

Network Management System

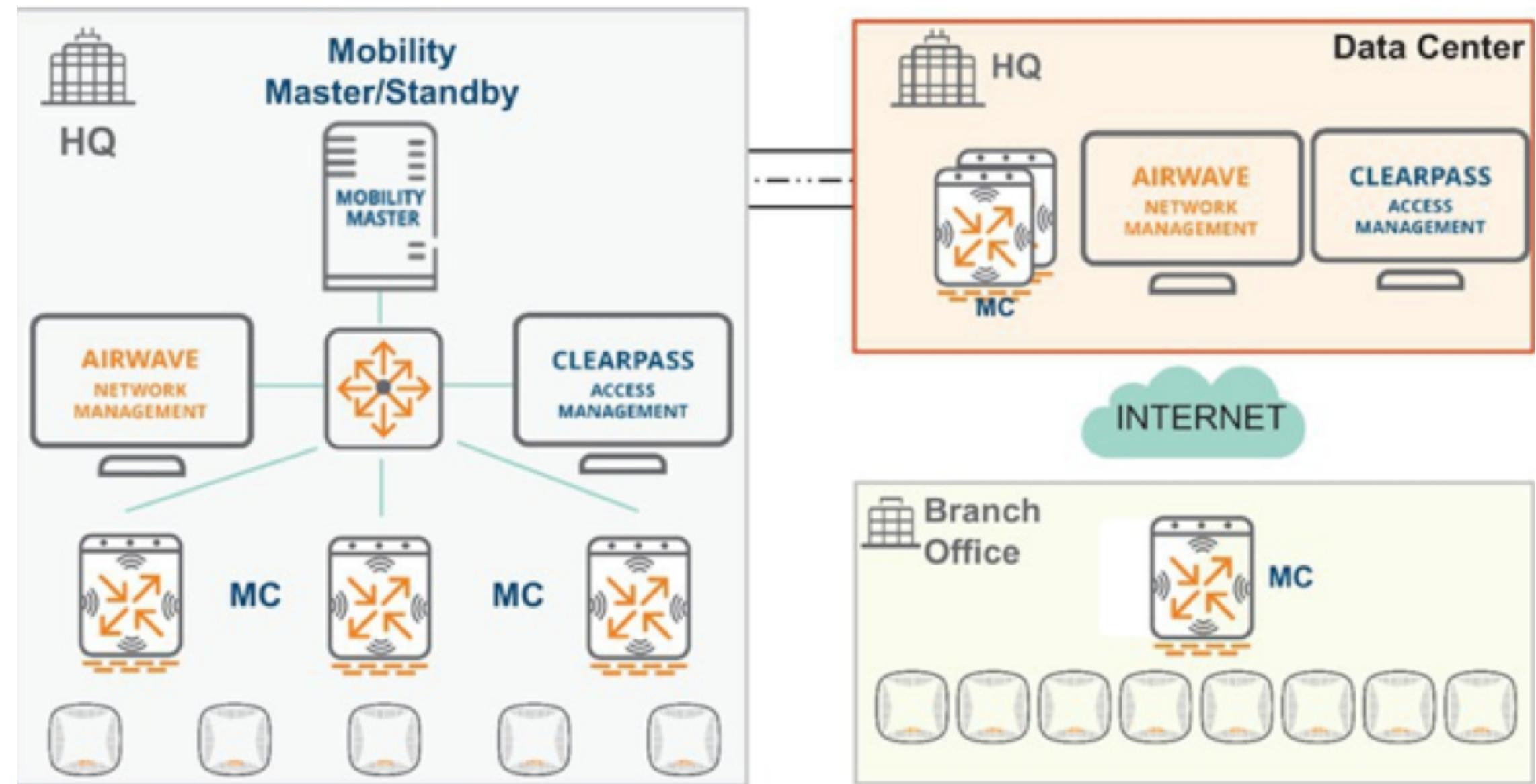
Site Reliability Engineering

INT 208: Network II



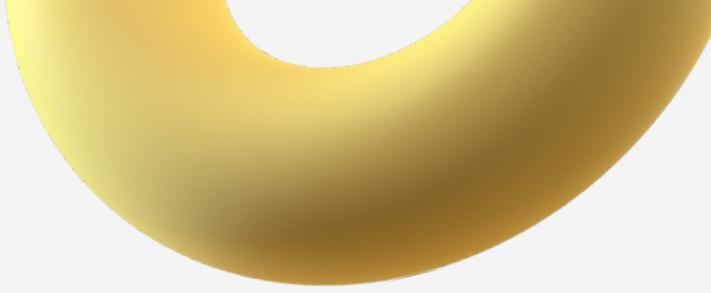
Learning Outcome

Network Management System **FCAPS**
Network Management Protocol **SNMP**
Simple Network Management Protocol
Internet Control Message Protocol **ICMP**
Monitoring Distributed Systems
Site Reliable Engineering

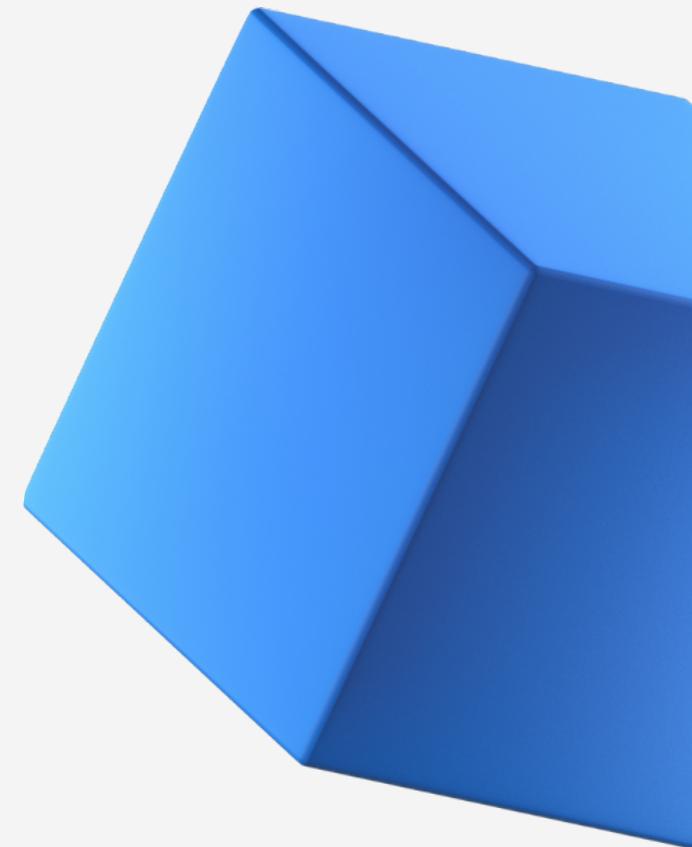




School of Information Technology



What is the Network Management System?



what are the Network Management Protocol?

FCAPS

Security Management

Account Management

Performance Management

Configuration Management

Fault Management



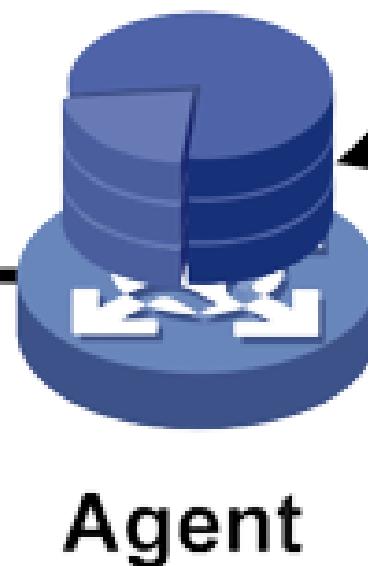
SNMP manager



Get/Set requests

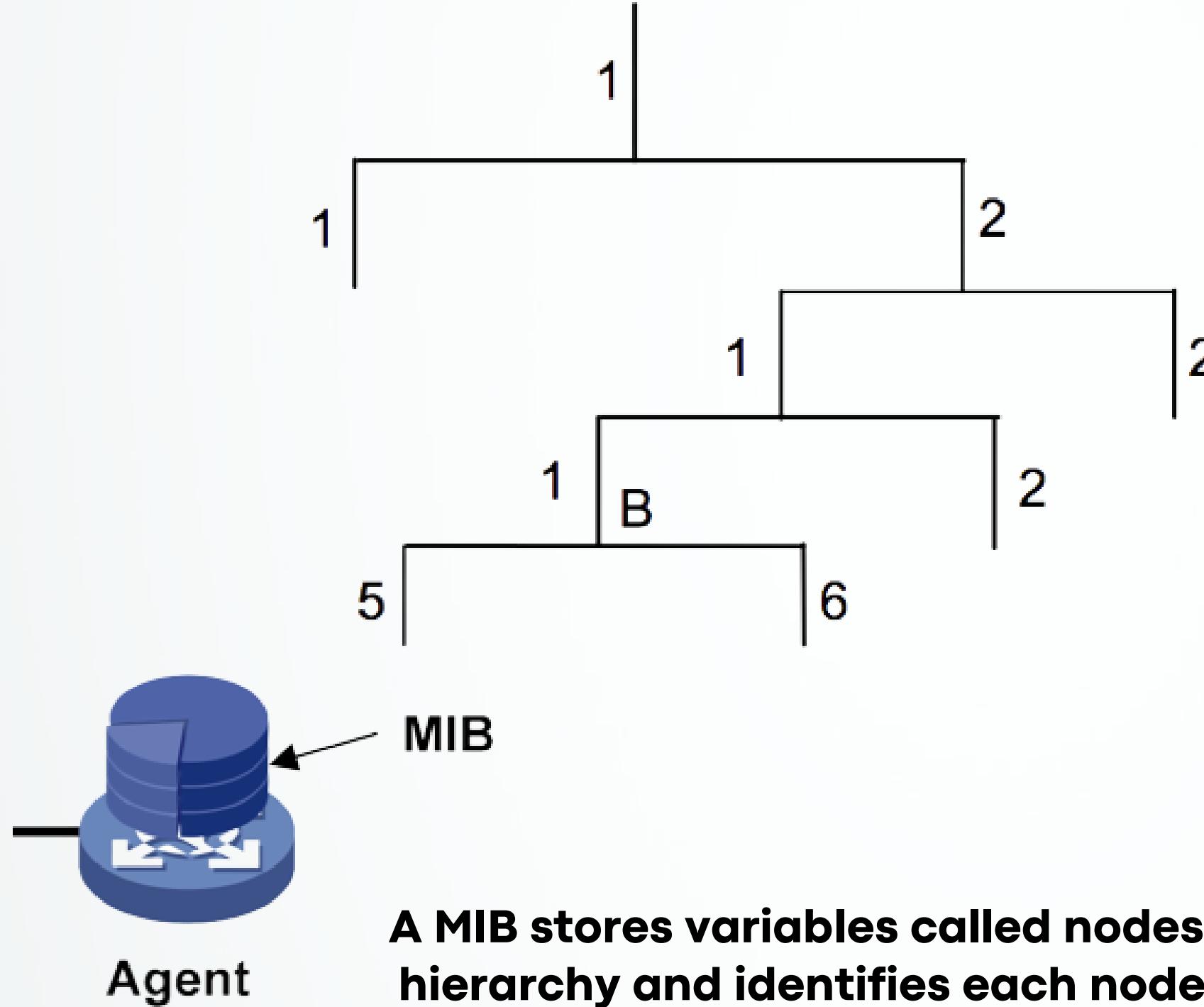
Get/Set responses
and Traps

SNMP agent



**Management
Information
Base**





An OID is a string of numbers that describes the path from the root node to a leaf node.

A MIB stores variables called nodes or objects in a tree hierarchy and identifies each node with a unique OID.



Site Reliability Engineering

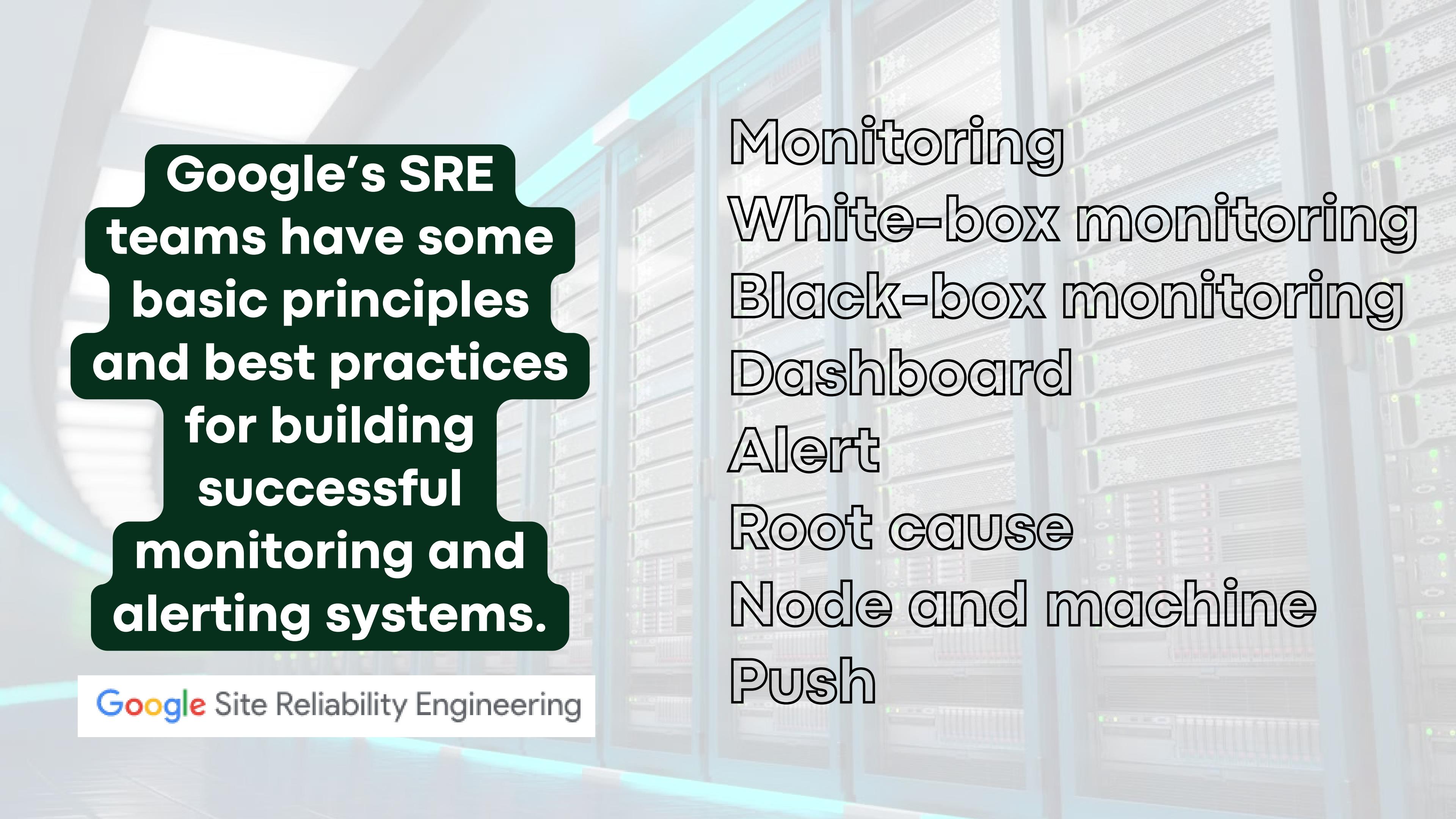
HOW GOOGLE RUNS PRODUCTION SYSTEMS

<https://sre.google/sre-book/monitoring-distributed-systems/>

Edited by Betsy Beyer, Chris Jones,
Jennifer Petoff & Niall Murphy

Monitoring Distributed Systems





**Google's SRE
teams have some
basic principles
and best practices
for building
successful
monitoring and
alerting systems.**

Google Site Reliability Engineering

Monitoring
White-box monitoring
Black-box monitoring
Dashboard
Alert
Root cause
Node and machine
Push

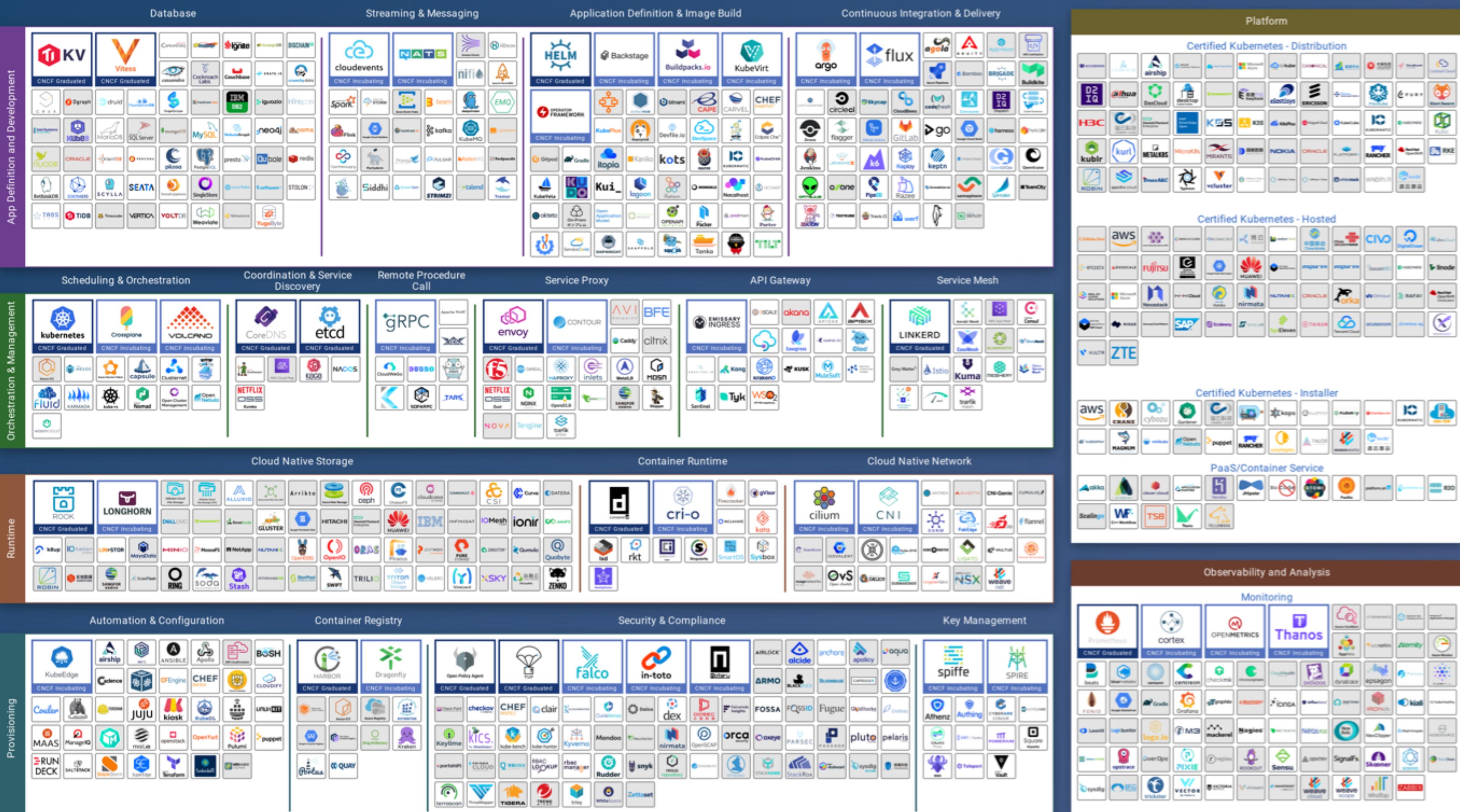
The Four Golden Signals

Latency

Traffic

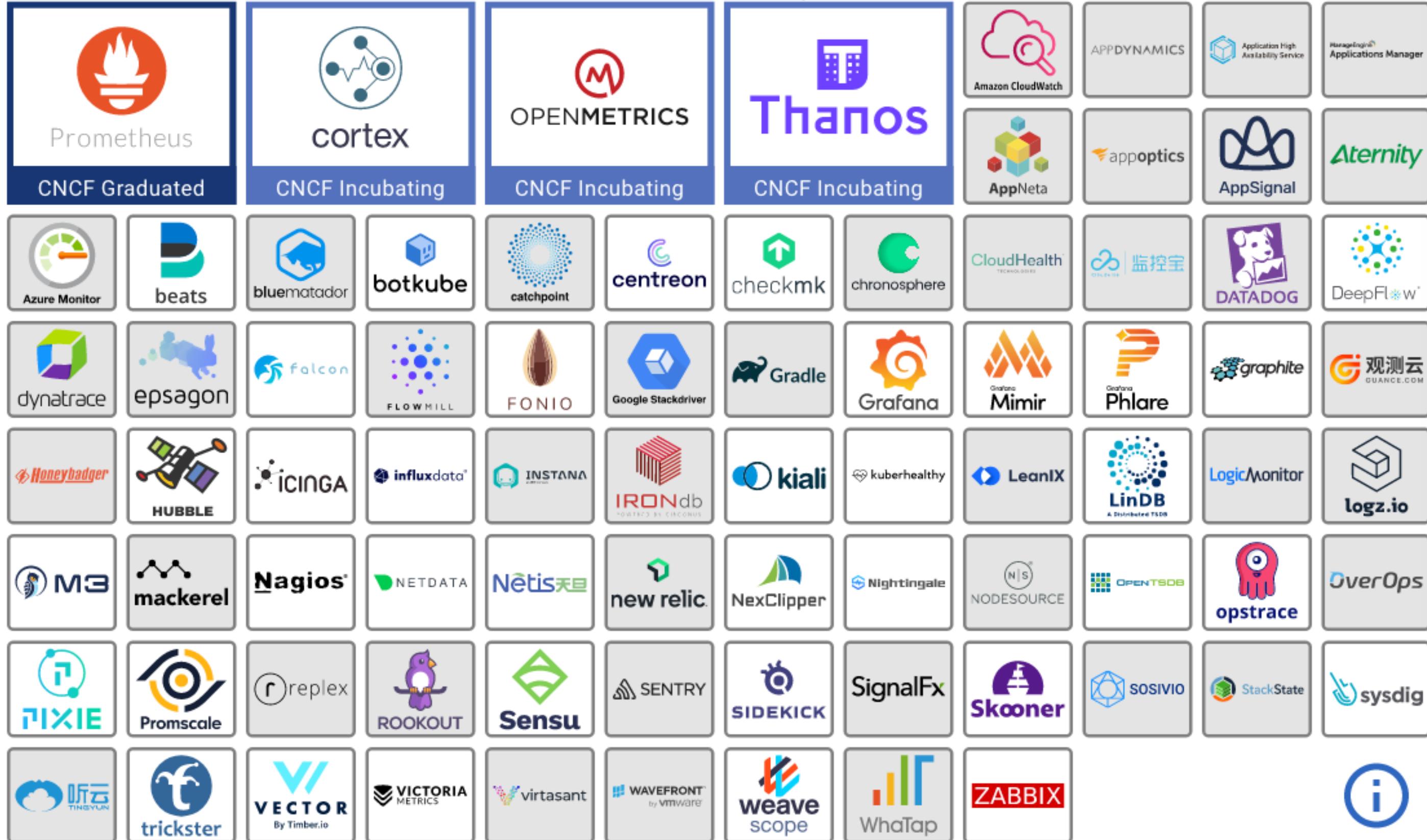
Errors

Saturation

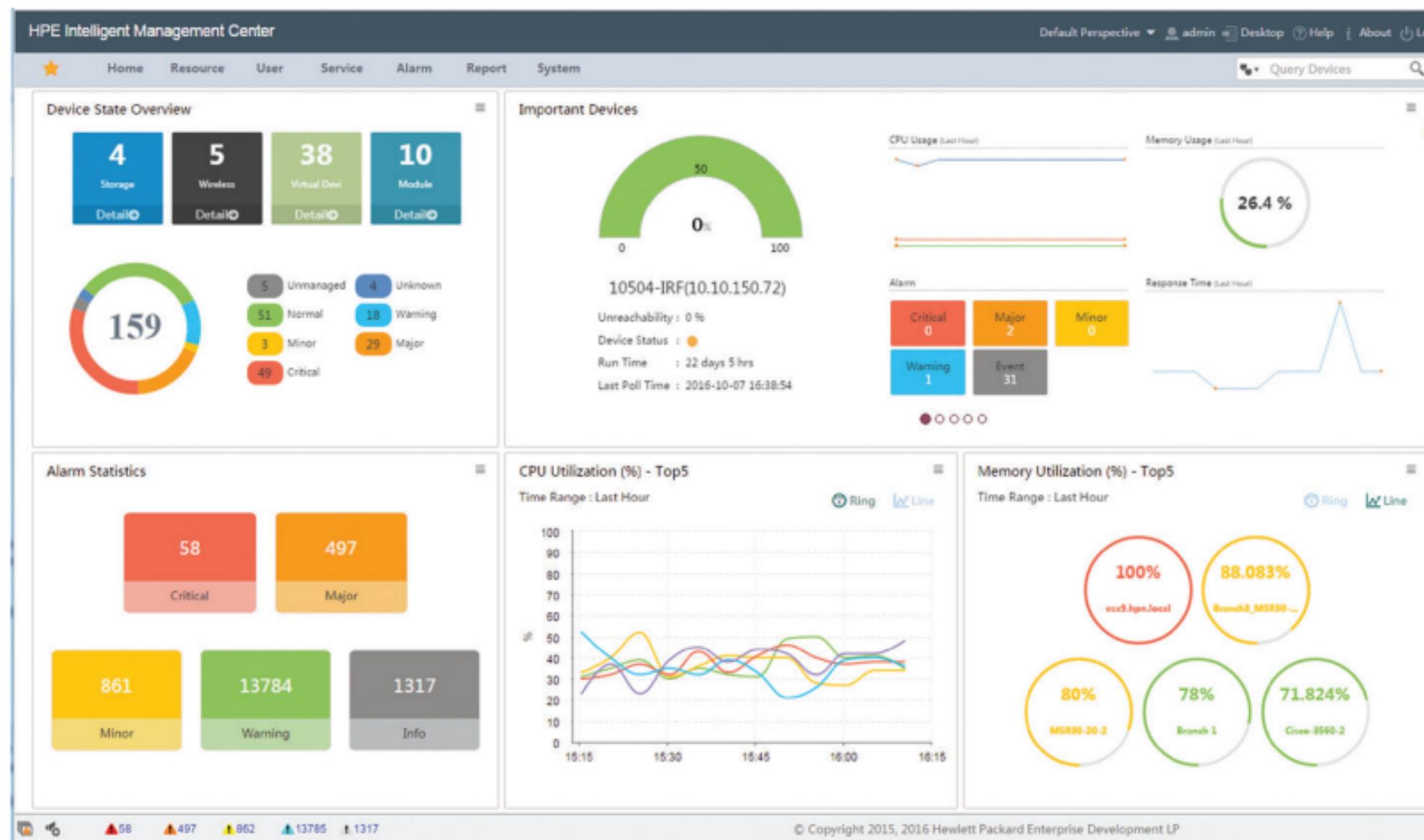


Observability and Analysis

Monitoring



HPE Intelligent Management Center Standard Software Platform



Key features

- Real-time telemetry with HPE FlexFabric Network Analytics software is part of the IMC optional Virtual Application Networking Fabric Manager Software (VFM) module and is enabled with the FlexFabric 5940 and 5950 switches
- Highly flexible and scalable deployment options
- Real-time analytics REST API for streaming of telemetry data
- Powerful administration control
- Rich resource management
- Detailed performance monitoring and management, flexible centralized reporting
- Fault, Configuration, Accounting, Performance, and Security (FCAPS) capabilities within the IMC Platform
- Integration with Aruba AirWave, Aruba ClearPass and HPE OneView¹
- Alarm correlation
- Cisco Nexus support
- EVPN VxLAN support
- Comprehensive eAPIs
- Arista device support

IP ADDRESS OF SWITCH

Room 10-01

10.4.24.**11-19** /24 Rack 11

10.4.24.**21-29** /24 Rack 12

10.4.24.**31-39** /24 Rack 13

10.4.24.**41-49** /24 Rack 14

10.4.24.**51-59** /24 Rack 15

Room 10-02

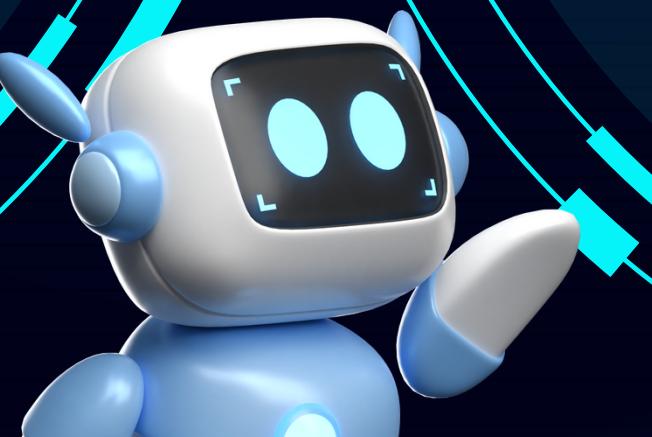
10.4.24.**111-119** /24 Rack 21

10.4.24.**121-129** /24 Rack 22

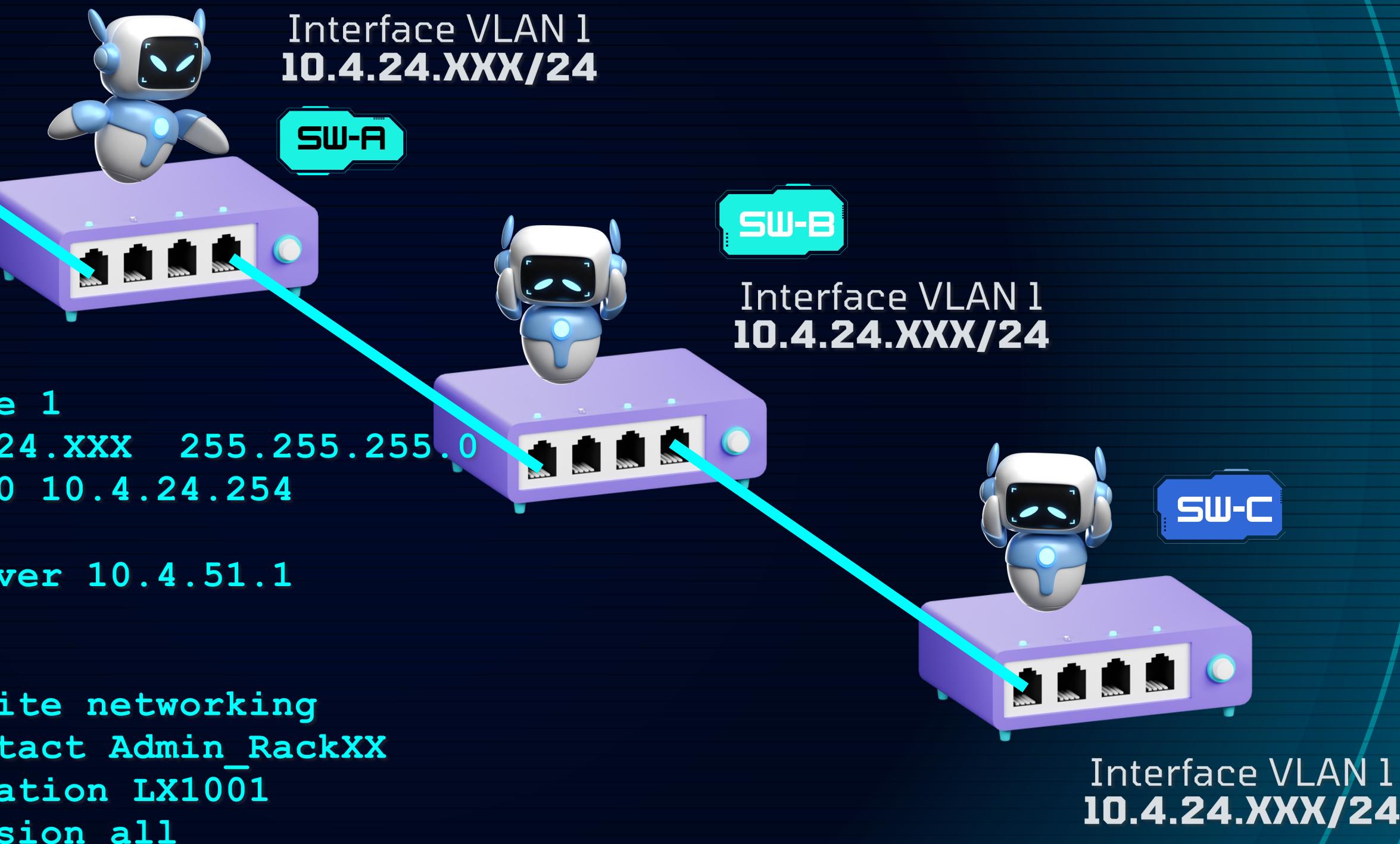
10.4.24.**131-139** /24 Rack 23

10.4.24.**141-149** /24 Rack 24

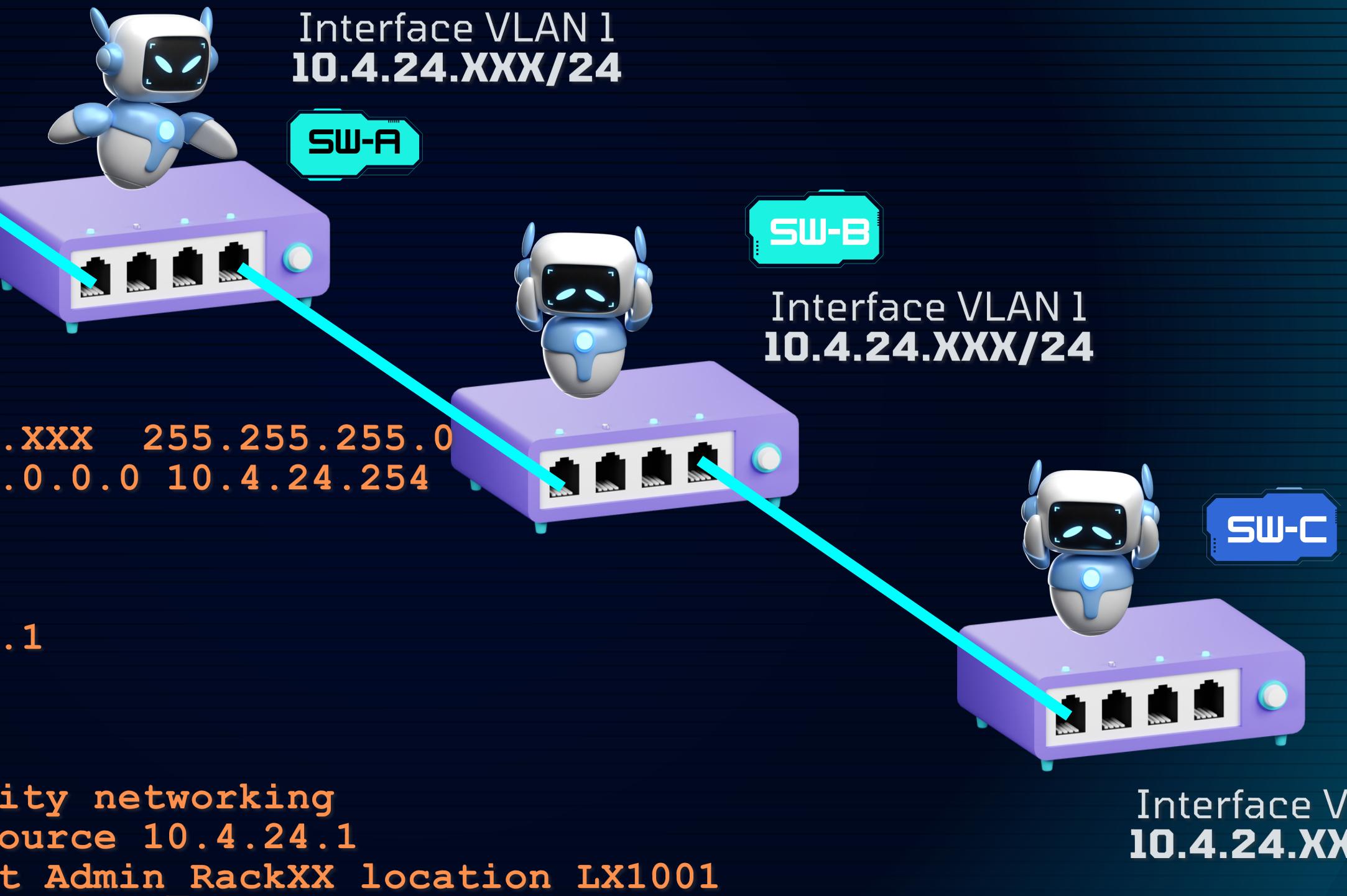
10.4.24.**151-159** /24 Rack 25



PHYSICAL DESIGN



PHYSICAL DESIGN



```
(config)# vlan 1  
(vlan-1)# ip address 10.4.24.XXX 255.255.255.0  
(config)# ip route 0.0.0.0 0.0.0.0 10.4.24.254
```

```
(config)# timesync ntp  
(config)# ntp unicast  
(config)# ntp server 10.4.51.1  
(config)# ntp enable
```

```
(config)# snmp-server enable  
(config)# snmp-server community networking  
(config)# snmp-server trap-source 10.4.24.1  
(config)# snmp-server contact Admin_RackXX location LX1001
```

HPE Intelligent Management Center Standard Software Platform

The screenshot shows the login interface of the HPE Intelligent Management Center. At the top, there is a header bar with the HPE logo and the text "Intelligent Management Center". Below the header, there are two input fields: "Operator" with the value "admin" and "Password" with the value "*****". A large red message below the password field states: "Your license is a trial version, and it will expire on May 18, 2024. Please click the Activate link in the Login pane to re-activate the license before the expiration date." At the bottom of the login form is a "Log In" button. The background of the entire page is a dark blue dashboard with various performance metrics and graphs.

<https://10.4.24.1:8443/imc>

admin
Pwd@12345

View Management

Resource Management

Add Device

Auto Discovery

Batch Operation

Import/Export Device

Maintenance Task

Device Routes

Maintenance Records

Terminal Access

Network Assets

Hierarchical NMS

Virtual Resources

Performance Management

Resource > Add Device

Basic Information

Host Name/IP *

Device Label

Mask

Device Group

Login Type

 SSH Automatically register to receive SNMP traps from supported devices Support Ping Operation Add the device regardless of the ping result Use the loopback address as the management IP**SNMP Settings**

Configure

Parameter Type

SNMPv2c

Read-Only Community String

Read-Write Community String

4

Timeout (seconds)

3

Retries

Telnet Settings**SSH Settings**

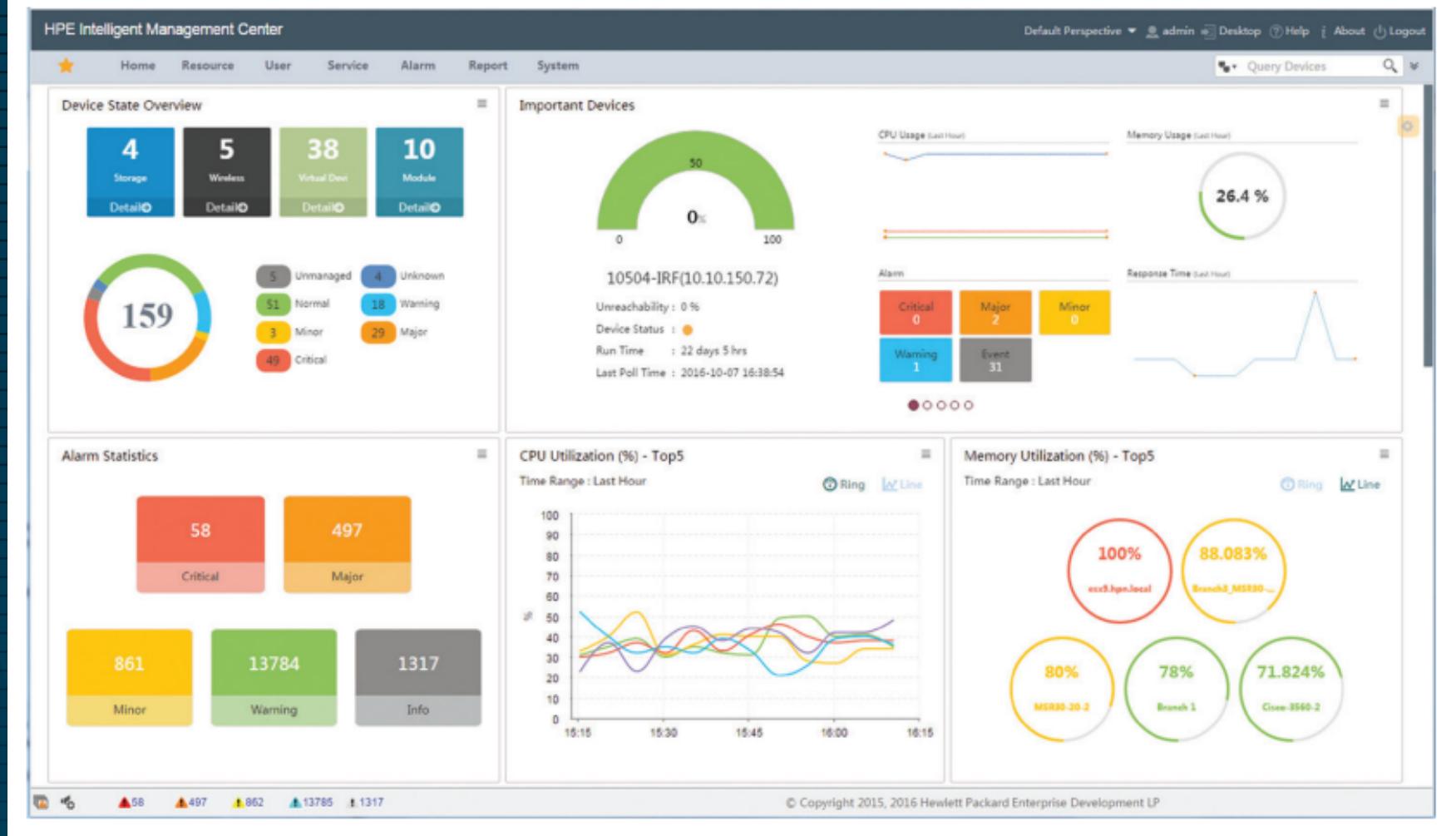
Switch IP address

networking

OK

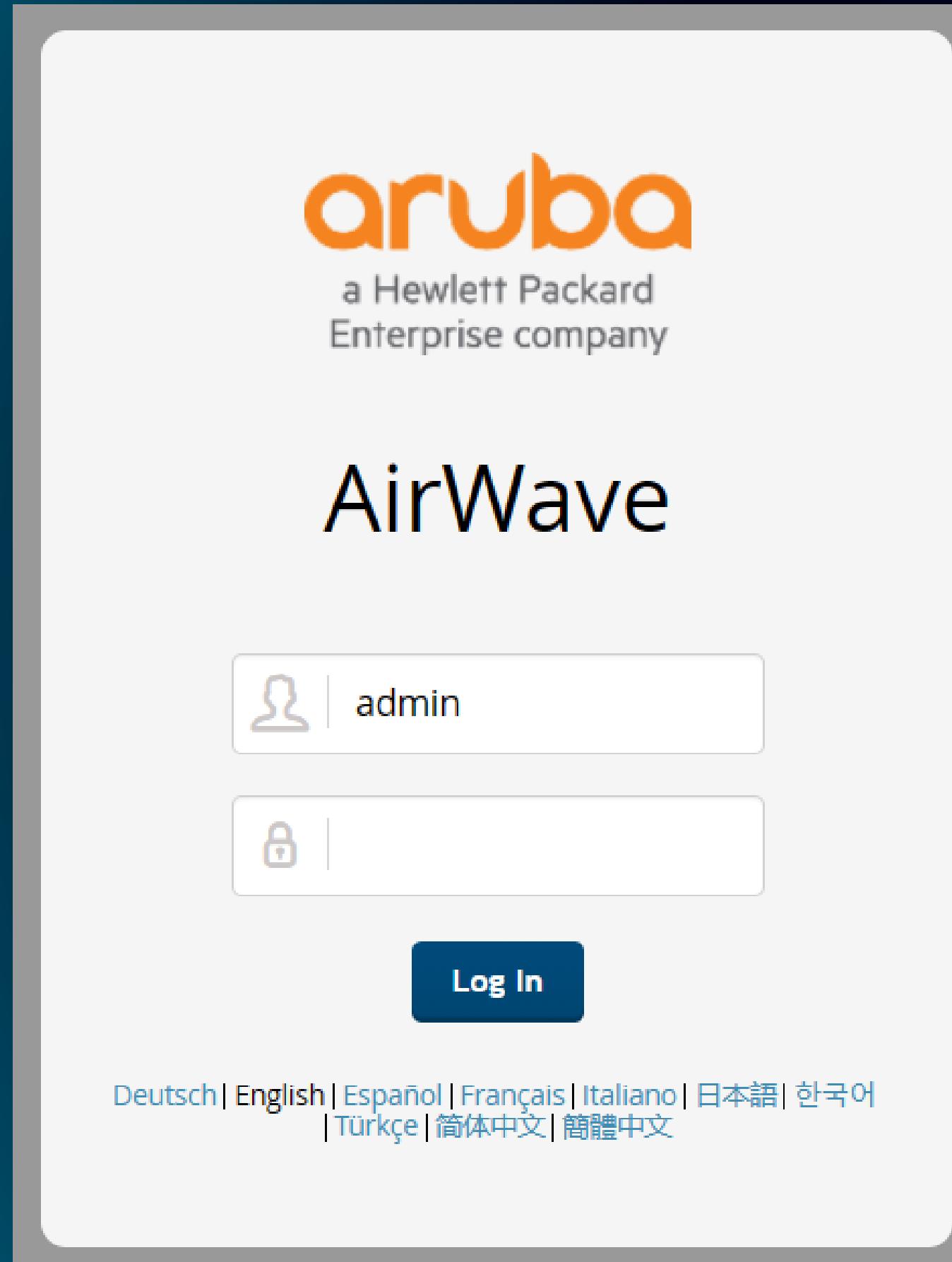
Cancel

HPE Intelligent Management Center Standard Software Platform



what are the recommended of the good feature of the network management?

capture the menu and explain good feature from FCAPS



<https://amp-vm00.sit.kmutt.ac.th>

admin
ampclass@SIT