RED HAT CONSULTING SOLUTION:
A holistic approach to advanced cloud migration

More Than Just Moving VMs

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The Challenge
Implementing an Infrastructure Change

Success Requires...

1. **Building a new platform**

2. Discovering needed workload requirements as it relates to the new platform.

3. **New platform** Management needs. How are you going to manage the new requirements and processes?

4. A well-designed infrastructure **well managed** is the **goal**: security, governance, reporting, self service, planning, remediation.

5. Enabling the **people and process** to effectively manage change
How Complex can it be?
MORE THAN JUST MOVING VMs

Migration Success Requires...

1. **Understanding current and future-state architecture**, even when current-state is not fully documented
2. Mapping **applications** to migration and modernization patterns
3. A **platform** to orchestrate the migration, preserving VM relationships and application ordering
4. A well-designed **infrastructure**, capable of processing the effort at scale
5. Enabling the **people and process** to effectively manage change
Apply the portfolio to the challenge

Red Hat Infrastructure and Management Portfolio

Infrastructure - Red Hat Virtualization, Red Hat Openstack, Red Hat Insights

Management Portfolio - Cloudforms, Ansible Tower, Red Hat Satellite

  Cloudforms - Cloud Management Platform and Orchestration
  Ansible Tower - Configuration Management and Automation
  Red Hat Satellite - RHEL licensing and configuration management
Achieving a managed infrastructure using Cloudforms and Ansible
AN EVOLUTIONARY PATH TO HYBRID CLOUD

**RED HAT CLOUDFORMS**

- Service Automation
- Policy & Compliance
- Operational Visibility
- Unified Hybrid Management

**CONTAINERS**
Red Hat Atomic | OpenShift by Red Hat® with Docker | Kubernetes

**VIRTUALIZATION**
- VMware®
- Microsoft® Hyper-V
- Red Hat Virtualization

**PRIVATE CLOUD**
- Red Hat® Openstack Platform

**PUBLIC CLOUD**
- Amazon® Web Services
- Windows Azure
- Google® Cloud Platform

**SOFTWARE DEFINED NETWORKING**
- Nuage Networks
- Neutron

**ORCHESTRATION**
- ANSIBLE Tower
CloudForms is an Advanced Cloud Management Platform & Automation Engine designed for managing Private/Public clouds for multi-regional deployments.

Key Cloud Management Benefits:

- **Service Automation** – Streamline complex service delivery processes for workloads with application business logic
- **Operational Visibility** – Complete lifecycle and operational management across Clouds for both IaaS & PaaS silos
- **Policy & Compliance** – Draws on continuous monitoring and deep insights to raise alerts and remediate issues
- **Unified Management** – Reduce VM & Container sprawl across Private & Public Clouds in a federated ecosystem

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Diagram explaining CloudForms as a part of the Red Hat ecosystem with integration points for Developer Community, Custom UI + Service Catalogue, API Mgt Platform, CMP Engine, and CloudForms as the core platform.
WHY CLOUDFORMS IS A PERFECT MATCH FOR MOST ORGs

• **Agentless** – Built to support hyperscale deployments (>100K) in a Federated regional deployments

• **100% Open Source** – based on ManageIQ Open Source Project; Google 2nd largest contributor

• **Proven Track Record** – Runs the largest Financial sector & Telco cloud environments

• **Supports Everything** – Supports all major VMs, Physical and Virtual; Top 3 Public Clouds (AWS, Azure, Google)

• **Containers & Kubernetes** – Ability to manage Containers natively with complete insight into Kubernetes

• **Deploys Fast, Virtually + Auto- Discovers Assets Continuously** – continuously discovering assets that are added or deleted in the cloud environment

• **Strong Automation & Governance Engine** – Tags everything, manages migration and integrates easily in existing CI/CD tool chain with role-based access control, multi tenancy, identity integration for LDAP; SCAP and STIG hardened

• **Integrates Simply in Existing Management Framework** – Protect your investment, CLOUDFORMS contains a full reporting engine that can be used to report on any data that is available and/or can integrate easily (API) into existing reporting and services framework
CLOUDFORMS – FEDERATED DEPLOYMENT

Principal Regional Design
- Each Datacenter operates independently and only manages the VMs that are assigned to it
- Each Data center runs a redundant CloudForms Database and UI nodes
- Datacenters with multi-zones share CloudForms DB and UI nodes

Federated Architecture
- CloudForms Master Nodes (UI/DB) is Federated across Datacenters and Regions
- Master CloudForms has its own set of redundant set of DB & UI nodes
- Master CloudForms Nodes provides centralized reporting
WHAT CLOUDFORMS CAN DELIVER FOR YOU

SERVICE AUTOMATION
Streamline complex service delivery processes, saving time and money.

POLICY & COMPLIANCE
Draws on continuous monitoring and deep insights to raise alerts or remediate issues.

OPERATIONAL VISIBILITY
Complete lifecycle and operational management that allows IT to remain in control.

UNIFIED HYBRID MANAGEMENT
Deploy across virtualization, private cloud, public cloud and container-based environments.
CLOUDFORM DESIGN POINTS

MULTI-CLOUD AGILITY
- FREEDOM OF CHOICE

SINGLE PRODUCT, SINGLE CODE
- EASY TO DEPLOY AND OPERATE

INTEGRATE VS. REPLACE
- VALUE TODAY AND AUTOMATE FOR TOMORROW

MANAGE DIVERSE WORKLOADS
- MODE 1, MODE 2, MODE N

PRACTICAL, OPERATIONAL SECURITY
- SEGMENT USER ACCESS AND DRIVE COMPLIANCE, CONTROL AND REPORTING
CLOUDFORMS FEATURES

AGENTLESS, VIRTUAL APPLIANCE
NON-INVASIVE, EASY MAINTENANCE

WEB-BASED, SELF-SERVICE, ADMIN AND OPERATIONS
ACCESS FROM ANY BROWSER

MULTI-TENANT AND MULTI-LOCATION
SECURELY SHARE INFRASTRUCTURE

PLUGABLE API FRAMEWORK
EASY TO INTEGRATE AND EXTENSIBLE TO OTHER PLATFORMS

HORIZONTALLY SCALABLE, LOAD-BALANCED
HIGHLY SCALABLE, HIGHLY AVAILABLE WITH FAILOVER AND FALLBACK

ROLE-BASED ACCESS CONTROL AND ENTITY TAGGING
SEGMENT USER ACCESS AND DRIVE COMPLIANCE, CONTROL AND REPORTING
TOWER EMPOWERS TEAMS TO AUTOMATE

**CONTROL**
Scheduled and centralized jobs

**KNOWLEDGE**
Visibility and compliance

**DELEGATION**
Role-based access and self-service

**SIMPLE**
Everyone speaks the same language

**POWERFUL**
Designed for multi-tier deployments

**AGENTLESS**
Predictable, reliable, and secure

AT ANSIBLE’S CORE IS AN OPEN-SOURCE AUTOMATION ENGINE
Now that are managed, let’s leverage the CMP to migrate the old to the new – CloudForms Migration Solution
RED HAT CONSULTING: CLOUD MIGRATIONS

Radically simplify the process of migrating workloads from legacy platforms to build out a robust, flexible cloud computing infrastructure to reduce operational costs and provide better agility to stakeholders. Red Hat Consulting helps you:

- Eliminate vendor dependency
- Mitigate risk
- Reduce TCO
- Accelerate provisioning
- Deliver services faster
- Streamline processes
- Migrate Workloads

**RED HAT CONSULTING: CLOUD MIGRATIONS**

**DISCOVERY SESSION**
Review and capture infrastructure requirements, processes, workload, and environment details as it pertains to developing a cloud migration strategy.

**WORKSHOPS**
Provide a target-state architecture for a Cloud Migration Solution based on Red Hat products with an implementation roadmap identifying levels of effort and timelines for organizational adoption.

**IMPLEMENTATION**
Deploy the target architecture to the client environment(s). Develop, test, and deploy automated workload migration. Operationalize cloud management and mentor client organization.
CLOUD MIGRATION PHILOSOPHY

Successful Migrations Require a Holistic Approach

- **People**
  - Drive collaboration across the organization
  - Put the right people in position to create positive change
  - Apply mentoring throughout to enable internal capabilities

- **Process**
  - Engage a repeatable ‘migration factory’ approach to iterate through workloads
  - Establish a continuous improvement atmosphere to evolve across iterations

- **Technology**
  - Unique migration tooling/templates help organize, automate, and orchestrate
  - Open-source solutions maximize cost savings and eliminate lock-in
THE PEOPLE

Building the Partnership

- Successful migrations require the engagement of the right people
  - **Business Owner:** Align the migration goals with the business strategy
  - **Architect:** Design an architecture that moves the business forward
  - **Operations:** Address the long-term success of the solution
  - **Development:** Enhance the developer experience
  - **Testing:** Streamline the migration validation process
  - **Security/Compliance:** Comply with business policies and standards
  - **User:** Understand and address the end-user experience
THE PROCESS

Cloud Migration in Action

Pre-Migration
- Team identifies and groups migration workloads
- Application owner creates validation plan
- Create network and check quota on POA
- vMotion VMs to NFS storage
- Tag VMs for migration

Migration Day
- Stop VMs
- Submit request to migrate selected group
- Migration state machine converts workload to new platform
- Post-migration configuration & application startup
- Application owner validates and approves migration

Post-Migration
- Update service catalog
- Agreement to clean-up old workload
- Decommission VM from POD
- Process completes
THE TECHNOLOGY

Powered by Red Hat Cloud Infrastructure

- Host workloads in Red Hat Enterprise Virtualization and/or OpenStack and Amazon Web Services
- Manage, automate, and orchestrate with Red Hat CloudForms and Ansible
THE TECHNOLOGY

Executing the Migration

- Configure **state machine templates** to orchestrate the migration
  - Create repeatable migration paths, error handling, and rollback paths, to ensure migrations are managed uniformly
  - Define a migration window to ensure VM ordering and dependencies are properly managed
- Implement **push-button self-service** catalogs to perform migrations
  - Migrations can be automated at the push of a button, and parallelized, leveraging state machine workflows
- **Monitor** the migration process in real-time
  - Report predictable outcomes to stakeholders
  - Validate migration and notify owners
Example architecture/data flow - POA Openstack
Example architecture/data flow - POA RHEV
Migration Demonstration
The Way Forward with Red Hat Consulting
RED HAT CONSULTING

What We Do

- Bring **subject matter expertise** around open source and Red Hat products and technologies into your organization
- Establish industry standards and **best practices** within your organization to improve process efficiencies and productivity
- **Mentor your staff** on Red Hat technologies and relevant concepts
- **Mitigate product and open source adoption risks** during enterprise migrations, modernization, and cutting-edge initiatives
- Get **direct access** to Red Hat business units and roadmaps
RED HAT SOLUTION DELIVERY FRAMEWORK

How We Deliver Value

ITERATE

DISCOVER  DESIGN  DEPLOY

ENABLE
# THE BIG PICTURE

**A Reference Implementation - Future Iterations**

<table>
<thead>
<tr>
<th>Iteration 1</th>
<th>Iteration 2</th>
<th>Future Iteration(s)</th>
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</thead>
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<tr>
<td><strong>Design and Pilot</strong></td>
<td><strong>Enhance and Deploy</strong></td>
<td><strong>Migrate and Operationalize</strong></td>
</tr>
<tr>
<td>Discovery session</td>
<td>Workload analysis and preparation</td>
<td>Environment and tooling updates</td>
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<td>Standard Operating Procedures</td>
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<tr>
<td>Workload analysis</td>
<td>Migrate first workload group</td>
<td>Migrate additional workloads</td>
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<tr>
<td>Target architecture</td>
<td>Pilot Go Live</td>
<td>Mentoring and Knowledge Transfer</td>
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<td></td>
<td><strong>Migrate and Validate</strong></td>
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![Diagram](image.png)
THANK YOU! - Questions

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