



The bridge to possible

Achieving Automation, Sustainability, and Performance:

Yes! You Can Have it All

Saumya Dubey
Customer Success Specialist
PSOSPG-1408

CISCO *Live!*

#CiscoLive

Saumya Dubey

Customer Success
Specialist

- I love to work on products and ideas around tech
- Travelling and Surfing is something I really enjoy
- Sustainability – Environmental Impact has been on my mind



Agenda

- Automation Use cases
- Performance & Sustainability Impact analysis
- Architecture



Solution ?

01 | Zero Touch Provisioning (ZTP)

Why Zero Touch Provisioning ?

Onsite Activities	Onsite Work-time (mins)	Driving Time(mins)	Avg Driving Speed (km/hr)	Km per tuck Roll	Avg CO2/Km in Kg	Avg CO2 per activity in Kg
Site Survey and CPE installation						
Site Survey	30	40	65	43	0.12	5.2
CPE Installation	60	40	65	43	0.12	5.2
	90	80				10.4
Service Restoration on Site						
Service Restoration	75	40	65	43	0.12	5.2
Average Field Interventions/Month	2000				Avg CO2 emissions in Kg/month	10410



Reference: <https://blogs.cisco.com/sp/go-greener-with-network-automation>

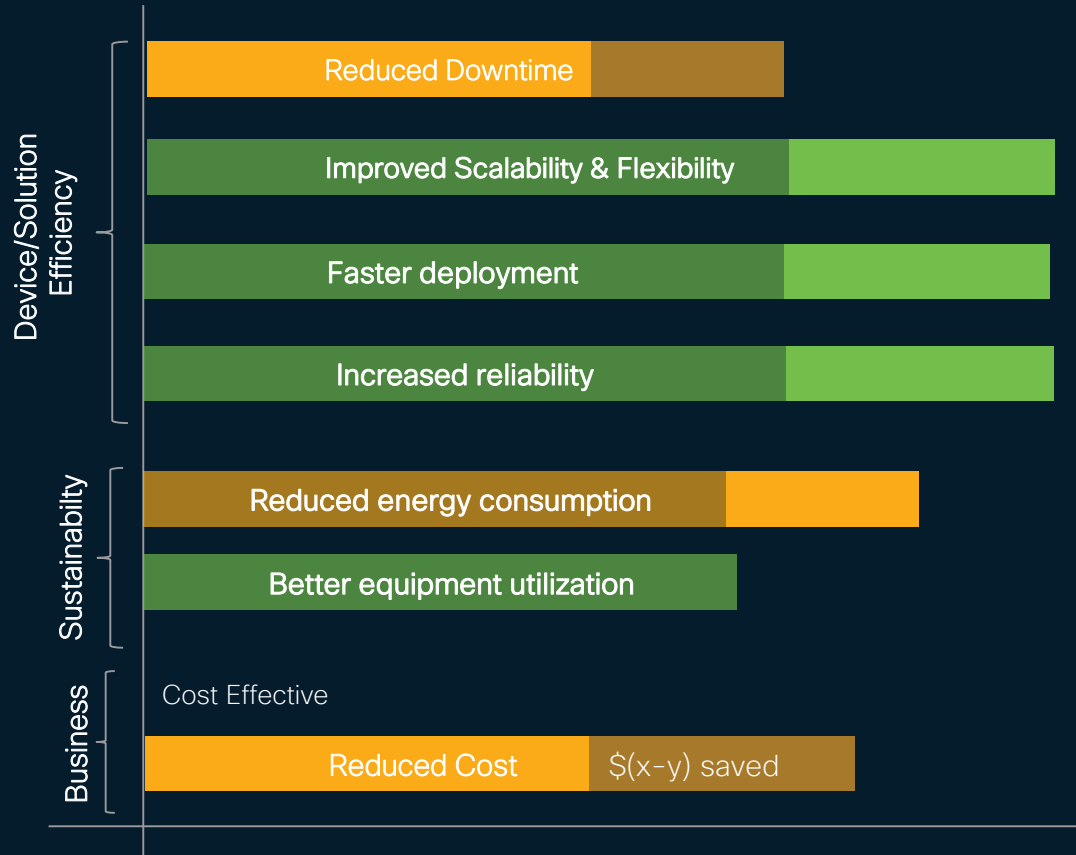
Why Zero Touch Provisioning ?

Onsite Activities	Onsite Work-time (mins)	Driving Time(mins)	Avg Driving Speed (km/hr)	Km per tuck Roll	Avg CO2/Km in Kg	Avg CO2 per activity in Kg
Site Survey and CPE installation						
Site Survey	30	40	65	43	0.12	5.2
CPE Installation	60	40	65	43	0.12	5.2
	90	80				10.4
Service Restoration on Site						
Service Restoration	75	40	65	43	0.12	5.2
Average Field Interventions/Month	2000				Avg CO2 emissions in Kg/month	10410



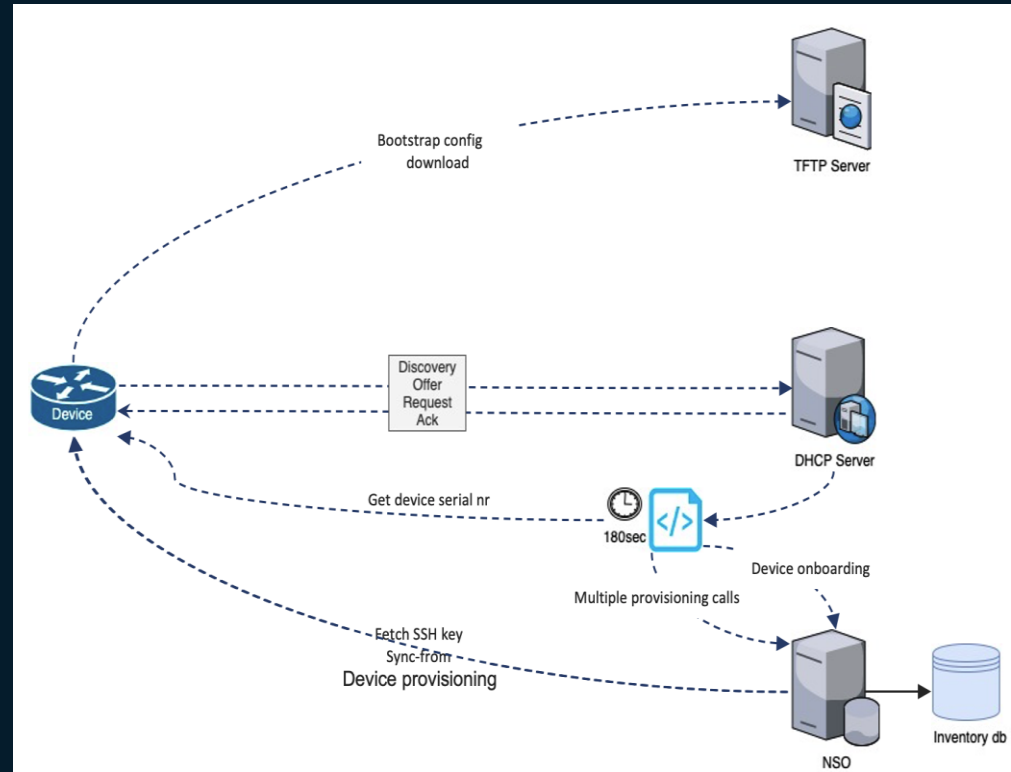
Reference: <https://blogs.cisco.com/sp/go-greener-with-network-automation>

Zero Touch Provisioning (ZTP) Solution Impact



Automating devices rollout using NSO

- Multivendor / Multi-Model support for Service Chaining
- Automatic Onboarding to NSO with Day1&2 Services Configuration (L3VPN, Voice)
- Centralized and automated system configuration.
- Automated Post /Pre-Checks (BGP, OSPF, MPLS, LDP, Health Checks, Connectivity, NTP, IP Routing Table Validation)



02 | Automated Power Management

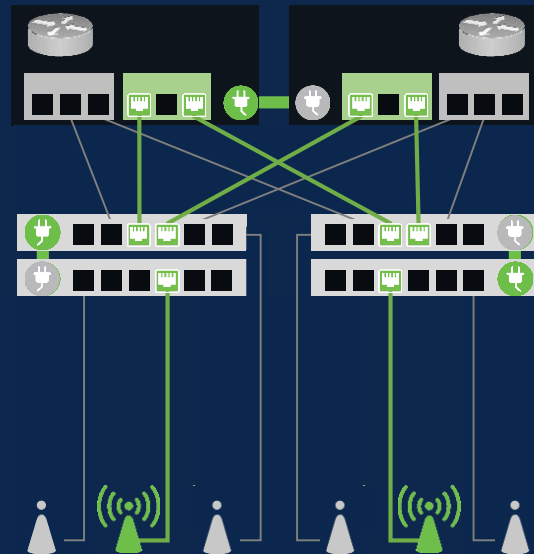
POWER OPTIMIZATION/REDUCTION.

Analyze

Implement

Energy Proportional Networks

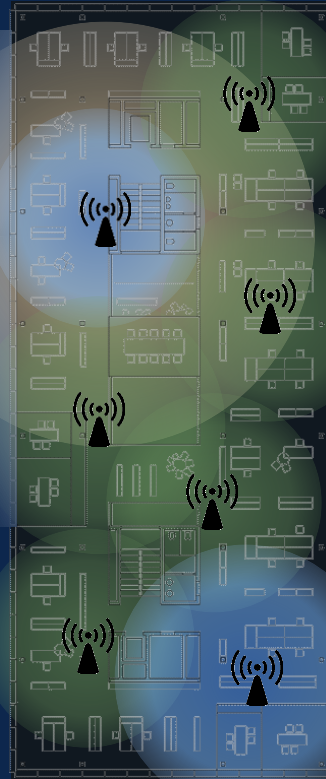
- To meet stringent application SLAs, today's network remains fully powered
- Selectively depower while maintaining all SLAs



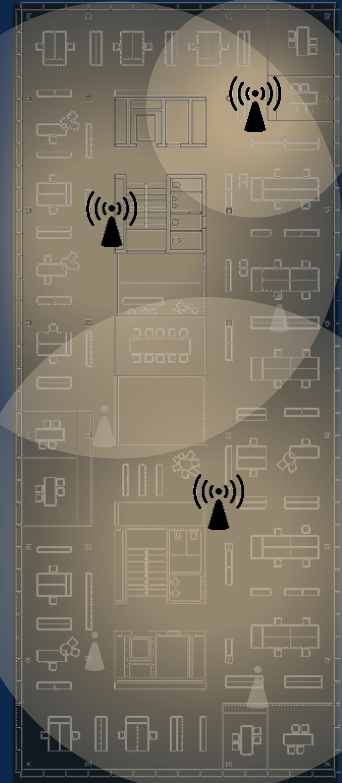
Selective Depowering

Power down APs /adjust frequencies to meet demand

Office Hours



Off Peak



CISCO *Live!*





MEASURE

Device



Location: Stockholm
Role: Edge

ASR1k

Power usage : 1770 W
Co2 emission: 1575 CO2e

Infrastructure : Data
Center

Power usage: 17k W
Co2 emission
(extrapolated) : 7k
CO2e



ANALYSE

{
Unused Port Detected :

[Device: details: {}],

High Power Consumption: [Device:
details: {}],

Heating: [Device: details: {}],

Bandwidth optimization:

[Device: details: {}].

}



Recommend

SELECTIVE DEPOWERING OF INTF BASED ON TIME

(P0) :

[Device: details: {}],

TRAFFIC POLICY (P1):

[Device: details: {Prioritize links }],

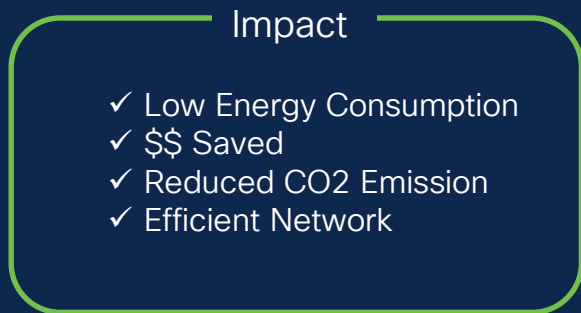
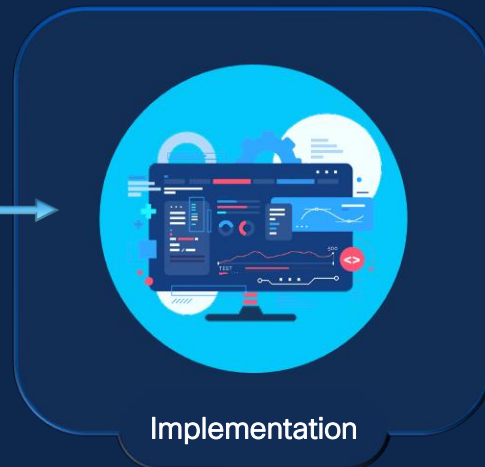
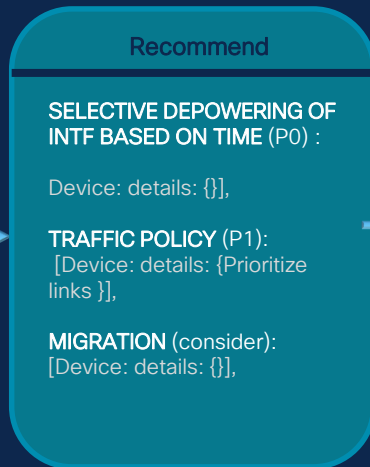
MIGRATION (consider):

[Device: details: {}],

Predict



Learning agent



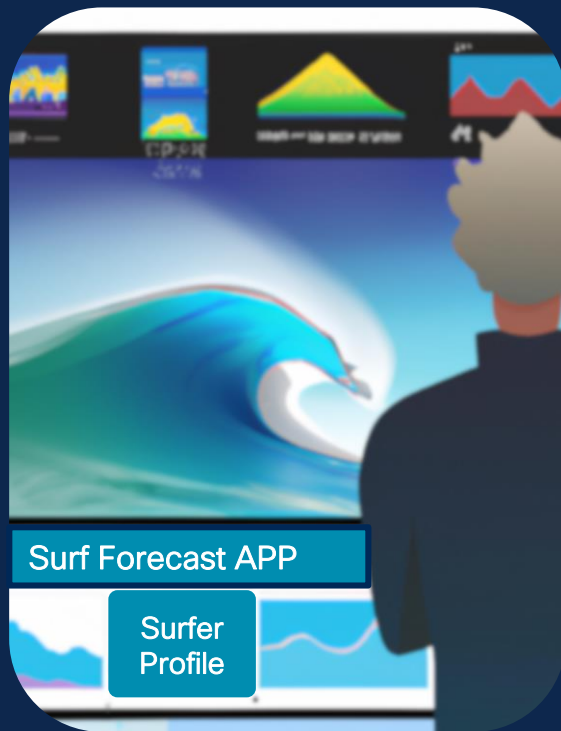
Surfer's App Journey



Recommendations

Improve Surfer
performance

Sustainable
Recommendation



Surfer's App Journey



Recommendations

Improve Surfer performance

Sustainable Recommendation

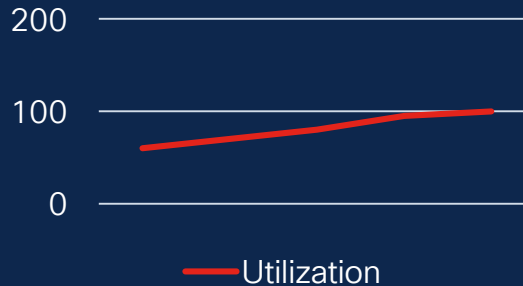


03 | Network Virtualization

Why have a cloud network setup in SP ?



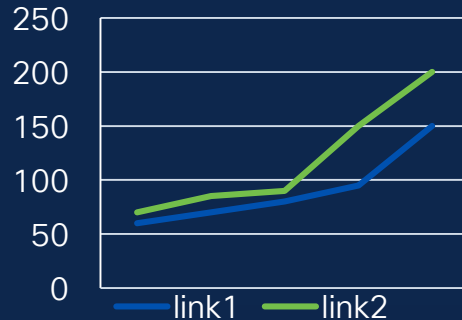
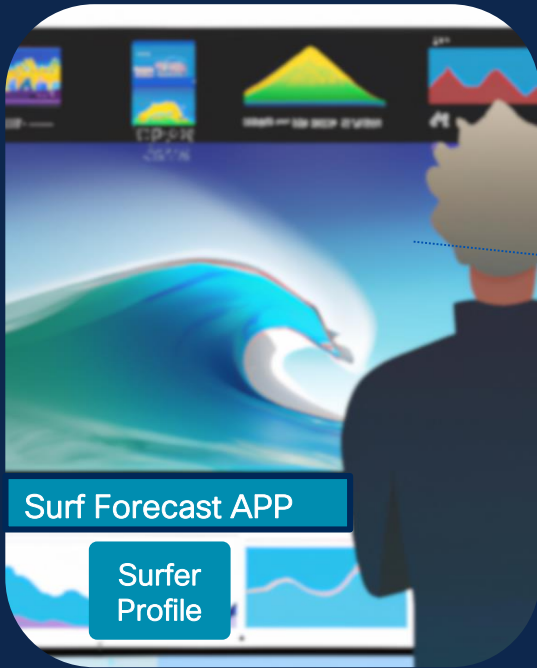
Utilization



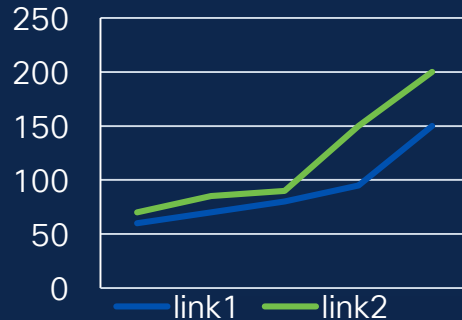
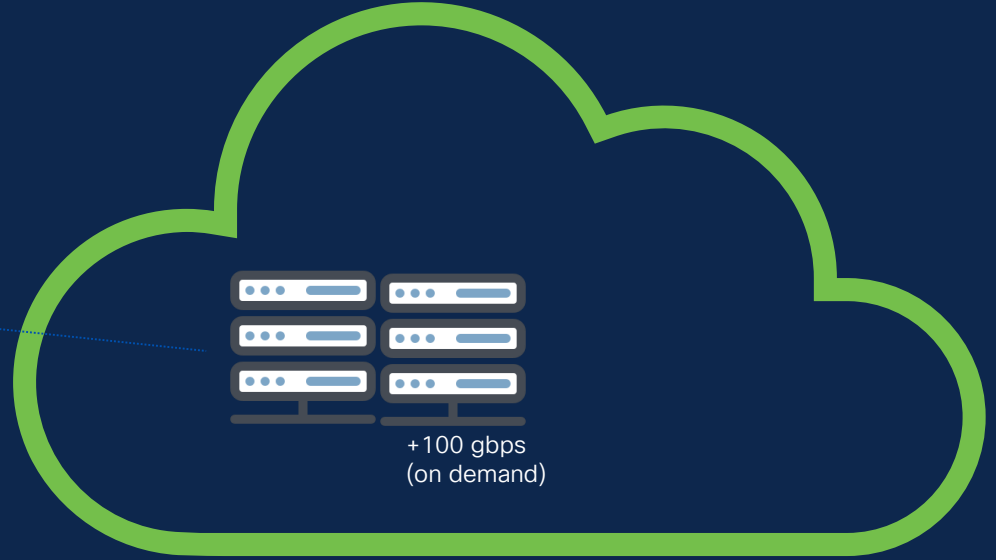
Fixed capacity: 100 gbps



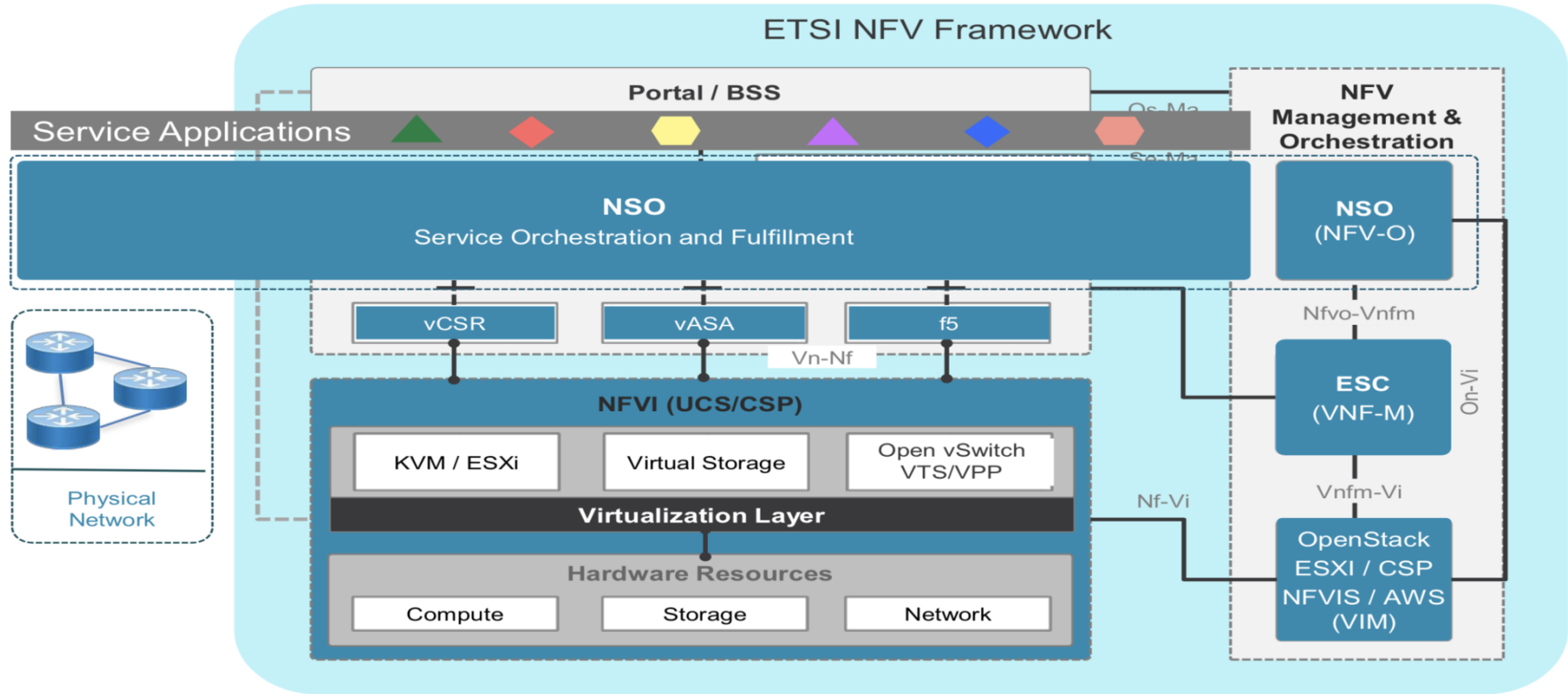
Why have a cloud network setup in SP ?



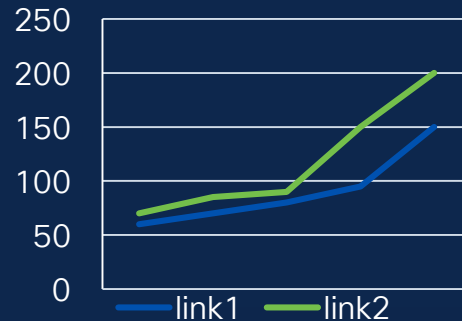
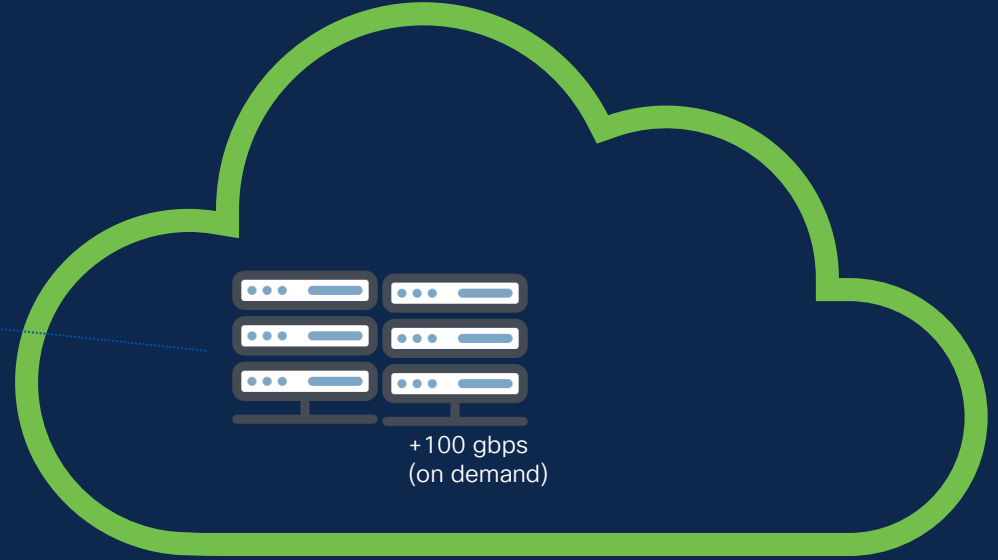
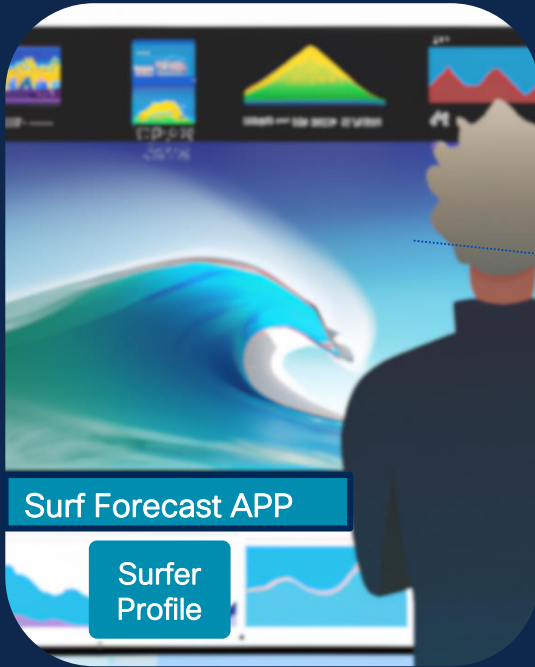
Why have a cloud network setup in SP ?



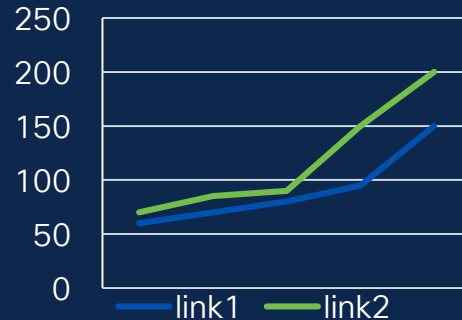
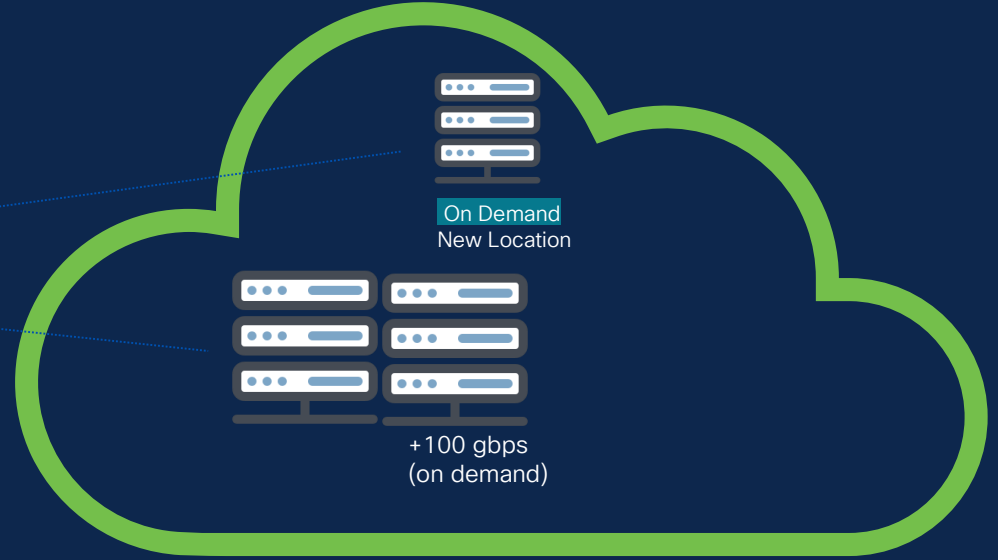
NFVO Solution Architecture



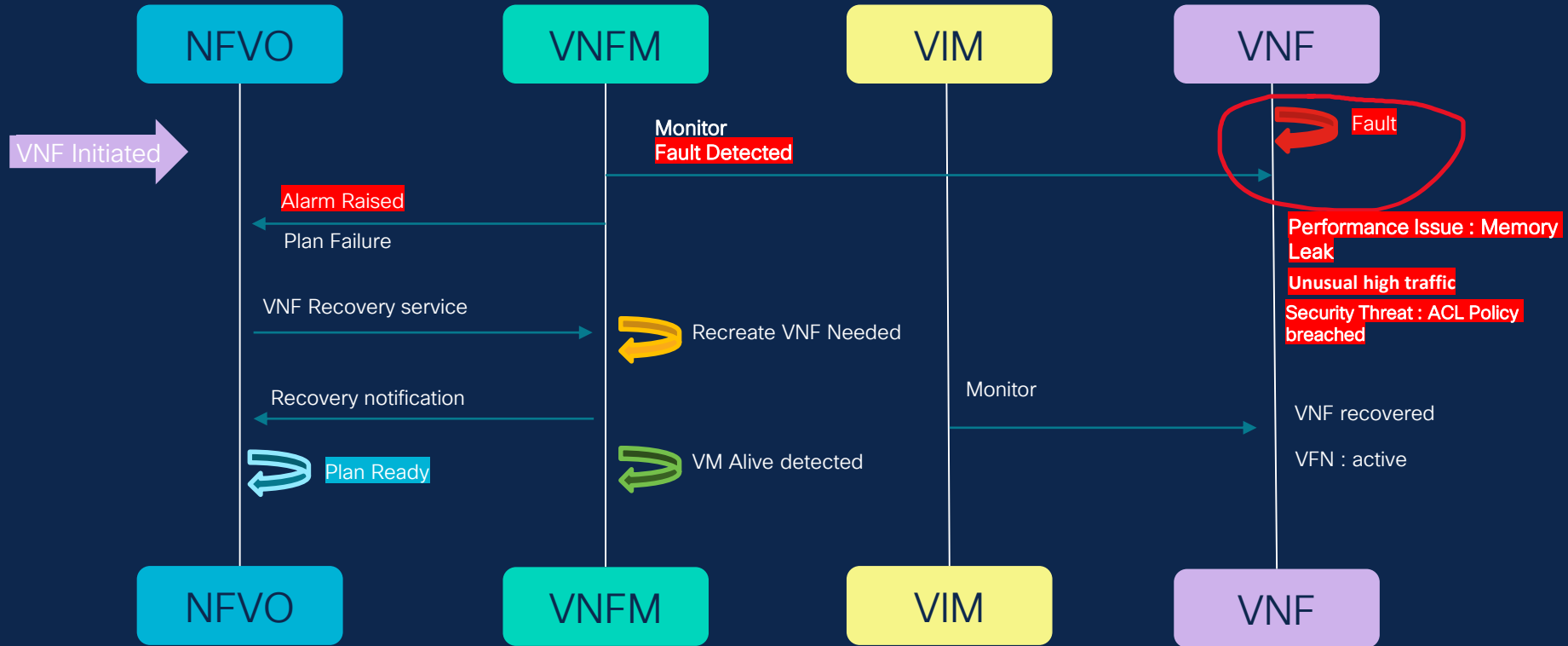
Why have a cloud network setup in SP ?



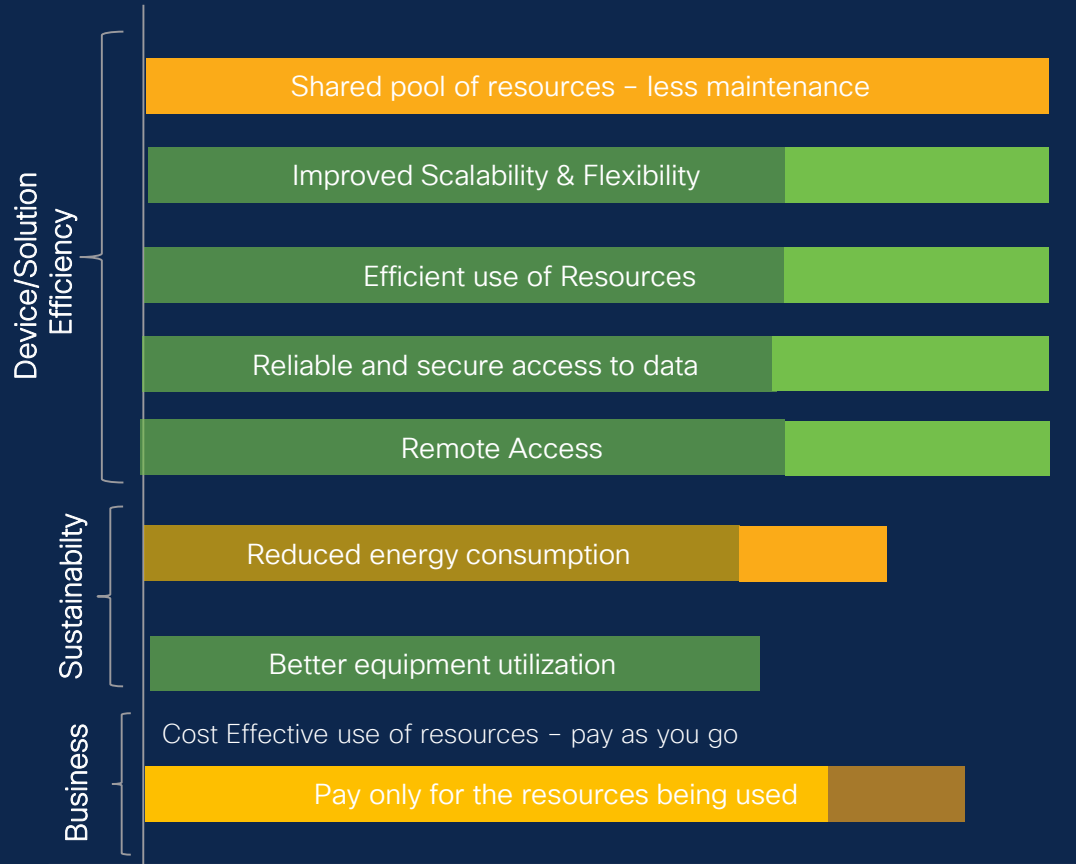
Why have a cloud network setup in SP ?



NFVO Solution Architecture



Potential Impact Analysis



03 | Containerization

The network function landscape is changing – Memory Lane



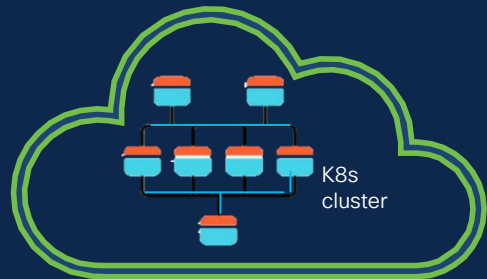
Physical Devices

Physical Network
Functions (PNFs)



Virtual Machines

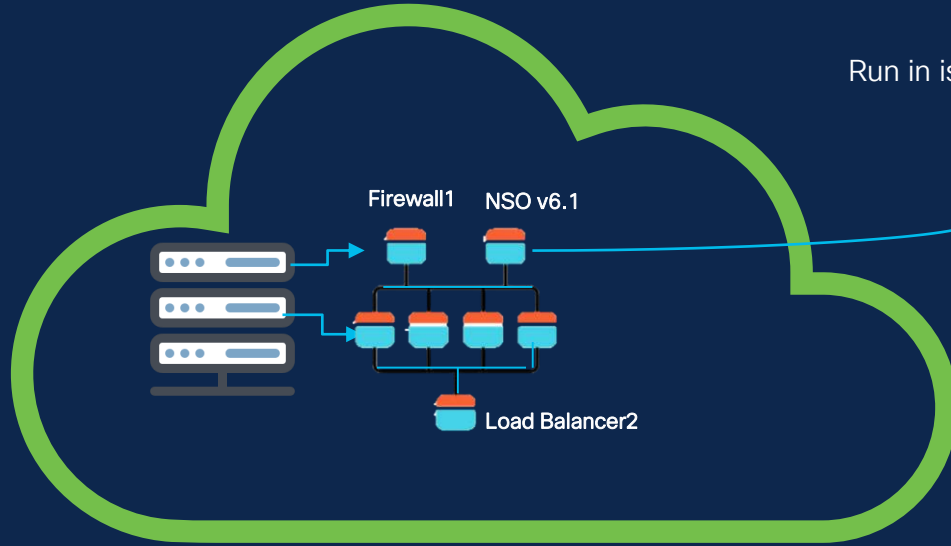
Virtual Network
Functions (VNFs)



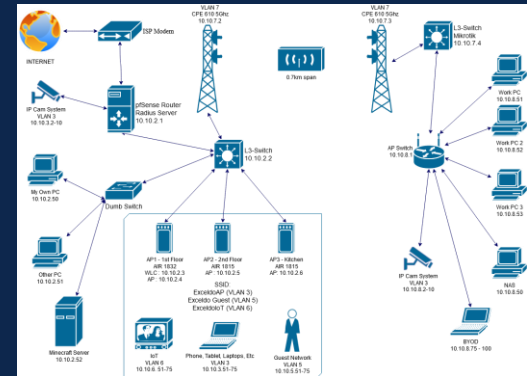
Containers

Cloud-Native Network
Functions (CNFs)

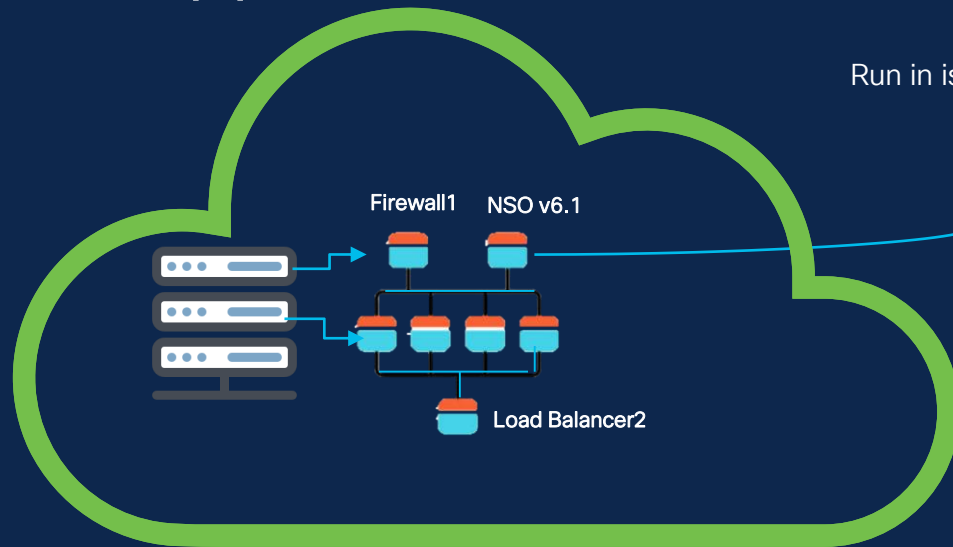
Why think about containerization of Apps?



Run in isolated user environments.



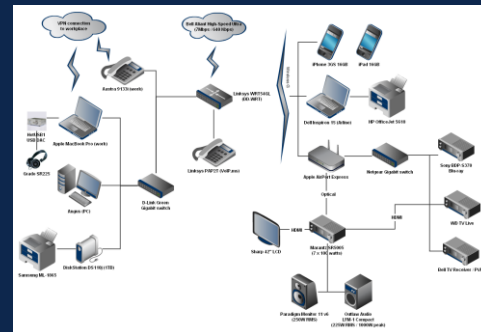
Why think about containerization of Apps?



Run in isolated user environments.

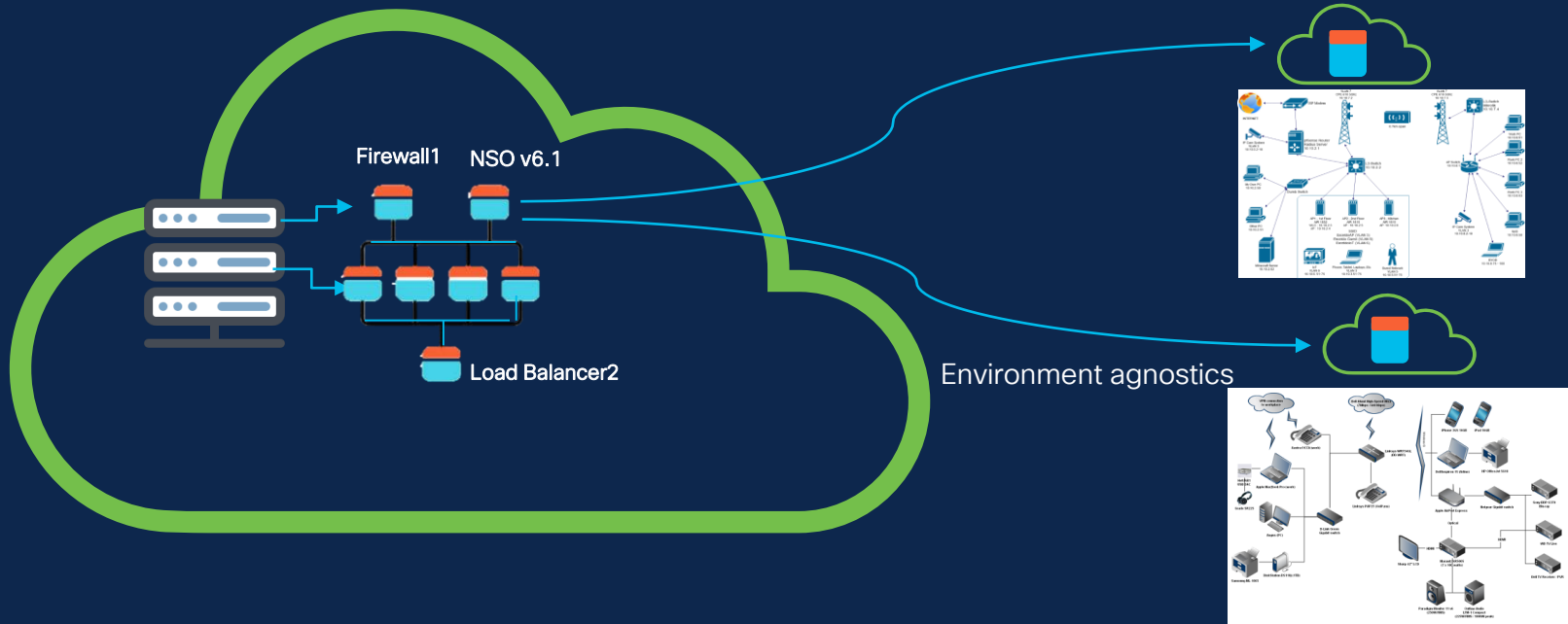


Instructor Training Center

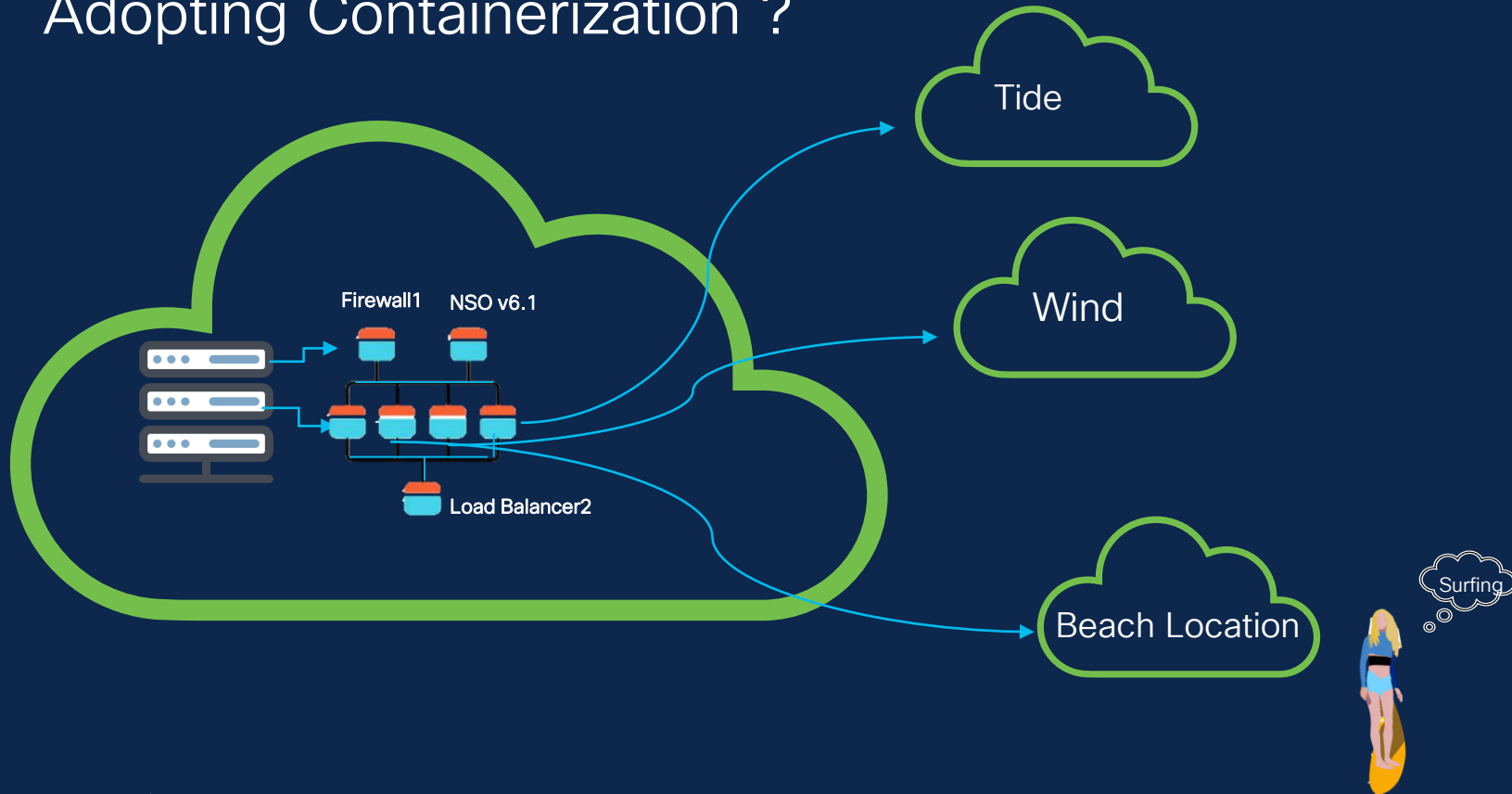


Why think about containerization of Apps?

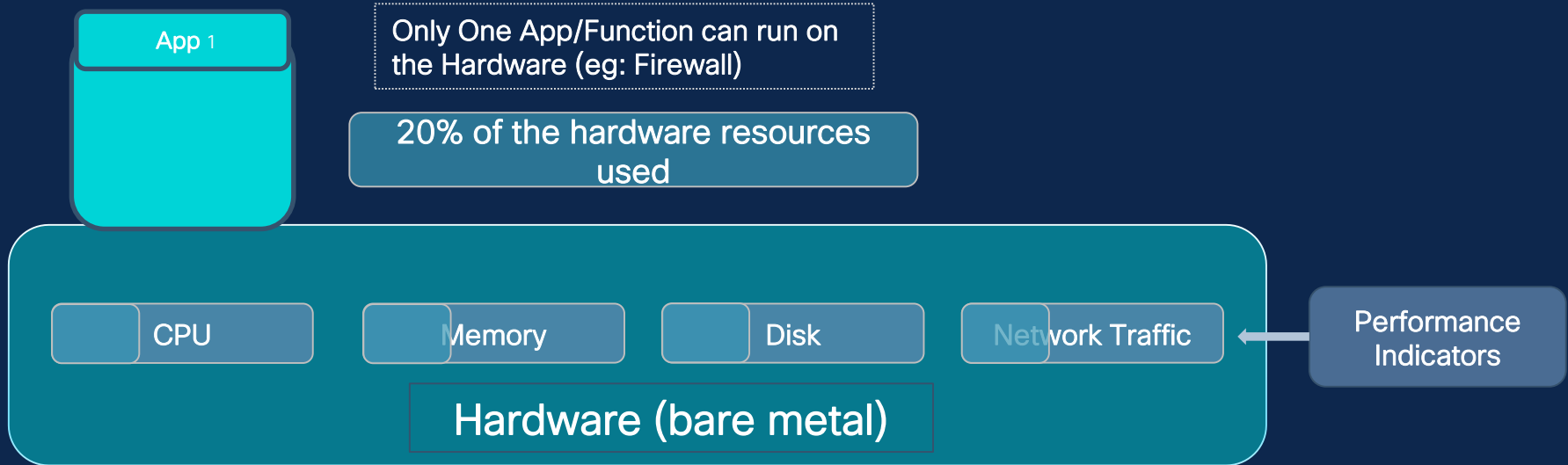
Run in isolated user environments.



Why Leading Companies Are Adopting Containerization ?

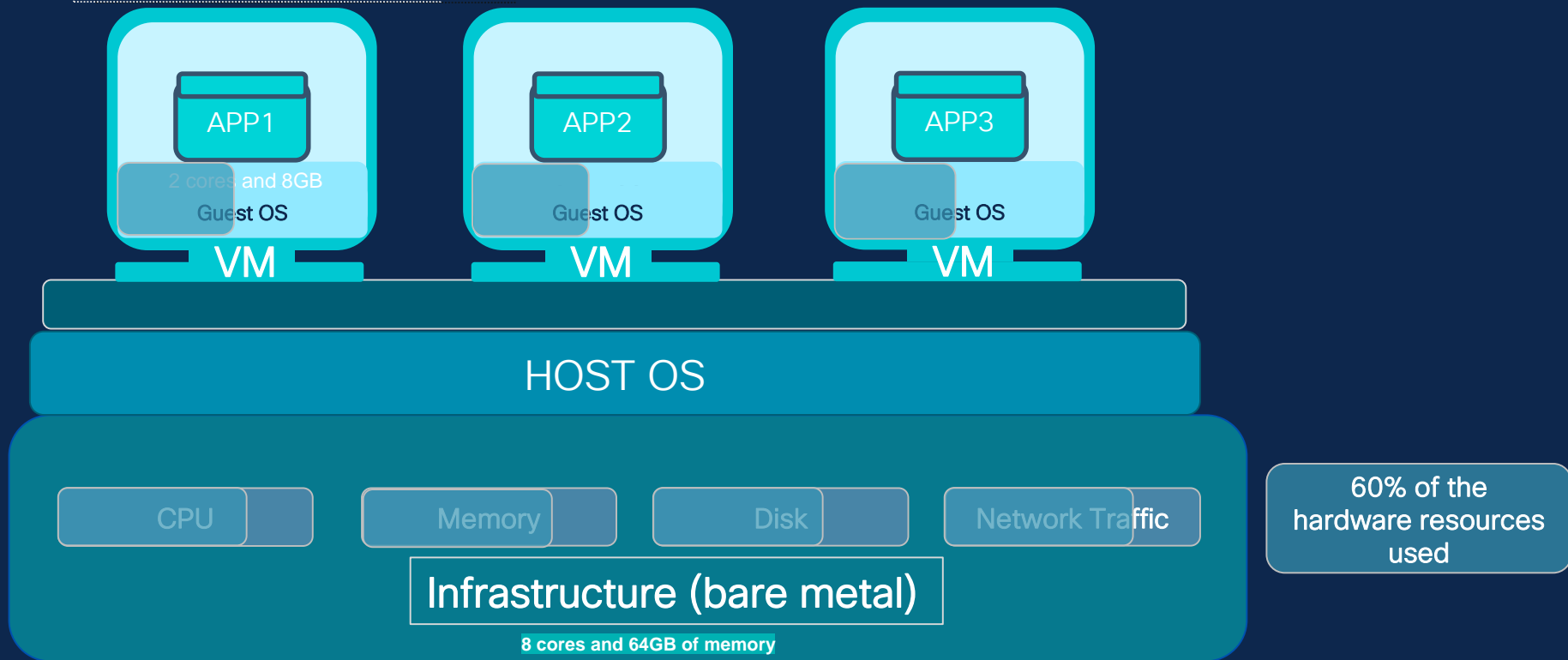


Memory Lane : Application on Hardware Days ...



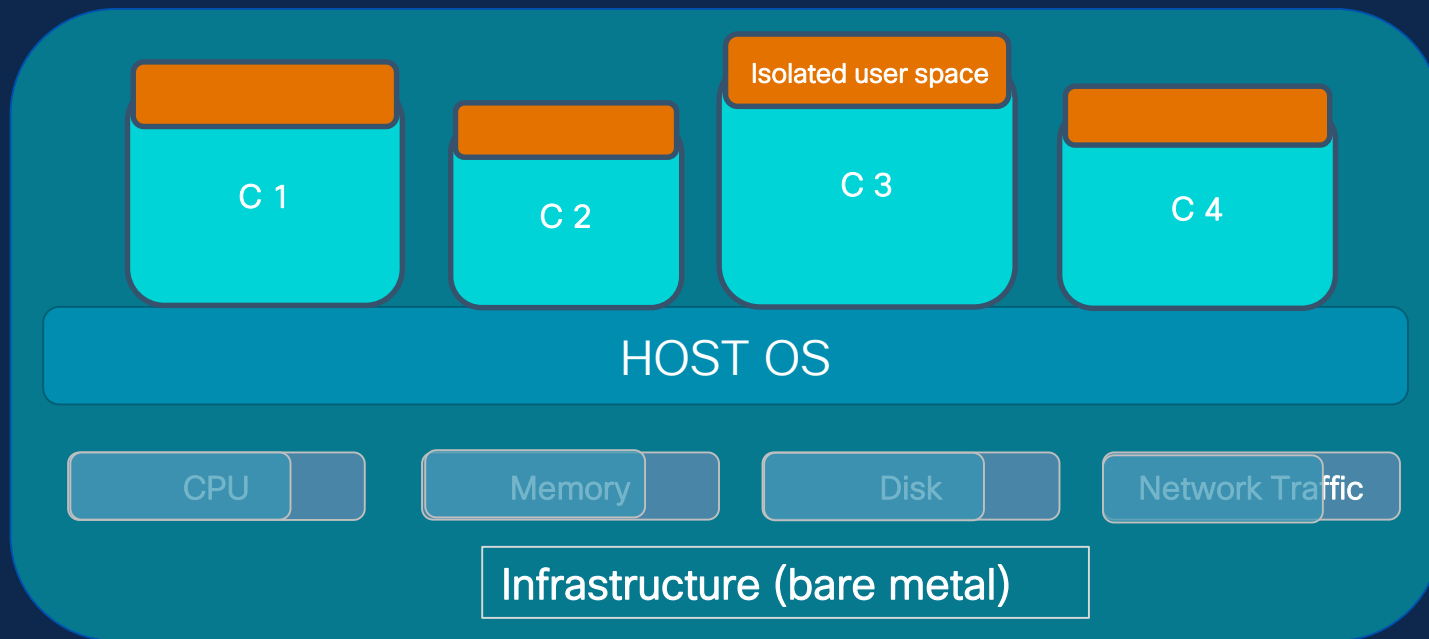
Memory Lane : Application on Virtual Machine

1 App/Function can run on one VM/M



Memory Lane : Containers on BareMetal

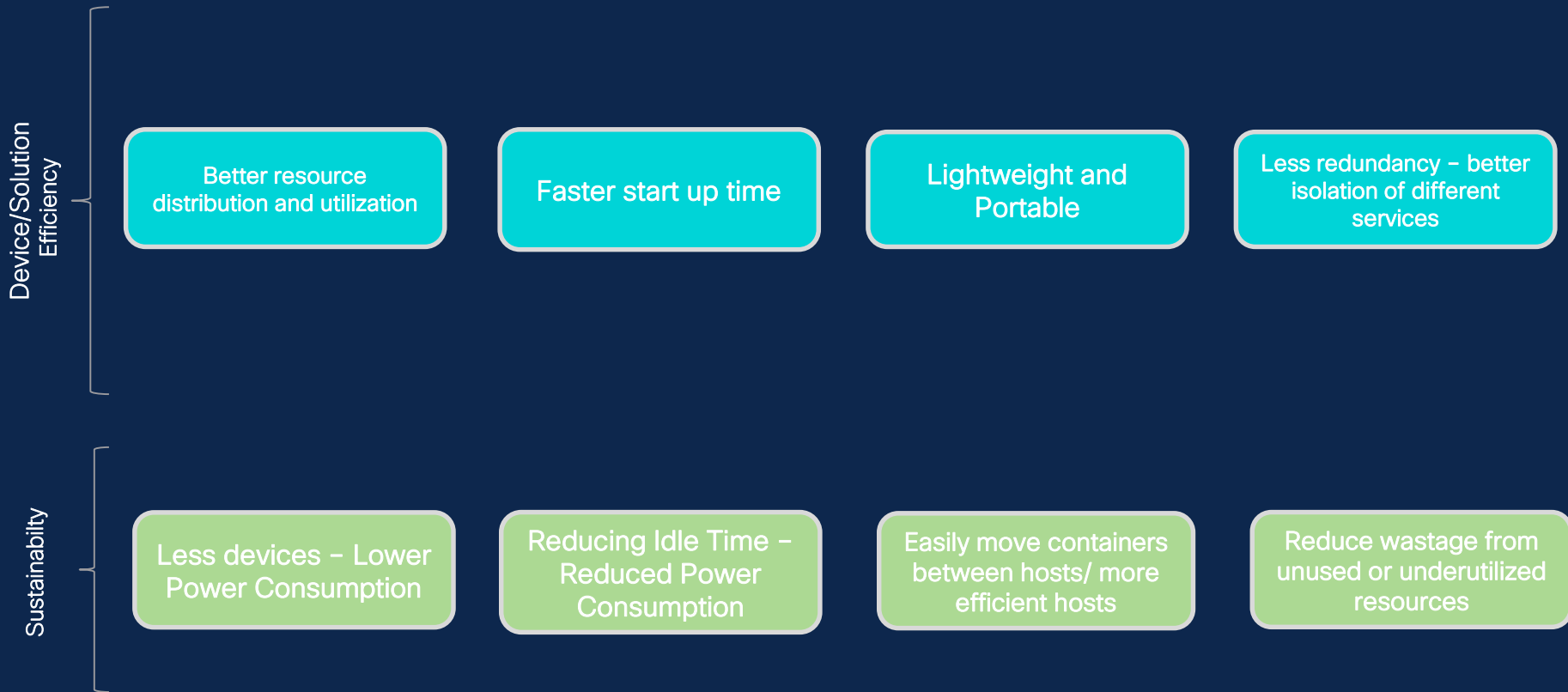
The Hardware can now run many Applications/Functions



Containers run as processes with access to the host's kernel

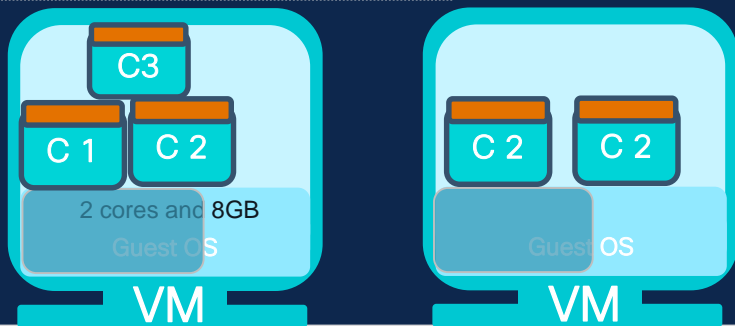
80% of the hardware resources used

Impact Analysis: Containers



Memory Lane : Containers on VM

Many App/Function can run on one VM



Use of containers can reduce the number of VMs required to run a given workload

HOST OS

CPU

Memory

Disk

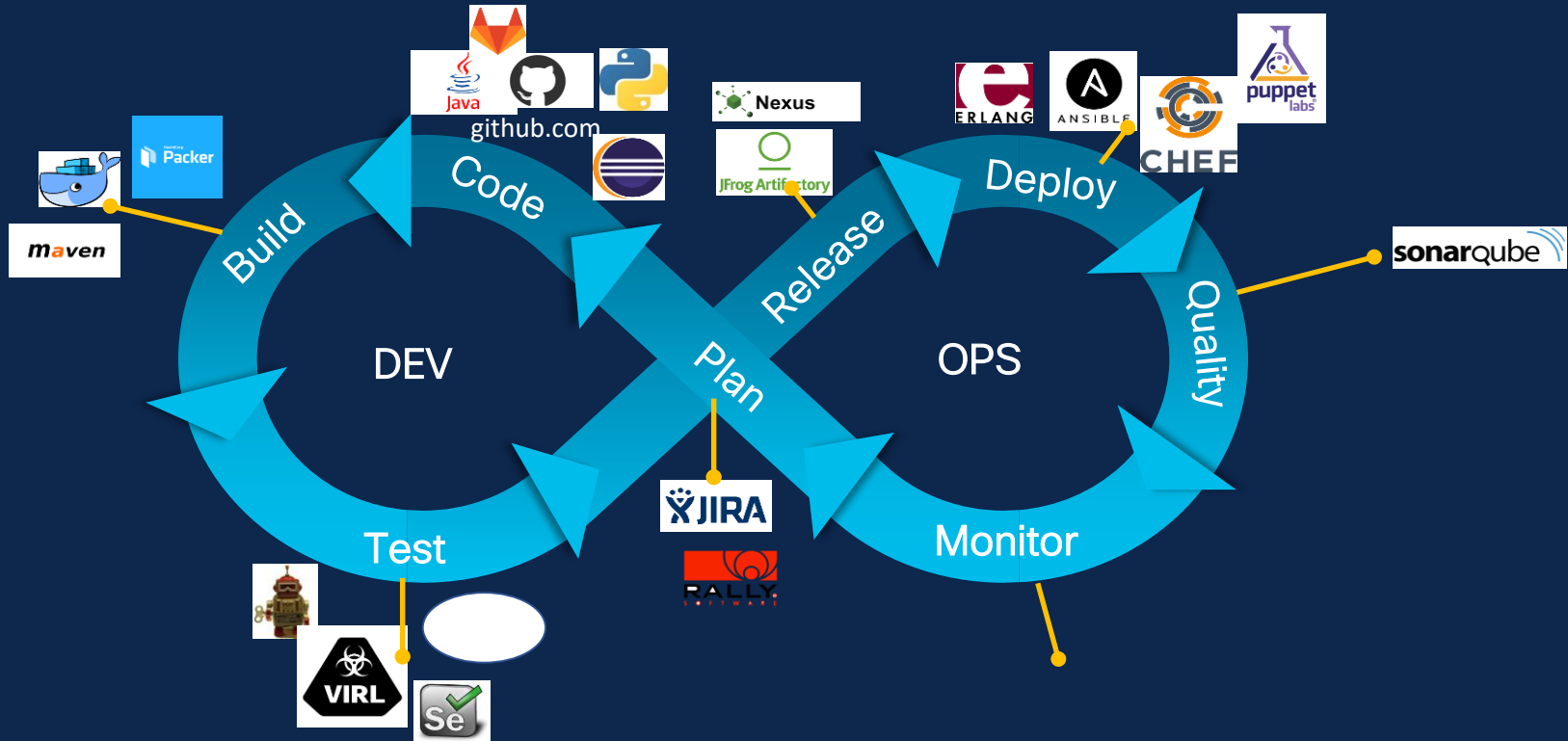
Network Traffic

Infrastructure (bare metal)

8 cores and 64GB of memory

Hardware
resources used
less than 4 VMs

DevOps Race Track



Automation Use Cases Examples

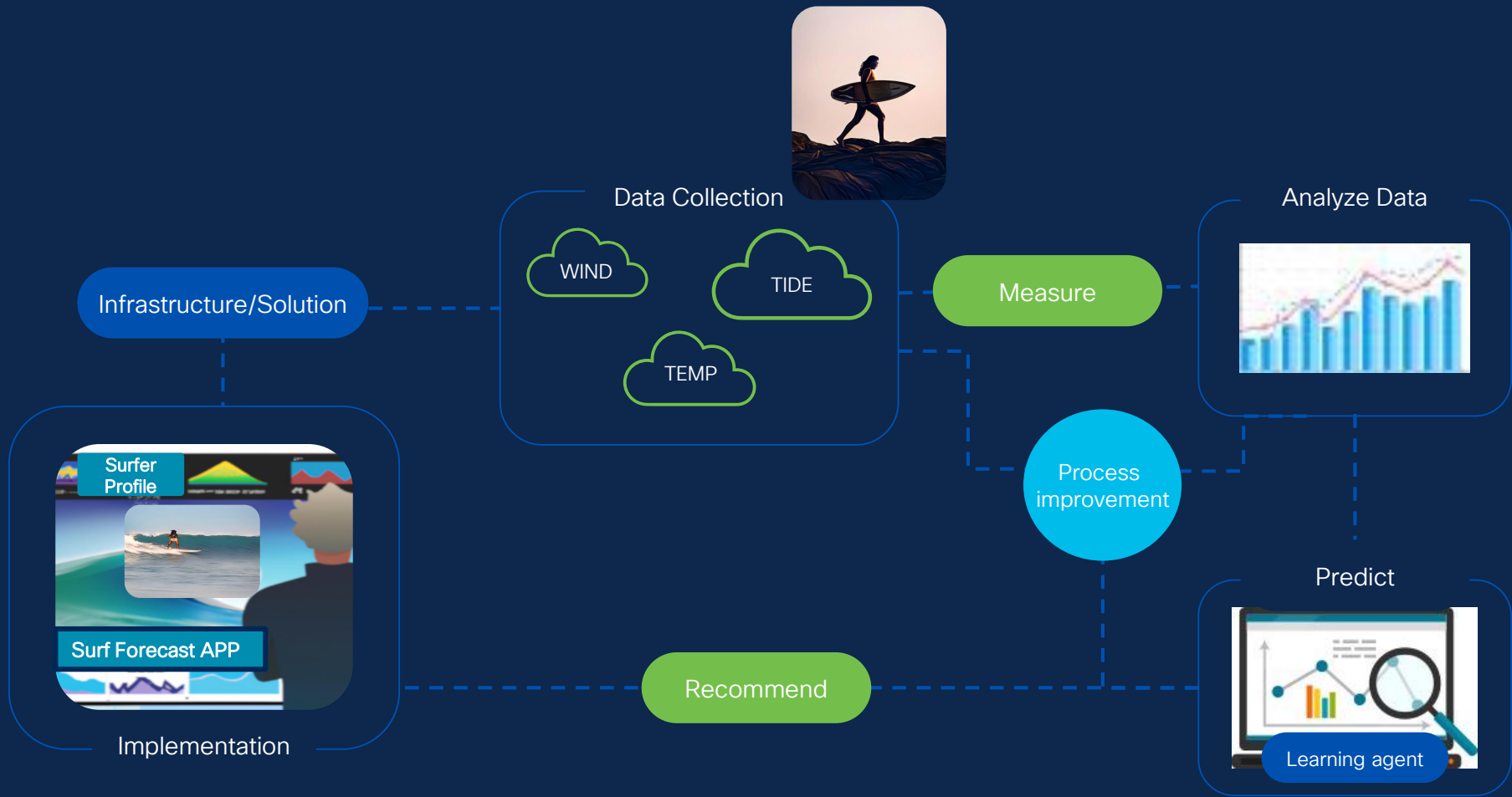
ZERO TOUCH
PROVISIONING

AUTO CAPACITY
MANAGEMENT

CELL SITE MIGRATION
& PROVISIONING

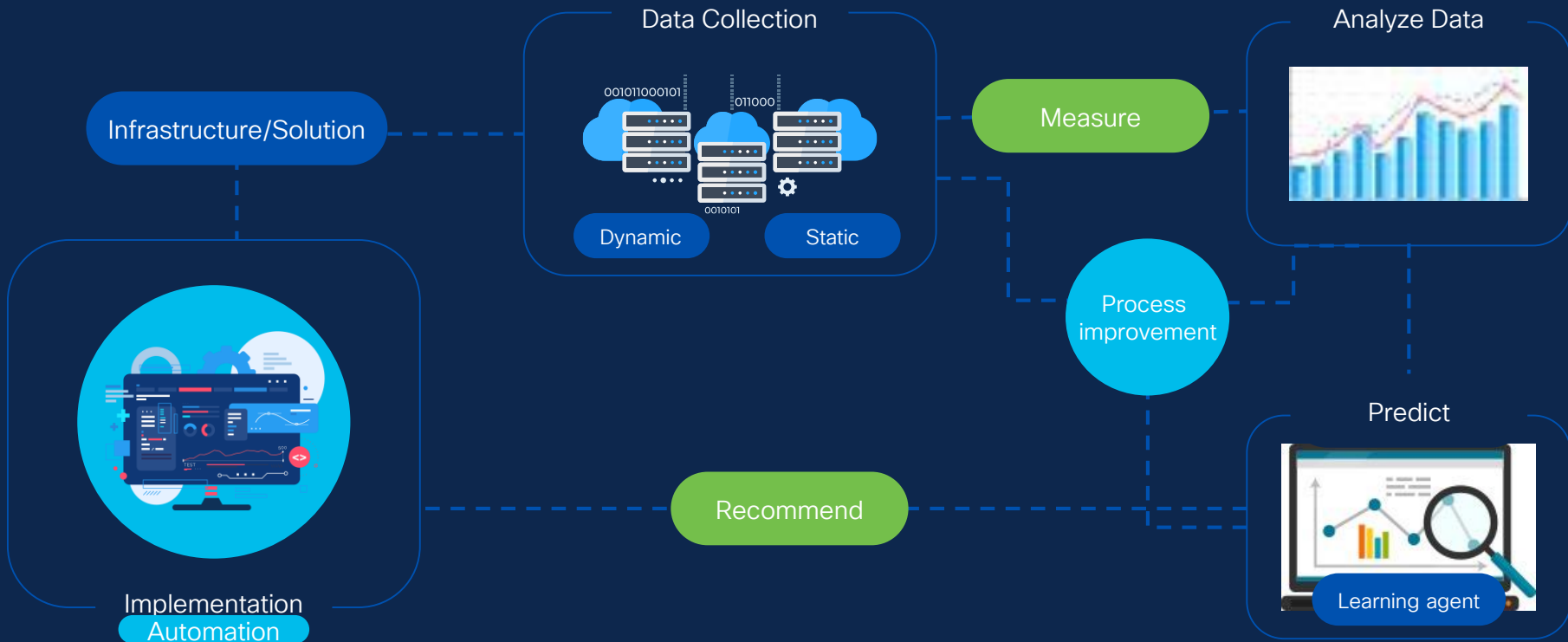
DEVICE & TRAFFIC
OPTIMIZATION

Your Usecase
Idea?



Driving Sustainability

Network Automation Closed Loop Architecture



Call To Action

1. Are you measuring your Solution/Infrastructure's Sustainability KPI?
2. It's in the design and the details. Along with Performance, include sustainability parameters in your architectural design from day 0
3. Do you want to collaborate with us on ideas?

CHECK OUT THE SUSTAINABILITY BOOTH

Automation Use Cases Examples



Slido.com #8222 743
Passcode: rvlin3

Your Usecase
Idea?

Complete Your Session Evaluations



Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to **win 1 of 5 full conference passes** to Cisco Live 2025.



Earn 100 points per survey completed and compete on the Cisco Live Challenge leaderboard.



Level up and earn **exclusive prizes!**



Complete your surveys in the **Cisco Live mobile app**.

Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

Contact me at: saumdube@cisco.com



The bridge to possible

Thank you

CISCO *Live!*

#CiscoLive