

IBM Cloud Paks

Cloud Pak for Multicloud Management Overview



Our Clients Are Looking at Multicloud . . .

1. **Hybrid** – Companies carry on-prem software and want to begin leveraging public cloud economics and services
2. **Acquisitions** – Companies acquire others and also their systems
3. **Economics** – Cloud providers are constantly competing and offering lucrative credit options as a common tactic
4. **Best of Breed Services** – Certain clouds are known for having better “Analytics” services and others may have better “IAM”
5. **Data Decentralization** – Compliance and local government rules about data locality can force the idea of multi-cloud (even though maybe public cloud is not used)
6. **Vendor Negotiation Leverage** – Always good to carry options to pivot dependencies
7. **Technology Agnostic Stance** - Better prepared for Change and Adaptation to shifting tech trends + New deployment & programming paradigms :: OPS AGILITY

Successful enterprises are evolving

Development, Security,
Operations **in silos**



Merged workflows to **enable DevSecOps** velocity

Separate tools for VM's,
Containers & COTS



Open-standards & unified tooling in
one **complete automation** solution

Many point products that don't
add up to a complete solution



Integrated, pluggable core –
extendable with your own capabilities
(BYO Sysdig, etc)

75%

improvement in overall efficiency

Issues with SRE/Operations, why things are hard

Lowers the risk first and then lowers the cost of cloud native environment

Repetitive & Low Value Tasks



Reduce Cost

Diverse Processes & Tools



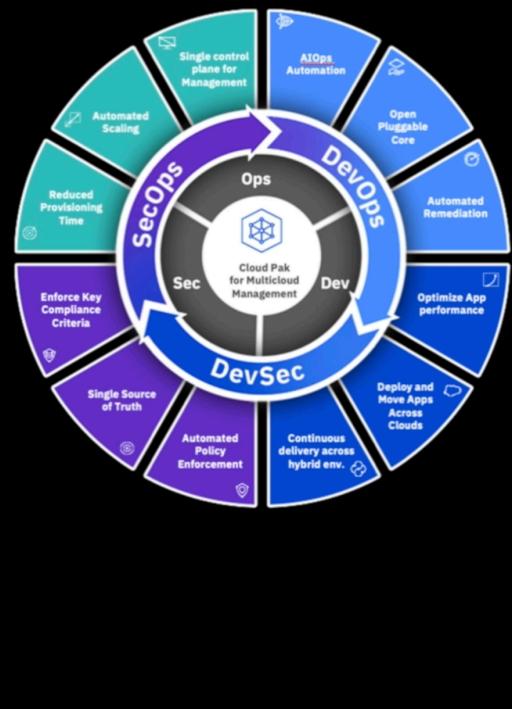
Reduce Risk

The typical team has more than 12 operations tools

1/3 of clients have leveraged **30+** services across **16** service providers ⁽¹⁾

IBM Cloud Pak for Multicloud Management

Reference Architecture



Multicloud is Happening . . . **Preparation** will give clients the advantage of keeping competitive and flexible in their industry.

Multicloud Management

>60%

of customers state they don't have the tools and procedures to manage and operate in a complex multicloud environment

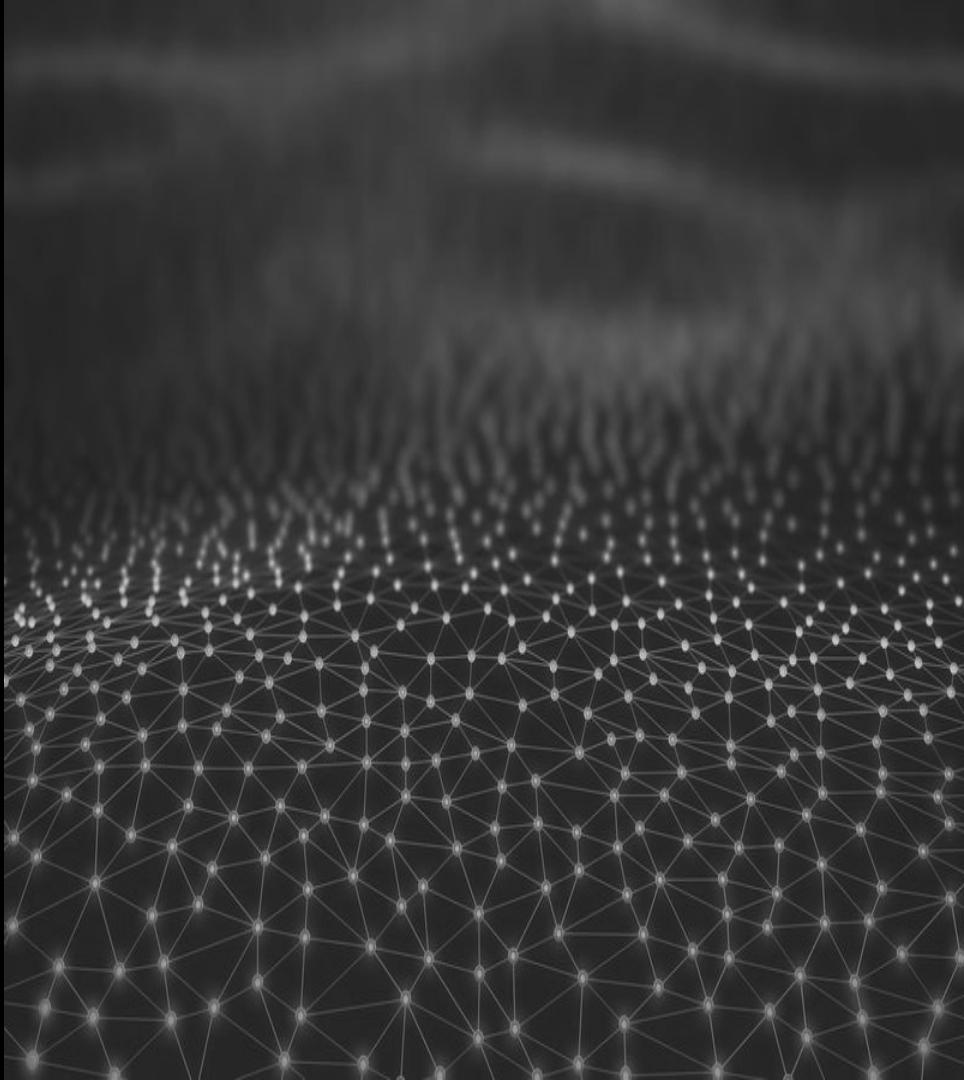
Even if you have just one cloud . . .

You need consistent automation to manage, secure and optimize applications and cloud resources.

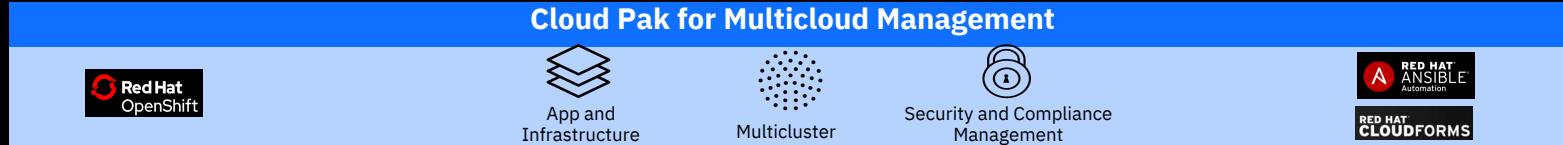
Even if you have just one cluster . . .

You need security, automated operations, & visibility.

As organizations
modernize and deploy
more clusters, new
challenges are
introduced....



Cloud Pak for Multicloud Management – Accelerate with Control



Cluster Lifecycle

One cluster can have as many as 5000 nodes, 150,000 pods and 300,000 containers

How are clusters created, scaled up or down, and retired?

How are nodes within the cluster kept up to date with the latest operating system and Kubernetes patches?

How is tenancy associated with clusters maintained?

Infrastructure Lifecycle

How do you reduce provisioning new infrastructure from hours/days down to seconds?

How are VMs & containers built, packaged, and deployed across all clouds?

How is new infrastructure created? What specifications required and where should it be deployed?

Is there an automated process to scale up or take down excessive capacity

Application Lifecycle

How are conditional gates enforced with tamper-proof controls?

How do applications scale on demand to not only conserve resources and costs but account for peak usage?

How are applications' performance going to be optimized

Security & Compliance Lifecycle

How is identity managed across a hybrid architecture?

How are the overall compliance and risk management controls enforced and audited?

How are keys and certificates managed for access and revocation?

IBM Cloud Pak for Multicloud Management

Application-centric Management

Deploy, upgrade, and manage applications with consistency across multiple clouds

Policy-Based Governance

Enforce policies and ensure compliance across clusters, applications and infrastructures

Cluster Lifecycle Management

Manage cloud-native and traditional VM environments together as your enterprise evolves



Multicloud
Management



Infrastructure
Management



Application
Management



Event
Management



Existing Tools & Processes



Security & Compliance
Management

IBM Cloud Pak for Multicloud Management

Create resource Catalog ⌂ ⓘ ⌂

Overview ⓘ

Refresh every 10s Filter results 2:59:37 PM

Azure	IBM	Amazon	MyDatacenter
1 Clusters	3 Clusters (3)	1 Clusters	2 Clusters (1)
01 AKS	01 IKS 01 RHOC 01 Other	01 EKS	02 RHOCP

3 Apps 7 Clusters 5 Kubernetes Types 3 Regions 20 Nodes 521 Pods

Show details

Cluster: nodes VCPU usage (CPU): ■ above (10.84 - 9.99) ■ average (3.02 - 2.49) ■ below (1.84)

Group By: Cloud Provider Size: Nodes Shade: VCPU

Hide details

Detailed description: This screenshot shows the 'Overview' page of the IBM Cloud Pak for Multicloud Management interface. At the top, there are four cards representing different cloud providers: Azure, IBM, Amazon, and MyDatacenter. Each card shows the number of clusters and a breakdown of node types. Below these are summary statistics: 3 Apps, 7 Clusters, 5 Kubernetes Types, 3 Regions, 20 Nodes, and 521 Pods. A 'Show details' button is present. At the bottom, there's a chart showing VCPU usage by provider, categorized into three levels: above (red), average (yellow), and below (green). The chart shows that most nodes are in the 'above' category across all providers.

Cloud Provider	Nodes	VCPUs (above)	VCPUs (average)	VCPUs (below)
Amazon	1	0	0	1
Azure	1	0	1	0
IBM	3	2	1	0
MyDatacenter	2	1	1	0

Multicloud Visibility

Immediate insight into environment, regardless of provider

Application centric insights

Cluster based insights using labels

Multicloud Visibility

IBM Multicloud Manager

Create resource Catalog

Search

Search - 1 (Unsaved) | + New search

kind:daemonset,deployment,job,statefulset,replicaset X

Job (41) ▾

Name	Namespace	Cluster	Completions	Parallelism	Successful	Created
rook-ceph-osd-prepare-75f9f43b36f19527f379688dd6bfd3a9	rook-ceph	icp-os-set-dragon	1	1	1	3 months ago
rook-ceph-osd-prepare-76b43e4682c6a3c30d536286f80f9675	rook-ceph	icp-os-set-dragon	1	1	1	3 months ago
oidc-client-registration	kube-system	icp-os-set-dragon	1	1	1	3 months ago
rook-ceph-osd-prepare-set-dragon-master.purple-chesterfield.com	rook-ceph	icp-os-set-dragon	1	1	1	3 months ago
logging-elk-kibana-init	kube-system	icp-os-set-dragon	1	1	1	3 months ago

items per page 5 | 1-5 of 41 items

1 of 9 pages < 1 >

Replicaset (376) ▾

Name	Namespace	Cluster	Desired	Current	Created
cert-manager-ibm-cert-manager-99fcdb8fd9	cert-manager	icp-os-set-dragon	1	1	3 months ago
logging-elk-client-597d88579c	kube-system	icp-os-set-dragon	1	1	3 months ago

Search through all clusters based on a simple query language

Identify potential impact when planning changes or diagnose root causes when things don't go as expected

Overview Page : Check compliance & health status of all your clusters

IBM Cloud Pak for Multicloud Management

Create resource Catalog

Refresh every 5 minutes

Filters

Condition

- None
- Non-compliant
- High VCPU
- High storage
- High memory

Cloud providers

- All
- Amazon
- Azure
- IBM
- MyDatacenter

Purpose

- All
- Dev
- Prod

Regions

- All
- UK
- US
- USWest

Kubernetes type

- All
- AKS

Overview

Cluster compliance 7

42% Compliant

3 Compliant

4 Non-compliant

Pods 521

99% Running

520 Running

1 Pending

0 Failed

Cluster status 7

100% Ready

7 Ready

0 Offline

VCPUs 116

used 41 | 35%

available 74 | 63%

139
93
46
0

3:34 PM 3:34 PM 3:35 PM 3:35 PM 3:36 PM 3:37 PM

Memory 427.79 GiB

Storage 80 GiB

Overview Page (more) : Check compliance & health status of all your clusters

IBM Cloud Pak for Multicloud Management

Create resource

Catalog



Clusters

Name	Namespace	Status	Nodes	Klusterlet Version	Kubernetes Version	Labels
aks-cluster	aks-cluster	Ready	2	3.2.1	v1.13.10	cloud=Azure region=USWest +3
eks-cluster	eks-cluster	Ready	2	3.2.1	v1.11.10-eks-7f15cc	cloud=Amazon region=US +3
iks-cluster	iks-cluster	Ready	2	3.2.1	v1.14.6+IKS	cloud=IBM region=US +3
rokld-cluster	rokld-cluster	Ready	2	3.2.1	v1.11.0+d4cacc0.rhos	cloud=MyDatacenter region=US +3
social-dev-1	social-dev-1	Ready	4	3.2.1	v1.11.0+d4cacc0.rhos	cloud=IBM region=US +3
social-dev-3	social-dev-3	Ready	4	3.2.1	v1.11.0+d4cacc0.rhos	cloud=IBM region=UK +3
web-dev-1	web-dev-1	Ready	4	3.2.1	v1.11.0+d4cacc0.rhos	cloud=MyDatacenter region=US +3

items per page 20 | 1-7 of 7 items

IBM Cloud Pak for Multicloud Management

Create resource

Catalog



1 of 1 pages



Clusters / **iks-cluster**

[Overview](#) [Nodes](#)

[Launch to Grafana](#) [Delete cluster](#)

2
NODES

0 Inactive
0 Active

3
APPLICATIONS

0 Deployed
0 In progress

1
POLICY VIOLATIONS

0 Failed
0 Deployed

5
SECURITY FINDINGS

IBM Cloud Pak for Multicloud Management

Create resource Catalog

Topology

Clusters Relationships Applications Policies

Refresh every 15s

Search [+Search]

Dev	Prod
 social-dev-1 tight-haddock-master.purple-chesterfield-stinkbug-master.purple-chesterfield.com	 eks-cluster 192.168.88.168
 rokd-cluster c100-e.us-east.containers.cloud.ibm.com	 social-dev-3 burro-master.purple-chesterfield.com
 iks-cluster 172.20.0.1	 aks-cluster 137.117.99.212

Application & Topology

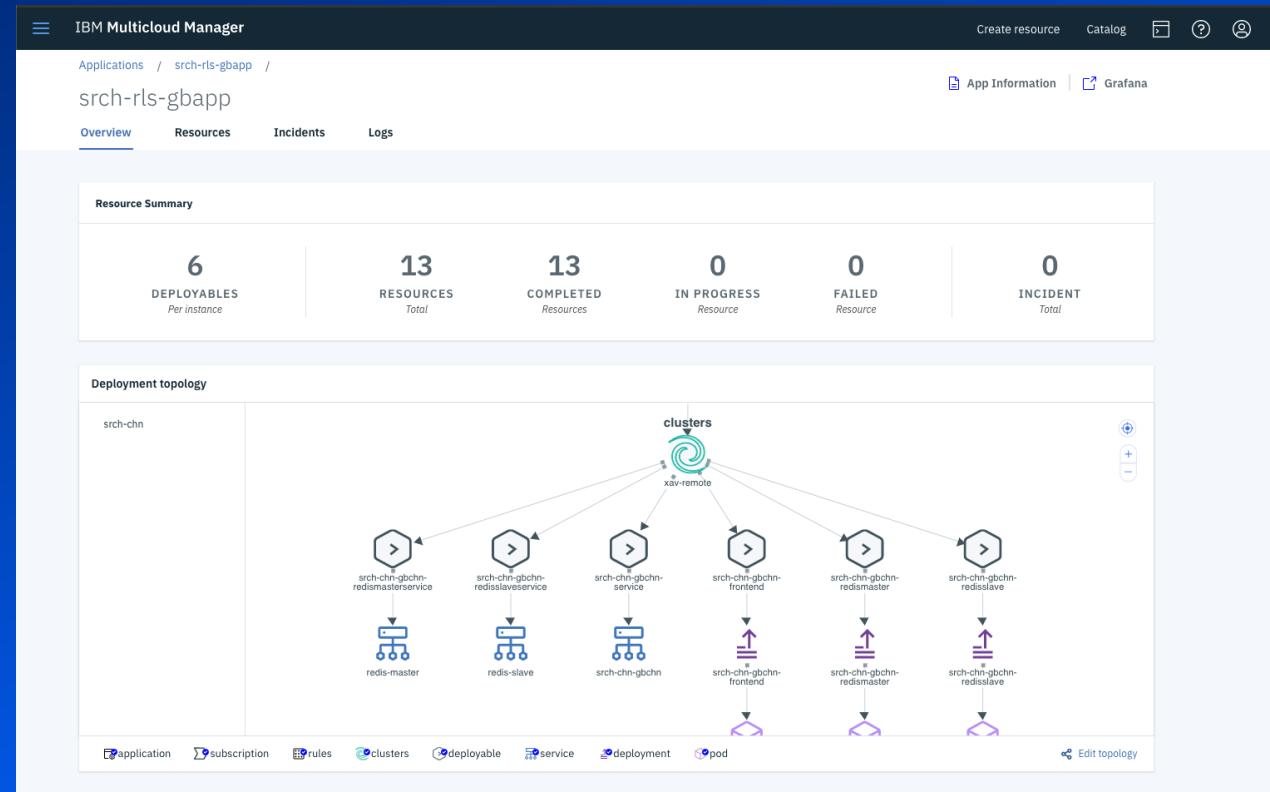
Extend the community app model with notions of channels (git, Object Store, Helm, etc.) and subscriptions (built-in platform native continuous delivery of apps)

Channels > point to objects

Subscription > take action on deployables in channels

Declarative placement engine to distribute apps across your cluster ecosystem

Aligned health information, incident management, and event management around each application



Application Lifecycle Views: Create a new Application, view all aspects of each applications

IBM Cloud Pak for Multicloud Management

Create resource Catalog ? @

Applications

Overview Resources

All applications (3)

Search applications Create Application +

Application name	Namespace	Deployables	Resources	Completed resources	In progress	Failed	Created
acme-railways-inventory-myapp	acme	6	5	5	0	0	3 days ago
acme-railways-ticketing-myapp	acme	6	13	13	0	0	3 days ago
guestbook-gbapp	gbchn2	6	14	14	0	0	3 days ago

Items per page 20 | 1-3 of 3 items

IBM Cloud Pak for Multicloud Management

Applications / acme-railways-inventory-myapp / acme-railways-inventory-myapp

App Information | Grafana

Overview Resources Incidents Logs

Resource summary

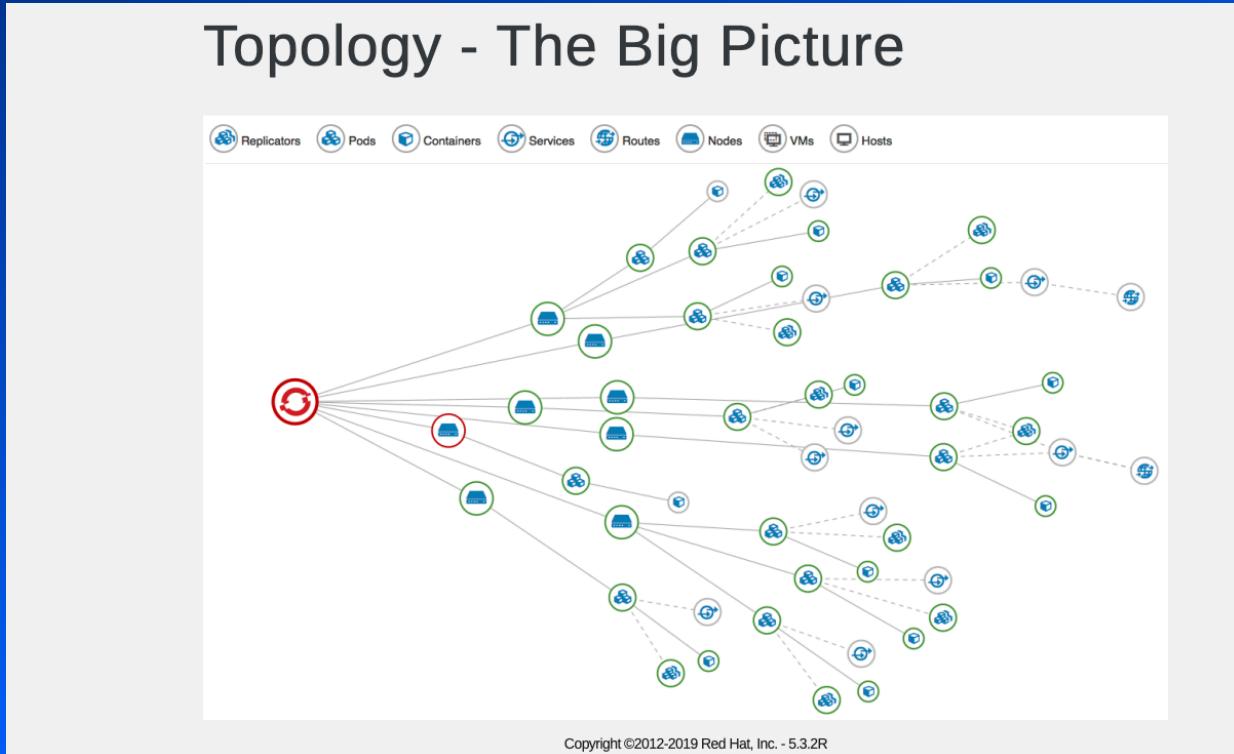
6 DEPLOYABLES Per instance	5 RESOURCES Total	5 COMPLETED Resources	0 IN PROGRESS Resource	0 FAILED Resource	0 INCIDENT Total
----------------------------	-------------------	-----------------------	------------------------	-------------------	------------------

Resource topology

Application & Topology

Extend the discovery capability to VMs by integrating Cloudforms from Red Hat

Full state topology



Healthy Application = Happy End User

Real time intelligent insights to application health

Golden signals are a common language to monitor many different technologies and clouds, simplifying communication and troubleshooting

Set custom thresholds to trigger remediation or at minimum, targeted notification of exact issue

Waste less time reacting to unclear or unnecessary alerts

Application troubleshooting tracing spans VM & container portions of application



Latency



Errors



Saturation



Traffic

The time it takes to service a request

Trend view of request error rate

View of utilization against max capacity

Demand being placed on the system

Security & Compliance

Declarative policies customized to client's specifications

Instant view into security posture

Market differentiating governance:

Visibility = CSO auditability

The screenshot shows the IBM Multicloud Manager interface. At the top, there's a dashboard with summary statistics: 4 Policy Violations, 2 Cluster Violations, 6 High Severity Findings, 31 Medium Severity Findings, and 30 Low Severity Findings. Below the dashboard, a modal window titled "Create policy" is open, showing a form with fields for Name (policy-grc), Specifications (a dropdown menu), Cluster selector (set to "Amazon"), Standards (a dropdown menu), and Categories (a dropdown menu). To the right of the modal, a large block of Policy YAML code is displayed:

```
apiVersion: mcm.ibm.com/v1alpha1
kind: PlacementBinding
metadata:
  name: binding-policy-grc
  namespace: kube-system
  placementRef:
    name: placement-policy-grc
  apiVersion: mcm.ibm.com/v1alpha1
  kind: PlacementPolicy
  subjects:
    - name: policy-grc
      kind: Policy
      apiGroup: policy.mcm.ibm.com
  spec:
    cloud: "Amazon"
    apiVersion: mcm.ibm.com/v1alpha1
    kind: PlacementPolicy
    metadata:
      name: placement-policy-grc
      namespace: kube-system
    spec:
      ClusterLabels:
        matchExpressions:
          - {key: cloud, operator: In, values: ["Amazon"]}
```

CIS compliance

With Ansible Automation, updates to these can be automatically applied

Real time scans for unexpected mutation, vulnerabilities

Categorize violations based on regulatory requirements

Customize with "Enforce or Inform"

"Troubleshooting, forensics
and audit can be handled
at scale when you have
a single source of truth
across the teams."

VP of Engineering at a Top
5 Investment Bank

<https://sysdig.com/blog/sysdig-2019-container-usage-report/>

Layers of Value with Cloud Pak for Multicloud Management

Cloud Pak for Multicloud Management incorporates the value of Kubernetes container orchestration + the power of OpenShift container orchestration and brings visibility, automation and management to your applications, no matter if they are deployed to VMs or Containers. You can ensure consistent security for your workloads no matter where you choose to deploy them, on-prem, public/private cloud or at the edge

IBM Cloud Pak for Multicloud Management

Red Hat OpenShift Cloud Native Workloads



kubernetes



#cpmc-m-sales-win-room for all questions



Edge



Private



Systems

- Virtual machine workload management
- Container cluster management; regardless of provider (ex: GKE, EKS, IKS etc.)
- Container movement to a different *K8 provider
- Application Management; performance
- Event Management; integration with existing tools
- Application Placement Policies (to any cloud)
- App updates automatically across all clouds
- Application Logging/Monitoring
- Infrastructure management
- Security policies, vulnerability advisor, mutation advisor

- Container Management
- Single Cluster orchestration
- Service catalog (operators)
- Jenkins CI/CD
- Web console
- Cluster logging/monitoring Run on any cloud

- Container registry
- Container scanner



In 2019
Red Hat OpenShift is
top choice for secure,
on-prem Kubernetes

<https://sysdig.com/blog/sysdig-2019-container-usage/>

- Container orchestration
- Container scheduling
- BYO Linux infrastructure
- BYO everything

Key Focus on Automation



CP4MCM – Automation Engines



Kubernetes Operator App Model

Manage your Applications using Automations that are not just a part of your cluster but living in your hybrid application by extending the operator with any of the following tools



Automation

Huge library of playbooks for easy consumption for tasks, with highlights around:

Software deploy and config, infrastructure provisioning, policy and security management



CLOUDFORMS

Discover and manage your infrastructure on multiple clouds.

Setup and manage compliance and policies for your infrastructure



Terraform

Deploy your infrastructure as code, allowing the management of infrastructure in a modern DevOps way



IBM Cloud
Automation Manager

Service Composer bring together the best of Ansible and Terraform along with your existing IT operations to create simple to consume services.

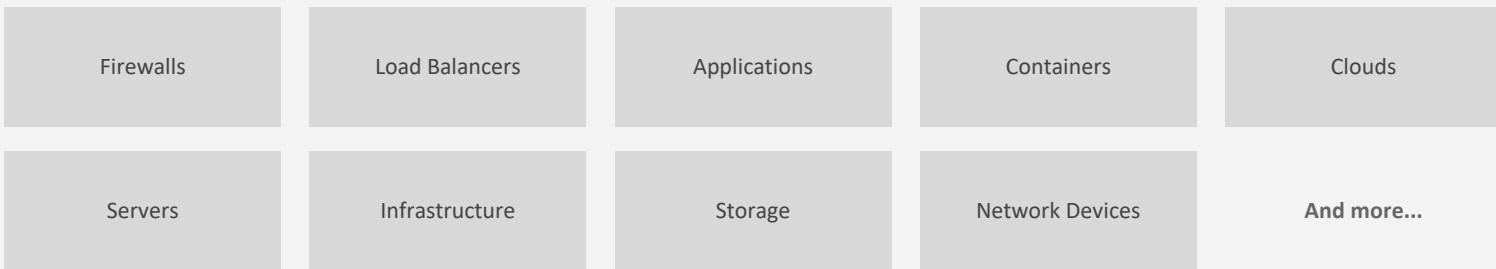
What can I do using Ansible Automation?

Automate the deployment and management of your entire IT footprint.

Do this...



On these...



Ansible automates technologies you use

Time to automate is measured in minutes

Cloud	Virt & Container	Windows	Network	Security	Monitoring
AWS	Docker	ACLs	A10	Checkpoint	Dynatrace
Azure	VMware	Files	Arista	Cisco	Datadog
Digital Ocean	RHV	Packages	Aruba	CyberArk	LogicMonitor
Google	OpenStack	IIS	Cumulus	F5	New Relic
OpenStack	OpenShift	Regedits	Bigswitch	Fortinet	Sensu
Rackspace	+more	Shares	Cisco	Juniper	+more
+more		Services	Dell	IBM	
Operating Systems	Storage	Configs	Extreme	Palo Alto	Devops
RHEL	Netapp	Users	F5	Snort	Jira
Linux	Red Hat Storage	Domains	Lenovo	+more	GitHub
Windows	Infinidat	+more	MikroTik		Vagrant
+more	+more		Juniper		Jenkins
			OpenSwitch		Slack
			+more		+more





Red Hat Ansible Automation Platform

210+

Virtualization Modules

Client Challenge:

- Difficult to manage a mixture of operating systems environments
- Provisioning VMs and other virtual infrastructure can take hours to days
- IT departments are tasked with more responsibilities, but team headcount does not grow accordingly



Red Hat Solution:

- Users can provision various operating systems across different IT domains with Ansible
- Virtual resources spanning multiple environments are delivered in minutes
- Ansible allows teams to automate simple tasks in order to produce more work with the same resources

What was the Result?

- Accelerated deployment of critical patches from **three days down to three hours**
- Reduced upgrade time from **one day to two hours**
- Overall change delivery time was **reduced by 75%**





Client Challenge:

- Adopting multiple or hybrid clouds each cloud operations can require its own tools & knowledge
- Rising costs to manage as different tools are introduced

The Red Hat Solution:

- Ansible's cloud-agnostic approach cut costs and runs across all vendors
- *Users can automate existing assets with the same code*
- *Spans current on-premise and public cloud assets, and clouds that will be deployed in the future*

What was the Result?

- Scaled to support more than 30 million users and 50,000 agent networks on one robust application
- Unified developers and operators on a single platform
- Automated infrastructure provisioning across multiple cloud environments



MC4MCM - Red Hat Ansible Automation



Deploy and Manage your Infrastructure

Create host
and add groups

Create
credentials
from
KeyStore's

Execute or
schedule
templates to
run against
groups of
Inventories

The screenshot shows the Red Hat Ansible Tower dashboard. On the left is a dark sidebar menu with various navigation options. A blue arrow points from the 'Create host and add groups' text to the 'Dashboard' option in the sidebar. Another blue arrow points from the 'Create credentials from KeyStore's' text to the 'Credentials' option in the sidebar. A third blue arrow points from the 'Execute or schedule templates to run against groups of Inventories' text to the 'Templates' option in the sidebar.

DASHBOARD

- HOSTS: 141
- FAILED HOSTS: 6
- INVENTORIES: 15
- INVENTORY SYNC FAILURES: 0
- PROJECTS: 7
- PROJECT SYNC FAILURES: 0

JOB STATUS

Period: PAST MONTH, Job Type: ALL, View: ALL

The chart displays the volume of jobs over a two-month period. The y-axis represents the number of jobs (0 to 15), and the x-axis represents dates from October 12 to November 12. The data shows low activity until late October, followed by a significant spike peaking around 15 jobs on October 25, and then fluctuating between 0 and 5 jobs through November 12.

RECENTLY USED TEMPLATES

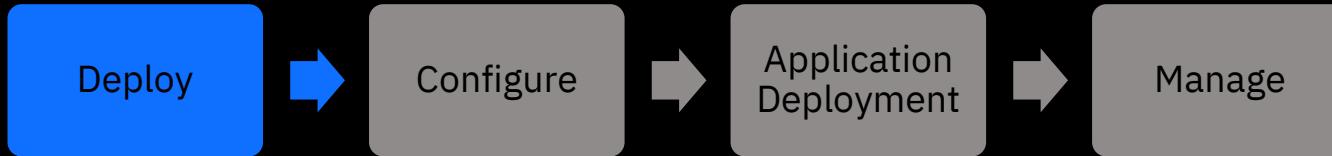
VIEW ALL

NAME	ACTIVITY	ACTIONS
LAMP template	███████████	🚀
svt-upptime	██████████	🚀
SVT_Hello	██████████	🚀
Hello World	██████████	🚀
Omar template	██████████	🚀

RECENT JOB RUNS

VIEW ALL

NAME	TIME
LAMP template	11/11/2019 2:09:27 PM
svt-upptime	11/8/2019 3:43:37 AM
SVT_Hello	11/8/2019 3:20:51 AM
svt-upptime	11/7/2019 11:10:00 AM



Deploy Infrastructure

BareMetal and Virtualized environments

Configure Networks

Configure and validate your networking while ensuring it is in continual compliance

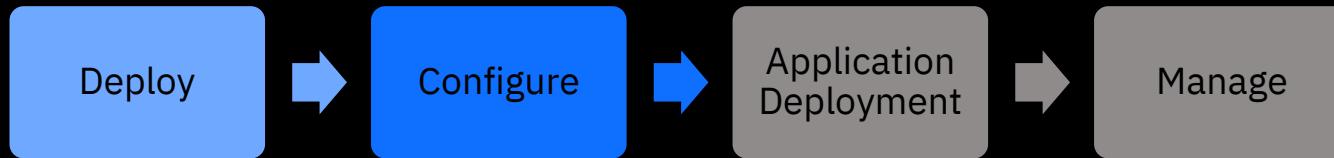
Storage

Provision and manage storage in you infra. Able to work with Software-defined storage, cloud based storage, and hardware storage appliances

Cloud

Public cloud support with 100's of modules supporting services

Private cloud deployments on VMWare and OpenStack



Configure your System

Tweak your deployed resources to match your requirements from security to app config.

Make Automation Accessible

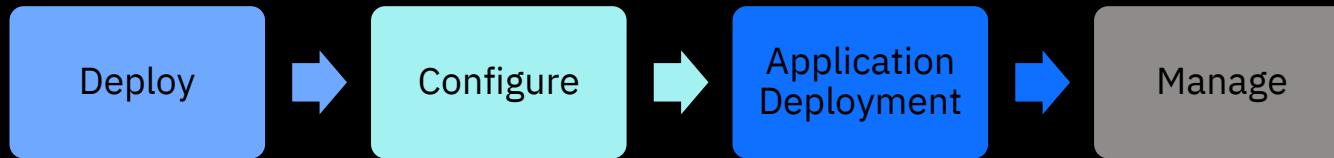
Reliable, simple to write, easy to use, only needs an ssh-key or password to work

Goal-Oriented, Not Scripted

State driven resource model that describes the desired state of a system, not the path to get the system there.

Secure and agentless

Uses the most advanced and secure communication method available in OpenSSH. No Agent required, all scripts are copied down that are needed through the OpenSSH methods.



Deploy Apps Easily

Tweak your deployed resources to match your requirements from security to app config.

Power of Playbooks

Reliable and simple to write and maintain with no agent required.

Repeatable

State driven resource model that describes the desired state of a system, not the path to get the system there.

Simple to write

Uses the most advanced and secure communication method available in OpenSSH. No Agent required, all scripts are copied down that are needed through the OpenSSH methods.

Key Focus on Automation - Terraform



IBM Cloud

Infrastructure Management

IBM Cloud Automation Manager

Build Services graphically
With ***Service Composer***

Self Service Catalog

Hybrid · Multimodal · Multicloud · Orchestration · Open Service Broker

Operate deployments across all
clouds ***from one console***

Operations

Plan/Apply · Start/Stop/Restart · Power On/Off · Snapshots

Automate infrastructure
provisioning with **Terraform**

Automate Infrastructure-as-Code

Compute · Networking · Storage · VMs · Containers · Functions · Public · Private

Run-on & manage-to ...

Intel

Power

Z

VMWare

OpenStack

IBM Cloud

AWS

Azure

Google

CP4MCM – Service Composer

Create Self Service Library for hybrid application deployments

Purpose

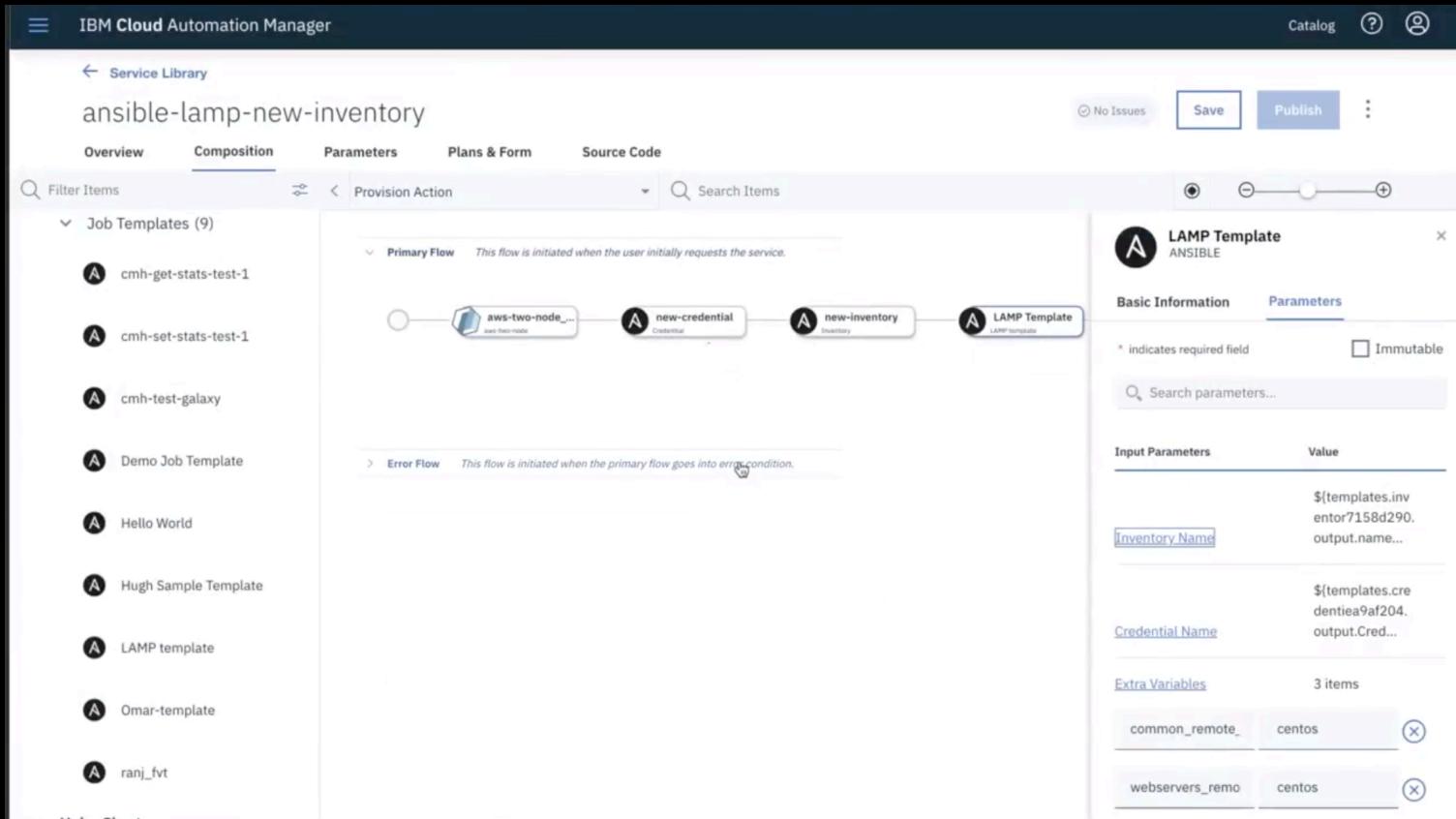
Simplified Application Deployment

Benefits

Use best tool for the job to automate your hybrid application

Support for :

- Helm/Operators
- Terraform
- Ansible
- BPM
- IT Integrations



The screenshot shows the IBM Cloud Automation Manager Service Library interface for a service named "ansible-lamp-new-inventory". The "Composition" tab is selected, displaying a flow diagram and a list of job templates.

Job Templates (9):

- cmh-get-stats-test-1
- cmh-set-stats-test-1
- cmh-test-galaxy
- Demo Job Template
- Hello World
- Hugh Sample Template
- LAMP template
- Omar-template
- ranj_fvt

Primary Flow: This flow is initiated when the user initially requests the service. It consists of the following steps:

```
graph LR; Start(( )) --> aws[aws-two-node...]; aws --> newCredential[new-credential Credential]; newCredential --> newInventory[new-inventory Inventory]; newInventory --> lampTemplate[LAMP Template LAMP template]
```

Error Flow: This flow is initiated when the primary flow goes into error condition.

LAMP Template ANSIBLE:

Basic Information:

* indicates required field Immutable

Parameters:

Input Parameters	Value
Inventory Name	\$(templates.inventory7158d290.output.name...)
Credential Name	\$(templates.credentials.123456789af204.output.Cred...)
Extra Variables	3 items
common_remote_	centos
webservers_remo	centos

CP4MCM – Service Ordering

Simplified end user request for Hybrid Services

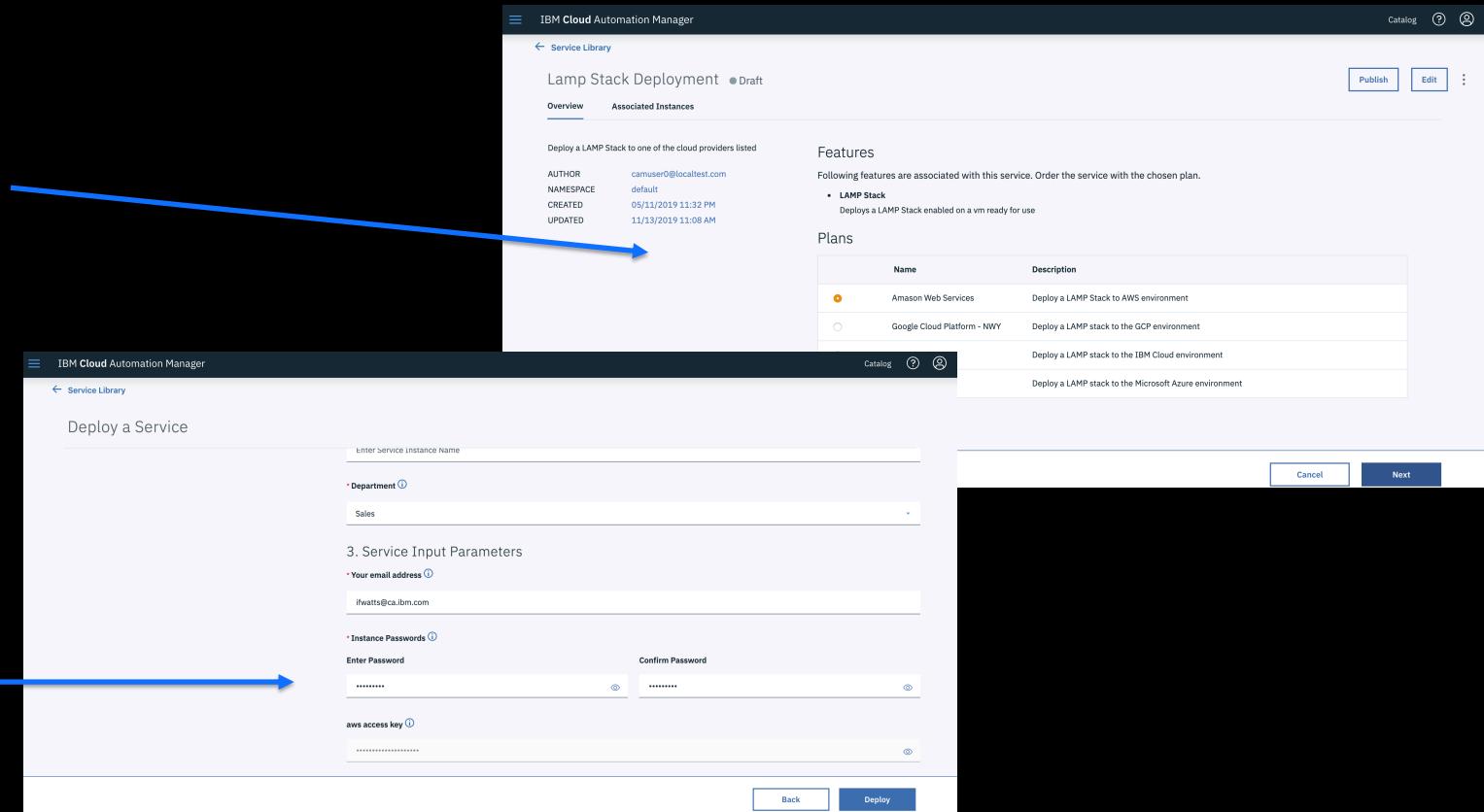
Purpose

Allow the end user to order services that contain IT assets from any cloud, containing container based apps as well as traditional infra

Benefits

reduce IT cost for IT team to be needed for common deployments.
Increase time to value for end users.

End users parameters are simplified to easy deployment!



The screenshot illustrates the simplified end-user experience for ordering hybrid services. It shows two main interfaces:

- Service Library (Top):** Displays a service named "Lamp Stack Deployment" (Draft). It includes details like Author (camuser0@localhost.com), Namespace (default), and creation date (05/11/2019 11:32 PM). A blue arrow points from the "Benefits" section towards this screen.
- Deploy a Service (Bottom):** A step-by-step wizard for deploying a service instance. Step 3, "Service Input Parameters," asks for:
 - Your email address: ifwatts@ca.ibm.com
 - Instance Passwords: Enter Password and Confirm Password fields.
 - aws access key: A field with several dots.A blue arrow points from the "End users parameters are simplified to easy deployment!" section towards this screen.

Both screens include standard navigation and action buttons like "Publish," "Edit," "Catalog," "Cancel," and "Next."

CP4MCM – Service Day 2 Management

Manage deployments at a service level

Purpose

Allow the end user to make changes to the system they have deployed in a controlled manner

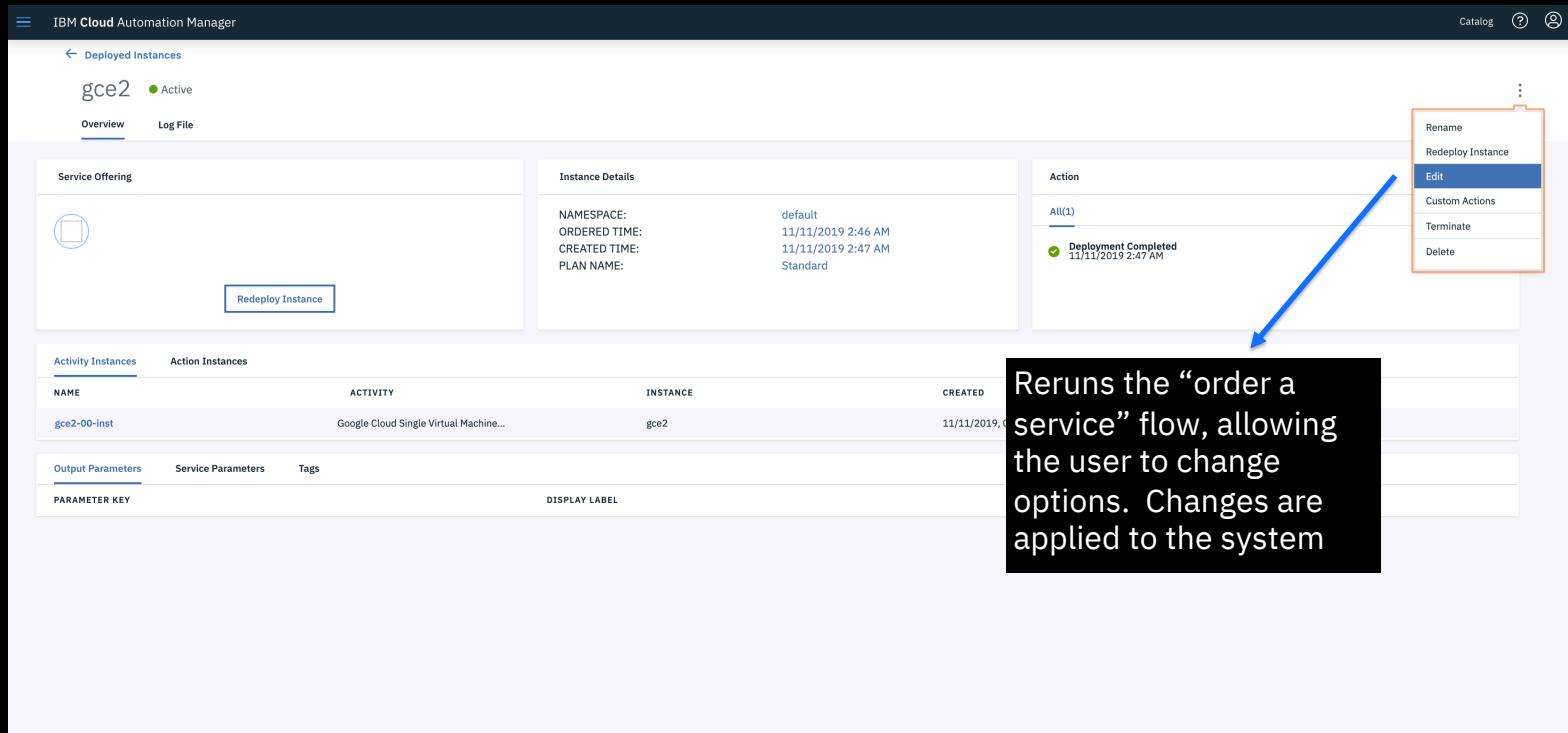
Benefits

reduce IT cost for IT team to be needed for simple changes.

Controls remain in place on edits.

Support for :

- Terraform
- Ansible
- IT Integrations



The screenshot shows the 'Deployed Instances' page in the IBM Cloud Automation Manager. A single instance, 'gce2', is listed as 'Active'. The 'Overview' tab is selected. On the right, there's a 'Service Offering' section with a placeholder icon and a 'Redeploy Instance' button. Below it is an 'Instance Details' section showing: NAMESPACE: default, ORDERED TIME: 11/11/2019 2:46 AM, CREATED TIME: 11/11/2019 2:47 AM, PLAN NAME: Standard. To the right is an 'Action' section with a dropdown menu open, showing options: Rename, Redeploy Instance, Edit (which is highlighted in blue), Custom Actions, Terminate, and Delete. A blue arrow points from this menu to a callout box. The callout box contains the text: 'Reruns the “order a service” flow, allowing the user to change options. Changes are applied to the system'.

Infrastructure Dashboard

Discovery your infrastructure in CloudForms



What is CloudForms

5.1. Infrastructure Providers

 5.1.1. Red Hat Virtualization

 5.1.2. VMware vSphere

 5.1.3. Microsoft SCVMM

5.2. OpenStack Platform Director

Infrastructure Providers

5.3. Cloud Providers

 5.3.1. Red Hat OpenStack
Platform

 5.3.2. Amazon EC2

 5.3.3. Microsoft Azure

5.4. Container Providers

5.5. Network Providers

5.6. Configuration Management
Providers

CloudForms is an infrastructure management platform that allows IT departments to control users' self-service abilities to:

- Provision

- Manage

- ensure compliance

- across virtual machines and private clouds

https://access.redhat.com/documentation/en-us/red_hat_cloudforms/5.0/html/support_matrix/index

Q How many nodes/ networks / storage do I actually have across all my deployments?

Q Where are my resources located and how are they connected?

Q How can I troubleshoot issues across the stack?

Q How can I automate common tasks?

Q Do my nodes and VMs comply with my enterprise policy?

Q Are my developers using untrusted software?

Q Do I have VMs running with unauthorized users?

Q Has my configuration changed over time?

Q How can I limit permissions on my users?

Q Are my configurations correct and not drifting?

Q How I can get notified of issues?

Q Are my resources sized correctly?

Q Do I have enough spare capacity? When will I run out?

MC4MCM - CloudForms



Discover and Manage your Infrastructure

The screenshot shows the Red Hat CloudForms web interface. The left sidebar contains navigation links for Overview, Services, Compute, Migration, Configuration, Networks, Storage, Control, Automation, Monitor, and Red Hat Cloud. The main content area is titled "Cloud Providers" and displays four entries:

- AWS**: Type: Amazon EC2, EVM Zone: default, Instances: 152, VCpus: 382
- Azure - BB**: Type: Azure, EVM Zone: default, Instances: 4, VCpus: 10
- cam-powervc-1**: Type: OpenStack, EVM Zone: default, Instances: 0, VCpus: 0
- CAM PowerVC 2**: Type: OpenStack, EVM Zone: default, Instances: 1, VCpus: 16

At the bottom of the page, there are search and filter options: "Select All", "Name", and a dropdown menu. Navigation controls at the bottom right include "20 Items", "1 - 4 of 4", and "1 of 1".

Inventory
Overview

Setup
Compliance
Checks

MC4MCM - CloudForms



Infrastructure Details, and Management

The screenshot shows the Red Hat CloudForms web interface. On the left is a navigation sidebar with links like Overview, Services, Compute, Migration, Configuration, Networks, Storage, Control, Automation, Monitor, and Red Hat Cloud. The main content area is titled "Compute > Cloud > Instances > Instances by Provider > Instances by Provider > AWS > us-east-1a > ans-vm-0". The interface includes tabs for Configuration, Policy, Lifecycle, Monitoring, Power, and Access. A modal window for the instance "ans-vm-0" is open, displaying detailed information such as IP Addresses (172.31.27.232, 54.196.156.63), MAC Address (0a:58:b1:62:e3:58), Container (amazon: 1 CPU (1 socket x 1 core), 2048 MB), Platform Tools (TUIA), Operating System (linux_ubuntu), Architecture (64 bit), Advanced Settings (N/A), Resources (Available), Management Engine GUID (9e78c3b1-5ee4-4dc5-b72b-349ce0c6f105), Virtualization Type (hvm), Root Device Type (ebs), and ID within Provider (i-01dbe47e2748b65a7). The Lifecycle section shows Discovered (Tue, 29 Oct 2019 14:24:18 +0000), Last Analyzed (Never), Retirement Date (Never), and Retirement State (Not Available). Relationships show Cloud Provider (AWS), Availability Zone (us-east-1a), and Cloud Tenants (None).

Detailed data on instances, images,

Power on/off Systems

Setup Retirement Dates

Set policy

Configuration using Ansible automations!

MC4MCM - CloudForms



Policy and Compliance

The screenshot shows the Red Hat CloudForms Management Engine interface. On the left, the navigation bar includes 'Cloud Intel', 'Red Hat Insights', 'Services', 'Compute', 'Configuration', 'Networks', 'Middleware', 'Storage', 'Container', 'Cloud Catalog', 'Automation', 'Orchestration', and 'OpenShift'. A blue arrow points from the 'Configuration' menu down to a modal dialog titled '172.16.32.121 says:' which asks 'Perform SmartState Analysis on this Instance?'. Another blue arrow points from the 'Monitoring' button in the top navigation bar to the 'Compliance' section of the main content area. The 'Compliance' section displays the status as 'Non-Compliant as of Last Minute Ago' with a red 'X' icon. A third blue arrow points from the 'Jobs' tab in the bottom navigation bar to a table showing two jobs: 'Copy Good Hosts' (ID 531) and 'EBC Demo Ansible Demo' (ID 532), both completed on 3/22/2017 at 1:14:10 AM.

RED HAT® CLOUDFORMS MANAGEMENT ENGINE

Cloud Intel > Instances by Provider > Instances by Provider > Instances by Provider > AWS > Azure Central US > Azure Central US > Azure East US > A <Archived> > O <Orphaned>

Red Hat Insights > Services > Compute > Configuration > Networks > Middleware > Storage > Container > Cloud Catalog > Automation > Orchestration > OpenShift

Configuration > Refresh Relationships and Sync Data > Perform SmartState Analysis on this Instance? > Edit this Instance > Set Ownership > Remove Instance > Edit Management Engine

Monitoring > Power > Lifecycle

Instance "app-server05"

Properties

Name	app-server05
IP Addresses	10.0.2.4, 52.176.58.46
MAC Address	00-0D-3A-90-28-6F
Container	azure: 1 CPU, 1792 MB
Platform Tools	N/A
Operating System	CentOS Linux release 7.3.1611 (Core)
Snapshots	None
Advanced Settings	0
Resources	Available
Management Engine GUID	0140d56a-0ad1-11e7-a5df-005056ae b581
ID within Provider	38d90b44-1503-493a-86ff-cd135c65a ff8\app-servers\microsoft.compute\vi

Compliance

Status	Non-Compliant as of Last Minute Ago
History	Available

Power Management

Power State	on
Last Boot Time	N/A
State Changed On	Fri, 17 Mar 2017 00:17:24 -0

Security

Users	27
Groups	49
Key Pairs	N/A

Configuration

Packages	495
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TOWER PROJECTS INVENTORIES TEMPLATES JOBS

JOBS

ID	NAME	FINISHED	LABELS
531	Copy Good Hosts	3/22/2017 1:14:10 AM	
532	EBC Demo Ansible Demo	3/22/2017 1:14:10 AM	

rhlab Tags

No rhlab Tags have been added

Policy checks run on schedule, but can be launched manually on demand.

Checks run on schedule,

Automated remediation of failures can be configured using Ansible Templates

Easy to consume Hybrid Apps

Create Services with simple drag and drop parts

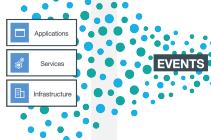


IBM Cloud Event Management

Cut through alarm noise. Restore service fast.

Cloud-native, consolidated operational event and incident correlation, prioritization and resolution

Event Sources



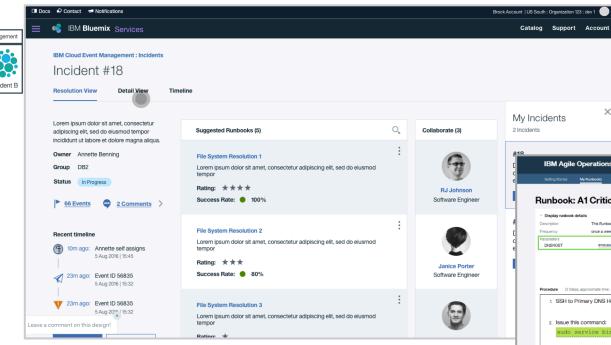
Developer in a DevOps Team

Operator

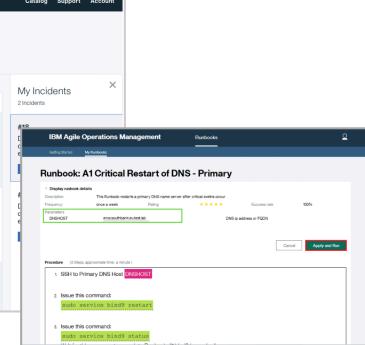
Site Reliability Engineer

Lead Engineer

Collaboration



Prioritized Incident Correlation



Guidance & Automated Tasks

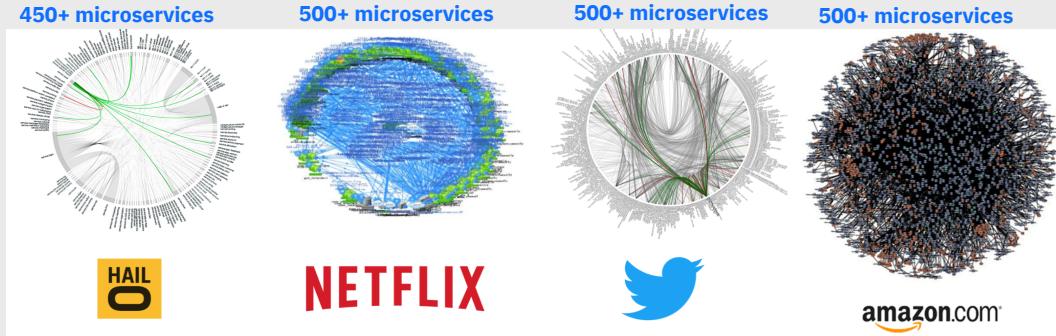
Ingest application, performance and operational event metrics

Automatically receive prioritized, correlated, incident information and guidance

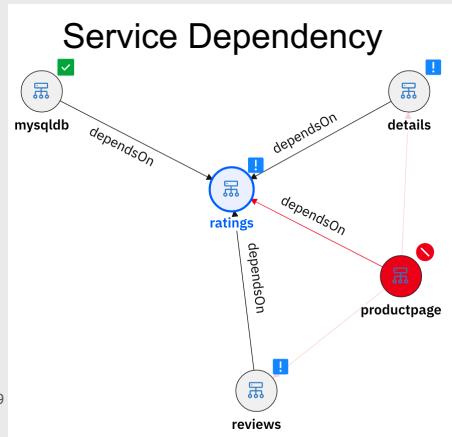
Manage operations from one place and improve efficiency across teams

Understanding Microservice Health

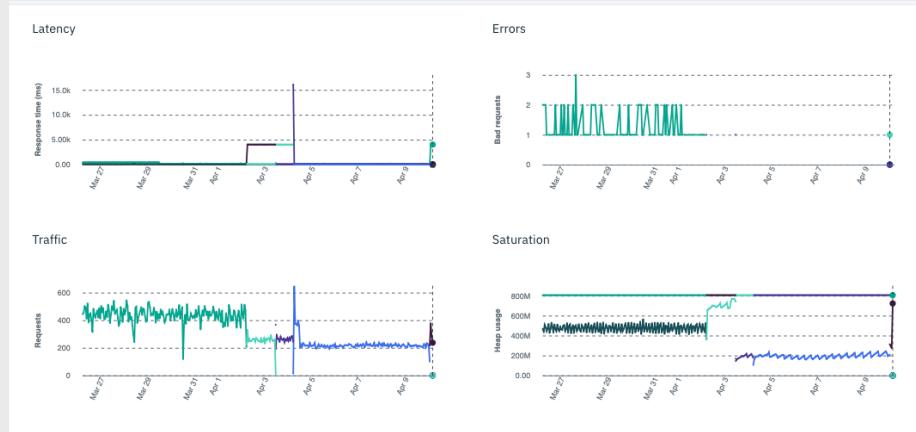
Traditional Approach



Focus on a single service to understand the traffic, performance, and error rate of all requests (in and out)



Golden Signals



Synthetic Monitoring: Find problems before they affect end users

In today's fast-moving digital world, by the time end users are affected it's already too late. Isolate and fix issues with complex microservice applications before end users notice a problem.

Use synthetic tests to automatically check response times and alert if there are issues.

- Run tests as frequently as every minute to find issues quickly
- Set warning and critical response time thresholds

Synthetics to test:

- Websites
- REST APIs
- Key ports/protocols like ldap, dns, dhcp, etc.



Traditional Resources

Modernize with Golden Signals



IBM Middleware

- IBM DataPower
- IBM DB2
- IBM Infosphere DataStage
- IBM Integration Bus (IIB)
- IBM MQ
- IBM WAS (including Liberty)
- WAS Infra. Mgr
- API Connect

OS

- Linux
- Windows
- Unix

Hypervisors

- KVM
- Hyper-V
- VMware
- PowerVM

Database

- DB2
- Oracle
- MSSQL
- MySQL
- Postgres
- HANA
- MariaDB
- MongoDB

Microsoft

- .NET
- Exchange
- Sharepoint
- IIS
- Lync server
- Office 365
- Skype
- SQL Server
- MS Cluster
- Active Dir.

Others

- Hadoop
- Python
- SAP
- J2SE
- Springboot
- HTTP Serv
- NetApp
- Jboss
- Tomcat
- Ruby

Cloud Resources

*Manage dynamic workloads
– simplified with Golden Signals*



Platform

- Kubernetes private cloud
- Red Hat OpenShift
- IBM Cloud Private
- Kubernetes services on public clouds
- Azure, EC2

Runtime

- Liberty DC
- Node.js DC
- Swift
- Go
- python
- J2SE/Springboot

Others

- NGINX
- redis
- Telegraf plugin framework
- Zipkin & Jaeger
- istio

Strength in Differentiation

Cloud Pak for Multicloud Management

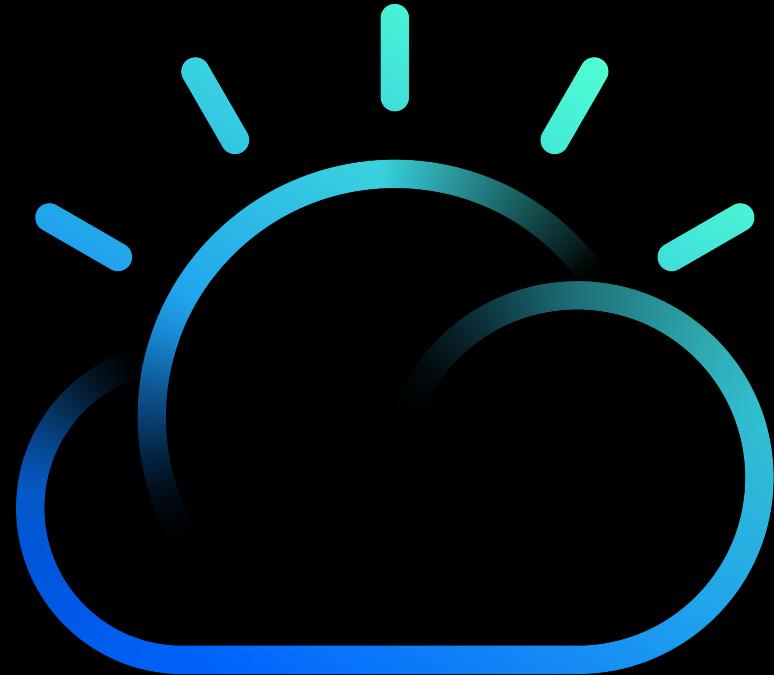
Differentiators:

- Platform agnostic VM and container management
- Built on open source and open standards
- Manage containers, clusters and VM, at scale, from a single pane of glass
- Manage and standardize virtual infrastructure provisioning across clouds and repeat

Use Cases:

- Dynamically monitor and remediate problems in automated way – Optimize performance
- Manage end-to-end with security – Ensure Consistency & Auditability
- Achieve continuous delivery model – Faster Time to Market
- Automation where you need it – Accelerate day to day operations

Thank you!



IBM Cloud