C-Scape
14-15 January 2014 | Bedfont Lakes, UK

SP SDN
Moving from Connection Provider to Cloud Provider

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Topics

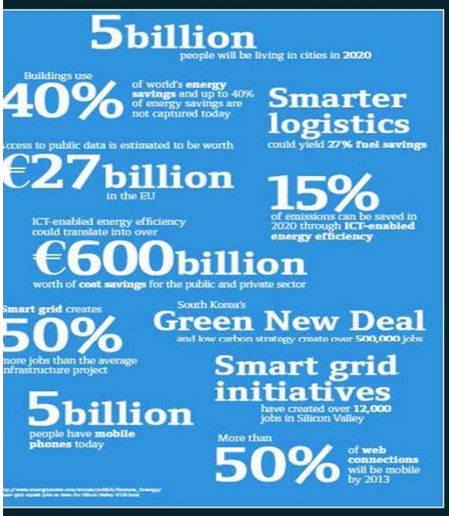
Key Drivers
Network Focus Areas
Baseline Principles
Cloud and SP

The New Normal?

	PAST: 3 Years Ago	NOW	Near Future 2-3 Years
Connectivity	Location based (Work / Home)	Device based	Ubiquitous
Applications	Few	Many	Lots
Time to Deliver New Services	Telecom: 18 months	Internet: 6 months	Social: Overnight
Information	Disjointed	Analytics	Intelligence: Network+Analytics+Policy

How Does the Networking Business Evolve?

Data Is the New Currency



Big Data Market: Growth to $16.9B

Only 5% of Digital Information is Currently Being Used*

1/3 of data will go through the **cloud**

700 Days of Constant Video Will Traverse Internet **Every Second**

We Store 92% of this New Information

50 Billion Connected Things

> 1 Zettabyte of Unique Information Created In Just 3 Years

1,200,000,000,000,000,000,000

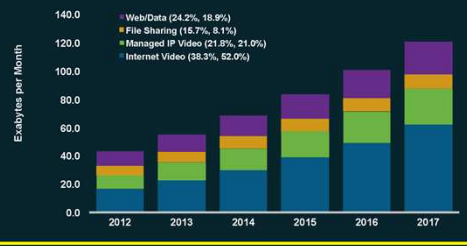
Zettabyte | Exabyte | Petabyte | Terabyte | Gigabyte | Megabyte | Kilobyte | Byte

Equivalent to: 125 million years of your favorite 1-hour TV show

he Economist 2010. Being used means understandable/treatable by a device
ource: IDC, Cisco IBSG2012, Cisco VNI, Economist, Apple, Facebook, Google

Service Provider Networking: An Industry in Change

Significant Traffic Growth, Driven by Video



23% Global CAGR

Emergence of M2M and Internet of Everything (IoE)

50 Billion Connected Things by **2020**

Connected Things **Growing 5X** Faster than Mobile Devices

More than **22%** of all networked events will be **Machine Driven** by 2017

Technological Inflections

- Virtualized Software
- 4K Video
- LTE
- Cloud-based NFV + SDN

Industry Consolidation

verizon + terremark

Acquires 45% of Verizon Wireless from vodafone

T-Mobile + metroPCS

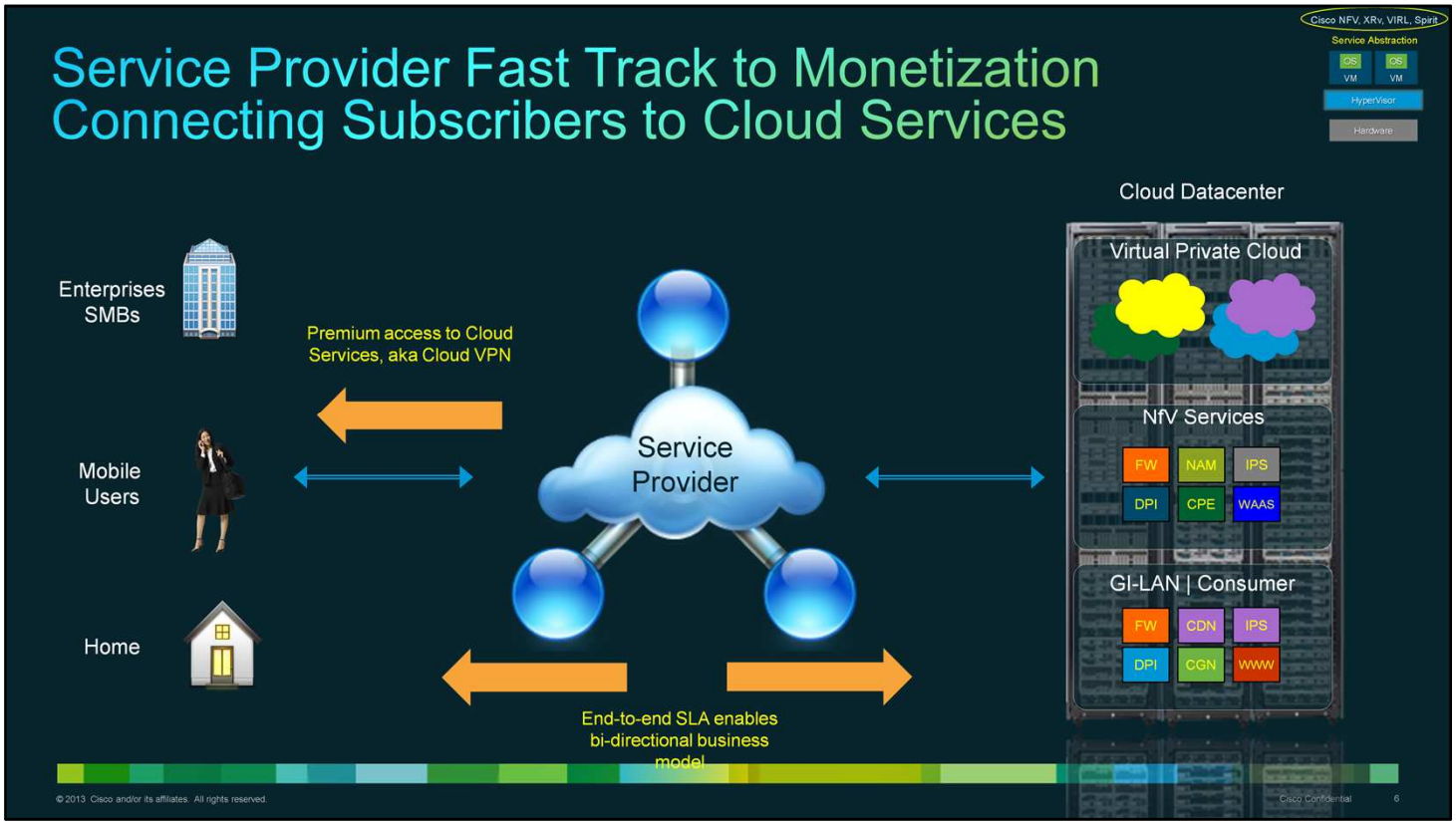
vodafone + Kabel Deutschland + CABLE & WIRELESS

TIME WARNER CABLE + NaviSite®

américa móvil + kpn

SoftBank + Sprint

Service Provider Fast Track to Monetization
Connecting Subscribers to Cloud Services



Fundamental Targets

One truly converged network

- de-layered, IP and Optical are one, bits over wavelengths, no L1-L2-L3 dependencies

The same technology for LAN and WAN

- For LAN: IP packets in Home, Office, Data Center; for WAN: IP packets in Metro, Country, Continent

All digital services for consumers and businesses

- communication, information, cloud -apps, -compute and –storage

Real-time OSS

- instantaneous self-service provisioning, guaranteed good user experience, real-time analytics

Standardized service toolbox

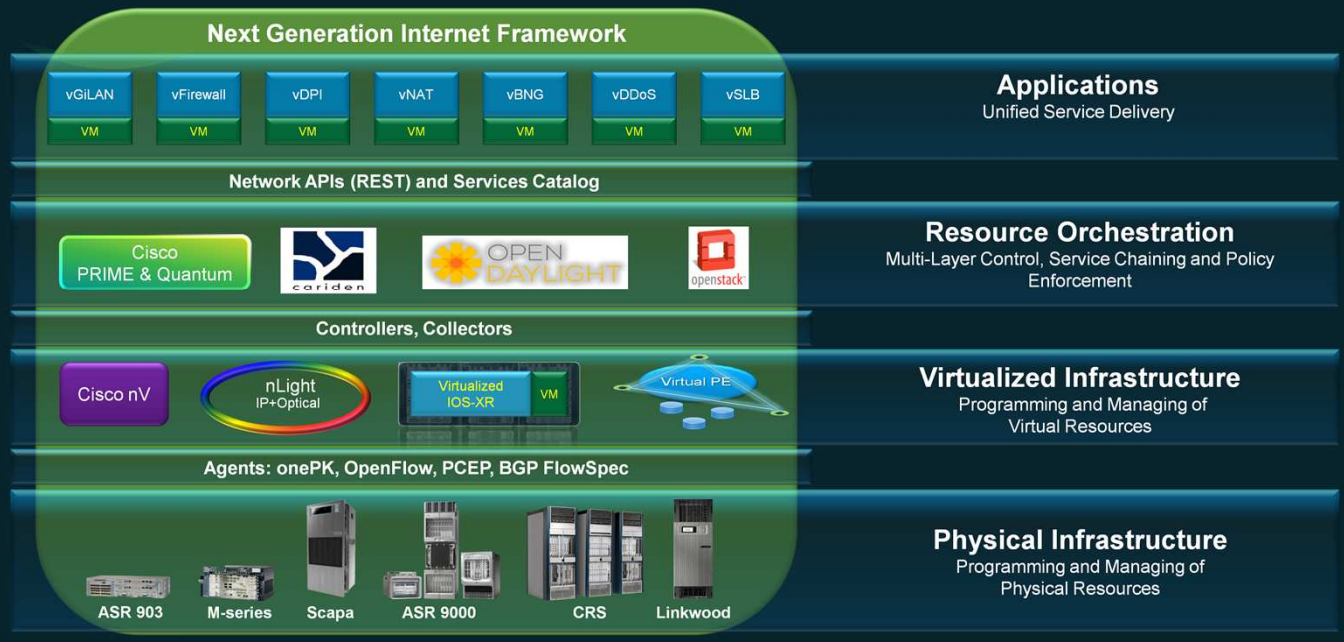
- services in the Data Centers, with standard computers instead of specialized appliances

Cloud-era economics

- service flexibility, fast-paced innovation, agile implementation, reduced system complexity, lower cost

Next Generation Internet Architecture

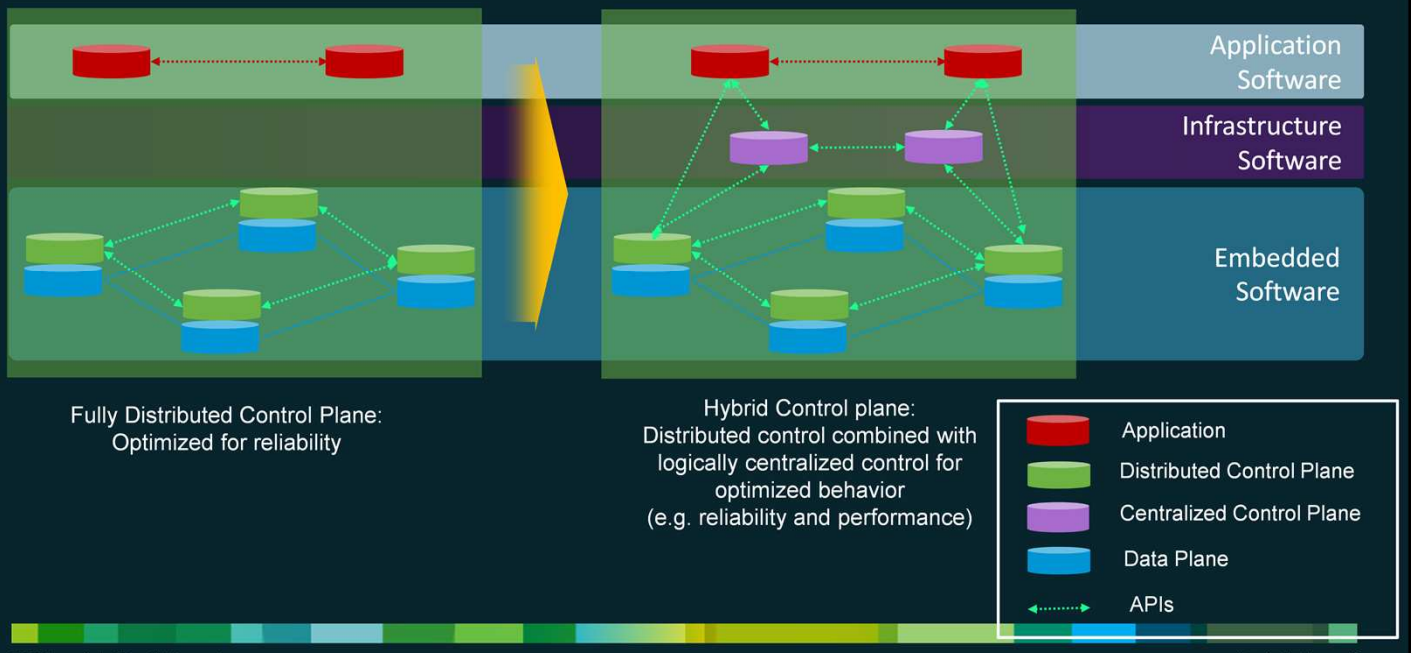
Intelligent, Ultra-Scalable Network



Baseline SDN and NfV principles for SP

Service Provider SDN

Multi-Layer Software Implementation – *Evolving* Network Control

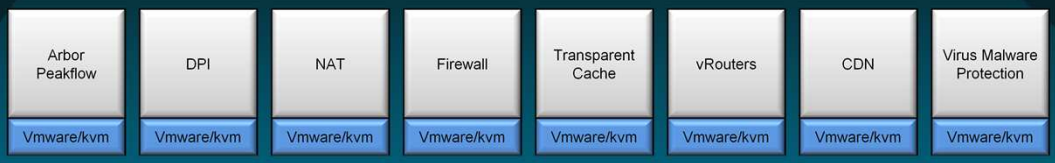


Network function Virtualization

Transition network services to virtual workloads

Service Architecture Vision

Flexible NfV placement for optimal Service Delivery



Decide per NfV function Where to place it based on service logic requirements

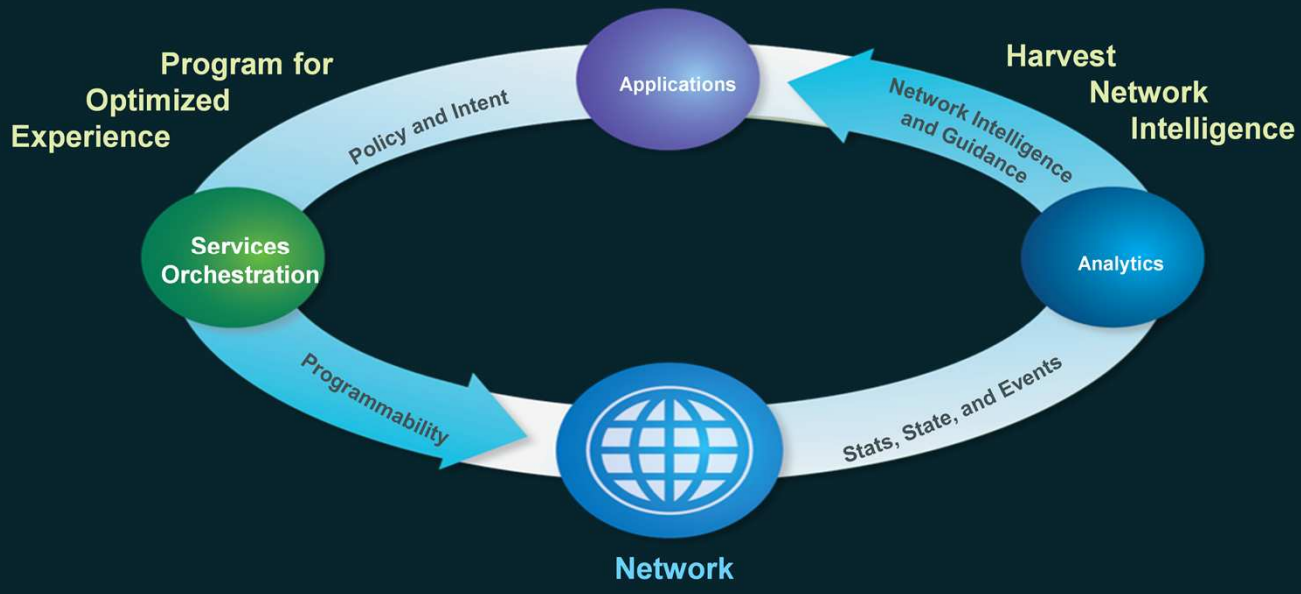
- Low Latency
- Simplified Service Chaining
- Simplified Management Plane

- Elastic Scale
- High Throughput

Centralized Data Center
Distributed Data Center

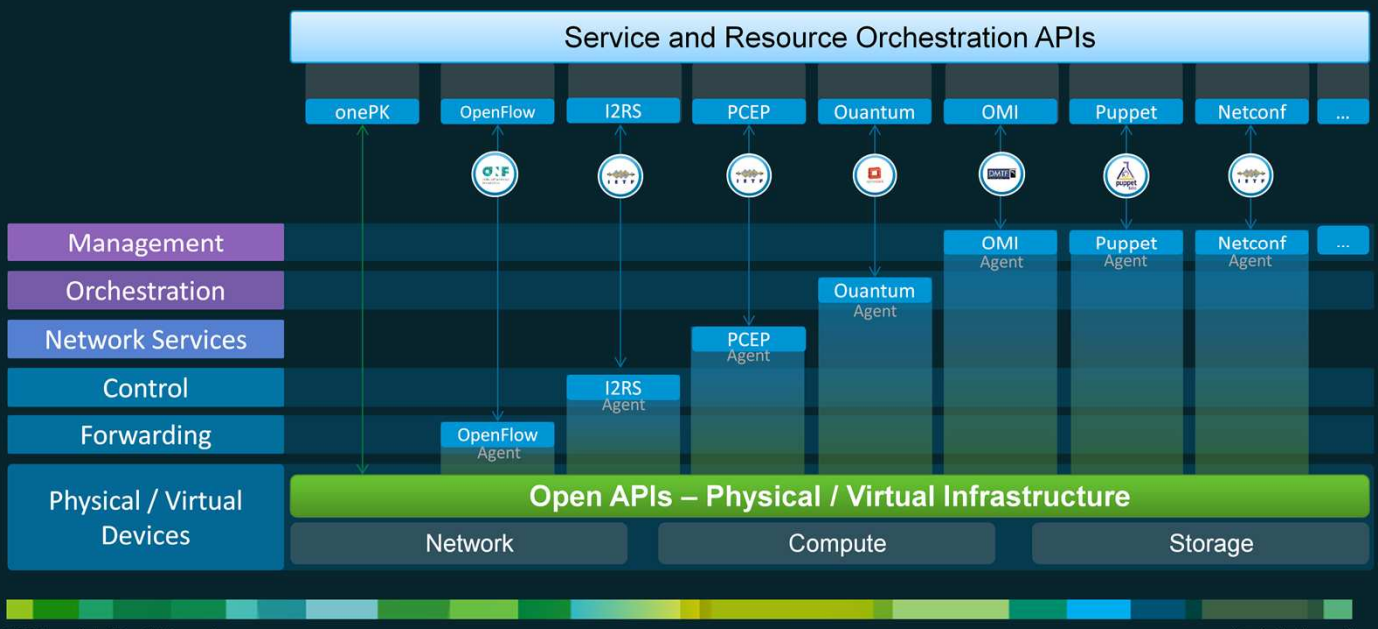
Cisco Open Network Environment

Interaction Among all Components of Service Creation & Delivery



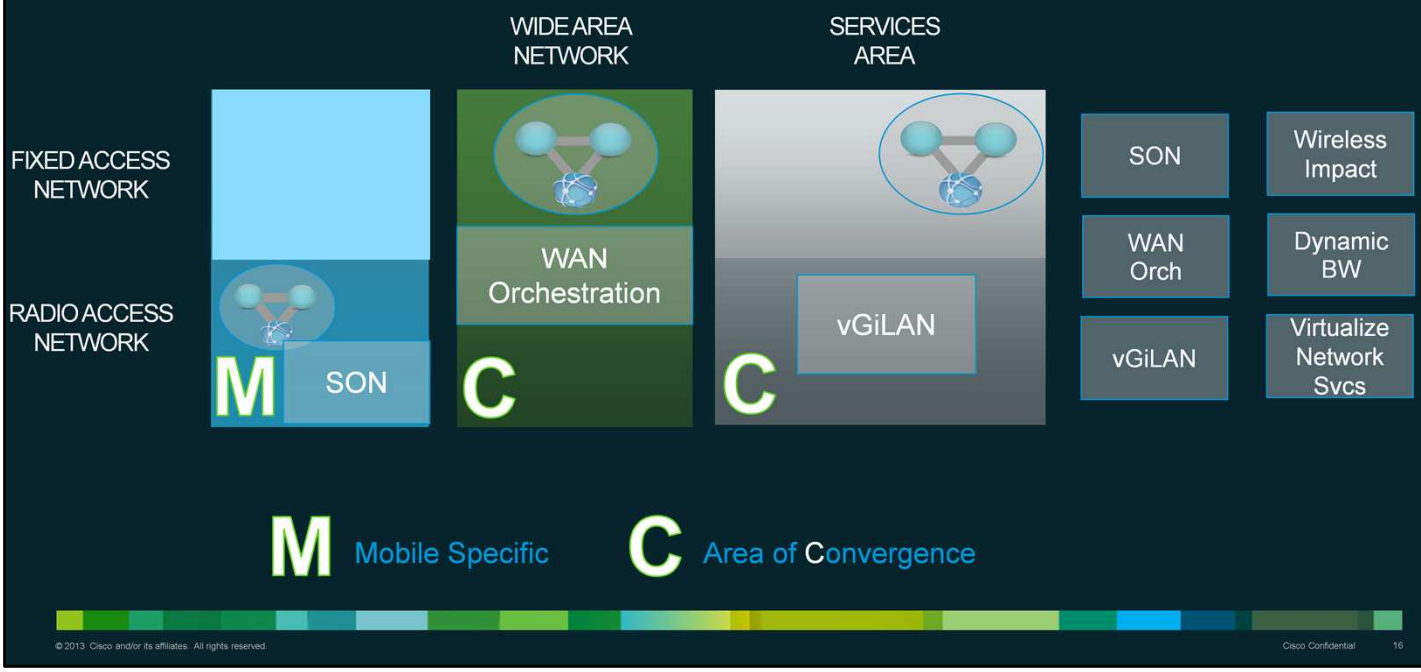
SDN – Enabling Programmatic Network Access

Open APIs as Flexible Integration Vehicles at Multiple Layers



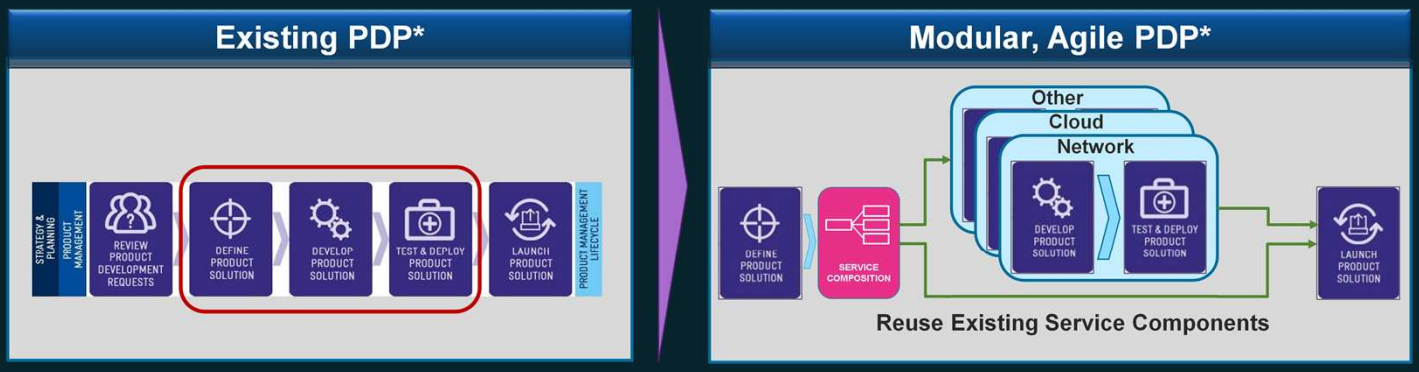
Deployment Use Case – What to use it for ?

Where to get benefits from Programmatic Capabilities- Concretely



The Cloud Debate: How to positively affect GTM and TTM for Services

Need a new Operational Model and Capability

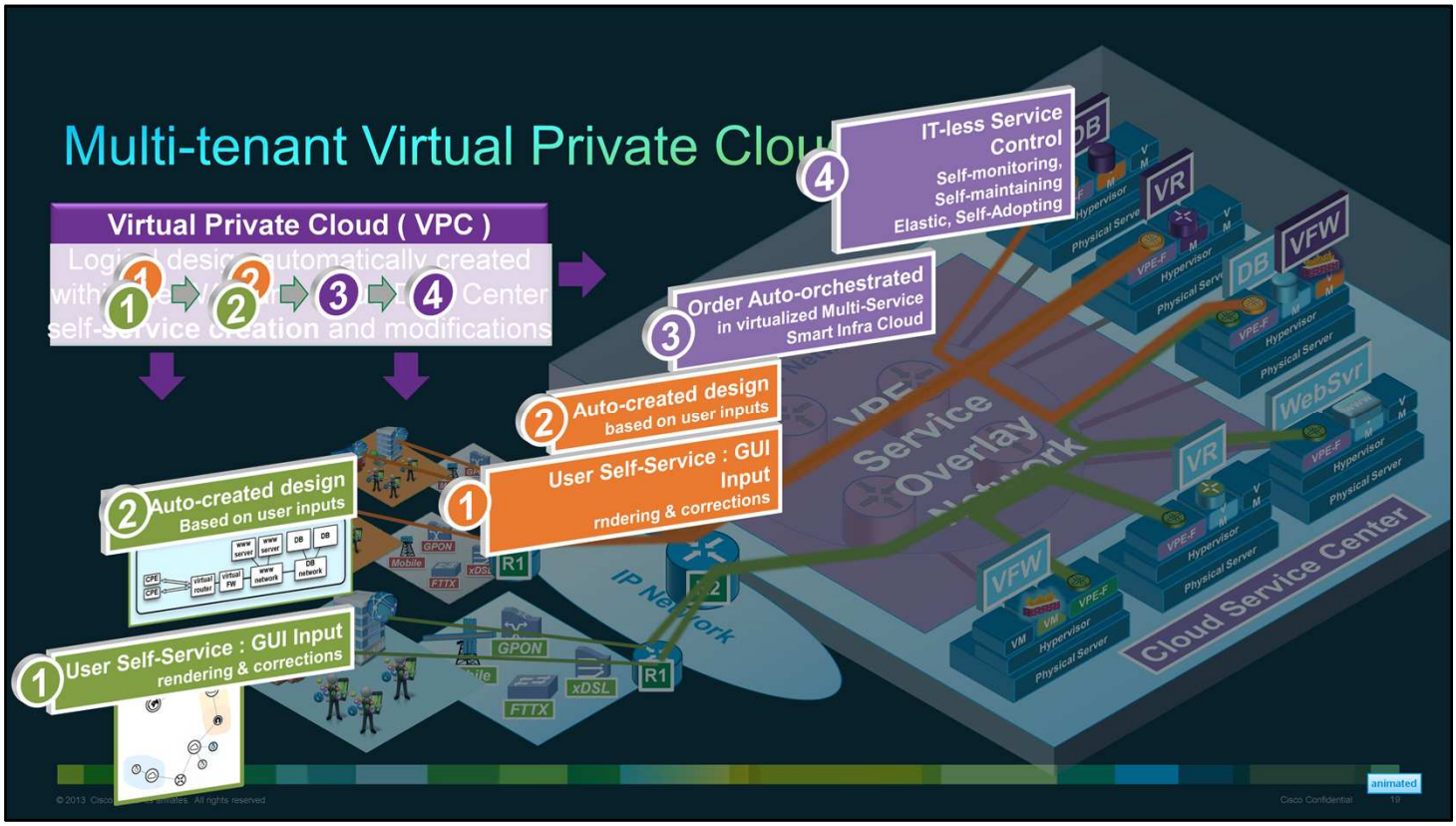


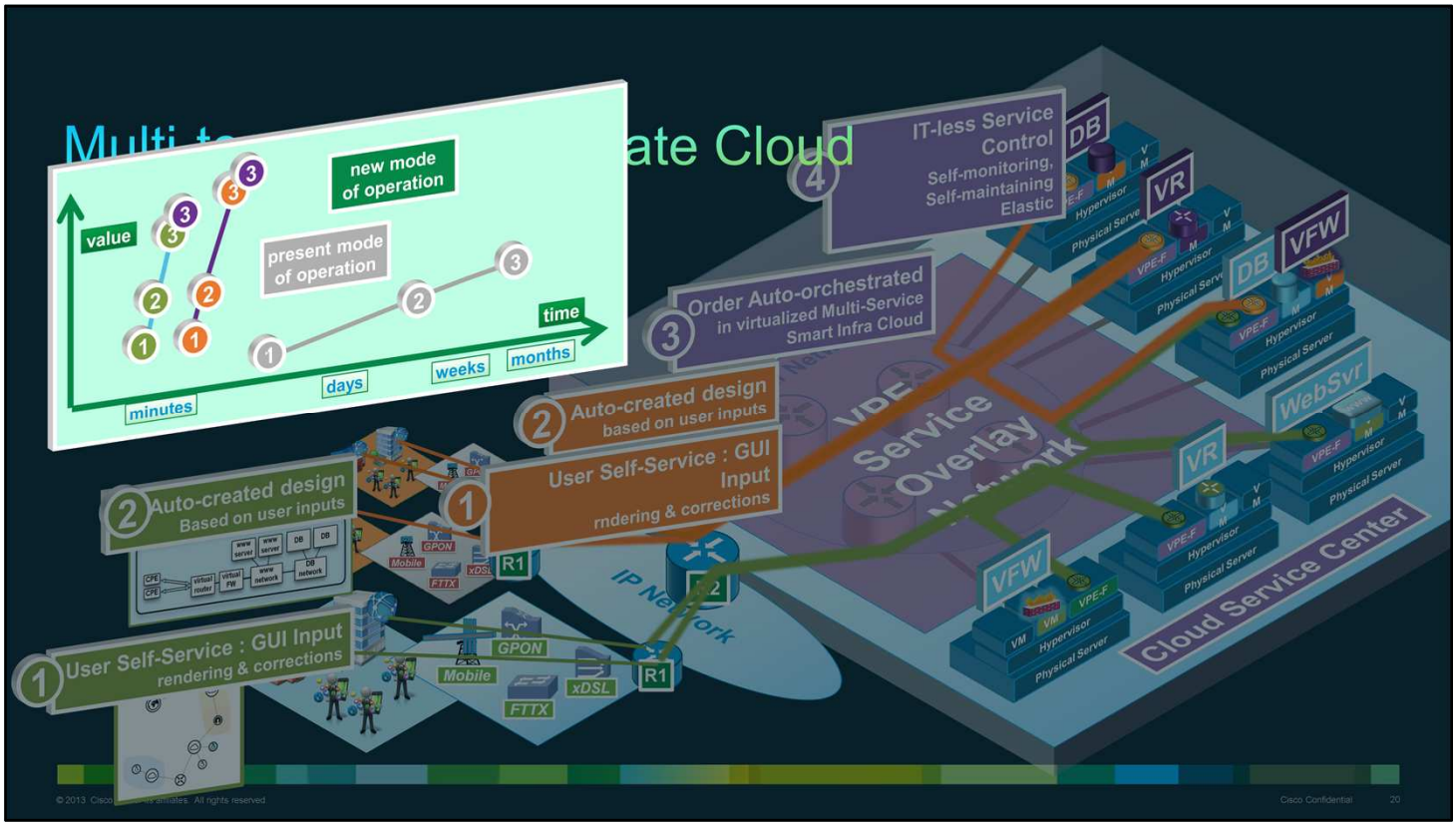
- Linear, sequential
- Stand-alone services, platforms
- No reusability, modularity
- Longer time-to-market

- Modular, hierarchical service design
- Parallel, intra-domain development
- Reusable service components
- **4-6 month cycle time improvement**

Source: Cisco Consulting Services

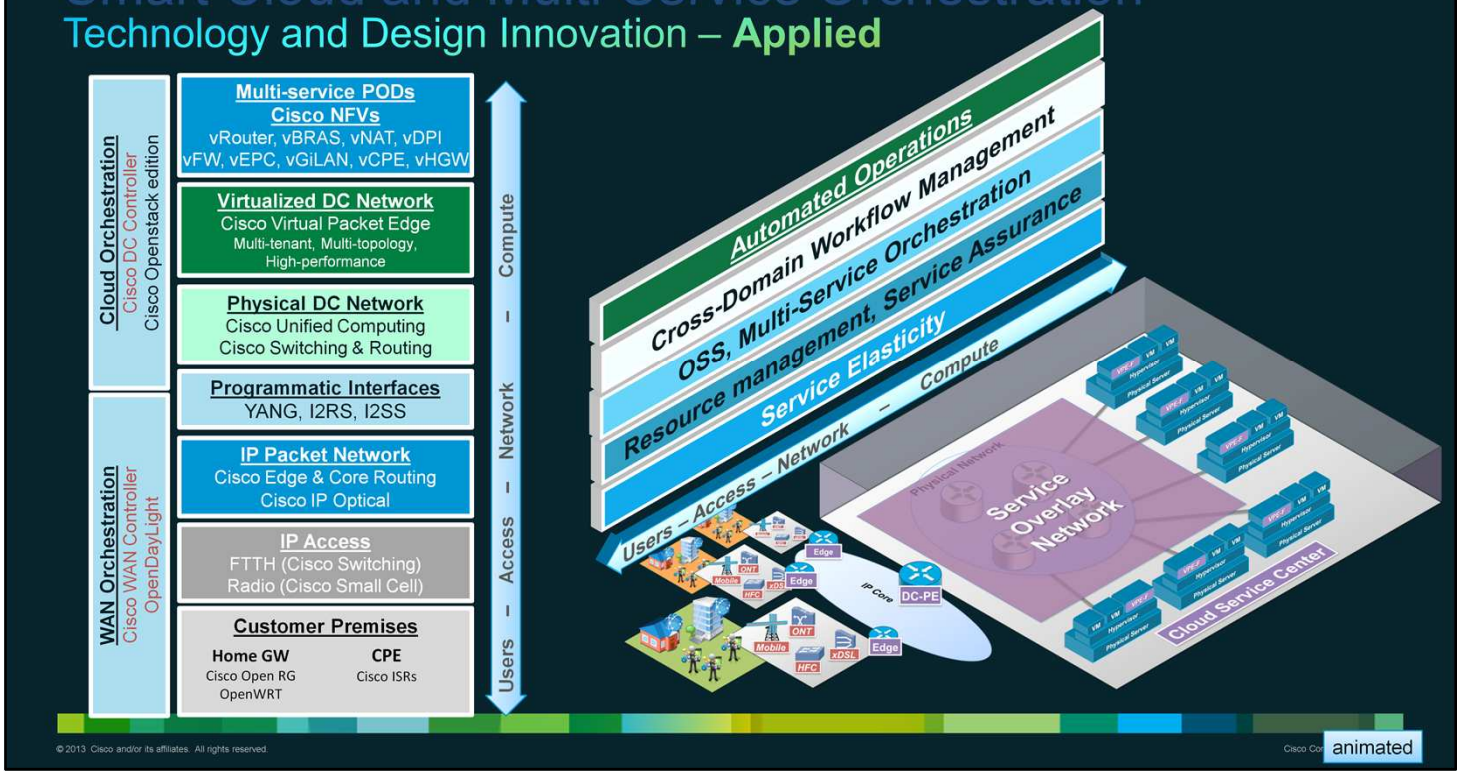
* PDP = Product Development Process

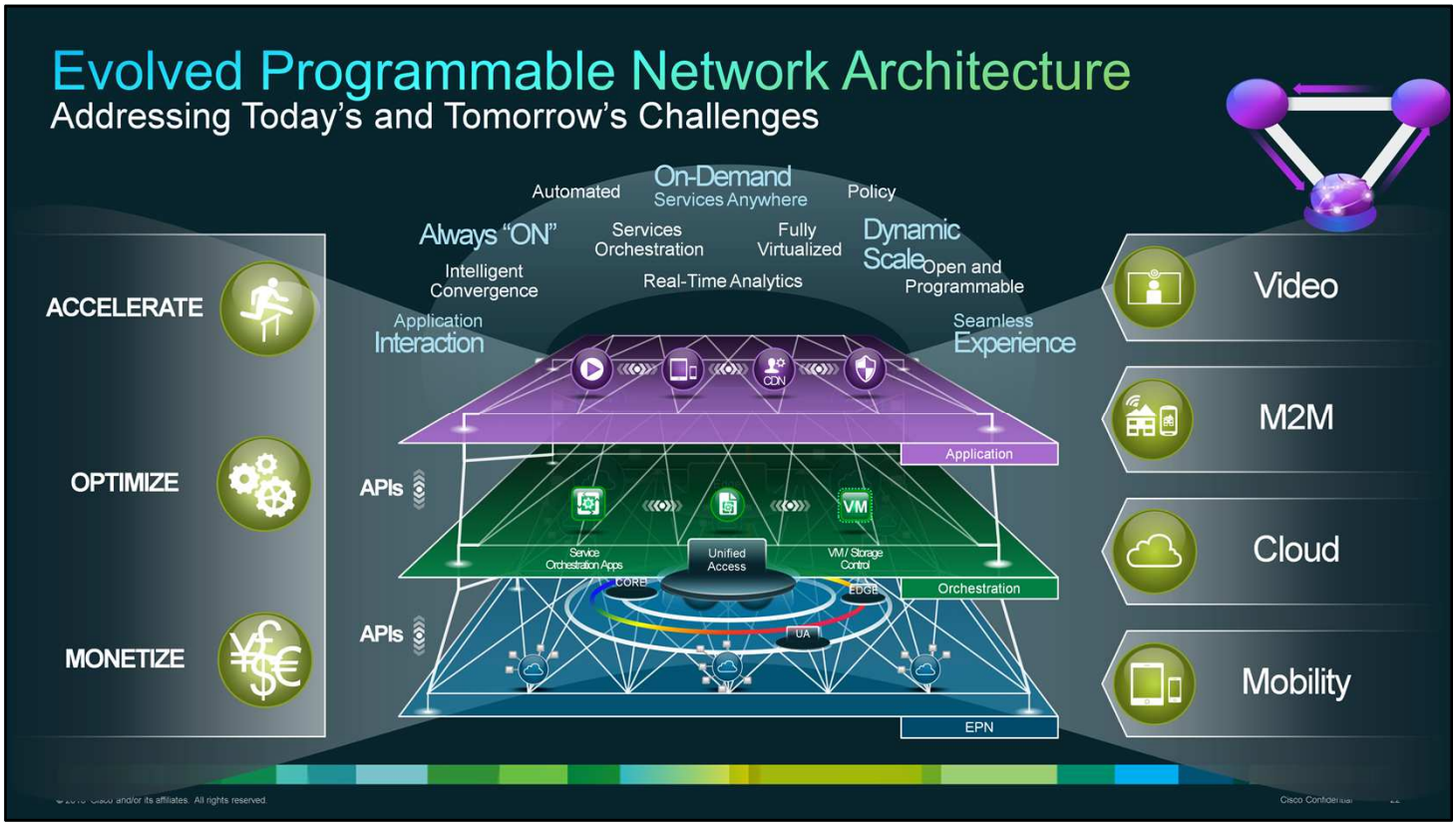

Multi-tenant Virtual Private Clou
Virtual Private Cloud (VPC)
Logical design automatically created
with
self-service creation and modifications
Center
4
IT-less Service Control
Self-monitoring,
Self-maintaining
Elastic, Self-Adopting
3
Order Auto-orchestrated
in virtualized Multi-Service
Smart Infra Cloud
2
Auto-created design
based on user inputs
1
User Self-Service : GUI Input
rndering & corrections
2
Auto-created design
Based on user inputs
1
User Self-Service : GUI Input
rendering & corrections
Service Overlay Network
IP Network
Cloud Service Center
VR
VFW
DB
WebSvr
Hypervisor
Physical Server
VPE-F
GPON
xDSL
FTTX
R1
R2
animated



Smart Cloud and Multi-Service Orchestration

Technology and Design Innovation – **Applied**




Evolved Programmable Network Architecture
Addressing Today's and Tomorrow's Challenges
Automated
On-Demand
Services Anywhere
Policy
Always "ON"
Services
Orchestration
Fully
Virtualized
Dynamic
Scale
Open and
Programmable
Intelligent
Convergence
Real-Time Analytics
Application
Interaction
Seamless
Experience
ACCELERATE
OPTIMIZE
MONETIZE
APIs
APIs
CDN
Application
VM
Service
Orchestration Apps
Unified
Access
VM / Storage
Control
CORE
EDGE
Orchestration
UA
EPN
Video
M2M
Cloud
Mobility

Driving the Next Wave of Innovation

Flexible, High-performance, Netw

Tightly Integrated Applications, I ge, and Compute

Common Operational Model ac ents

Open | Programmable | Fully Virtualized | Automated | Resilient | Secure

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