



Upgrade to DX UIM 20.4 CU9 to Leverage New Features and Security Updates

28 September 2023

Agenda

AIOPS AND OBSERVABILITY BY BROADCOM

EXTENSIVE HYBRID, MULTI-CLOUD MONITORING

ZERO-TOUCH CONFIGURATION

OBSERVABILITY VIEWS

WEB-SCALE SCABILITY

ASDF

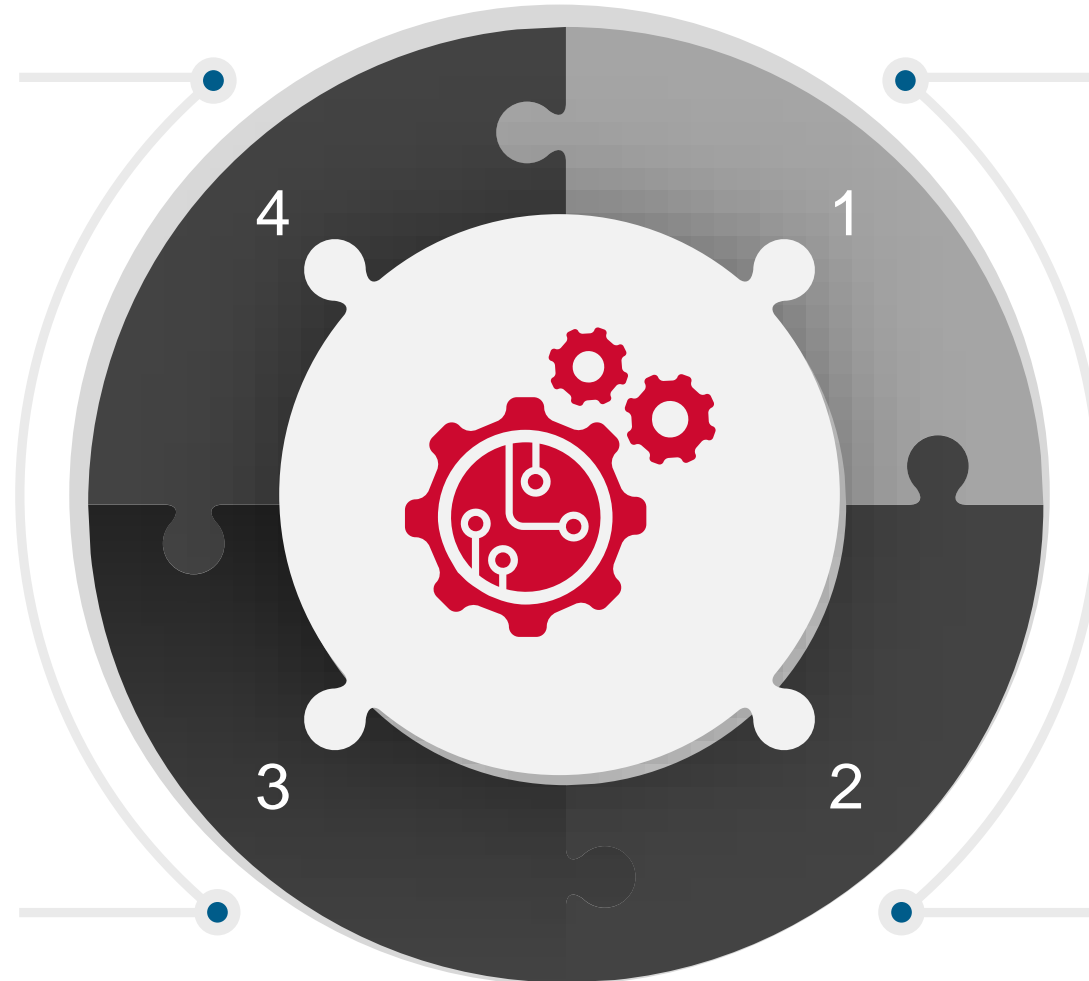
Need to Act Today, or...

Monitoring Tool Sprawl

Multiple tool requires time and effort to manage, adds complexity and drags down potential economies of scale

Silo Views

Fragmented, incomplete view of today's deep technology stacks and hybrid environments



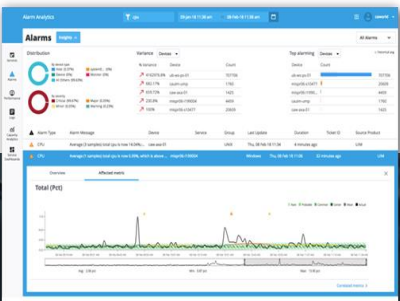
Unpredictable IT Ops

Uneven business service levels across the enterprise impacting the bottom line

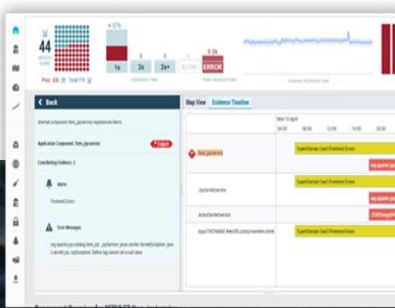
Inefficient Triage

Increased troubleshooting time and lack of innovation

AIOps Mission – Finding and Resolving Problems in IT Quickly



Gain insights into end-to-end digital experience



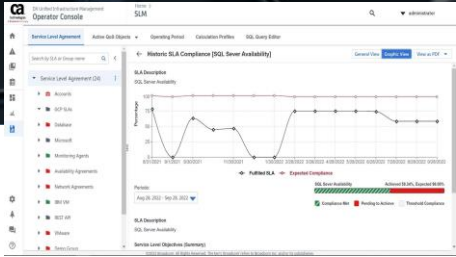
Observability from distributed, mainframe to hybrid cloud.



Operational efficiencies with actionable intelligence



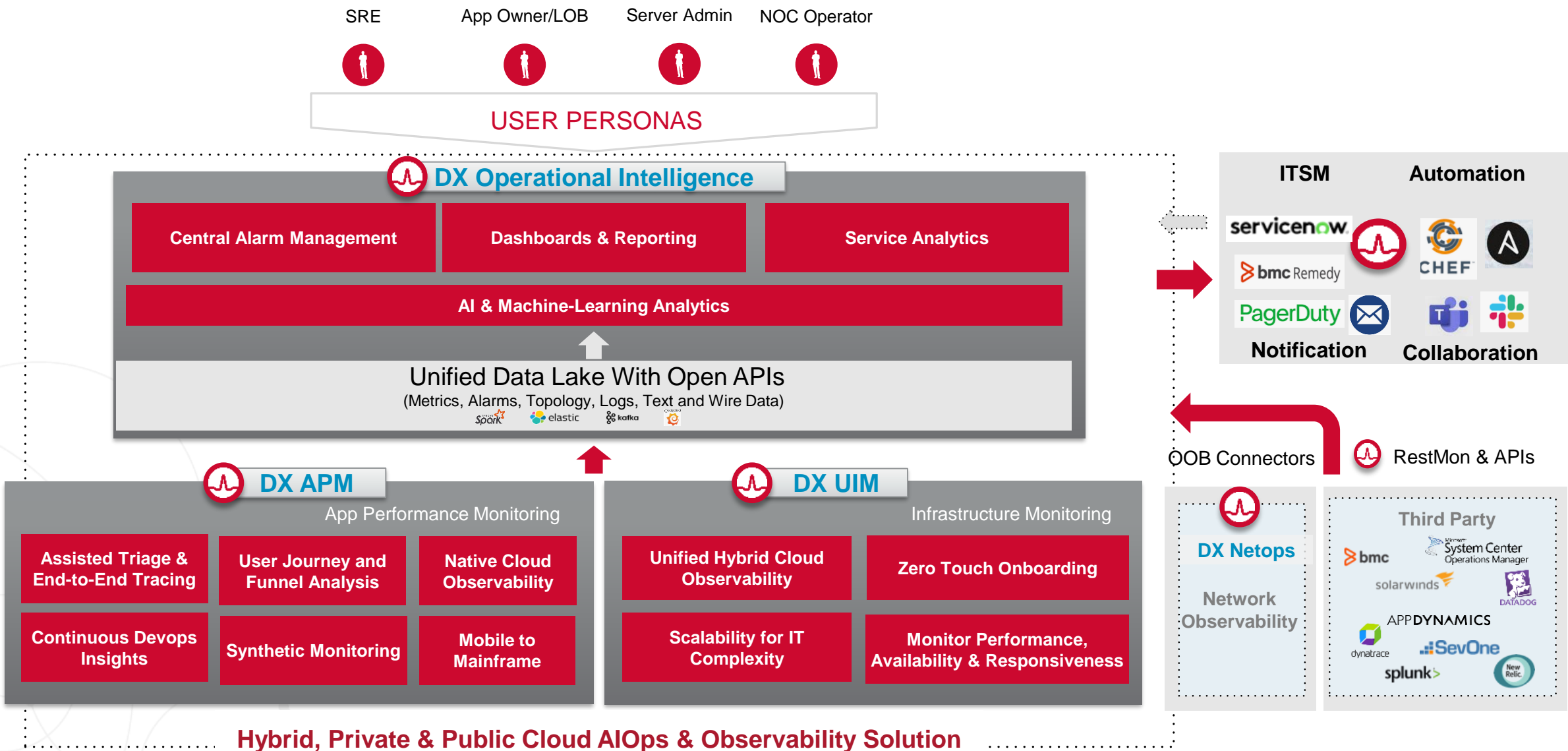
Diagnose issues across domains using comprehensive datasets down to code line level



Organizational awareness for digital service delivery and performance



AIOps & Observability Solution to Drive Intelligent Automation



Our Solution: DX Unified Infrastructure Management (DX UIM)



Scalability for IT Complexity

Reliability, security & scalability that's natively multi-tenant for the world's largest and most complex enterprises, government agencies and MSPs



Unified Hybrid Infrastructure Observability

Single platform with coverage of traditional, virtual and modern hybrid cloud technologies providing a single-pane-of-glass for IT Infrastructure

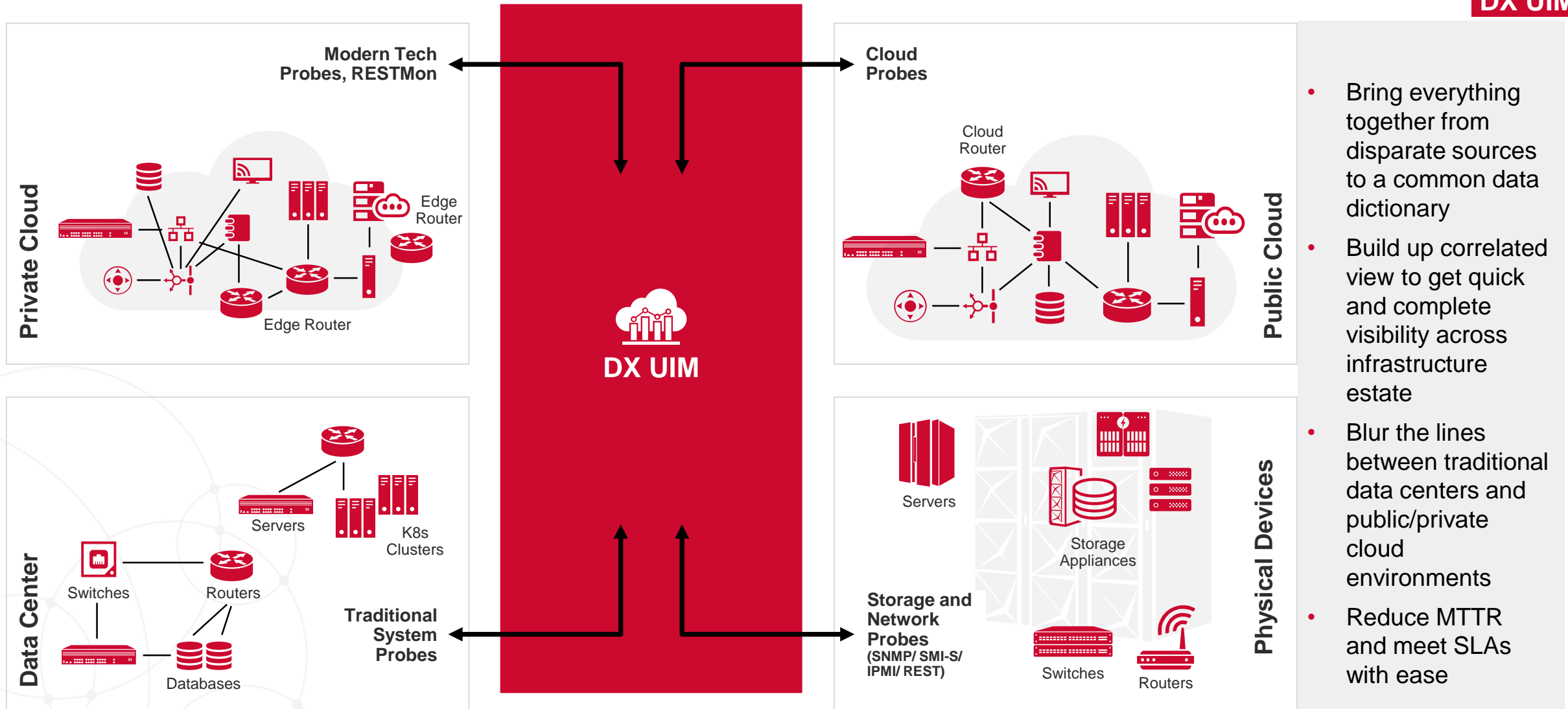


Intelligent Operations

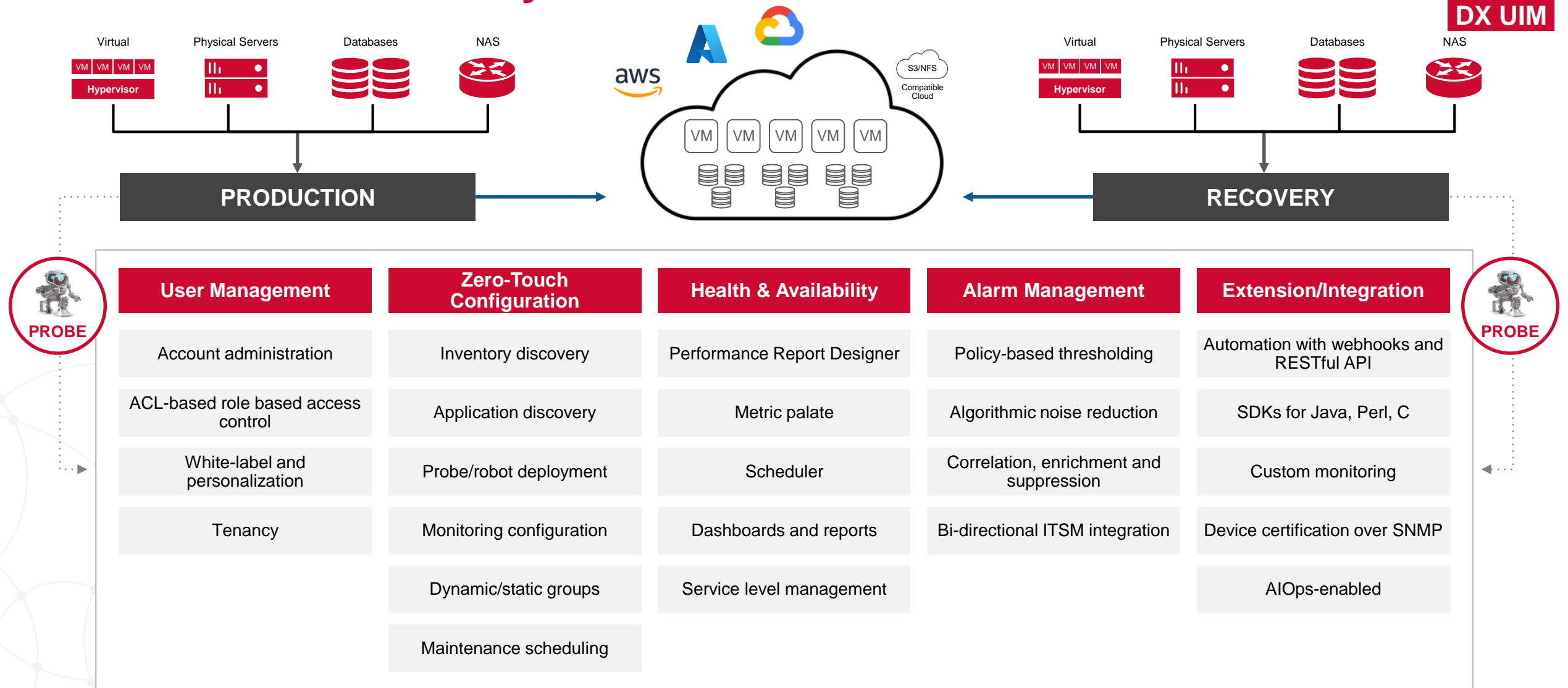
Automated inventory management, smart incident correlation and service-level insight for efficiency, faster MTTR and improved end-user experience

PARTNERING WITH IT OPS FOR DIGITAL TRANSFORMATION

True Hybrid Monitoring – Across Infrastructure Estate



Unified Solution for Hybrid Data Centers



Unified Solution for All Personas

Business

- Align IT to Business Goals



- Correlate IT to Business Value
- User Behavior & System Interaction Analysis
- Integrate Silos for a Unified Environment View

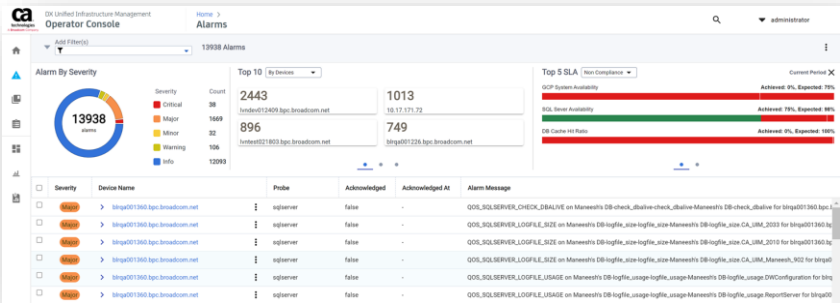


Operations and Monitoring

- Achieve Operational Efficiency
- Reduce Downtime



- Centralized Alarm Management
- Operational Workflow Integration



SRE, Subject Matter Expert

(infrastructure admin, security admin, network admin)

- Identify & Remediate Root Cause
- Automate



- Infrastructure Diagnostics



2023 Themes for Infrastructure Observability



Intelligent Operations & Analytics

Intelligent infrastructure observability in terms of predictive capacity planning, AI/ML driven alarm noise reduction, business service management by cutting the silos across app-infra-network



Hybrid Cloud Observability

140+ probes supporting physical & virtual hosts, hyperconverged infrastructure, storage, databases, network, application servers, user experience monitoring



Zero-Touch Configuration

Template-based monitoring for bulk configuration for quicker time-to-value

Centralized monitoring and alarm threshold definition for standardized monitoring across inventory technologies as per industry best practices



UX & Observability

UX enabling contextual accessibility and continued improvement of user flows enabling quicker triage



Platform & Scalability

Stable deployment and effective resource utilization to optimize the TCO

Keeping technology stack coverage up-to-date for platforms and version currency



Security & Stability

Continued improvement in DevSecOps

Providing enterprise-grade secure tool meeting common DevSecOps requirements

Extensive Hybrid, Multi-Cloud Monitoring



Hybrid Cloud Infrastructure and Containers are Going Mainstream



75%

Hybrid Infrastructure

Large IT operations have combination of on-premises, public cloud and private compute resources¹



58.7%

Traditional Revenue

By 2025, 59% of IT service provider addressable revenue will come from traditional infra management (but will decline)²



96%

Container Strategy

Per [CNCF®](#), 96% of enterprises will adopting containers like K8s in 2022 and beyond³



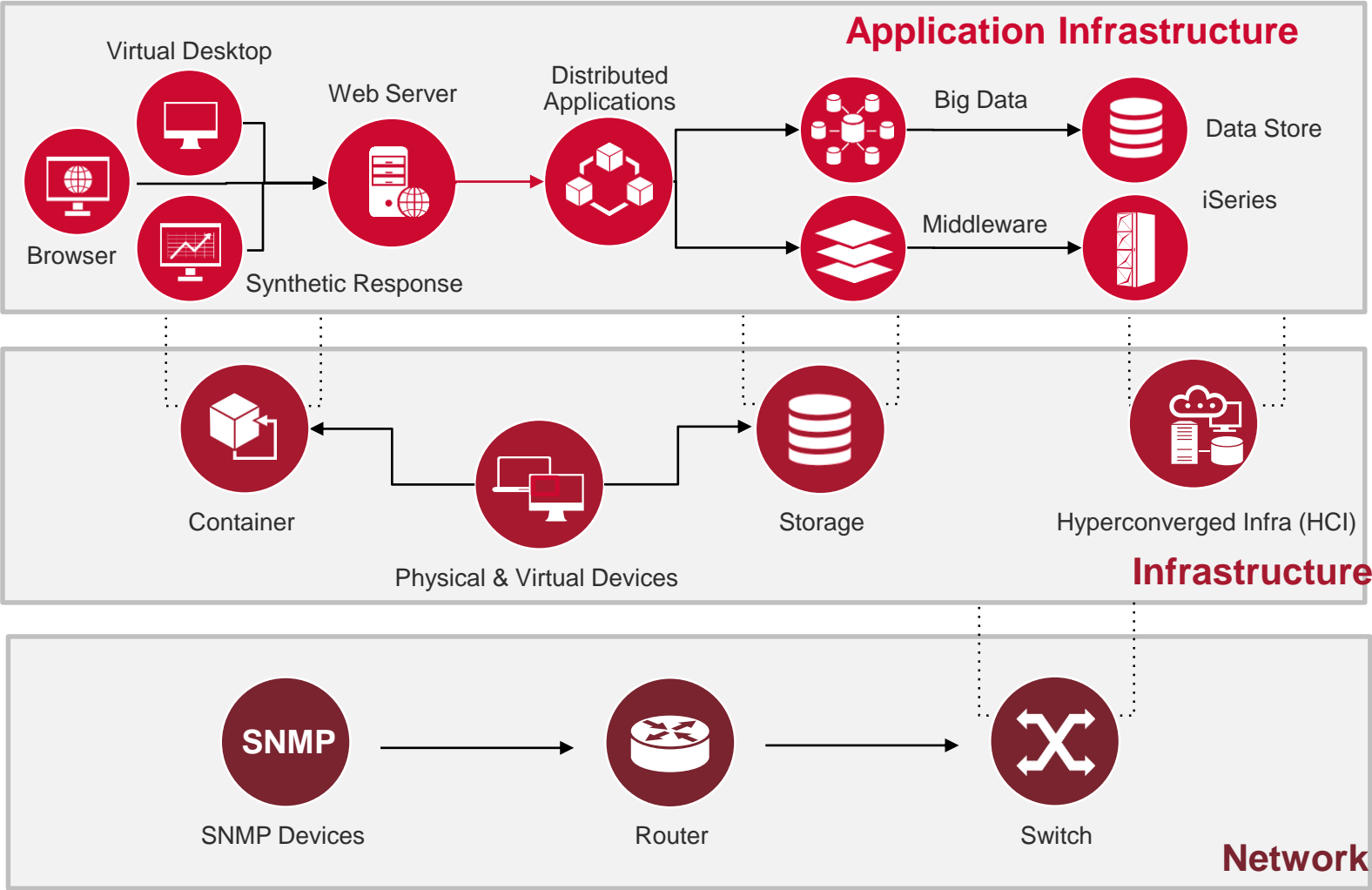
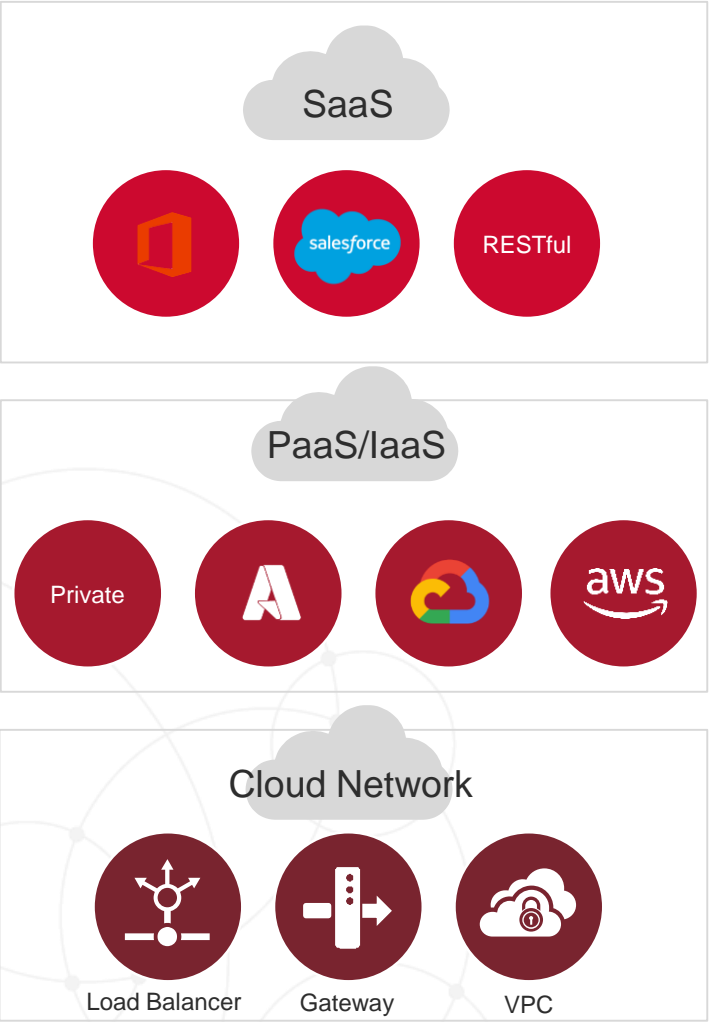
82%

Device Proliferation

82% of respondents indicate they will deploy a significant number of new devices over the next two years⁴

Sources: (1) Dimensional Research, *State of Infrastructure Management 2023*, December 2022; (2) Gartner [press release](#), 9 February 2022; (3) Cloud Native Computing Foundation [press release](#), 10 February 2022; (4) Dimensional Research, *State of Infrastructure Management 2023*, December 2022

Full Stack Observability for Hybrid Data Centers



What's New: Additional Modern IT Infrastructure Monitoring

Alerts, Events, Logs, Custom Metrics, Billing Data and More

Public Cloud Service Providers



Services spanning multiple categories across accounts, geographies, and workflows

Containers and Orchestrators



Foundational infrastructure elements, distributed containers, deployment plane elements, and control plane services

Virtualization and Storage

Monitor enterprise-grade virtualization, converged infrastructure, clusters and OpenStack-enabled cloud deployments and infrastructure





Support for Azure PaaS Managed SQL as Datastore

Benefits

- Upgrading and patching
- Backups
- Monitoring
- High availability and scalability

Connection Types

- Redirect (recommended)
 - Direct connection to database node
- Proxy
 - Connection using a proxy gateway

Deployments

- Infra on cloud
- Hybrid

Peering

- Virtual network peering
- Global virtual network peering

Networking

- Public endpoint
- Private endpoint

Gateway Types

- VPN
- ExpressRoute

Data Maintenance

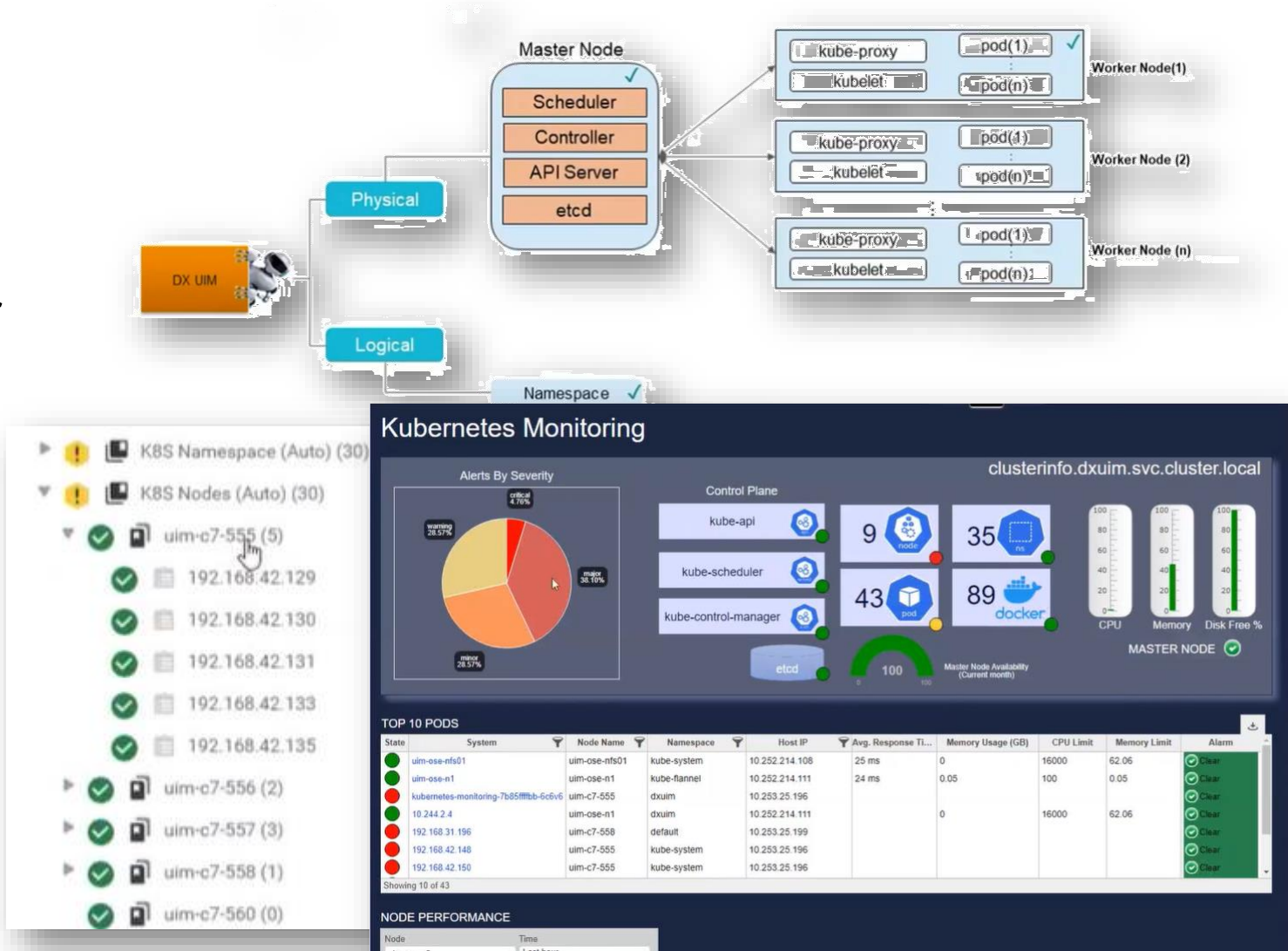
- Index maintenance
- Partitioning of data tables

Verified with RTM Version

- Microsoft SQL Azure 12.0.2000.8

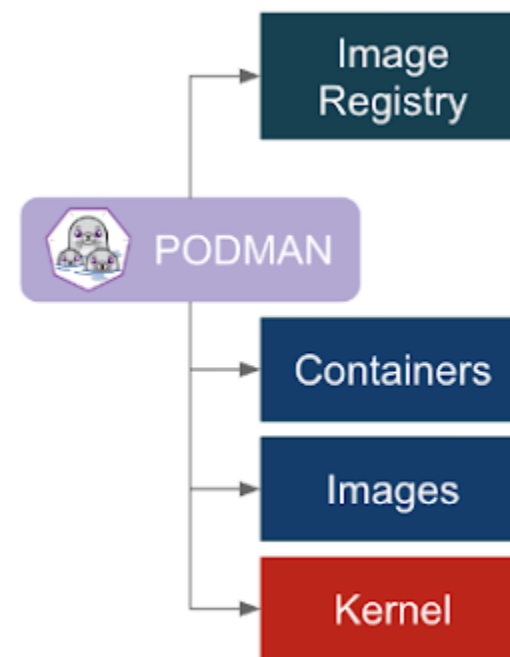
Kubernetes Monitoring Coverage

- Wide and deep coverage across physical and logical planes of the deployment
- Segregate and apply specific policies to group members per your preferences
- Monitor at-a-glance with confidence
- Set SLAs, alarm policies, monitoring on everything you need



Podman Monitoring Coverage

- The Podman probe monitors the health and performance of your Podman environment; you can generate Quality of Service (QoS) and alarm messages for the following components:
 - Host (single host system)
 - Containers
 - CPU
 - Network
 - Disk
 - Memory
 - Processes
 - Images
 - Volumes



Zero-Touch Configuration



Zero Touch Monitoring

Enabling Efficient IT Operations

Key Benefits

- ✓ Apply consistent (template-based) monitoring across IT stack
- ✓ Enable configuration management at scale
- ✓ Speed time-to-value with zero touch inventory onboarding
- ✓ Manage monitoring governance

3. Autonomous Operations

- Alarm notification and incident management
- Out-of-the-box dashboards and reports
- Performance and health management

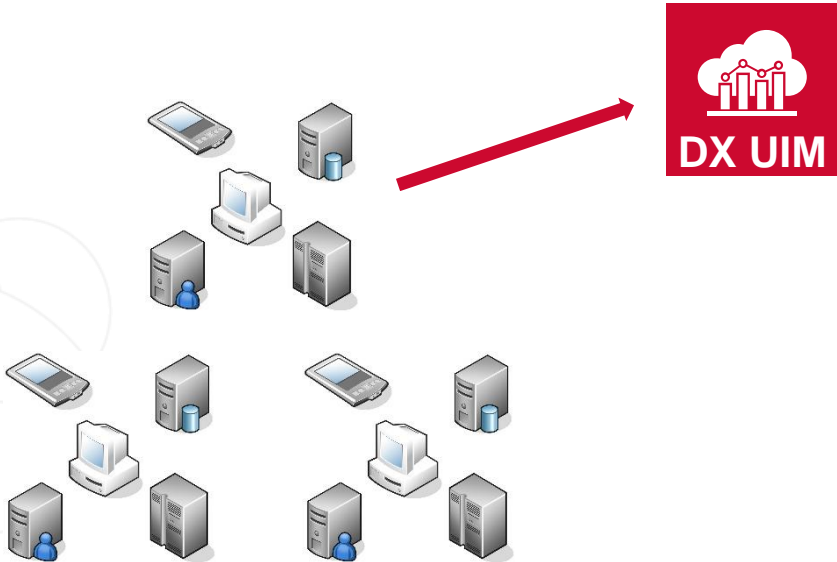
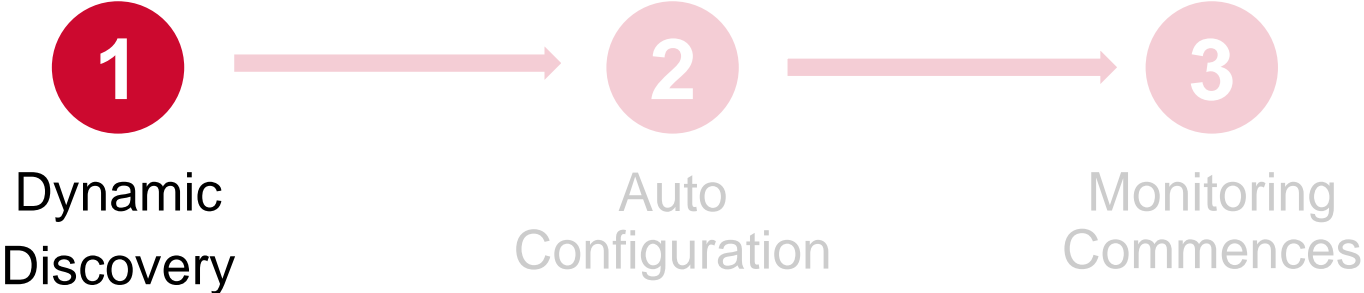
1. Dynamic Discovery

- Device discovery
- Application discovery
- Inventory grouping

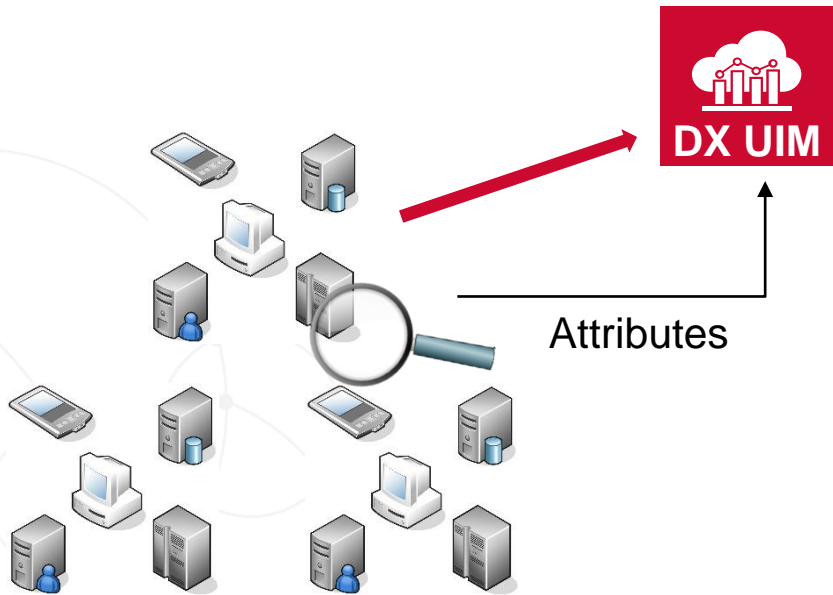
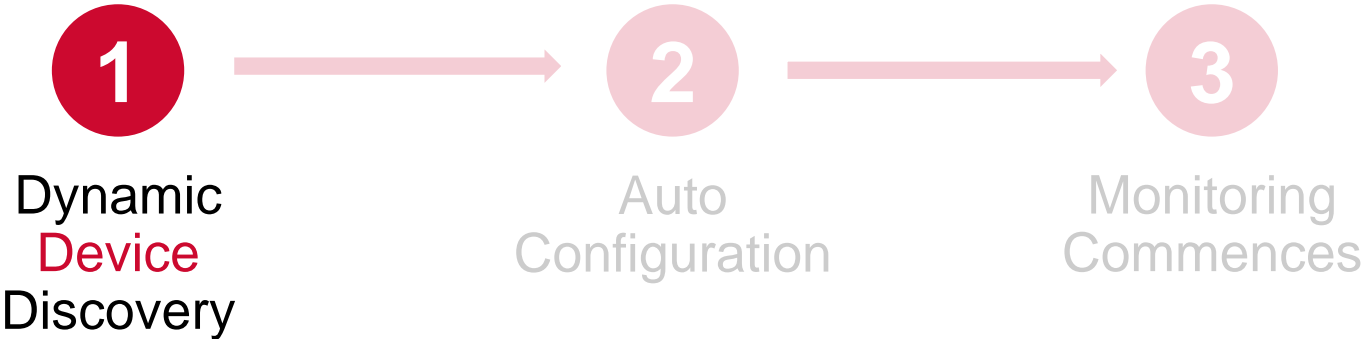
2. Auto Configuration

- Push monitoring profile (metrics collections)
- Alarm policy (threshold definition)

Dynamic Discovery



Dynamic Discovery



Alarm Count	CS ID	Name	Origin	Discovered	Monitored By	OS Type	Device Type	Alerts	Last
0	2037	apex-com1	Wing001225_hub	7 hours ago		Windows	VirtualMachine	apex-com1	20/11
2	2038	esd-slips-vm-dev-test...	Wing001225_hub	21 hours ago		gcp_compute_engine	GCP Compute Engine	esd-slips-vm-dev-a...	20/11
2	2039	esd-slips-vm-dev-test...	Wing001225_hub	21 hours ago		gcp_compute_engine	GCP Compute Engine	esd-slips-vm-dev-a...	20/11
1	2034	NTN-lodrusuoft-D-CM	Wing001225_hub	3 days ago		vmware	VMware	NTN-lodrusuoft-D...	20/11
1	2033	lodrusuoft-D-CM	Wing001225_hub	3 days ago		vmware	VirtualMachine	lodrusuoft-D-CM...	20/11
0	2032	vm-operateknology-thp...	Wing001225_hub	8 days ago		Host	vm-operateknology...	vm-operateknology...	20/11
2	2031	apex-com-vm	Wing001225_hub	7 days ago		azure	VirtualMachine	apex-com-vm	20/11
0	2030	bedrock-oid	Wing001225_hub	9 days ago		vmware	VirtualMachine	bedrock-oid	20/11
1	2029	vm-two	Wing001225_hub	10 days ago		azure	VirtualMachine	vm-two	20/11

Configure Device Discovery

Setup WMI Credentials

Setup Linux/Unix Credentials

Setup SNMP Credentials

Define Scripts

Schedule Discovery

Device Name: BCPWindows001

IP: 10.10.10.1

User: administrator

Password: [Redacted]

Monitoring Protocol: [Redacted]

Buttons: Cancel, Previous, Next

Inventory onboarding

1. Wizard for scheduled discovery based on criteria like WMI, SSH, SNMP
2. Import thru CMDB
3. Discovery thru probing technology controller like vCenter, Nutanix Prism, etc.

Application Discovery and Auto Grouping

1

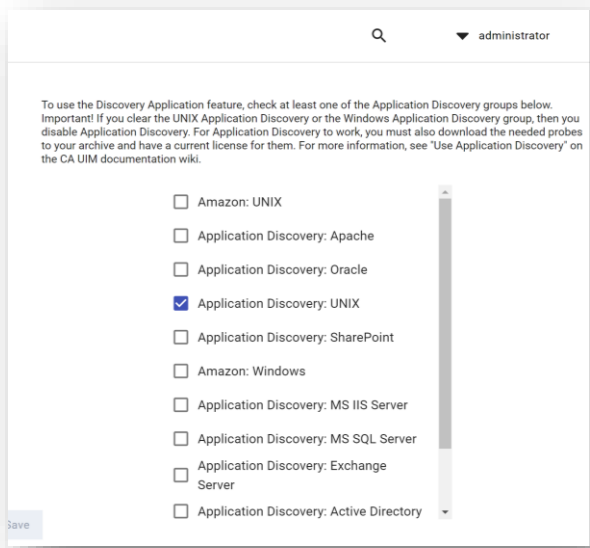
Dynamic
Application
Discovery

2

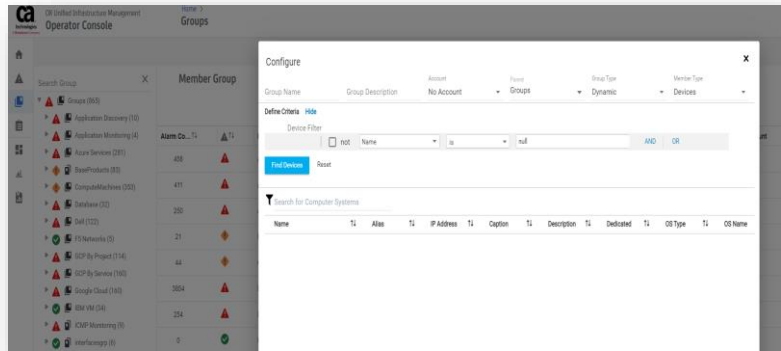
Auto
Configuration

3

Monitoring
Commences



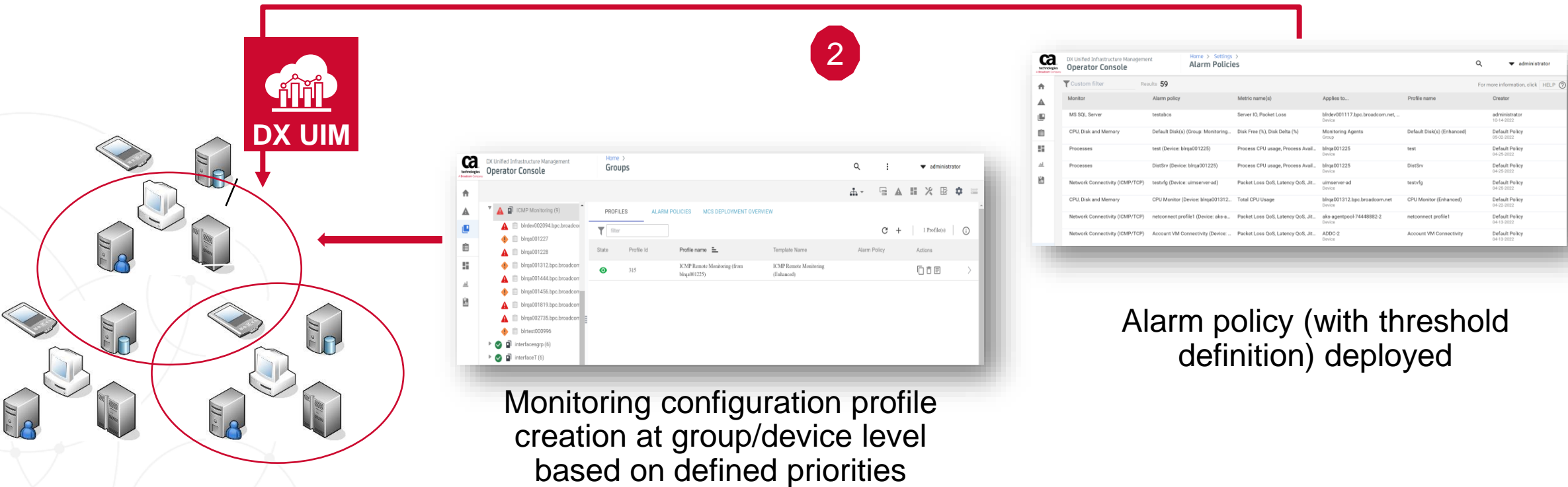
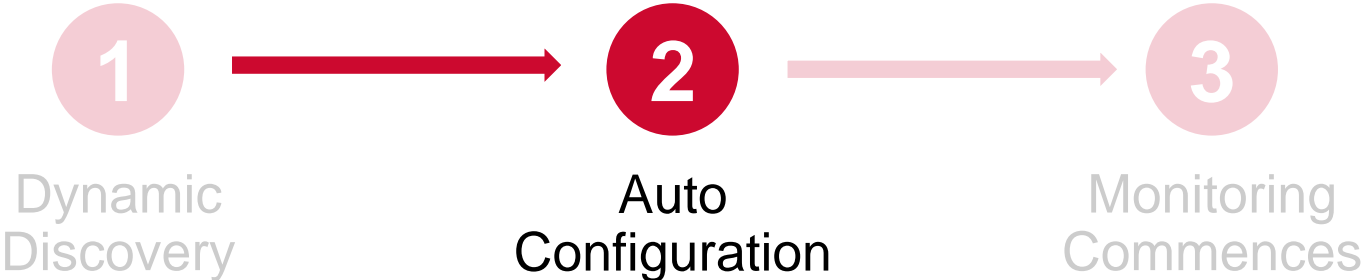
Discover application and set roles, such as host, server, VM, etc.



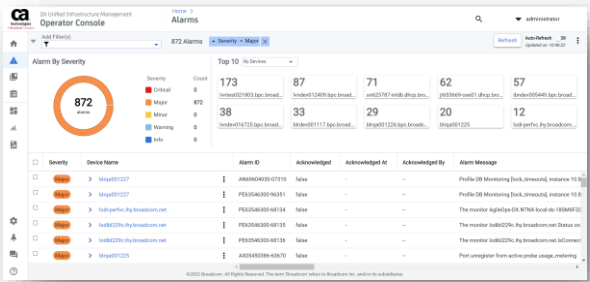
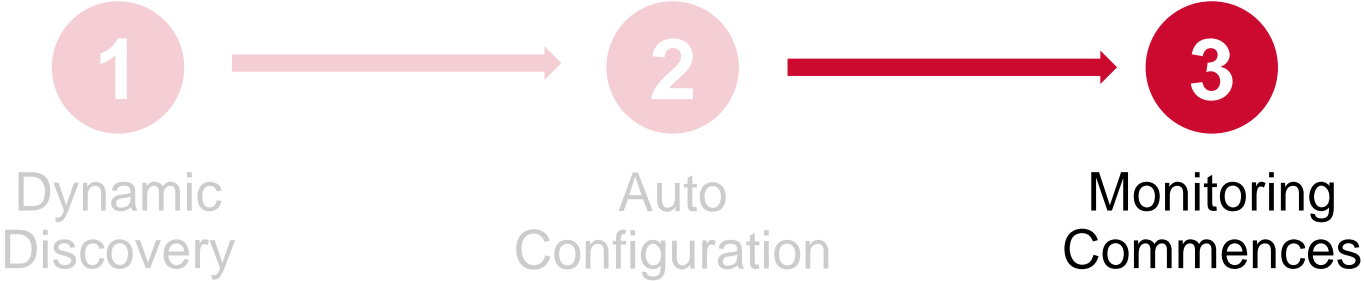
Inventory management thru dynamic and static groups

- Logical clustering of inventory based on properties, like IP, host, OS, etc.

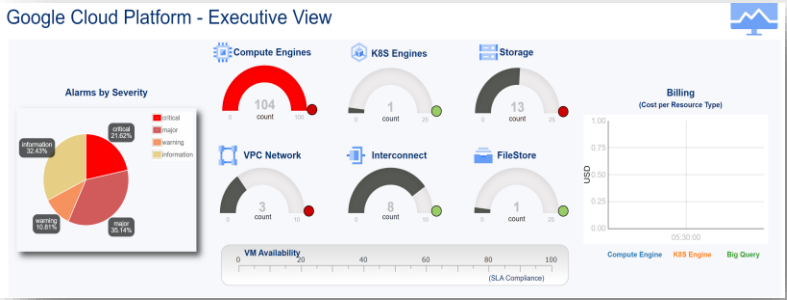
Automatic Monitoring Profile & Alarm Policy Configuration



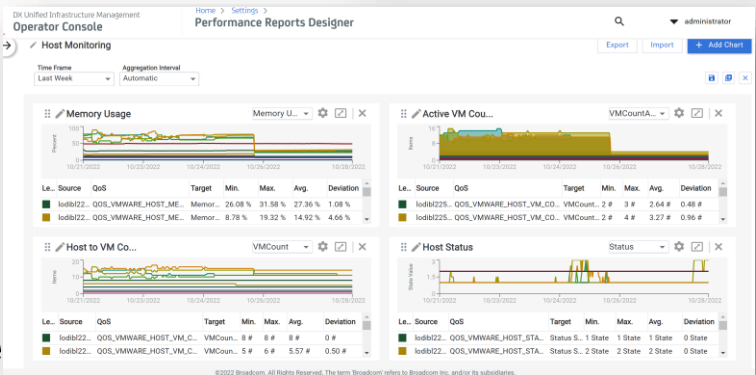
Monitoring Commences



Alarm generation and incident management



Out-of-the-box dashboards and reports



Health and performance

MCS Enhancements Delivered over 20.4 ++

Reliable and Scaled-Up Zero Touch Monitoring Configuration

— Support for hybrid cloud Inventory

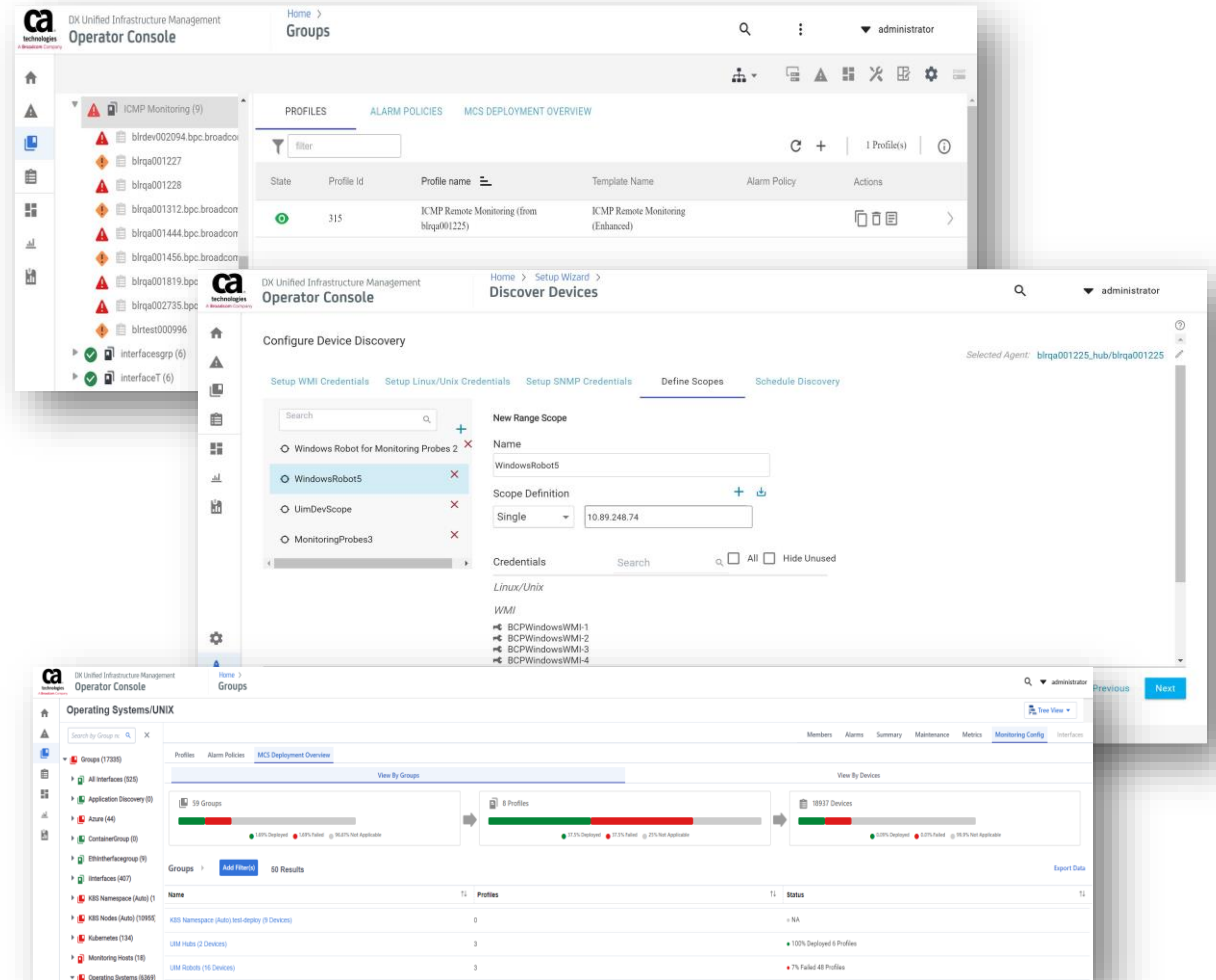
- Discovery server tuned for onboarding and correlation of inventory at higher scale
- Deep cleanup of inventory

— Improved reliability

- Avoid both profile corruption and data inconsistency in the database during template migration
- Improve Logging for profile migration failures

— Better Scalability

- Avoid unnecessary re-deployment of MCS profiles
- Optimized MCS queries and implicit transactions for high scale deployment
- Horizontal scaling for quicker probe deployment by ADE
- Limit metric collection as per configured
- Test button for MCS profiles on Operator Console for database probes



Observability Views



Enhancements to Inventory and Group Management

Understanding Monitoring Details

- Import of inventory from CMDB for quick onboarding
- Export of inventory and group details for CMDB comparison
 - Device and attributes
 - Monitoring configuration details like MCS profiles and alarm policies
- Manage high scale inventory with device attribute based filtering
- View additional inventory attributes
- Inventory and group summary view customizations
 - Sortable columns
 - Editable table columns

The screenshot displays the CA Technologies DX Unified Infrastructure Management Operator Console. The main view is the 'Inventory' page, showing a table of 18937 results. The table columns include Alarm Count, Max Severity, Name, CS Id, Monitored By, Device Type, IP Address, Discovered, OS Type, and OS. A filter 'Device Type Contains Virtual' is applied. Overlaid windows show the 'Edit Columns' dialog and the 'Import Device' dialog.

Alarm Count	Max Severity	Name	CS Id	Monitored By	Device Type	IP Address	Discovered	OS Type	OS
0	Clear	uim-c8-439.us-west1-b.c	26744		UNKNOWN	10.252.25.69	2 hours ago		
0	Clear	IDSRA01_orig_clone	26743	vmware	VirtualMachine		16 days ago	UNIX	Li
0	Clear	Nut1Hub	26742	vmware	VirtualMachine		16 days ago		
0	Clear	lodibl209dvm065	26741	vmware	VirtualMachine	10.131.177.129	16 days ago	UNIX	Li
0	Clear	lodibl209avm042	26740	vmware	VirtualMachine	10.131.176.54	16 days ago	Windows	W
0	Clear	InhydPIMDHCPEP1-1306	26739	vmware	VirtualMachine		16 days ago	UNIX	Li
0	Clear	InhydPIMDHCPEP1-HA4	26738	vmware	VirtualMachine		16 days ago	UNIX	Li
0	Clear	CVM	26737	vmware	VirtualMachine	10.131.135.62, 192...	16 days ago	UNIX	Li
0	Clear	RC5-	2				16 days ago	Windows	W
0	Clear	RC5-	2				16 days ago	Windows	W
0	Clear	RC5-	2				16 days ago	UNIX	Li

Edit Columns

- ☐ Alias
- ☒ Bus Type
- ☒ CS Id
- ☐ CS Key
- ☐ Caption
- ☐ Dedicated
- ☐ Description
- ☒ Device Type
- ☐ Discovered
- ☐ Has KeyIcon
- ☒ IP Address
- ☐ Last Updated
- ☐ Latest Origin
- ☐ MAC Address

Import Device

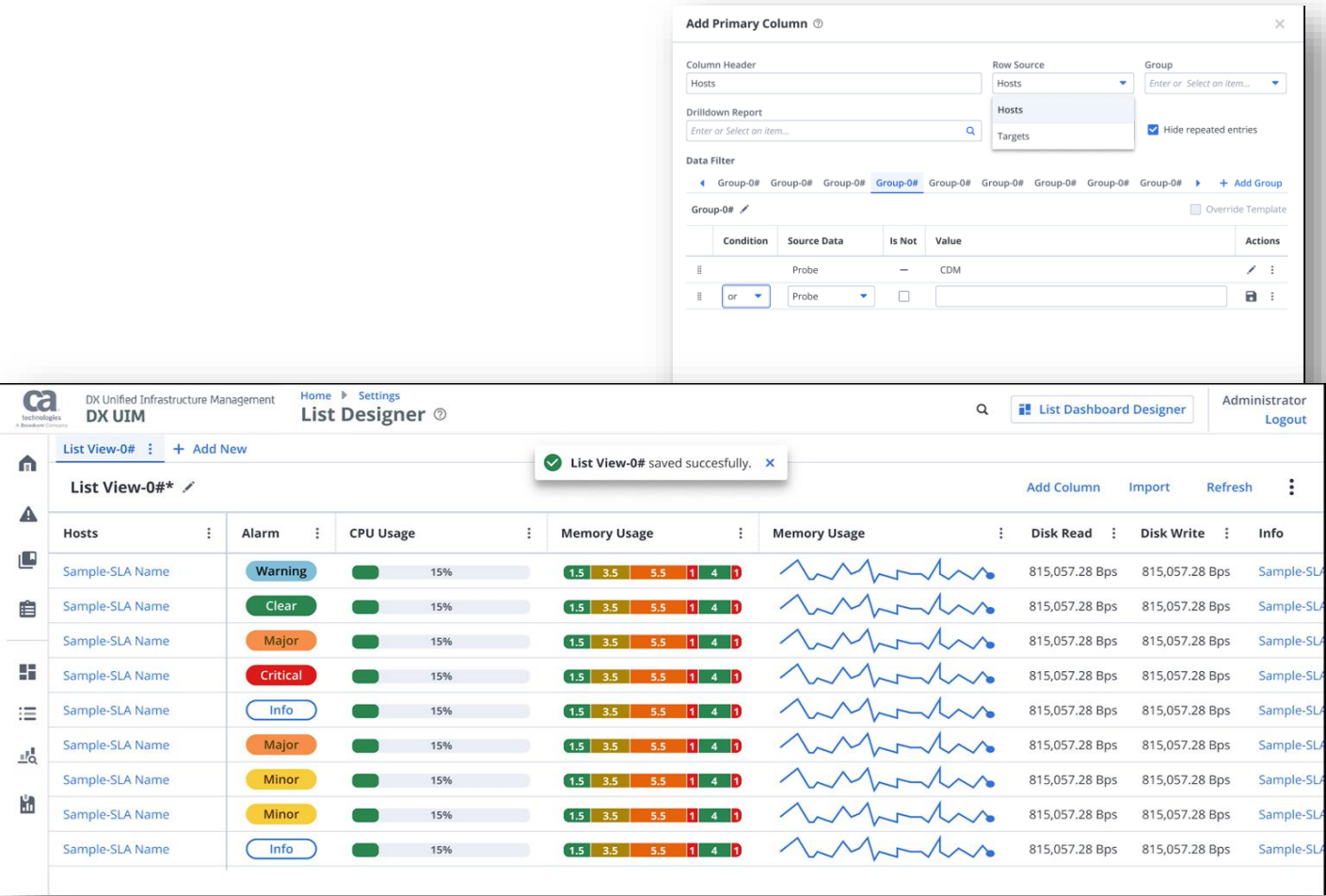
Upload an XML file from your computer

Cancel Import

List Designer and List Viewer for DX UIM 20.4

Faster Full-Stack Triage – Performance and Health Management

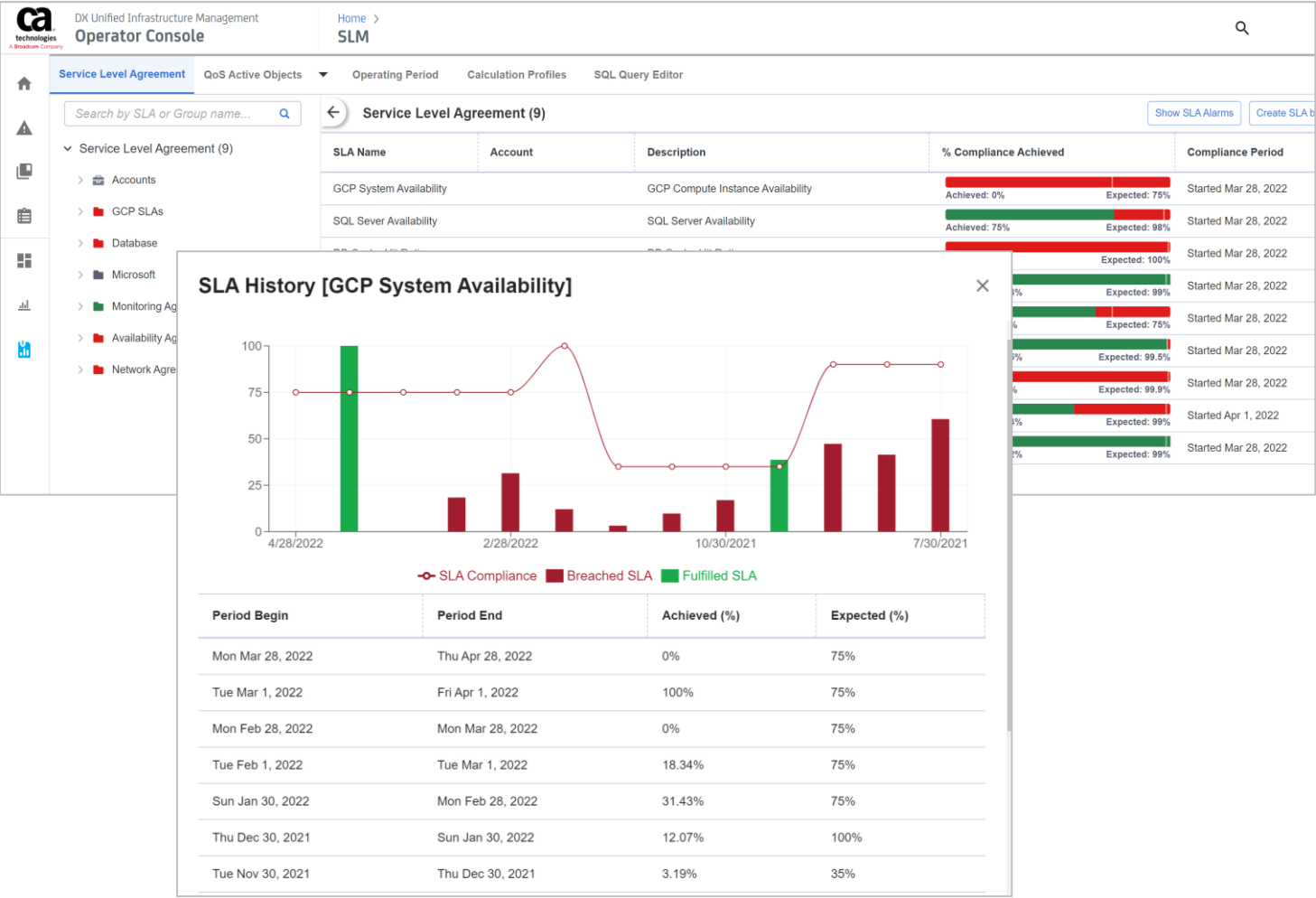
- (re)Introduction of list view designer with refreshed UX
- List Viewer displays information in a table format; the information can be in the form of text, numbers, gauges, alarms or line graphs
- Create two kinds of lists: detail or group
 - In detail lists, each row displays information for a single host or target
 - In group lists, each row displays aggregated information for a group of systems
- Publish URLs for sharing and easy access
- Role-based, tenant-aware visualization



Service Level Management

Faster Full-Stack Triage with Service Level Management

- Manage service availability across tech stack based on QoS parameters for defined service objectives
- Share service availability trend reports with stakeholders
- SLA alerts for proactive service degradation management
- Group-level SLO definition



Performance Insights

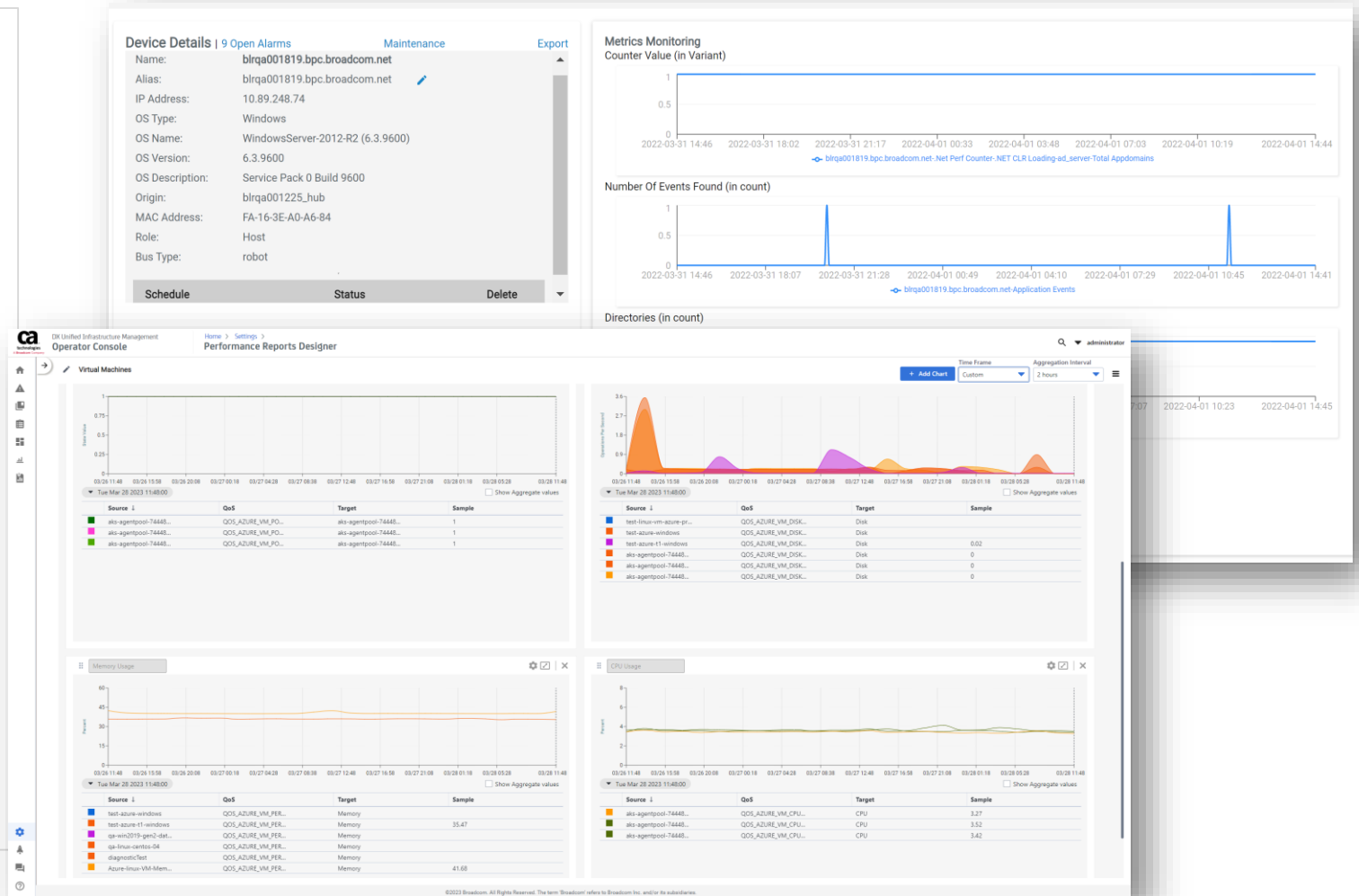
Faster Full-Stack Triage – Performance and Health Management

Performance Reports Designer

- Compare QoS parameters across devices
- Schedule reports to share with all stakeholders
- Multiple chart options for accurate representation

Metric Viewer

- View metrics across devices, groups, and technologies
- View performance anomalies based on historical data
- Role-based metric views



Product Usage Details with DX UIM 20.4

Enabling Efficient License Utilization

Product usage collector

- Display monthly license usage data on Operator Console as per new SKU DXIMGR990
- Summary usage, detailed as per older probe packs for correlation
 - Beneficial for customers still on legacy CA SKUs
- Data accessed by tools admin based on ACL
- Detailed usage report (origin level) generated using the usage_metering probe
- *Usage telemetry data can be shared with Broadcom thru both online and offline mechanism

ca technologies
A Broadcom Company

DX Unified Infrastructure Management
Operator Console

Home > Settings >
Product Usage

Monthly usage summary as per DX UIM SKU

November, 2022

Licensed Metric - #DXIM Devices ⓘ

Product Version	Period	Total Usage
20.4.5	November, 2022	40.90

Billing Summary - November, 2022

Monitoring Area	Usage (Ratio)	DXIM Devices
CA NM - Service Response Time Adv Pack	2.00 (1:1)	2.00
CA NM - Ping Pack	9.00 (10:1)	0.90
CA NM - Server and Application Pack	31.00 (1:1)	31.00
CA NM - Storage Pack	0.00 (5:1)	0.00
CA NM - Server Pack	7.00 (1:1)	7.00
Unknown Pack	27.00 (0)	0.00
Total		40.90

Monthly usage summary as per old probe packs

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*PLA customers obligated to share usage telemetry on regular cadence with Broadcom



Section 508 (VPAT) Compliance of GUIs

Better Accessibility, Improved Usability

DX UIM 20.4 CU6 onward conforms to WCAG 2.1 AA standards

- **Perceivable:** Presents information that can be perceived in different ways, where a user can adjust color, contrast or font size
- **Operable:** User will be able to perform required interactions using a keyboard or voice commands, not just using a mouse
- **Understandable:** Improved user flows so that information and instructions is clear and navigation methods are easy to understand and use
- **Robust:** Content is robust enough so that it can be interpreted reliably by a wide variety of users and types of assistive technologies

The screenshot displays the DX UIM 20.4 CU6 Operator Console interface. The top navigation bar includes 'demo-uimserver_domain' and 'demo-uimserver_hub'. The main content area shows a 'Status' section with a 'Hub' tab, displaying 'demo-uimserver_hub' and a 'Robots - 3' status. A large green circle indicates 'Active - 3'. Below this, there are sections for 'License' (Perpetual) and 'Tunnel' (Disabled). The bottom section shows 'General Info'. On the right side, there is a 'W3C WAI-AA WCAG 2.1' logo and a checklist titled 'POUR' with four items, each marked with a checkmark. The bottom of the screenshot shows the 'Operating Systems/Windows' section with a 'Member Group' table. The table has columns for 'Alarm Count', 'Name', 'Device Type', 'OS Name', 'Origin', 'IP Address', and 'Monitored By'. The table lists several entries, including 'cabsbuildongoing.aod.labs', 'chnageit.aod.labs.broadcor', 'demo-cabi', 'demo-oc', 'demo-uimserver', 'eem-win1.aod.labs.broadcor', 'eem-win2.aod.labs.broadcor', and 'eem-win3.aod.labs.broadcor'. The footer of the interface includes the copyright notice: '©2023 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.'

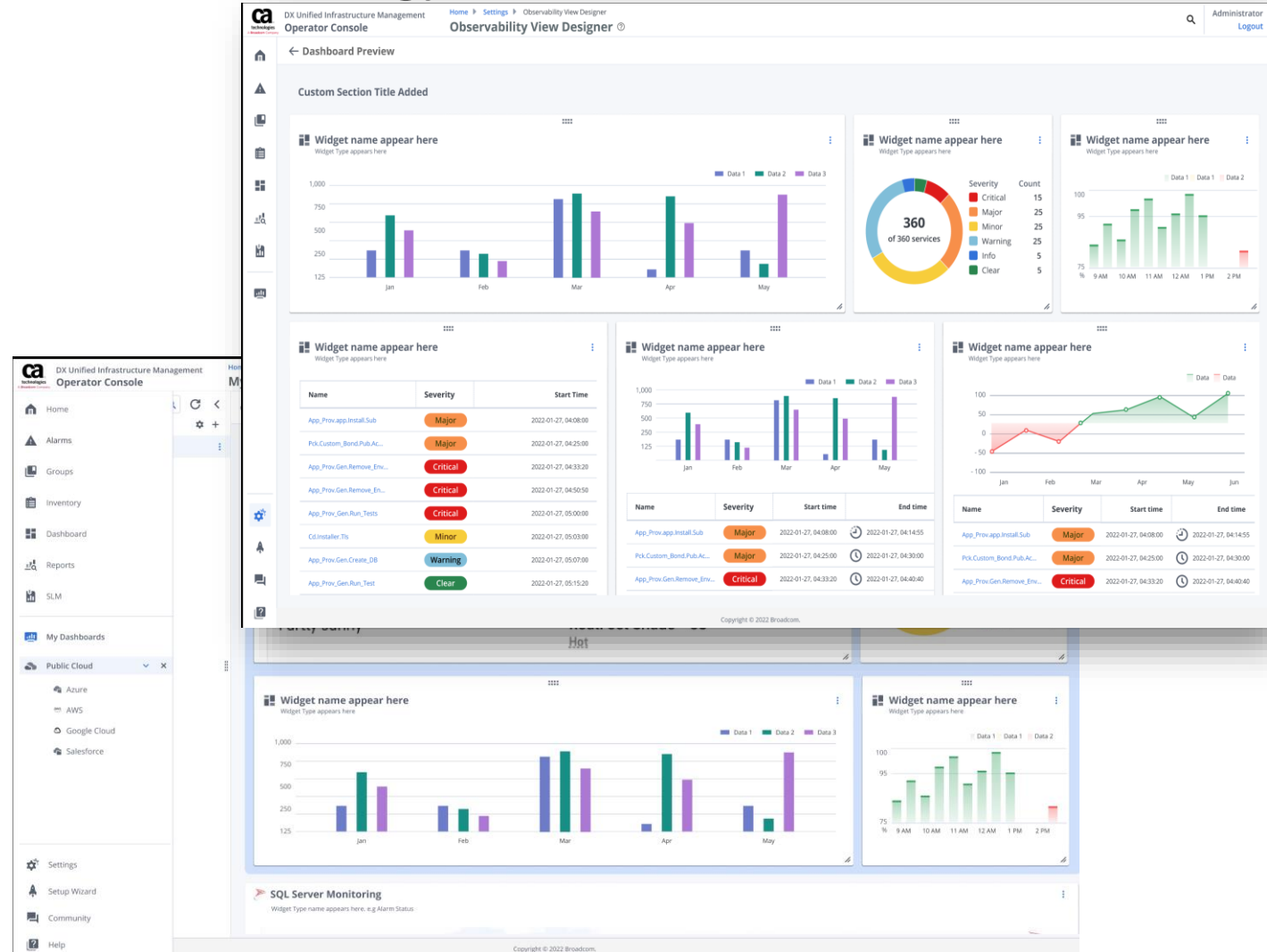
Coming Soon: Observability View Designer

Richer Home Screens as Per Roles and Technology

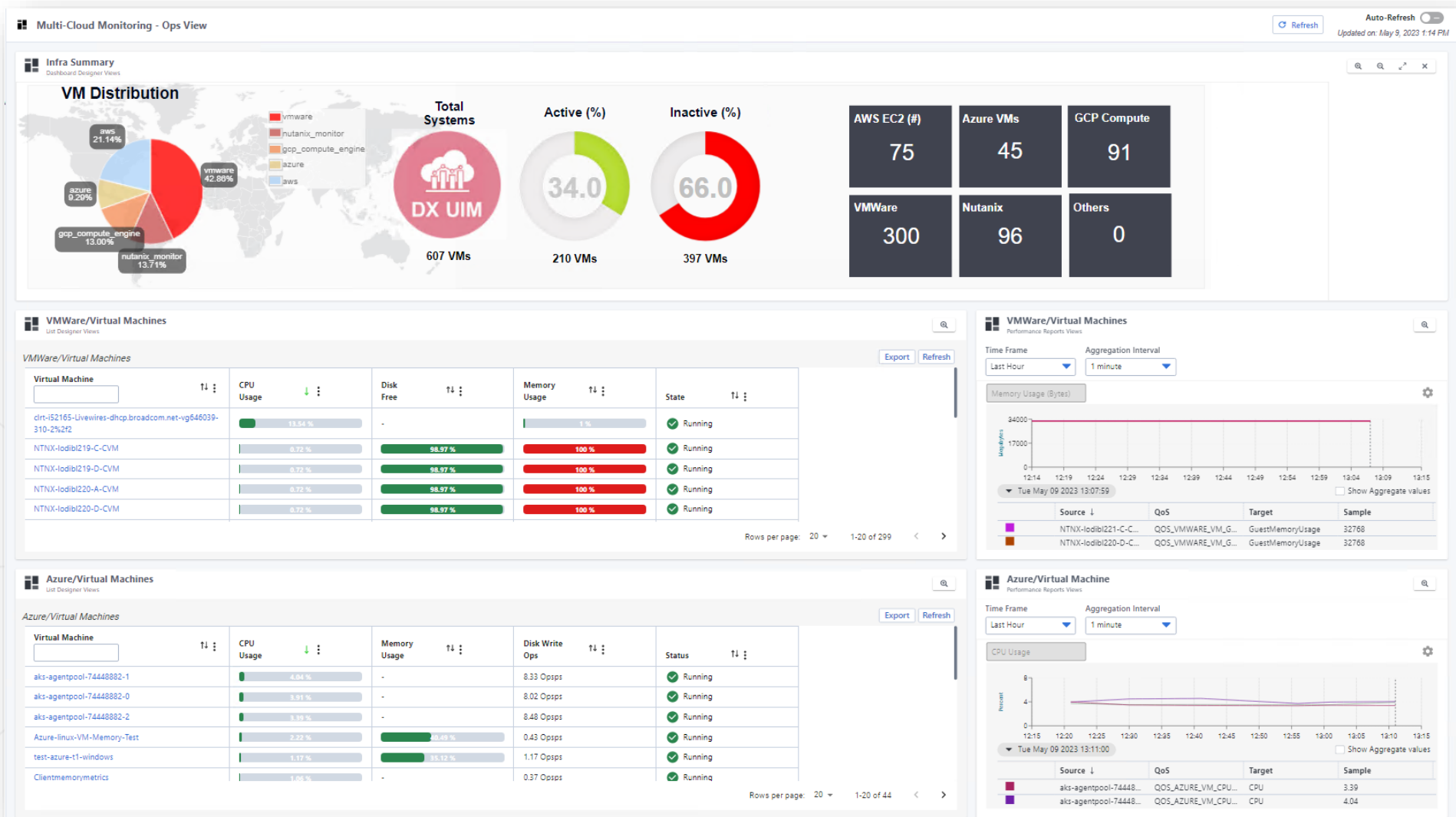


New dashboarding option

- Design integrated views to create unified views across infrastructure stack
- Support correlation to understand performance insights across hybrid multi cloud data center
 - Inventory to fault correlation
 - Fault to performance correlation
- Persona based content
- Enabling self service



Sample of Observability View for DX UIM



Web-Scale Scalability



DX UIM Offers Widest Coverage for Infrastructure Observability

SERVERS & APPS

- Apache HTTP Server
- Active Directory Events
- Active Directory Server
- Cisco UCM
- Citrix Insight Server
- Citrix Provisioning Service
- Citrix XenApp
- Citrix XenDesktop
- Email Response
- IBM Domino Server
- IBM Notes Server Response
- IBM WebSphere
- IBM WebSphere MQ
- JBoss
- Java Management Extensions
- Java Virtual Machine
- Microsoft Exchange
- Microsoft Exchange Server Response
- Microsoft Office365
- Microsoft IIS
- Microsoft SharePoint
- Microsoft Windows Event Log
- Microsoft Windows Performance
- Microsoft Windows Services
- Salesforce
- SAP Basis
- Sybase EAServer
- Tomcat
- WebLogic
- Web URL Service

SYSTEMS & SERVICE RESPONSE

- Active Directory Response
- CPU Disk Memory
- Cisco
- Cisco IPSLA (SAA)
- Cisco UCM
- Cisco UCS
- Citrix Insight Response
- Clustered Environments
- Command Execution
- DHCP Response
- DNS Response
- ecoMeter
- Email
- E2E Application Response
- File & Directory
- File Systems Mount
- I/O Stats
- ICMP
- KVM
- LDAP Response
- LogMon
- Network Time Protocol Response
- NIC Performance
- Printers
- Processes
- Reboot
- Remote System
- URL Endpoint Response

CLOUDS, CONTAINERS & VIRTUALIZATION

- Apache CloudStack
- AWS
- Citrix XenServer
- Docker
- Google Cloud Platform
- IBM PowerVM
- Kubernetes
- Microsoft Azure
- Microsoft Hyper-V
- Nutanix
- OpenStack
- PodMan
- Red Hat
- Solaris Zones
- VMware ESX
- VMware vCenter
- VMware vCloud Director

IBM AS/400 iSERIES

- Data Service Pack
- Disks
- Fetch System Messages
- Jobs
- Jobs Queue
- Jobs Schedule
- Journal Message
- Output Queue
- OHST Data
- Message Service
- Network Monitoring

NETWORKING INFRASTRUCTURE

- Cisco Meraki
- Cisco Tandberg C-Series
- Cisco Tandberg EX90
- Cisco Tandberg MXP Series
- Cisco UCM
- Cisco UCS
- ICMP
- Net Connect
- NQ Services
- SNMP Collector
- SNMP Get
- SNMP Trap Daemon

EXTENSIBILITY & INTEGRATIONS

- Application Delivery Analysis Inventory
- CA APM Bridge
- CA App Experience Analytics Gateway
- CMDB Gateway
- DX Operational Intelligence Gateway
- Email Gateway
- Java Database Connectivity Gateway
- Message Gateway
- REST API Monitoring
- Short Message Service Gateway
- Service Desk Gateway
- SNMP Gateway
- Spectrum Gateway
- System Log Gateway
- Usage Reporting Web Gateway

BIG DATA, DATABASES & STORAGE

- Apache Flume
- Apache Oozie
- Apache Solr
- Cassandra
- Cloudera Impala
- Ceph
- Cohesity
- Dell EMC Elastic Cloud Storage
- Dell EMC VMAX
- Dell EMC VPLEX
- Dell EMC VNXe
- Dell EMC XtremIO
- Hadoop
- Hitachi
- HP 3PAR
- IBM DB2
- IBM DS S8xxxx
- IBM DS S3xxxx, S4xxx, S5xxx
- IBM SAN Volume Controller
- IBM Total Storage 4000
- JDBC Response
- MongoDB
- MySQL
- NetApp
- NetApp ONTAP
- Oracle
- Pure Storage
- Redis
- SQL Response
- SQL Server

Monitoring Probe Update Highlights



- **Expanded hybrid cloud monitoring coverage** with enhanced coverage using Azure Monitor API, new hyperconverged infrastructure agent for HPE Simplivity along with container monitoring with support for Pod Manager, Docker and Kubernetes
- **Enhanced Microsoft Active Directory** monitoring with support for dynamically located DSA file
- **Expanded synthetic monitoring** with support of Microsoft Edge browser with revamped recorder now available thru MS marketplace
- **Updated CPU/disk/memory** monitoring to auto-update disk mount point
- **Improved security for data collection** with upgrade to AES-256 and SHA-256 encryption algorithms across the probe portfolio
- **Certification of modern technology APIs**, like ServiceNow San Diego, Salesforce API v55, Cisco Meraki API v1.0, Cohesity OS 6.60 (Pegasus), SharePoint 2019, and OpenStack Xena and Train releases



Why Upgrade



DX UIM 20.4 CU9: Why Upgrade



Secure at Scale

Modern, scaled up performance and alarm management along with additional security for high-scale enterprises, government agencies and MSPs



Modern Support

Additional support for Google Cloud, Microsoft Server Core 2019 and PerconaDB open-source database as option



Quality

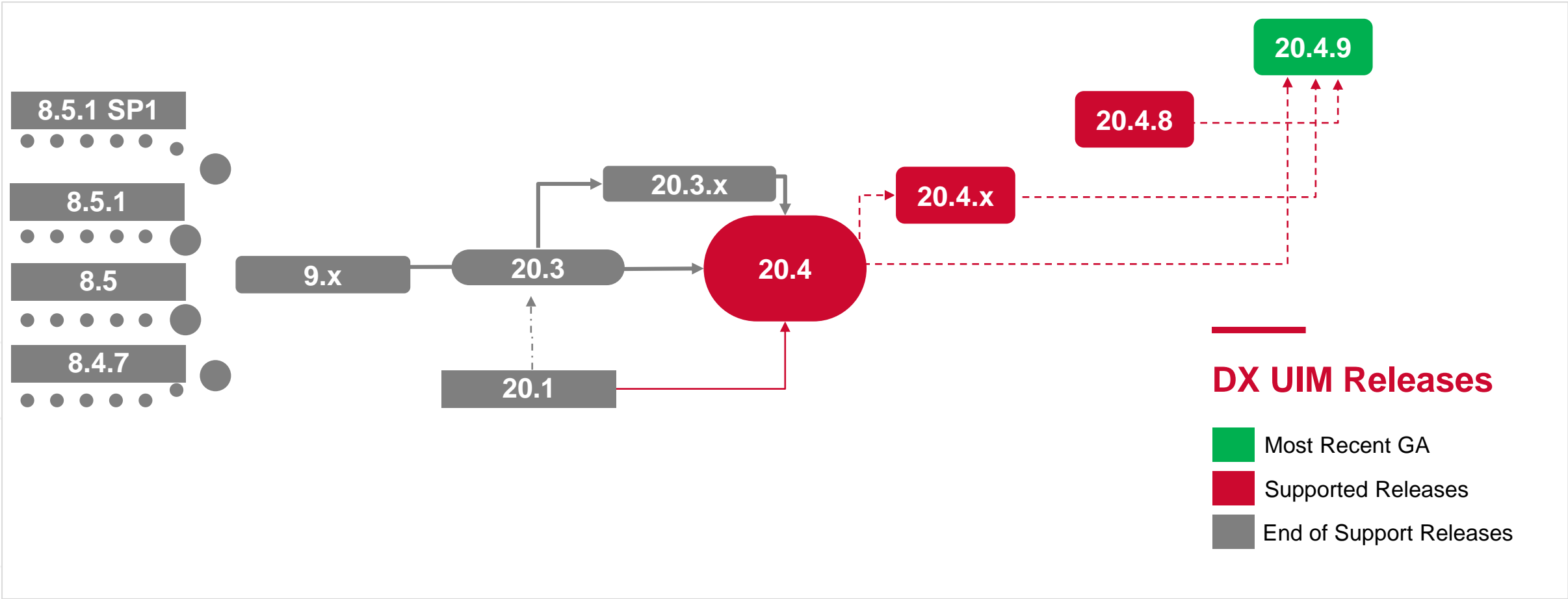
100+ feature enhancement requests, 20+ ideas from user community and customer-found defect fixes



Path Ahead

Ingests granular data to enable highly accurate analytics with complementary AIOps solutions

DX UIM 20.4: Upgrade Paths or Fresh Install



Robust Security Practices through DevSecOps

Enterprise-Grade Security



SECURE DEVELOPMENT

- Standard and reliable build systems
- Static and dynamic code scans
- Proactive third-party vulnerability remediation



SECURE DELIVERY

- Code signing with credible techniques like Authenticode, GNU Privacy Guard (GPG) and Safe Structured Exception Handlers (SafeSEH)
- Proactive standard and advanced penetration testing



SECURE DEPLOYMENT

- Securing monitoring **data-at-rest** at the persistence layer
- Securing **data-in-motion** thru tunnels and secure bus

CONTINUOUS FOCUS ON SECURITY THROUGH CI/CD FOR DX UIM



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