

The background features a vibrant, multi-colored gradient. A diagonal line divides the image into two main sections. The upper-left section is a solid blue, while the rest of the image is a gradient of purple, orange, and yellow. The text 'AWS re:Invent' is positioned on the left side, overlapping the blue and purple areas.

AWS
re:Invent

TLC202

Assurance Cloud: Telco-grade assurance via the cloud with MYCOM & AWS

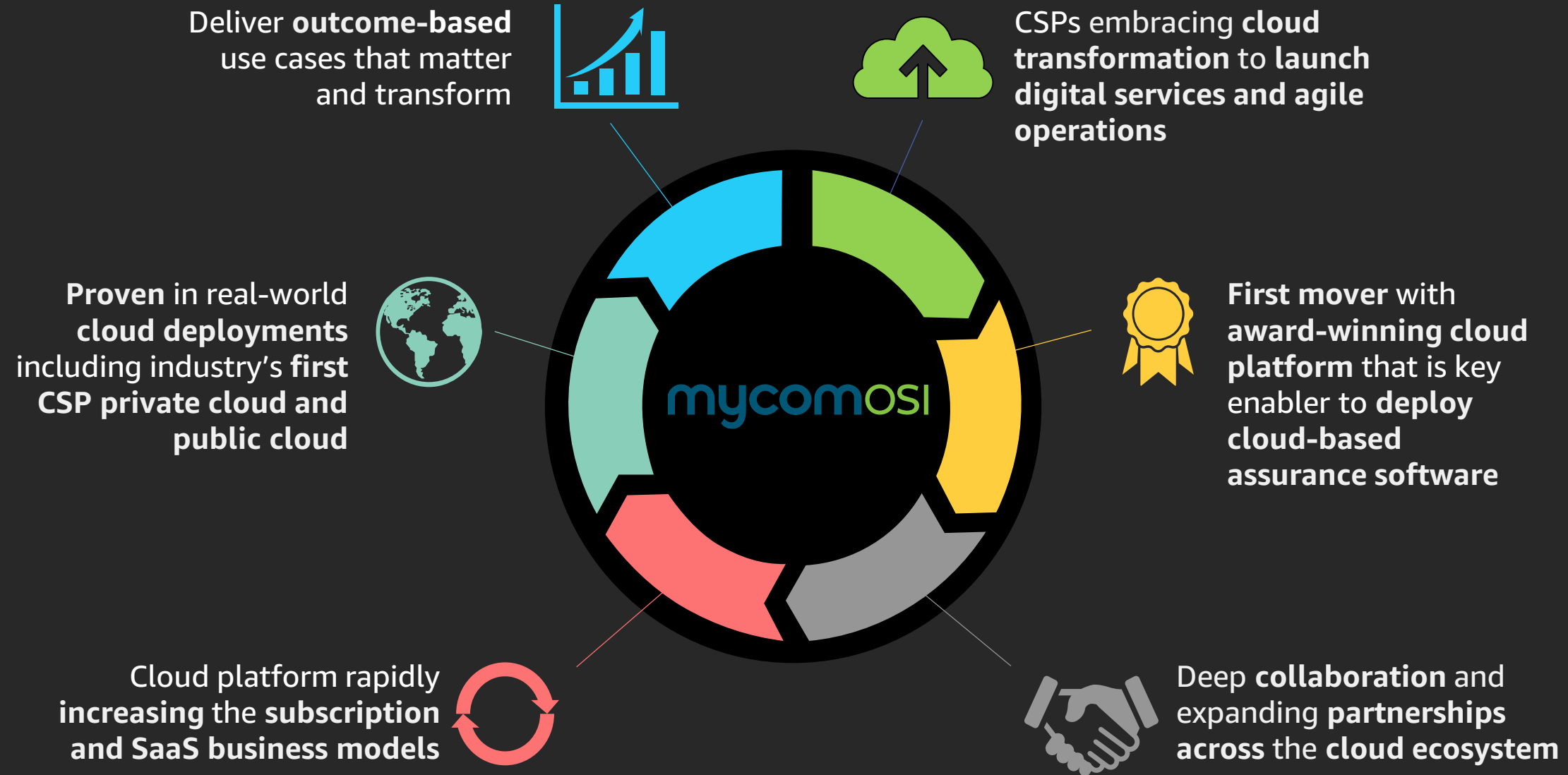
Dirk Michel

SVP Cloud Business Operations
MYCOM OSI

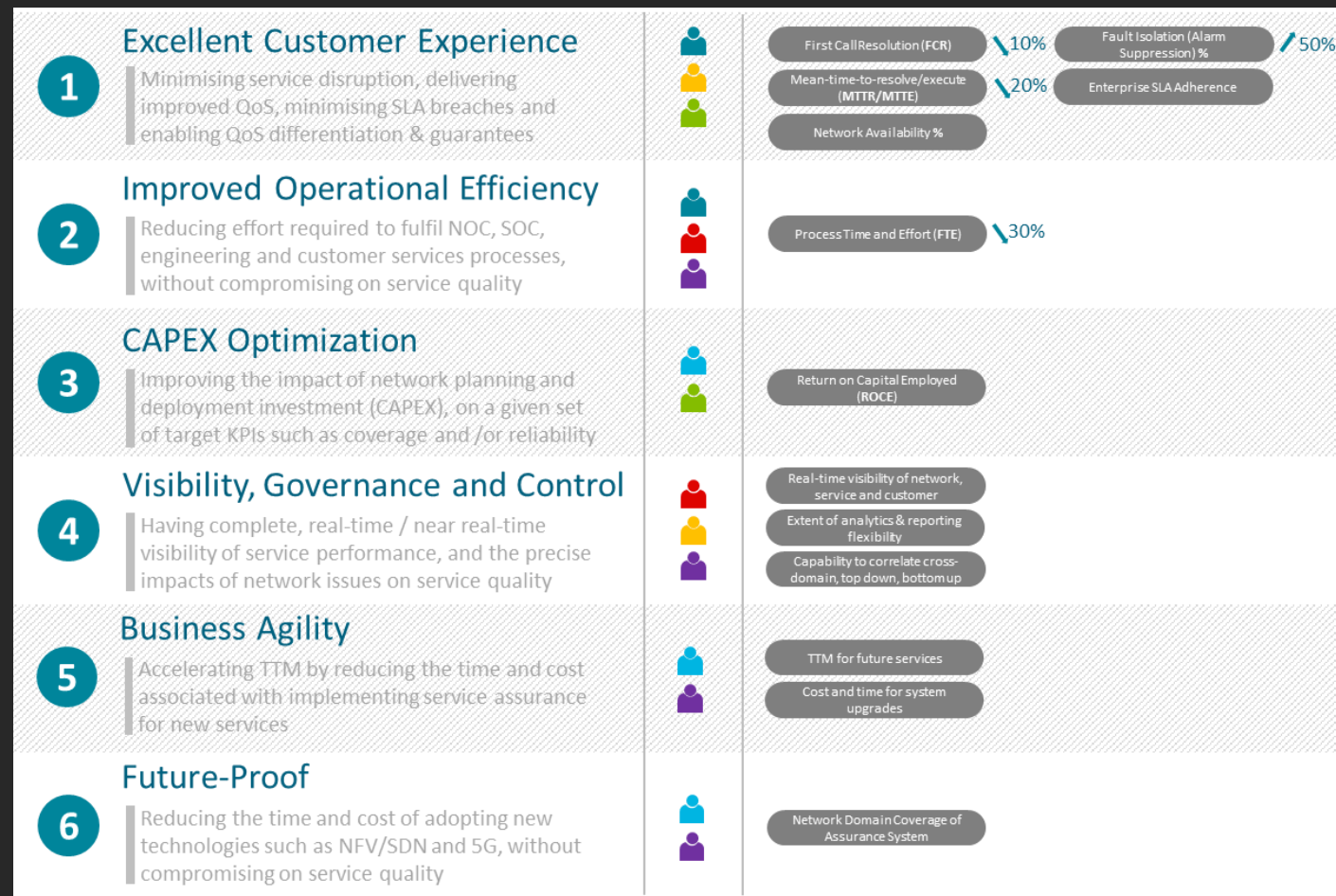
Robin Harwani







Principal, WW Partner SA Lead - Telecom,
Amazon Web Services

About MYCOM OSI



Assurance is critical to telco network management



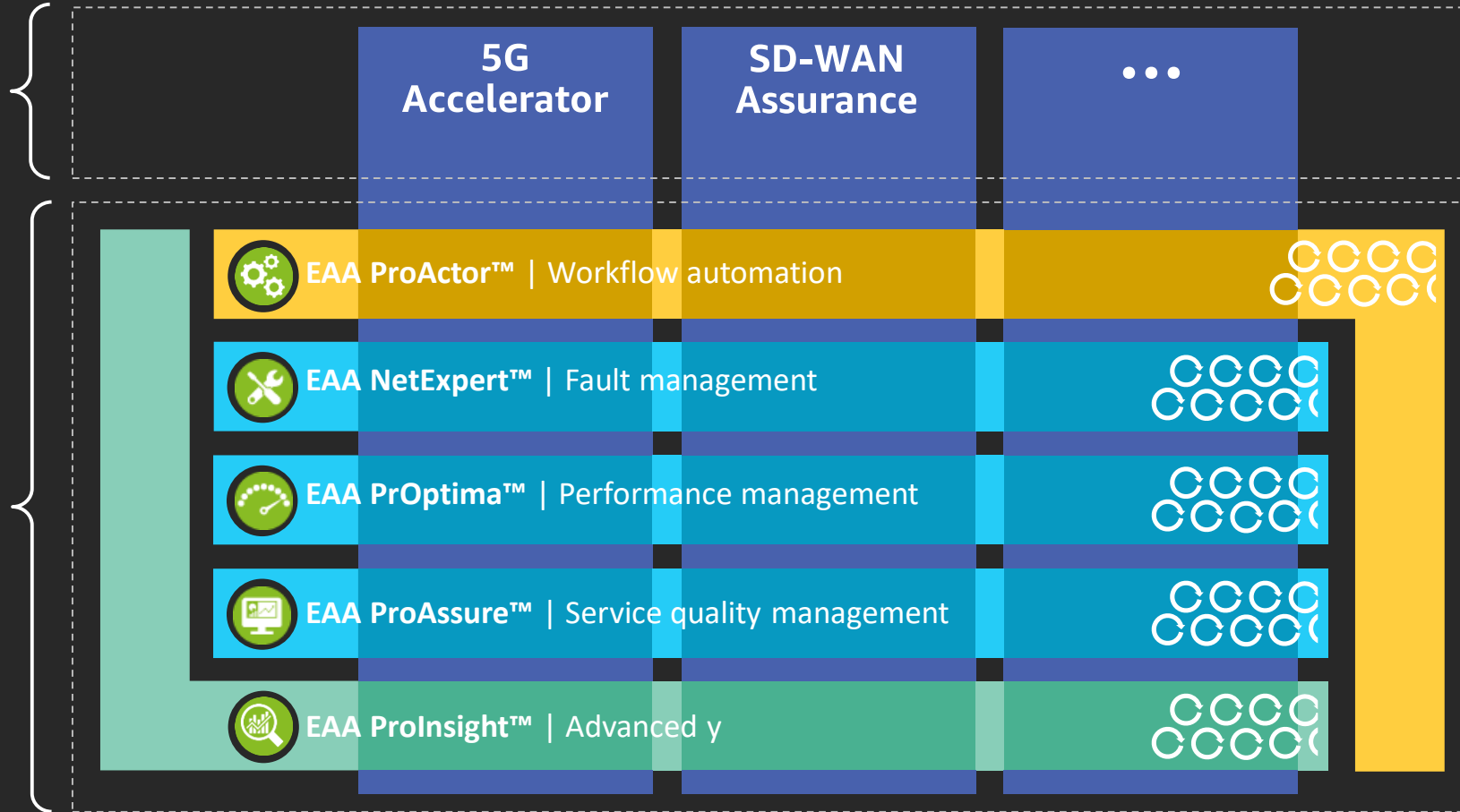
-  Customer Service
-  SOC
-  Engineering
-  Network Operations (NOC)
-  Business Departments
-  Planning

The “eyes and ears” of the network: surveillance / detection / issue isolation / resolution

The Assurance cloud portfolio

 SmartPacks™

↑ Vertical solutions



Scenario-aligned solutions: Purpose built for specific business scenarios and challenges. Avoids complex customization & configuration while leveraging advanced product capabilities developed over more than 25 years

Function-aligned applications, supporting the highly complex operations of Tier 1 telco network & service operations centers (NOC/SOC).



SmartPacks™: Preconfigured use cases catering to specific scenarios, including KPIs, dashboards, automation workflows, etc.

↔ Horizontal applications

The flexibility of cloud-native architecture has unlocked a whole range of “packaging” options

Goal for the day: What do we want you to know?

1. Why customers are moving Assurance platforms to AWS Cloud?
2. How we did it: Implementing the Mycom Assurance Cloud™
3. Quick demo
4. Lessons learned
5. Sneak peak into roadmap

1. Why are customers moving Assurance platforms to AWS Cloud?

Why are customers moving Assurance platforms to AWS Cloud?

Move to elastic infrastructure
to support improved TCO



Move to elastic application
to support on-demand and
unplanned application
capacity expansions



Achieve 99.99% availability
via 3x geo-redundant active-active
architecture



Move to cloud-native API-based
integration
and TMF/ETSI APIs



Faster software innovation
via containerized/microservices-
based architecture



Improved risk management
in a time of new tech introduction
and uncertainty



Building a *"cloudified NOC"* for the *"cloudified"* telco network

Why are customers moving Assurance platforms to AWS Cloud?



5G and automation

5G is driving up OpEx and CapEx by introducing yet more complexity. Automation is now a question of survival, and cloud capacity unlocks AI/ML, the driver of automation.



The last of the old guard

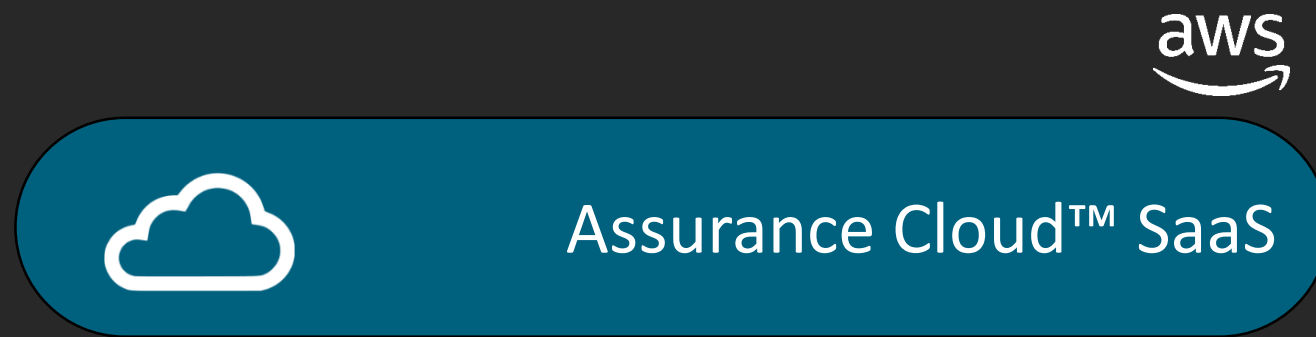
The industry is realizing that assurance does not have to be on premises and that it is a major bottleneck in the adoption of business agility (DevOps, CI/CD)



On-demand paradigm

CSPs realize that requirements can't be chiselled in stone anymore. "Programmable" networks means constant innovation and the need for new features "on demand"

Need to simplify the customer design experience



Cloud-only functionality	<ul style="list-style-type: none">• EAA Apps + ECP• Adaptor Catalogue™• Smartpacks Catalogue™
	Digital in-service operations
PaaS	
IaaS	

- 1 APPLICATIONS**
 - EAA PrOptima™
 - EAA ProAssure™
 - EAA NetExpert™
 - EAA ProActor™
 - EAA ProInsight™
- 2 USERS / SEATS**

Users seats

 - Up to 10
 - Up to 20
 - Up to 30
 - Up to 40
 - ...
- 3 NETWORK CATALOGUE**

Network Catalog

 - Up to 10
 - Up to 20
 - Up to 30
 - Up to 40
 - ...
- 4 SOLUTIONS CATALOGUE**

Solution catalog

 - Up to 10
 - Up to 20
 - Up to 30
 - Up to 40
 - ...
- 5 DATA VOLUME**

Data volume

 - Up to 10 GB/Day
 - Up to 20 GB/Day
 - Up to 30 GB/Day
 - Up to 40 GB/Day
 - ...

2. How we did it: Implementing the Mycom Assurance Cloud™

Globe Telecom: The path to cloud-native Assurance

We directly contributed to Globe Telecom's
Cloud Operating Strategy

Showing that it *can* be done for Assurance

Helping Globe unlock the Assurance Cloud™ benefits



What had to be addressed?

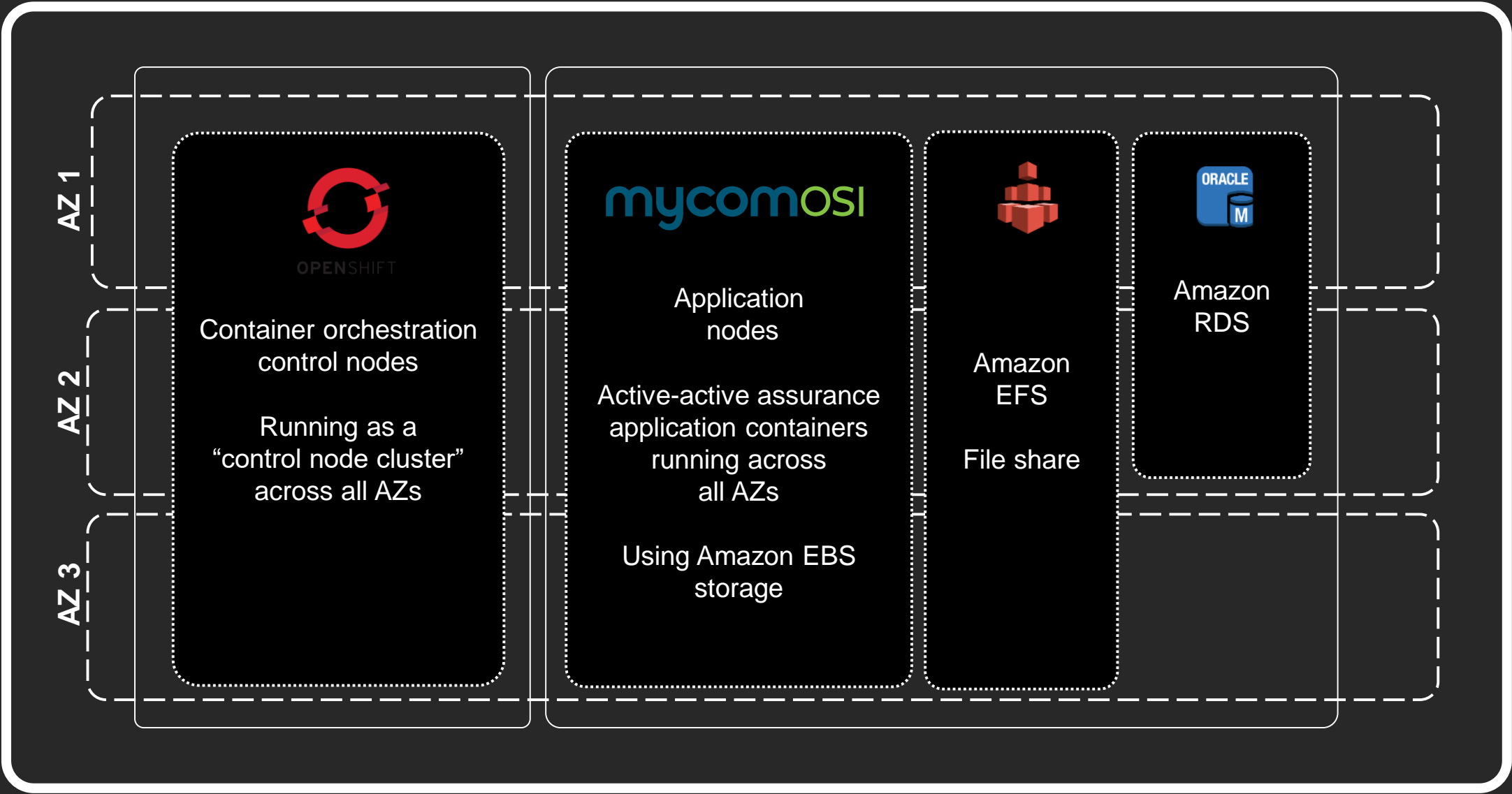
Security

Elasticity/availability

Performance

Monitoring

Level 0 architecture: The landscape



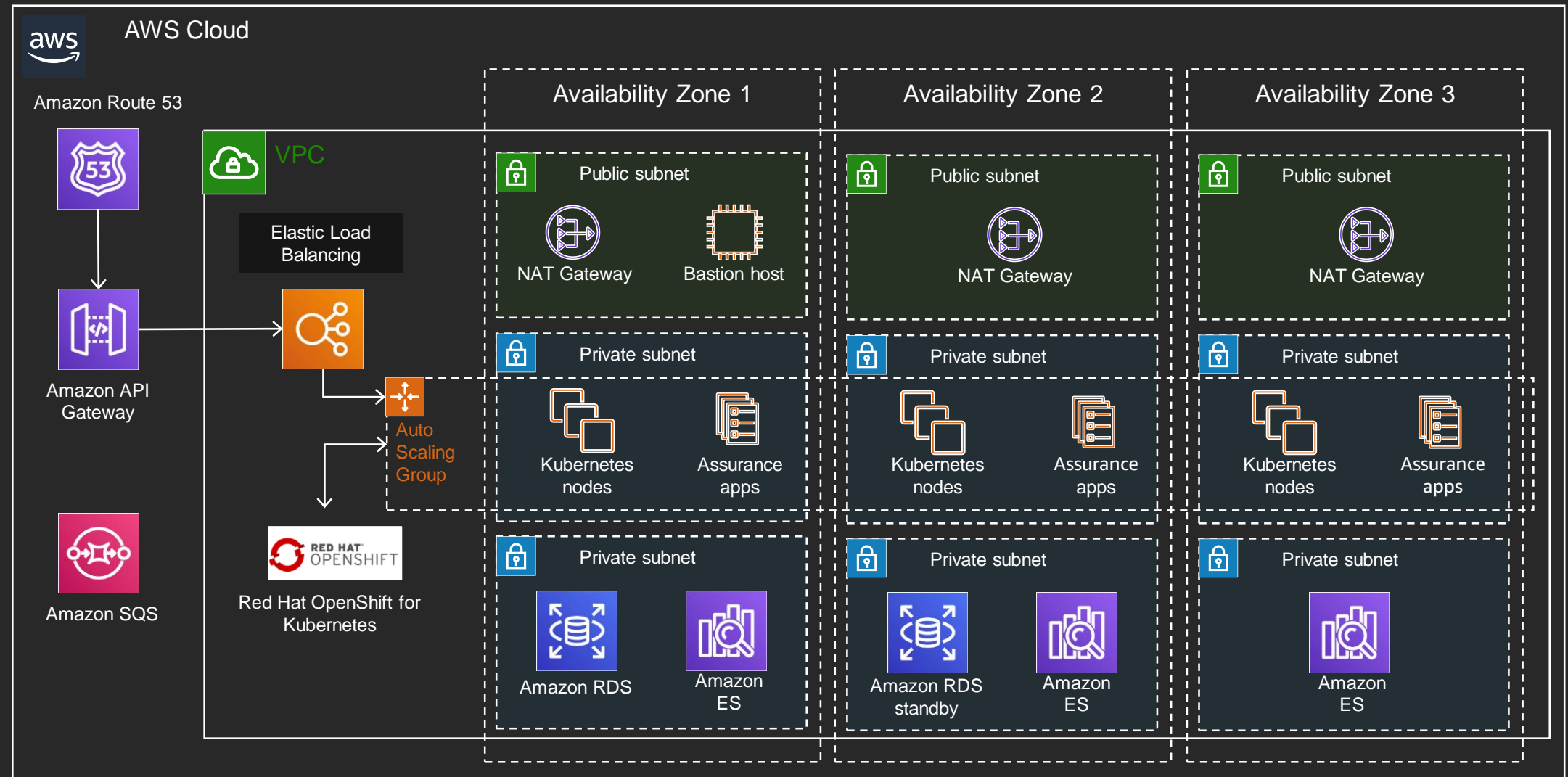
Evolved deployment architecture

Key AWS services

- ELB
- Amazon EC2
- Amazon VPC
- Amazon RDS
- CloudWatch
- CloudTrail
- Systems Manager
- Amazon ES
- Amazon SQS
- Amazon SES
- AWS Backup

ISV partner services

- Red Hat OpenShift



Security

Security

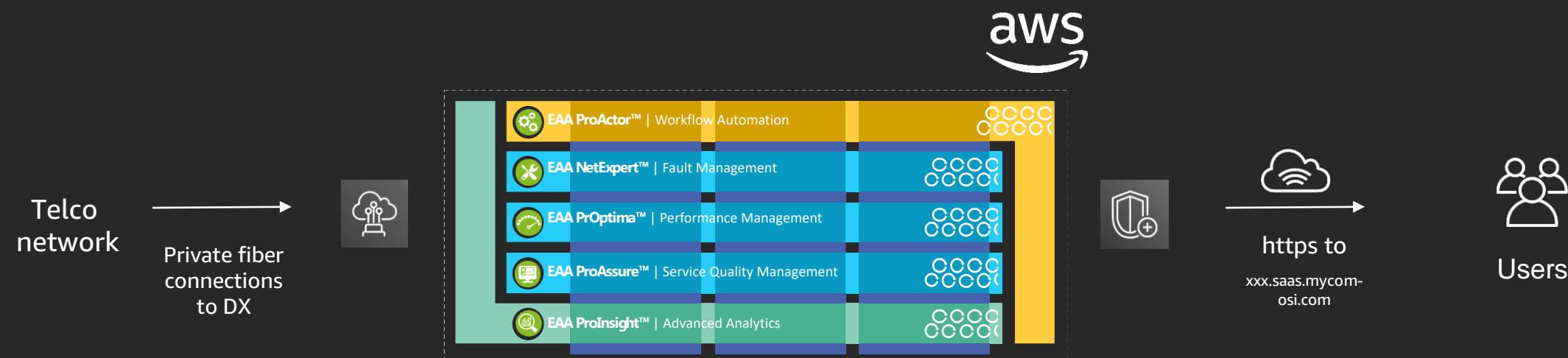
Creating the SaaS security model

Network to Assurance Cloud™

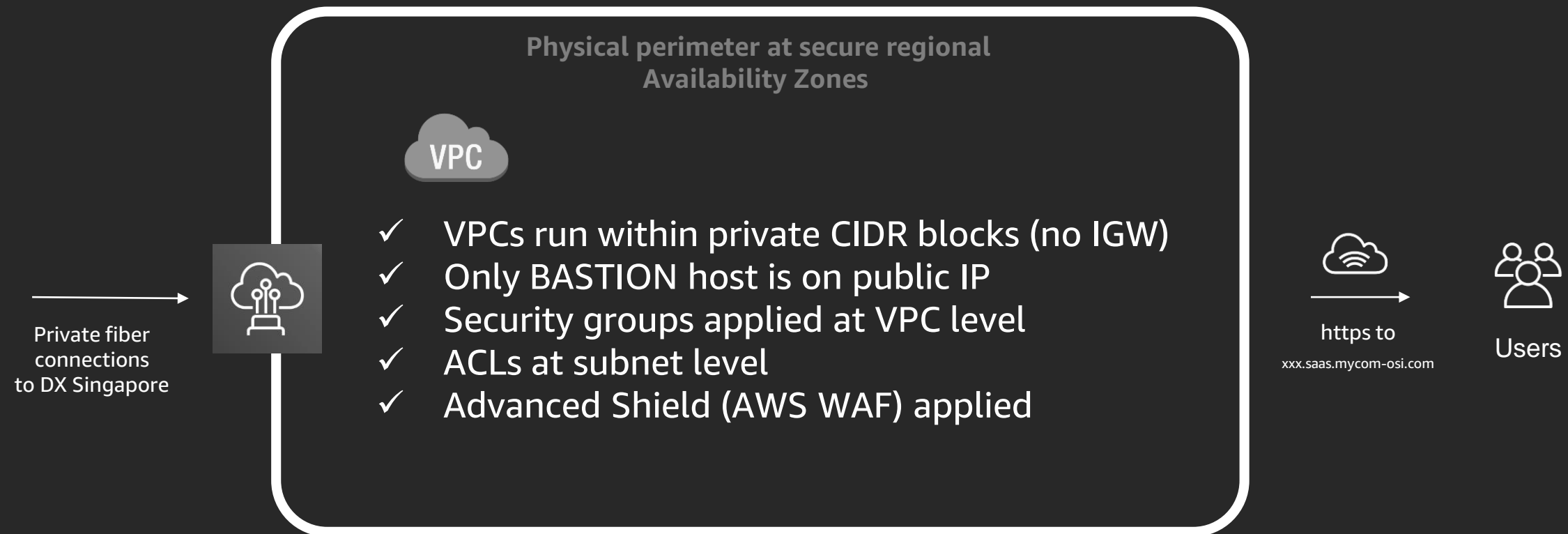
- ✓ All network data arrives via a fully private and encrypted fiber connection
- ✓ Network data is pushed/pulled into the Assurance Cloud™
- ✓ Security compliances demonstrated within

Users to Assurance Cloud™

- ✓ Connect via https
- ✓ All browser driven



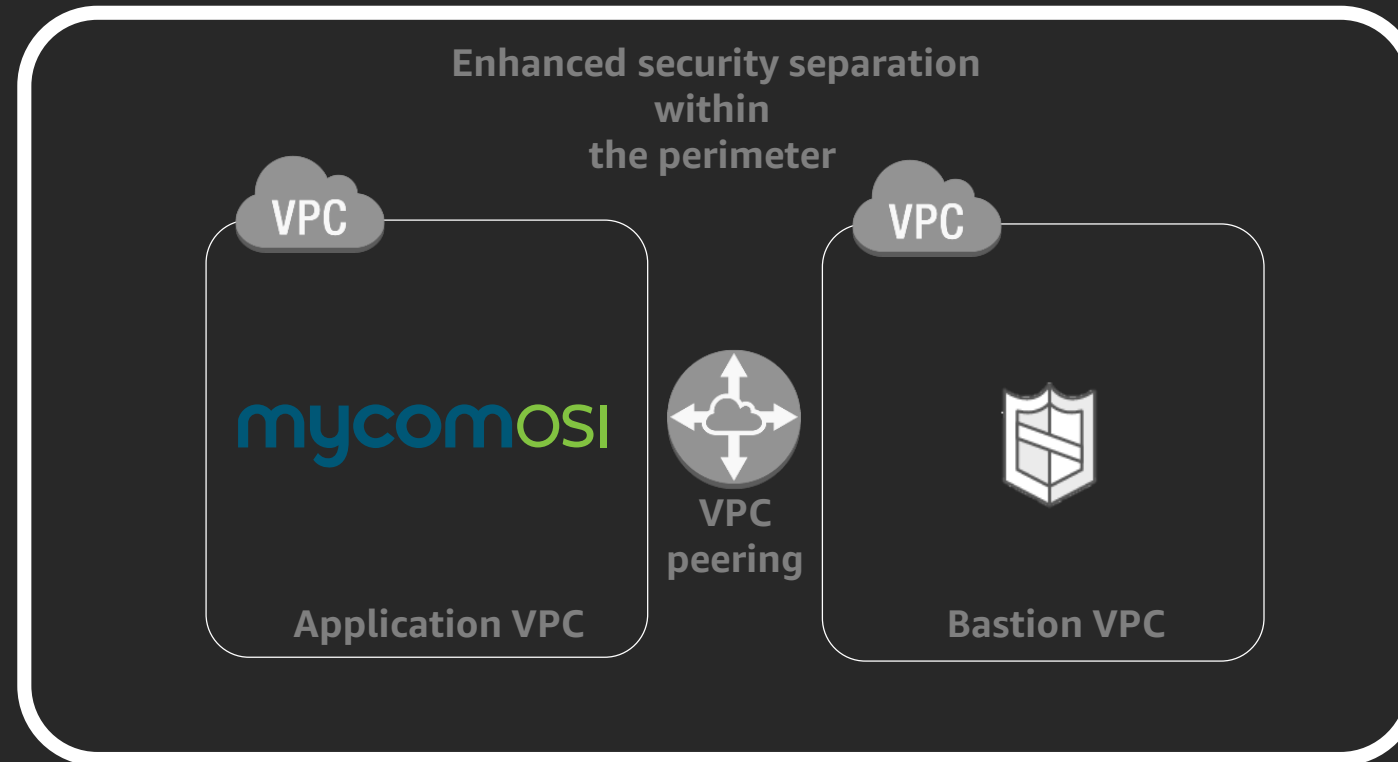
Isolation



- ✓ Access the application via secured https
- ✓ All network data are pushed/collected via dedicated private MPLS (DX)

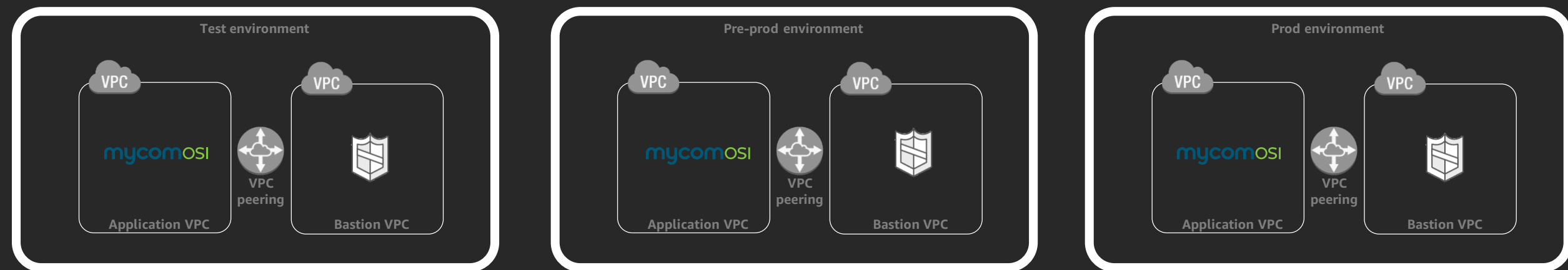
Separation

Security groups
and ACLs/NACLs



- ✓ Access the application VPC only via the management VPC
 - ✓ The application VPC is in a dedicated subnet

Environment and account separation based on roles



- ✓ Test/pre-prod/prod each have a full set of dedicated environments
 - ✓ Full separation between environments

Encryption at rest/in transit and hardening

RDS encryption

Default encryption method is based on AES-256 via AWS Key Management System (AWS KMS)

Once encryption is activated, the underlying storage, replicas, backups, and snapshots are encrypted as well

Amazon EBS and Amazon EFS storage volume encryption

Default encryption method is based on AES-256 via AWS KMS

Once encryption is activated, the underlying storage, replicas, backups, and snapshots are encrypted as well

In-transit user plane

- ✓ https for all application traffic
- ✓ We use CA certificates

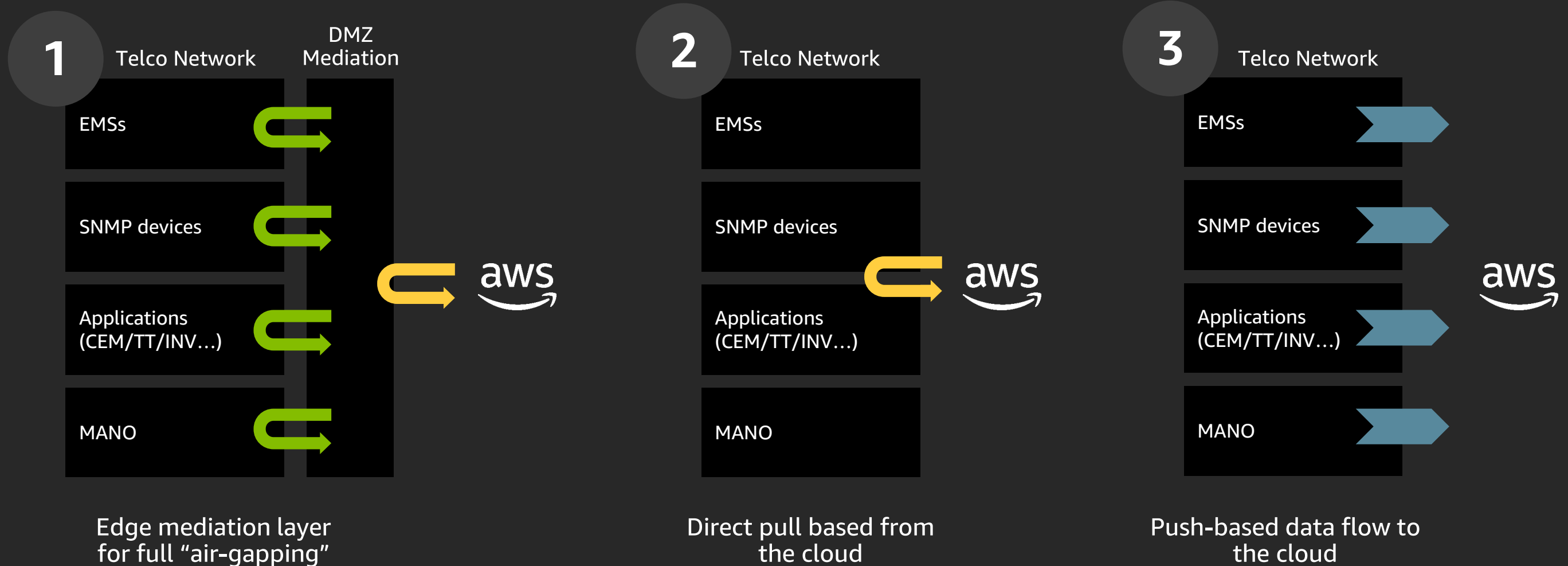
In-transit network data plane

- ✓ Incoming file based data as sFTP
- ✓ Incoming SNMP data as SNMPv3
- ✓ ...

OS Hardening based on CIS compliance

Network data flow to the Assurance Cloud™

“Air-gapping” the data sources: Typical data flow handling



Application user management

Using oauth2 for identity management

OAuth2/OpenID-Connect workflow based on browser redirection

Application never sees credentials; for OAuth2 server's eyes only

OAuth2 service returns a "token," a temporary access key encoding the roles associated to the identity

Choosing an appropriate identity management repository

Internal identity management that our application suite provides

External identity management via integration to your IAM (e.g., AD)

Using OAuth2 for authorization management



- RBAC: Roles information is carried by OAuth2
- Token is obtained once per session from OAuth2
- Microservice endpoint decodes token into roles
- Microservice rejects request if role is insufficient

Pen testing

- ✓ Independent pen test
- ✓ Bring-your-own pen test

- Quarterly pen testing scheduled
- Regular audits scheduled

- ✓ Pen test against web apps (attack from the outside)
- ✓ Pen test CIS (attack from the inside)

Continuous hardening is being applied

Pen testing from the inside network to Assurance Cloud™

Pen testing from the outside users to Assurance Cloud™

The dashboard displays the following severity counts:

Severity	Count
CRITICAL	0
HIGH	0
MEDIUM	0
LOW	0
INFO	31

The findings table is as follows:

Severity	CVSS	Plugin	Name
INFO	N/A	90191	Amazon Web Services EC2 Instance Metadata Enumeration (Unix)
INFO	N/A	121575	Ansible Installed (Linux/UNIX)
INFO	N/A	110095	Authentication Success
INFO	N/A	39520	Backported Security Patch Detection (SSH)
INFO	N/A	45590	Common Platform Enumeration (CPE)
INFO	N/A	55472	Device Hostname
INFO	N/A	54615	Device Type
INFO	N/A	25203	Enumerate IPv4 Interfaces via SSH
INFO	N/A	25202	Enumerate IPv6 Interfaces via SSH

Elasticity and availability

Architecting for elasticity

Automatic resource elasticity via “min | des | max”

- ✓ The concept of “auto-scaling groups” is used to auto-scale compute nodes
 - New compute nodes will be automatically provisioned when scaling events occur
 - Compute nodes are removed automatically when scale-down events occur
- ✓ Resource scale out/in events are detected by adaptive baselining on thresholds

Automatic application elasticity via container scaling

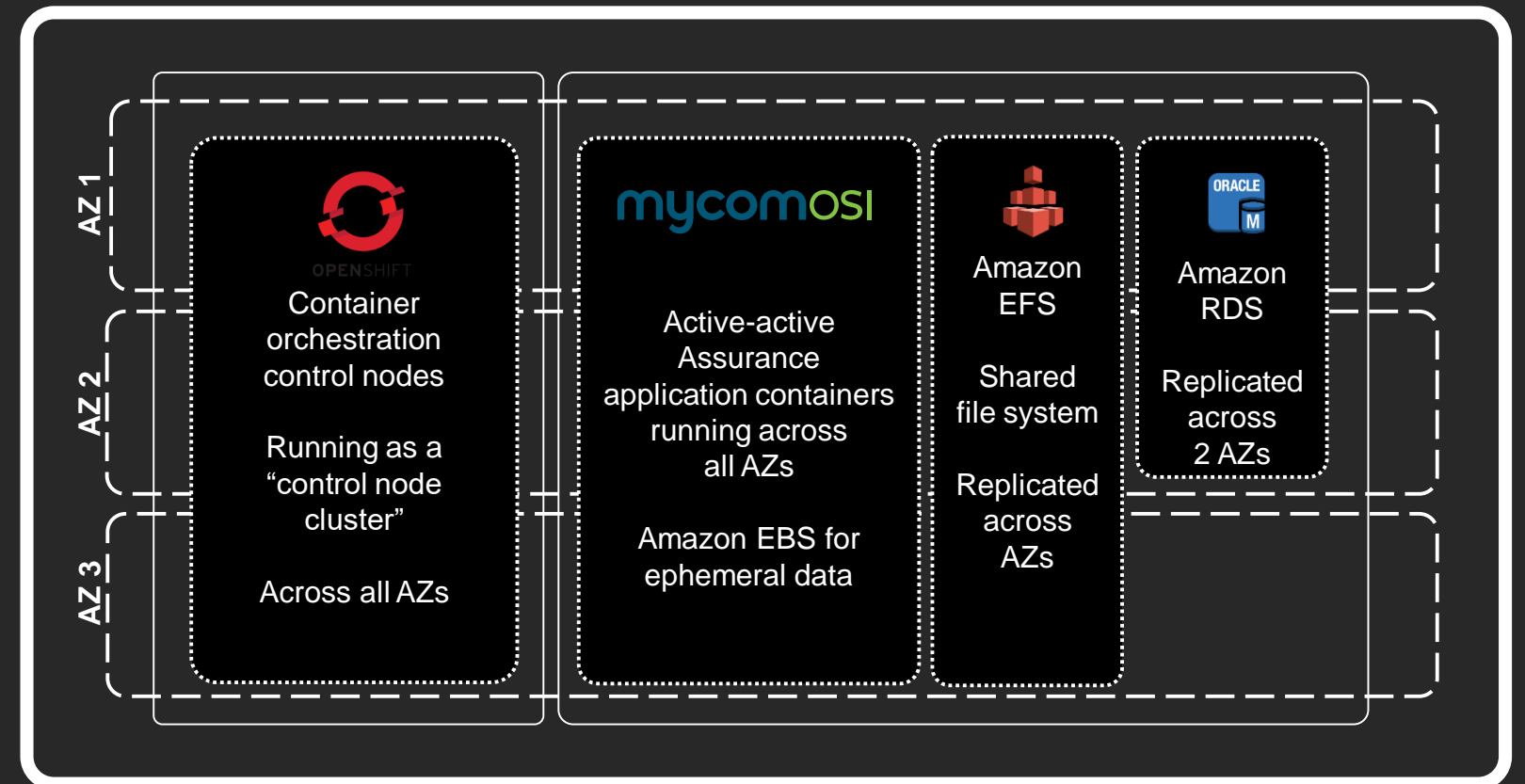


kubernetes

- ✓ The docker container manager (k8) places application images across the pool of available compute nodes (app nodes)
- ✓ New or removed compute nodes at the IaaS layer are made visible to the k8 cluster for updated container placement or distribution

Architecting for high availability

- ✓ **Active/active** design for a/a HA
- ✓ **Active/passive** design for some micro services as a/p HA
- ✓ **Fast restart** for stand-alone non-HA services



Design for failure

Application performance

Performance

Improving application performance under load

Enabling cloud-based *surge protection*

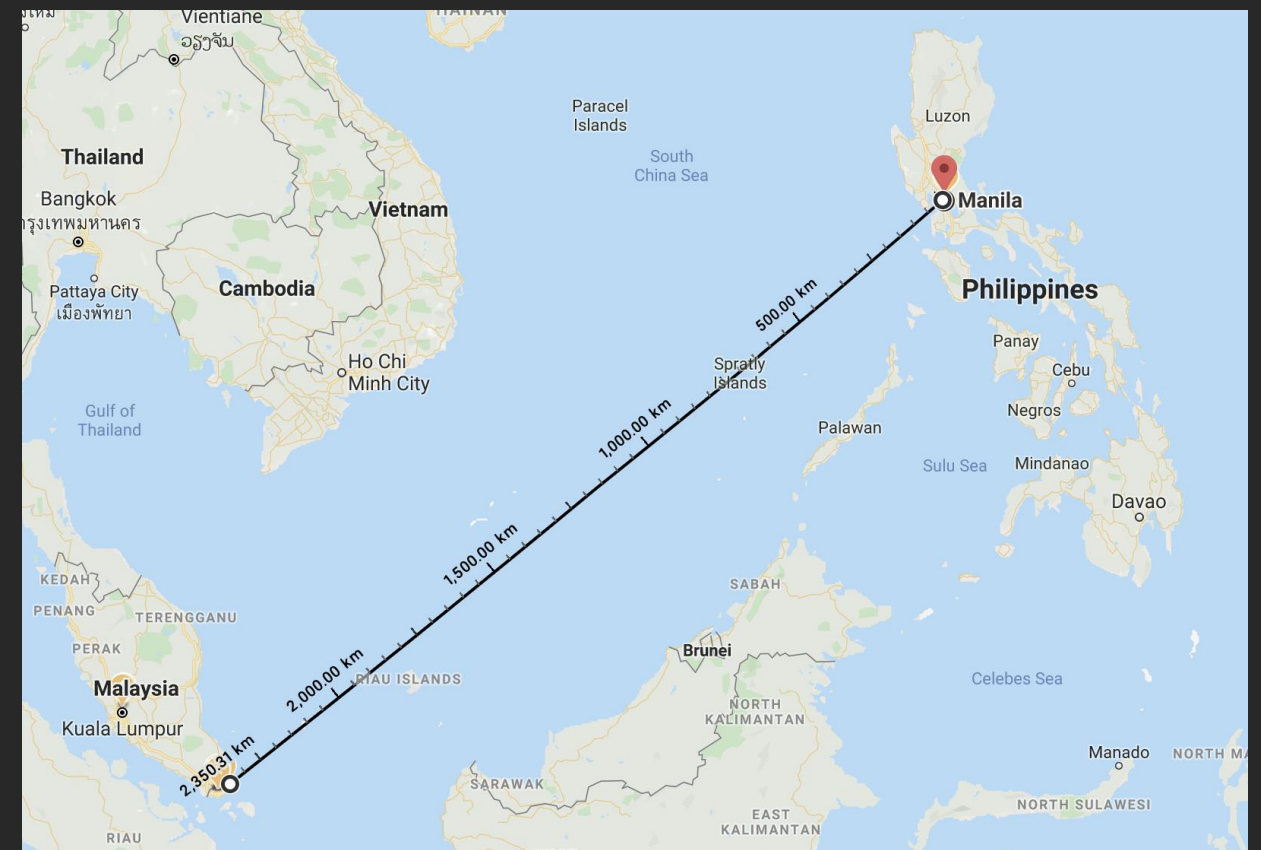
Configuring application-level surge handling
Fast auto-scaling on application and infra levels

Issues solved

- Data surges created by connection downtime
- Unplanned outages and event bursts
- Data collection queuing minimized

Enabling *edge collection* for SNMP-V3-based devices

On-premises data pollers with off-premises SaaS application



Monitoring

Monitoring

Cloud management platform

Resource monitoring

Amazon CloudWatch (AWS resource agent logs)
Setting rules, thresholds, and notifications

OpenShift cluster monitoring

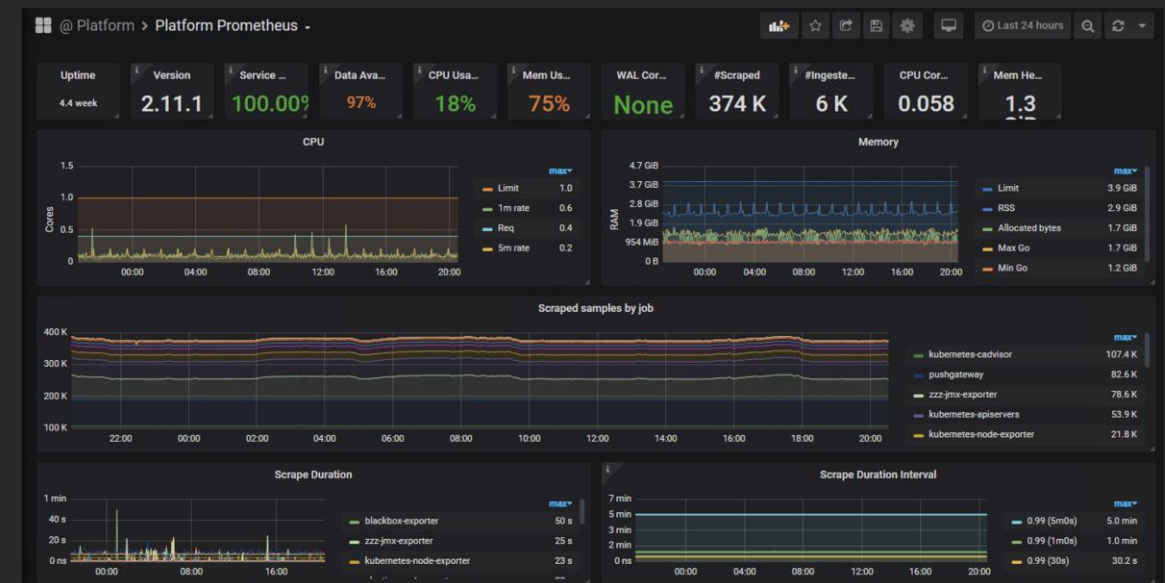
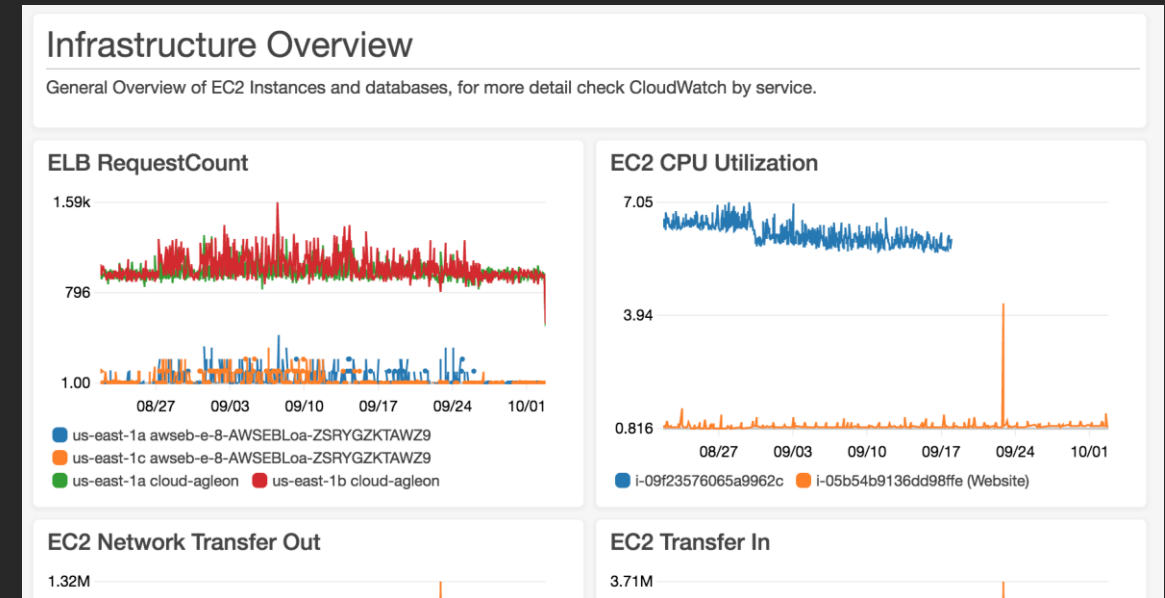
Prometheus
Graphana rules, thresholds, and notifications

Application monitoring

Graphana rules, thresholds, and notifications
Incoming data flow rules, thresholds, and notifications

Security monitoring

AWS CloudTrail (AWS account activity logs)
VPC flow logs (traffic logs)



3. Quick demo

4. Lessons learned

Lessons learned

Implementation



Operation



Cost



New features



AWS Region

Reduce time-to-activate to
1 month

Evergreen model: Always on
the latest releases

In-service-management and
digital operations

SLA guarantees for
availability and performance

Cloud-scale cost efficiency

Overall TCO improvements
with elastic cloud footprint

Faster project timelines and
less human labor costs

Cloud-only geo-redundancy
and backup security

Burst protection and HIC
capability



On-prem

Standard delivery time
frames depending on infra
lead times and deployment
efforts (6 months)

More complex support model
with app and infra separation

Ongoing capacity planning
and infra expansion handling

On-premises cost structures

Infra upgrades for container
workloads

More labor-intensive admin
and overhead

On-premises feature set
available

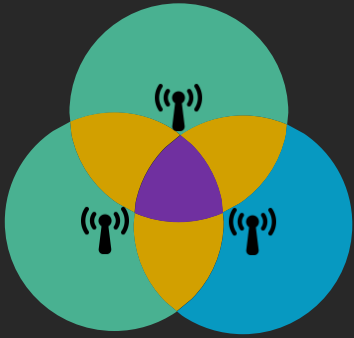
App evolution and roadmap
plans

5. Roadmap

Prepackaged 5G Accelerator Solution

5G RAN

New Radio (NR) planning, acceptance & optimization

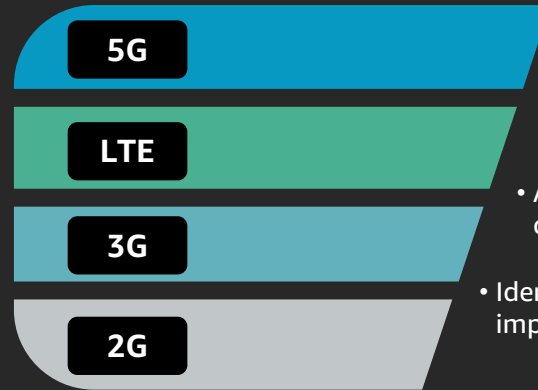


User scenarios

- Configuring and validating the parameters of each 5G site
- Activating, testing, and certifying 5G sites are running as expected
- Ongoing monitoring of 5G RAN stability & performance
- Reporting of 5G RAN KPIs and trends

Shared Transport

Shared resource performance management for 5G and pre-5G

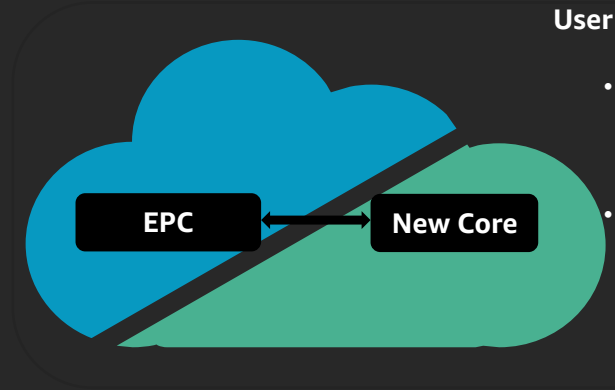


User scenarios

- Assuring the continuity of pre-5G services
- Assuring the differentiation of 5G QoS
- Identifying KPI trends that may impact service quality

Shared Core

Shared resource and underlying infrastructure performance management



User scenarios

- Monitoring the utilization of underlying infrastructure
- Identifying KPI trends that may impact service quality

Accelerating the 5G rollout with the Assurance Cloud™ – Powered by AWS

5G Accelerator: Why on AWS Cloud?



Carrier-grade 5G functionality, out of the box | The solution bundles the most advanced performance management capability into a ready-to-use pre-integrated solution



On-demand, from city to country | Powered by the multi-award-winning Assurance Cloud™ service assurance SaaS, the solution can be activated in less than 1 hour



Grows with your network | Leveraging the footprint of the public cloud, the solution automatically scales, for high availability/performance even in extreme conditions



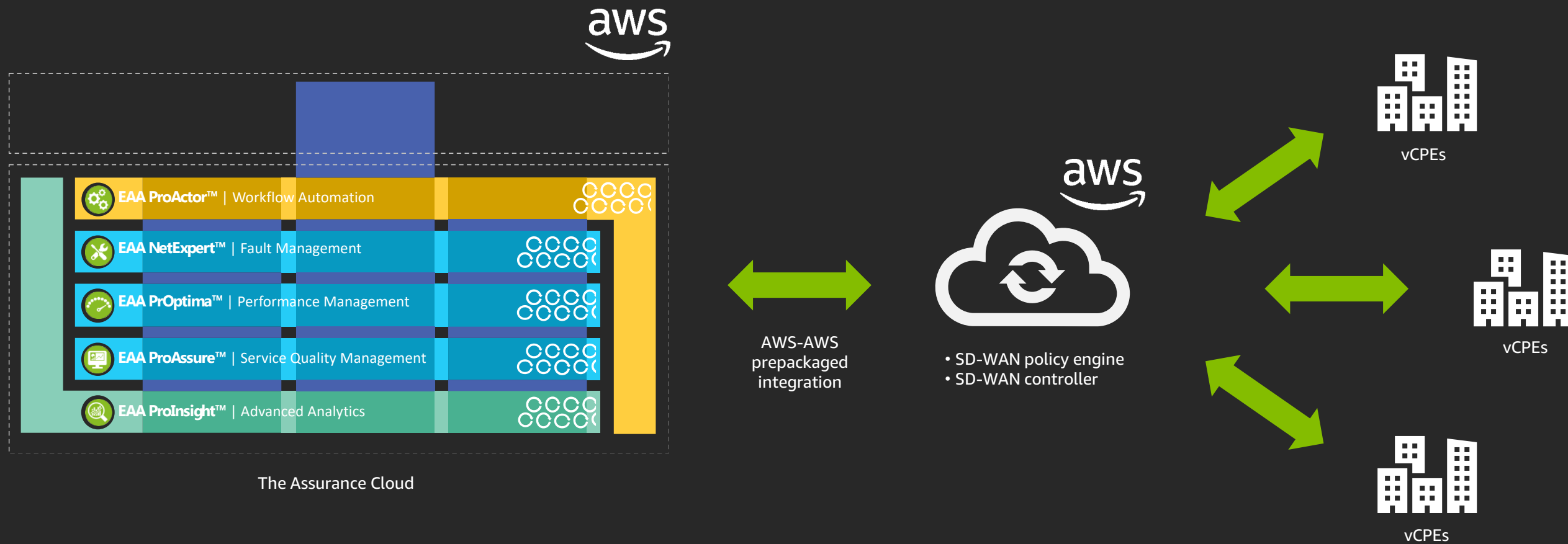
Grows with your business | Based on a shared cloud platform, the solution can be extended to a full Assurance Cloud™ deployment as your 5G services evolve



Lower TCO, no compromise | The solution is specifically designed for 5G network deployments while keeping costs down by avoiding complex customization

**5G adoption is about 3 times faster than LTE, but growth is from nontraditional sources:
AWS Cloud is perfect for the required speed and responsiveness to
changing business needs**

Prepackaged SD-WAN Assurance Solution



Distilling decades of carrier-grade assurance R&D into a simple-to-use product, available on demand, with a clear business case

SD-WAN Assurance: Why it matters



Features

- **Per-enterprise, application, and site** visibility of SD-WAN performance and reliability
- **Real-time analytics** identifying issues and service impact at enterprise, application, and site levels
- **Integrated with SD-WAN orchestrator** for assurance-driven augmented orchestration
- **Flexible interface** for drag-and-drop dashboards, for any stakeholder
- **Carrier-grade performance management** engine, based on cloud-native architecture, designed for massive scalability for 100,000s of branches

Benefits

- **Reduce costs** by eliminating unused connectivity
- **Improve performance** by dynamically responding to cyclical trends & network issues
- **Improve efficiency** by offloading more traffic to low-cost connectivity providers without compromising on mission-critical services
- **Optimize ISP/CSP management** through data-driven SLA management
- **Realize value quickly** with MYCOM OSI's powerful SmartPack™ catalog
- **Deploy seamlessly** with simple activation and minimal customization or integration

SD-WAN takes telco vendors into a high-volume, low-customization business model. AWS Cloud is perfect for this paradigm shift: it provides a low-friction buying journey.

Visit **Telecom Lounge at MGM** check out
the Mycom OSI demonstration in detail
and meet the experts!

Thank you!



Please complete the session survey in the mobile app.