**

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<th>Description</th>
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<td><strong>Image Migration</strong></td>
<td>Images and data are migrated logically, typically using migration tools such as VMotion, Platespin or Racemi.</td>
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<tr>
<td><strong>Storage Migration</strong></td>
<td>Data is migrated using storage array based tools or appliances such as IBM's Storage Volume Controller.</td>
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<tr>
<td><strong>Build New</strong></td>
<td>The Cloud environment is built from the hardware up using the clients standard software stack and tools.</td>
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**Complex environments** | **Large data requirements** | **Simpler environments**
The process to migrate to a complex Cloud environment is similar to moving data and applications between data centers*

- Setup VPN connectivity
- Deploy Replication Appliance and verify replication is enabled
- Verify the VPN SA is running and allowing the required communication paths
- Connect the sites and enable replication as per VM/VMDK
- Choose the target site, vSphere Replication Appliance and datastore in the Wizard
- Choose replication options and recovery settings in the Wizard
- Confirm replication
- Recover the VM for a Migration event and verify VM

*Example migration using VMware tools
For simpler migrations Cloud specific tools can automate much of the migration process

- Obtain an account and API keys from the Cloud provider
- Download and install the Migration Agent or Wizard
- Select the source server and destination server in the Cloud location
- Select the destination server size, type, memory, disk and other available options
- Specify the target server name
- Initiate the migration and run post processing if required
Systems Management and Operational considerations need to be documented and integrated into the clients systems

**Management and Downtime, planned and unplanned**
- When and what duration are the maintenance windows required by the Cloud vendor
- How far in advance and by what process will the client be notified of unplanned downtime
- What service level agreements including response times and penalties are available
- What level of systems management interface is required

**Scalability of capacity**
- How quickly can new infrastructure and services be provisioned
- Is the capacity provisioned in a single or multiple data centers and can the client specify the locations

**Systems backup capability**
- What data should be backed up, to where and on what schedule
- How is data security ensured
IBM is helping a mid sized, industrial sector client design, build and migrate to a SoftLayer cloud environment

Our clients scope

- Newly formed organization from a divestiture
- 49 server SAP production environment designed to operate on a SoftLayer virtualized and bare metal environment
- Expected to double the size of the cloud environment within 12 months
- Required secure connectivity from SoftLayer to external systems

How IBM helped our client

- Designed the cloud infrastructure to maximize growth potential with minimal cost
- Designed the Virtual Private Cloud (VPC) to ensure data and application security
- Installed and configured new platforms with OS, middleware and SAP systems
- Migrated data from the legacy infrastructure
IBM has the skills, resources and tools necessary to help quickly plan and implement your migration to a Cloud environment

**IT infrastructure migration that matters!**
- 200+ complex migrations every year where downtime is minimal and unplanned application outages are not acceptable
- ‘000’s of simpler migrations every year where speed and low cost are key factors
- Dedicated team of migration practitioners augmented by technology and migration SME’s in IBM’s Center of Competency
- IT discovery tools (ALDM) to quickly help document the current environment and help design the Cloud infrastructure
- Dedicated WW team to assess network latency issues and suggest resolutions

**Cloud experience that matters!**
- 9,000+ cloud engagements, with more than 5,000 on private cloud
- 10 IBM data centers exclusively dedicated to cloud
- 3,000 IBM field experts supporting cloud; thousands more researching cloud breakthroughs in 13 cloud development labs
- 5.5M client transactions and 2B client documents exchanged on IBM’s B2B cloud daily
- 1M users and 300,000 client-based trading communities connected globally via the IBM Cloud
IBM’s commitment to the Cloud computing model

SoftLayer, An IBM Company

**IBM Commits $1.2 Billion to Expand Global Cloud Footprint**
Builds a Massive Network of Local Cloud Hubs for Businesses Worldwide with 40 Data Centers Across Five Continents
Source: IBM, January 17, 2014
Thank you. Please connect with us as below to learn more

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