Mark Szynaka

- With a background in managing one of the largest global financial networks, Mark brings his network monitoring, security and ITIL best practices to the cloud

- He helps enterprise IT investigate and implement cloud computing architectures—public, private and hybrid—using Amazon Web Services, terremark/Verizon and Rackspace technologies

- Mark is the inventor of the AutoBaseliner

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Cloud*e***Broker**

What are Cloud Templates?

Server and Application Configurations

IaaS	PaaS	SaaS
IaaS provides the basic infrastructure	PaaS and SaaS don't allow you to control the servers	

Cloud templates are offspring of enterprise standard builds

IaaS	Templates	PaaS	SaaS
IaaS provides the basic infrastructure	Templates live between IaaS and PaaS and allow control of servers	PaaS and SaaS don't allow you to control the servers	

What are the Types of Cloud Templates?

Four levels of templates			
Basic server	**Full server**	**Application**	**Off-the shelf**
Machine image with OS	Basic server plus configurations	Server with app configuration	Turnkey app server
IaaS provides	Boot up and operational tasks baked in	Application loaded and allows you to configure	Pre-configured and application support available

Which Template Model Is Right for You?

- Pick the **starting point** which is right for your team
  - Good for IT shops that know what they want
  - Don't want to build it themselves from scratch
  - Don't want to lose control of the platform and applications

Function	Example	Server & OS	OS config	Operations config	Application load	Application pre-configured
IaaS Machine Image	AWS, Linux AMI	Yes				
Server Template	MySQL Server	Yes	Yes	Yes		
Application Template	Rightscale, MySQL Server	Yes	Yes	Yes	Yes	
Application Appliances	JumpBox, LAMP	Yes	Yes	Yes	Yes	Yes

Template Models Compared

- Pick the **build** which is right for your team

Function	Example	Pros	Cons
IaaS machine image	AWS Linux AMI	Get flexibility of platform size OS with patches	Requires operational configuration
Server template	Linux server With boot tasks	Scripting using Chef or Puppet Provides control of Configuration	Management of the script is owned by the IT department.
Application template	Rightscale MySQL server	Boot and operations scripting is managed by the configuration tool service.	Usually requires an agent be installed to perform the configuration
Deployment Template	Rightscale deployment	Allows for grouping of servers such as load balancers, firewalls, web & DB servers	Additional cost for the configuration tool service
Application Appliances	JumpBox LAMP	Get a running application with default configurations & application support is available	Application support is available as long as you don't change the underlying configuration significantly. More tied to the vendor than your own build

Benefits of Using Templates to the IT Manager

- Running start for DevOps
  - Test multiple options quickly and cheaply

- Clone the build that is right for you

- Disaster recovery
  - Have clones waiting to spin up for DR

- Training
  - IT Staff can train on exact replicates of production

Cloud Configuration Management

ITIL configuration and change management

Scripting tools to create your own builds

Configuration management SaaS to create and manage configurations

Puppet and Chef

- Two leading configuration scripting tools

- Scripts the instructions for configuring OS and applications

- Image launch script creates the server build

- SaaS configuration tools front-end **Chef** and **Puppet**
  - Walk you through the scripting
  - Catalog builds
  - Group servers for deployment

Example of Chef Script

```
service "mysql" do
    supports :restart => true
    action :enable
end

 if ['solo', 'db_master', 'db_slave'].include? node[:instance_role]
    template "/etc/mysql.d/custom.cnf" do
    owner 'root'
    group 'root'
    source 'custom.cnf.erb'
    notifies :restart, resources(:service => 'mysql')
    end
end
```

Configuration Management SaaS

- Walk you through the build process
  - Options with explanations

- Catalog your builds
  - Organize for DevOps and change management

- Clone management
  - Keep original version and spawn copies

- Patch management

Example of Configuration SaaS

RIGHT SCALE

Name	Description	Example Values
DB_LINEAGE_NAME	Enter the name that will be used for the backup snapshots of the database.	text:myweeklysnapshot
MASTER_DB_DNSID	Enter the ID that points to the **Master Database Server's** DNS Record, which maps to its private IP address. See <u>Domain Setup</u>.	DNSMadeEasy: 1234567 DynDNS: db-master.dyndns-home.com Route 53: Z3DSDFSDFX:db-master.aws.site.com **Note**:If Route 53 is used, the Time-To-Live (TTL) for the A Record must be 60 seconds, otherwise the script will fail.
MASTER_DB_DNSNAME	Enter the Fully Qualified Domain Name (FQDN) that points to the **Master Database Server**. See <u>Domain Setup</u>.	DNSMadeEasy: master1.example-dnsname.com DynDNS: db-master.dyndns-home.com Route 53: db-master.aws.site.com
SLAVE_DB_DNSID	Enter the ID that points to the **Slave Database Server's** DNS Record, which maps to its private IP address. See <u>Domain Setup</u>.	DNSMadeEasy: 1234567 DynDNS: db-slave.dyndns-home.com Route 53: Z3DSDFSDFX:db-slave.aws.site.com **Note**:If Route 53 is used, the Time-To-Live (TTL) for the A Record must be 60 seconds, otherwise the script will fail.

Off-the-Shelf vs. Templates

- Templates allow you to design and manage the build
- Off-the-shelf appliances are turnkey, pre-configured OS and applications servers
- Your server to operate, ready to run

 (Almost 1,000 builds)

Off-the-Shelf Example

AWS Marketplace

MySQL Databases by OpDemand

Sold by OpDemand

Free trial, then from $99 per month

Software as a Service

OpDemand makes it simple to manage your MySQL database on AWS. Get up and running fast with pre-built templates. OpDemand's orchestration technology makes managing cloud ...

Xeround Cloud Database for MySQL Applications: PRO Edition

Sold by Xeround

Free trial, then from $75 per month

Software as a Service

Xeround is an elastic, always-on database-as-a-service for MySQL applications. Xeround PRO is designed for mission-critical applications and provides both unlimited automatic ...

MySQL Relational Database provided by JumpBox

Version v1.7.14 app v5.1.67 | Sold by JumpBox

$0.01 to $0.05/hr for software + AWS usage fees

Linux/Unix, Ubuntu 10.0.4 | 32-bit Amazon Machine Image (AMI)

MySQL is probably the most widely used relational databases around. It's used as an integral component in many JumpBoxes and is also useful to have available in an easy to ...

Cloud Portability of Templates

- Check the portability of your off-the-shelf and configuration tools templates

- Be aware of IaaS-specific calls; APIs and services

- Leveraging IaaS functions makes you less portable

- Build multiple IaaS versions and test
  - Design using generic concepts
  - Deploy using IaaS specific configuration

Cloud Portability of Appliances

- Application appliances list out the IaaS compatibility
  - Check any caveats and test

- Testing must include full infrastructure
  - Data stores, APIs, SDN, DNS, load balancing

- Building parallel IaaS configurations
  - Redundancy
  - Disaster recovery

Development Operations

- Multiple competing systems can be tested
  - Spin up a basic default configuration & begin

- Iterations on testing can be expedited
  - Test, tweak, promote or shutdown

- Development can be isolated from production
  - Cost-effectively enables full development environments

Interoperable Template Design

- Design using generic concepts, deploy using cloud-specific configs
  - Leveraging IaaS unique APIs or features locks you in

- APIs differ
  - Different set of resources
  - Different formats and encoding

- Infrastructures differ
  - VLANS, Security, NAT

- Create cloud specific builds and deployments
  - APIs, data storage, backups
  - Always test before you need to use it

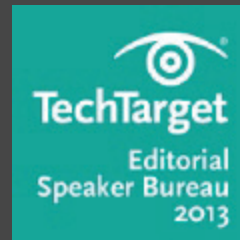Even if the template says it operates on another cloud,

Test it.

Before

you need to use it,

test it. Always.

Summary

- Get the template which is right for you

- Leverage but don't be constrained by standard builds

- Test multiple configurations in DevOps

- Lock down the config that works & clone

- Build interoperable designs to avoid IaaS lock-in

Mark Szynaka

Founder of CloudeBroker

Specializing in cloud architecture

Thank you!

Questions?