

IBM Cloud Pak for Network Automation

Making automated ORAN/vRAN deployments and operations a reality

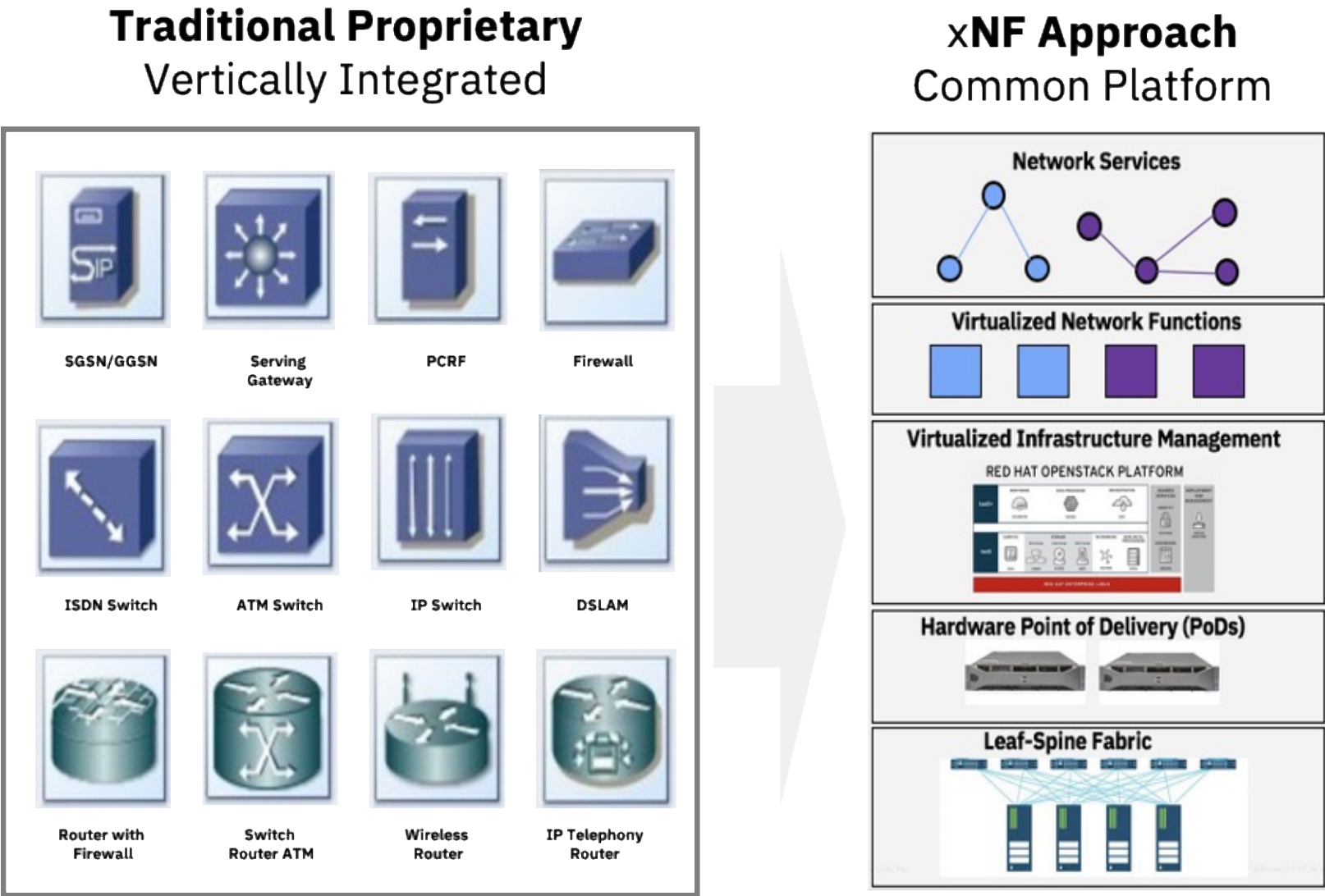
Alan Sullivan
Offering Manager



Agenda

- What is vRAN
- Typical vRAN scenarios
- Benefits of IBM Network Automation

Network evolution – from legacy to cloud network architectures



Legacy network paradigm	Virtualized network paradigm
Dominated by NEPs	Ecosystem of hardware and software suppliers
Network standards based; proprietary, bundled network elements and services	Network standards-based; open, unbundled, cloud-based platforms

Network transformation is key for success

- Deliver innovative services faster and stay competitive
- Reduce costs via extreme automation and adoption of cloud-native operations model

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

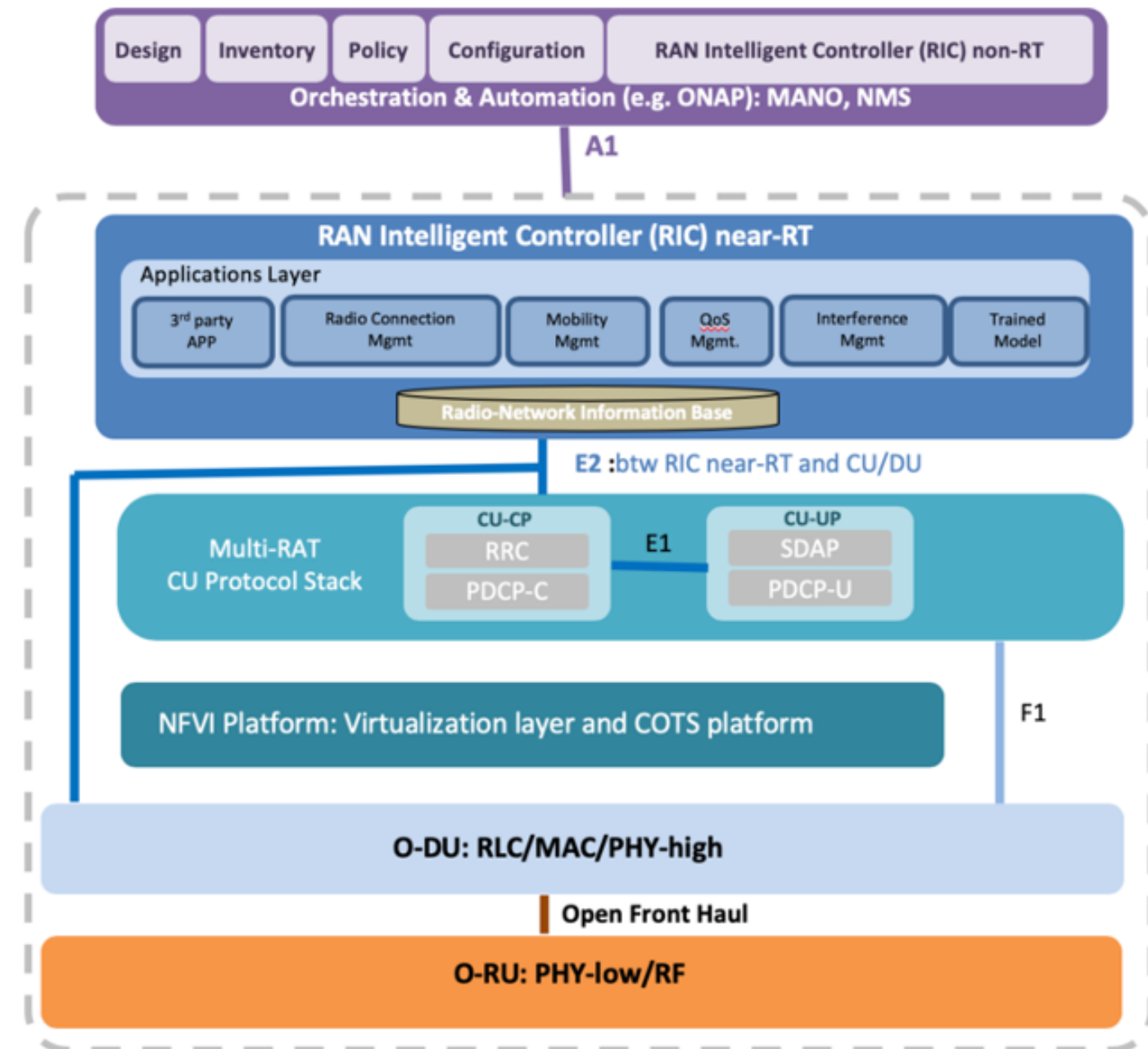
Poll 1

At what stage in your journey are you when looking at vRAN?

1. Initial fact-finding stage
2. Evaluating the move to vRAN in the next 2 years
3. Evaluating the move to vRAN in the next 12 months
4. Comparing the available products in the market

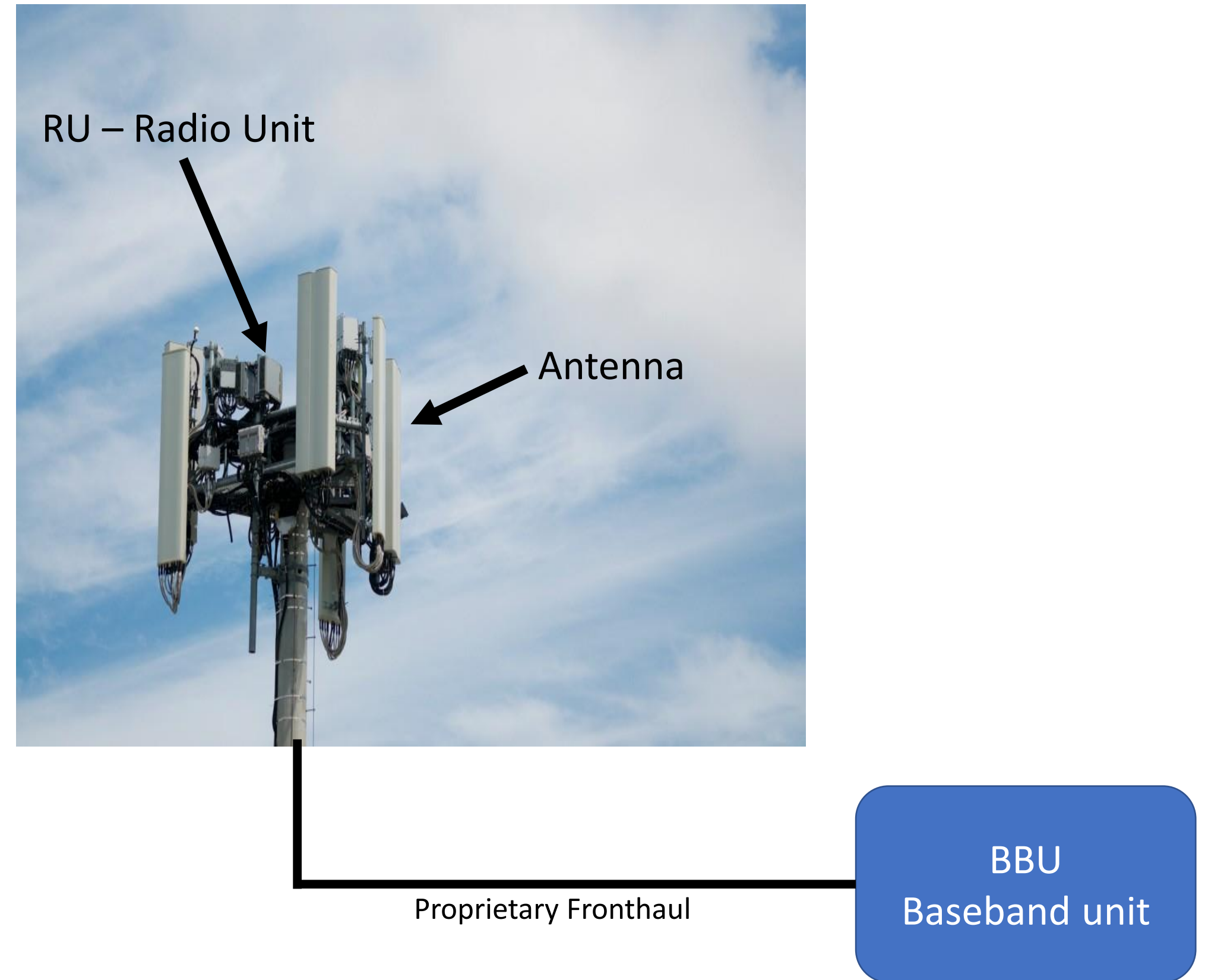
IBM O-RAN Alliance Participation

- IBM is a contributing member to the O-RAN Alliance
- IBM Research teams participate in Work Group 2 focused on
 - Non-Realtime RAN Intelligent Controller
- IBM Research provides deep knowledge in Artificial Intelligence for large-scale systems and AI/ML-enabled complex applications
- Work Group 2 Projects
 - AI/ML Lifecycle Management
 - AIOPS for Radio Access Networks
 - 5G Edge for Industry IoT



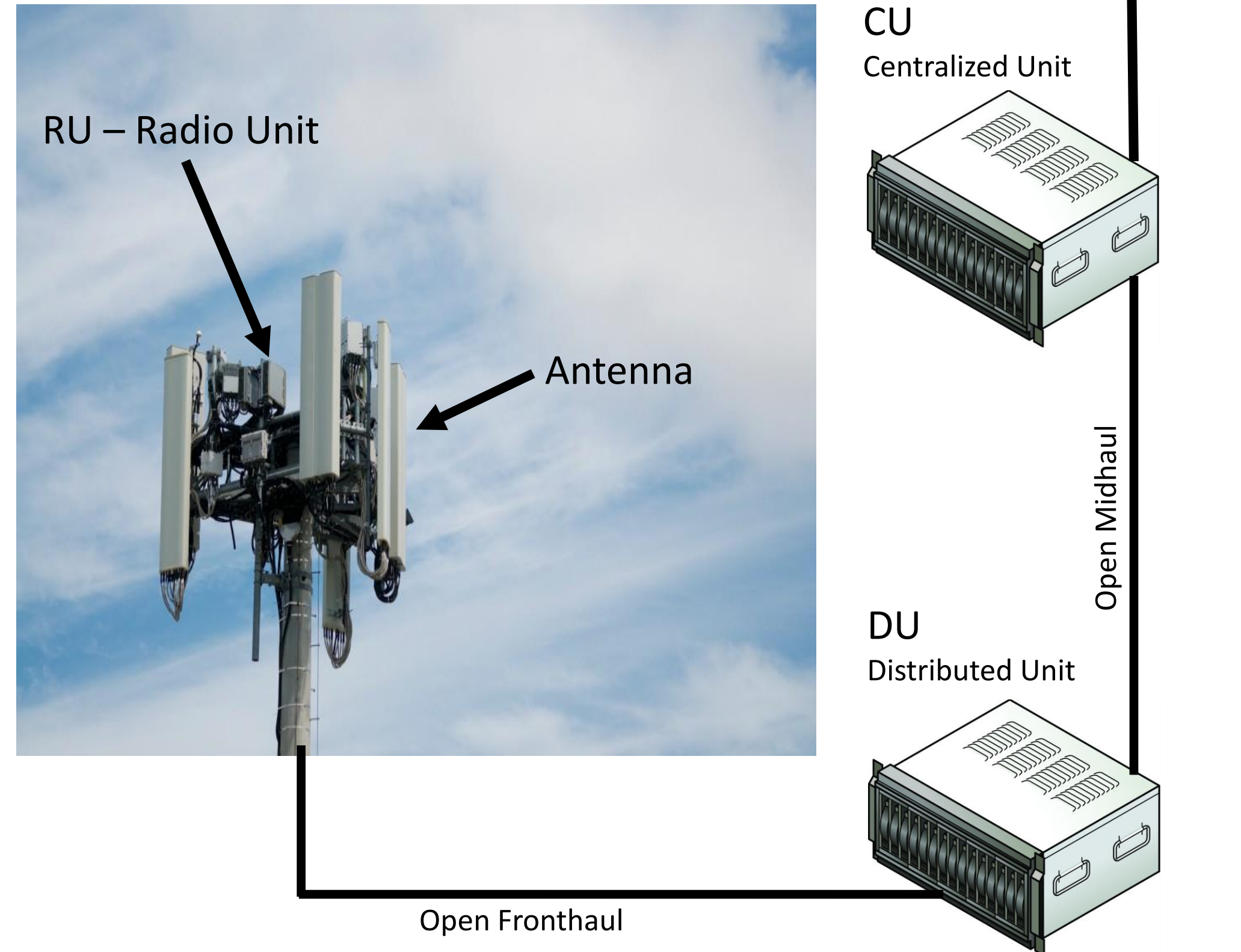
Traditional RAN

- Vendor lock-in
- Be-spoke proprietary hardware
- Fixed capacity
- Maximum capacity always online consuming resources
- Operational processes are manual
- Issues on site can result in engineer visits
- Limited ability to cope with localized ad-hoc increases in demand

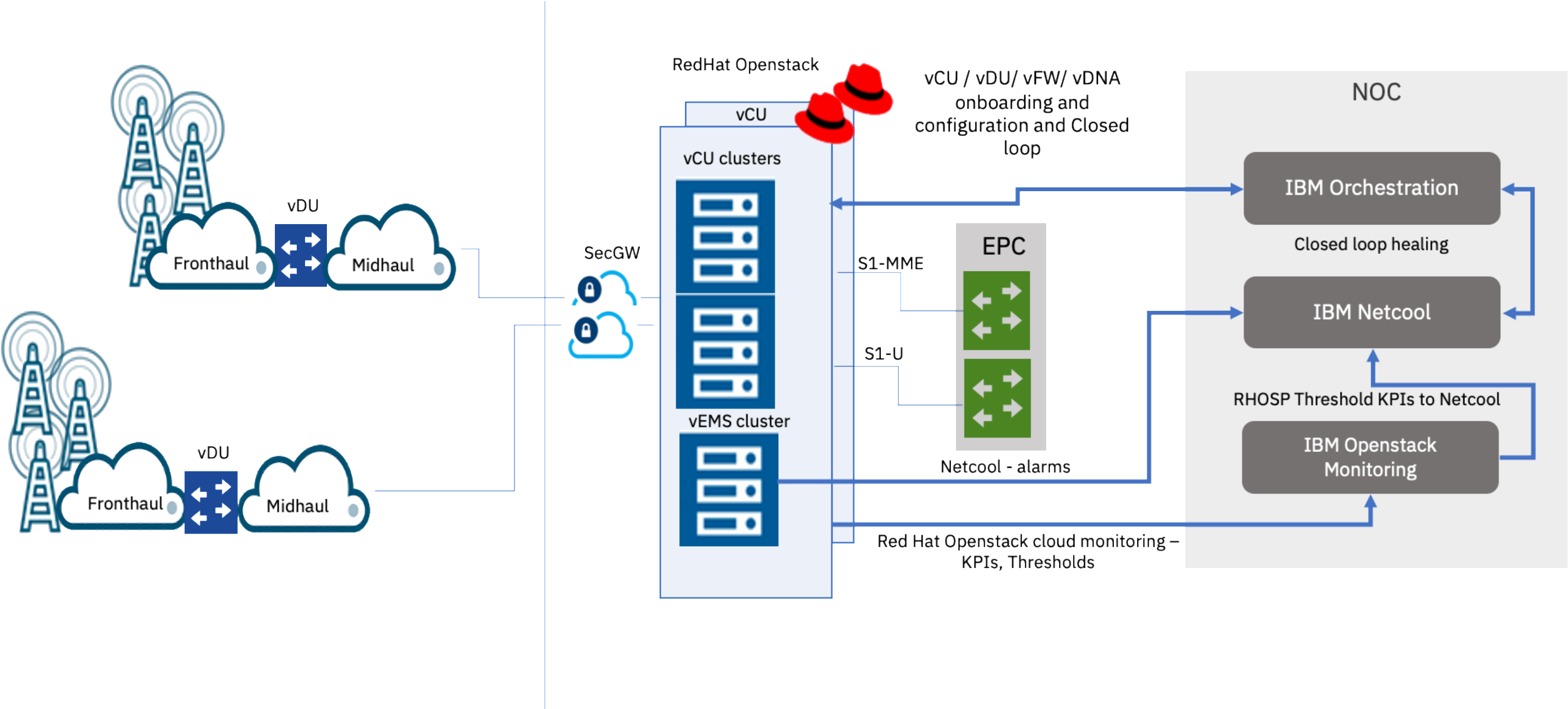


vRAN

- No vendor lock-in
- COTS hardware
- Flexible capacity
- Capacity is automatically managed to match demand
- Automated operational processes
- Reduced number of site visits
- Impact of localized ad-hoc increases in demand are automatically managed

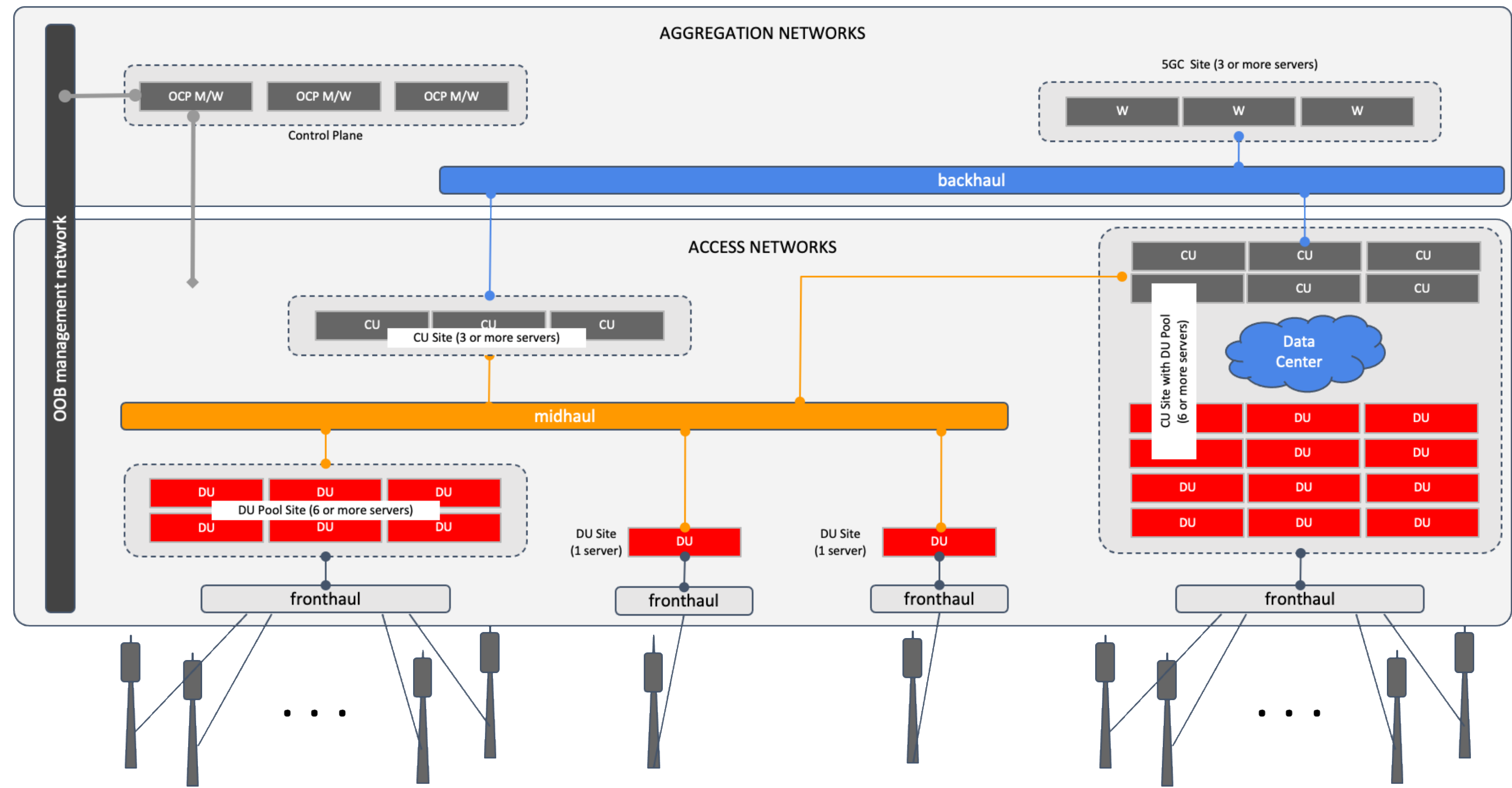


vRAN High Level Deployment Architecture



IBM + RedHat Platform- Cloud Platform, E2E onboarding, monitoring

DU/CU Clustering Scenarios



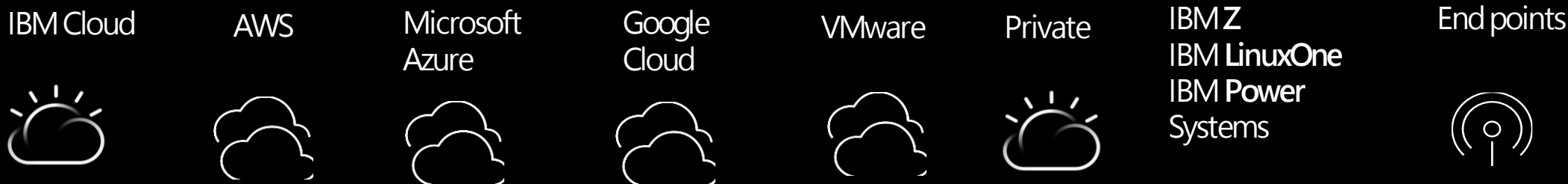
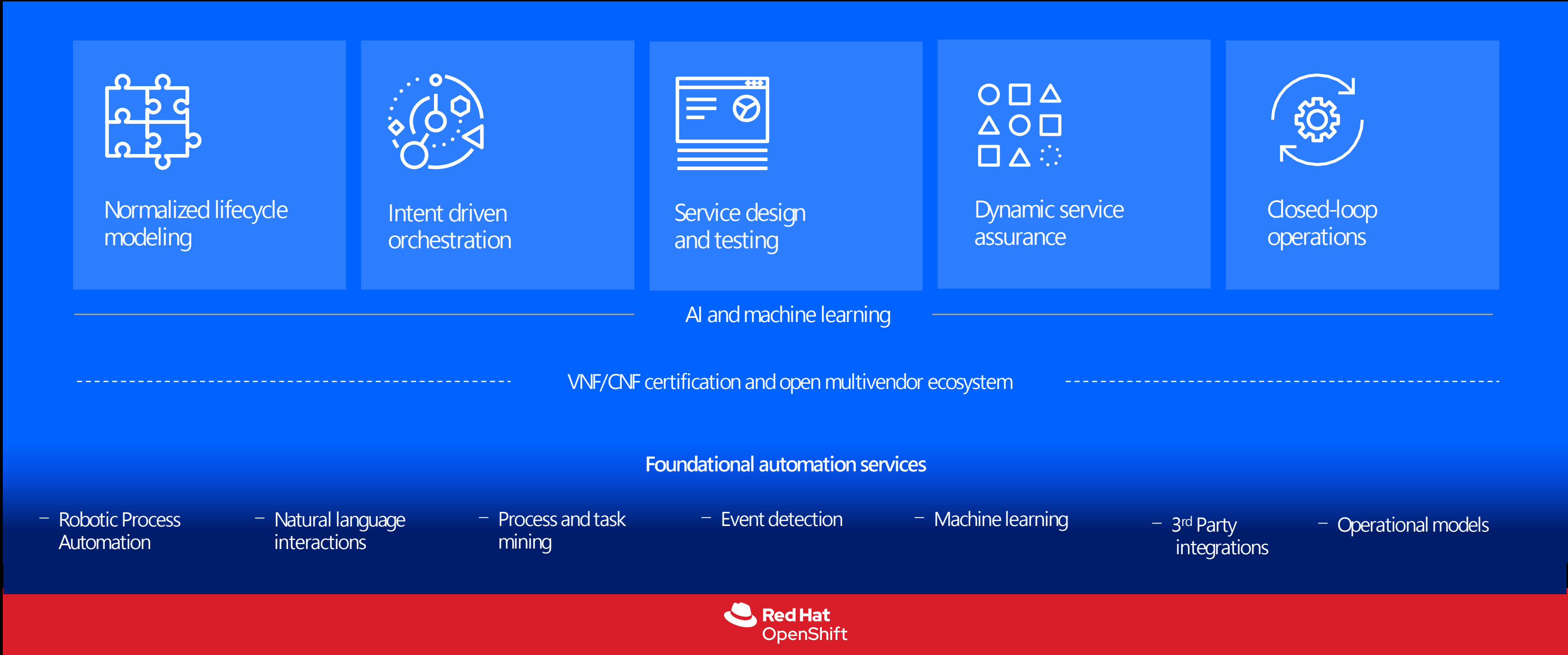
Poll 2

Do you currently have any orchestration or automation in your network ?

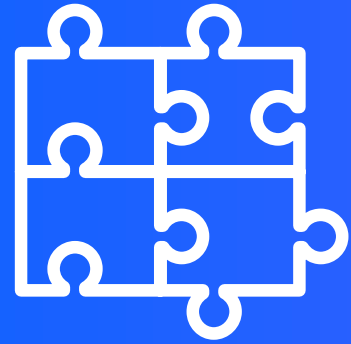
1. We have neither
2. We have some automation
3. We have some orchestration
4. We are actively looking to deploy both

IBM Cloud Pak for Network Automation

Enables zero-touch network transformation for CSPs



IBM Cloud Pak for Network Automation capabilities



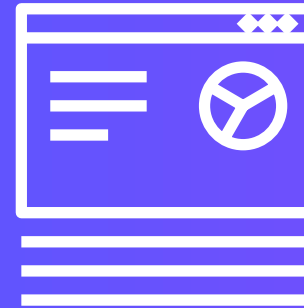
Normalized lifecycle modeling

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



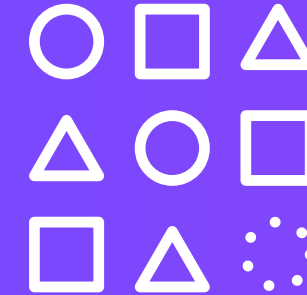
Intent driven orchestration

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



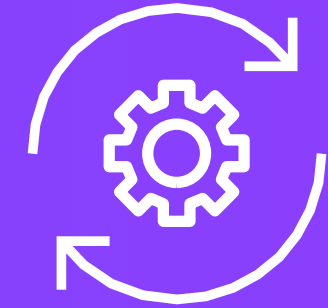
Service design & testing

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

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

Improve Customer Experience

Automated network monitoring and alarm management.

Reduce customer service response time by up to

6x

Deploy Faster

Accelerate the delivery of networks and services through AI-powered automation.

Rapidly design, deploy and scale new services and decrease operations effort by up to

80%

Leverage Industry Expertise

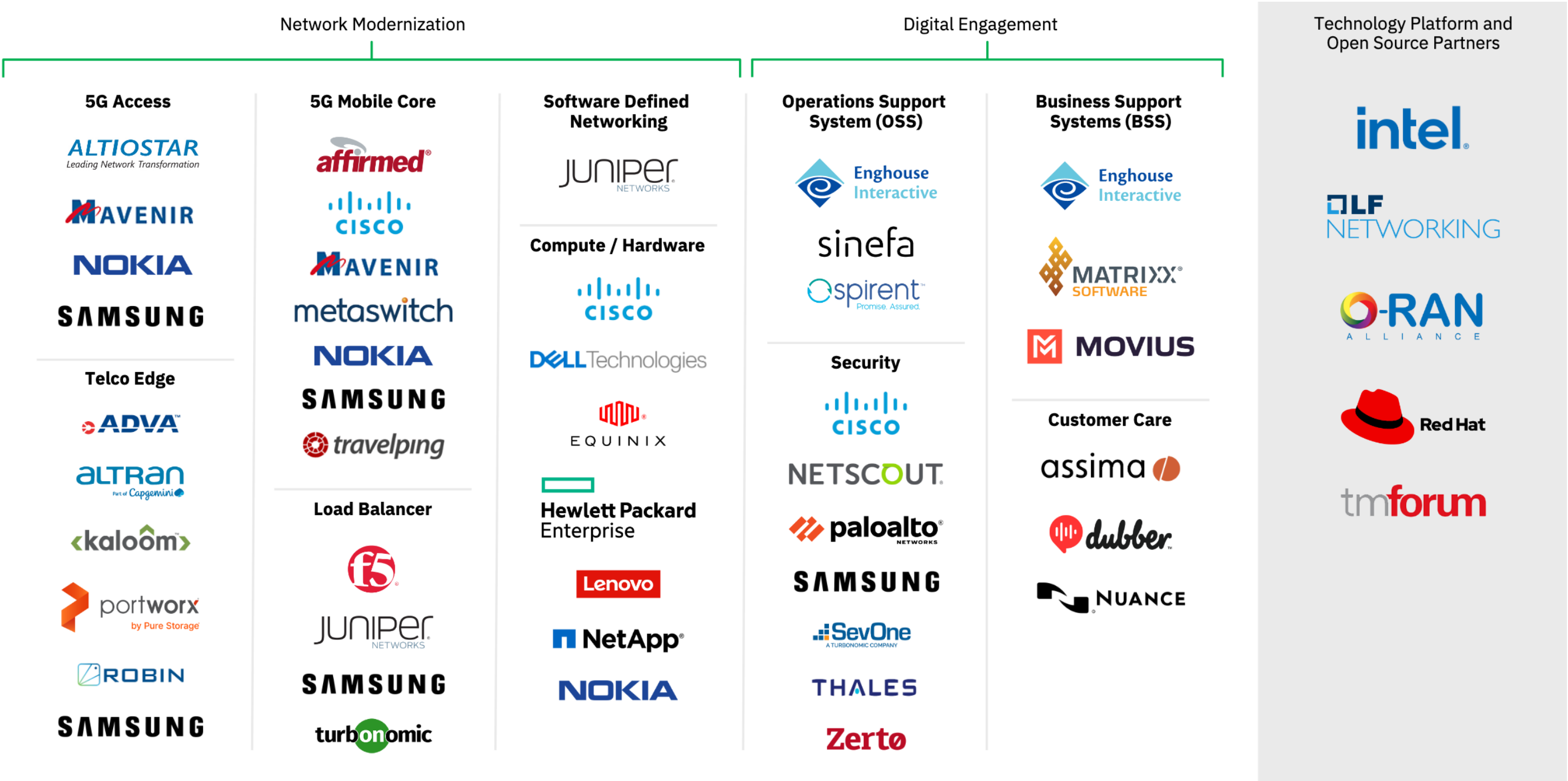
Open ecosystem of partners with unifying architecture

Ecosystem of industry partners

50+

IBM Cloud Pak for Network Automation Open Ecosystem

- Built on **open standards**
 - ETSI MANO & ONAP aligned
- Unifying architecture with ecosystem of **50+ industry partners**
- **VNF/CNF interop ecosystem** jointly established by IBM and Red Hat



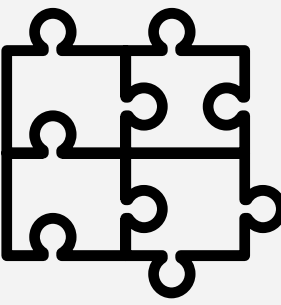
Industry partners include equipment manufacturers, networking providers, IT providers, independent software vendors, and system integrators.

Poll 3

What areas do you see most benefit from infusing AI into network automation?

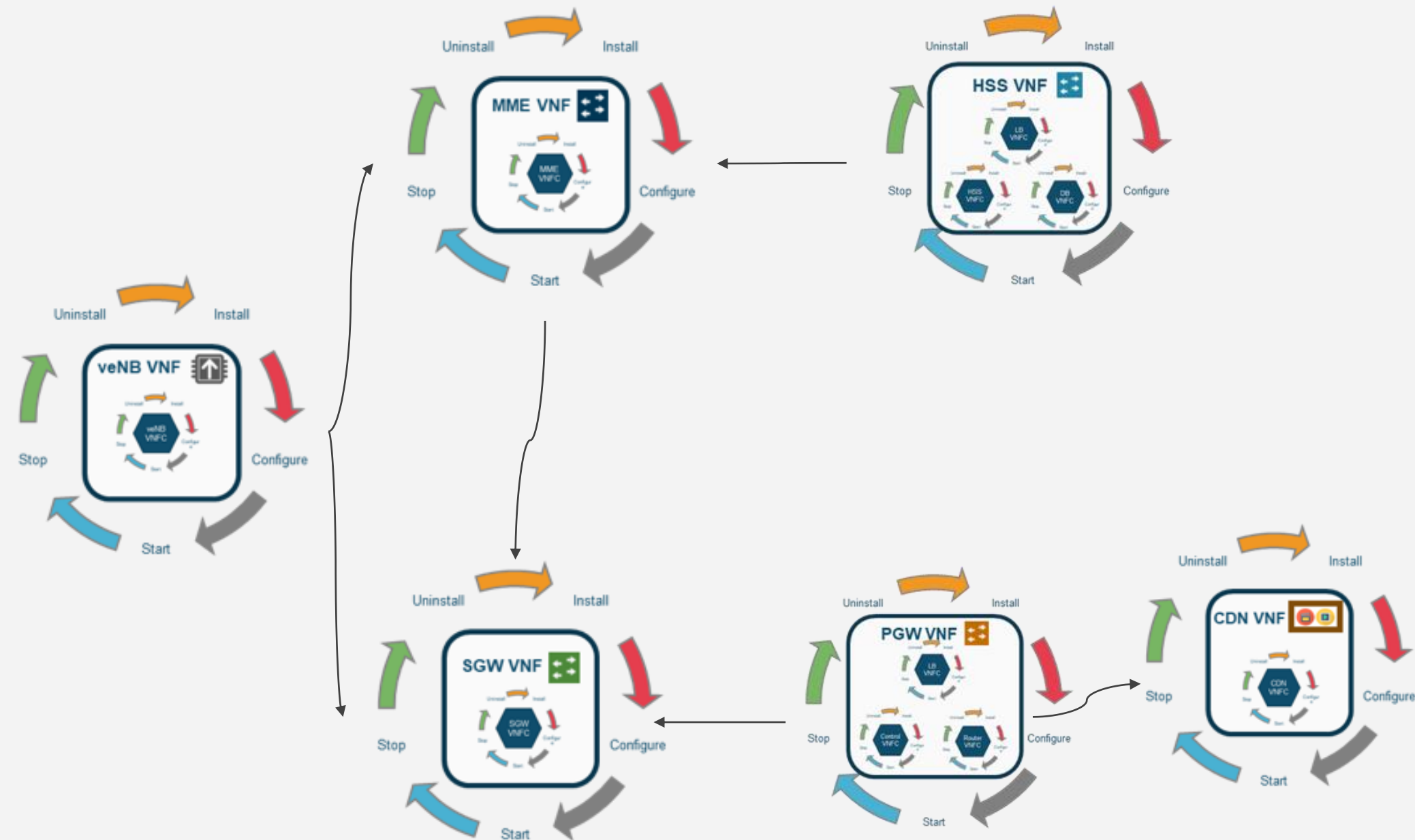
1. Predictive maintenance
2. Self diagnostic, automatic problem detection
3. Self-healing of networks
4. Intelligent network operations

Normalized Lifecycle Modeling



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

- Maintaining different skills, methods & procedures for different vendors is expensive and slows down innovation
- The IBM approach:
 - Reduced complexity through standardized operational lifecycle and tools – **standardize for consistency**
 - Common operational lifecycle for each xNF & Service
 - **Generate complete network service lifecycles** using relationships and opinionated patterns
- Outcome:
 - Increased levels of operational automation by modeling the end-to-end service **with runtime operational requirements in mind**

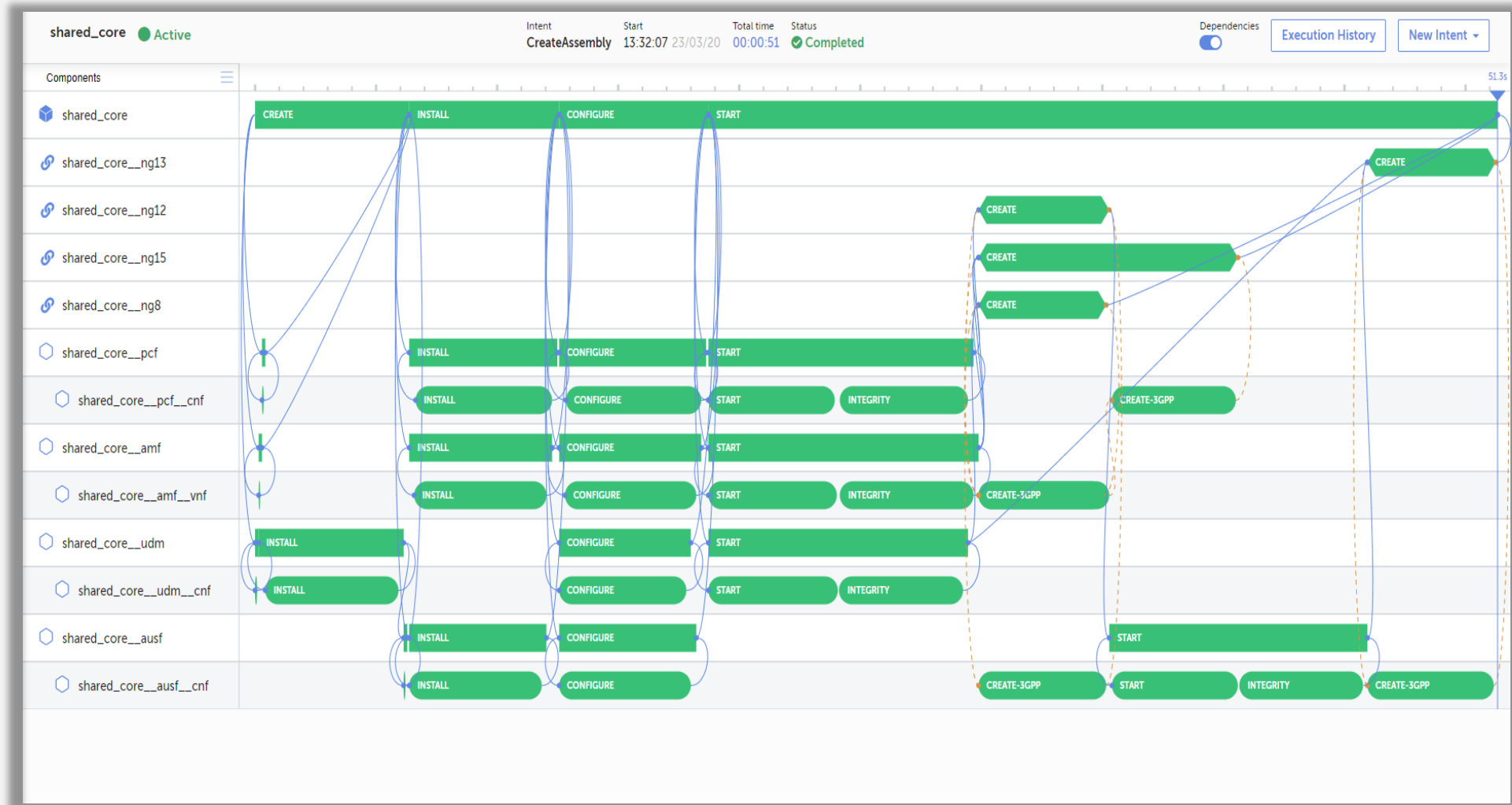


Intent Driven Orchestration



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

- Manual programming is time consuming, error prone and inefficient
- The IBM approach:
 - Design with **intent** using **declarative based models**
 - **Model the service** rather than program its lifecycle workflows
 - Auto-generate & execute the most efficient steps
 - **Reconciles the actual and target state** of all network cloud stacks
- Outcome:
 - Intended operational state of complex service **maintained automatically**

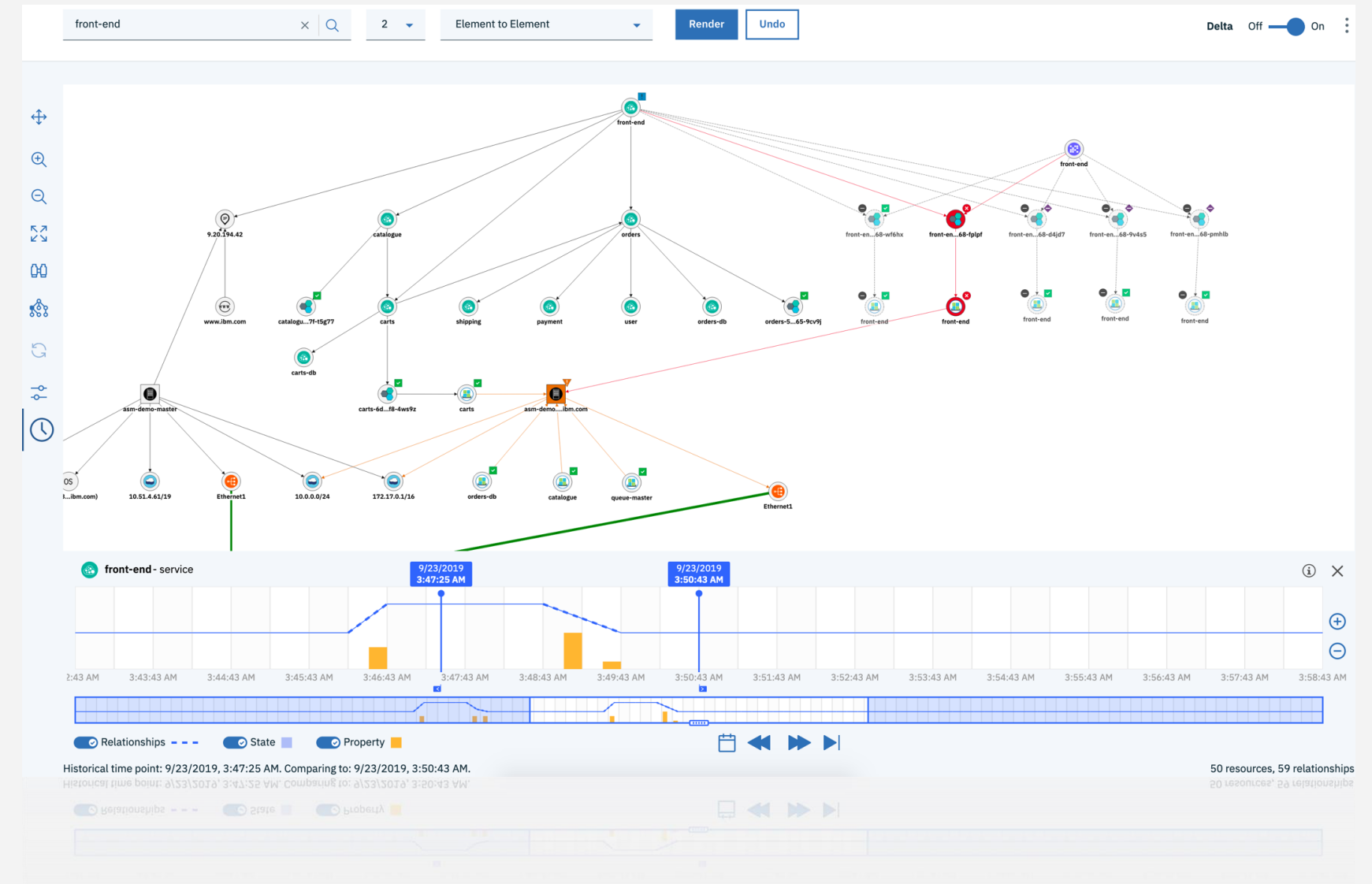


- DevOps approach is required to automate network cloud operational process, reducing complexity and manual effort

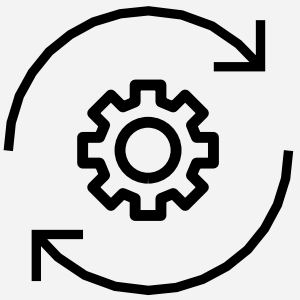
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Real-time view of network and cloud infrastructures using AI to drive decision making and process automation

- Reducing time to diagnose incidents and avoid outages
- The IBM approach:
 - Embrace frequent changes with **real time insight**
 - Fix issues before they become service and customer affecting
 - **Real time context** for rapid resolution
 - Correlate relevant data in real-time to detect hidden anomalies
 - Go back in time - know what happened, when
- Outcome:
 - Quickly isolate problems for **faster mean time to repair**

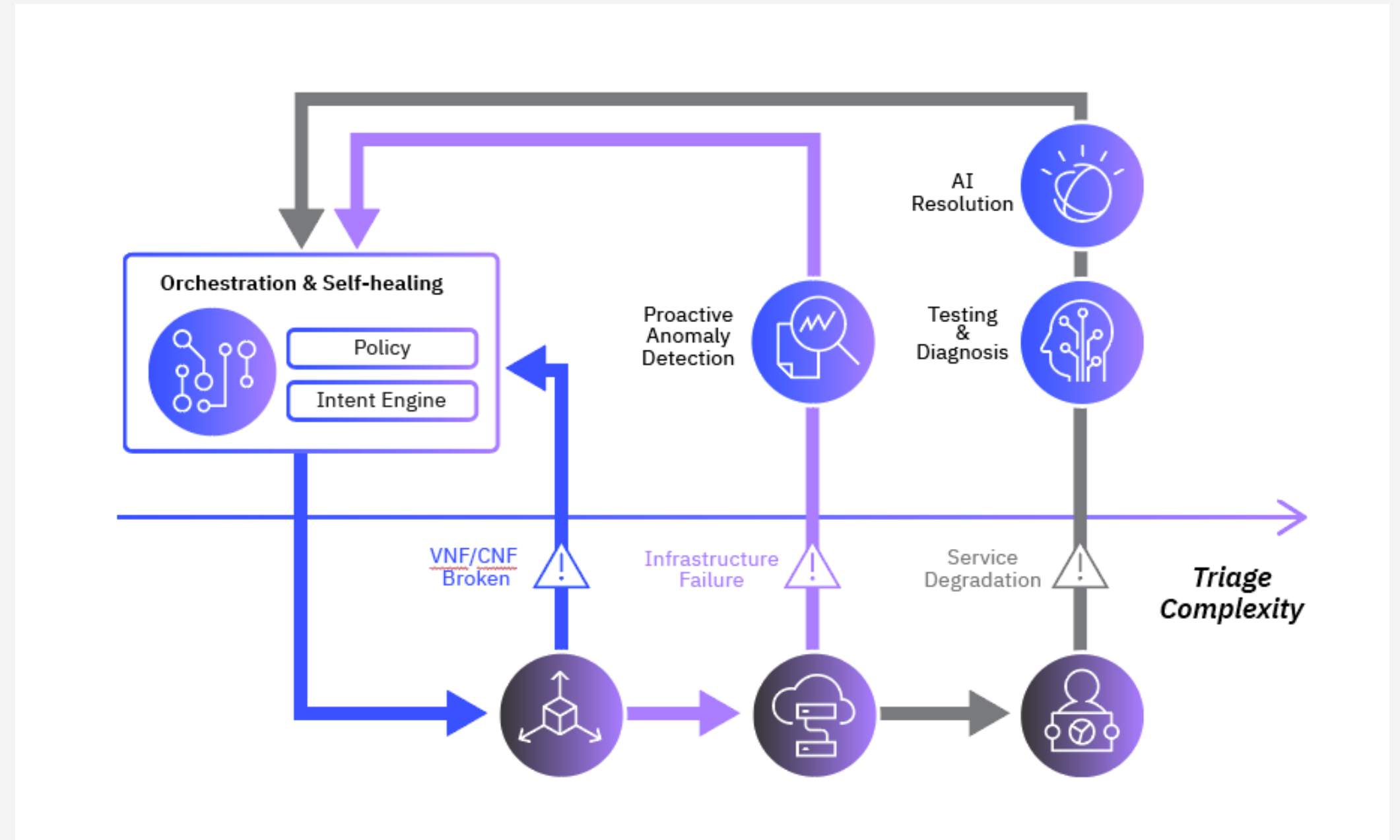


Closed-loop Operations



Feedback loop of communication between assurance and orchestration to enable zero touch operations

- Networks are becoming increasingly dynamic and many applications require low latency—often, no time is available for human interactions
- The IBM approach:
 - Incident detection and resolution
 - **AI-driven resolution** of identified errors, with further auto diagnostics for unknown errors
 - **Sense and respond** to issues or opportunities for optimization and select opinionated patterns to execute
- Outcome:
 - AIOps to reduce operational expenses **greater than 5x**; improve network visibility and customer responsiveness



Why IBM Cloud Pak for Network Automation?

- Design, test and deploy services in minutes instead of days or weeks and evolve to zero-touch operations
- Run on any cloud, anywhere and manage any network vendor infrastructure
- Open IBM and Red Hat® ecosystem to rapidly onboard certified VNFs/CNFs



Poll 4

What are the main factors that inhibit, or slow down, the adoption of network automation today

1. High learning curve due to complex technology and multi-vendor environments
2. Resistance of people to process and skill change due to automation
3. Limited ROI visibility/measurability
4. Upfront expenses

Thank you

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