

The background is a vibrant, abstract graphic. It features a central bright white light source from which numerous colorful rays emanate, creating a sunburst or starburst effect. The rays transition through a spectrum of colors including yellow, orange, red, and various shades of blue and green. Overlaid on this are large, flowing, wavy shapes in similar colors, giving the overall image a sense of motion and energy.

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The bridge to possible

Achieving Automation, Sustainability, and Performance:

Yes! You Can Have it All !

Saumya Dubey
Customer Success Specialist
PSOSPG-1408

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Saumya Dubey

Customer Success Specialist
Automation

- 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 and Design



Solution ?

1. 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 C02/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 C02 emissions in Kg/month	10410



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

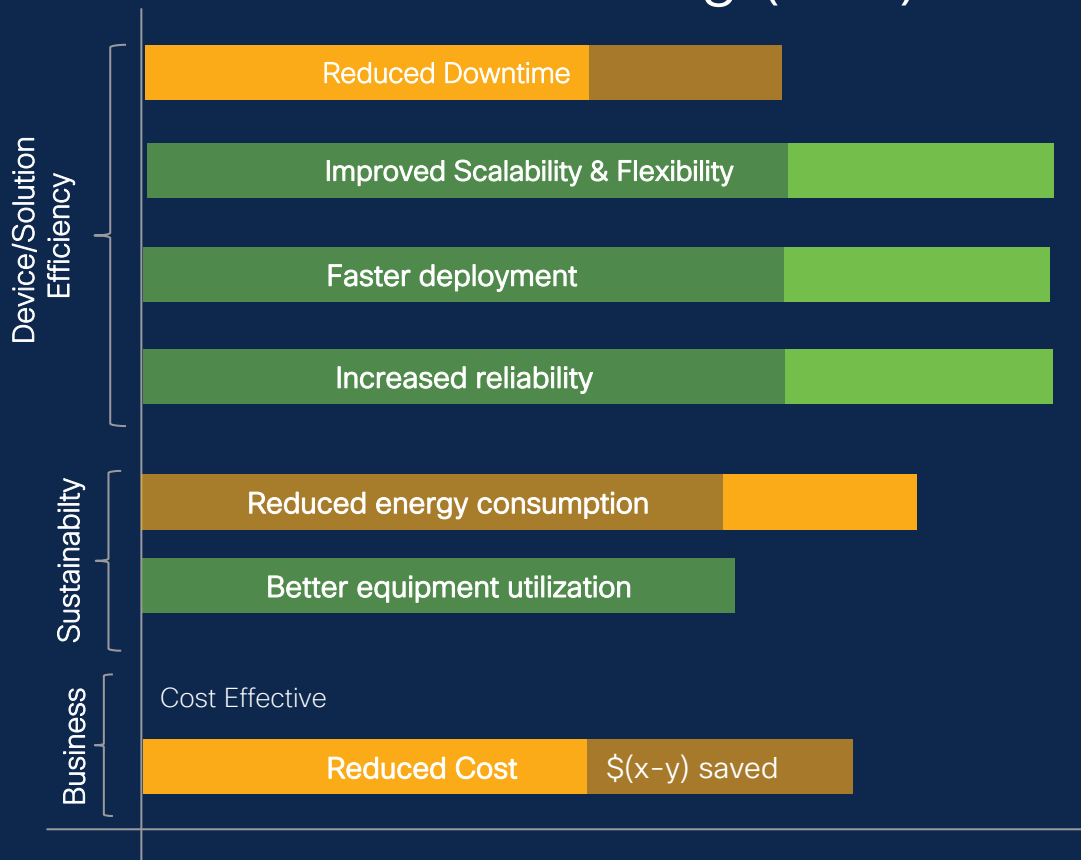
Why Zero Touch Provisioning ?

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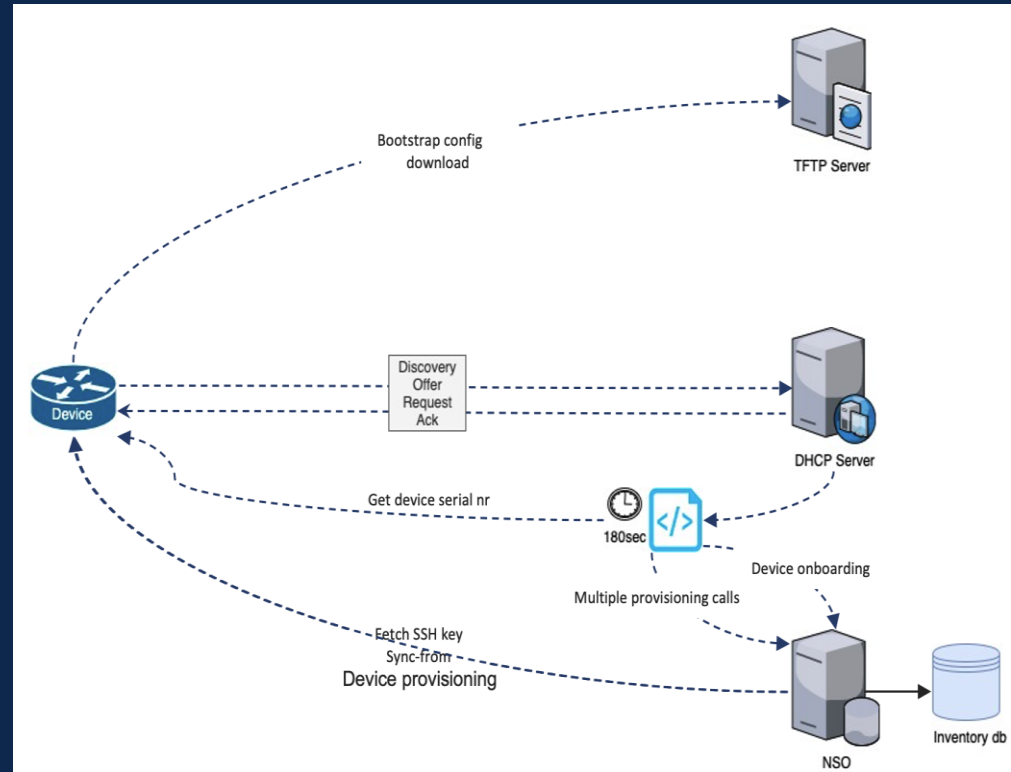
Reference: <https://blogs.cisco.com/sp/go-greener-with-network-automation>

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)



2. Automated Power Management

POWER USAGE - DATA CENTER /ACCESS POINT / DEVICE?

POWER OPTIMIZATION/REDUCTION.

Analyze

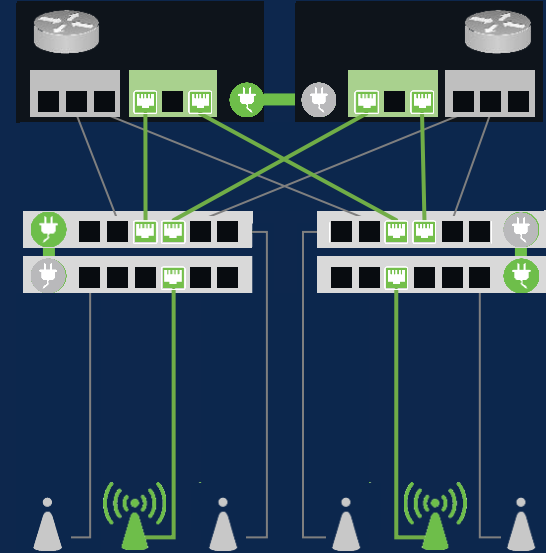
Recommend

Implement



Energy Proportional Networks

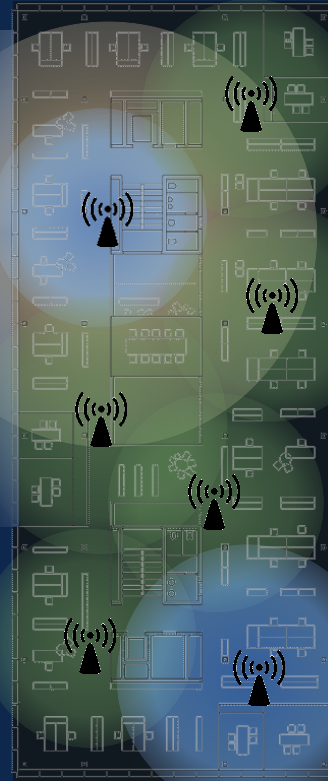
- To meet stringent application SLAs, today's network remains fully powered
- Selectively depower while maintaining all SLAs



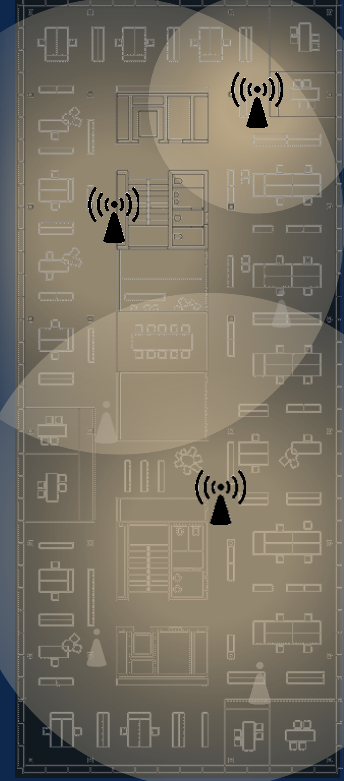
Selective Depowering

Power down APs /adjust frequencies to meet demand

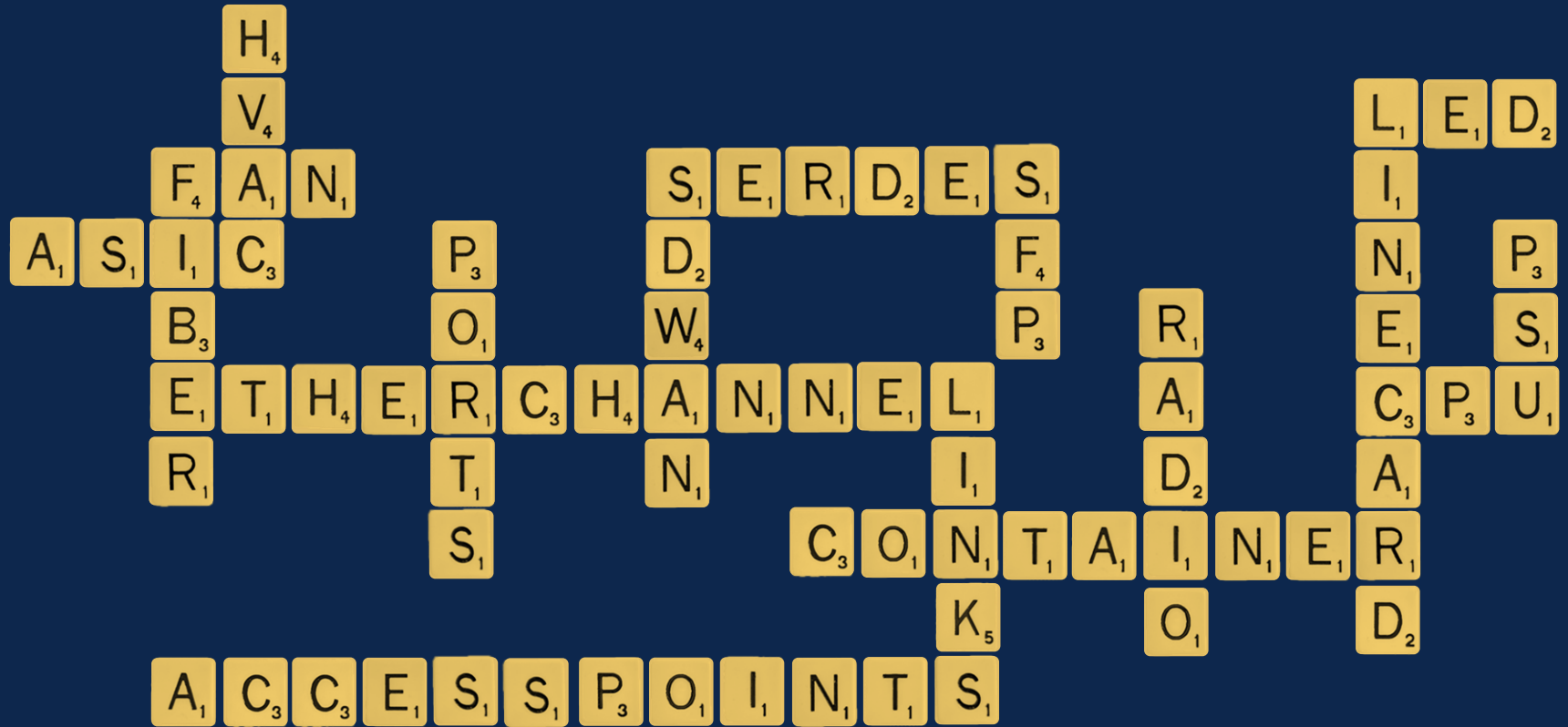
Office Hours 



Off Peak 



Selective Depowering





MEASURE

Device

Location: Las Vegas
Role: Edge

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: {}],

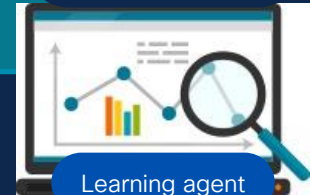
TRAFFIC POLICY (P1):

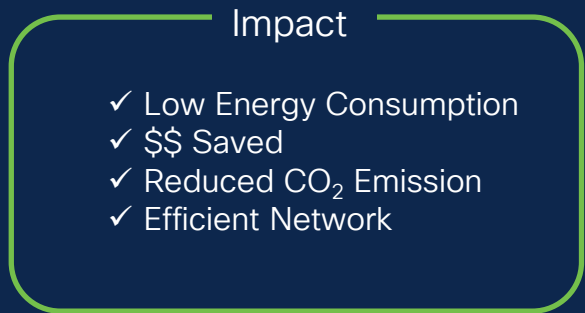
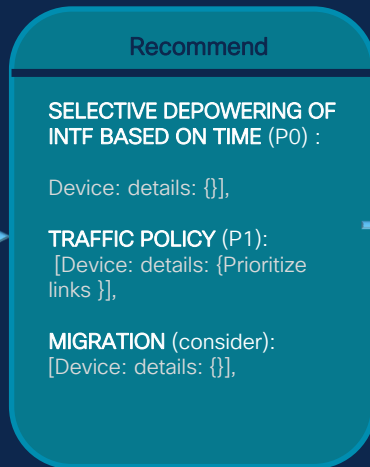
[Device: details: {Prioritize links }],

MIGRATION (consider):

[Device: details: {}],

Predict





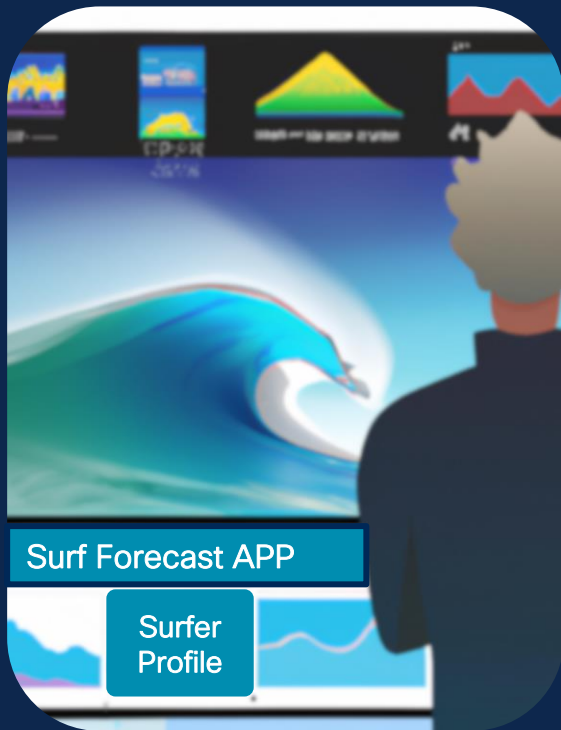
Surfer's App Journey



Recommendations

Improve Surfer
performance

Sustainable
Recommendation



Surfer's App Journey



Recommendations

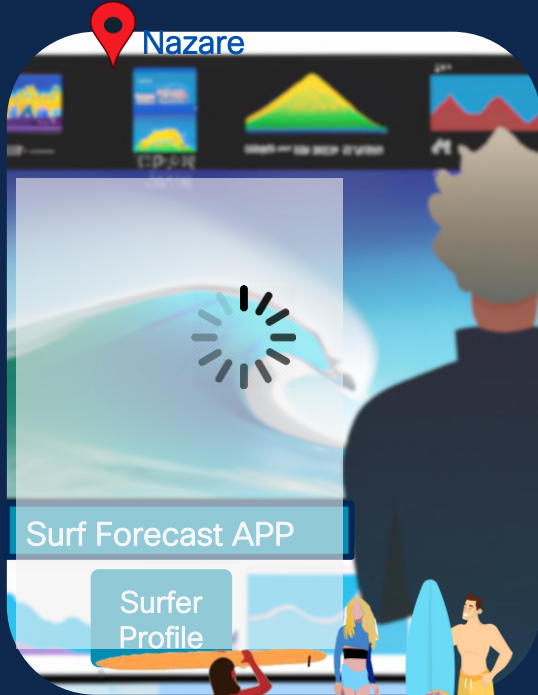
Improve Surfer performance

Sustainable Recommendation

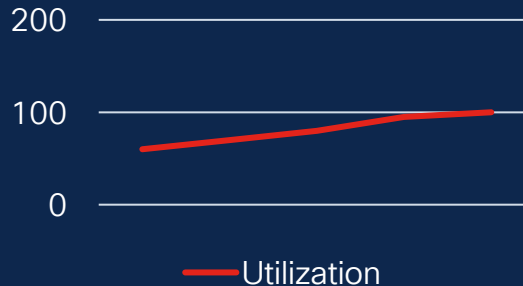


3. Network Virtualization

Why have a cloud network setup in SP ?



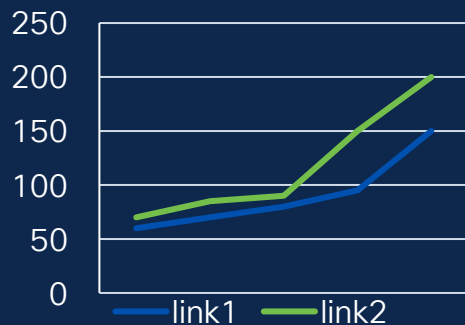
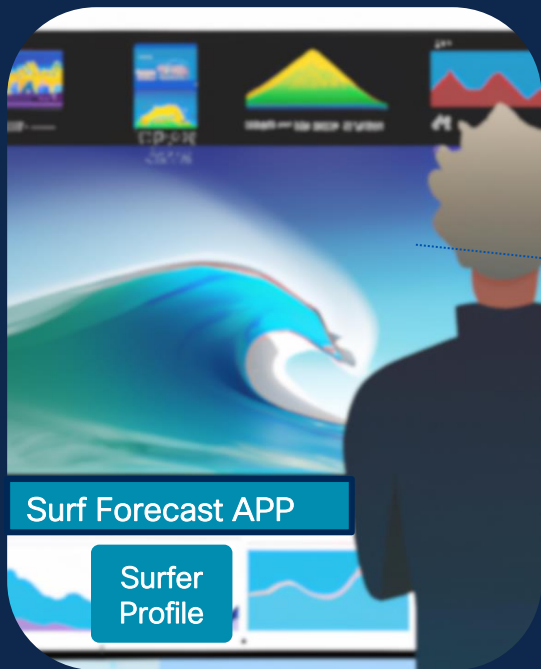
Utilization



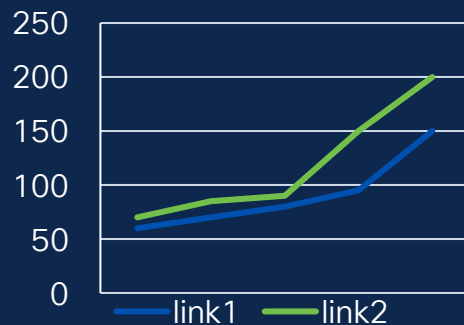
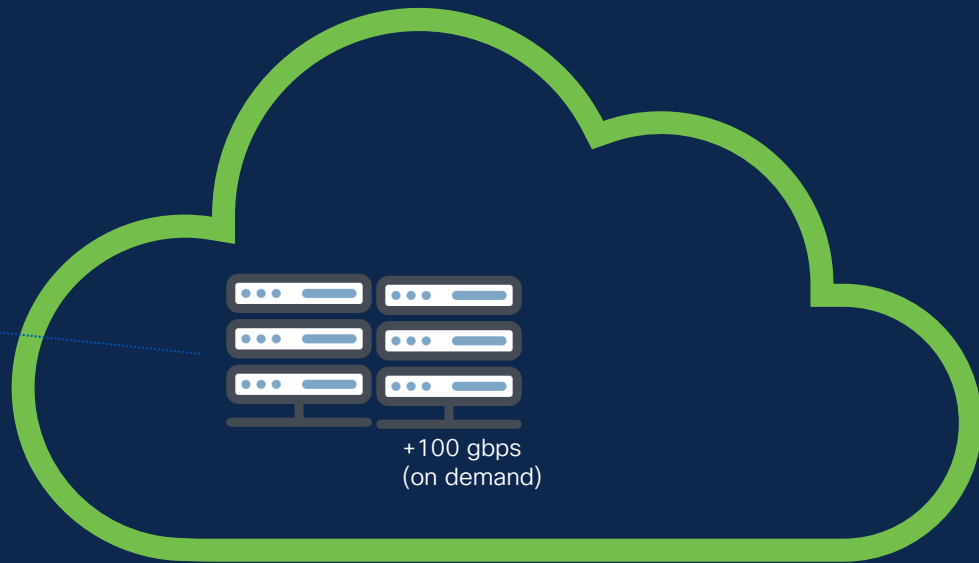
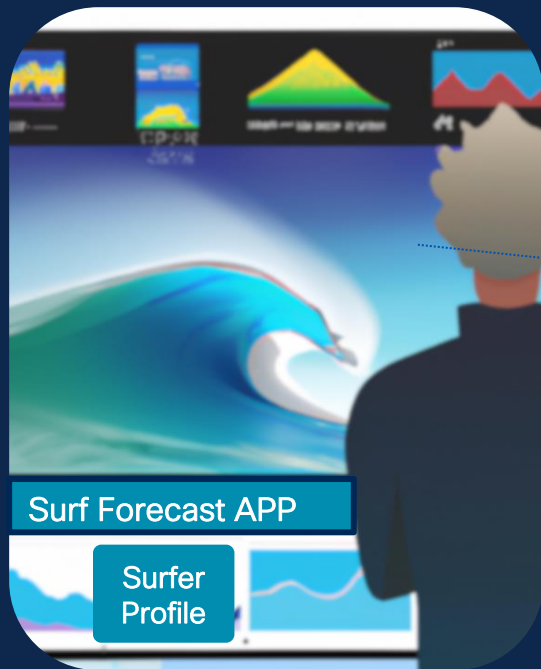
Fixed capacity: 100 gbps



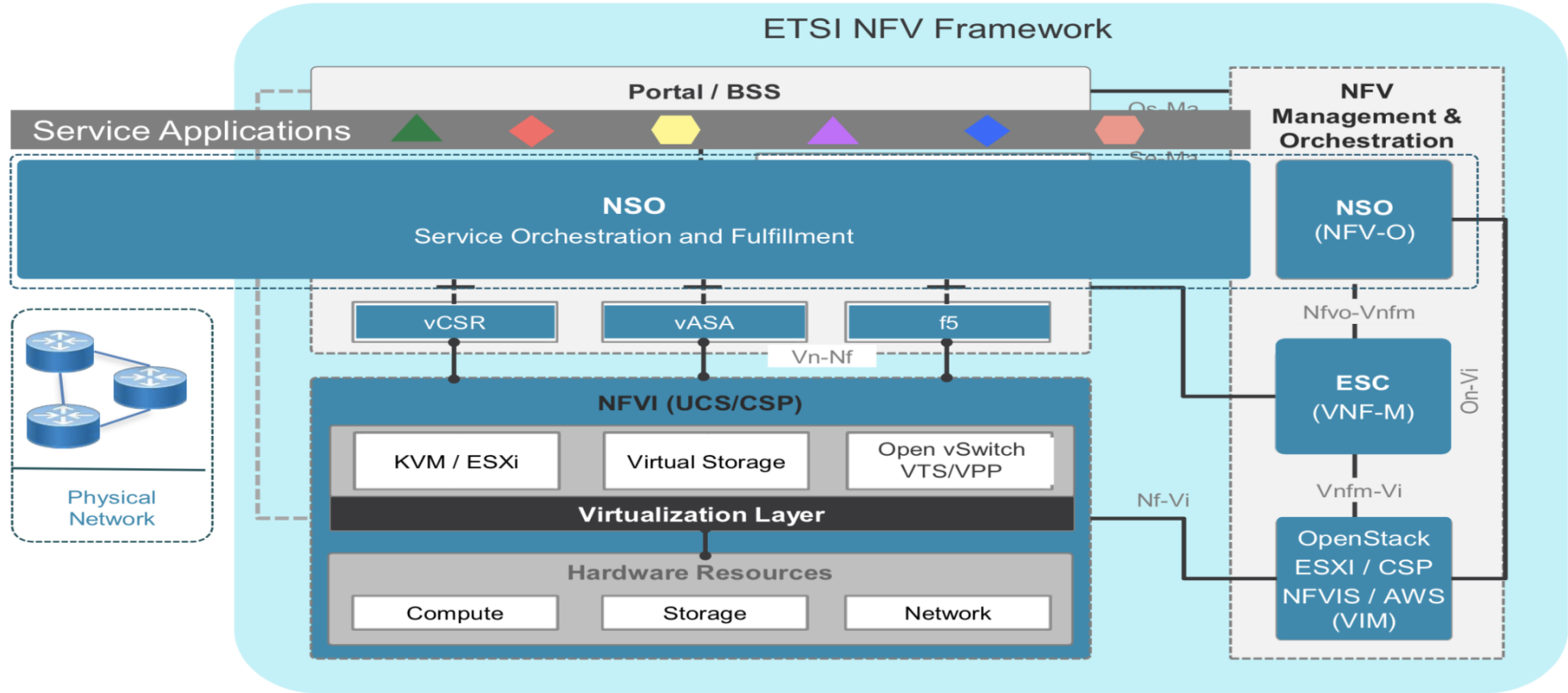
Why have a cloud network setup in SP ?



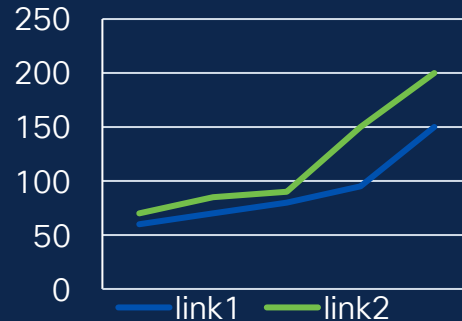
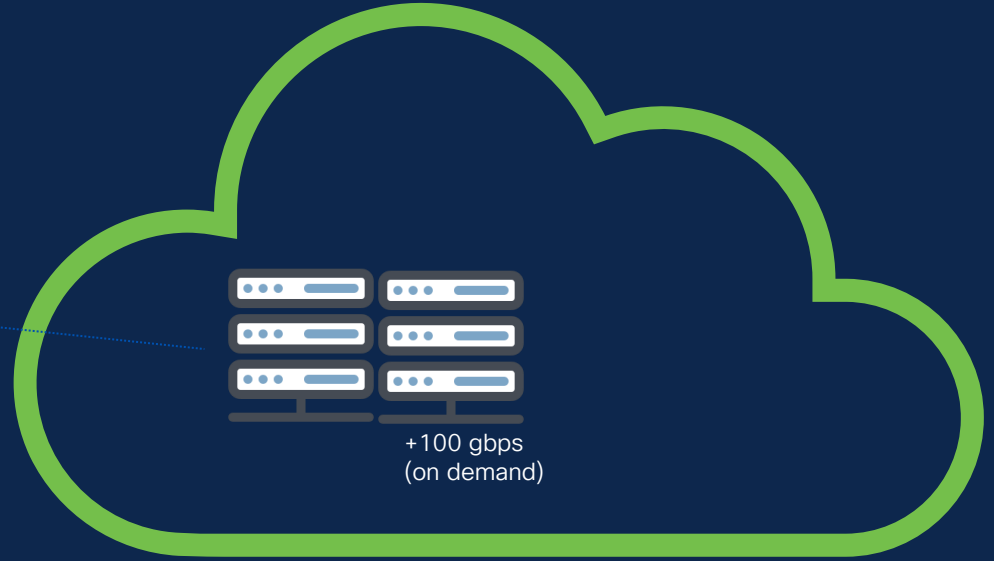
Why have a cloud network setup in SP ?



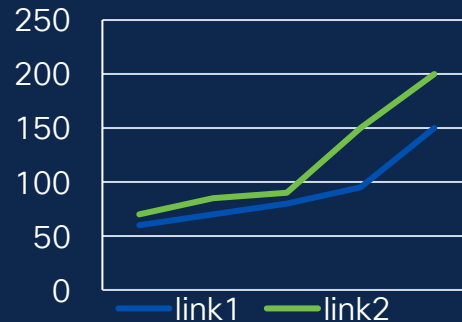
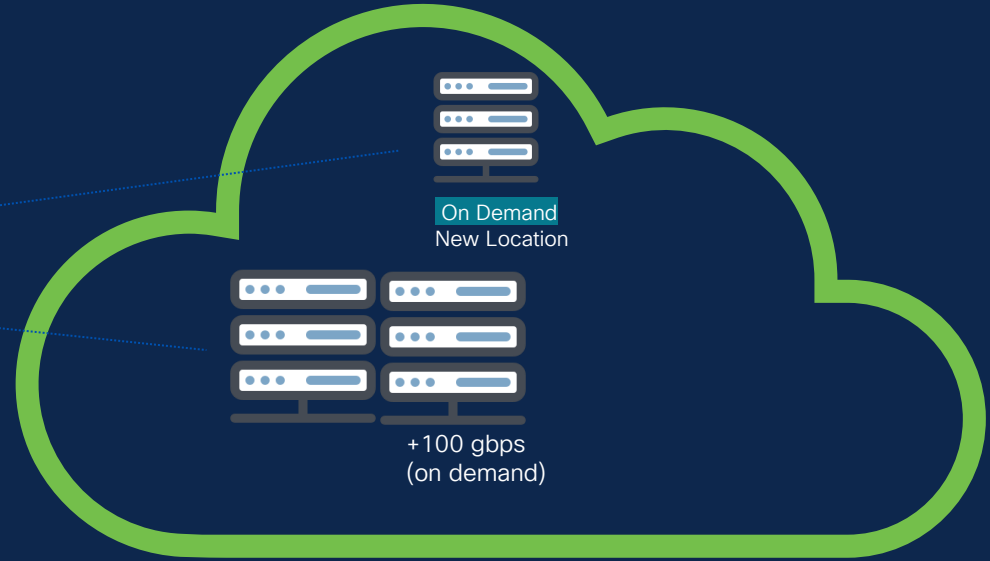
NFVO Solution Architecture



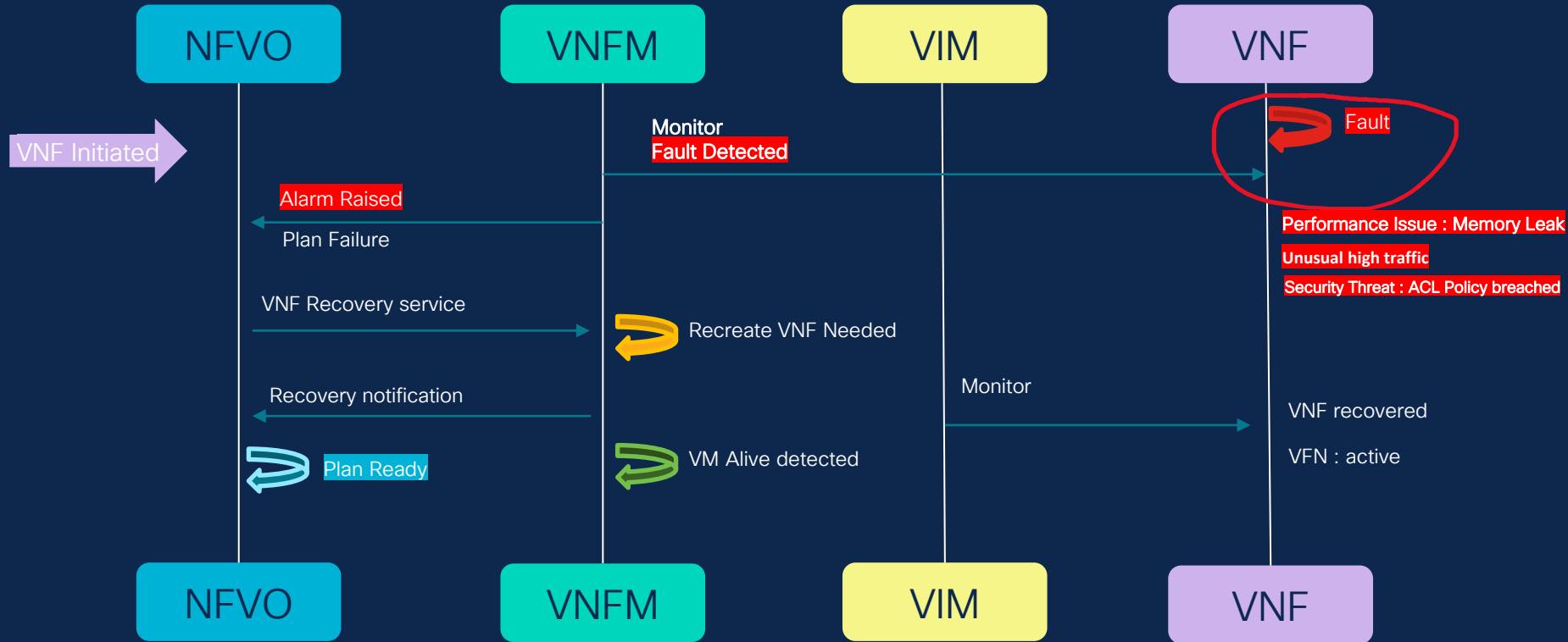
Why have a cloud network setup in SP ?



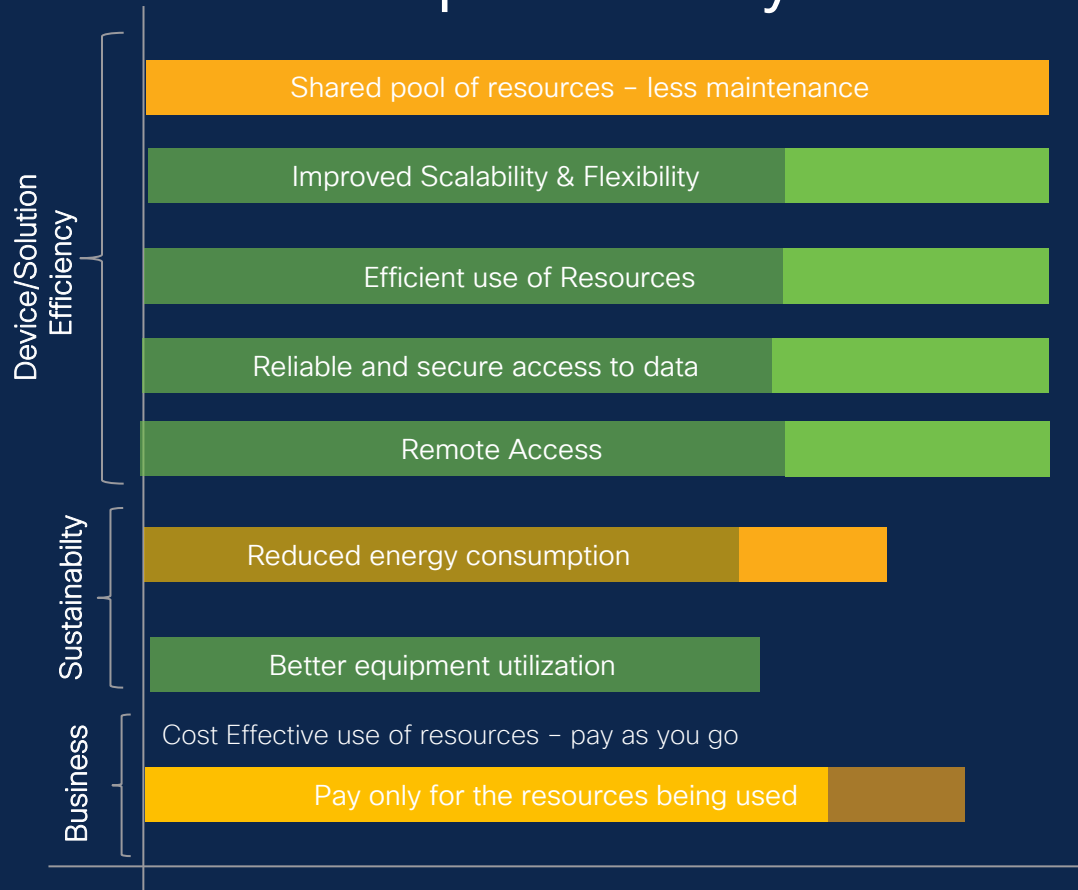
Why have a cloud network setup in SP ?



NFVO Solution Architecture



Potential Impact Analysis



4. Containerization

The network function landscape is changing – Memory Lane



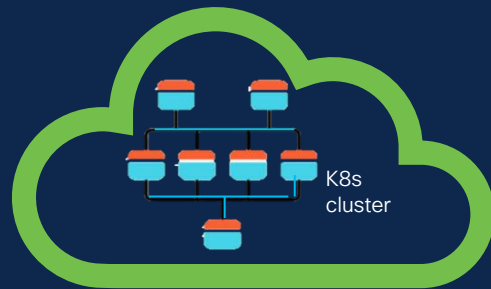
Physical Devices

Physical Network
Functions (PNFs)



Virtual Machines

Virtual Network
Functions (VNFs)



Containers

Cloud-Native Network
Functions (CNFs)

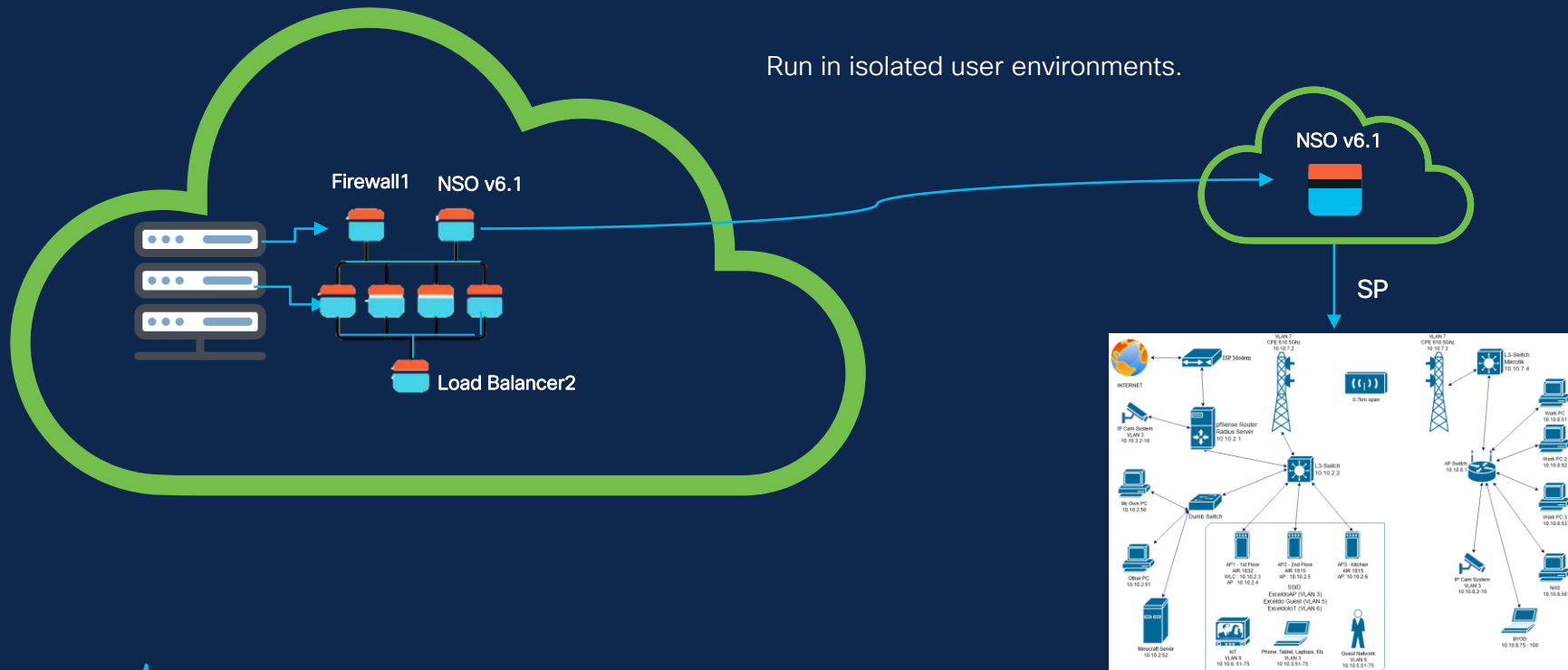
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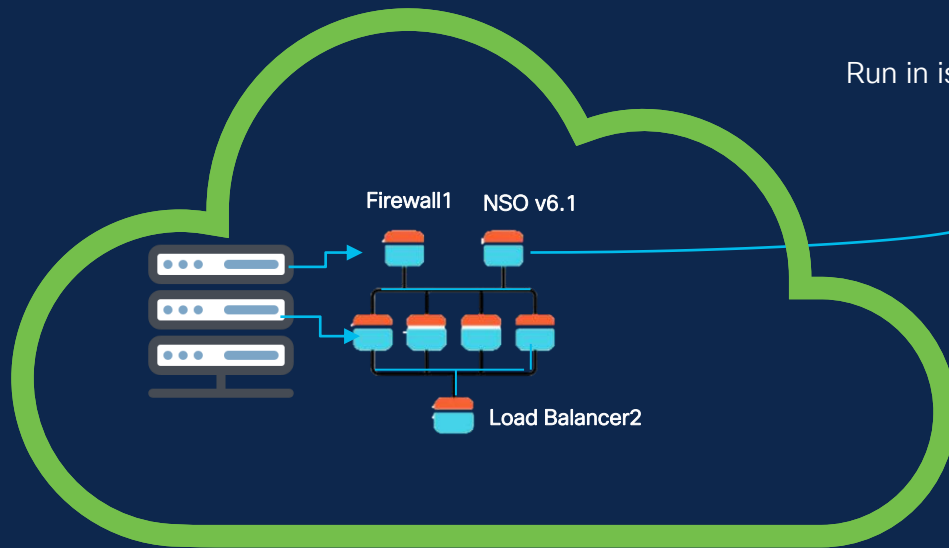
PSOSPG-1408

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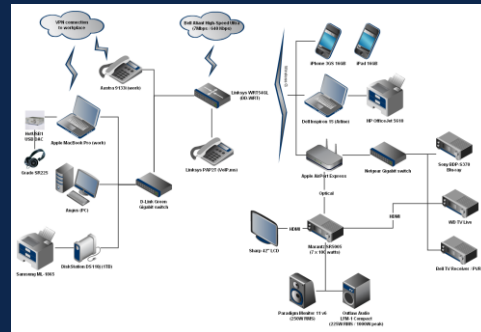
Why think about containerization of Apps?



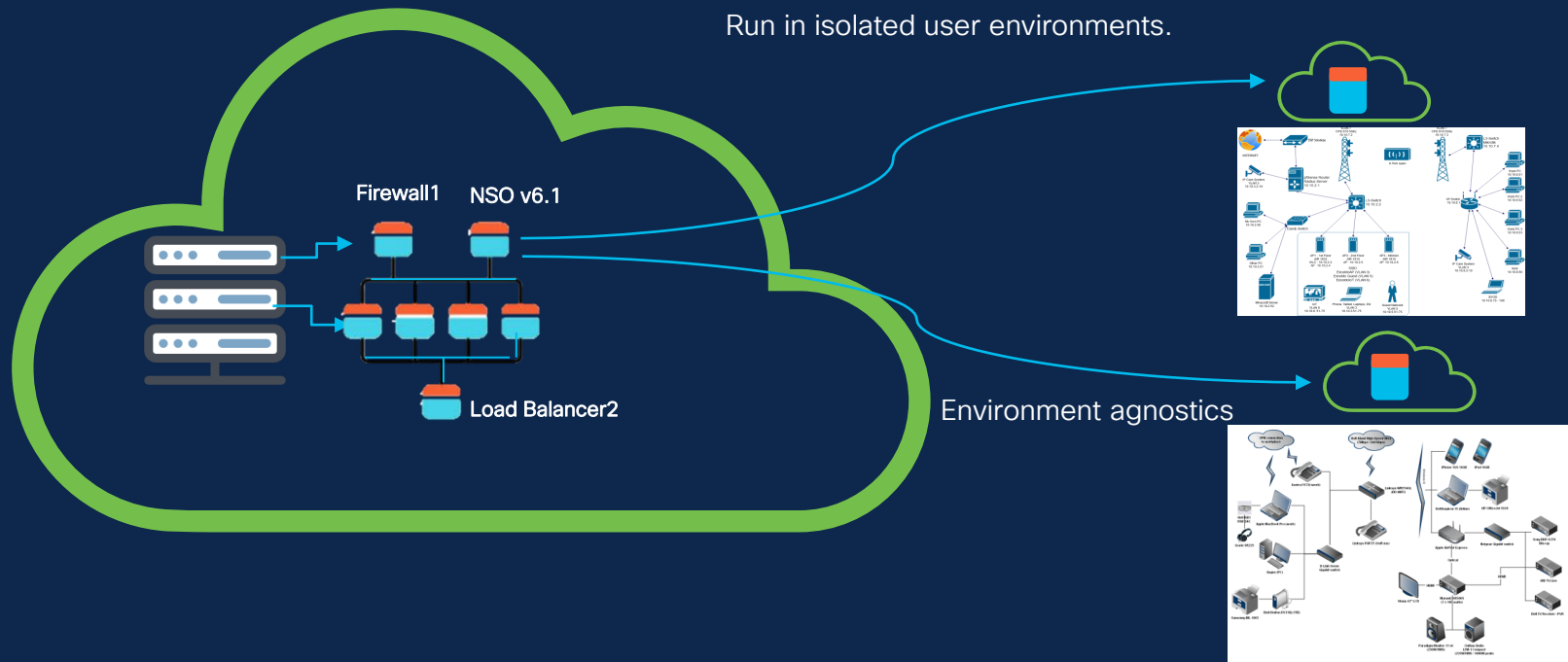
Run in isolated user environments.



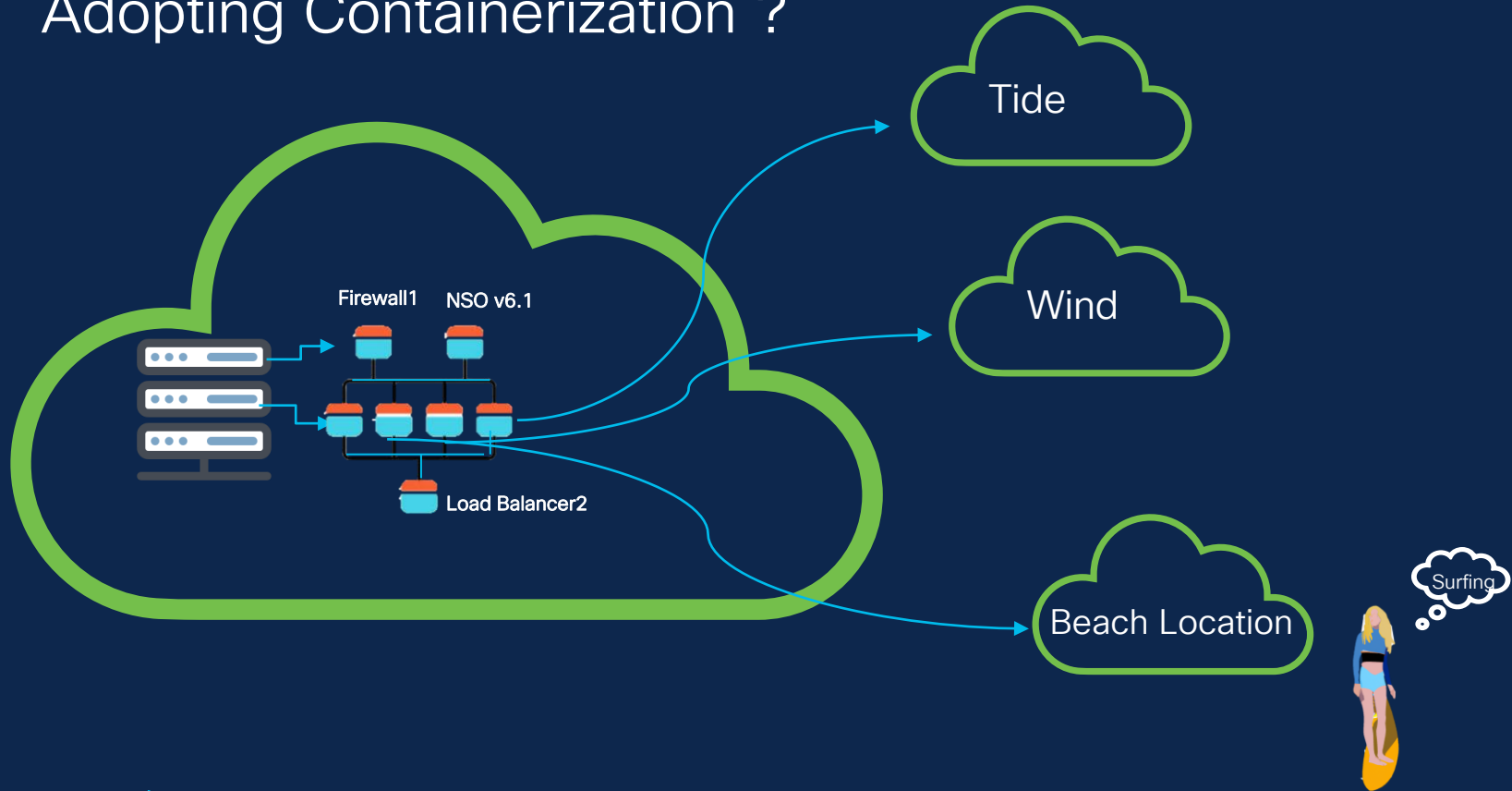
Instructor Training Center



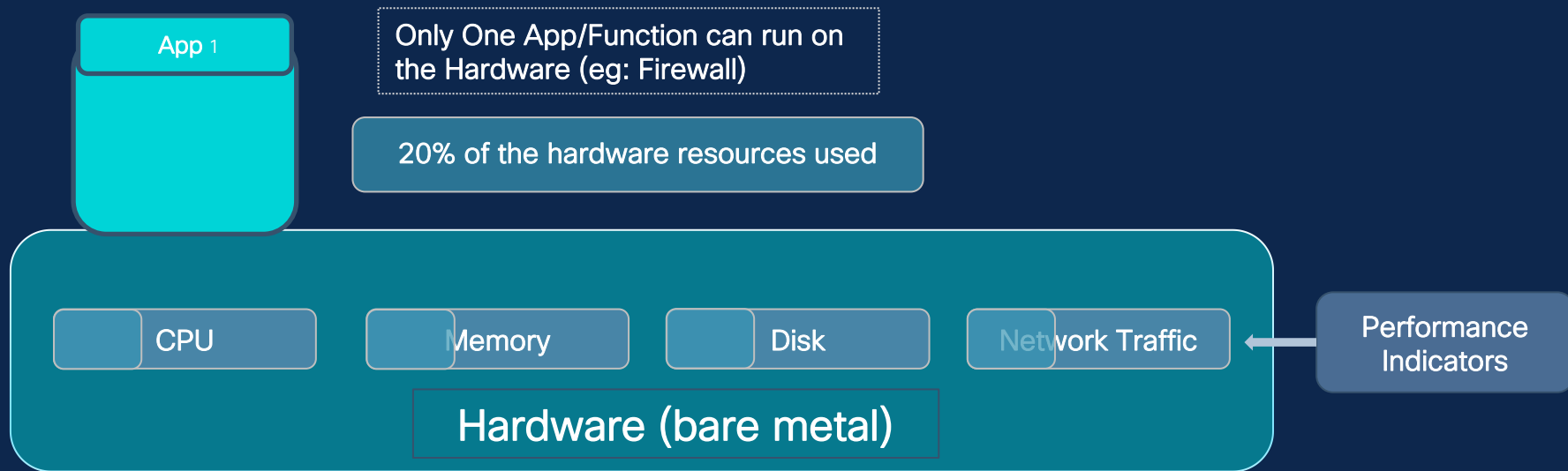
Why think about containerization of Apps?



Why Leading Companies Are Adopting Containerization ?

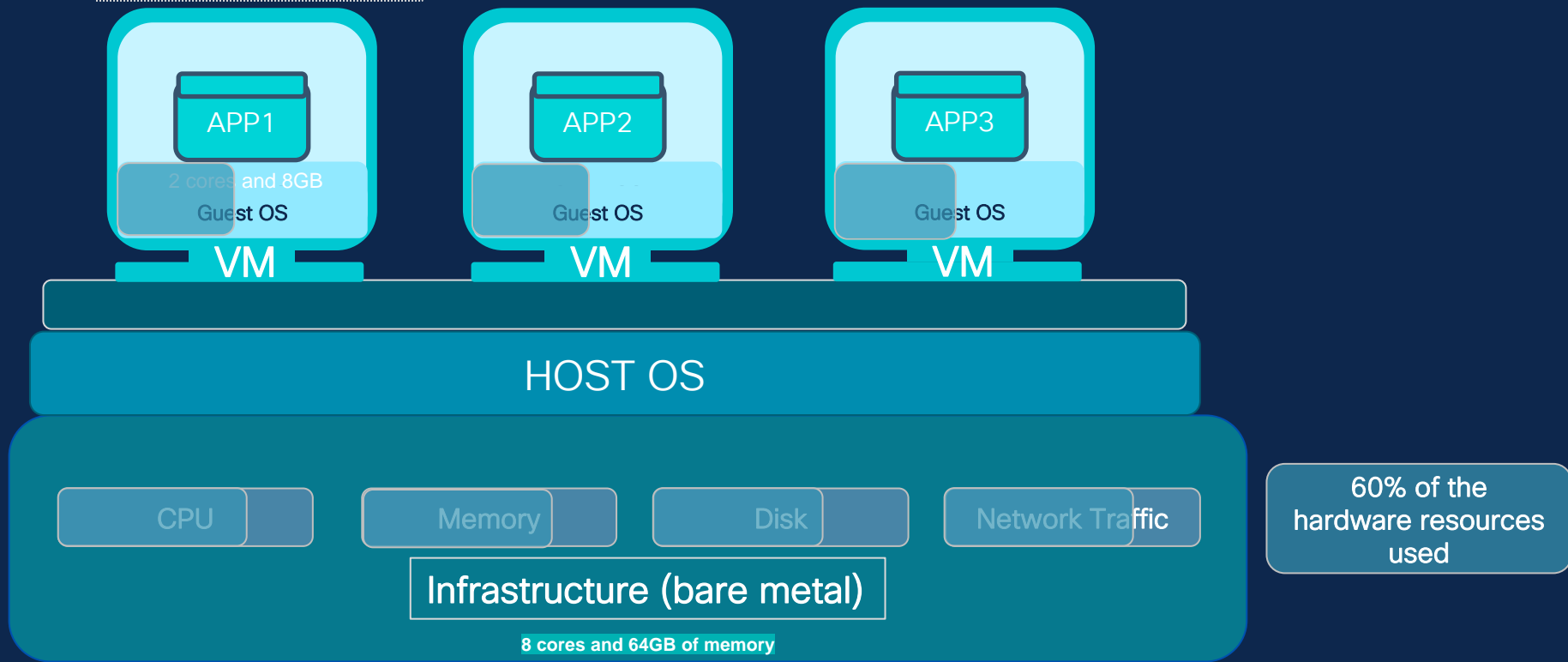


Memory Lane : Application on Hardware Days ...



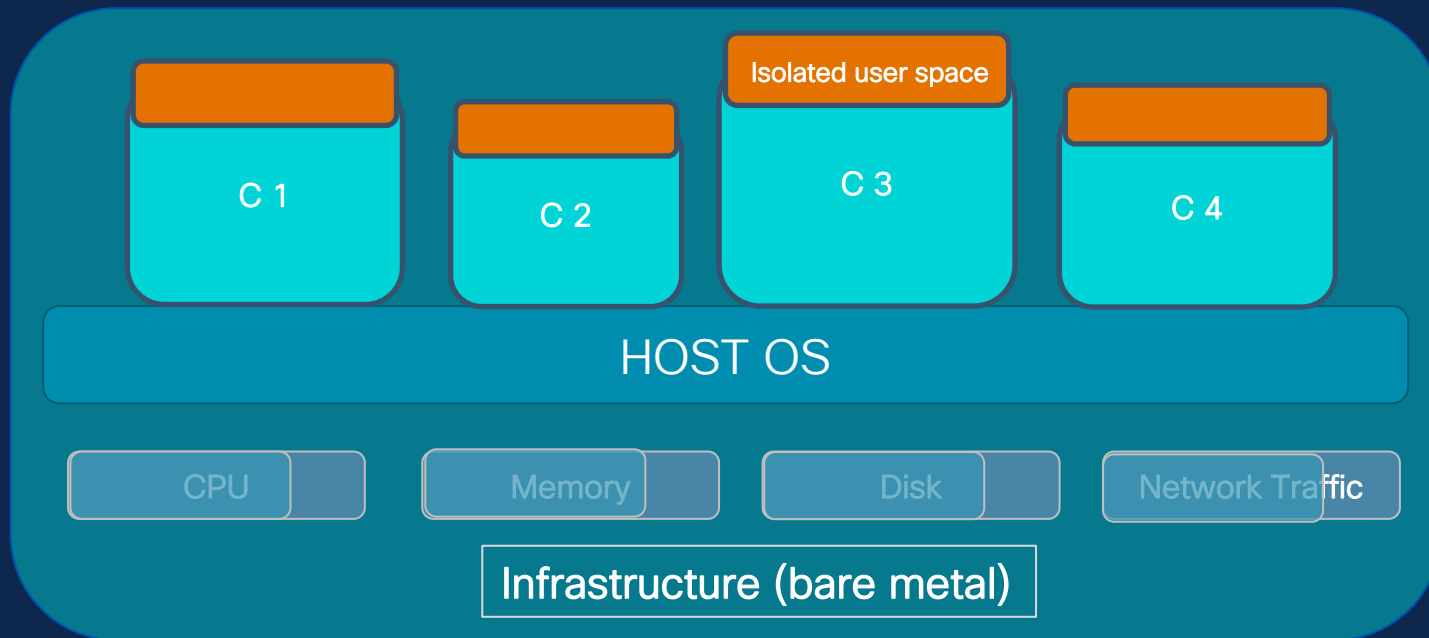
Memory Lane : Application on Virtual Machine

1 App/Function can run on one VM



Memory Lane : Containers on BareMetal

The Hardware can now run many Applications/Functions



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

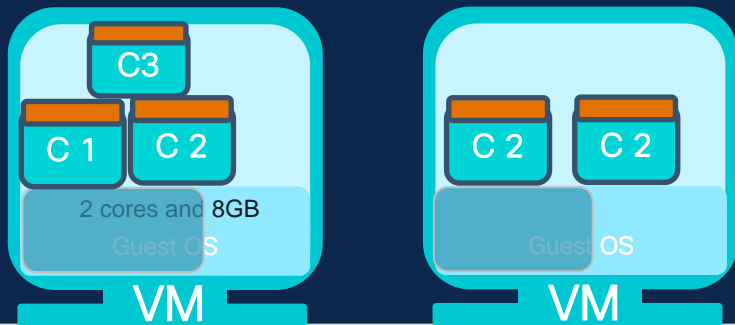
80% of the hardware resources used

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

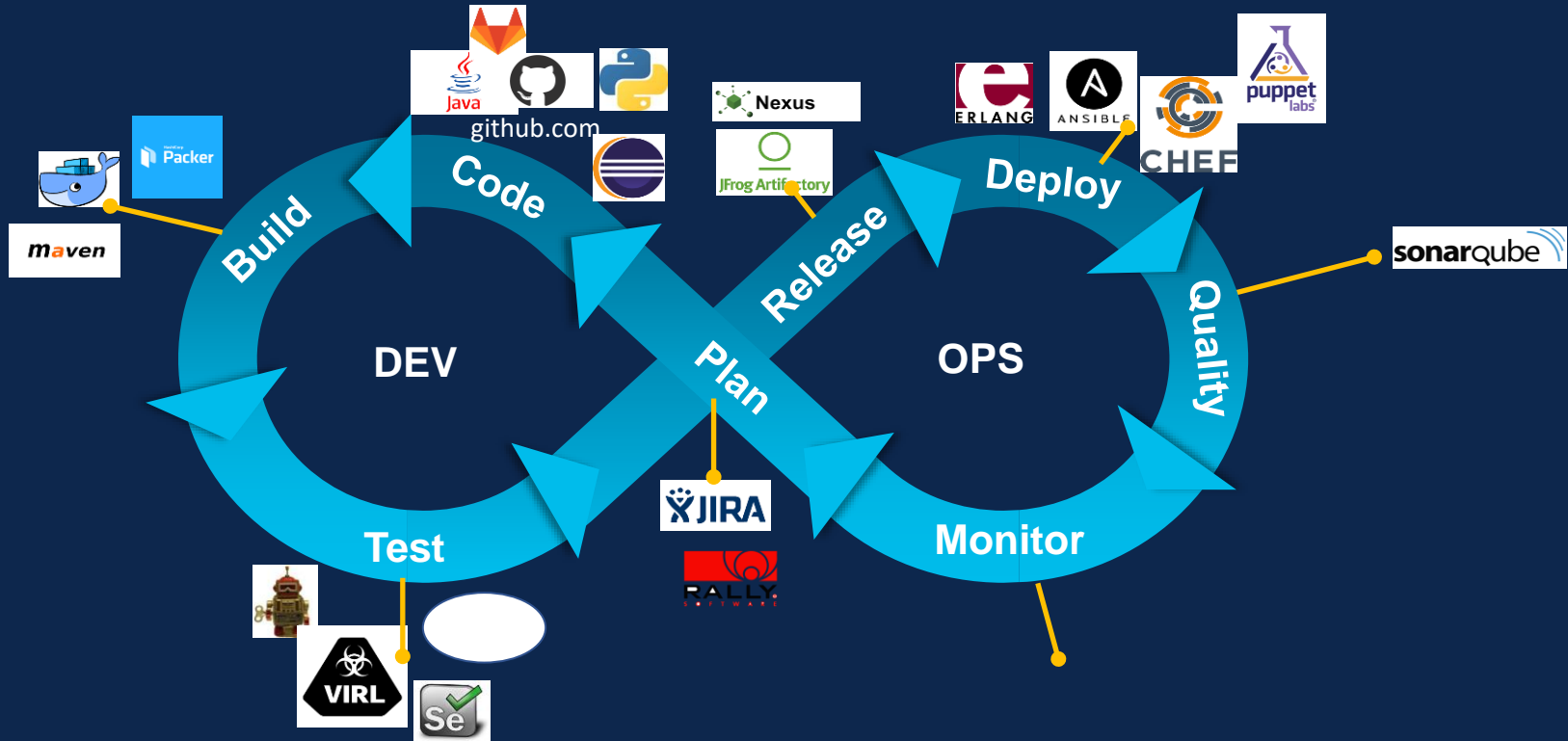
Network Traffic

hardware resources
used less than 4 VMs

Infrastructure (bare metal)

8 cores and 64GB of memory

DevOps Race Track



Automation Use Cases Examples

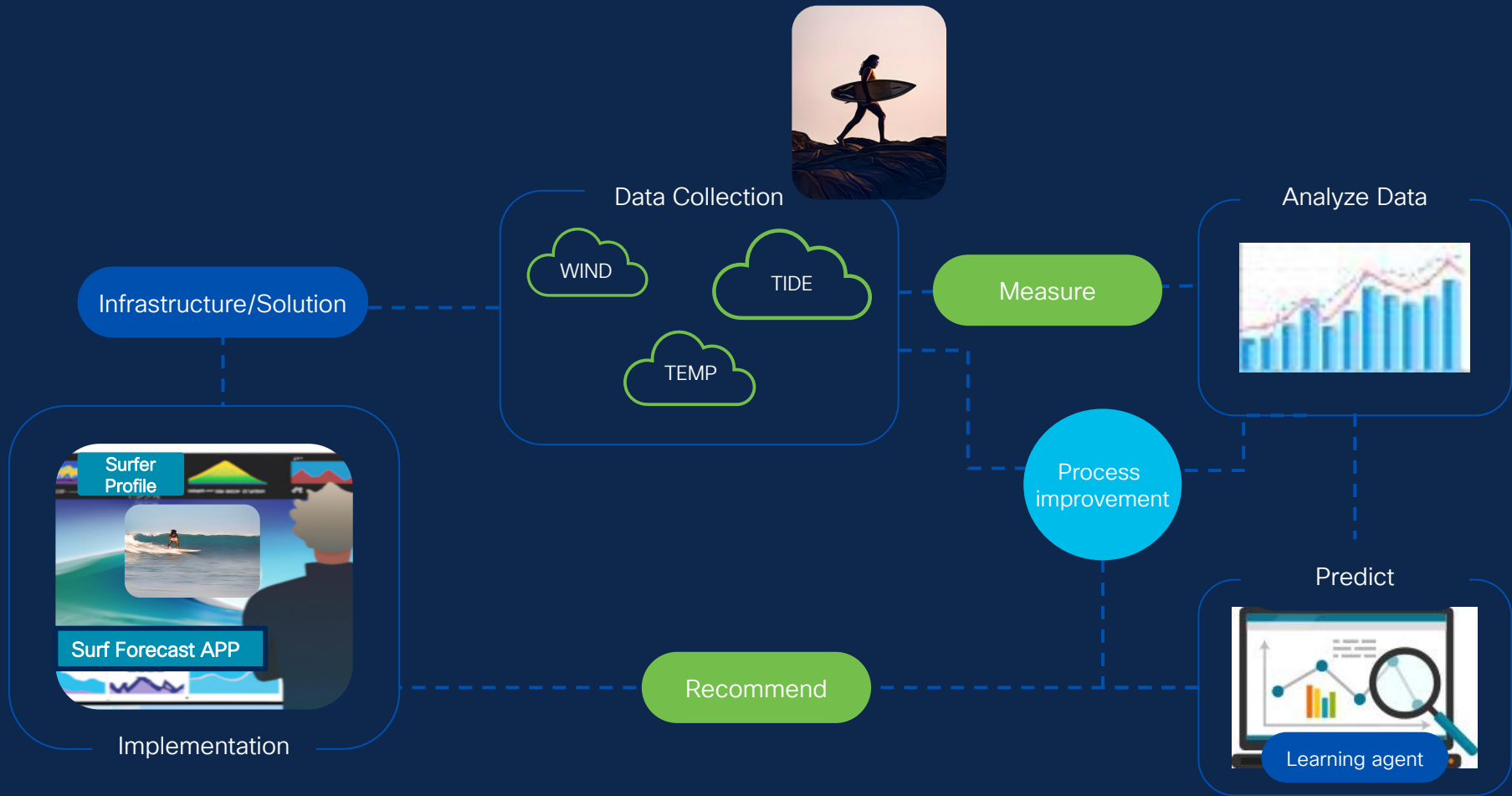
ZERO TOUCH
PROVISIONING

AUTO CAPACITY
MANAGEMENT

CELL SITE MIGRATION
& PROVISIONING

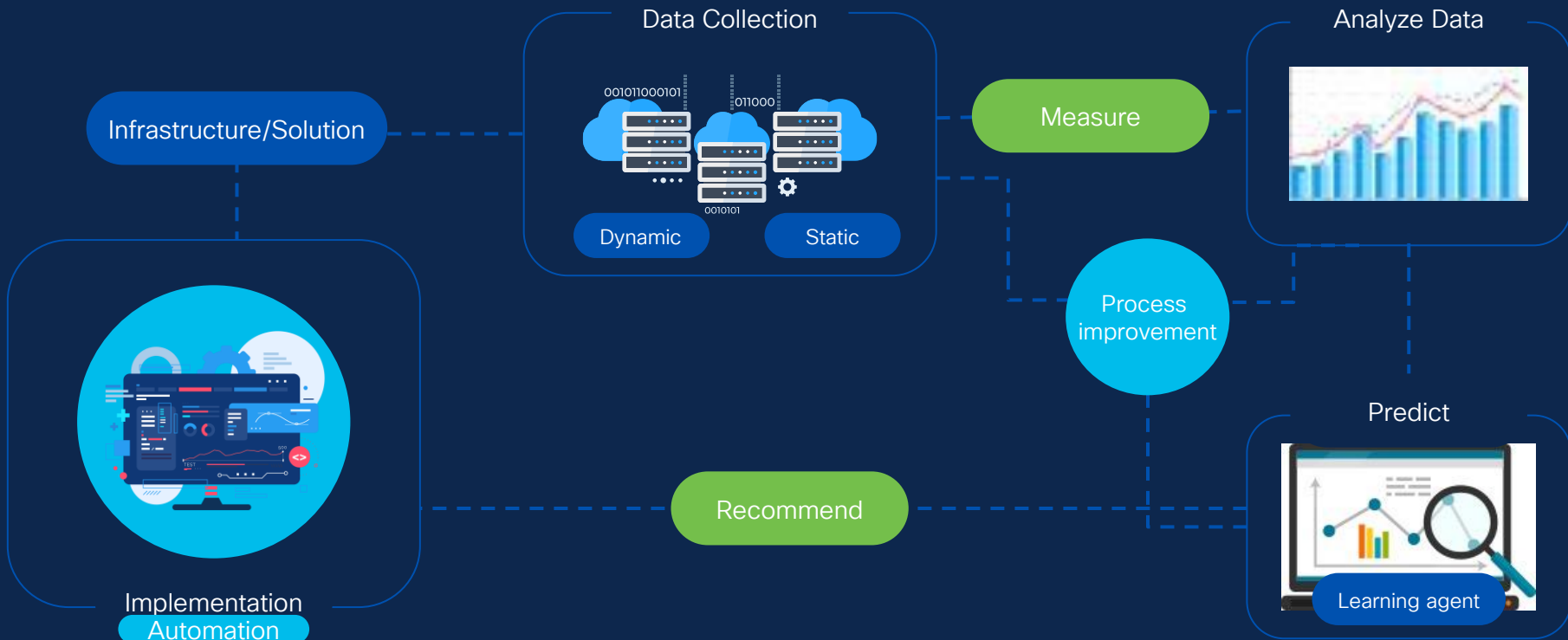
DEVICE & TRAFFIC
OPTIMIZATION

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?

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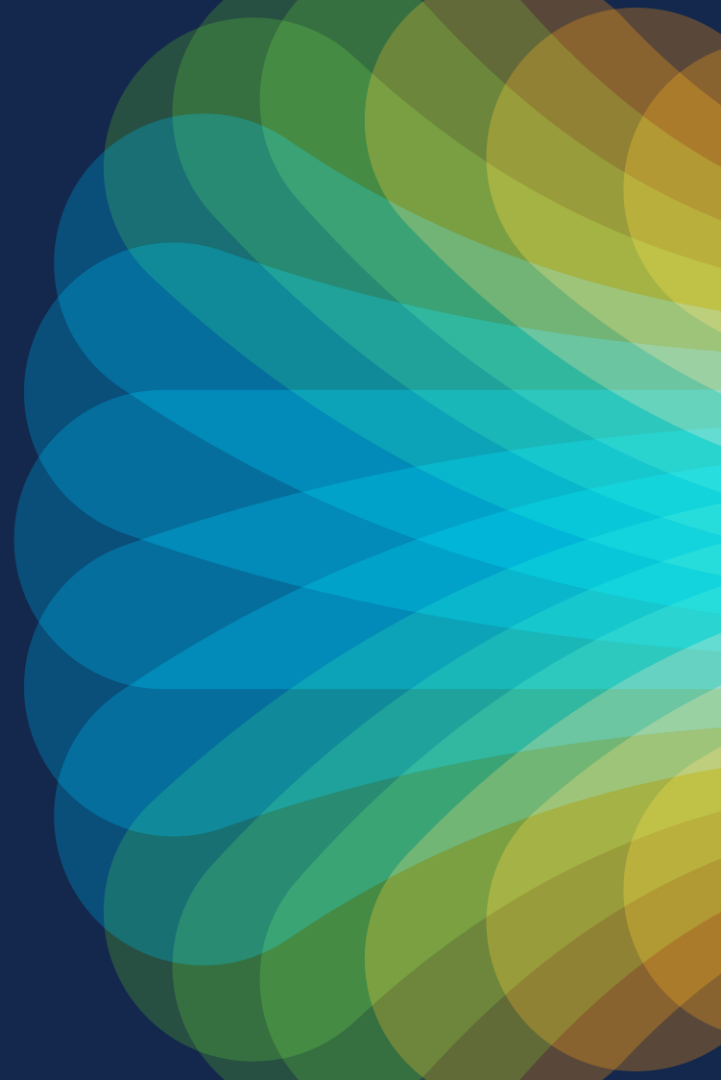


The bridge to possible

Thank you

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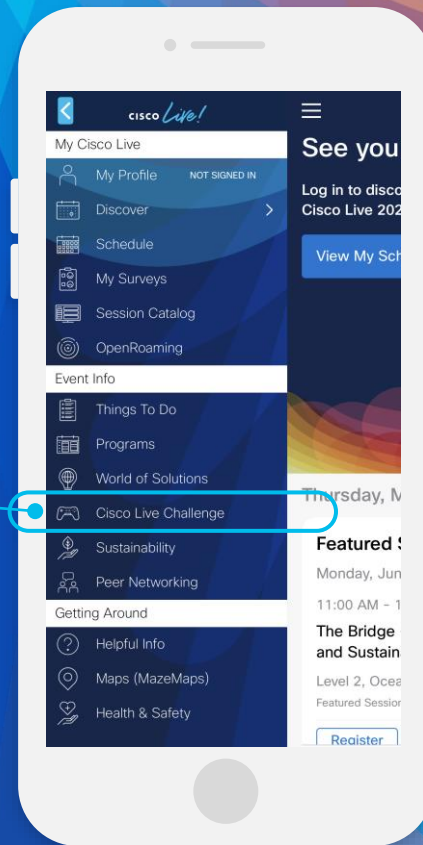


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