



# Operating in a Broadband and Cloud Kind of World

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Systems Engineer

August 7, 2014

Change over the next five years  
will occur much faster than the  
previous five

# The Changing Landscape

Homes are  
“Cutting the Cord”



New Services

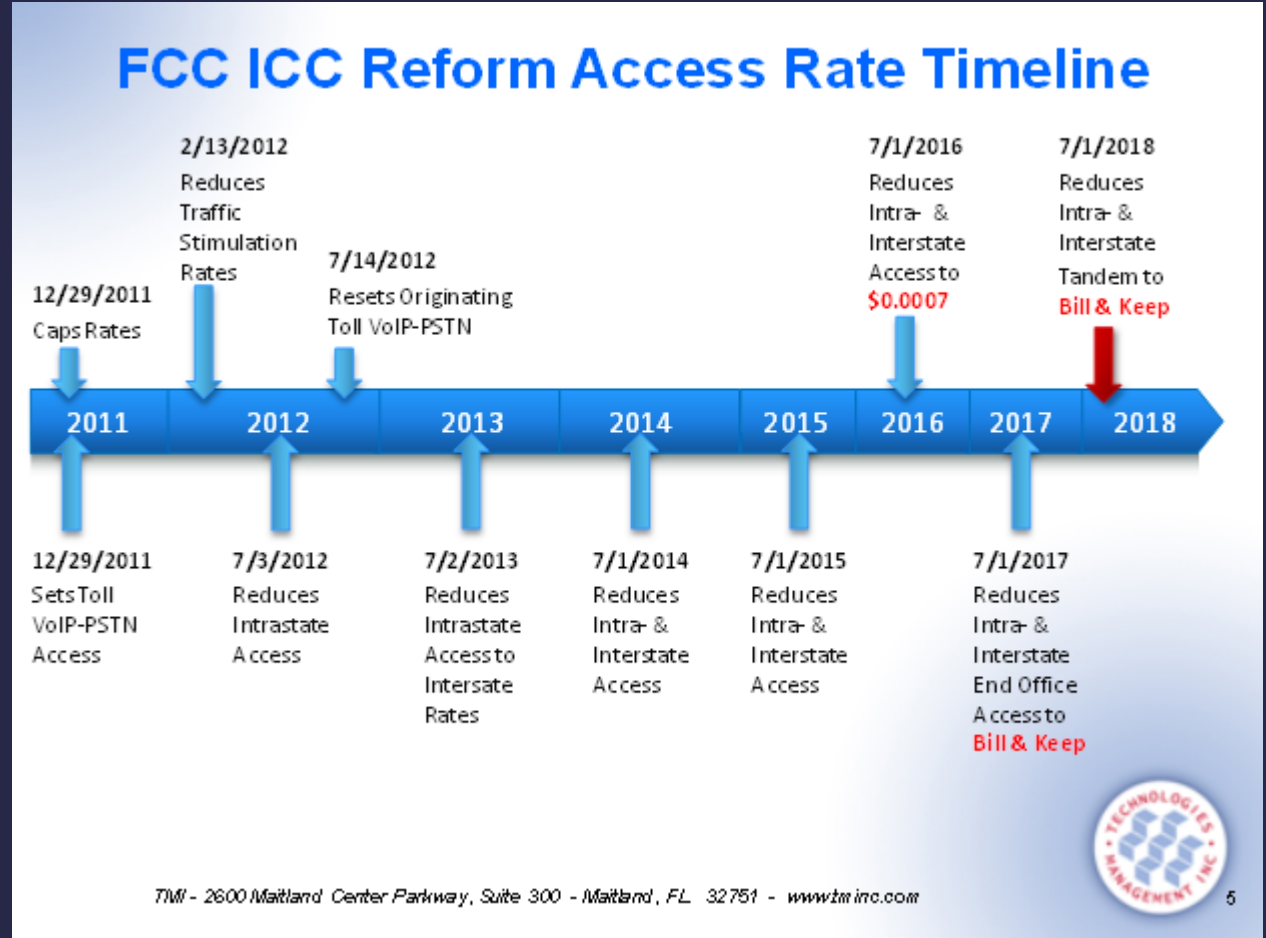
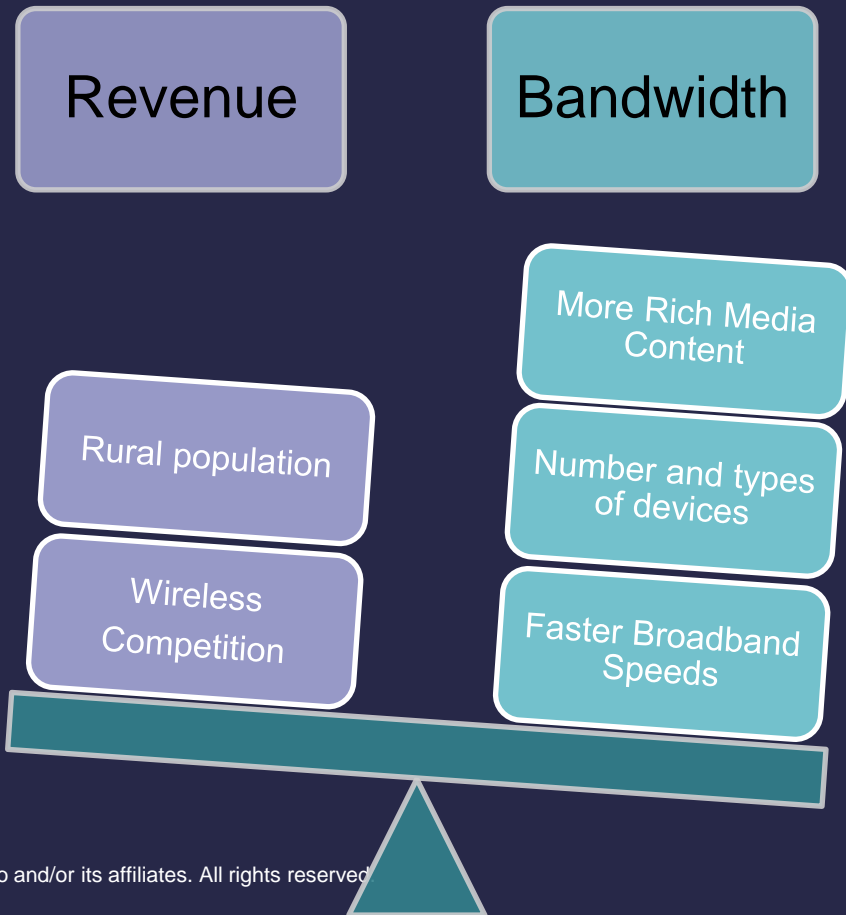
Cloud Based Services  
are the Future

# The Future for Telco's

- Your customers will be different - millennials
  - They will expect to always be connected
  - They will expect a high quality experience (regardless of the application or device)
- Networks are going to need to be able to scale to support the bandwidth growth and consumer demands
- Last mile will be a valuable asset
- The challenge is how to monetize it



# Telco's Are Facing Unprecedented Challenges



# Opportunities for Rural Telco

## Focus on small medium business and Managed Services

\*\*\* You are viewed as trusted technology partner to consumers and SMB's in your serving area

### Hosted Services

- Web hosting
- Email hosting
- Collo facilities

### Cloud Based Services

- IaaS
- SaaS

### Collaboration Services

- White Label
- Consortiums

# Establishing the Zettabyte Era

By 2017, global IP traffic will reach an annual run rate of 1.4 zettabytes per year

1.4 zettabytes is equal to:

- 12X more than all IP traffic generated in 2008 (121 exabytes)
- Nearly 1 Billion DVDs per day for an entire year

Source: Cisco VNI Global IP Traffic Forecast, 2012–2017

## What is a zettabyte?

- - One trillion gigabytes
- - Approximately  $10^{21}$  (1,000,000,000,000,000,000,000 bytes)



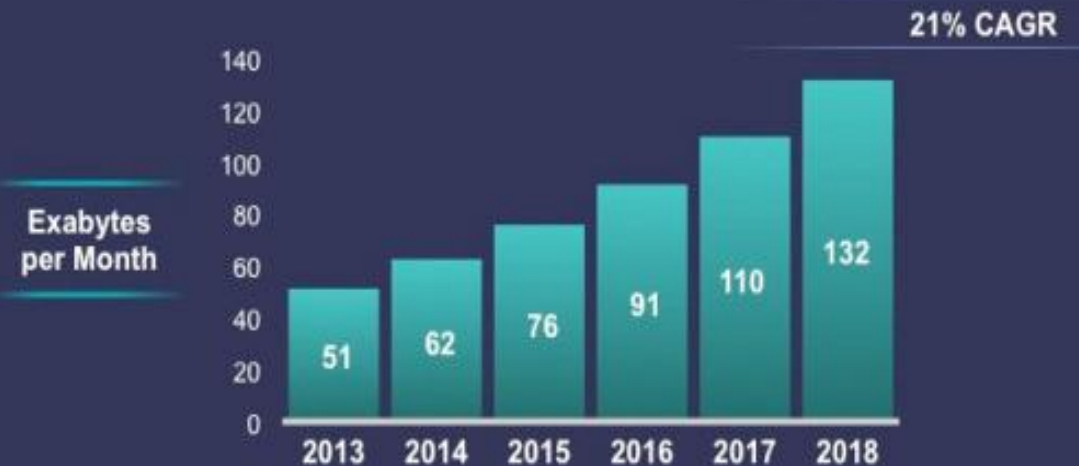
# US Leads the way in IP Growth

**2016**

The highest traffic-generating country will be the United States (22 exabytes per month)



Global IP Traffic Growth / Top-Line  
Global IP Traffic will Increase 3X from 2013 to 2018



Source: Cisco VNI Global IP Traffic Forecast, 2013–2018



# Traffic & Service Adoption Drivers, 2011–2016



**More Devices**  
*Nearly 19 Billion Connections*



**Faster Broadband Speeds**  
*4-Fold Speed Increase*



**More Internet Users**  
*3.4 Billion Internet Users*

**More Rich Media Content**  
*2 Years of Video Minutes/Second*



Source: Cisco VNI Global Forecast, 2011–2016

# Cloud Statistics

**By 2016, *cloud computing will be the bulk of IT spend* with about half in Opex.**

Gartner

**BY 2016, *>50% of Global 1000 companies* will have stored customer-sensitive data in the public cloud**

**2016 will be a defining year *Half of large Enterprises will have hybrid cloud deployments***

Gartner

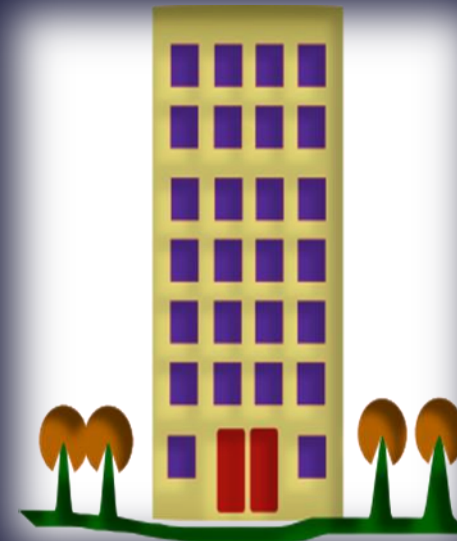
**Within the next 3 years around *20% of the Collaboration market* will move to Cloud**

**By 2020, *1/3 of all the data will live in or pass through the cloud***

Gartner

# What is Cloud Computing ?

- **On Demand**
- **At Scale**
- **Multi-tenant environment**
  - Capacity to support multiple customers on the same physical infrastructure
  - Overlay management (Condominium Management)
  - Capability to support full segregation between tenants when required at all levels
    - Network
    - Storage
    - Computing
    - Security



# Deployment Models

A white, fluffy cloud icon with the word "Private" written in black text in the center.

Private

- Fixed workloads
- Controlled, compliant & secure

A white, fluffy cloud icon with the word "Hybrid" written in black text in the center.

Hybrid

- Choice of clouds
- Workload mobility
- Consistent security & network services

A white, fluffy cloud icon with the word "Public" written in black text in the center.

Public

- Variable workloads
- Quick ramp
- Consumption based
- Less Secure

A large, teal-colored double-headed arrow pointing left and right, with the text "WORKLOAD TYPE" centered above it.

WORKLOAD TYPE

Cloud ultimately is about workload mobility: Different cloud services for different workload types

# Obstacles for Public Cloud

Portability

Lack of  
Standards

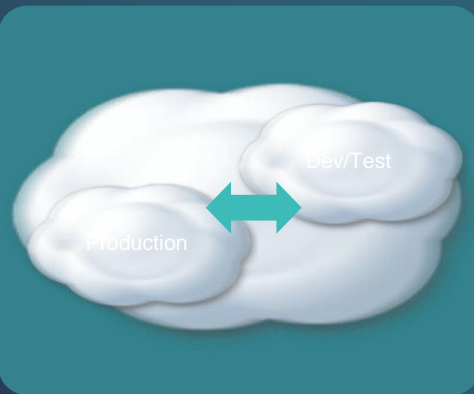
Security  
issues

Operational  
insertion

Culture: as with any new model

# Hybrid Cloud Use Cases

## Dev/Test



Dev/Test Application across private and virtual private cloud

## Shadow IT Control



Providing rapid access to hybrid cloud capacity  
IT in control of what and where their applications can be deployed

## Capacity Augmentation

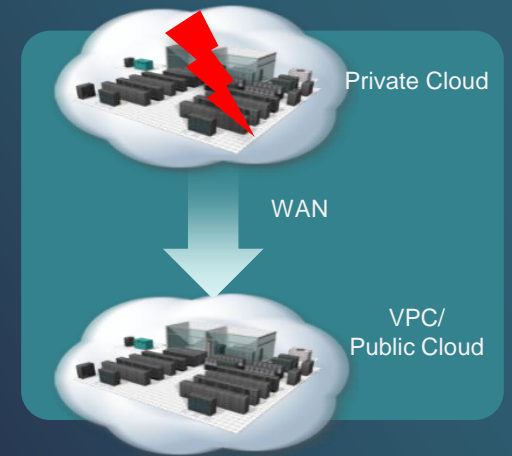


Common Peak Workloads

Bursting from private cloud to virtual private or public cloud for peak workloads

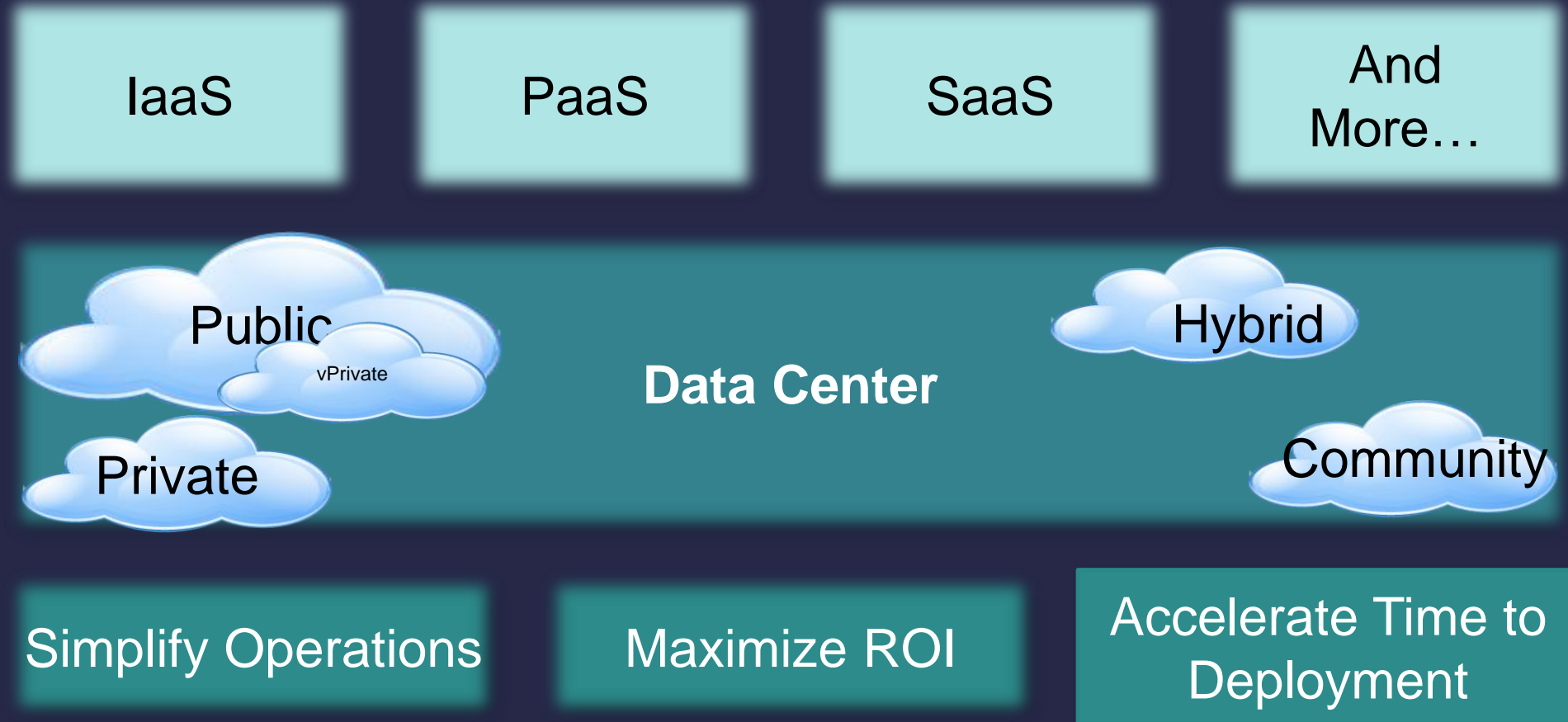
Workload migration  
Application On-boarding

## Disaster Recovery



Automate network policy consistency and tenant onboarding for DRaaS offerings

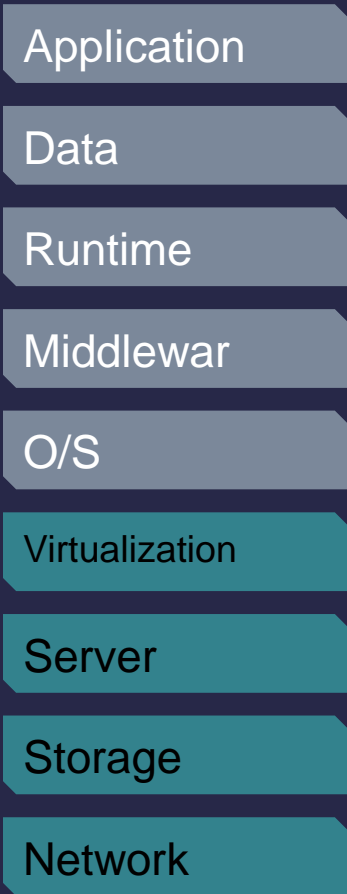
# The Cloud Model



# Service Models

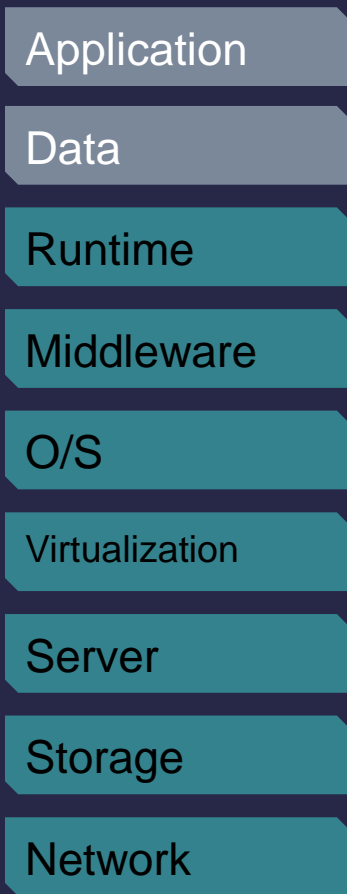
## IaaS

Infrastructure as a service



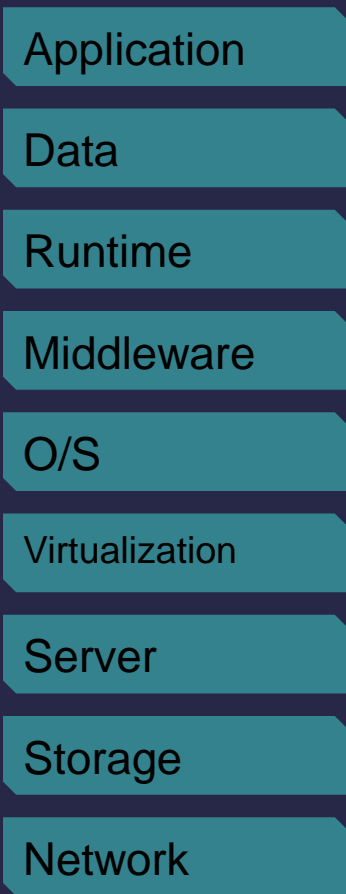
## PaaS

Platform as a Service



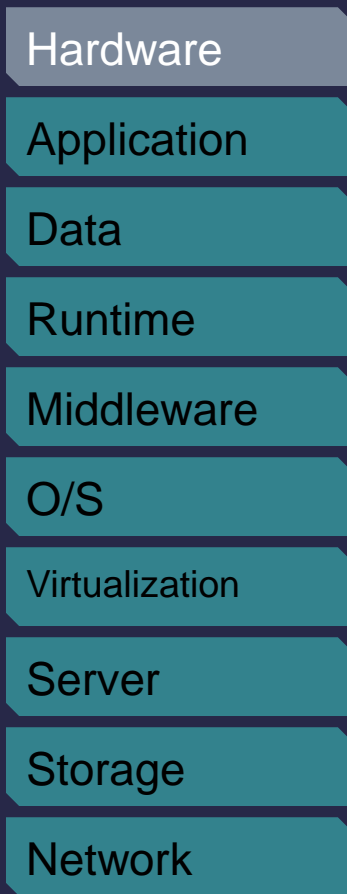
## SaaS

Software as a Service



## MaaS

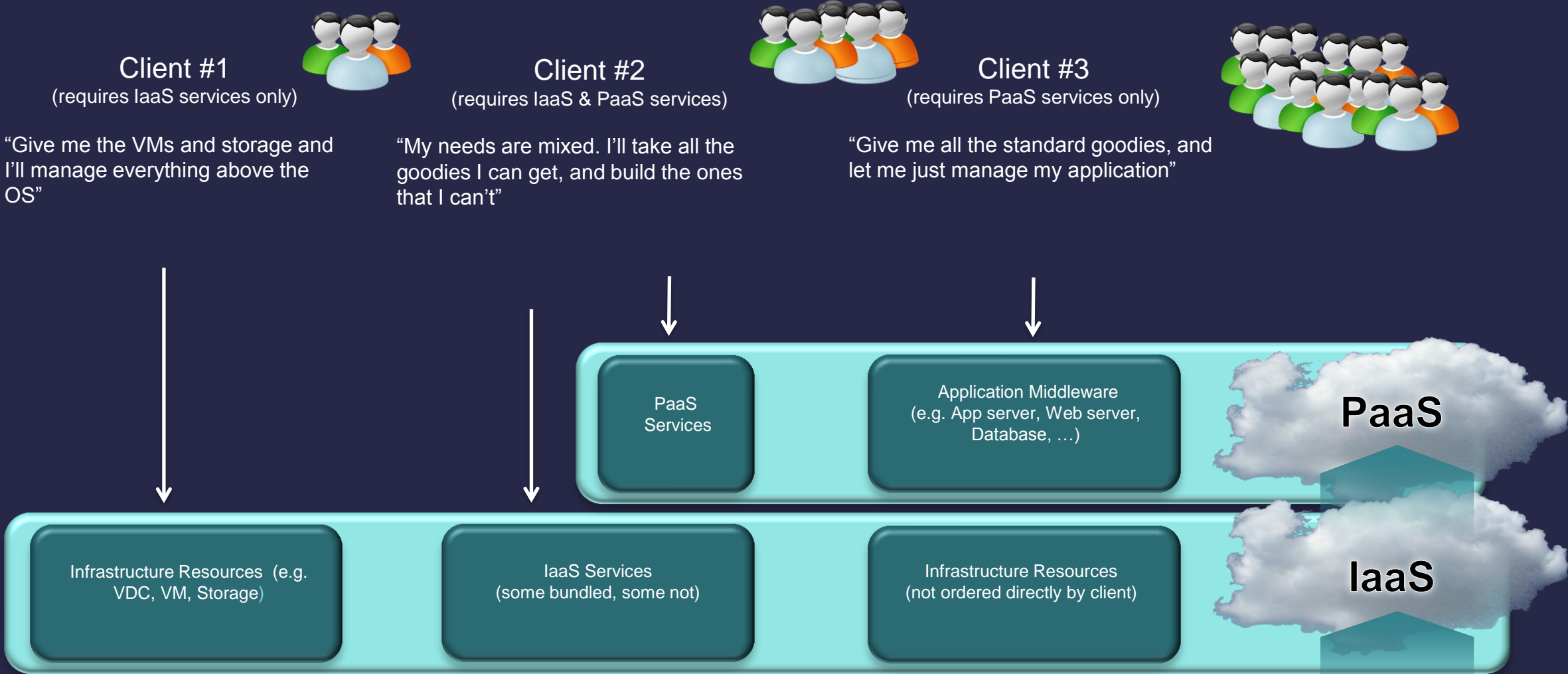
Management as a Service



Hybrid-Requires equipment on site

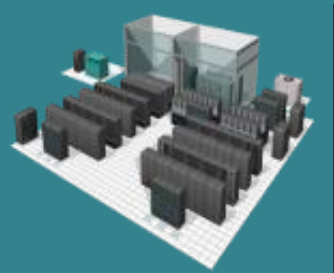


# IaaS → PaaS: What do end customers want?

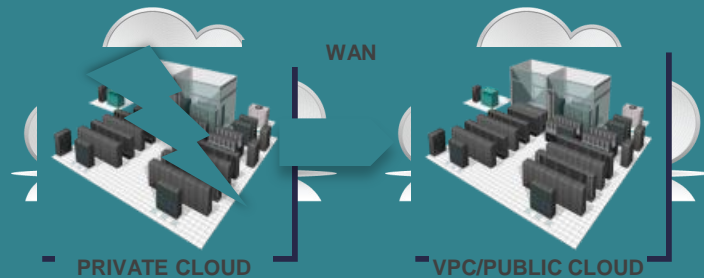


# Provider Solutions for Enabling the Cloud

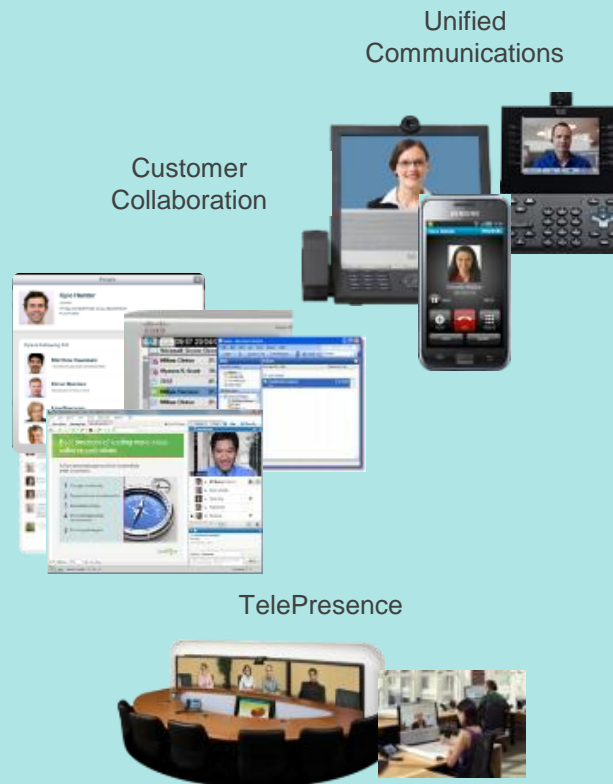
## Infrastructure as a Service Solutions



## Disaster Recovery as a Service Solutions



## Hosted Collaboration Solutions



## DaaS Solutions



## Video Solutions



# Hosted Collaboration Service

Unified Communications



Customer Collaboration



Collaboration Applications

Telepresence

CLOUD  
ON PREMISE

# Increased Demand for New Consumption Models

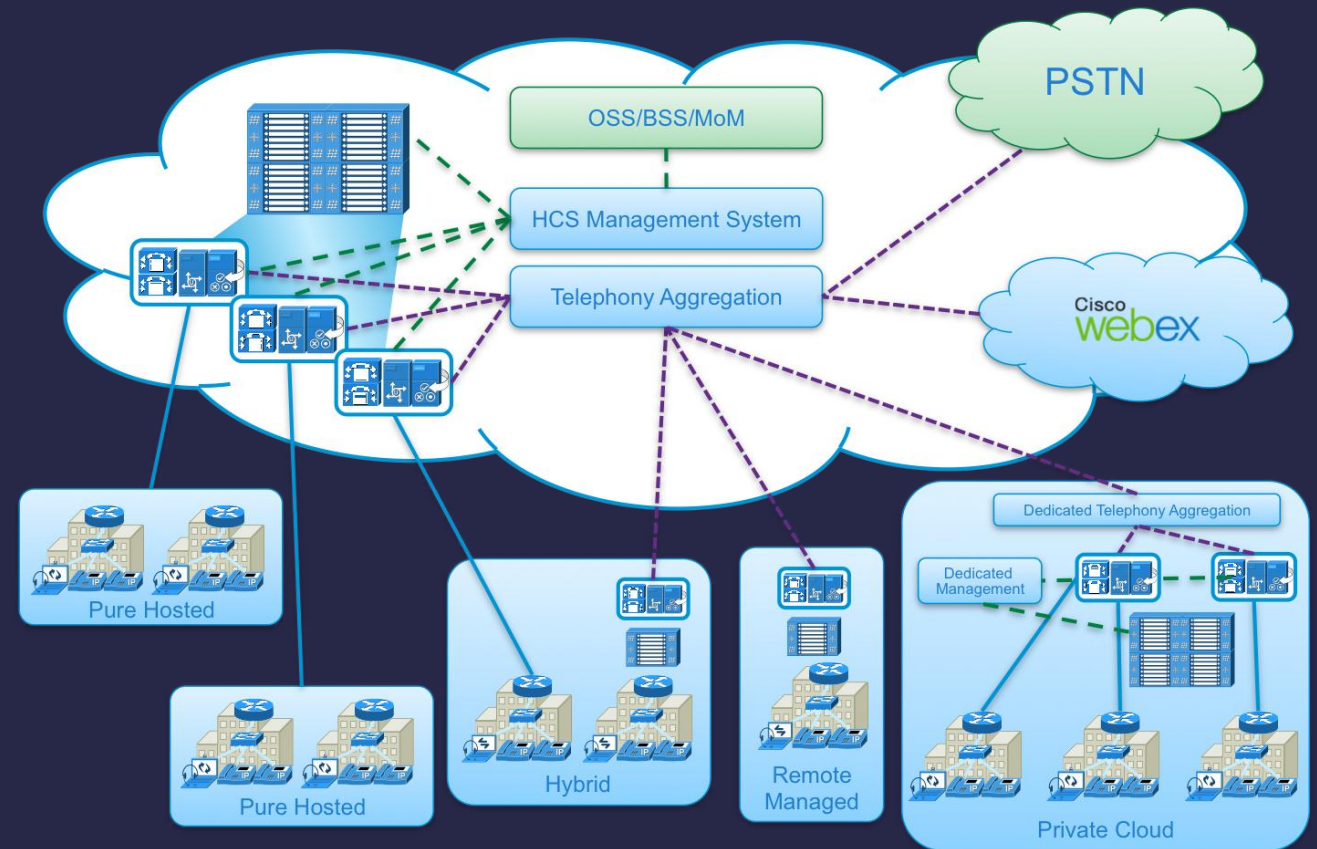
## New deployment options outpacing traditional CPE



**CAGR 2013**

# Hosted Collaboration Services Consumption Models

- Pure Hosted
- Hybrid
- Remote Managed
- Private Cloud



Multiple Deployment Models

# Applications as a Service

Vertical Applications

Law



Accounting

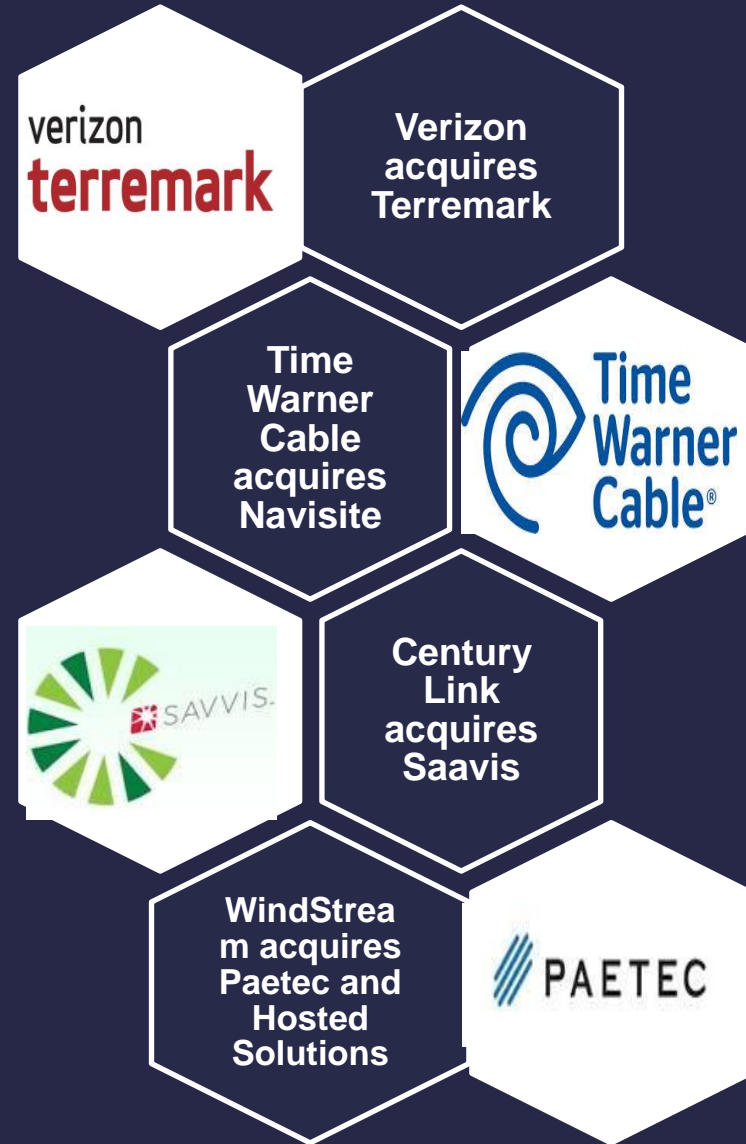


Engineering/Arch



Horizontal Applications



# Market Validation



And more  
to come...



# And another option... Security as a Service Solution

**Centralized Management & Reporting**

|  |  |
|--|--|
| <p>VPN Services </p> <ul style="list-style-type: none"> <li>Remote access VPN<br/>IPSec, SSL VPN<br/>Session persistence (always on VPN)</li> </ul> | <p>VPN Services </p> <ul style="list-style-type: none"> <li>Site to site VPN through Internet FW</li> </ul> |
|--|--|


**VPN as a Service**

**Centralized Management & Reporting**



|   |   |
|---|---|
| <p>Firewall support </p> <ul style="list-style-type: none"> <li>Stateful inspection</li> <li>Application inspection</li> <li>Network address translation</li> <li>Encrypted traffic inspection</li> <li>Protocol inspection</li> </ul> | <p>Advanced Firewall </p> <ul style="list-style-type: none"> <li>Identity-aware policy enforcement</li> <li>Malware traffic detection and blocking</li> <li>Botnet traffic filter</li> <li>Voice and video security</li> </ul> |
|---|---|

**Firewall as a Service**



**Centralized Management & Reporting**

|  |  |
|--|--|
| <p>Spam Defense </p> | <p>Virus &amp; Malware Defense </p> |
|--|--|

**Email Security as a Service**

|   |   |
|---|---|
| <p>Data Loss Prevention </p> | <p>Secure Messaging (Encryption) </p> |
|---|---|

**Centralized Management & Reporting**

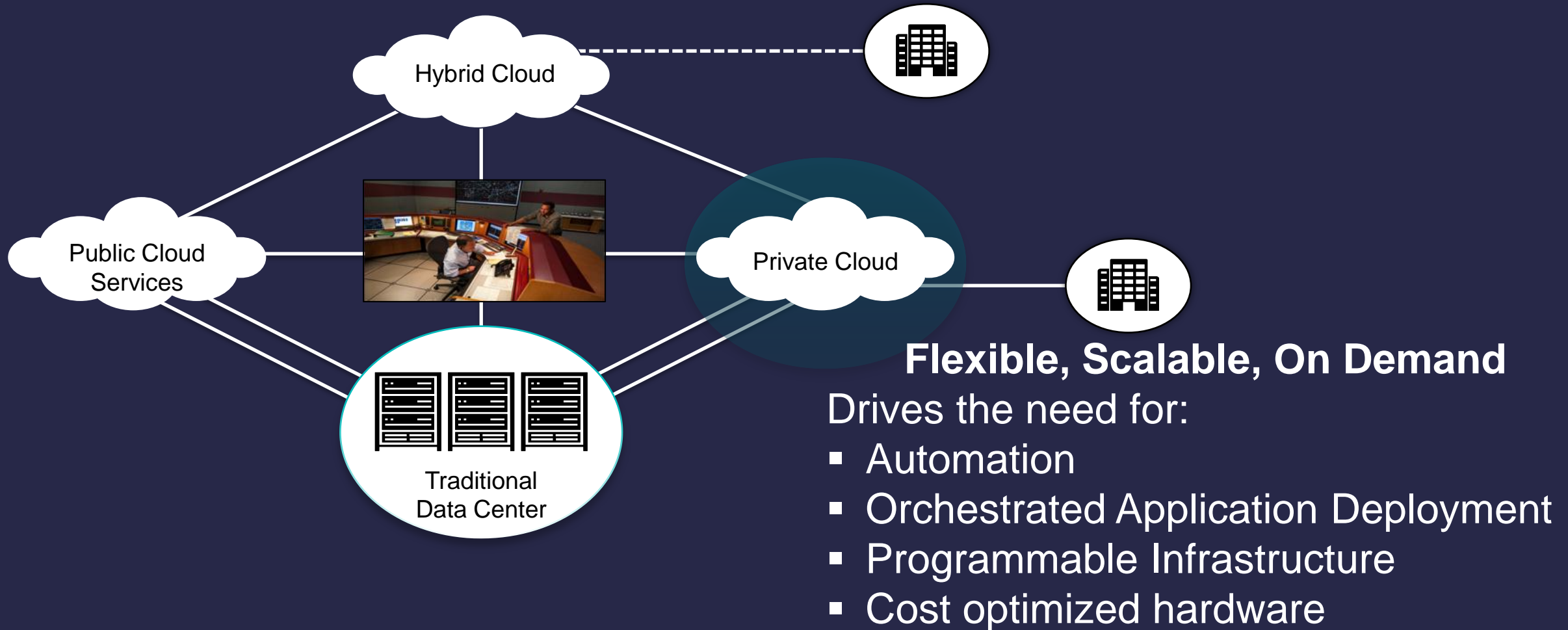
|   |   |
|---|---|
| <p>Web Filtering </p> <ul style="list-style-type: none"> <li>Web usage controls</li> <li>Application visibility</li> <li>Bi-directional control</li> </ul> | <p>Web Security </p> <ul style="list-style-type: none"> <li>Anti-malware protection</li> <li>Web content analysis</li> <li>Script emulation</li> </ul> |
|---|---|

**Web Security as a Service**



# Tomorrow's IT—World of Many Clouds

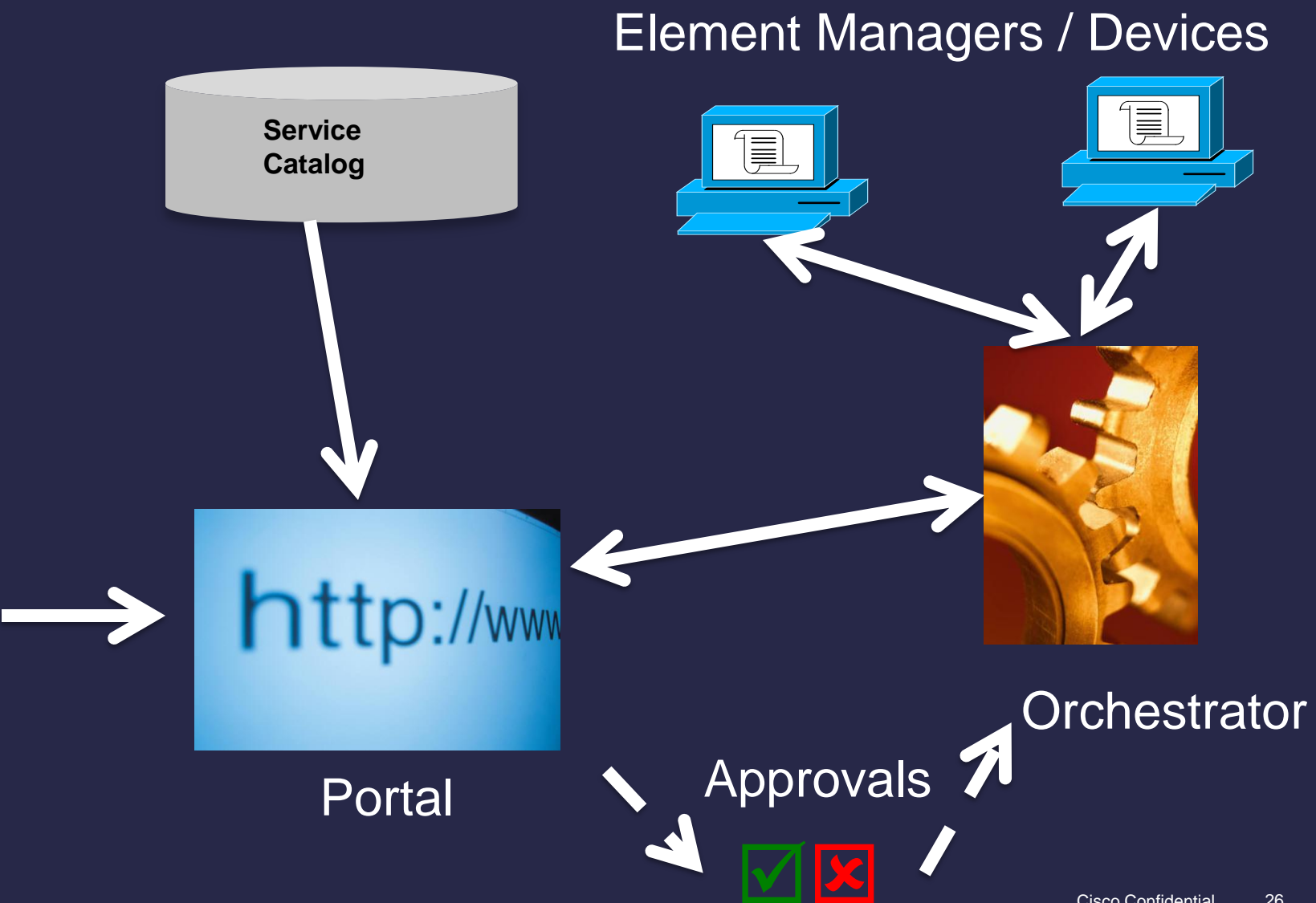
Enabled by a Network-Centric Data Center Architecture



Cloud drives the need for New Infrastructure Paradigms

# And last but not least...The importance of a Customer portal

- IT
- Development
- End-Consumers



# Automation of Services

## IT Service Catalog and Self Service Portal

Enterprise IT Services

Network Services

Cloud Computing Services

### Unified Orchestration & Automation

|                     |                               |                  |                 |
|---------------------|-------------------------------|------------------|-----------------|
| BYOD                | Hosted Collaboration Services | Webex            | VDI             |
| Laptops/ Desktops   |                               | Desktop Software | Mobile Apps     |
| Smartphone Tablet   | Video – Live & On-Demand      | Social Apps      | Enterprise Apps |
| IP Phones/ Printers |                               |                  |                 |

**Devices, Collaboration, Apps**

|                               |
|-------------------------------|
| Manage Wired/Wireless Network |
| VPN/Security                  |
| Other Network Functions       |

**Network Functions**

| IaaS                     | PaaS                                 | SaaS                                |
|--------------------------|--------------------------------------|-------------------------------------|
| Virtual/Bare Metal       | Application Platforms                | Hosted Applications                 |
| Virtual/Physical Network | Pre-built Application Infrastructure | Cloud Service Brokerage Integration |
| Multi-Cloud              | Blueprints                           | Syndicated Applications             |

**Infrastructure & Platform Services**

## Bring Your Own Device

Explore the services that we offer to help you use your personal devices to be productive at work. Services include: Registration, Wipe, Message.



## Collaboration Services

Explore the services that we offer to help you use your personal devices to be productive at work. Services include: Email, Conferencing, IM.

## Manage My Stuff

Review your services. Track open orders for services, access your order history, get analytics on currently active services, and take action to maintain or upgrade your services.

## Enterprise IT Services

All of your personal services in one place.



Device Services



Application Services



Collaboration Services



Application Platforms



Virtual Data Center



Bring Your Own Device

## Cloud Computing Services

Fulfill your cloud computing needs with a full suite of virtual services.

## Featured Workplace Services

Review the best new services



### Apple Macbook Air

With the latest Intel Core i5 and i7 processors, up to 60 percent faster graphics, and faster flash storage, MacBook Air packs a lot of features into an astonishing 2.38 pounds [Details](#)

## Popular Workplace Services

Pick from the most popular services



### Send Message to Device (BYOD)

Send a message to the mobile device. This message will show up on locked devices. [Details](#)

## Essential Workplace Services

Select the best tools for your role



### Microsoft Office

Microsoft Office makes it easy to simplify your workday. Achieve more with beautiful docs, spreadsheets and multimedia presentations. [Details](#)



### Apple iPad

Made from high-quality materials like aluminum and glass, iPad and iPad mini are exquisitely designed. You can tell just by looking. [Details](#)



### Google Docs

Google Apps is a cloud-based productivity suite that helps you and your team connect and get work done from anywhere on any device. It's simple to setup, use and manage, allowing you to work smarter and focus on

# Summary

- Telco's are faced with unprecedented challenges ahead
  - Both business and technical
- However, opportunities exist for new revenue generating services
  - Monetize the network
  - New revenue generating services
  - Optimize cost
- Start with simple services like collocation, incrementally move towards Software as a Service (SaaS)



## Formula for Success

Exponential Grow of IP Traffic

+

Demand for Cloud based Services

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Profitable Cloud Based Service Offerings

Thank you.

