IBM Cloud for Telecommunications and IBM Cloud Pak for Network Automation

Gary O'Driscoll
Offering Management Lead, 5G & Edge
IBM Cloud & Cognitive Software

IBM Automation Digital Library

Network Automation solutions

On Demand

Steve Canepa, IBM & Jeffrey Hammond, Forrester | CUBE Conversation

Feb 11, 2021 11:00 AM EST

IBM Cloud for Telecommunications and IBM Cloud Pak for Network Auto...

Feb 25, 2021 11:00 AM EST

Making automated oRAN/vRAN deployments and operations a reality

On Demand

Introducing IBM Cloud Pak for Network Automation

On Demand

Automating the Journey to Cloud Native Intelligent Networks

ibm.biz/Bdf4JN

© 2021 IBM Corporation

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

© 2021 IBM Corporation

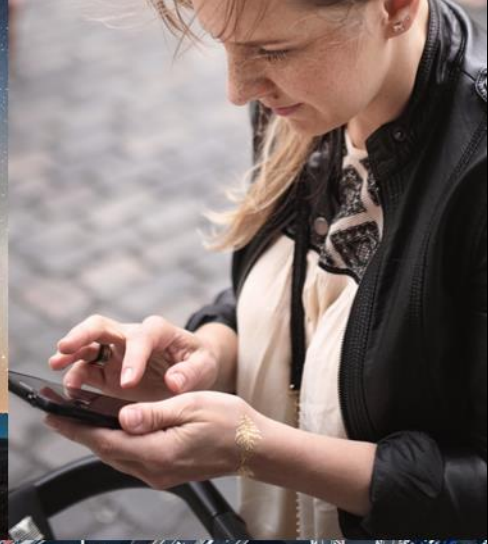
Quote from Appledore Research Whitepaper, 2020

Network transformation imperatives

Deliver innovative 5G and edge services, faster

Reduce operational costs

Improve customer experiences



© 2021 IBM Corporation

Automation and AI are critical to CSP network transformation

84%

Identified faster time-to-market of new services as the most important KPI for successful automation initiatives*

76%

Plan to use AI to automate self-diagnostics and problem detection to reduce OPEX and improve customer satisfaction*

*Sources from IBM Institute of Business Value Report: ibm.biz/reenvisioncspw3

© 2021 IBM Corporation

Automate networks to deliver zero-touch operations

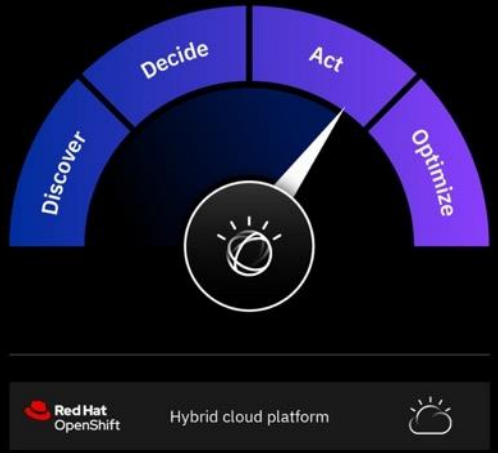
Discover
Discover hidden patterns and trends to continuously fine tune network operations and performance

Decide
Empower both telecom business and network organizations to execute data driven decisions to improve top and bottom lines

Act
Automate network and services design, deployment and operations with intent-driven orchestration and closed loop operations

Optimize
Detect and remediate incidents proactively to improve customer SLAs and experiences

Automation dial



82% reduction in cost to onboard new services

6x reduction in customer service response time

IBM Cloud Pak for
Network Automation

© 2021 IBM Corporation

*82%: IBM TCO Study; 6x based on Nextel case study

The first high trust, unified architecture that addresses the fundamental transformation challenges facing telco's today…

TRUST	Your data is your data. Put it to work on a global network with AI that runs anywhere for low latency.
AGILITY	A cloud experience everywhere built on the market leading OS, Container & Kubernetes platform
CONTROL	A single control plane, with consistent enforcement of compliance and security from the core to the edge
SPEED	Tap into expert-built service architectures, IBM's enterprise client reach and an ecosystem partners to monetize faster.

© 2021 IBM Corporation

IBM Cloud for Telecommunications is right for **you**…

A unified architecture built on open innovation providing a consistent user experience on a **single control plane**

A hybrid cloud platform deployable on public cloud, on-prem or 3rd party cloud end points

Superior latency at the edge as well as unmatched data governance policies so **you own your data**

Deploy, manage and orchestrate edge devices and network functions with **AI-driven** service assurance and network orchestration

The **most open and secure public cloud** built for your business and your industry

20%

cost reduction via centralizing deployment to edge nodes

30%

Reduced downtime up to 30% through automation of lifecycle management

80%

Client have seen >50% in OpEx reduction through automation & centralized management

© 2021 IBM Corporation

Poll

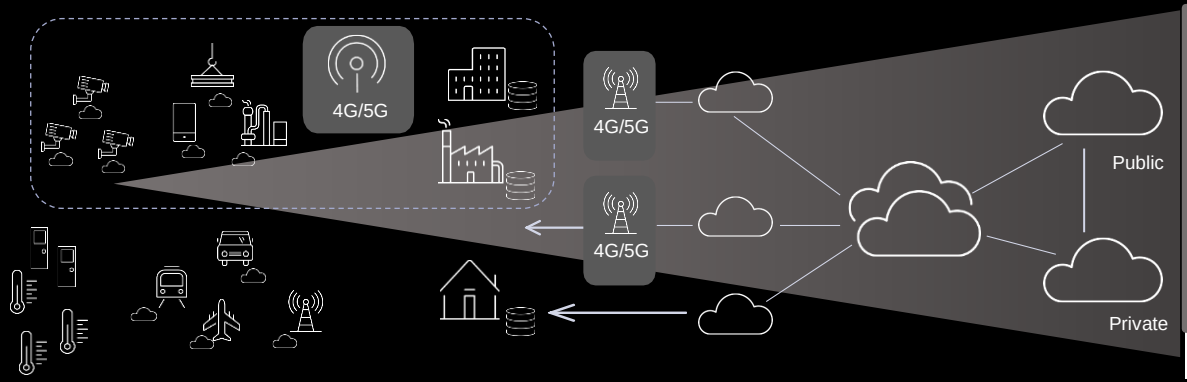
What workloads are best suited as first candidates to migrate to the cloud

- **OSS applications**
- **BSS Applications**
- **Core Network Functions**
- **IMS Services**
- **Virtualised RAN**

IBM Cloud for Telecommunications

Far Edge | Enterprise Edge | Network Edge | Distributed Cloud | IBM Public Cloud Zones

Distributed Architecture for ultra-low latency



IBM and Red Hat Ecosystems Partners

Device | Edge | Access | Mobile Core | Hardware | SDN | Security | OSS | BSS | Engagement

IBM Cloud services delivered anywhere a client needs them, managed from a single pane of glass, with as-a-service operations.

IBM Edge Applications Manager | IBM Cloud Pak for Network Automation | IBM Cloud Satellite | IBM Cloud Paks | IBM Public Cloud

© 2021 IBM Corporation

IBM Cloud for Telecommunications

Capabilities

- Deliver next generation 5G & edge services
- Deploy and manage new cloud capabilities
- Enrich relationships with AI driven engagement

Expertise

Ecosystem Partners & IBM Services

Accelerate your journey with IBM Services industry expertise, service architectures and proven methods

Advanced Technologies

IBM Edge Application Manager

Scale, analyze and manage data and applications running on edge devices, anywhere for new insight and services without weighing down the network

IBM Cloud Pak for Network Automation

Orchestrate and Automate containerised network functions for zero touch / closed loop operations

IBM Cloud Pak for Watson AIOps

AI infused service assurance, anomaly detection and root cause to drive closed loop operations

IBM Cloud Pak for Data

Operationalize data anywhere and deliver innovative new AI-based services

IBM Cloud Satellite

Gain the highest level of security and compliance for containerized apps and data across all your clouds from the data center to the edge with a single point of control

Foundation

Powered by: Red Hat

Red Hat OpenShift

Begin with a foundation for delivering new container-based apps, data and services anywhere

Red Hat OpenStack

Enable open network function virtualization on any infrastructure without lock in

Infrastructure

IBM public cloud | Private | Other clouds | Network Cloud | Edge | SDN | 5G Networks

© 2021 IBM Corporation

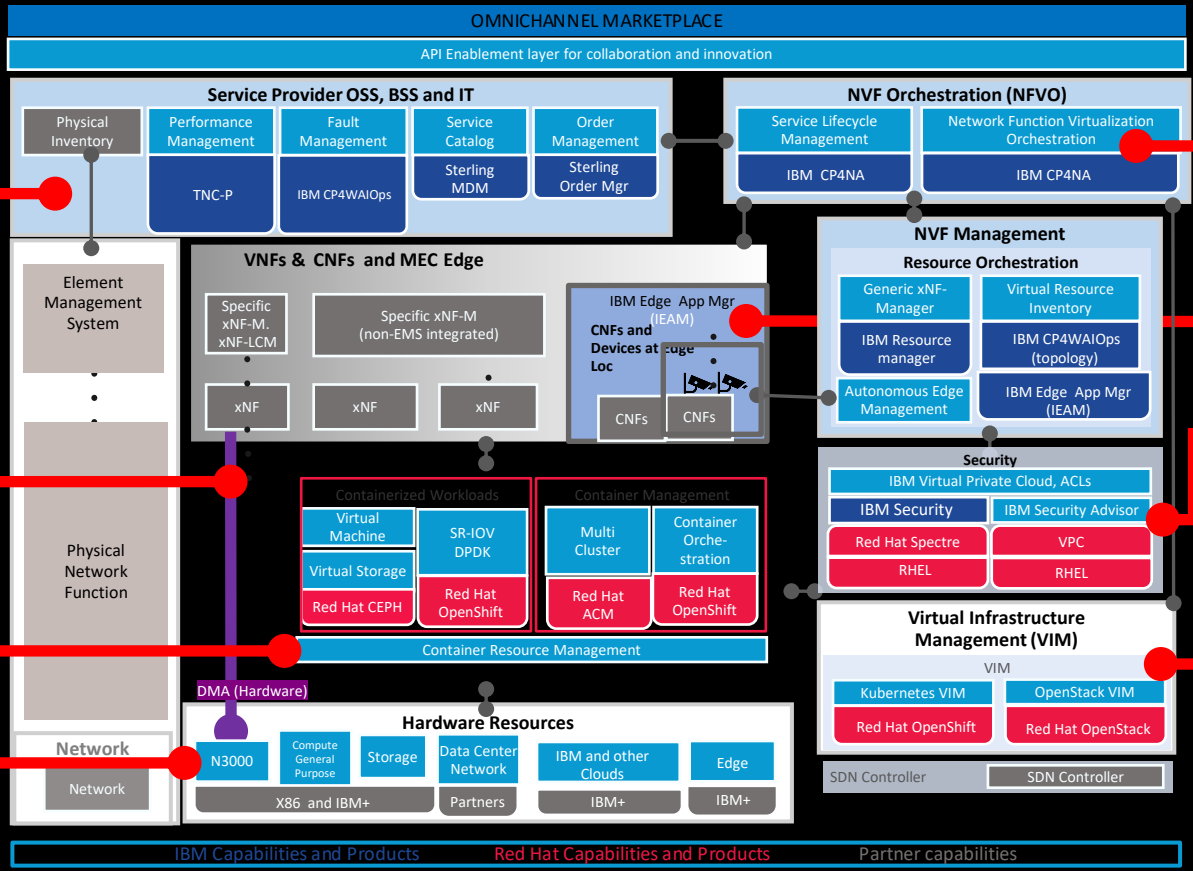
Reference Architecture for IBM Cloud for Telecommunications

Data Center Resiliency
Multi-Zone Region (MZR) for High Availability

Enhanced Kubernetes
SR-IOV, DPDK, MULTUS

Extended Resource Management Functions
NUMA, CPU Pinning
Group Affinity

Specialized Hardware Acceleration



Highly Available Orchestration
on prem with failover to orchestration shadowed on IBM Public Cloud.

Data Sovereignty
IBM Cloud Satellite allowing customer data to remain local.

Security
Host Lists
Virtual Private Cloud
Auditing
HPCS (BYOK/KYOK Key Mgt.)

Red Hat VIM/CIM
Container Access Lists.

© 2021 IBM Corporation

IBM Cloud for Telecommunications ecosystem partners

IBM Cloud

Network Modernization

5G Access

ALTIOSTAR
Leading Network Transformation

MAVENIR

NOKIA

SAMSUNG

Telco Edge

ADVA

ALTRAN
Part of Capgemini

kaloom

portworx
by Pure Storage

ROBIN

SAMSUNG

5G Mobile Core

affirmed

cisco

MAVENIR

metaswitch

NOKIA

SAMSUNG

travelping

Load Balancer

f5

JUNIPER NETWORKS

SAMSUNG

turbonomic

Software Defined Networking

JUNIPER NETWORKS

Compute / Hardware

cisco

DELL Technologies

EQUINIX

Hewlett Packard Enterprise

Lenovo

NetApp

NOKIA

Digital Engagement

Operations Support System (OSS)

Enghouse Interactive

sinefa

Spirent
Promise. Assured.

Security

cisco

NETSCOUT

paloalto NETWORKS

SAMSUNG

SevOne
A TURBONOMIC COMPANY

THALES

Zerto

Business Support Systems (BSS)

Enghouse Interactive

MATRIXX SOFTWARE

MOVIUS

Customer Care

assima

dubber

NUANCE

Technology Platform and Open-Source Partners

intel

LF NETWORKING

O-RAN ALLIANCE

Red Hat

tmforum

© 2021 IBM Corporation

Hybrid Cloud Architecture

Red Hat OpenShift

Red Hat OpenStack

End Point

CSP Network Edge

Local Data Centers

4G RAN

MEC

5G RAN

CSP Data Centre

Market Data Centers

BSS

4G/5G Core

IMS Core /
VoLTE / VAS

OSS

Assurance

Orchestration

© 2021 IBM Corporation

Hybrid Cloud Architecture

Red Hat OpenShift

Red Hat OpenStack

End Point

CSP Network Edge

Local Data Centers

4G RAN

MEC

5G RAN

IBM Cloud Satellite

CSP Data Centre

Market Data Centers

BSS

4G/5G Core

IMS Core / VoLTE / VAS

OSS

Assurance

Orchestration

IBM Cloud Satellite

Virtual Private Cloud

Central Data Centers

BSS

IMS / VoLTE

4G/5G Core

OSS

Orchestration

Assurance

IBM Public Cloud

Single pane of glass management across all locations

© 2021 IBM Corporation

Hybrid Cloud Architecture

Red Hat OpenShift

Red Hat OpenStack

End Point

CSP Network Edge

Local Data Centers

4G RAN

MEC

5G RAN

IBM Cloud Satellite

CSP Data Centre

Market Data Centers

BSS

4G/5G Core

IMS Core / VoLTE / VAS

OSS

Assurance

Orchestration

IBM Cloud Satellite

Virtual Private Cloud

Central Data Centers

scale

BSS

distribute

IMS / VoLTE

4G/5G Core

pilot

OSS

Orchestration

shadow

Assurance

IBM Public Cloud

Single pane of glass management across all locations

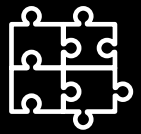
© 2021 IBM Corporation

Poll

When will your organization start to move workloads to cloud ?

- **Already started**
- **Within the next three months**
- **Within this year**
- **Sometime in 2022**
- **Not decided**

IBM Cloud Pak for Network Automation



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

© 2021 IBM Corporation

Automate, innovate and transform today!

5G Network Slicing

Automated lifecycle management for differentiated enterprise 5G virtual network services on top of a shared physical infrastructure

vRAN / Open RAN

Turnkey deployment and management of open and virtualized radio access networks across multi-vendor systems

Multi-access Edge Computing (MEC)

End-to-end management for new low-latency enterprise network applications enabled by extending the telco cloud to the edge

Network site deployment

Standardize and automate cloud buildout across multivendor infrastructures to speed service delivery

4G/5G telco cloud platform

Manage both existing 4G and emerging 5G core and RAN services with a single open and scalable telco cloud platform

NFV lifecycle management

Create an automated open NFV platform and ecosystem while lowering costs and evolving to cloud-native

© 2021 IBM Corporation

Get started

Explore
and schedule a free virtual consultation with an expert

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

ibm.com/industries/telecommunications/network-automation

With IBM Cloud for Telecommunications and 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

Move 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

© 2021 IBM Corporation

© Copyright IBM Corporation 2021. All rights reserved. The information contained in these materials is provided for informational purposes only, and is provided AS IS without warranty of any kind, express or implied. Any statement of direction represents IBM's current intent, is subject to change or withdrawal, and represent only goals and objectives. IBM, the IBM logo, and ibm.com are trademarks of IBM Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available at Copyright and trademark information.

IBM