



# Connecting Customers with Services

## Cisco IP NGN Carrier Ethernet System

### The Future of the Internet

Unprecedented growth: Mobile, video, expectations, and complexity.

### Cisco IP NGN Carrier Ethernet System

Enabling the convergence of Internet, video, mobile, and cloud services onto a single network.

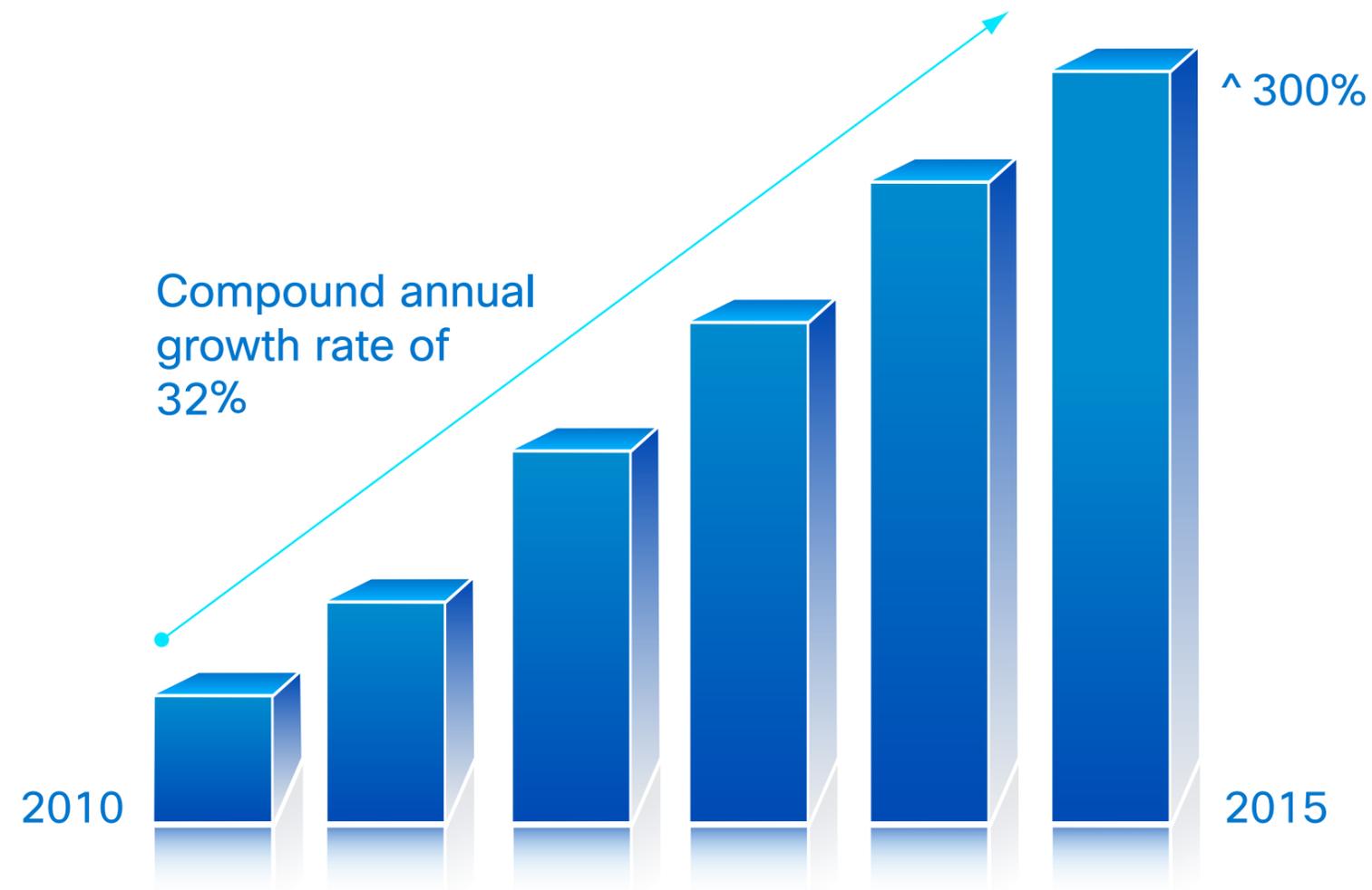
### Backed by Cisco Services

Infrastructure, operations, and scale: All managed for performance and efficiency in real time.



# Meeting the Challenge of the Zettabyte Era

**Increased Complexity** Annual global IP traffic will reach nearly a zettabyte (966 exabytes) by 2015.



## Video, Mobile, and Cloud Will Dominate Growth



### Internet

From 2010 to 2015, global IP traffic will quadruple. The projected increase of Internet traffic between 2014 and 2015 alone is 200 exabytes, which is greater than the total amount of IP traffic generated globally in 2010.

### Video

By 2015, one million video minutes, the equivalent of 674 days, will traverse the Internet every second.

### Mobile

By 2015, there will be nearly 15 billion network connections through devices, including machine-to-machine, and more than two connections for each person on earth.

# Simple to Scale. Simple to Operate.

## Next-Generation Internet

To meet the needs of the zettabyte era, service providers need an intelligent network that is simple to scale and simple to operate. The Cisco® IP Next-Generation Network (NGN) Carrier Ethernet System is a pre-tested, validated, end-to-end network solution for video, mobile, and cloud that includes the management tools to operate it and the full backing of Cisco's world-class services team to bring it all together.

Service providers can simplify operations, reduce risk and time to market, and maximize the return on their capital investment. Cisco innovations deliver customer experiences from the core to the customer at the lowest cost, power, and space.

The Cisco IP NGN Carrier Ethernet System can accommodate both existing and next-generation services, while protecting capital investment and optimizing operating expenses. It also supports the workflow and business processes used in multivendor network environments, and includes a comprehensive open infrastructure of service activation and assurance methods.

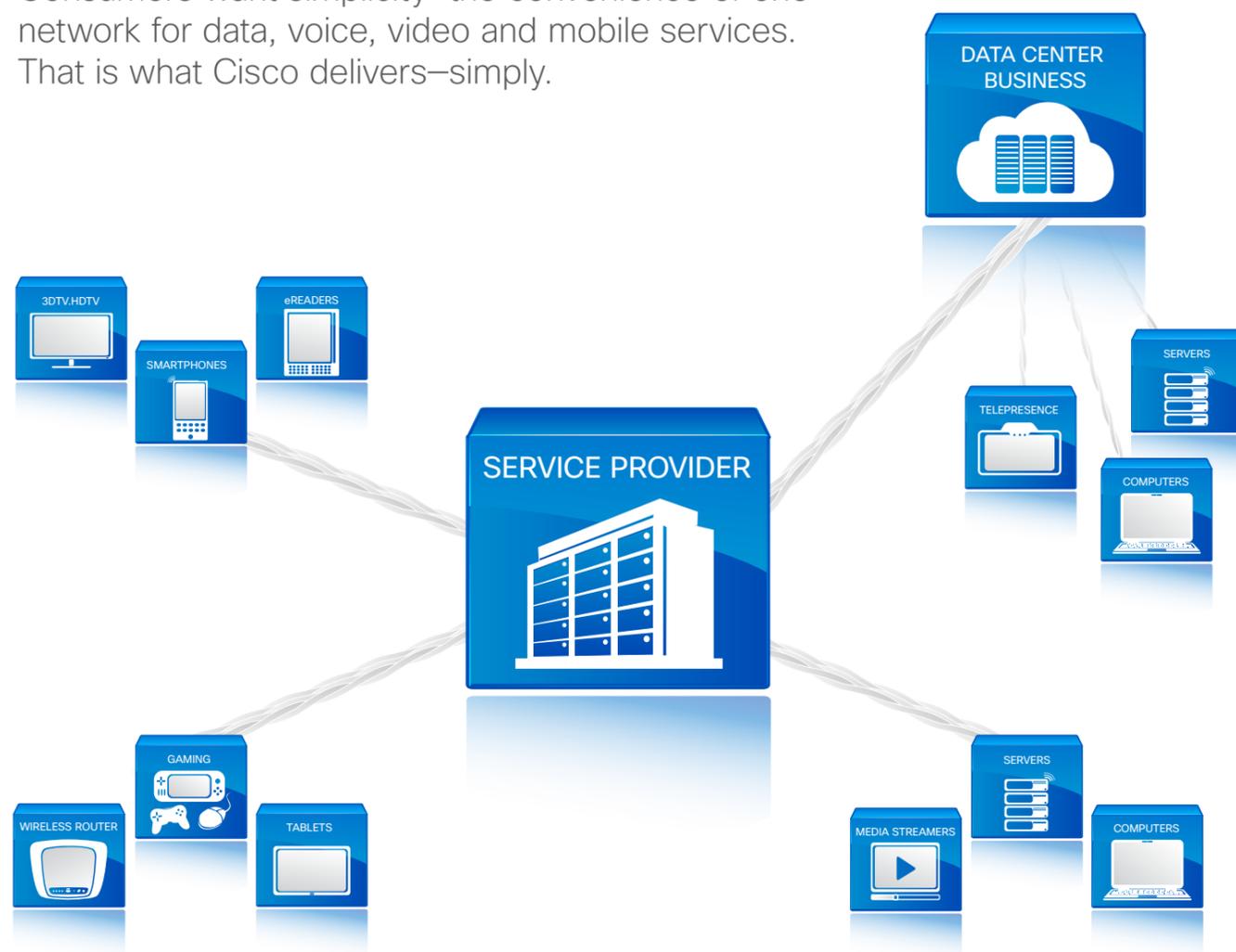
Taking advantage of standards-based technology, Cisco is the first manufacturer to submit every component of a complete end-to-end system for Metro Ethernet Forum (MEF) certification. Full compliance of every platform was validated to meet both MEF 9 and 14 standards. Systems with MEF-certified components enable service providers to deploy fully compliant and interoperable end-to-end Carrier Ethernet services.



# High-Performance Experiences Customers Expect

## Converged Network

Consumers want simplicity—the convenience of one network for data, voice, video and mobile services. That is what Cisco delivers—simply.



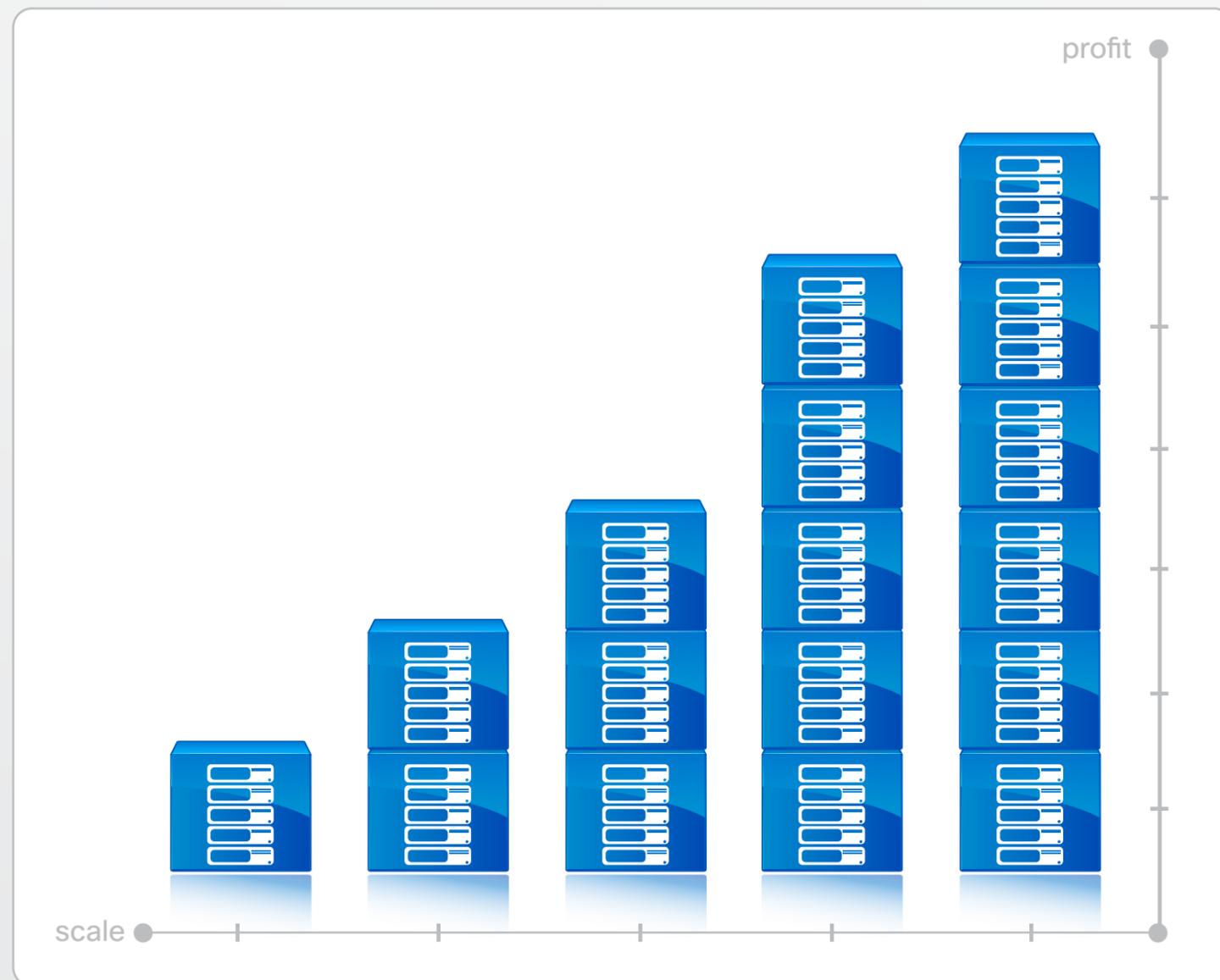
## Simplicity, Scale, and Experience

The Cisco IP NGN Carrier Ethernet System enables service providers to deliver the rich, unified, high-performance experiences their customers demand. It supports any service on any device, anywhere, and anytime. Because the Carrier Ethernet system offers the most extensive set of configurable options available, it adapts to evolving needs, yields unsurpassed cost savings, and enables providers to enhance their revenue and satisfy their customers with compelling “any-play” services.

The Cisco IP NGN Carrier Ethernet System is based on Multiprotocol Label Switching (MPLS) technology to simplify service integration and make the converged network more resilient, scalable, and economical. For zero-touch deployments, time to revenue is faster because distributed intelligence throughout the network can help optimize services transport. The Carrier Ethernet system is also access technology-independent, supporting cable, fiber, wireless, and DSL. Enabling convergence across access, edge, core, and optical components simplifies network operations while still enabling enhanced user experiences.

Mobile services are enhanced, too, with easy and secure roaming, quality-of-service (QoS) capabilities, and support for services that you can adapt to future high-bandwidth mobile applications.

# Capacity When Needed, Investment Protection from the Start



## Scale Profitably in the Zettabyte Era

Growth is good, but it can bring headaches to service providers that are unprepared for the zettabyte era. Massive traffic growth, especially in complex video and content-rich services, can lead to network bottlenecks and lost opportunities unless the infrastructure allows for timely increases in capacity to match demand.

## Pay as You Grow, Scale at the Edge, and Access

The Cisco IP NGN Carrier Ethernet System can grow as demand grows, minimizing the need for complete system upgrades and protecting your network investments. For example, the Cisco ASR 9000 Series Aggregation Services Router delivers up to 96 Tbps per system along with Cisco network virtualization technology. No other edge platform can match its combination of speed, flexibility, and services.

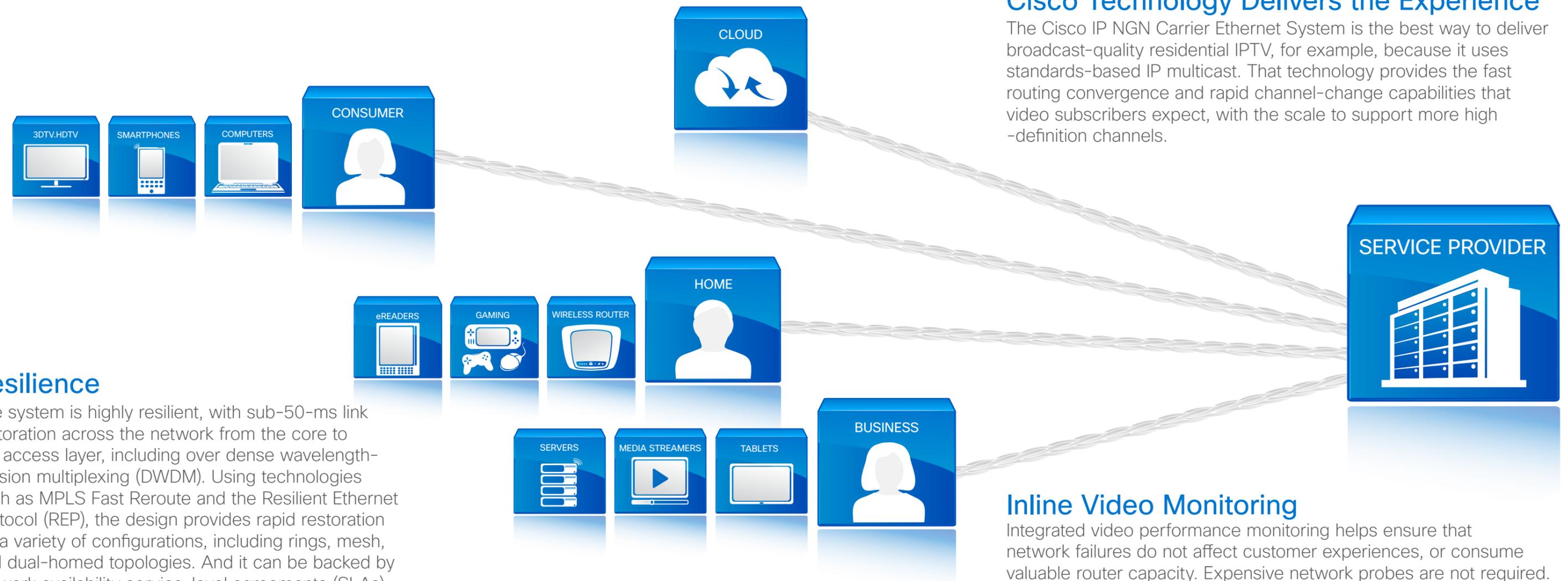
The Cisco ME 3600X Ethernet Access Switch is upgradable from 1 to 10 Gbps with a simple software license—no new hardware is required. So as bandwidth demand rises, the network can scale with it and so can profitability.

# One Network Delivering Many Experiences

**What Does This Mean to You?** Reliability, flexibility and lower turnover.

## Cisco Technology Delivers the Experience

The Cisco IP NGN Carrier Ethernet System is the best way to deliver broadcast-quality residential IPTV, for example, because it uses standards-based IP multicast. That technology provides the fast routing convergence and rapid channel-change capabilities that video subscribers expect, with the scale to support more high-definition channels.



## Resilience

The system is highly resilient, with sub-50-ms link restoration across the network from the core to the access layer, including over dense wavelength-division multiplexing (DWDM). Using technologies such as MPLS Fast Reroute and the Resilient Ethernet Protocol (REP), the design provides rapid restoration for a variety of configurations, including rings, mesh, and dual-homed topologies. And it can be backed by network availability service-level agreements (SLAs) from Cisco Services.

## Inline Video Monitoring

Integrated video performance monitoring helps ensure that network failures do not affect customer experiences, or consume valuable router capacity. Expensive network probes are not required. The system detects problems automatically at the services level and can reroute traffic without manual intervention.

**What Does It Mean to Your Customers?** High performance and improved satisfaction.

# All Backed by Cisco Service Assurance

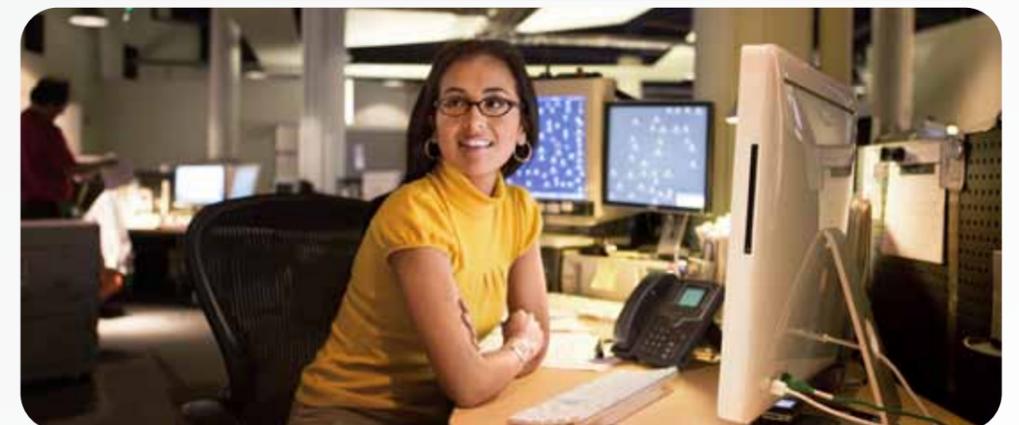
## The Challenge of Change

Service providers worldwide are delivering an increasingly rich set of services over IP next-generation networks. At the same time, they are experiencing rapid changes in technology and sharp growth in subscribers, IP video traffic, multiservice convergence and their customers' expectations. More than ever, it is necessary to monitor and manage the health of the network, to respond to changing demands, make sure of reliable service, and prevent costly outages.

## Customer Benefits

Cisco Assurance Services for IP Next-Generation Networks provide real-time monitoring and optimized management of faults, availability, performance, and capacity. They can focus as needed on these specific characteristics, or on broader operational support.

- **Network assurance:** Real-time health checks are performed to improve network performance and reliability.
- **Lower-cost, higher-efficiency Cisco best practices:** These practices join customer processes to reduce or eliminate outages, improve operating efficiency, and lower costs.
- **Faster time to market:** Respond more quickly to competition and changing customer demands.
- **Reduced risk:** Services are backed by Cisco with mutually agreed performance indicators and service-level agreements.





# IP Next-Generation Network Carrier Ethernet System

One End-to-End Network.

Delivering the promise of next-generation networking. Multiple services, richer experiences, and the intelligence to meet the demands of tomorrow.

[cisco.com/go/ce](http://cisco.com/go/ce)



Cisco CRS Family



Cisco ASR Family



Cisco 7600 Series



Cisco ME Family



Cisco Mobile  
Wireless Router



Cisco Catalyst Family



Cisco ONS Family



Cisco Integrated  
Service Router

## Core

Cisco CRS-1  
Cisco CRS-3

## Edge/EPC

Cisco ASR 9000  
Cisco ASR 1000  
Cisco ASR 5000  
Cisco 7600

## Aggregation

Cisco ASR 9000  
Cisco 7600  
Cisco ME 3800X  
Cisco ASR 903

## Optical

Cisco ONS 15454 M2/M6  
Cisco ONS 15454 M12  
Cisco CPT 600  
Cisco CPT 50

## Access

Cisco Catalyst® 3750 Metro  
Cisco Catalyst 4500  
Cisco Catalyst 6500  
Cisco ME 3600X  
Cisco ME 3800X  
Cisco ME 4924  
Cisco ME 6524  
Cisco ASR 901  
Cisco ASR 903

## Customer Premises

Cisco ISR  
Cisco ASR 901