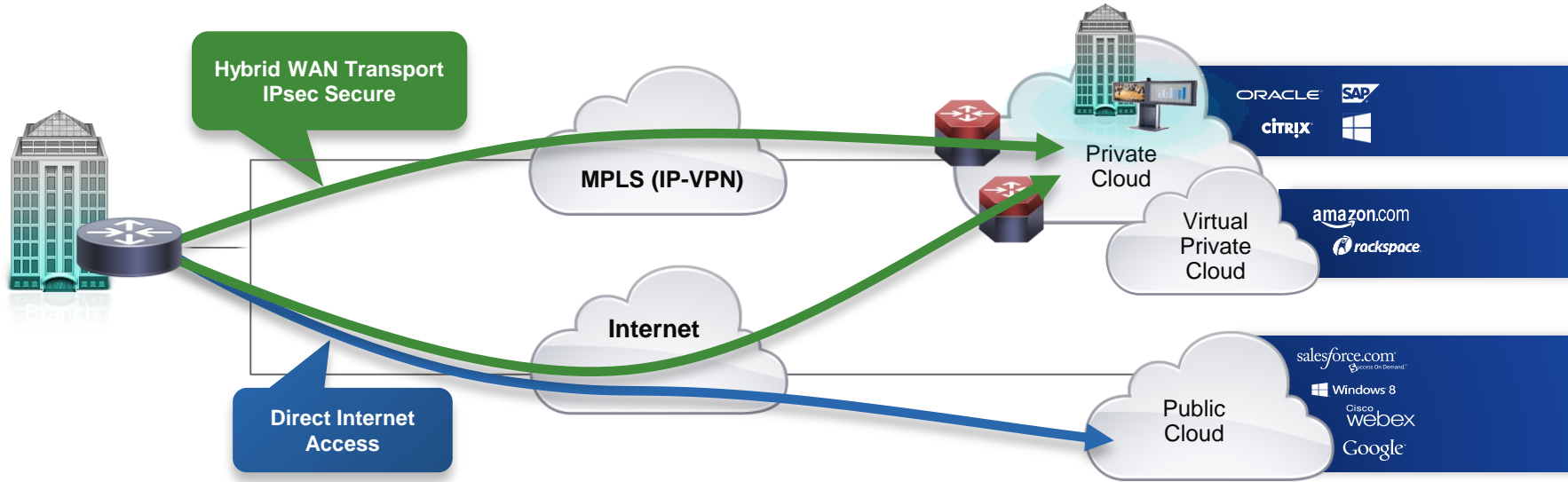# IWAN Application for the APIC-EM Controller

Pedro Leonardo – Product Management Network Transformation
September 2015

Agenda

1. Intelligent WAN recap

2. Deploying IWAN using Plug and Play

3. Demo:

    • Visualization of branches and their status from a easy-to-manage GUI

    • Define path control and priorities for application per business needs

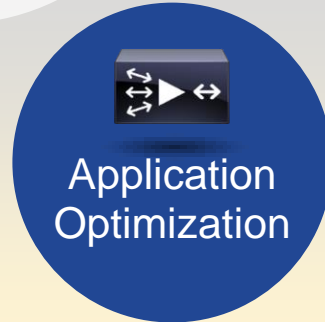# Intelligent WAN: Leveraging the Internet
Secure WAN Transport and Internet Access

Hybrid WAN Transport IPsec Secure

MPLS (IP-VPN)

Internet

Direct Internet Access

Private Cloud

Virtual Private Cloud

Public Cloud

ORACLE SAP

CITRIX Windows

amazon.com

rackspace

salesforce.com

Windows 8

Cisco WebEx

Google

- Secure WAN transport for private and virtual private cloud access
- Leverage local Internet path for public cloud and Internet access

- Increased WAN transport capacity; and cost effectively!
- Improve application performance (right flows to right places)
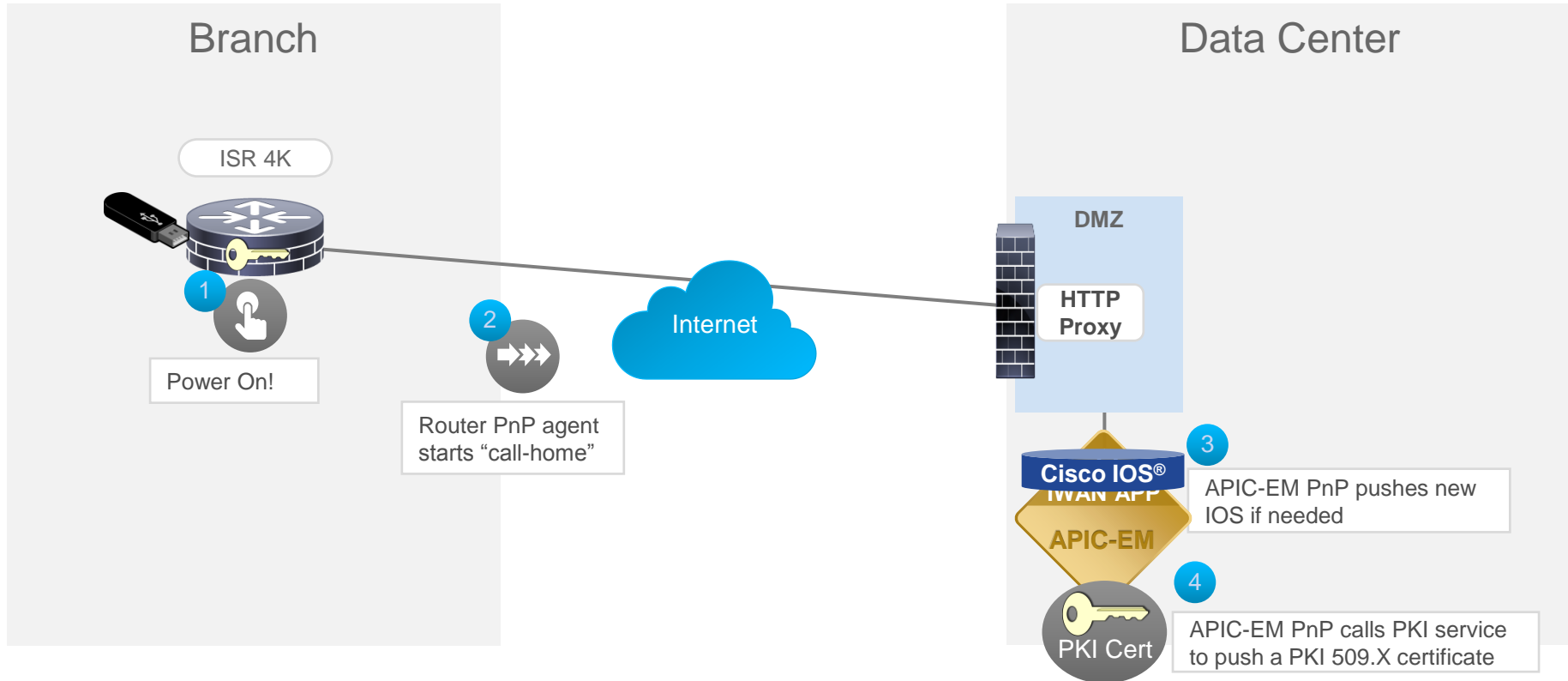
SD-WAN Done Right – Cisco Intelligent WAN

IWAN APP

APIC-EM

Policy-Based
Controller

Transport
Independence

Intelligent
Path Control

Application
Optimization

Secure
Connectivity

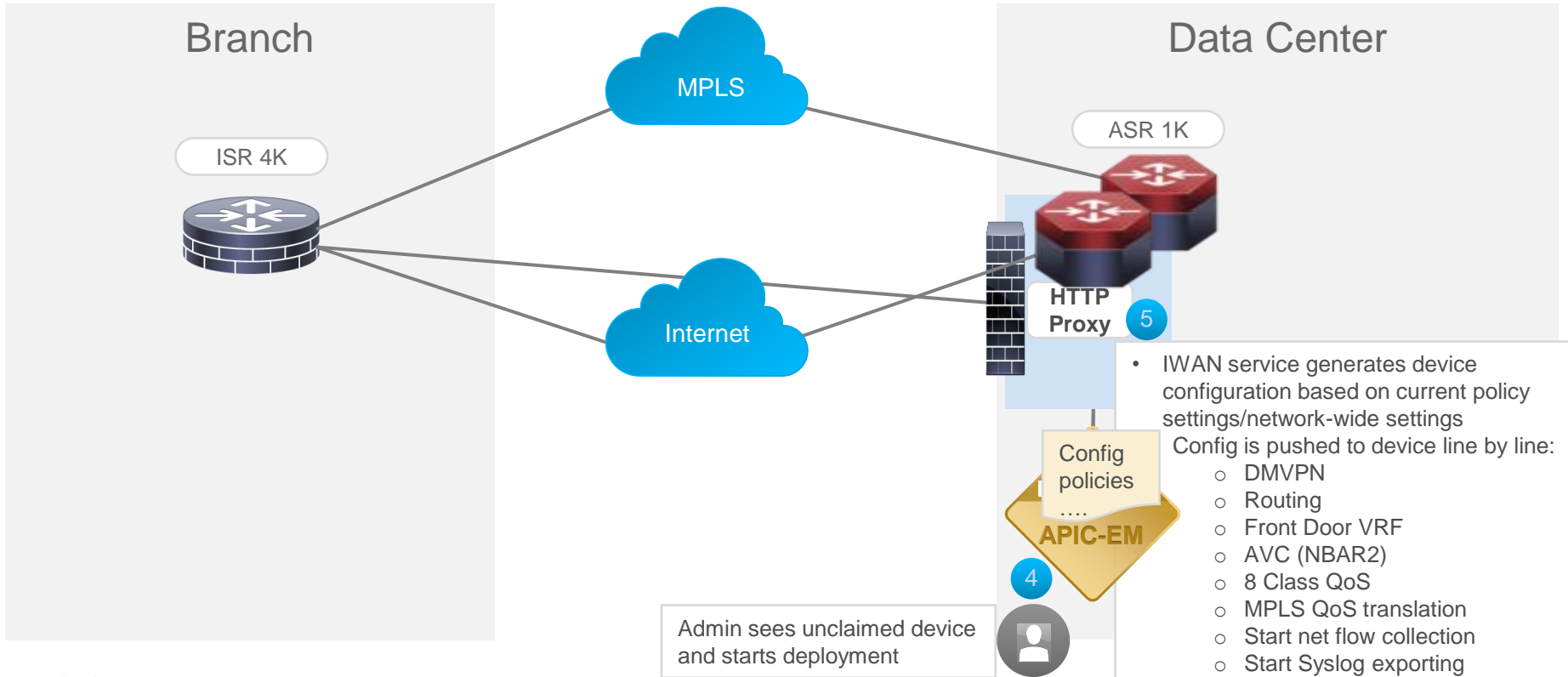# Deploying IWAN sites with Plug and Play

- Connect Internet and MPLS cables
- Insert PnP bootstrap USB stick
- Power up ISR 4K

- Network wide settings have been defined
- Datacenter has been configured
- Application policies have been set

Branch

Data Center

ISR 4K

DMZ

HTTP Proxy

1

Power On!

2

Internet

Router PnP agent starts "call-home"

Cisco IOS®

IWAN APP

APIC-EM

3

APIC-EM PnP pushes new IOS if needed

4

PKI Cert

APIC-EM PnP calls PKI service to push a PKI 509.X certificate

- IWAN config is applied
- Hybrid WAN tunnel come up

- Controller generates IWAN config
- Controller pushes config to device

Branch

Data Center

MPLS

ISR 4K

ASR 1K

Internet

HTTP Proxy 5

Config policies ….

APIC-EM

4

Admin sees unclaimed device and starts deployment

- IWAN service generates device configuration based on current policy settings/network-wide settings
  Config is pushed to device line by line:
  - DMVPN
  - Routing
  - Front Door VRF
  - AVC (NBAR2)
  - 8 Class QoS
  - MPLS QoS translation
  - Start net flow collection
  - Start Syslog exporting

cisco

Demo

CISCO

Typical IWAN App deployment topology

Datacenter (POP) Aggregation
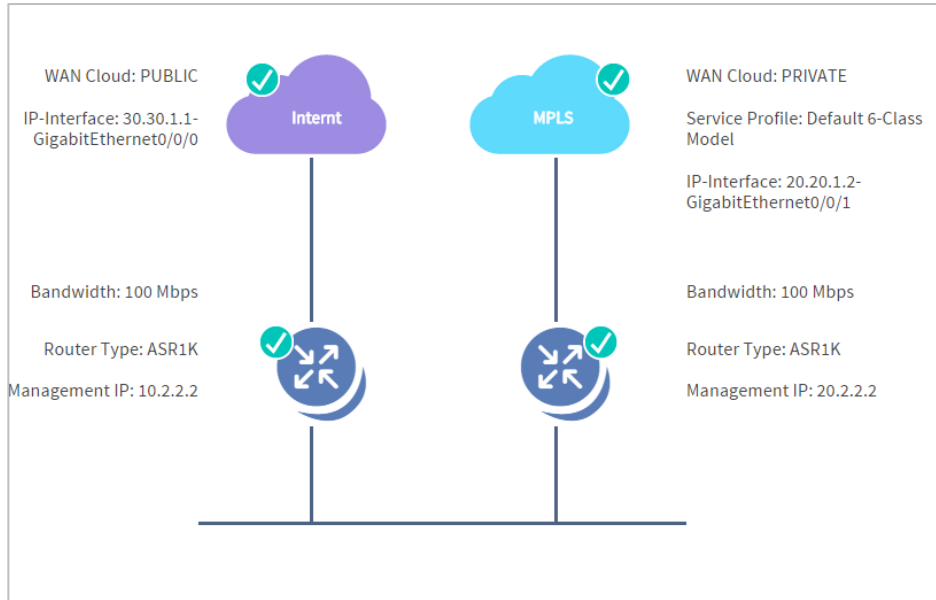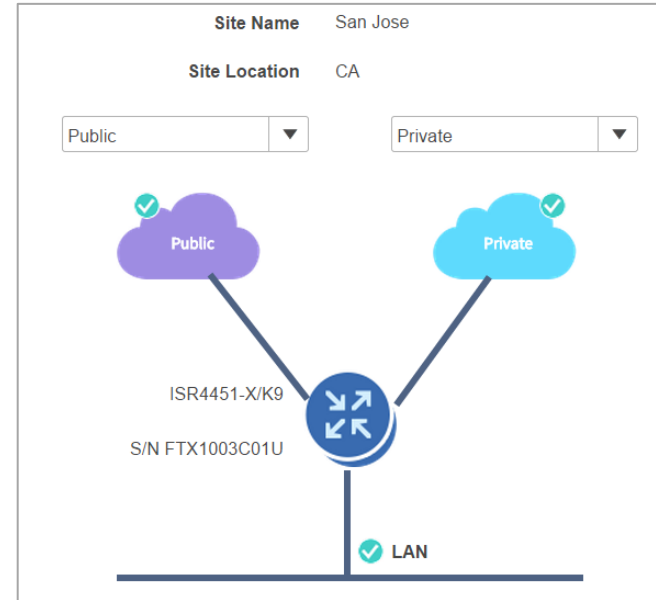
WAN Cloud: PUBLIC

IP-Interface: 30.30.1.1-
GigabitEthernet0/0/0

WAN Cloud: PRIVATE

Service Profile: Default 6-Class
Model

IP-Interface: 20.20.1.2-
GigabitEthernet0/0/1

Bandwidth: 100 Mbps

Bandwidth: 100 Mbps

Router Type: ASR1K

Management IP: 10.2.2.2

Router Type: ASR1K

Management IP: 20.2.2.2

Internt

MPLS

Branch – Dual Links

| Site Name | San Jose |
| Site Location | CA |

Public ▼   Private ▼

Public

Private

ISR4451-X/K9

S/N FTX1003C01U

✓ LAN

CISCO

APIC - Enterprise Module

CISCO

Hi, admin

Network wide settings

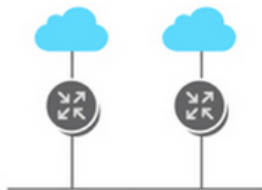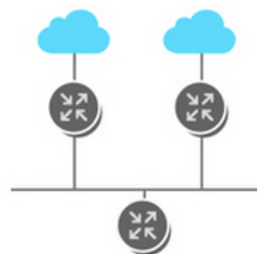| System | IP Address Pools | Service Providers | IWAN aggregation site | Certified IOS releases | Apply Changes |

Select Topology

Configure Hub Site

Select Topology

Routers with no External Master Controller

Routers with External Master Controller

Previous   Next

I wish this page would..

Set your aggregation ASR1Ks

Network wide settings

| System | IP Address Pools | Service Providers | IWAN aggregation site | Certified IOS releases |

Apply Changes

Select Hub Configuration

WAN Cloud: PUBLIC

IP-Interface: 20.20.1.2-GigabitEthernet0/0/1

Internt

MPLS

WAN Cloud: PUBLIC

IP-Interface: 30.30.1.1-GigabitEthernet0/0/0

Bandwidth: 500 Mbps

Router Type: ASR1K

Management IP: 10.22.1.2

Bandwidth: 100 Mbps

Router Type: ASR1K

Management IP: 10.43.2.2

Previous   Next

I wish this page would..

Deploy a site – chose topology

APIC - Enterprise Module

API

Hi, admin

Provisioning Site

Site

Apply Changes

Configure WAN Clouds

- ✓ Select Topology
- ✓ Edit site name and loca...
- ● Configure WAN Clouds
- ● Configure LAN
- ● Site Summary

Site Name San Diego

Site Location UNKNOWN   Set Geo

mpls ▼   int ▼

✓ Private   ✓ Public

Type: ISR4431-X/K9
Serial Number: S/N ADC9884R98H
Host Name: San_Diego_6506_3

⊕ LAN

Previous   Next

💬 I wish this page would..

APIC - Enterprise Module

API
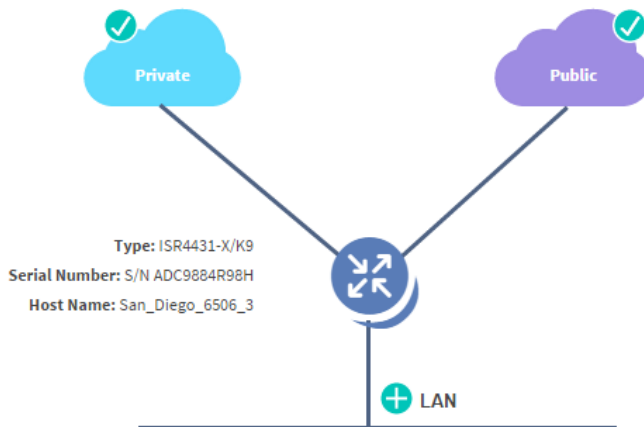
Hi, admin

Application Policy

Categorize Applications

other	98
consumer_apps	58
file-sharing	35
business-and-product...	33
voice-and-video	30

Top 5 Application Categories

Define Application Policy

Scavenger   Business Critical   Default
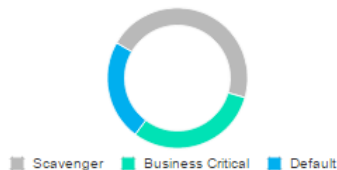
Apply Changes

Add Application

Search Apps

Add Application   ⊗

* Name   MyCustomApp1

Type   ○ URL   ● Server IP/Port   ○ DSCP

Protocol   ● UDP   ○ TCP

* Value   172.3.2.1

* Similar to App   citrix   ▼

* Category   file-sharing   ▼

Jitter   1

Packet loss   2

Delay   50

Add   **Cancel**

backup-and-storage

database

instant-messaging

voice-and-video

business-and-productivity-tools	33	...
file-sharing	35	...
social-networking	8	...

consumer_apps	58	...
gaming	13	...
software-updates	7	...

Page loaded in 1020ms

I wish this page would..

Application priority policy setting in IWAN app
- Path Preference
- Drag & Drop business buckets

APIC - Enterprise Module

API

Hi, admin

Categorize Applications

consumer_apps ▬▬▬▬▬▬▬ 48
voice-and-video... ▬▬▬▬▬ 28
business-and-pr... ▬▬▬ 18
other ▬▬▬ 17
file-sharing ▬▬ 12

Top 5 Application Categories

Define Application Policy

■ Business Critical ■ Scavenger ■ Default

Apply Changes

Business Critical

business-and-prod...   ☁ mpls ▼
email   ☁ mpls ▼
software-updates   ☁ mpls ▼
voice-and-video   ☁ mpls ▼
database   ☁ mpls ▼
file-sharing   ☁ mpls ▼
browsing   ☁ mpls ▼
backup-and-storage   ☁ mpls ▼

Scavenger

gaming   No App Performance ▼
consumer_apps   No App Performance ▼
instant-messaging   No App Performance ▼
social-networking   No App Performance ▼

Application Performance ⬤
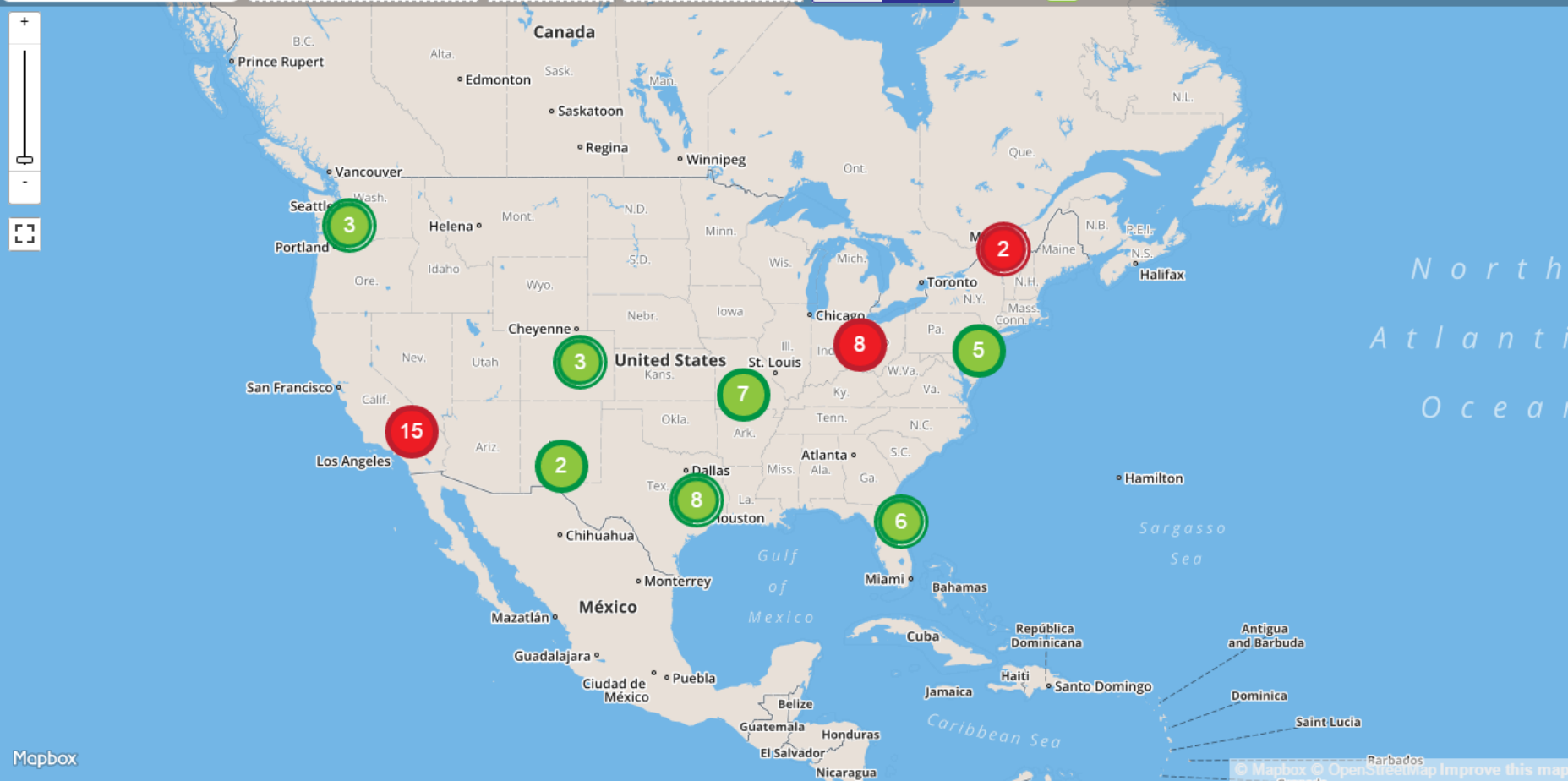○ No path preference
⦿ Path Preference
Path 1   inet ▼
Path 2   mpls ▼
                  mpls
Save   Drop

Default

other 🔒   No App Performance ▼

Page loaded in 31ms

💬 I wish this page would..

CISCO

APIC - Enterprise Module

API

Hi, admin

Search by Site Name...

🏢 25 Sites 🏢 34 Sites 🏢 HUB Site 5 Unmapped Sites

☰ List 📍 Map

Edit Mode Off

Mapbox

© Mapbox © OpenStreetMap Improve this map

Page loaded in 515ms

💬 I wish this page would..

APIC - Enterprise Module

Hi, admin

Search by Site Name...

13 Sites | HUB Site | 5 Unmapped Sites | List | Map | Edit Mode | Off

API

Site Name : San Diego
Site Location : San Diego
Status : Up

WAN Cloud : int
Bandwidth(Mbps) : 78
CE IP Address : 1.1.1.2
CE IP Address : 1.1.1.1

Private

Public

WAN Cloud : mpls
Bandwidth(Mbps) : 300

Type : ISR4451
Serial Number : S/N FTX1003C01U
Host Name : San_Diego_2951_1

LAN

Riverton
Casper
Medford
Twin Falls
Pocatello
Scottsbluff
Ogden
Green River
Cheyenne
Sidney
Denver
Colorado
Colorado Springs
Pueblo
Lamar
Gunnison
Trinidad
Santa Fe
Albuquerque
New Mexico
Socorro
Clovis
Alamogordo
Carlsbad
Deming
El Paso
Odessa
San Diego
Phoenix
Mesa
Tucson
Yuma
Ensenada

Mapbox

US 385

Page loaded in 515ms

I wish this page would..