Zero-touch network operations with AI-powered automation

Transforming to a Cloud Native Operations Management Model

Jim Carey

Offering Management and Strategy
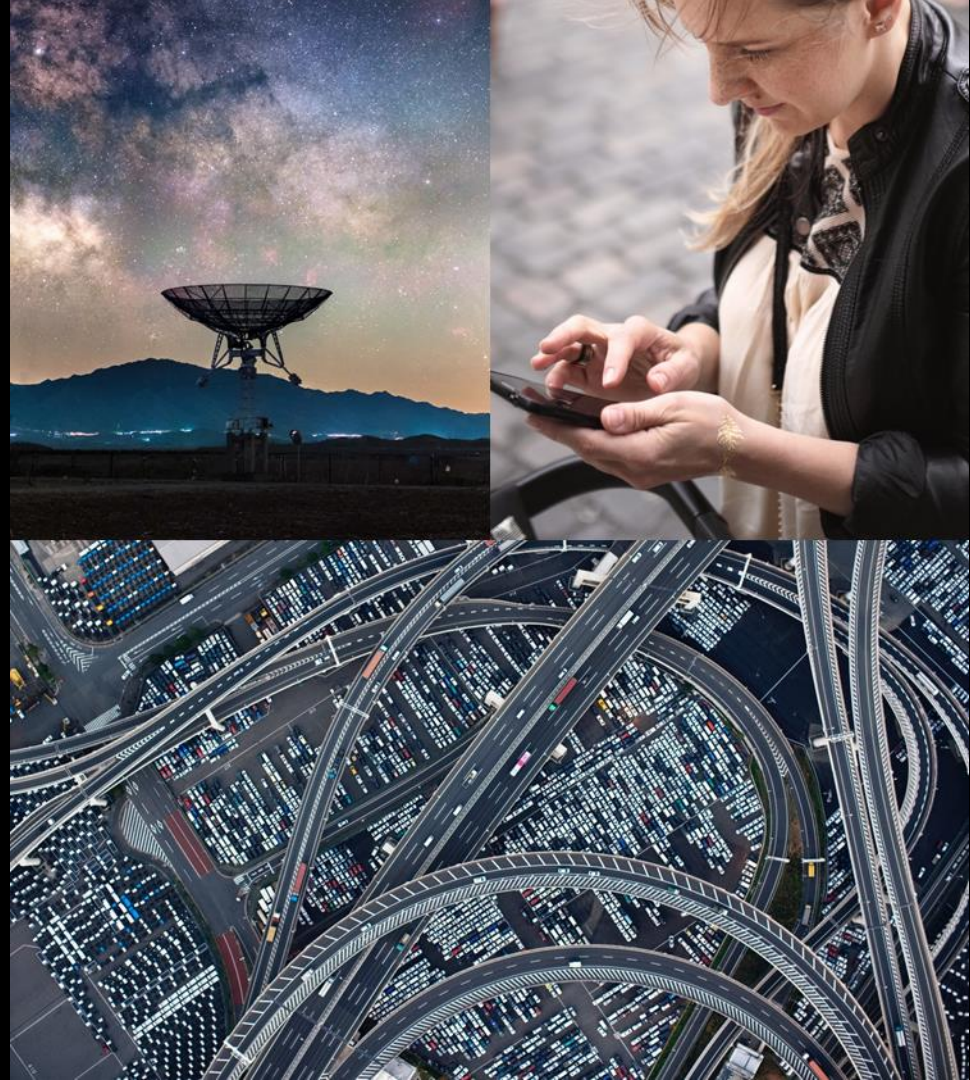
IBM Telco Products

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IBM

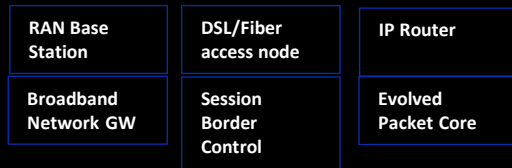# Telecommunications network transformation imperatives

- Deliver new innovative 5G and edge services faster

- Integrate AI and Automation to reduce operational costs

- Improve customer experiences
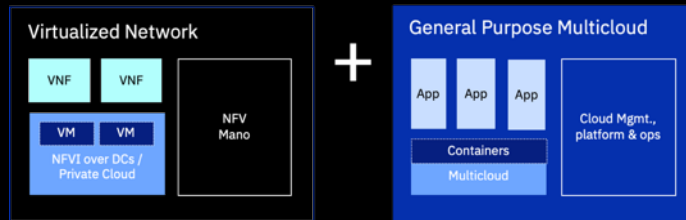
Telco cloud revolution is underway

Telcos need to modernize their networks to increase agility and deliver new services
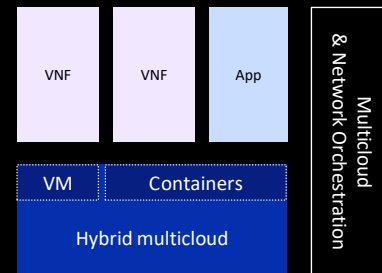
Traditional proprietary, vertically integrated

RAN Base Station	DSL/Fiber access node	IP Router
Broadband Network GW	Session Border Control	Evolved Packet Core

Proprietary, bundled network elements and services

Virtual networks integrated with a general-purpose cloud

Virtualized Network

VNF   VNF

VM   VM

NFV Mano

NFVI over DCs / Private Cloud

+

General Purpose Multicloud

App   App   App

Containers

Multicloud

Cloud Mgmt., platform & ops

Open, unbundled, cloud-based platforms

Telco networks become cloud platforms

VNF   VNF   App

VM   Containers

Hybrid multicloud

Multicloud & Network Orchestration

Ecosystem of partners who can help co-create new 5G-powered Edge solutions

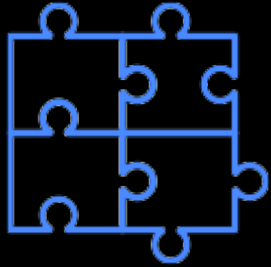"Ultimately 5G is about the move to software at the center of the network"

Quote from Appledore Research Whitepaper, 2020

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POLL QUESTION 1:

Where are you in your transformation journey?

1. Still running on mostly hardware

2. Started virtualizing, but haven't changed my processes

3. Adopting DevOps, but no closed loop operations

4. Already adopting AI based closed loop automation

Getting to Zero touch operations requires a transformation with new tools and new processes

+ **+** **=** Zero touch operations

Normalized Lifecycle Model

Standardized lifecycle operations for all xNFs to enable model-driven automation with CI/CD toolchains
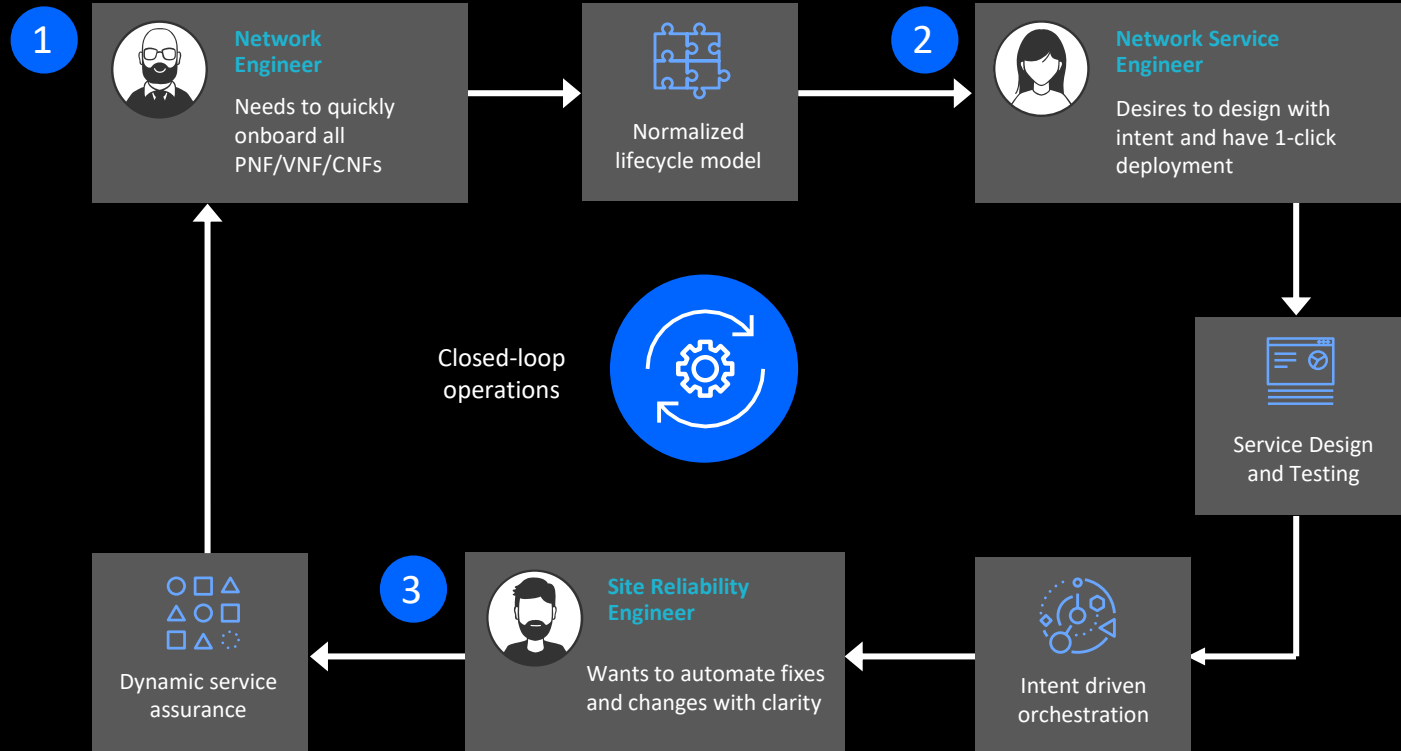
Intent driven Orchestration

Model the desired service operational state rather than pre-programming workflows

Closed-Loop Operations

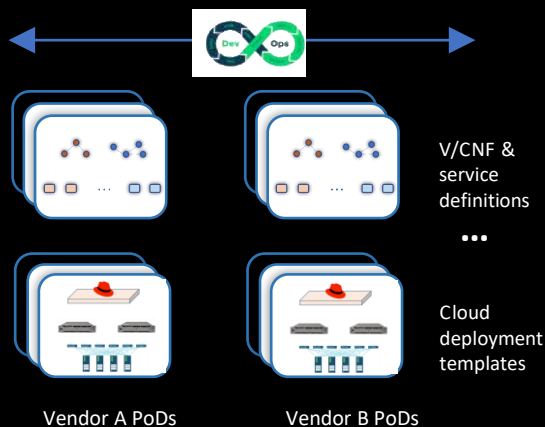Apply ML and AIOps to proactively respond in dynamic environments

Automation and AI should affect every aspect of network service delivery

Network Engineer

Needs to quickly onboard all PNF/VNF/CNFs

Normalized lifecycle model

Network Service Engineer

Desires to design with intent and have 1-click deployment

Service Design and Testing

Closed-loop operations

Intent driven orchestration

Site Reliability Engineer

Wants to automate fixes and changes with clarity

Dynamic service assurance

Network Cloud Stack requires an SRE style operating model

Fully automated delivery model
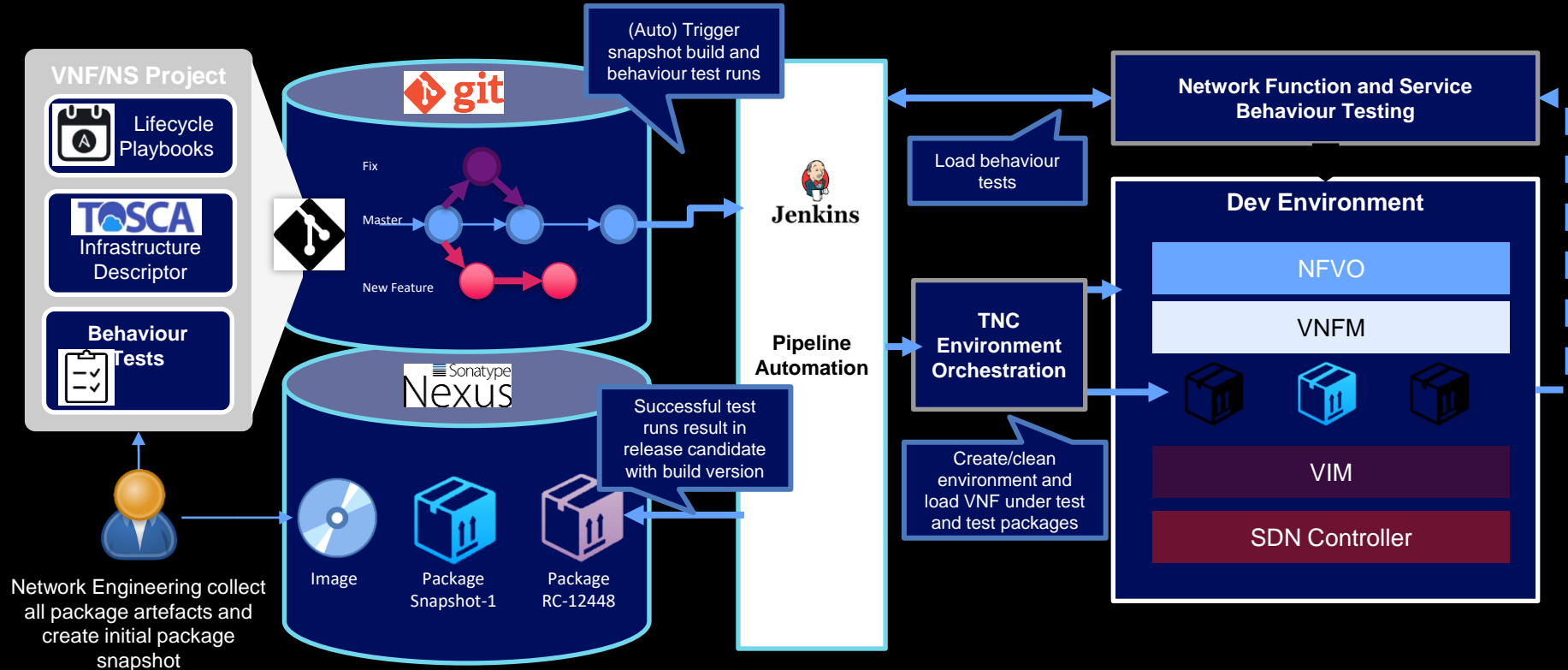Highly scalable & repeatable for functions and services

V/CNF & service definitions

• • •

Cloud deployment templates

Vendor A PoDs   Vendor B PoDs

Key operating model changes
Fully software-defined system requires new tooling, processes & skills

Deployment

Fully software defined architecture

Maintenance   Closed-loop automation
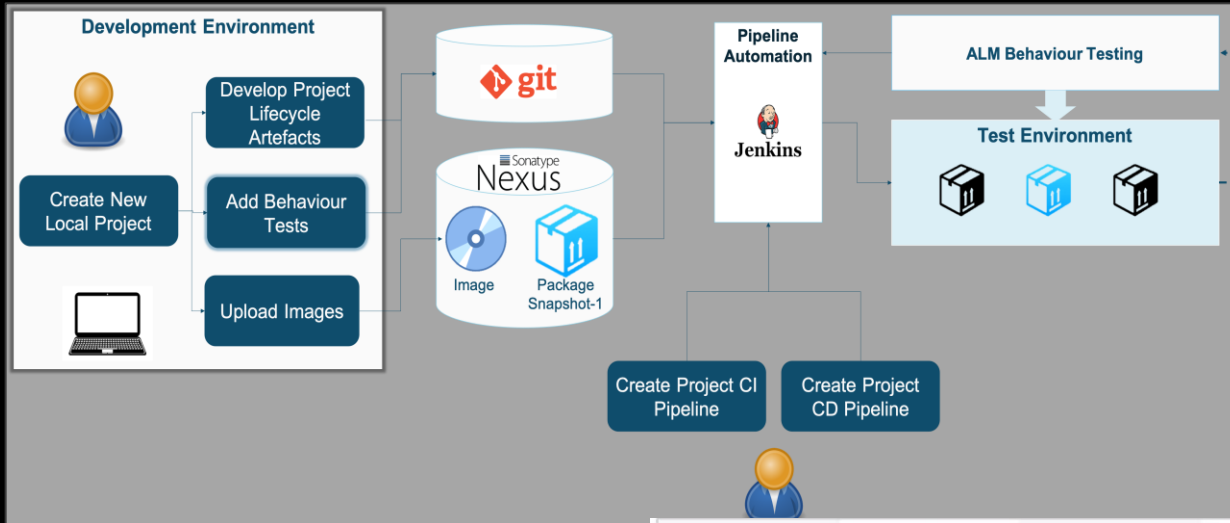
Architecture	Standard, open virtualization & software components
Ops tooling	Intent-based (vs. workflow-based)
Process	SRE (Site Reliability Engineering), DevOps
Skills	Software eng + admin

Adopting DevSecOps from Software best practices prepares the network operations and delivery teams to move quickly

Focus on Automated and Repeatable builds of network functions and services enables rapid response in unexpected situations
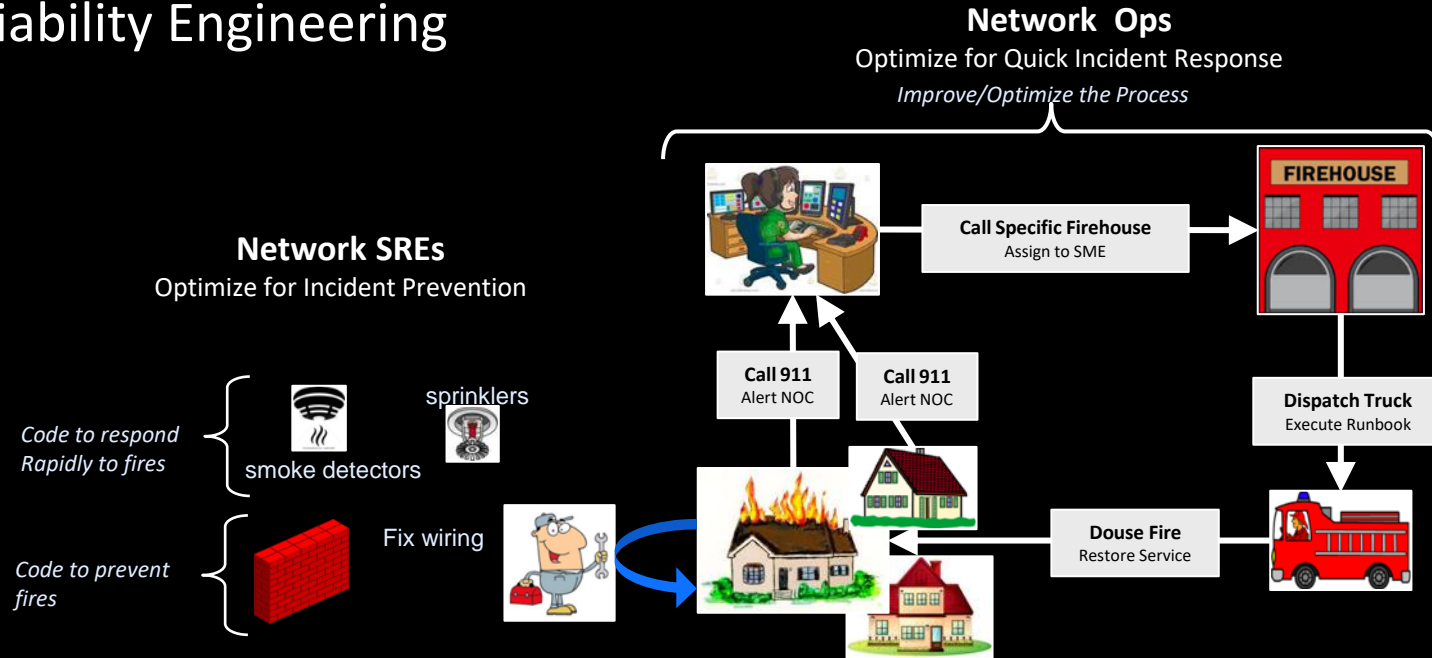

DevSecOps:

- Build to re-Build

- Automate to re-build solution with integrated testing so that solution is always in a known state

- Enable quickest reaction to any problem that emerges

The difference between Network Operations and Network Site Reliability Engineering

Network Ops
Optimize for Quick Incident Response
Improve/Optimize the Process

Network SREs
Optimize for Incident Prevention

sprinklers

Code to respond Rapidly to fires

smoke detectors

Code to prevent fires

Fix wiring

Call Specific Firehouse
Assign to SME

FIREHOUSE

Call 911
Alert NOC

Call 911
Alert NOC

Dispatch Truck
Execute Runbook

Douse Fire
Restore Service

- Traditional Network Operations focuses on fighting the fires
- SRE fights the fires, but invests in ensuring that there won't be another fire with the same cause
- In ITIL terms, SRE do Problem Remediation. Operations does Incident Remediation
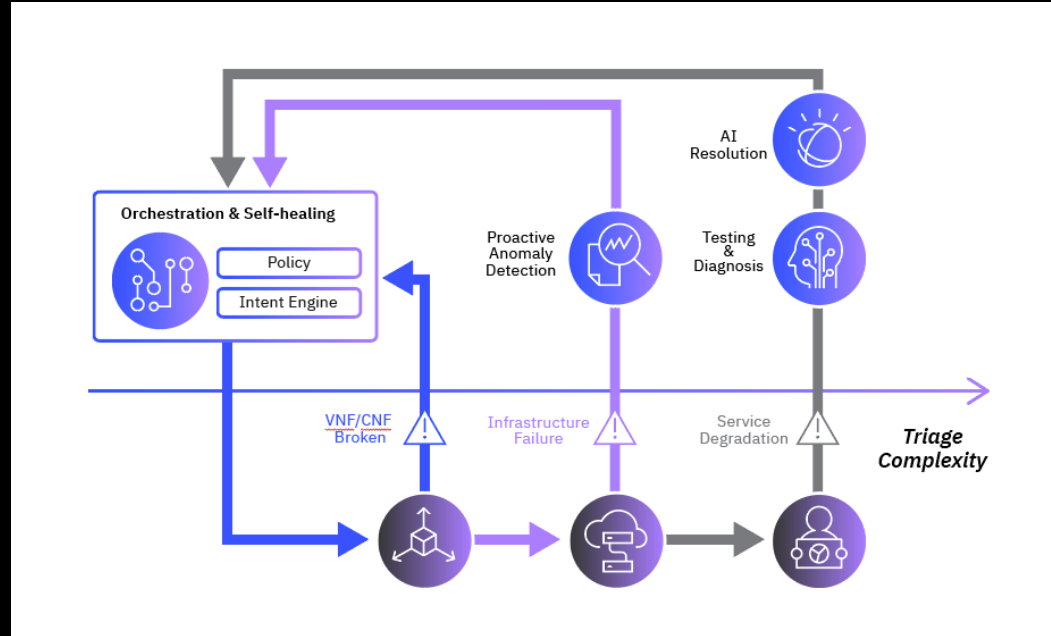
Getting to a Zero Touch Operation using Closed Loop Automation requires new tools and new approaches

Transform Process:

- Embrace Change

- Adopt Cloud Operations (DevSecOps) Model to increase agility

- Adopt Site Reliability Engineering practices to deliver Closed Loop solutions that fix problems

Adopt new Tools:

- Flexible Automation Fit for Purpose

- Robust, Intent-based Automation (avoid explicit workflows)

- Embrace Change with AI/ML capabilities to integrated context

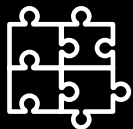- Intentional Integration with Modular Flexibility

POLL QUESTION 2:

What are the biggest challenges to updating your operations model?

1. No significant challenges

2. Organizational resistance to change

3. Lack of adequate tools or cost prohibitive

4. Lack of transformational resources / skills

IBM Cloud Pak for Network Automation

A Modular solution that supports rich automation, process transformation, nad Closed loop Assurance by design

Normalized lifecycle modeling

Standardized operations for all xNFs to enable model-driven automation with CI/CD toolchains

Intent-driven orchestration

Models the desired service operational state rather than pre-programming workflows

Service design & testing

Automation for the service itself and underlying resources for test, pre-production, and production environments

Dynamic service assurance

Real-time view of network and cloud infrastructures using AI to drive decision making and process automation

Closed-loop operations

Automated feedback loop between assurance and orchestration to enable zero touch operations

Automate, innovate and transform today to make sure your network is ready for tomorrow

Network site deployment

4G/5G telco cloud platform

NFV lifecycle management
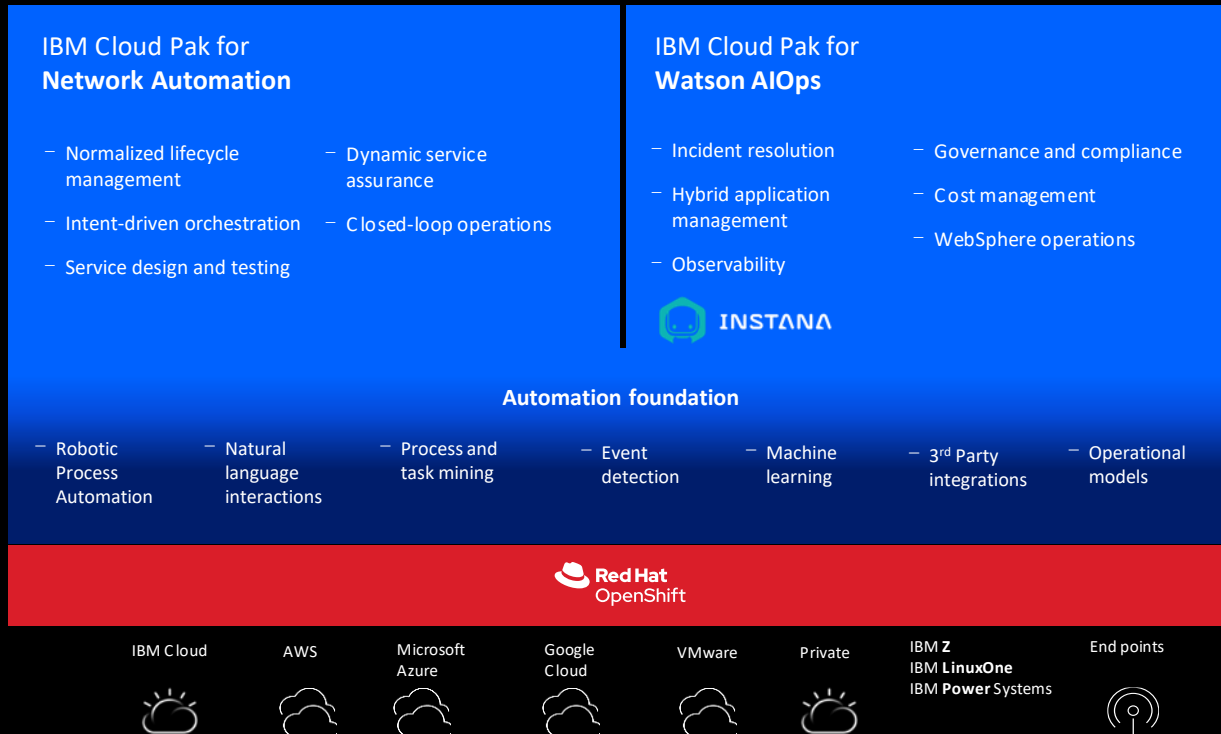
5G Network Slicing

vRAN / Open RAN

Multi-access Edge Computing (MEC)

Deliver proactive telco network transformation

IBM Cloud Pak for Network Automation and IBM Cloud Pak for Watson AIOps

IBM Cloud Pak for **Network Automation**

- Normalized lifecycle management
- Intent-driven orchestration
- Service design and testing
- Dynamic service assurance
- Closed-loop operations

IBM Cloud Pak for **Watson AIOps**

- Incident resolution
- Hybrid application management
- Observability
- Governance and compliance
- Cost management
- WebSphere operations

INSTANA

Automation foundation

- Robotic Process Automation
- Natural language interactions
- Process and task mining
- Event detection
- Machine learning
- 3rd Party integrations
- Operational models

Red Hat OpenShift

| IBM Cloud | AWS | Microsoft Azure | Google Cloud | VMware | Private | IBM **Z** IBM **LinuxOne** IBM **Power** Systems | End points |

Meet the challenges of adopting 5G and Software based networking with new tooling and process transformation

Challenge

Opportunity

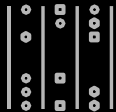Lack of end-to-end orchestration capabilities

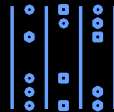Comprehensive **full stack automation** with DevOps and SRE

Managing environments with both physical & virtual resources

Hybrid solution spanning all resources

Lack of DevOps capabilities and skills needed to innovate

Adoption of a **cloud operating model** enabling a zero-touch solution

Get started

and schedule a free virtual consultation with an expert

Jim Carey

Offering Management Strategy

IBM Telco Products

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With IBM Cloud Pak for Network Automation, you can evolve to zero-touch network operations with AI-powered automation

Lower Costs

Improves business process and service assurance while lowering operations costs

Deploy Faster

Accelerates the delivery of networks and services through AI-powered automation

Run Anywhere

Runs on any cloud, anywhere, and manages any network vendor infrastructure

www.ibm.com/cloud/cloud-pak-for-network-automation

Thank you

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IBM Telco Products
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