



Cisco DNA

Digital Network Architecture

Rui Brás Fernandes
rbrasfer@cisco.com



<https://twitter.com/rbrasfer>



<https://pt.linkedin.com/in/ruibrasfernandes>

Cisco Vision and Strategy



Vision

Change the way the world works, lives, plays, and learns



Strategy

We create solutions built on intelligent networks that solve our customers' challenges

Digital Transformation Is Moving IT to the Boardroom

UPS

UPS My Choice
Delivery Control
Personalized Service

Boeing

Workforce Efficiency
WIP Inventory and
Part Tracking

Starbucks

Starbucks Apps
Order Ahead
Skip the Line

Louis Vuitton

Customer Experience
Physical and Virtual
RFID Content

American Express

American Express
Personalized Service
Through Mobile

...And Creating New Priorities for Digital Organization



Transform Processes
and Business Models

Innovations
Faster Time to Market



Empower Workforce
Efficiency and Innovation

Increased Productivity
Better Retention



Personalize Customer/
Citizen Experience

Increased Loyalty
Greater Insight

Mobility

Mobile traffic will exceed
wired traffic by 2017

IoT

IoT devices will
triple by 2020

Analytics

75% of companies planning
to or investing in big data

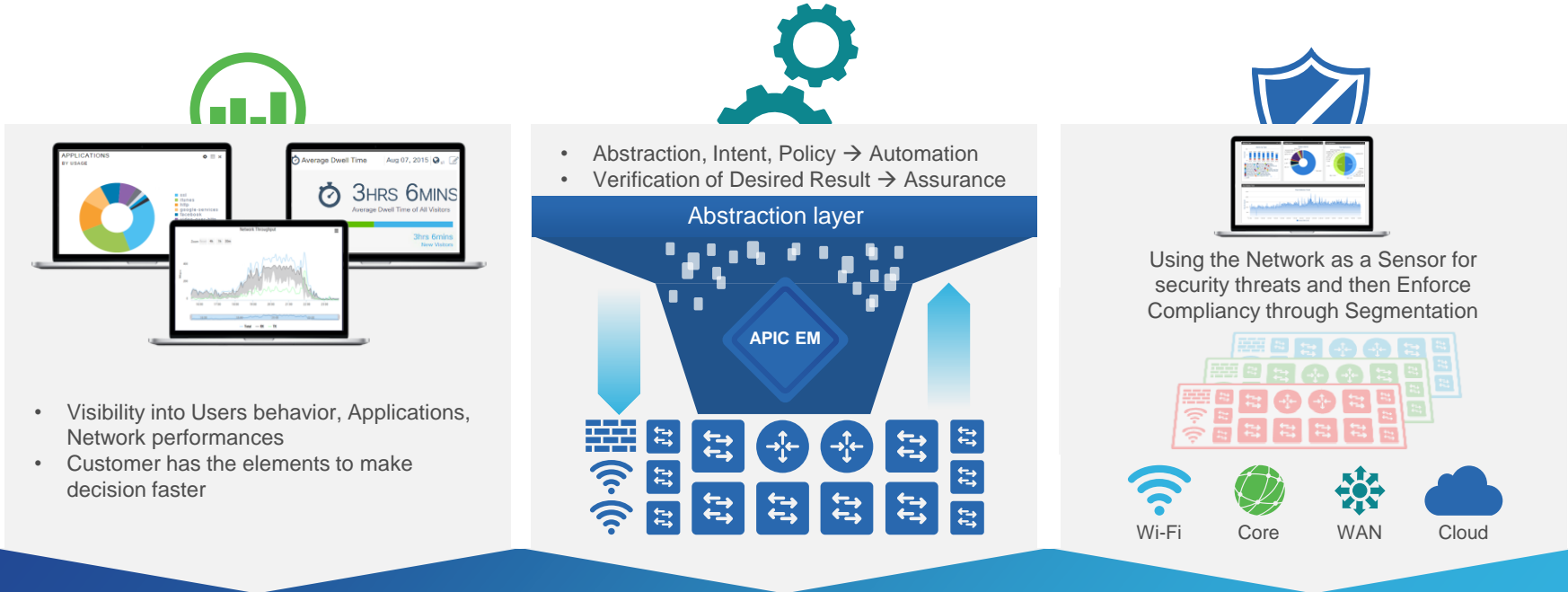
Cloud

80% of organizations will
primarily use SaaS by 2018

A New Infrastructure for the Digital Organization



Network Requirements for the Digital Organization



Drive Business
Innovations

Speed, Simplicity
& Visibility

Real-time and Dynamic
Threat Defense

Evolution of Networking Software

How do I deliver new **applications**?

How do I improve **security**?

How do I achieve **speed and simplicity**?

How do I learn **new software skills**?

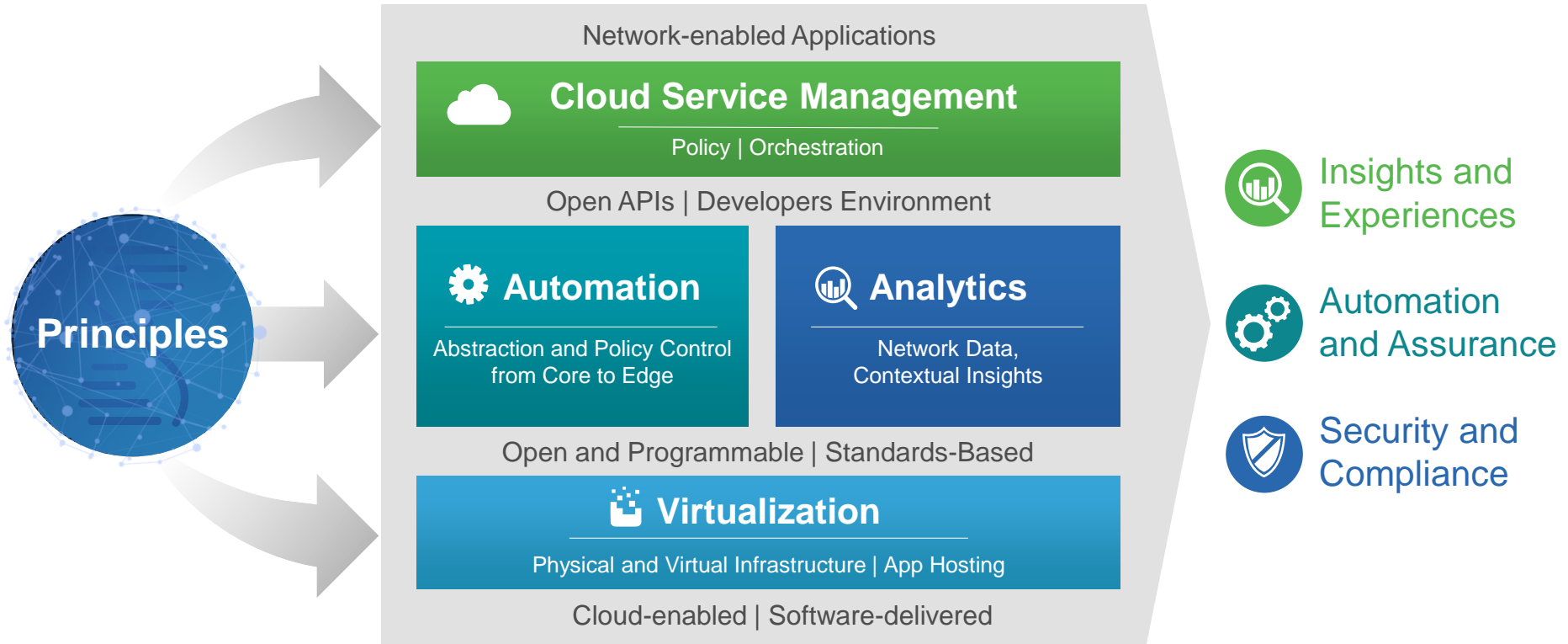
How does this **come together**?



Cisco® Digital Network Architecture

Open | Extensible | Software-driven

Cisco Digital Network Architecture



Building on a Strong Foundation of Hardware and Software Innovation

QFP QuantumFlow Processor



Advanced, Multi-Core, Feature-Rich **Routing Silicon**

Fully Programmable: leveraging the many features of IOS-XE with hardware performance

Scalable: Massive number of CPU cores (40/64), ability to cascade multiple QFPs = consistent high performance

Advanced on-chip QoS: 100,000+ hardware-based queues, sophisticated traffic shaping and control

Secure: linkage to high-performance crypto capability for secure WAN transport

Extensible Architecture: ability to scale both up and down—the foundation for a long-lived family of high-performance, flexible routing silicon



IOS-XE The Evolution of IOS

Taking the Proven Strengths of **IOS to the Next Level**

Operational and Services Uniformity: Routing, Switching, and Wireless consistency

New Foundational Capabilities: HA and operational leadership, state decoupling, net database...

Speed of Innovation Velocity: “Code once and Re-use Many” across multiple places in the network

Foundation for Virtualization: providing for network hosting and integration of virtualized functions (VNFs, containers)

Platform for the Future: the “software stage” for the next wave of Cisco innovation...

UADP Unified Access Data Plane



Flexible, Programmable, High-Performance **Switching Silicon**

Fully Programmable: excellent flexibility, ability to handle new encaps (VXLAN, GPE, etc.)—hardware speed, software elasticity

Scalable: Massive recirculation bandwidth and low recirculation latency provide excellent tunneling and services support for traffic flows

Advanced on-chip QoS: client-level granularity, sophisticated bandwidth shaping, with integrated on-chip NetFlow for visibility

Secure: integrated on-chip support for MACsec encryption (AES-128, CBC)

Extensible Architecture: ability to scale both up and down—the foundation for a long-lived family of high-performance, flexible switching silicon

“People that are really serious about software should build their own hardware”
100% Cisco-developed programmable silicon: unlocking the power of DNA at hardware speeds

Evolution to a Policy Model

- Express **Business Intent**
- **Translate** into device specific policy/configuration
- **Leverage Abstraction** (the controller knows about the device specifics)
- **Automate the Deployment** across the Network
- **Insure Fidelity to the Expressed Intent** (keep everything in sync)



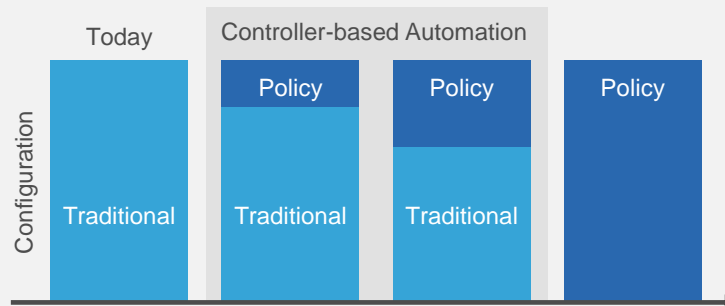
Automation
Controller-Led
Networking Deployment

De-coupling of
User Identity and Topology

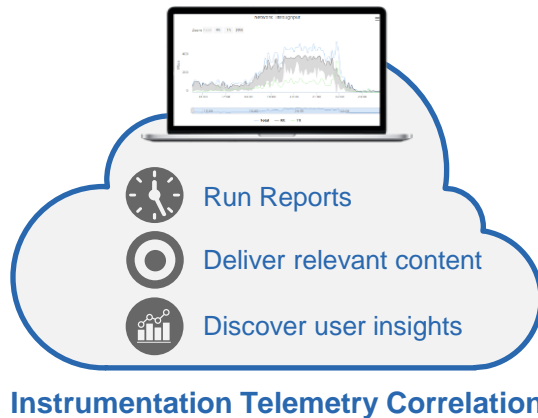
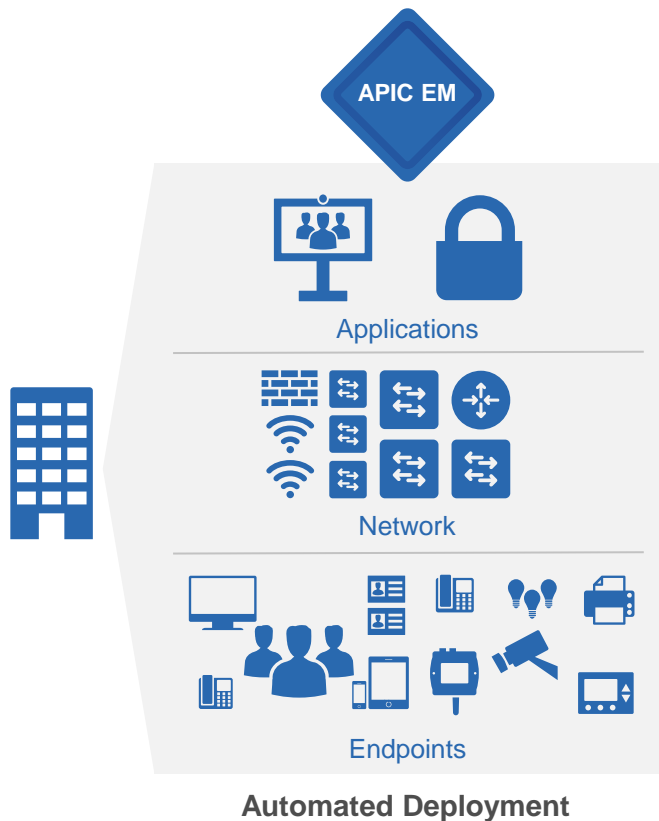
Much easier to translate **business objectives** to network functionality—
Lowers TCO

**User policy based on user identity
and user-to-group mapping**

Policy based Configuration—
Dynamic, able to be **automated** by the Controller
Over time—Policy grows, static shrinks



Deploy, Report, Measure, Adjust, Repeat



Measure and Adjust
Click here to Correct
Always Correct this way
(and never ask me again)

Open Device Programmability



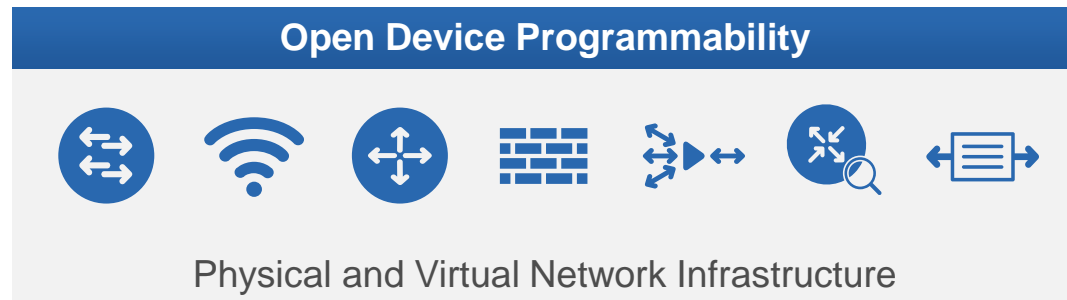
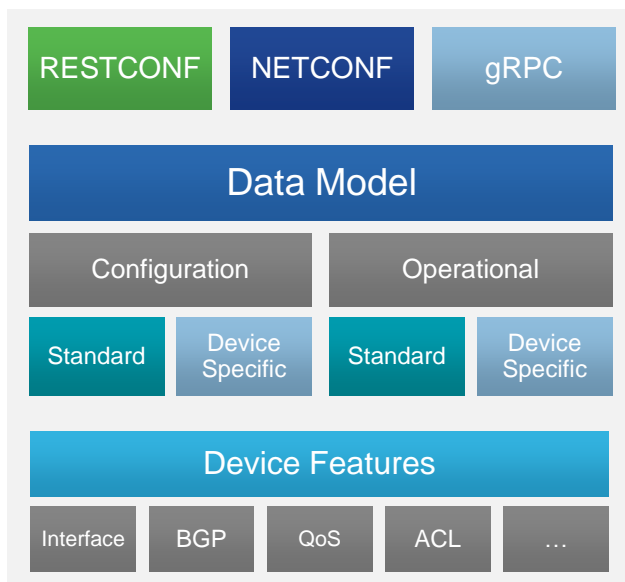
Set



Get



Automate



OpenConfig



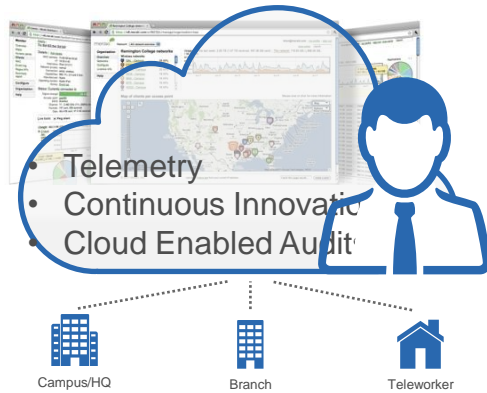
Other vendors...



Cloud Enabled Networking

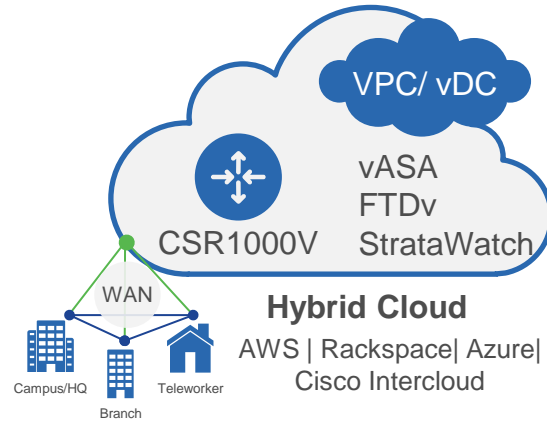
Cloud Connected

Simplicity | Speed



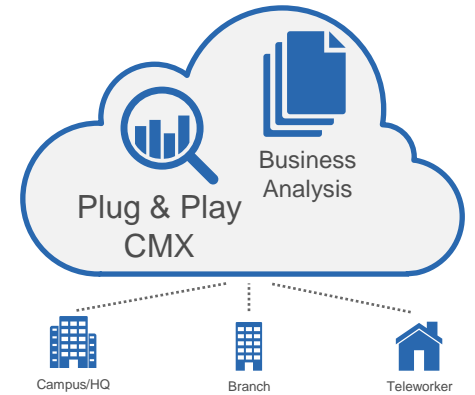
Cloud Edge

IaaS Scale | Flexibility



Cloud Delivered

Innovation | Insights



What's New: Cisco DNA Innovations



APIC-EM Automation Platform

Completely New Platform

Available Now

Base Automation: **Plug and Play**

Available Now

Cloud version Controlled Availability, May 2016

Policy Services: **IWAN App** & **EasyQoS**

Available Now | March 2016, respectively



Enterprise NFV

Branch Service Virtualization

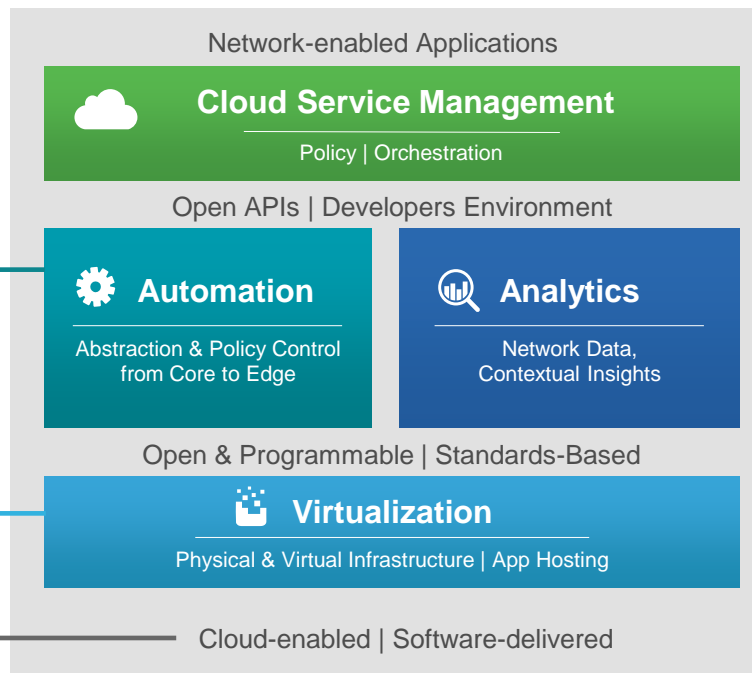
Controlled Availability, March 2016



CMX Cloud

Presence Analytics and Connect

Available Now in US, April 2016 for ROW



Available on DNA-Ready Infrastructure through Cisco ONE Software

Automation: Plug and Play



PnP Available Now
PnP Cloud May 2016
(controlled availability)

Cloud-Based Plug and Play



Order



Plug in and
Cloud Provision



Controller-Based
Management

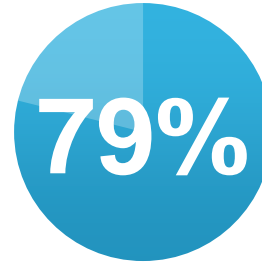
Eliminates



Staging



Truck Roll

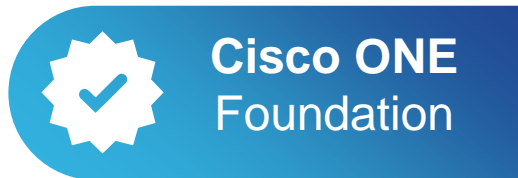


Lower
deployment
costs

“Plug and play means no more IT engineers in the field – faster time to market and dramatically lowered costs.”



Policy Service: IWAN Automation



Available Now

Optimal Branch Experience Made Easy

Simple Workflows



Zero-Touch
Rollout



Set Application
Policy



Gain Visibility
and Tune



Point and Click
Troubleshoot

IWAN Momentum

200+

deployments running up to

2500 sites

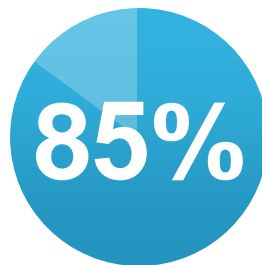


Transport-
Independent

Intelligent
Path Control

Application
Optimization

Highly Secure
Connectivity



Faster
deployments

“IWAN automation eliminates tedious configuration tasks for advanced networking features. I can configure IWAN with just 10 GUI clicks.”



Policy Service: EasyQoS

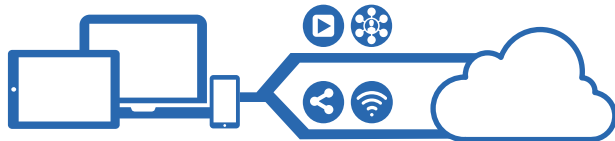


March 2016
General Availability in
Cisco ONE May 2016

Select from
Predefined
Policies

Automated
Deployment
of QoS config

Optimized
for Any
Infrastructure



Implements QoS in 250 ms

Enhance
Collaboration
Experience

300%
Reduction in
voice jitter



50%
Video quality
improves



Improved Application Experience with No Operator Intervention

“The EasyQoS App reduces deployment times for network-wide QoS dramatically. We can now respond to changing application needs via policy-based automation within minutes or even seconds.”



Software Control: Enterprise NFV



Full Software Stack to Increase Branch Agility

Central Orchestration Management

SDN: APIC-EM with Enterprise Service Automation

Consistent, trusted network services

Virtual Network Functions (VNFs): Cisco® and Third Party

Software Intelligence over Hardware

Virtualization Layer: NFV Infrastructure Software

Freedom of Choice

Hardware: Cisco UCS® E- and C-Series | COTS



Deploy Validated Designs in **Minutes**

March 2016
Controlled Availability:
General Availability
in Cisco ONE June 2016

“Cisco’s approach to network functions virtualization (NFV) delivers the elasticity to invoke innovative capabilities in an optimal way – whenever, wherever, and with whatever capacity they are required.”



Inside Cisco Enterprise NFW



IT Agility

Run on any platform
Elastic service scale
Deploy in minutes

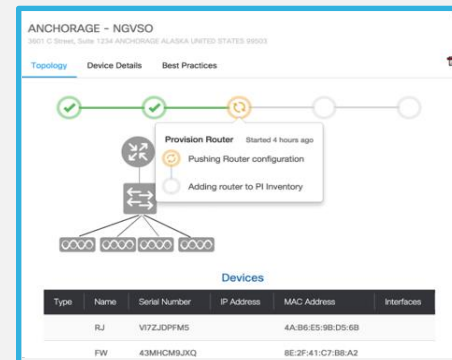
1 Select your network functions

- vRouter
- vFirewall
- vWAN optimization
- vWLAN controller
- Third-party services

2 Select your preferred infrastructure

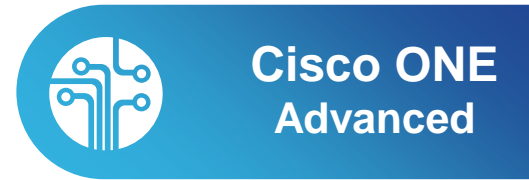
- Cisco® ISR, UCS E-Series
- Cisco UCS® C-Series
- x86 server

3 Orchestrate and automate services



APIC-EM with
Enterprise
Service
Automation

Digital Services: CMX Cloud



Customer Insights and Engagement

Presence Analytics



Zone-based location analytics



Connect

Drag-and-drop customizable portal on demand

Data on Storefront

Conversion

Frictionless

Guest Onboarding

Available now.
General Availability
in Cisco ONE June 2016

“CMX Cloud has helped us quickly gain business insights, so we can enhance the shopper experience at Santana Row with easy Wi-Fi onboarding, increased customer data, and improved customer engagement.”



Inside Cisco CMX Cloud



Cisco ONE
Advanced

- 1 Subscribe to Cisco® CMX Cloud and point to wireless infrastructure
- 2 Collect analytics on user behavior
- 3 Set up customized captive portal for guest onboarding



Gain
Insights and
Engage
Customers

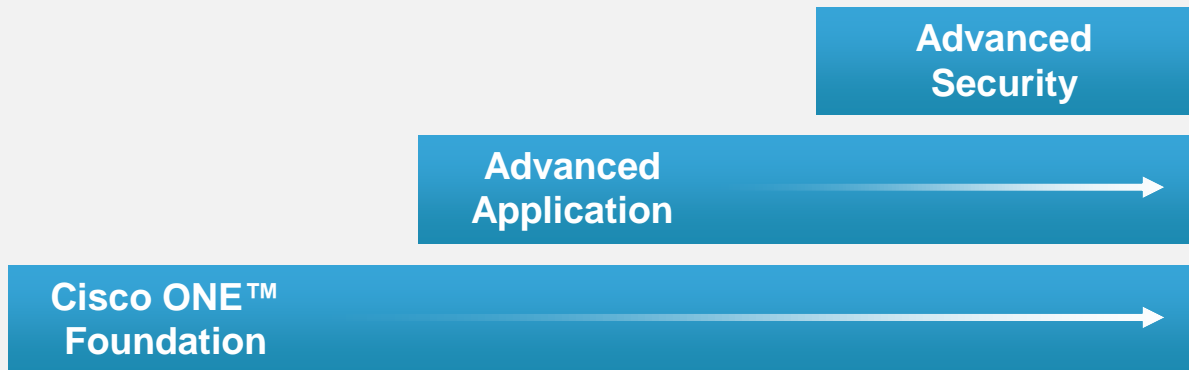
SaaS consumption
No MSE
hardware required
Deploy in less than
20 minutes

The screenshot shows the Cisco CMX Cloud interface for configuring a captive portal. The main area is titled 'NPI Example' and contains a 'Select Template' section. Two templates are visible: 'Registration Form Example' and 'Social Login Example'. The 'Registration Form Example' is selected and shown in a preview window on a mobile device. The preview shows a login form with fields for 'Email Address', 'Gender' (Male/Female), and a 'FREE TRIAL! GET STARTED' button. The interface also includes a navigation bar with 'DETECT', 'ANALYTICS', 'CONNECT & ENGAGE', 'MANAGE', and 'SYSTEM' tabs. A 'Sign' button is visible at the bottom. A list of features is shown in a callout box:

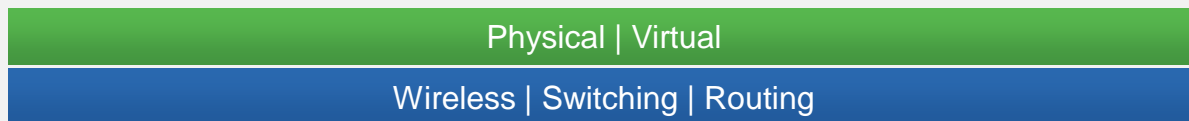
- Easy templates
- Multiple languages support
- Social logins
- Easily add logo and image
- Send relevant offers
- Capture user information

Cisco ONE Simplifies DNA Software Purchasing

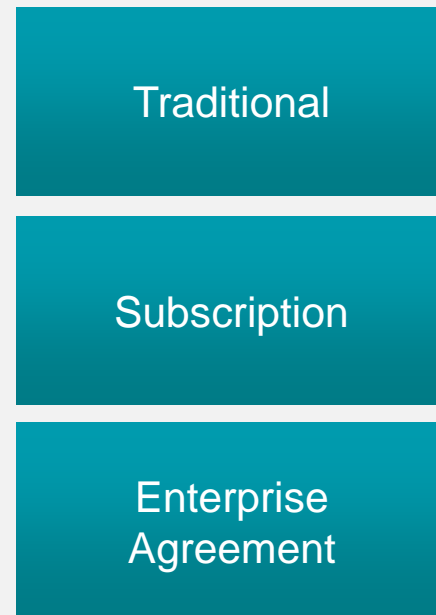
1 Select Software Capabilities



2 Select Platform



3 Select Purchasing Model



The Cisco DNA Customer Journey Starts Now



Base
Automation

Immediate value to
existing network



Policy
Services

Active control for
critical use cases:
Network, Collaboration



Advanced
Security

Network as a
Sensor and Enforcer



Complete
Software Control

End-to-end policy-
based automation



Digital
Services

Support lines of business:
analytics, IoT

Cisco ONE Foundation

Cisco ONE Adv. Applications

Cisco ONE ELA



“Ultimately, Cisco DNA is a game changer.”



“This is extremely exciting – people really want orchestration and they don't know how to get there. You are helping people think about this.”



“I'm glad you guys are going in this direction with this announcement.”

Gartner

“Enterprise NFV is innovative and exciting. Cisco is the only vendor that has the scale and size that can provide NFV to enterprises.”

FORRESTER

“I like your orchestration piece. ...cool you can pick what services, platform and templates that you want. I have been talking about this for the last two years.”

Begin Your Digital Journey Today



ARE YOU READY:

To automate network operations?

Save on WAN transport?

Enable richer collaboration experiences?

Gain business insights?

Deliver personalized customer experiences?

Detect and remediate threats rapidly?

To virtualize your branch?

Cisco Digital Network Architecture

Helping You on the Journey

Educate

Cisco live! Technology Tracks
Learning Paths
DevNet Zone

Roadshows and
Pop-up Events

Cisco Connect
DevNet Express

Structured Training

eLearning Instructor-Led

40+ DevNet Learning Labs



Certification Program

Coming in 2017



Enable



DevNet membership
350,000+

Getting Started and API
Reference Guides



Sample Applications

Community and
Pay-for Developer Support



40+
Developer
Sandboxes

9800+ Developers

4400+ Companies

Integrate



300+ Network
Partners and Growing



Marketplace

1500+ Solutions



250+ Compatible
Network Solutions

Cisco® Professional Services
2500+ Partners Strong

An aerial photograph of a city at dusk. The sky is a mix of deep blue, purple, and orange, with scattered clouds. The city below is illuminated with numerous lights, creating a dense pattern of small white and yellow dots. The overall mood is serene and contemplative.

***THERE'S
NEVER BEEN
A BETTER
TIME***

