AIOps Workshop

Infrastructure Automation

AIOps Workshop

Apply Intelligent Automation to your IT Operations

25/10/2021 to 28/10/2021
10:30 am – 12:30 pm IST | 1 pm – 3 pm SGT | 4 pm – 6 pm AEDT

25/10/2021	26/10/2021	27/10/2021	28/10/2021
Observability	**Application Performance Assurance**	**MTTR reduction**	**Infrastructure Automation**
Introducing IBM's new best-of-breed Enterprise Observability Platform with automated Application Performance Management: **Instana**	Application performance assurance has become critical. Post-pandemic businesses must assure application performance and match supply and demand of resources to drive revenue growth	The future of IT Operations is AI Operations. AI allows your SRE and Operations teams to reduce the Mean Time to Resolution (MTTR) for your IT incidents	To manage hybrid multi-cloud infrastructure, you need a holistic cloud management platform providing lifecycle management, service catalogues, chargeback, and control enforcement

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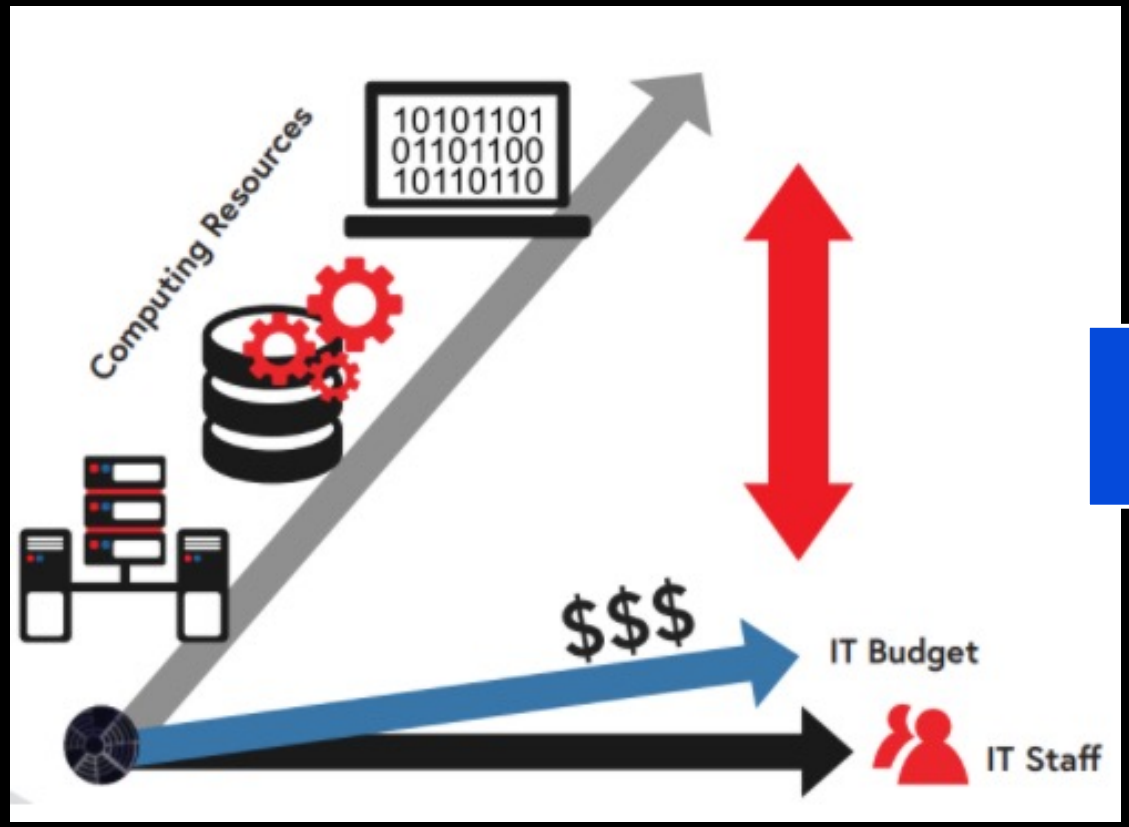
SRE and AIOps ..... *But, where's Automation*

"Besides black art, there is only automation and mechanization."

Federico Garcia Lorca (1898-1936), Spanish poet and playwright

IT Automation..... *Why??*



MultiCloud / Hybrid Cloud

Differing Guardrails & Compliance gates

Diverse Tooling landscapes

Varying level of automation

Un-availability of agile methodologies

Challenges - analysing and deducing intelligence

IT Automation..... *of course!!*

A ‘Soup-to-Nut’ layer

Collect & Synthesize data

Deduce intelligence

Consolidate & Control

Seeing is believing - visibility

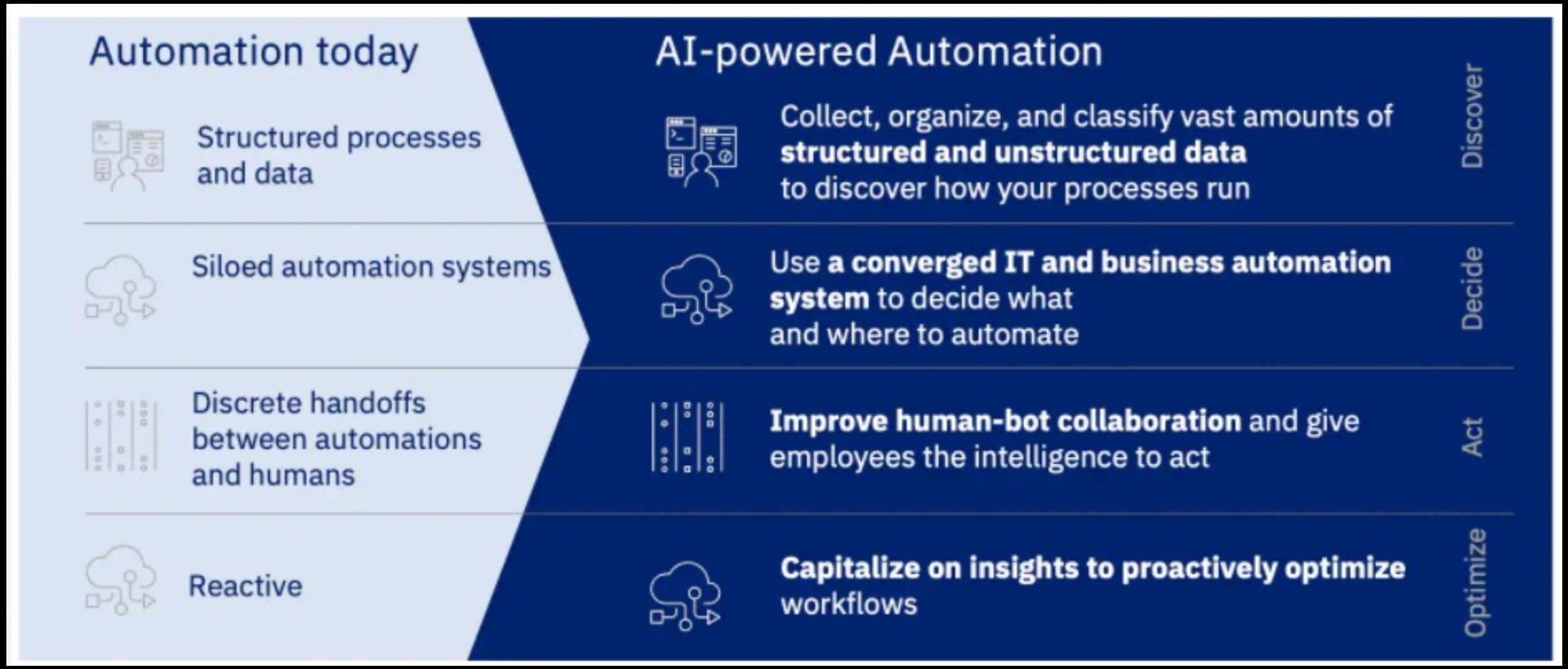
Root Cause Analysis

Prevention is priceless

Delighted client

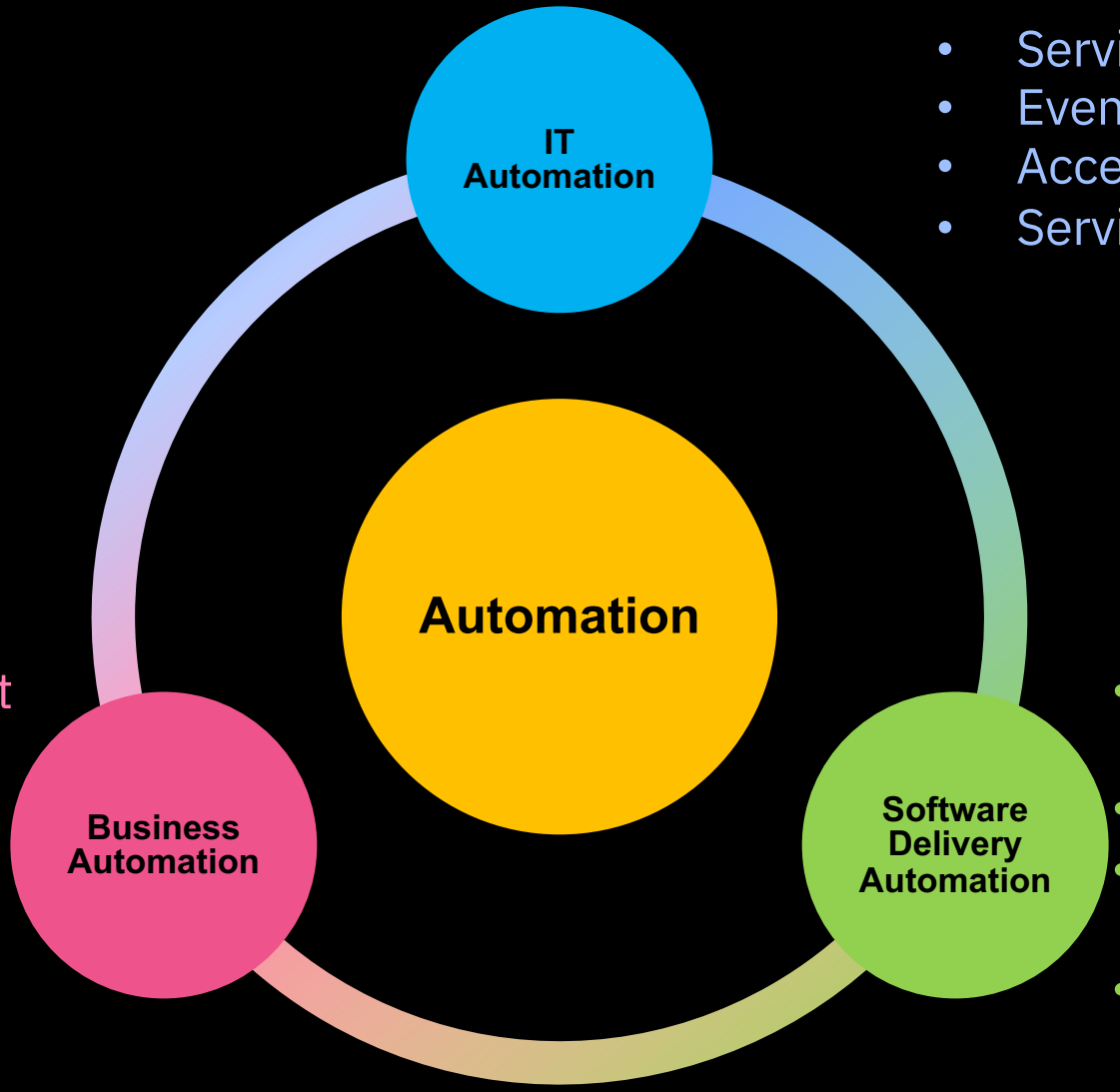
The Art of Automation

*'A **clever** person solves the problem, a **wise** person avoids it' .....Albert Einstein*



https://www.ibm.com/cloud/blog/art-of-automation

Automation ....*flavours*



- Service Request Management
- Event Management
- Access Management
- Service Desk & Ticketing

- Workforce Management
- Case Management
- Policy & Compliance
- Process Exception Handling

- Application Performance Management
- Compliance Management
- Application Code Vulnerability Management
- Software Quality Management

AIOps Creates Proactive Management

AI Insights and automation infused across workflows.

Infrastructure Automation Platform

Service Provisioning & Automation Library

VM , Network, Storage Inventory

Governance and Risk Compliance

Chargeback & Reports

K8s Cluster & Application Lifecycle

Structured data

Events / Alerts

Metrics

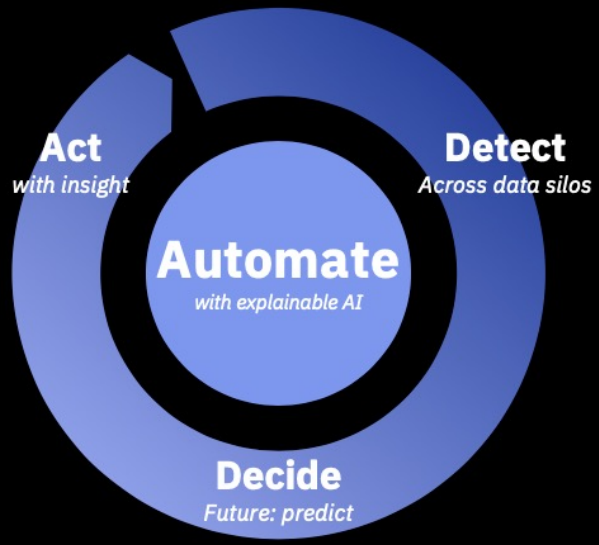
Topology

Policy Violations

Unstructured data

Logs

Tickets, Chat Logs, post-mortem studies & Comments



Proactive Management

Extend existing investments

AppDynamics dynatrace servicenow

Ecosystem of best in class tools

slack humio turbonomic sysdig

Infrastructure Management & IT Automation

INFRASTRUCTURE MANAGEMENT

- Discovery of existing VMs
- Inventory and lifecycle management of new and discovered VMs
- Compliance and Policy Management of VMs

ANSIBLE-BASED AUTOMATION

- Execute playbooks to automate VM provisioning
- Configure Actions to remediate policy violations via Ansible

SERVICES & TERRAFORM AUTOMATION

- Infrastructure provisioning based on Terraform templates
- Infrastructure-as-Code capabilities promoting Git-Ops process flow
- Composable service editor
- RBAC-controlled service library

Common approach to automate **all workloads in all clouds** repeatably and efficiently

Manage infrastructure as code

- Use a text or graphical editor to define simple VMs to full environments
- Declarative - *focus on the what, not the how*
- Standardize delivery for efficiency & control

Content library to get started fast

- Leverage IBM, community and home-grown assets as building blocks

Modernize legacy applications, build new cloud native applications

- Bring cloud services to existing apps.
- Bind datacenter services to cloud apps.
- GitOps

Terraform - Declarative Cloud Automation


```
resource "vsphere_virtual_machine" "vm_1" {
  depends_on = ["vsphere_folder.folder_vm_1"]
  name   = "${var.name}"
  folder = "${var.folder}"
  datacenter = "${var.datacenter}"
  vcpu   = "${var.vcpu}"
  memory = "${var.memory}"
  cluster = "${var.cluster}"
  network_interface {
      label = "${var.network_label}"
      ipv4_gateway = "${var.ipv4_gateway}"
      ipv4_address = "${var.ipv4_address}"
      ipv4_prefix_length = "${var.ipv4_prefix_length}"
  }
  disk {
    datastore = "${var.storage}"
    template = "${var.vm_template}"
  }
}
```

Common approach in all clouds

- *All clouds and all application architectures*

Open source

- *10,000+ GitHub stars; 1,153 contributors*
- *Supported by major cloud vendors*

Large & growing ecosystem

- *Terraform Module Registry*
- *Many OEM providers and provisioners*

Enterprise hardened by IBM

- *Secrets management*
- *Role based provisioning*
- *Team development*

Persona Interactions – the big picture

Mike
Infrastructure Admin

Create and Publish Cloud services

Deploy cloud services

Sandra
Developer

Joachim
IT Manager

View costs

Control costs and compliance

Building a Cloud Service in 4 steps

Define your application topology

↓

Add Service Management integration

↓

Define how users interact with the service

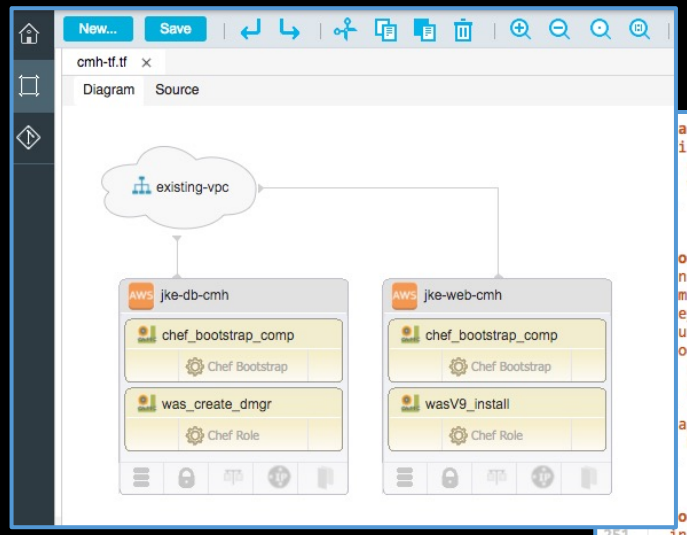
↓

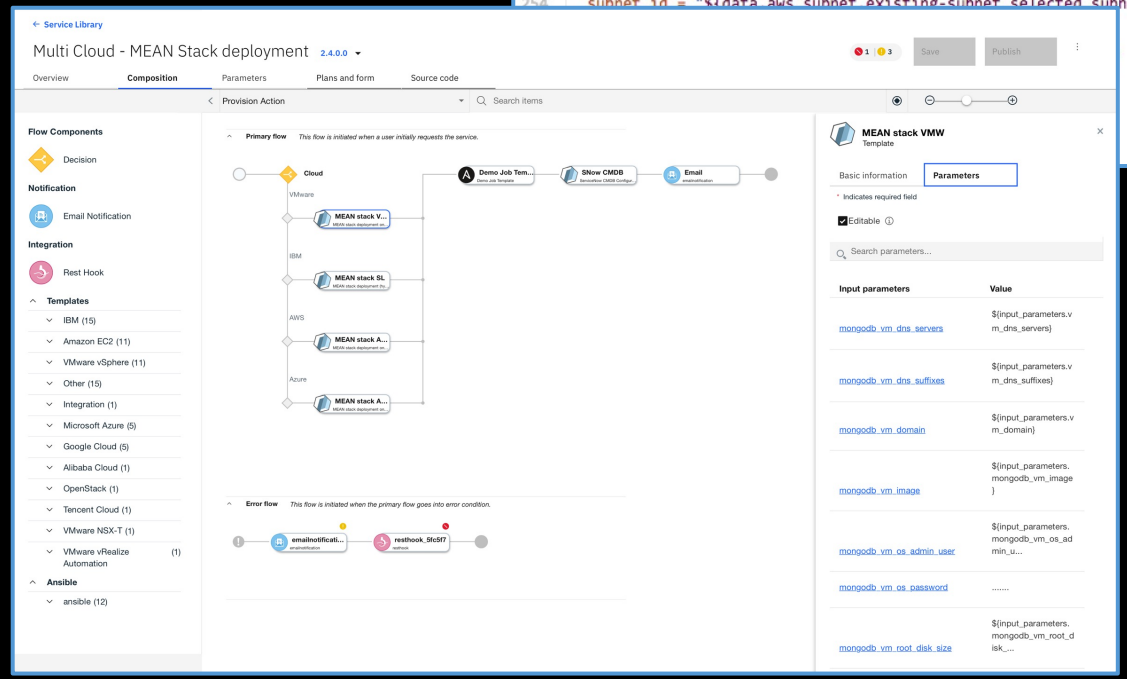
Publish the service in the catalog

Let’s see it in action!

Mike

Infrastructure Administrator





Provide standardization across clouds

I want service consumers to use the standardize infrastructure blocks that are properly tagged no matter where they are deployed and who deploys them.

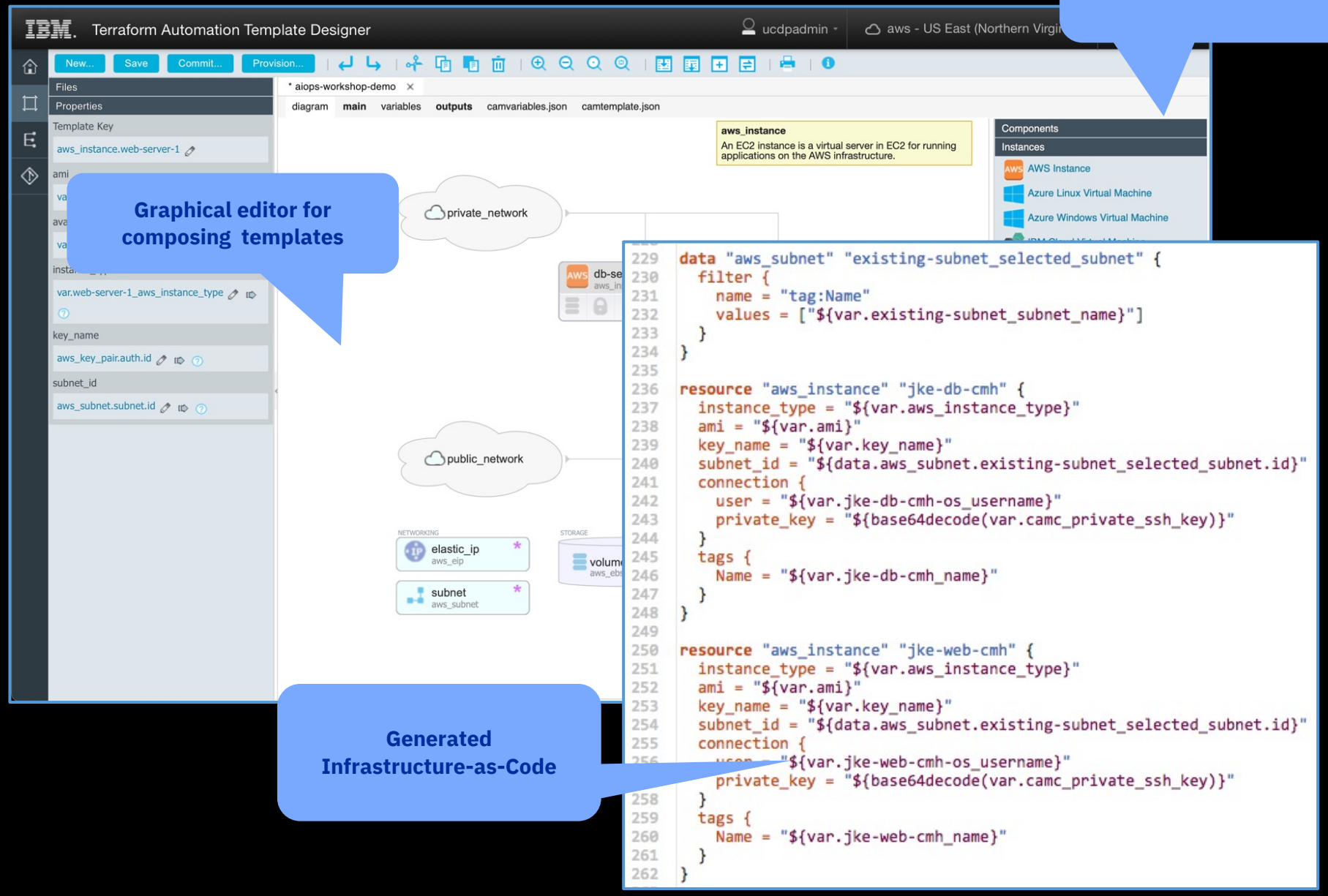
Automation

I want automate various repetitive tasks, provide consistency and compliance through policies

Define your application topology

Mike
Infrastructure Admin

Create and Publish
Cloud services




```
data "aws_subnet" "existing-subnet_selected_subnet" {
  filter {
    name = "tag:Name"
    values = ["${var.existing-subnet_subnet_name}"]
  }
}

resource "aws_instance" "jke-db-cmh" {
  instance_type = "${var.aws_instance_type}"
  ami = "${var.ami}"
  key_name = "${var.key_name}"
  subnet_id = "${data.aws_subnet.existing-subnet_selected_subnet.id}"
  connection {
    user = "${var.jke-db-cmh-os_username}"
    private_key = "${base64decode(var.camc_private_ssh_key)}"
  }
  tags {
    Name = "${var.jke-db-cmh_name}"
  }
}

resource "aws_instance" "jke-web-cmh" {
  instance_type = "${var.aws_instance_type}"
  ami = "${var.ami}"
  key_name = "${var.key_name}"
  subnet_id = "${data.aws_subnet.existing-subnet_selected_subnet.id}"
  connection {
    user = "${var.jke-web-cmh-os_username}"
    private_key = "${base64decode(var.camc_private_ssh_key)}"
  }
  tags {
    Name = "${var.jke-web-cmh_name}"
  }
}
```

Add Service definition workflow

Mike
Infrastructure Admin

Create and Publish Cloud services

Graphical editor for composing and connecting workflows

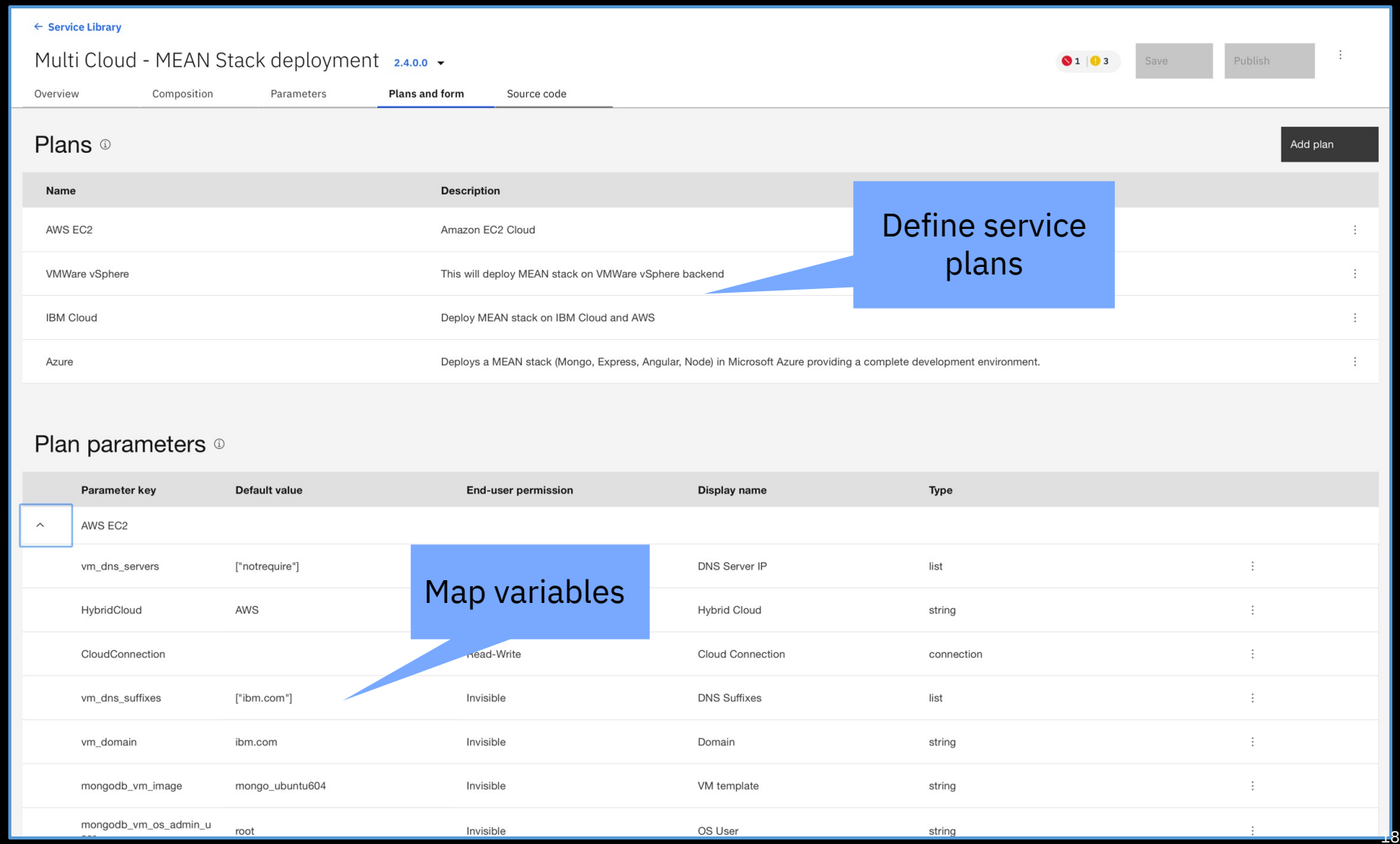
Palette of library assets Drag-and-drop workflow composition

Easy parameter editing and mapping

Define how users interact with the service

Mike
Infrastructure Admin

Create and Publish
Cloud services



Let’s see it in action!

Joachim

IT Manager

Visibility

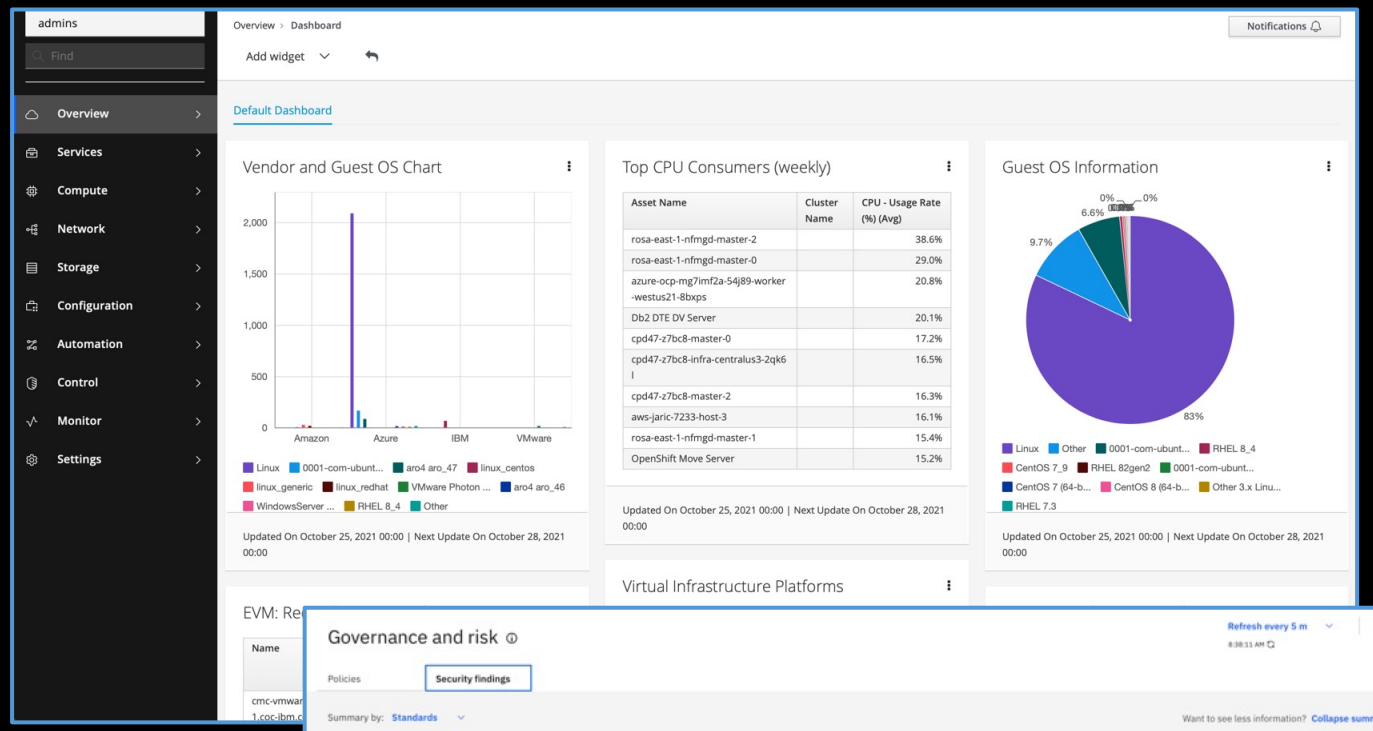
I want to visualize infrastructure, applications, and cost for my hybrid IT Environment

Control costs and resource consumption

I want understand how applications and business units consume resources and be able to generate chargeback reports

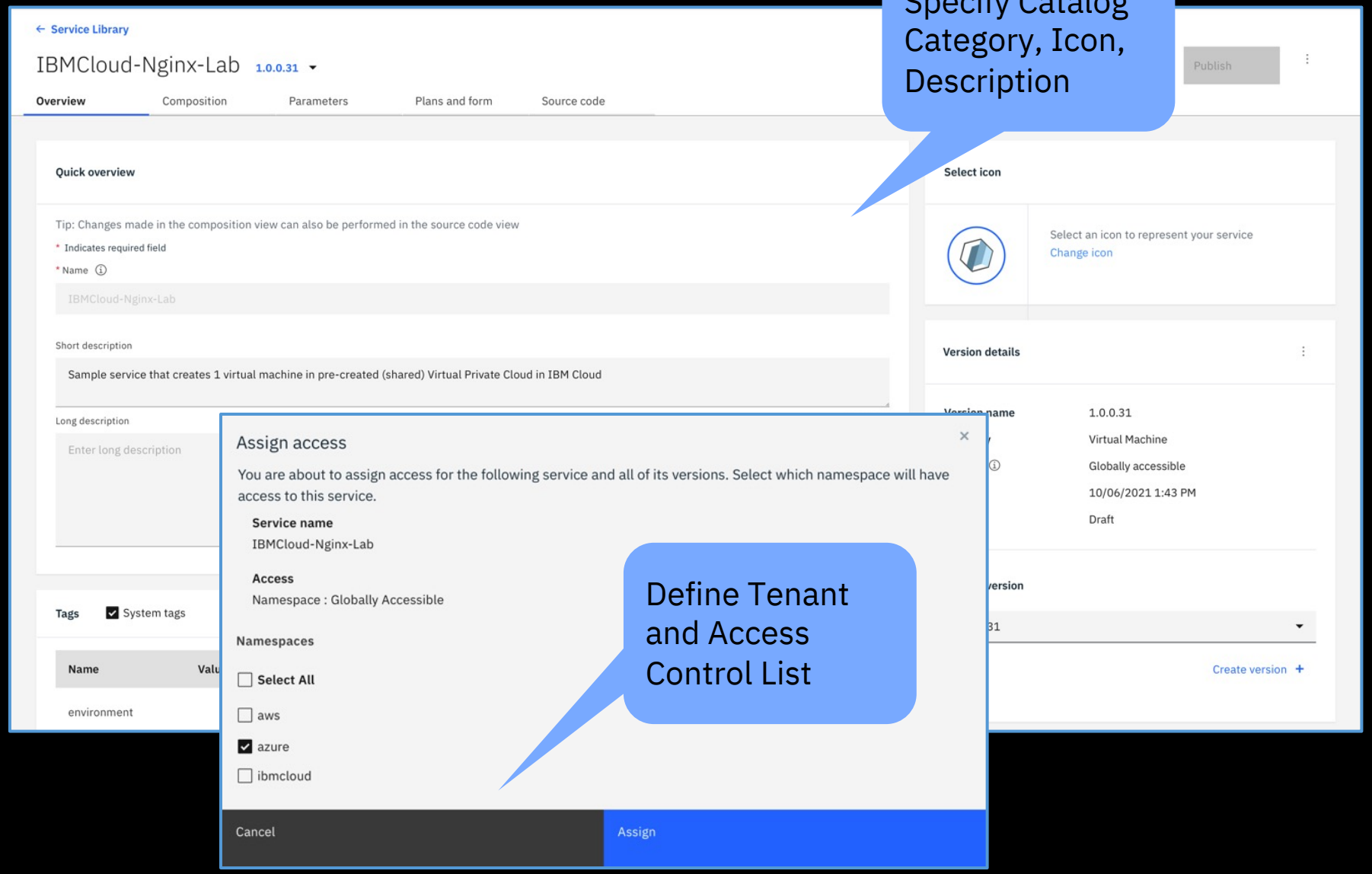
Self-service

I want to provide self service access for developers to provision the infrastructure they need



Publish the service in the catalog. Ready to go.

Create and Publish Cloud services



Let’s see it in action!

Sandra

Application Developer

Easily request new infrastructure

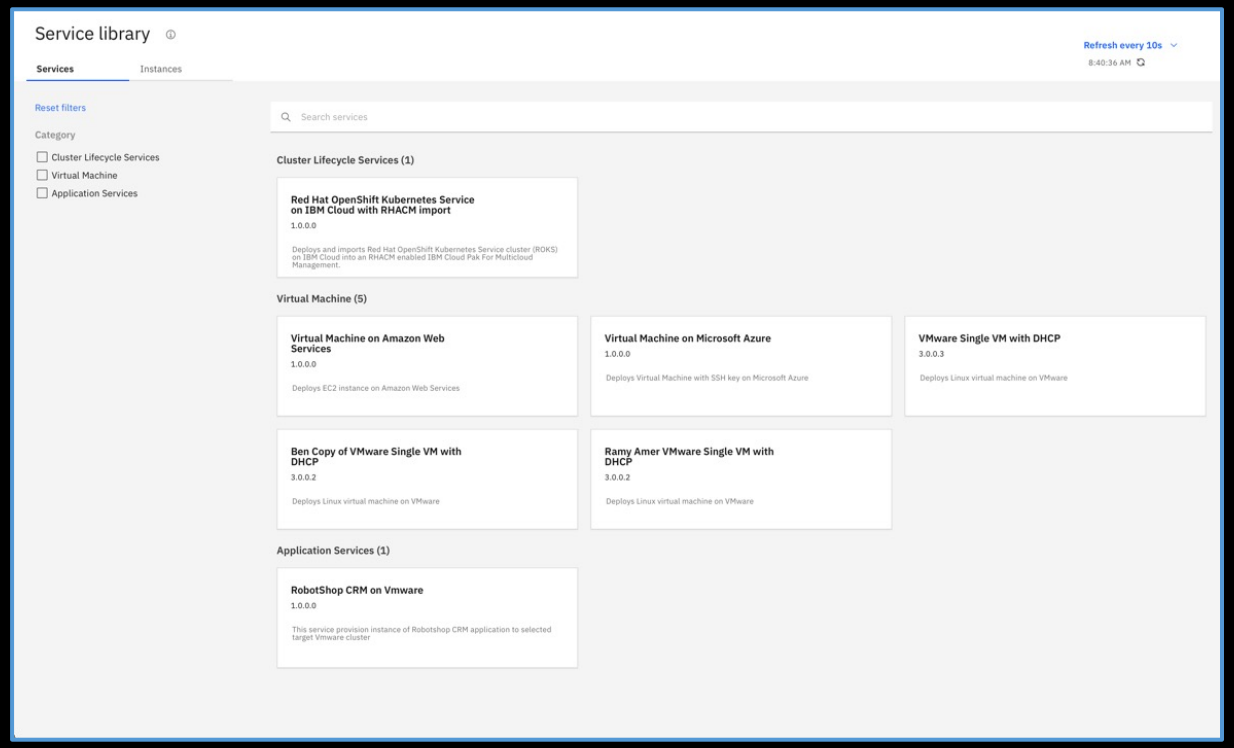
I want to quickly and easily request new service instances for development and test purposes, in any target cloud.

Simple Lifecycle Operations

I want to use simple Day 2 operational User Experience for lifecycle operations and further configuration changes.

Automated compliance

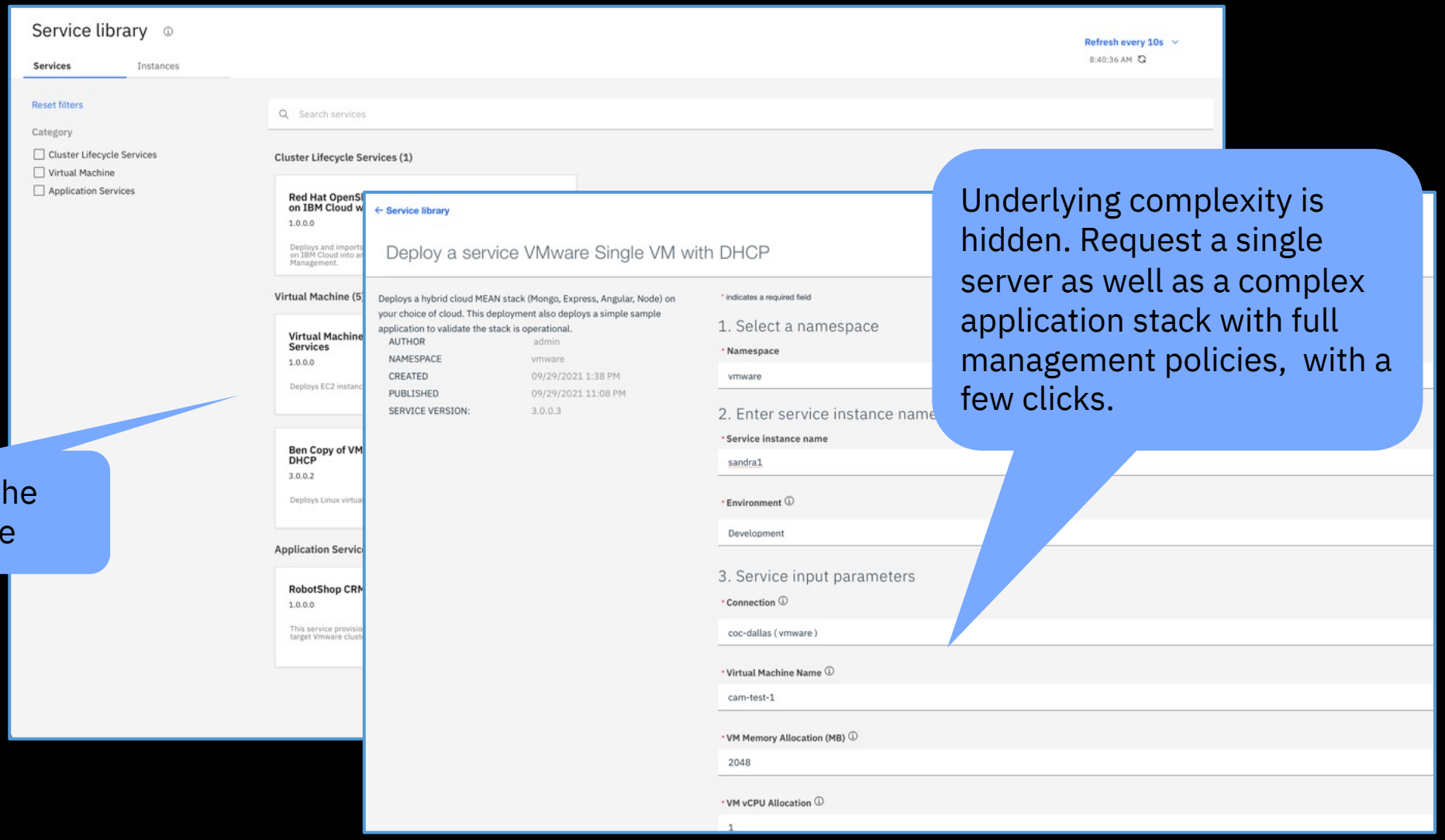
I don’t want to be bothered with compliance monitoring and reporting of the development environments – I want it to be fully automated without my intervention.



The cloud service is ready to go.
- The end users can deploy in minutes

Sandra
Developer

Select the service



Underlying complexity is hidden. Request a single server as well as a complex application stack with full management policies, with a few clicks.

Deploy cloud services

Governance Risk & Compliance

Policies

Control

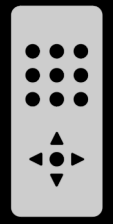
Compliance

- Policies – Critical to all 3 elements of GRC for the organization.
- Policies define the organization’s Governance structure.
- Policies address uncertainty, reducing Risks.
- Policies, well understood and followed, ensures Compliance and integrity.

Infrastructure Automation

Insight

Discovery, Monitoring, Utilization, Performance Reporting, Analytics, Chargeback, Trending

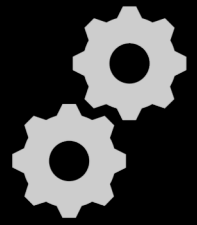


Control

Security, Compliance, Alerting, Policy-Based Resource and Configuration Management

Automate

IT Process, Task and Event, Provisioning, Workload Management and Orchestration



Integrate

Systems Management, Tools and Processes, Event Consoles, CMDB, RBA, and Web Services

Insight

Discovery & Inventory

Chargeback

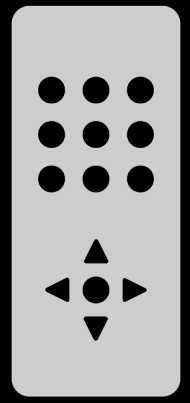
Monitoring

Analytics

Custom Reports

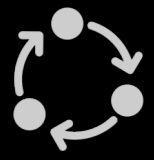
- Continuously discover your infrastructure: Clouds, VMs, Containers, Physical Infrastructure
- Discover and Visualize relationships
- Maintain inventory
- Tagging taxonomy/tag-mapping with cloud-providers
- Flexible Chargeback
- SmartState Analysis to enforce compliance & detect drift
- Capacity planning and right-sizing recommendations
- Custom Dashboard and report generation

Control



Policy &
Compliance

Alert

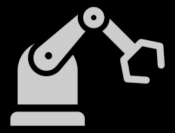


Lifecycle actions

- Basic lifecycle operations start/stop any VM
- Custom Operations - connect Ansible playbook to a custom button
- Control Policies to check condition, generate event and perform actions
- Compliance policies to flag non-compliance
- Alert policies - (ex: CPU above threshold-stop VM and alert)
- Multiple related policies combined in a policy profile

Automate

Lifecycle Management

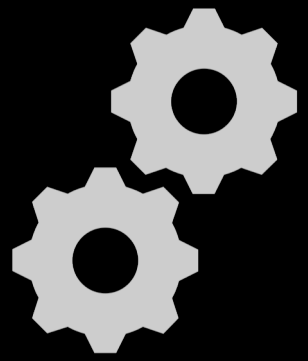


Automation framework

Self-service

- Automation using Ansible playbooks and/or Ruby code
- Provision and retirement of VMs and services
- Customized dialogs for user interaction/data collection
- Service Catalog – multi-tenant
- Customizable order-approval
- Quota management
- Integrate with your Systems via Automate Framework

Integrate

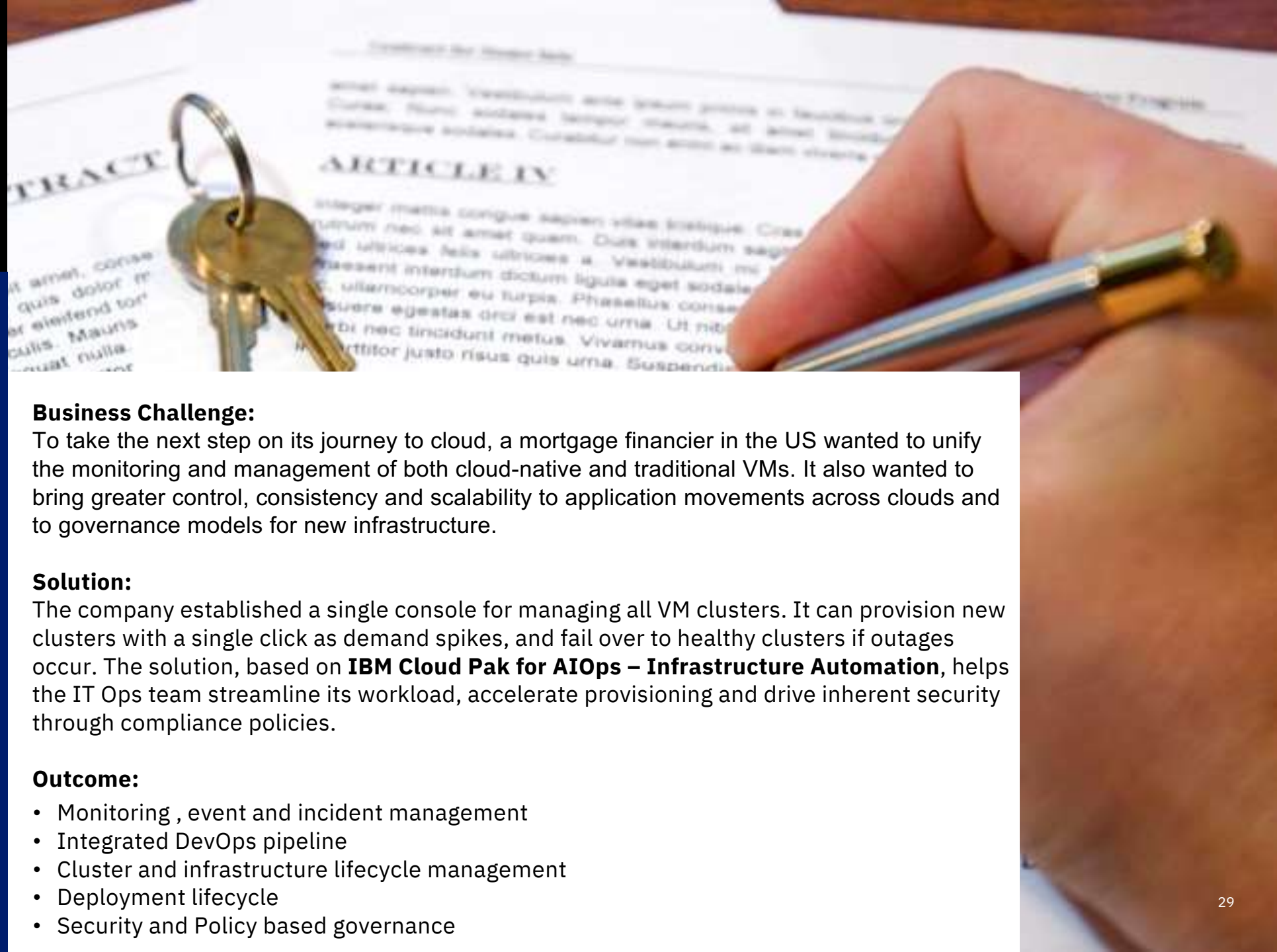


Comprehensive REST API allowing to:

- Integrate with your ServiceNow Catalog and do order routing
- Integrate with ticketing tools like BMC Remedy
- Integrate with IPAM tools like InfoBlox
- Send data from IM to the Graphing and Reporting tools of your choice
- Write your own custom UI and consume data from IM

A leading mortgage financier

Unifying control of an evolving hybrid cloud infrastructure



Business Challenge:
To take the next step on its journey to cloud, a mortgage financier in the US wanted to unify the monitoring and management of both cloud-native and traditional VMs. It also wanted to bring greater control, consistency and scalability to application movements across clouds and to governance models for new infrastructure.

Solution:
The company established a single console for managing all VM clusters. It can provision new clusters with a single click as demand spikes, and fail over to healthy clusters if outages occur. The solution, based on **IBM Cloud Pak for AIOps – Infrastructure Automation**, helps the IT Ops team streamline its workload, accelerate provisioning and drive inherent security through compliance policies.

Outcome:

- Monitoring , event and incident management
- Integrated DevOps pipeline
- Cluster and infrastructure lifecycle management
- Deployment lifecycle
- Security and Policy based governance

Automation underpins your AIOps Journey

Faster decision-making

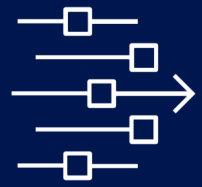
Full-stack and enterprise observability

INSTANA
an IBM Company

Optimized Resources

Dynamic resource and cost optimization

turbonomic
an IBM Company



Proactive Resolution

Problem determination, remediation, avoidance

IBM Cloud Pak for Watson AIOps

Streamlined Infrastructure Management

Hybrid Multicloud | *Provisioning* | *Discovery* | *Control* | *Automation* | *Insights*

IBM Cloud Pak for Watson AIOps

AIOps - application centric IT operations

Instana + Turbonomic + Cloud Pak for Watson AIOps

Observability

1

INSTANA
an IBM Company

Application-Driven, Top-Down
Automatically ingests and contextualizes observability metrics, traces, and events for performance

Optimization

2

INSTANA
an IBM Company
+
turbonomic
an IBM Company

Application Resourcing
Applications are continuously resourced for performance

Proactive Resolution

3

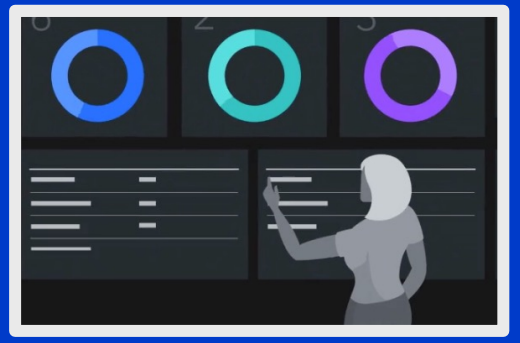
IBM Cloud Pak for Watson AIOps

AI-Powered, Predictive Insights
Software drives continuous performance and maintains compliance, while minimizing cost

Feedback loop confirms improvement in business and application performance

4 Infrastructure Automation

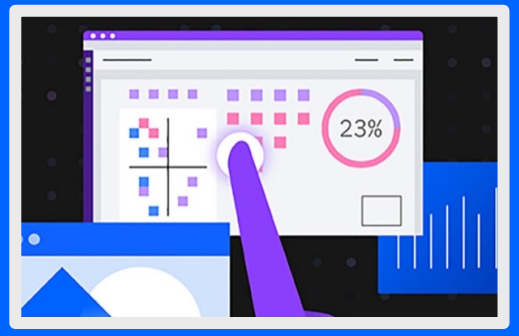
Q&A and Next steps



AIOps Free benefits calculator

Calculate your estimated benefits from intelligent IT automation

ibm.biz/AIOPsCalculator



Simulation: Respond to outages

View the incident resolution simulation of how an SRE or IT Ops Engineer can accelerate their time to analyze, diagnose & resolve incidents

ibm.biz/AIOPsSimulation

Sign Up for a Free Automation Innovation Workshop

A complimentary, customizable half-day workshop around AI-powered automation

ibm.biz/AIOpsWorkshop

Your Next Steps

Free Planning Workshop

IBM is offering a complimentary half-day workshop to help you identify how AI-powered automation can solve some of your toughest operational challenges.

In this workshop, IBM Automation subject matter experts will:

- Share the latest in AI-powered automation, including an inside look at how industry peers are leveraging automation
- Facilitate an interactive design-thinking exercise to discover top pain points and challenges within your organization that automation can solve
- Co-create an actionable plan for achieving required business outcomes

Must have Attendees:

IT Senior Level Executives (CIO, Senior VP, etc) and Business Senior Level Executives (LOB, et al.)

Automation Innovation Workshop Agenda Half Day

Agenda can be customized for what works best for your team!

Topics	Objectives	Duration
Automation innovations and industry trends	• Uncover what automation means for businesses and IT • Analysts viewpoints: Forecasts and Trends • Industry uses cases and best practices	30 Minutes
Collaborate to understand your biggest challenges	• Work through a virtual collaborative exercise utilizing Mural to gain insight into your key pain points and biggest challenges	90 Minutes
BREAK – 15-30 min		
Explore how Automation can solve your biggest challenges	• Dive into applicable Automation use cases based on the identified pain points from collaborative Mural session • Demo automation to see for yourself	60 Minutes
Recommended next steps in your automation journey	• Recap key focus areas • Establish how IBM Automation can help bring value to your business • Deliver customized roadmap for solving your identified challenges	60 Minutes

Improve Business Process Workflows | Reduce incident response time | Integrate Data across the business

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