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# Strategy & Vision for the ISP Market





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**Roland Acra**

**VP/GM Public Carrier IP Group,  
Cisco Systems**



# Our Mission

***To Build a Scalable Internet  
Infrastructure Enabling  
Profitable Network-based  
Services***

# Leadership Strategy for Internet Service Providers

- **Move toward new opportunities and business models based on content / applications and large scale wholesaling**
- **Interconnected system of services are the foundation for building value into ISP networks**
- **Depend on leadership portfolio of infrastructure platforms that deliver Internet-scale systems**

**Scalable bandwidth, scalable networks and scalable services**

# Agenda

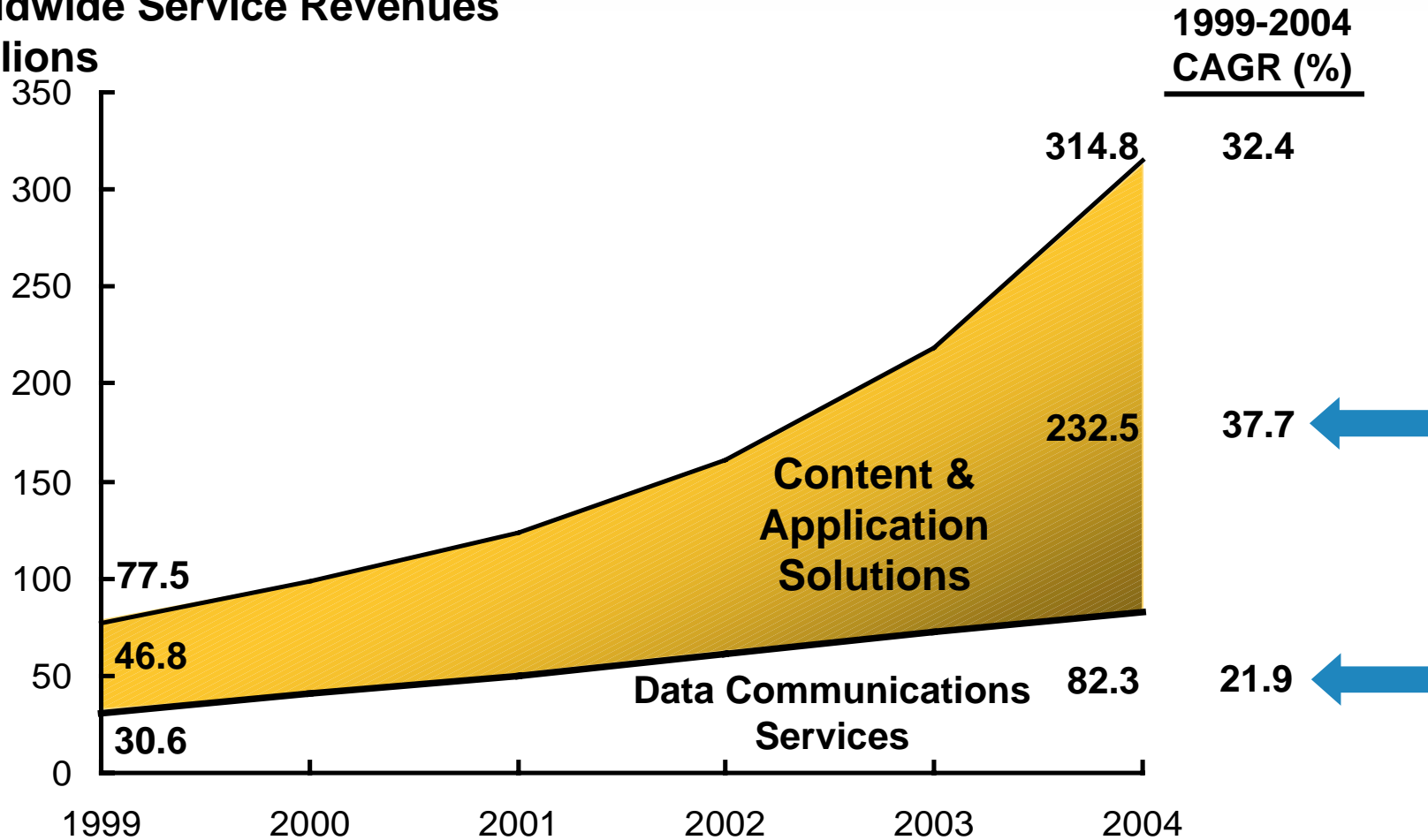
- **Market Directions**
- **Key Solutions for Your Customers**
- **Building Value with an Interconnected System of Services**
- **Leadership Portfolio of Scalable Infrastructure Platforms**



# Market Directions

# Internet Economy SP Solutions Engines for Growth

**Worldwide Service Revenues**  
\$ Billions



Sources: IDC; Dataquest; Forrester; Morgan Stanley Dean Witter; Internet Research Group; Veronis, Suhler & Associates; Cisco analysis

Note: Wireline voice transport grows at 7.6% from 564 B (1999) to 815 B (2004) and wireless voice transport grows at 13.8% from 225 B (1999) to 430 B (2004)

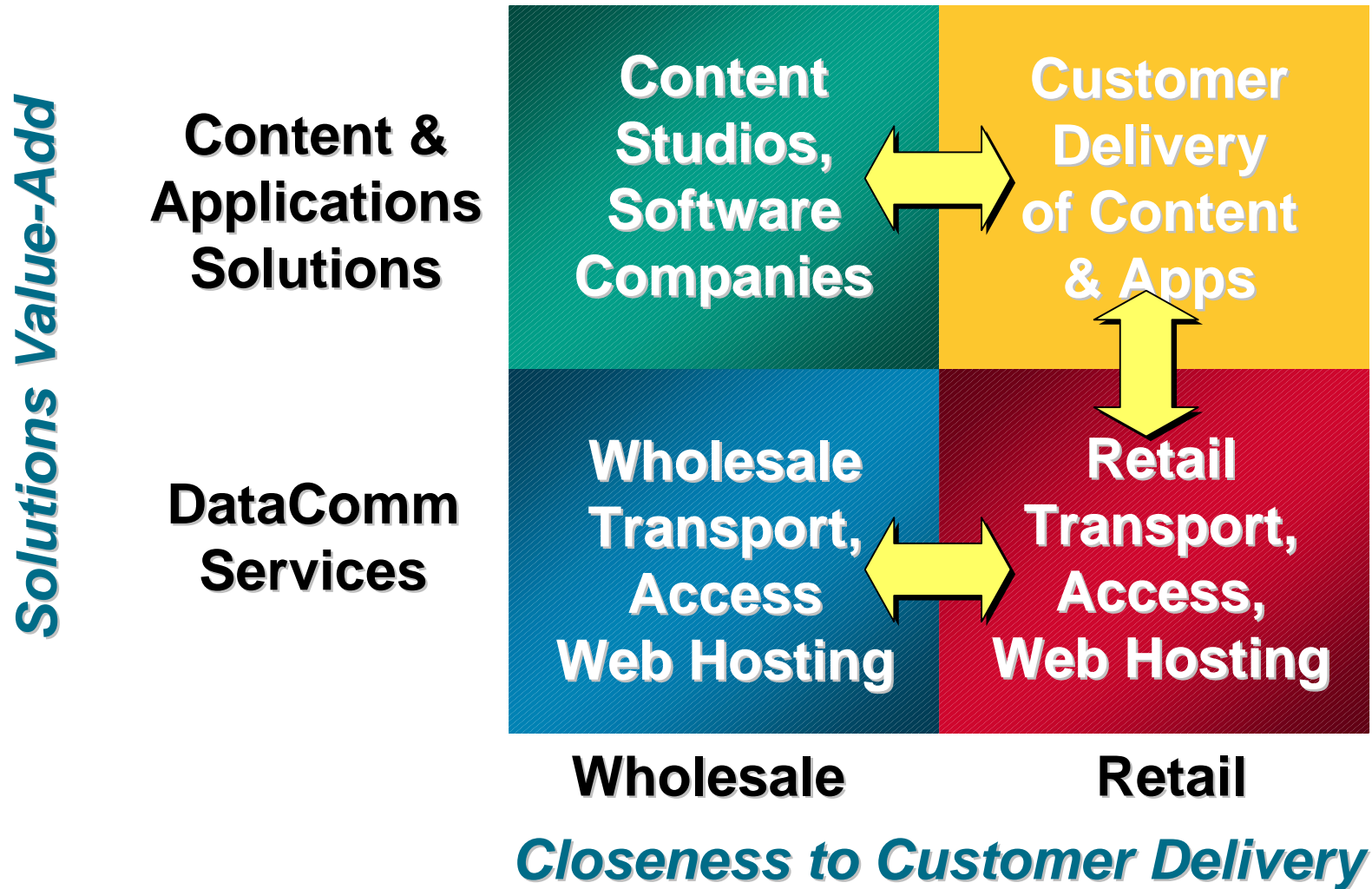
# Internet Economy SP Solutions: Content and Applications

	<b>Business Solutions</b>	<b>Consumer Solutions</b>
<b>Hosted Application Solutions</b>	<ul style="list-style-type: none"> <li>• E-business applications (internal-facing and external-facing)</li> </ul>	<ul style="list-style-type: none"> <li>• Personal productivity applications</li> <li>• Online gaming</li> </ul>
<b>Content &amp; Media Solutions</b>	<ul style="list-style-type: none"> <li>• Content delivery: advertising, company websites, information</li> </ul>	<ul style="list-style-type: none"> <li>• Content delivery: music-/video-on-demand</li> </ul>
<b>Communications Solutions</b>	<ul style="list-style-type: none"> <li>• Real-time</li> <li>• Store and forward</li> <li>• Managed messaging</li> <li>• Telecommuting</li> </ul>	<ul style="list-style-type: none"> <li>• Real-time</li> <li>• Store and forward</li> <li>• Telecommuting</li> </ul>
<b>Portal / Mediation Solutions</b>	<ul style="list-style-type: none"> <li>• Web portal</li> <li>• Voice portal</li> <li>• Online business communities</li> </ul>	<ul style="list-style-type: none"> <li>• Web portal</li> <li>• Voice portal</li> <li>• Online personal interest communities</li> </ul>
	<ul style="list-style-type: none"> <li>• Data storage &amp; mgmt.</li> <li>• Business process outsourcing</li> </ul>	<ul style="list-style-type: none"> <li>• Home automation solutions (security, energy, appliances)</li> </ul>



# Emerging Business Models

## *The Golden Square*



# Company Examples Consumer

*Solutions Value-Add*

**Content &  
Application  
Solutions**

**Warner Bros.**

**Yahoo!**

**AOL**

**Dialpad.com**

**Reuters**

**Bluelight.com**

**DataComm  
Services**

**Nat. ISPs**

**G-IXCs**

**ITSP**

**HSPs**

**Reg/Loc  
ISPs**

**Wholesale**

**Retail**

*Closeness to Customer Delivery*

Cisco.com

# Emerging Business Models

## *Solution Examples*

**Solutions Value-Add**

**Content & Applications Solutions**

**DataComm Services**

Content	Portal Solutions
	Consumer Solutions
Applications	Business Solutions
	Communications Solns
Content Delivery Svces	Content Delivery Svces
Wholesale Hosting	Retail Web Hosting
Wholesale Access	Retail Access
Wholesale Transport	Retail Transport

**Wholesale**

**Retail**

***Closeness to Customer Delivery***

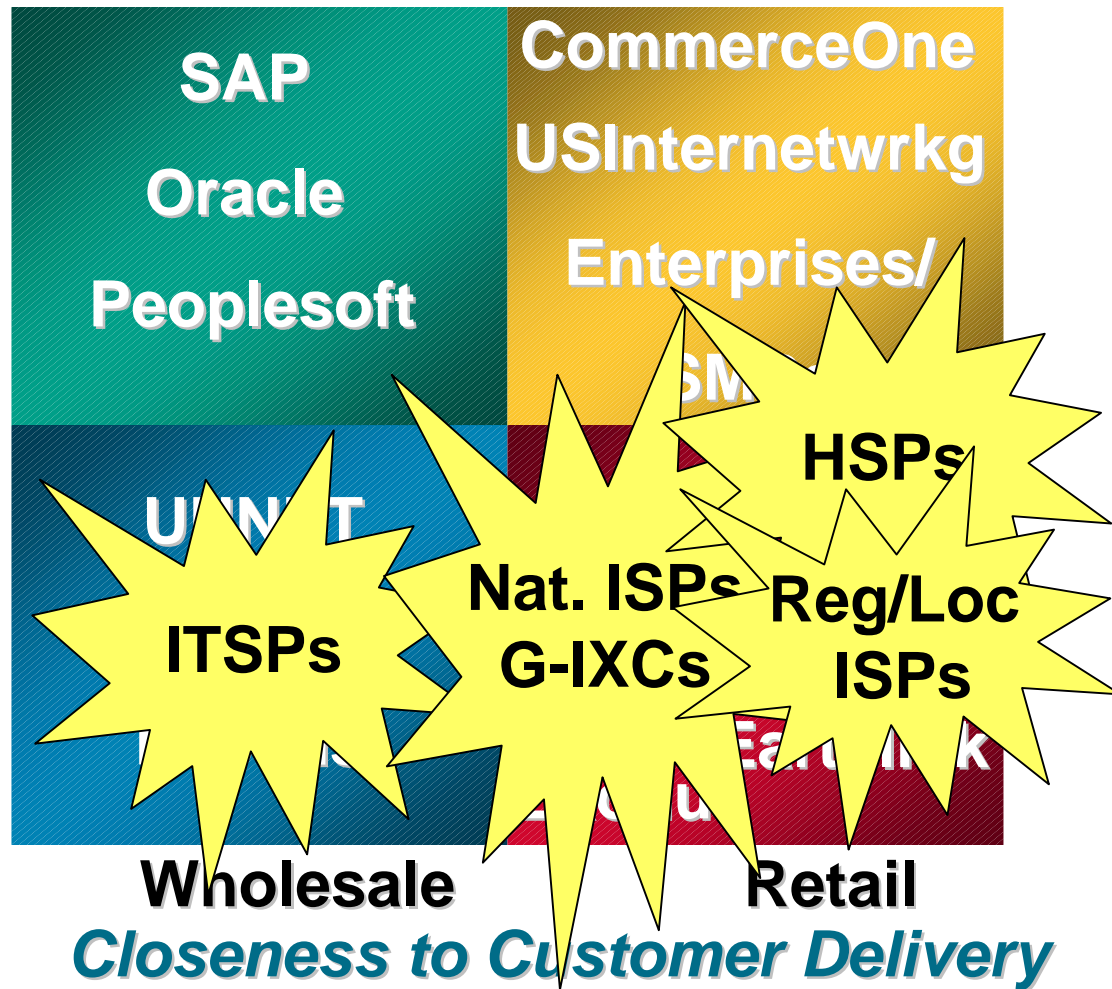
# Company Examples

## *Business Customer*

*Solutions Value-Add*

**Content & Application Solutions**

**DataComm Services**



# Paths to Continued Success

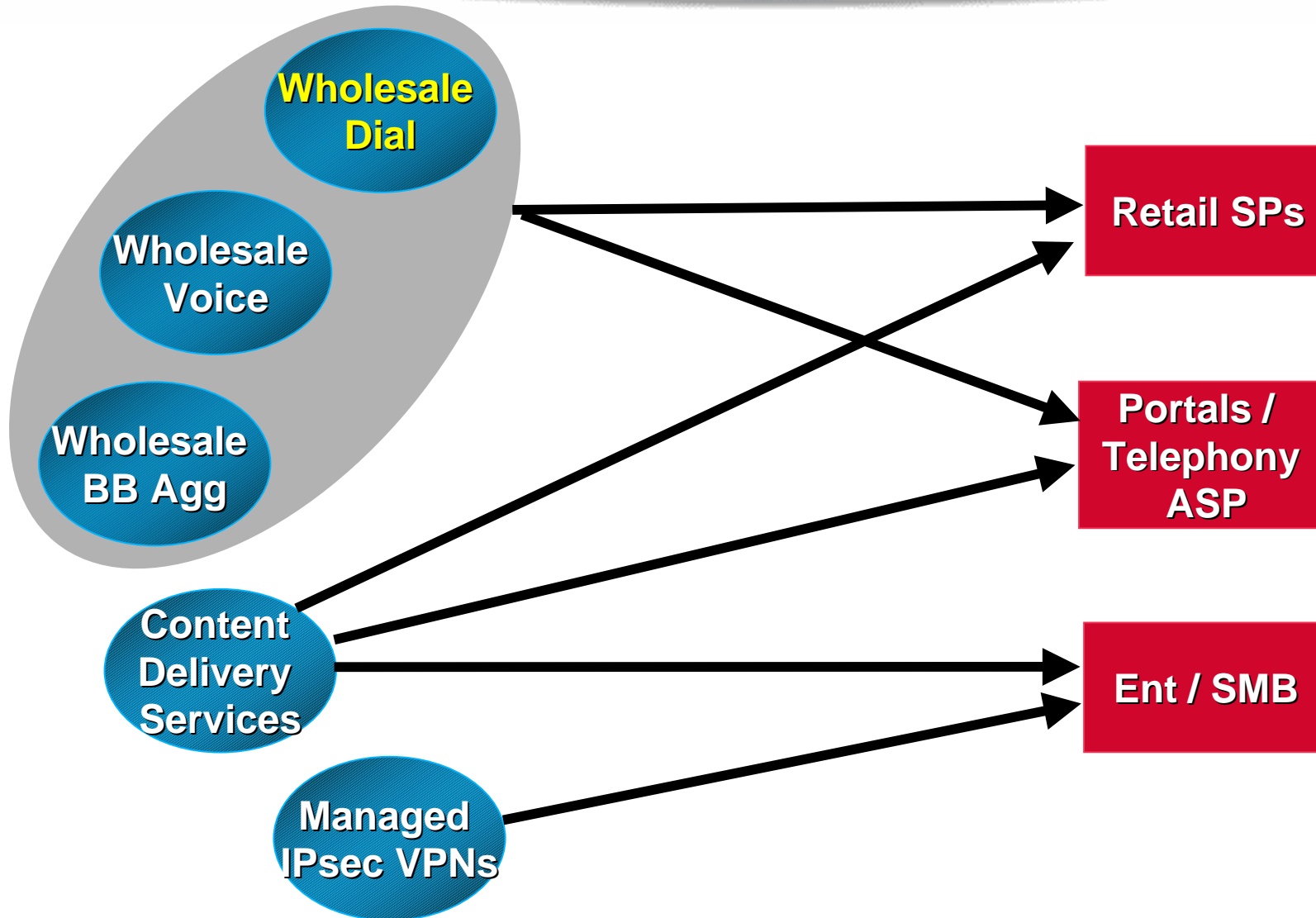
- **National ISPs, G-IXCs, HSPs**  
**Build scalable networks optimized for content**
- **Regional/Local ISPs**  
**Leverage SMB customer relationships**
- **ITSPs**  
**Look to increase scale**



# Key Solutions for Your Customers

## Opportunities Based on the New Business Models

# Key Solutions for Your Customers



# Wholesale Dial Trends

## Private Label Internet Access

### Advertiser Supported

### Subsidized

Brand

Consumer Free  
Internet Services

Enterprise  
Private Label  
Internet Services

Employee  
Internet Services

alta vista:

DELLnet

*Ford Motor Company*

LYCOS

E\*TRADE

BLUELIGHT.com

intel.

NETZERO  
Defenders of the Free World™

JBOxford  
& COMPANY

American Airlines®

Internet  
Service  
Enablers

1stUp.com  
free the web™

free i

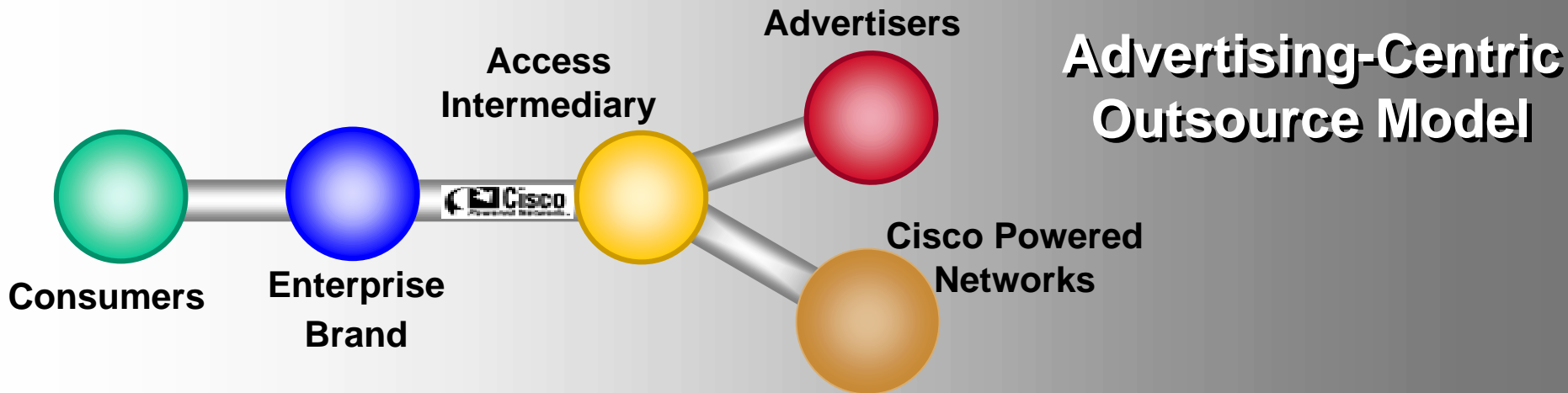
spinway.com®

peoplepc

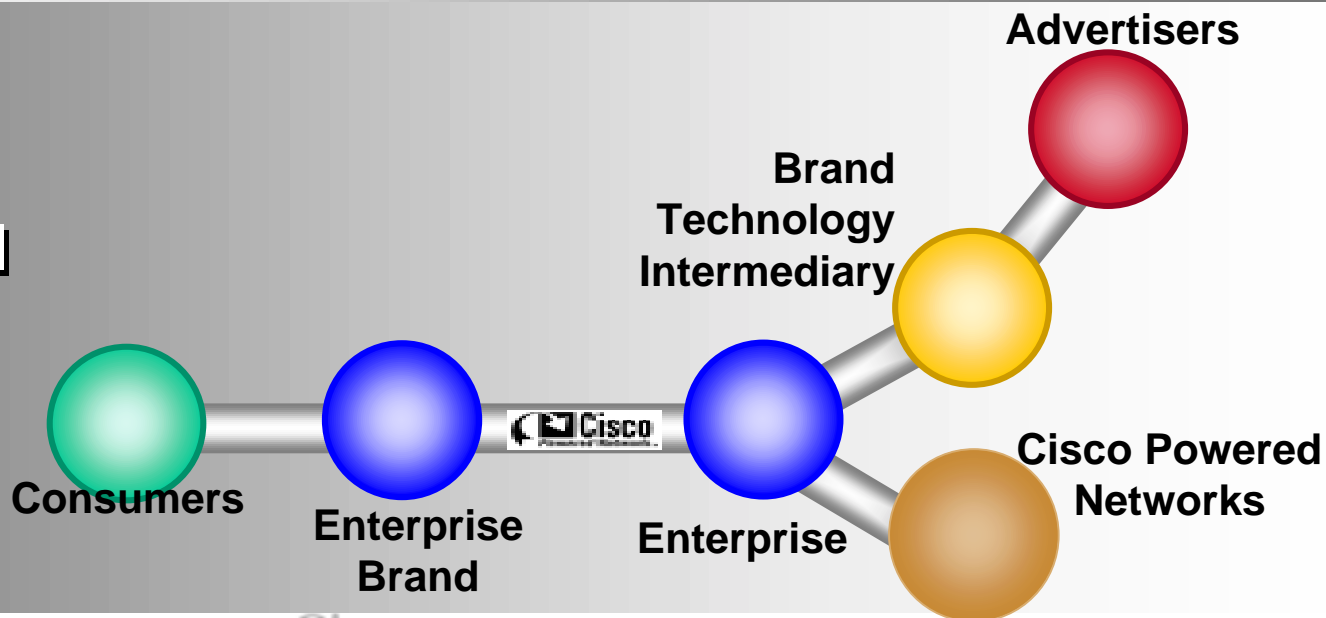
Cisco  
Powered Network.



# Private Label Internet Access Business Model



## Brand-Centric In-House Model



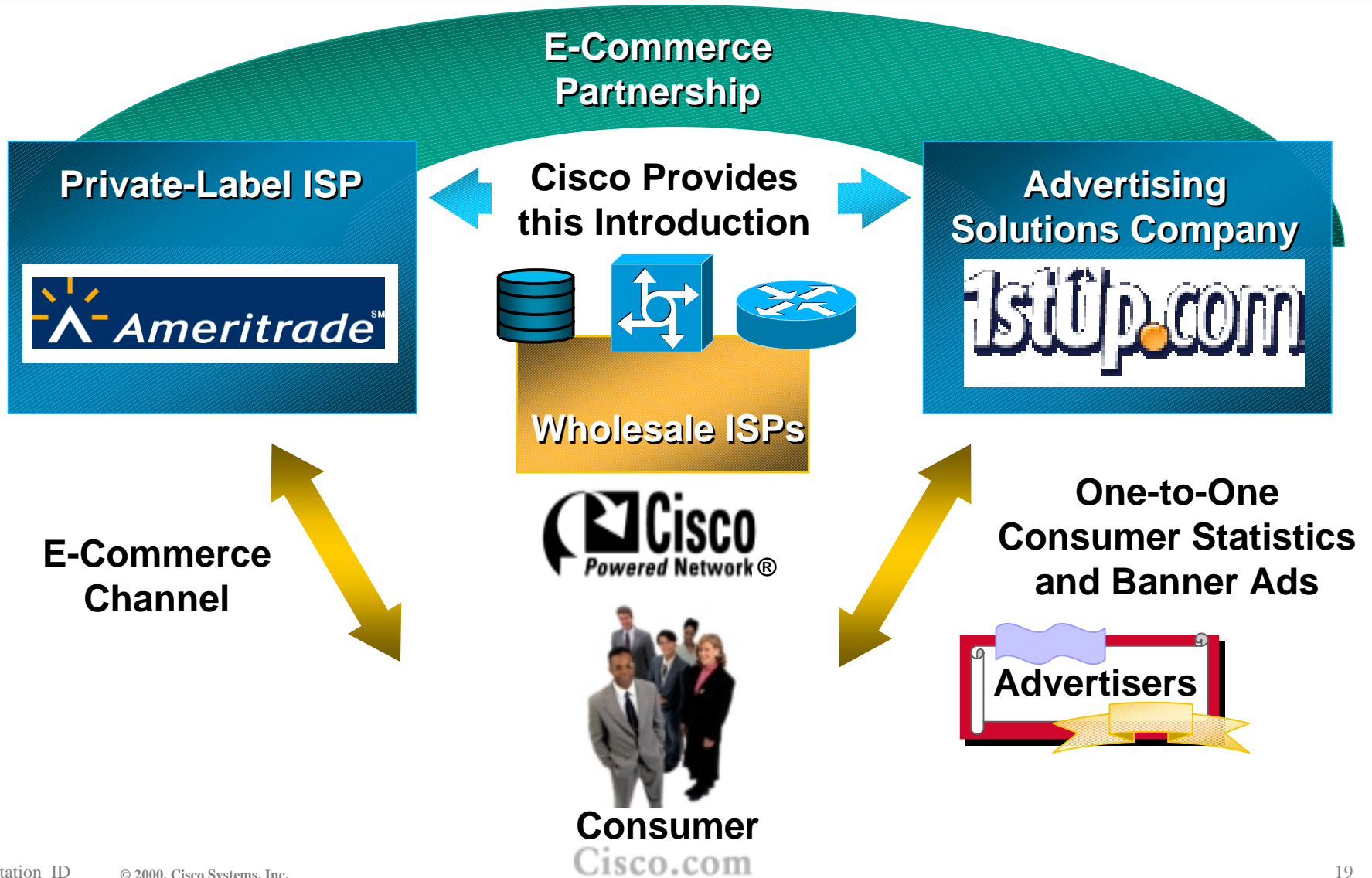
# Advertising-Centric Outsource *Ameritrade Example*

## Enterprise Goals for Private Label Internet

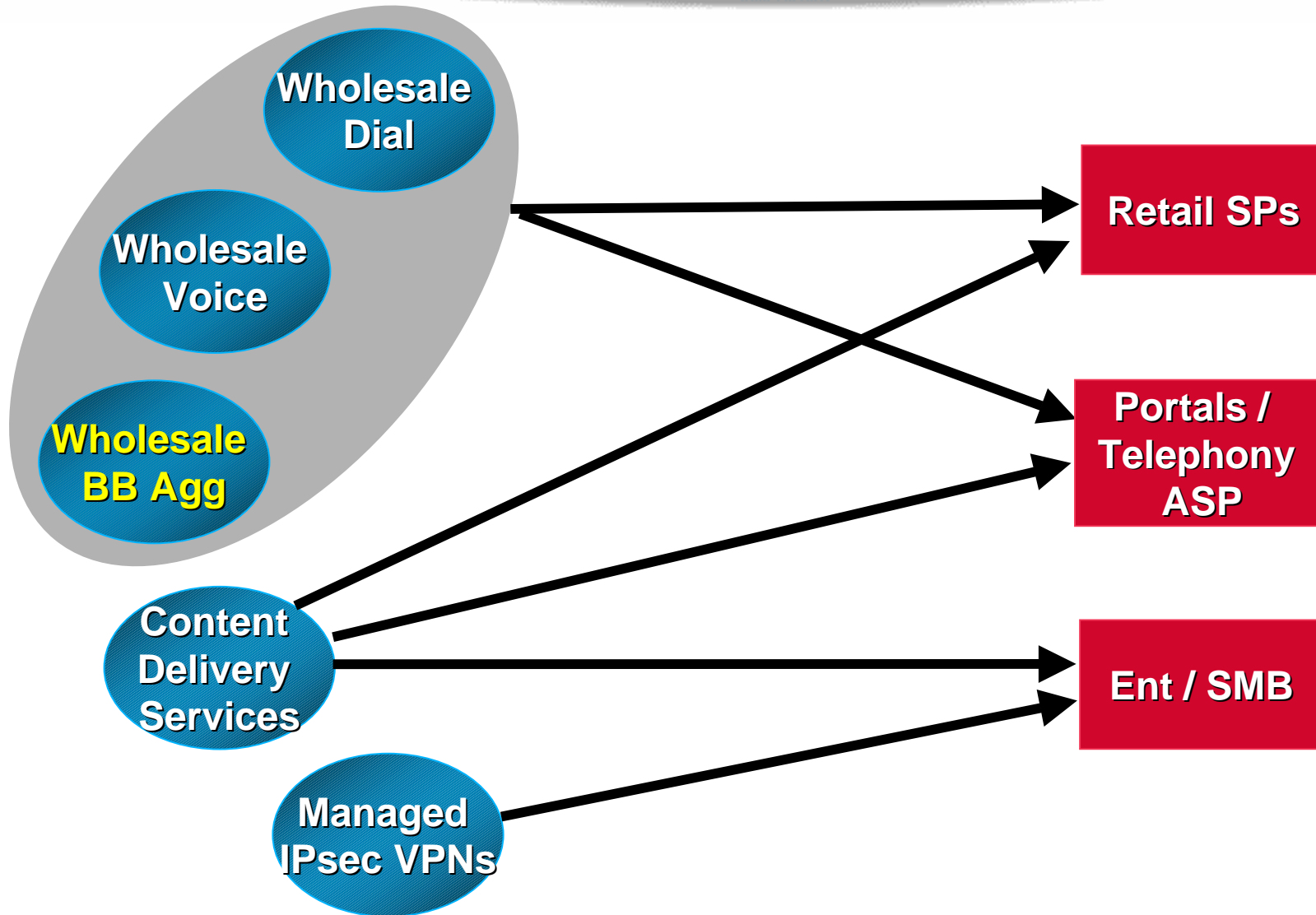
- Attract, acquire and retain new customers
- Increase customer “stickiness” and satisfaction
- Maximize e-commerce sales
- Complement off-line advertising
- Differentiate against competitors



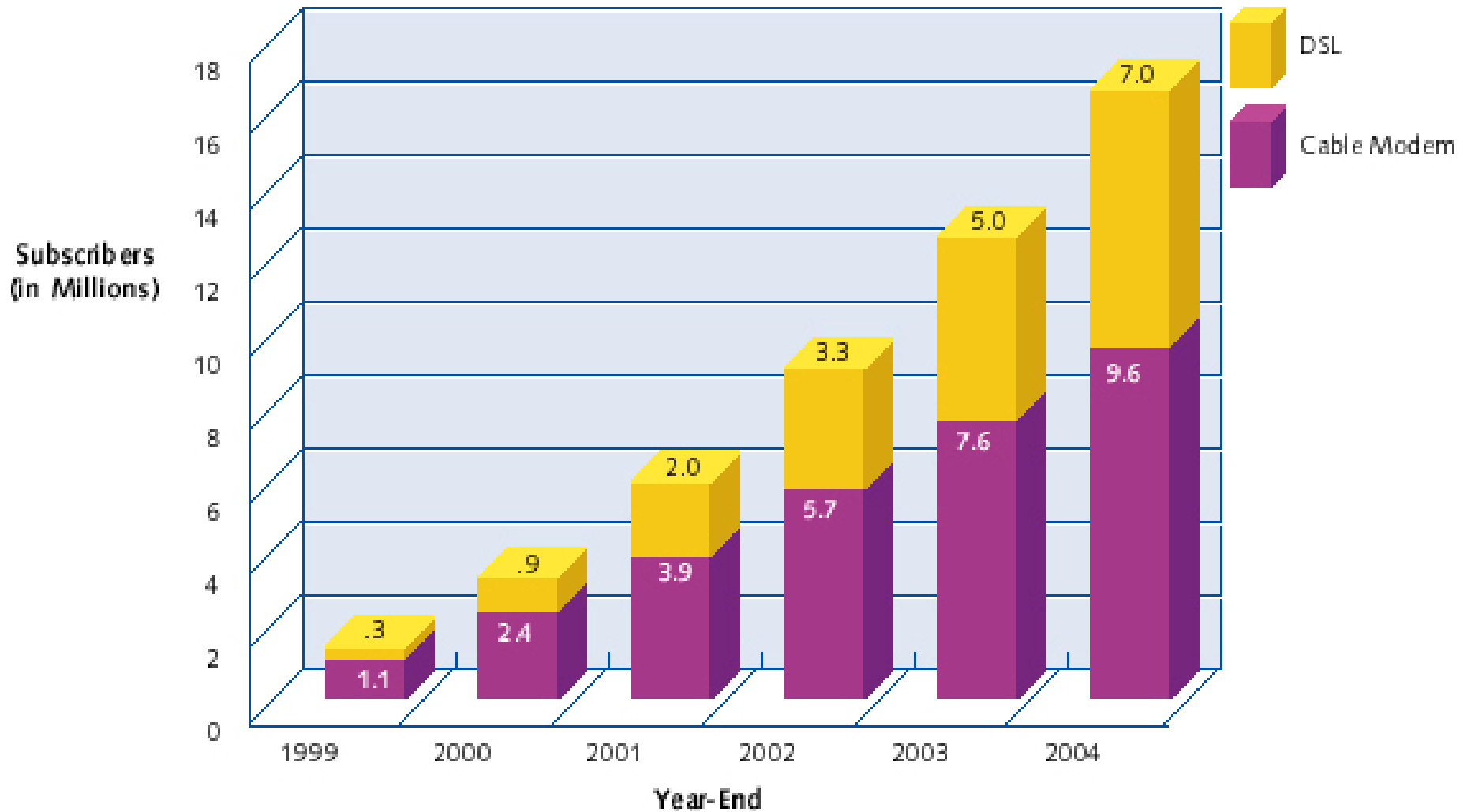
# Advertising-Centric Outsource *Ameritrade Example*



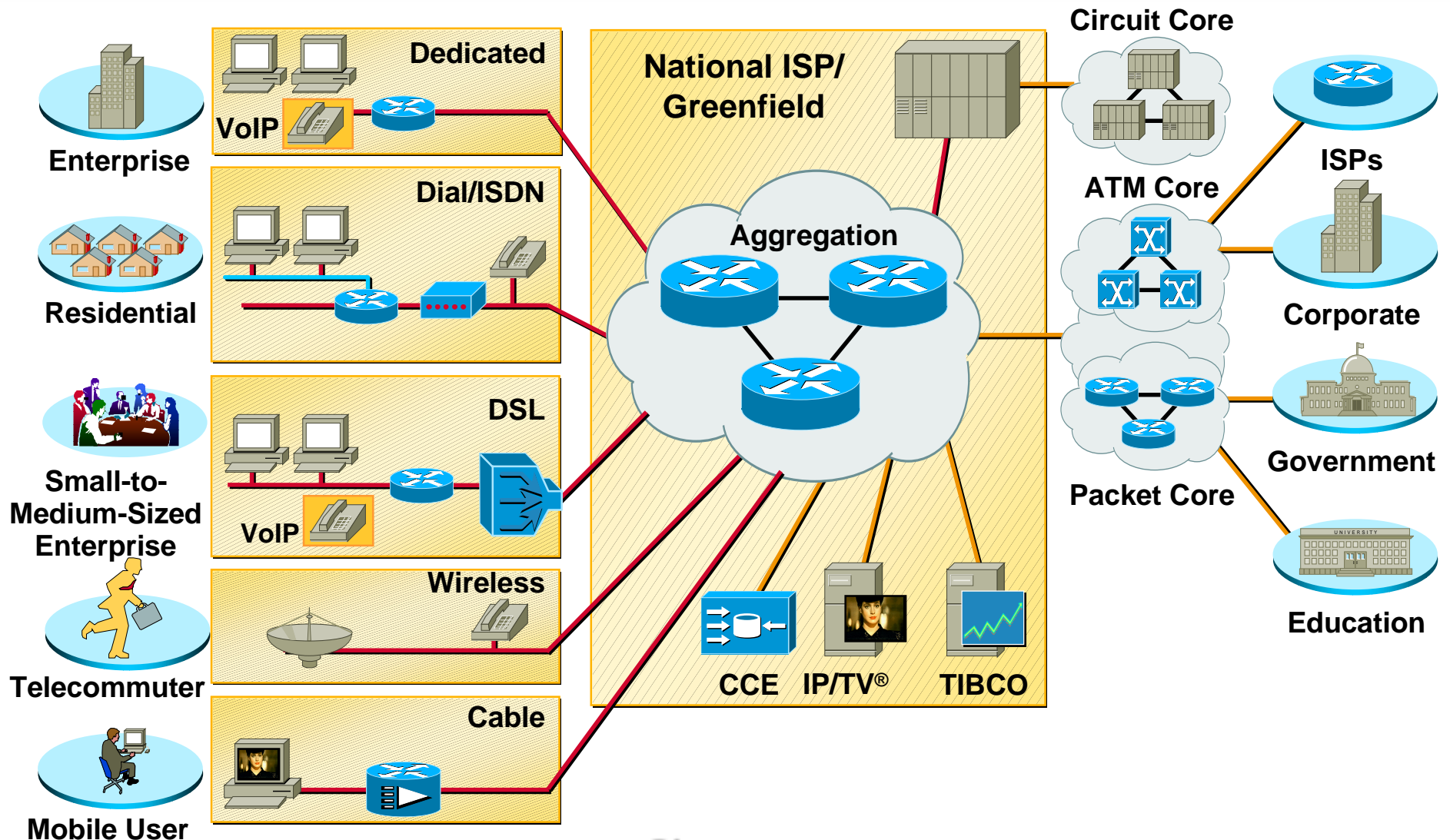
# Key Solutions for Your Customers



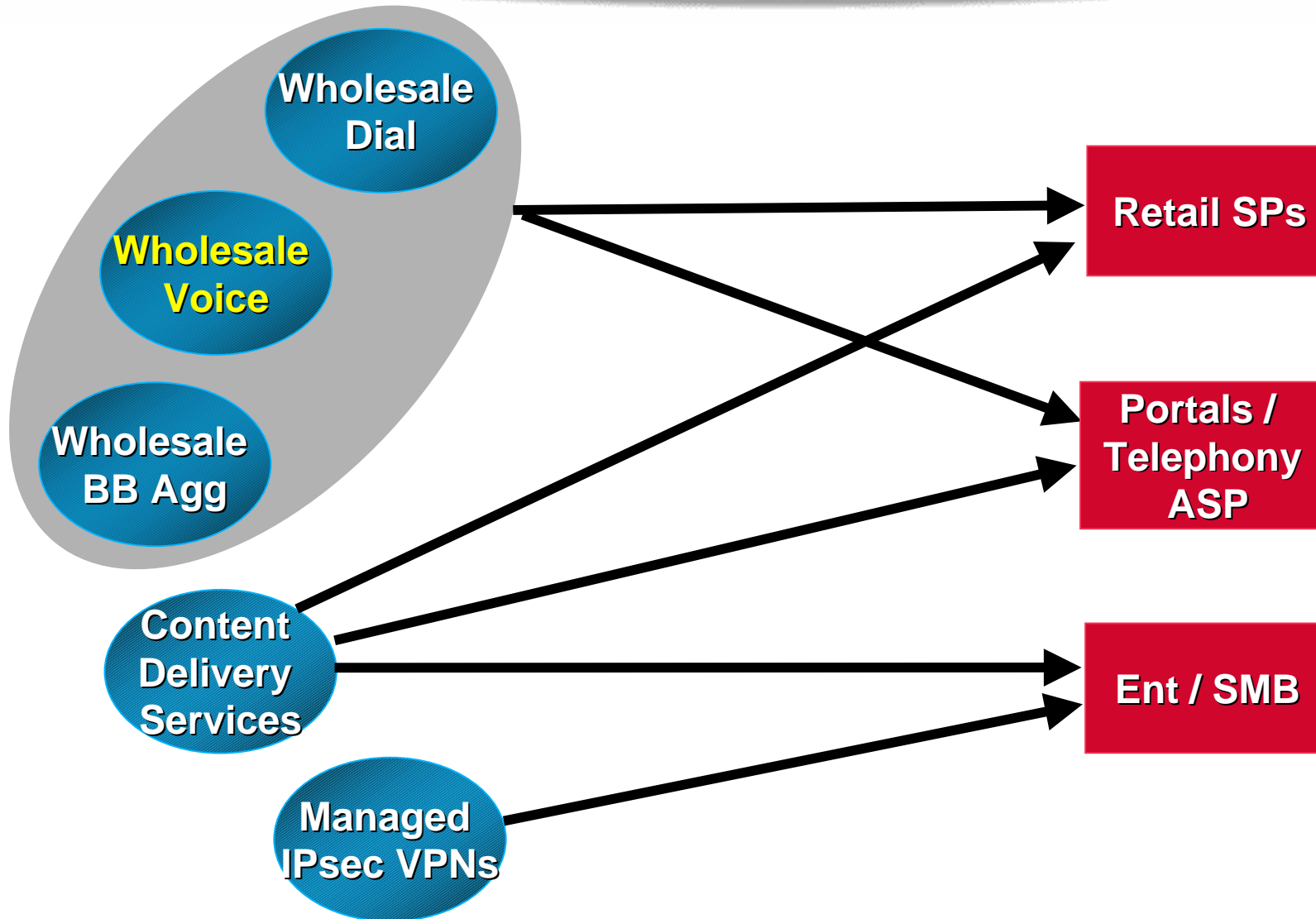
# U.S. Broadband Residential Subscribers



# Diverse Access Aggregation



# Key Solutions for Your Customers

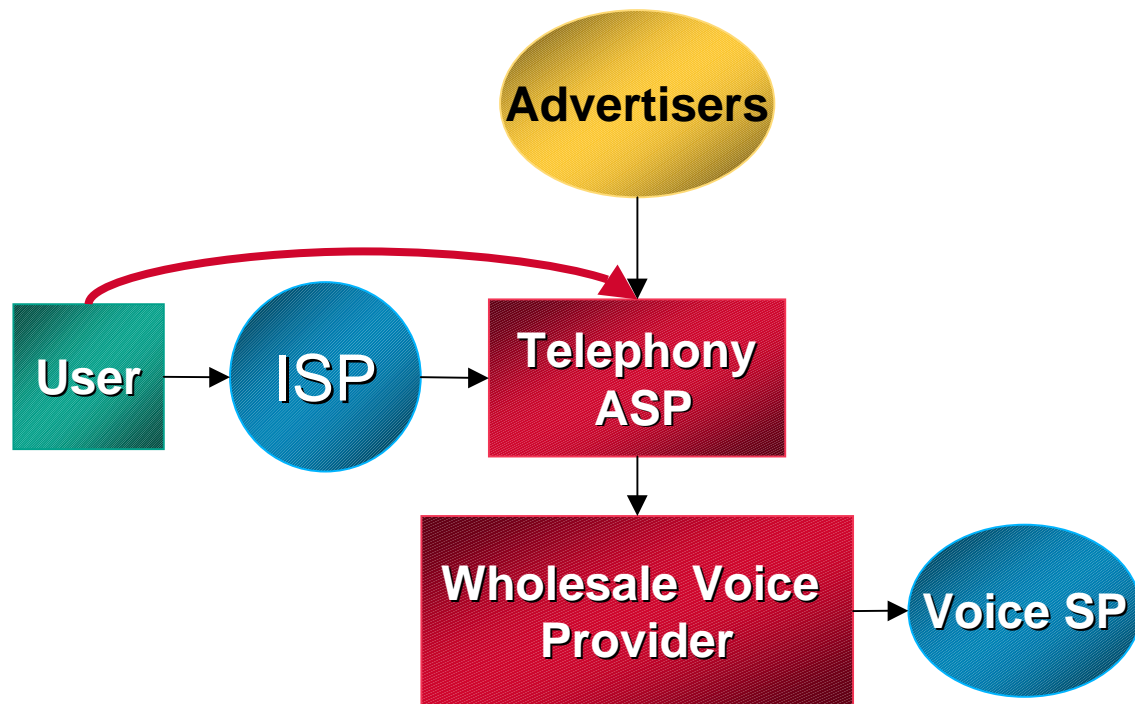


# Wholesale Voice Aggregation / Resale Model





# Wholesale Voice Telephony ASP Model



GENUITY

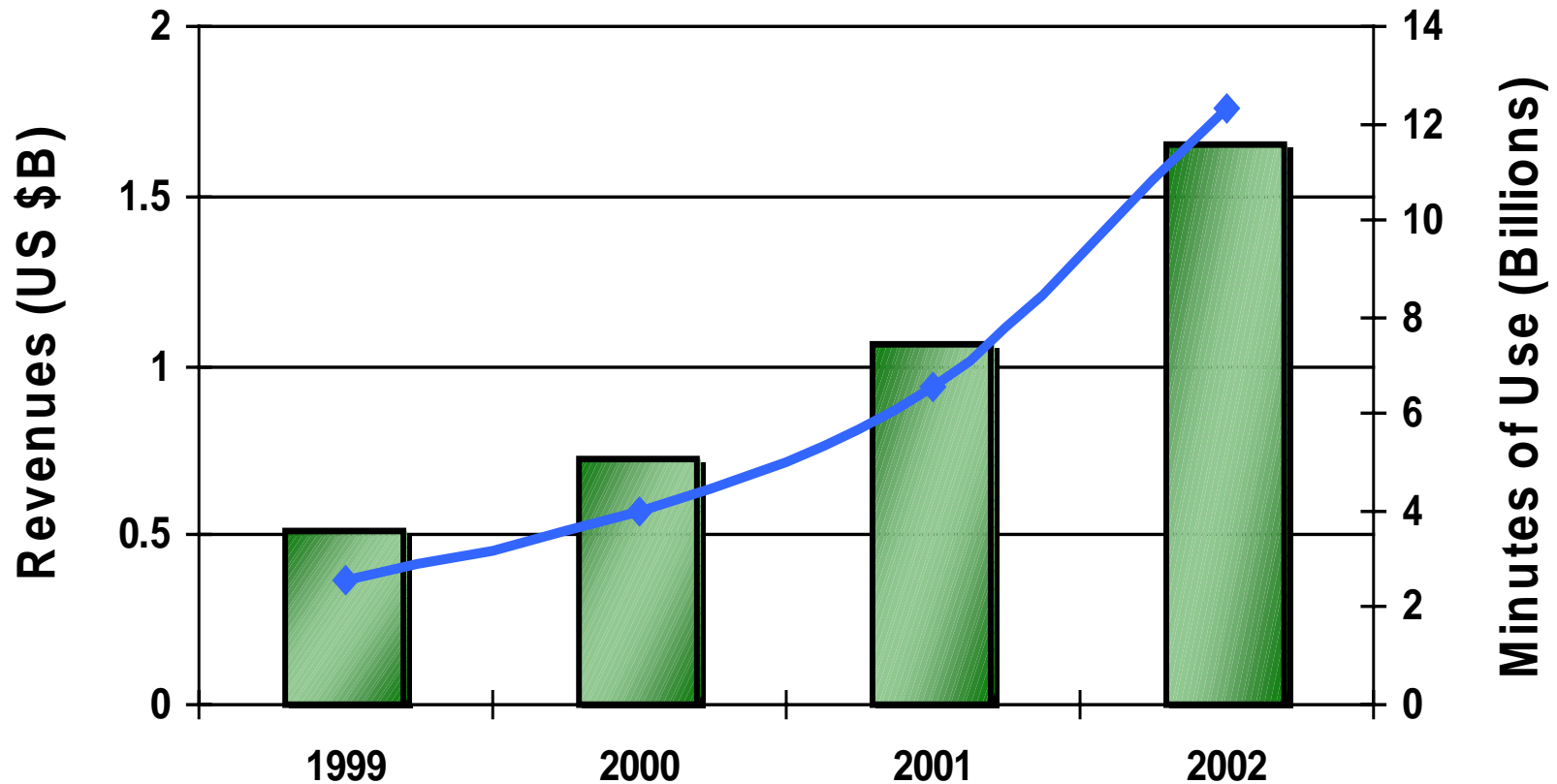
HearMe

Live Voice and Internet Telephony Products



# Global SP Voice-over-Packet Market

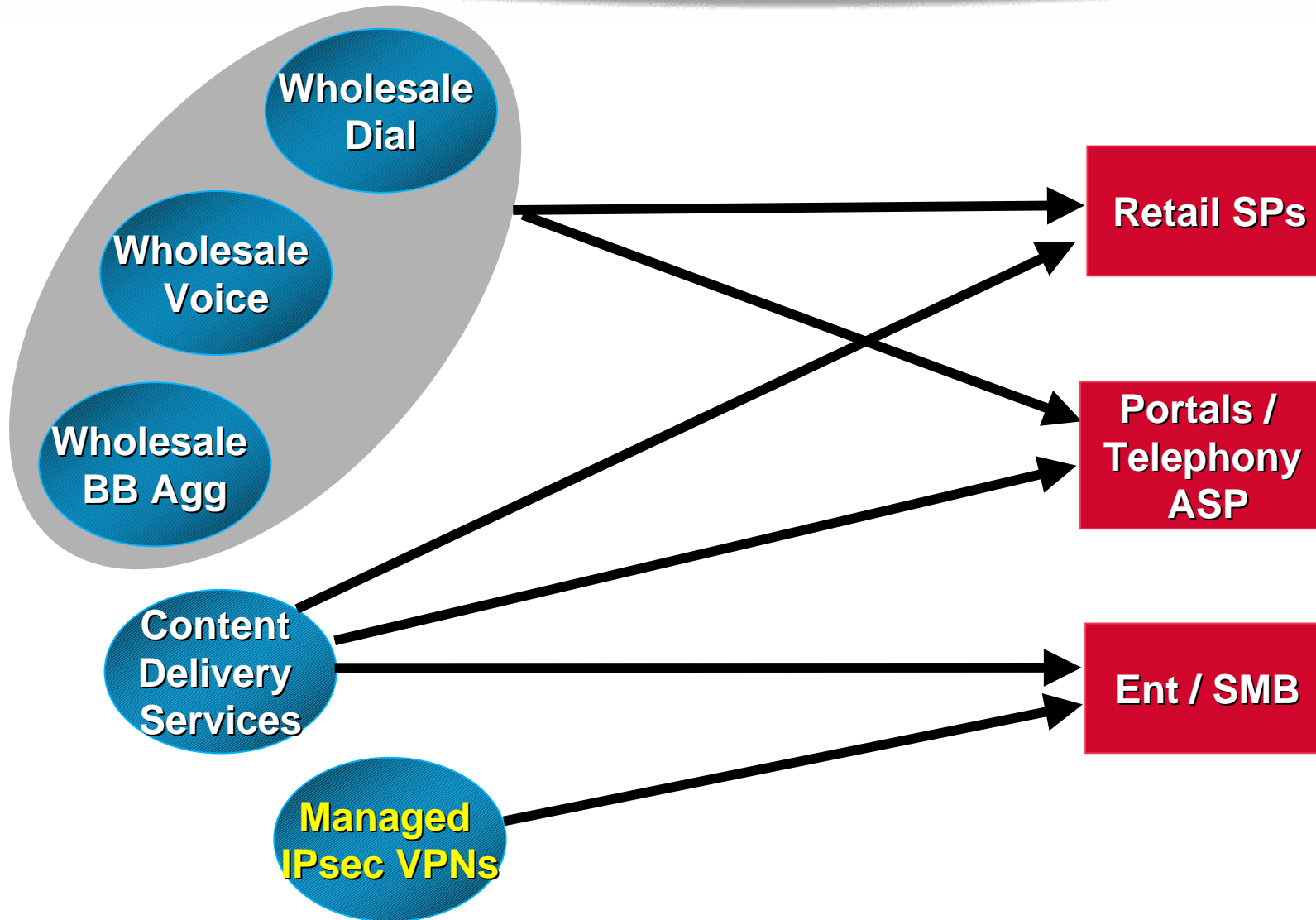
## Four Billion Minutes in 2000



Source: "Voice over Packet Networks", Probe Research, February 2000

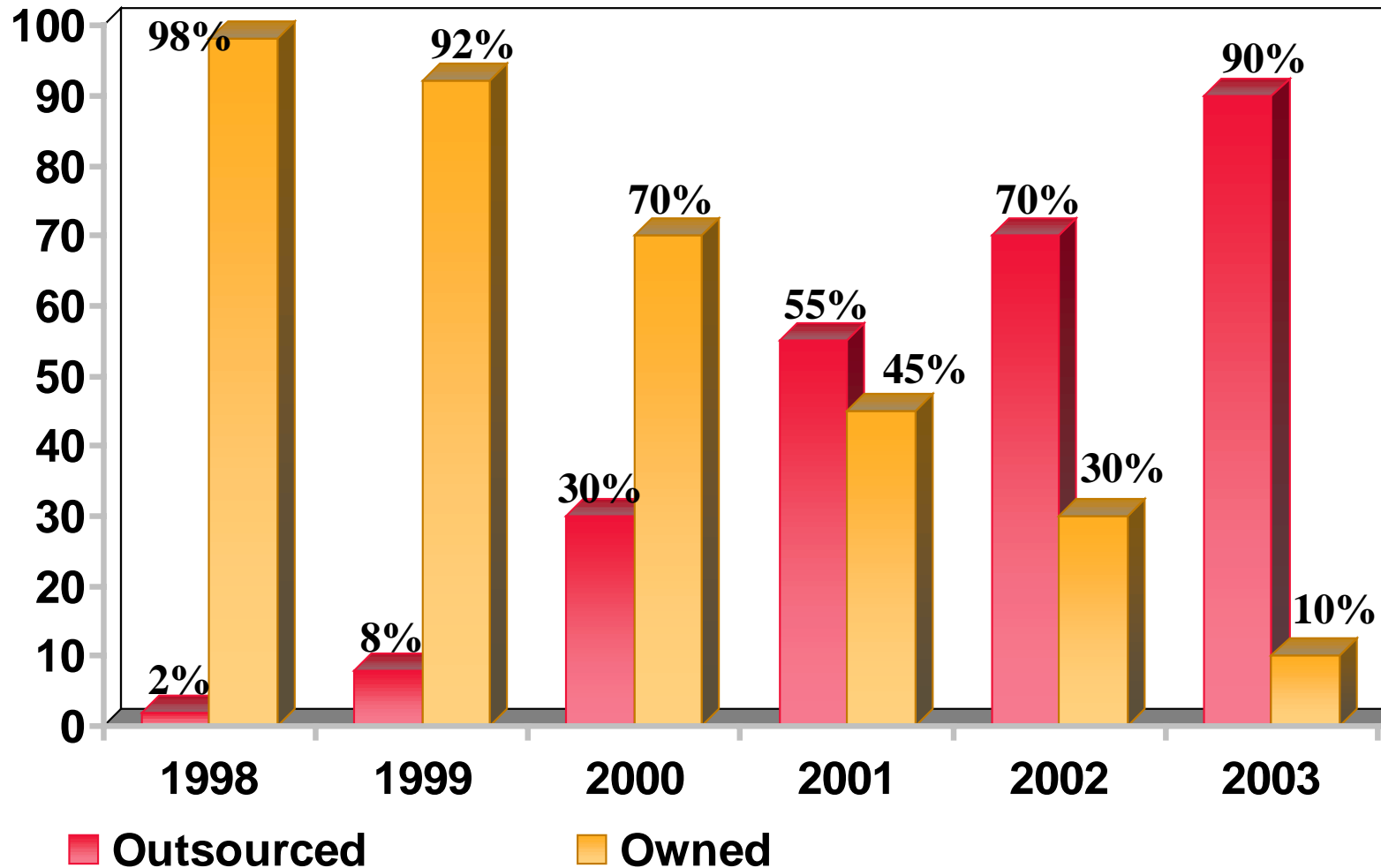


# Key Solutions for Your Customers



# Outsourced vs. Owned VPNs

## *Trend to Outsourced*



Source: Cahners In-stat Group, 1999

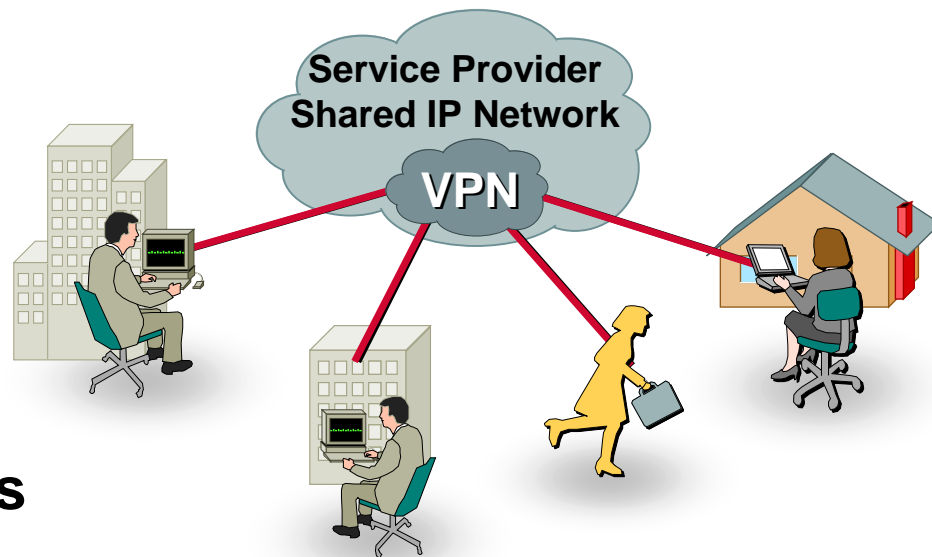
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Cisco.com

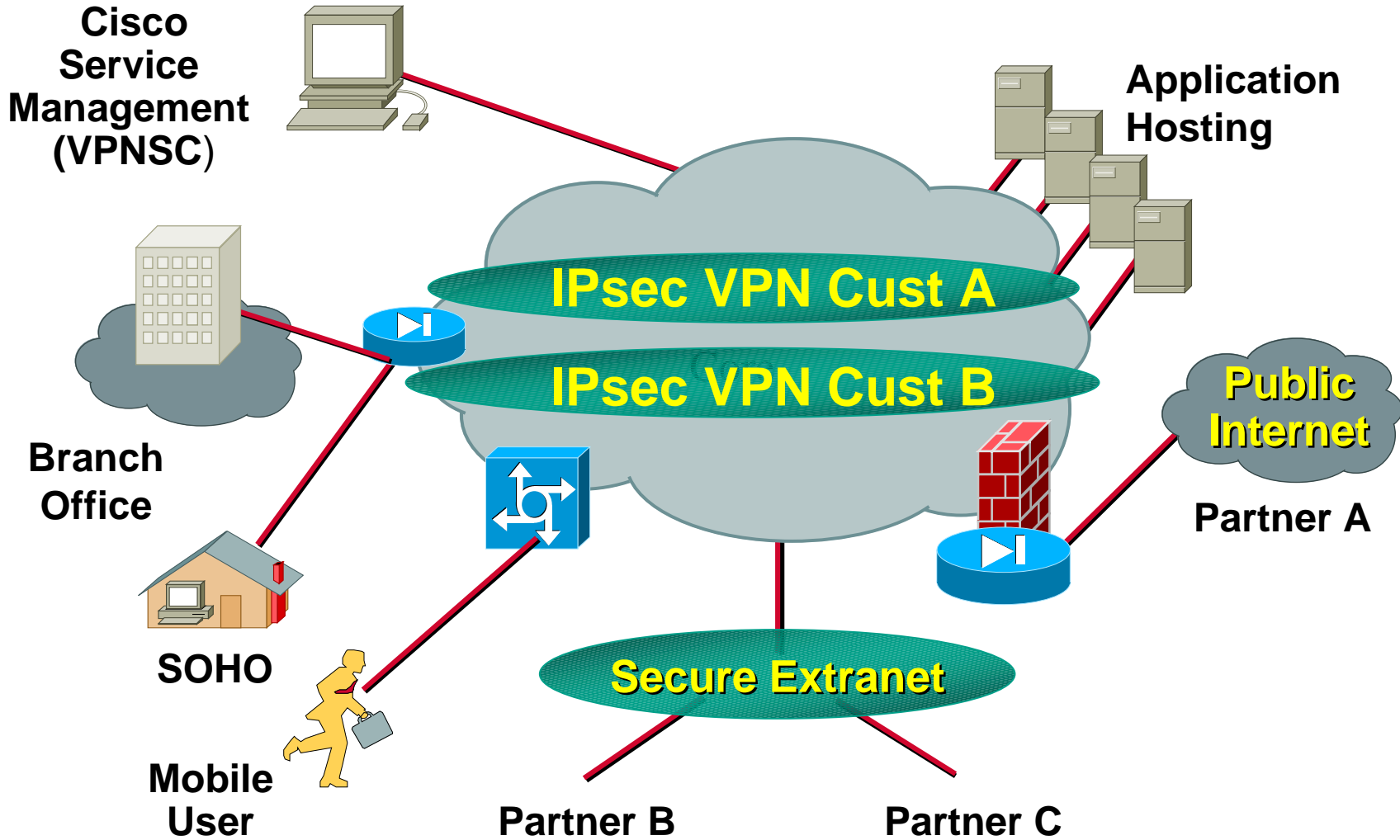
# Virtual Private Network *Services Definition*

- **Access VPN**  
Enterprise access  
for SOHO or mobile  
users
- **Intranet VPN**  
Branch offices
- **Extranet VPN**  
Business-to-business  
Industry groups

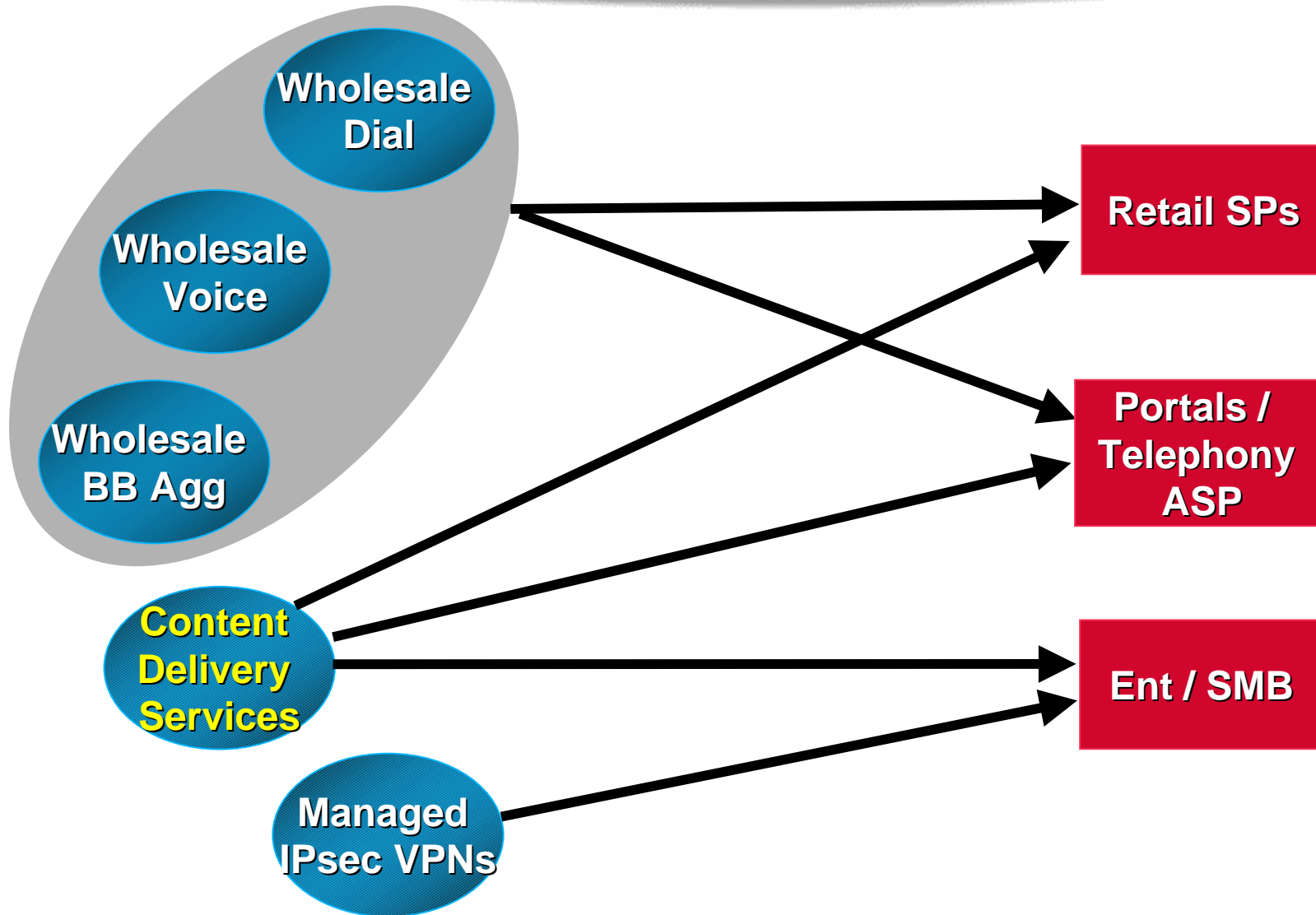


**Customer communities  
deployed on a shared infrastructure  
with the same policies as a private network**

# Managed IPsec VPNs

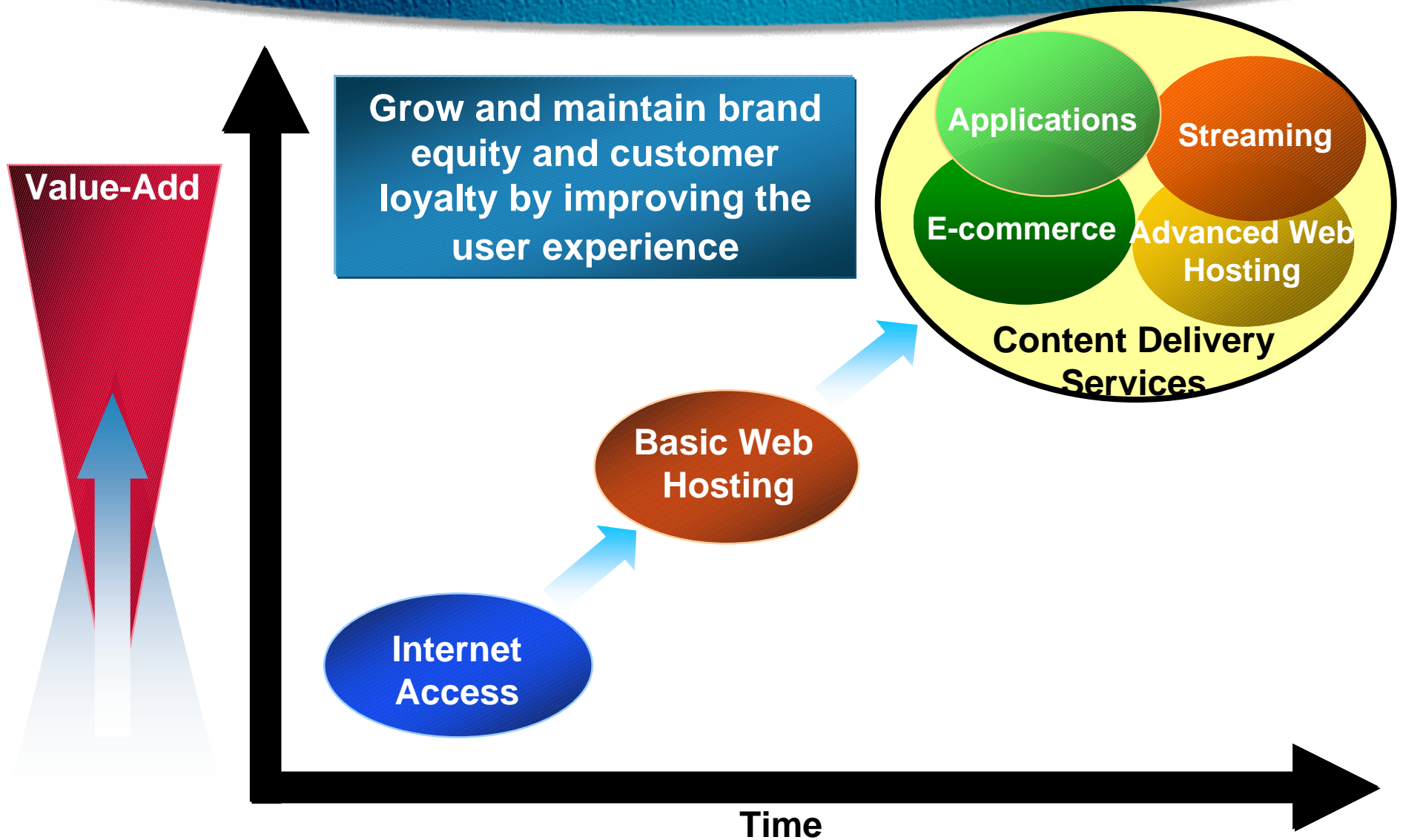


# Solutions for Your Customers



# Value-Add Content Delivery Services

## *The SP's Vision*





# Emerging Content Services

## Business to Consumer Services

Static Image acceleration  
(this is the state of CDN's today)

Large Scale On-Demand  
and Live Streaming Media  
Delivery and Hosting

Content Rating and  
Filtering

Distributed Dynamic  
Content

Personalization (e.g. Ad  
Insertion)

## Business to Business Services

Distributed Web Hosting,  
Applications Hosting, and  
E-Commerce

Virtual Private Content  
Delivery Nets (VPCDN's)

Intranet/Extranet Streaming  
Media Delivery

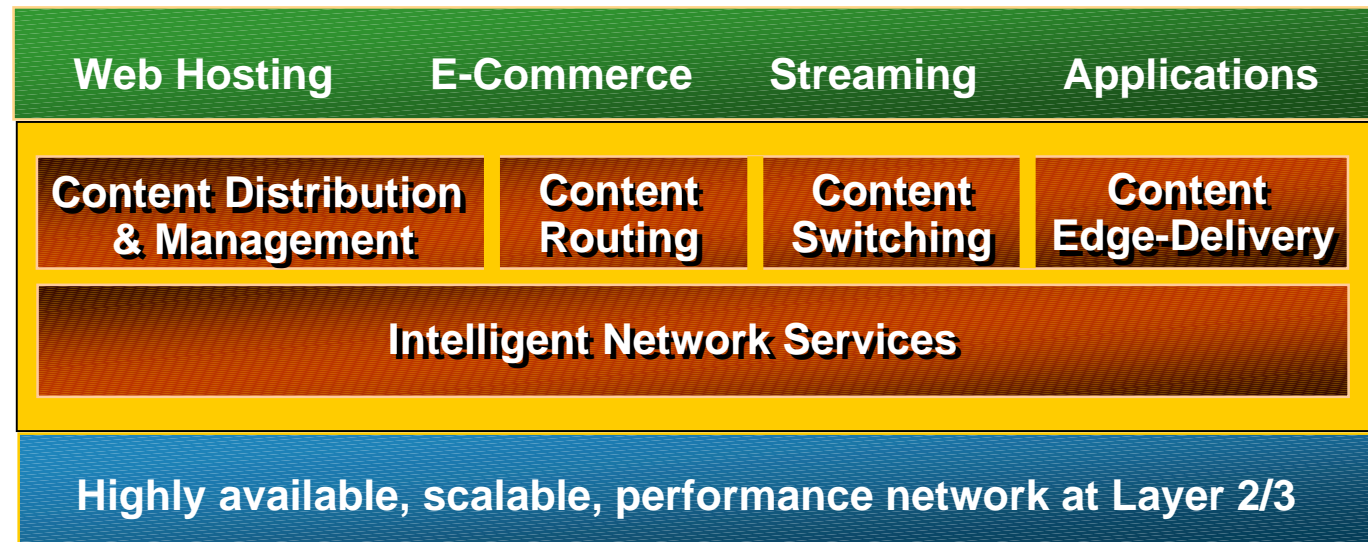
Enterprise Controlled  
Content Access and  
Delivery

# Content Delivery Networks Required System Building Blocks

**Content  
Delivery  
Services**

**Content  
Delivery  
Networks**

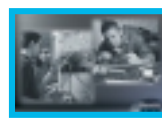
**L2/L3  
Networks**



**Mobile**



**Fixed  
Wireless**



**Cable**



**DSL**



**Dedicated/  
ATM/FR**



**ISDN/Dial**

# **Cisco Forms Content Alliance**

## ***Accelerate Adoption of CN Services***

- **Objectives of the Content Alliance**

  - Develop and promote open standards for Content Peering

  - Drive the creation of other standards needed to speed the adoption of Content Networking services

- **28 Charter Members**

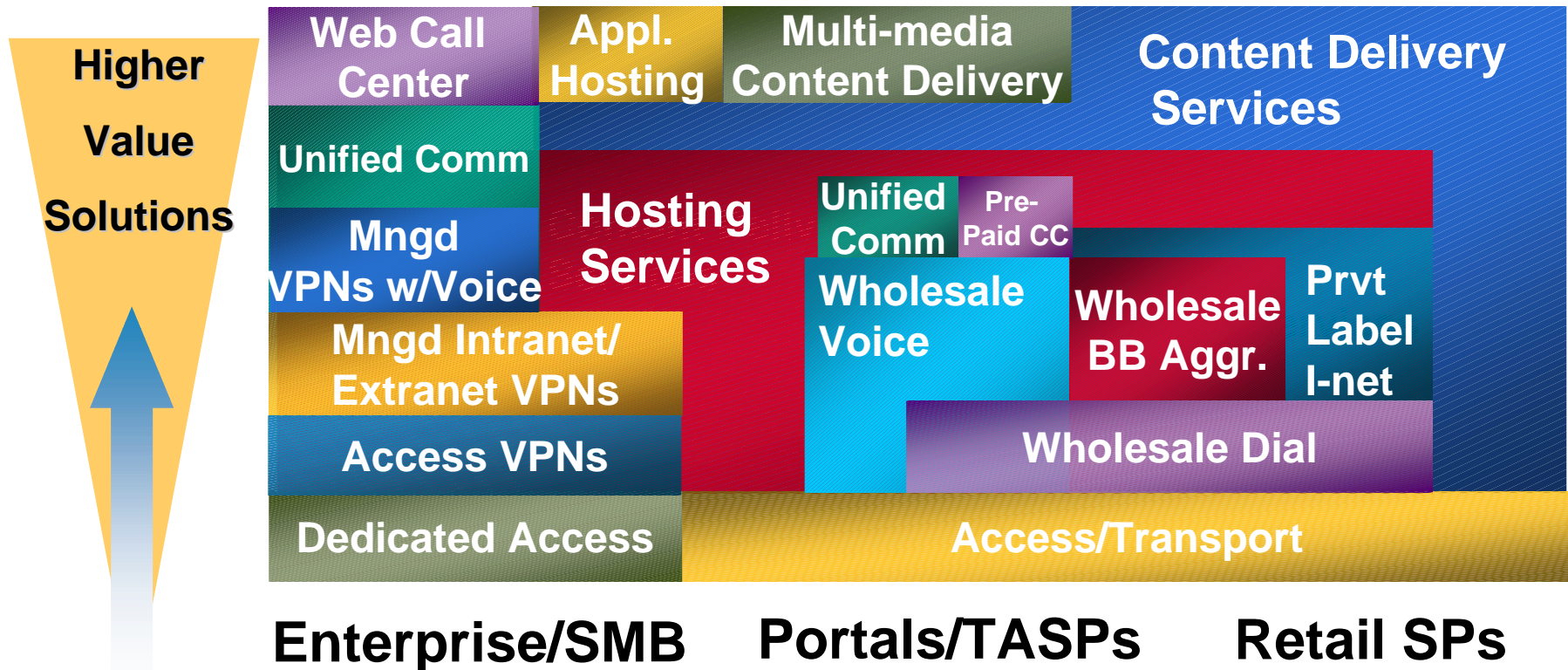
  - ARC, America Online, Inc., Cable & Wireless, Cisco Systems, Digex, Digital Island, Documentum, EMC, Entera, Genuity, Global Center, HelloNetwork.com, Mirror Image Internet, NaviSite, NetSat Express, Network Appliance, OBCTV.com, Primedia Workplace Learning, PSINet, ServInt, SolidSpeed Networks, StorageNetworks, Streampipe.com, Sun Microsystems, Telefónica Data, US Data Authority, Vividon, and Walt Disney Internet Group



# Building Value with an Interconnected System of Services

# Interconnected Services

## Build Higher Value for Service Providers





# Leadership Portfolio of Scalable Infrastructure Platforms

# Service Provider Infrastructure Challenges

- **Develop and deploy a network architecture that lasts**

- Scalable to handle growth (ports & bandwidth)

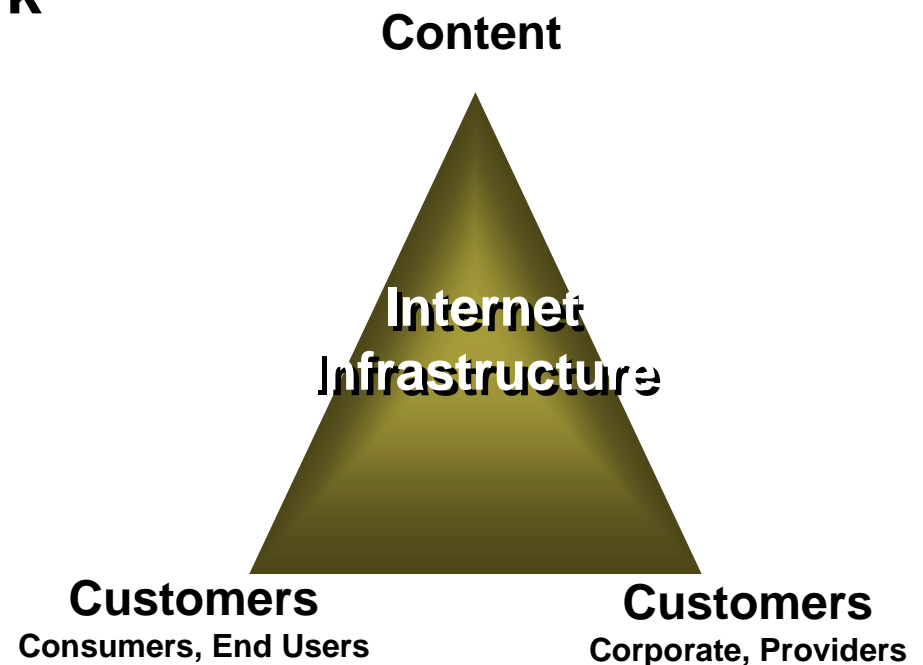
- Flexible to accommodate today's services and future innovative services

- **Easy to operate and manage**

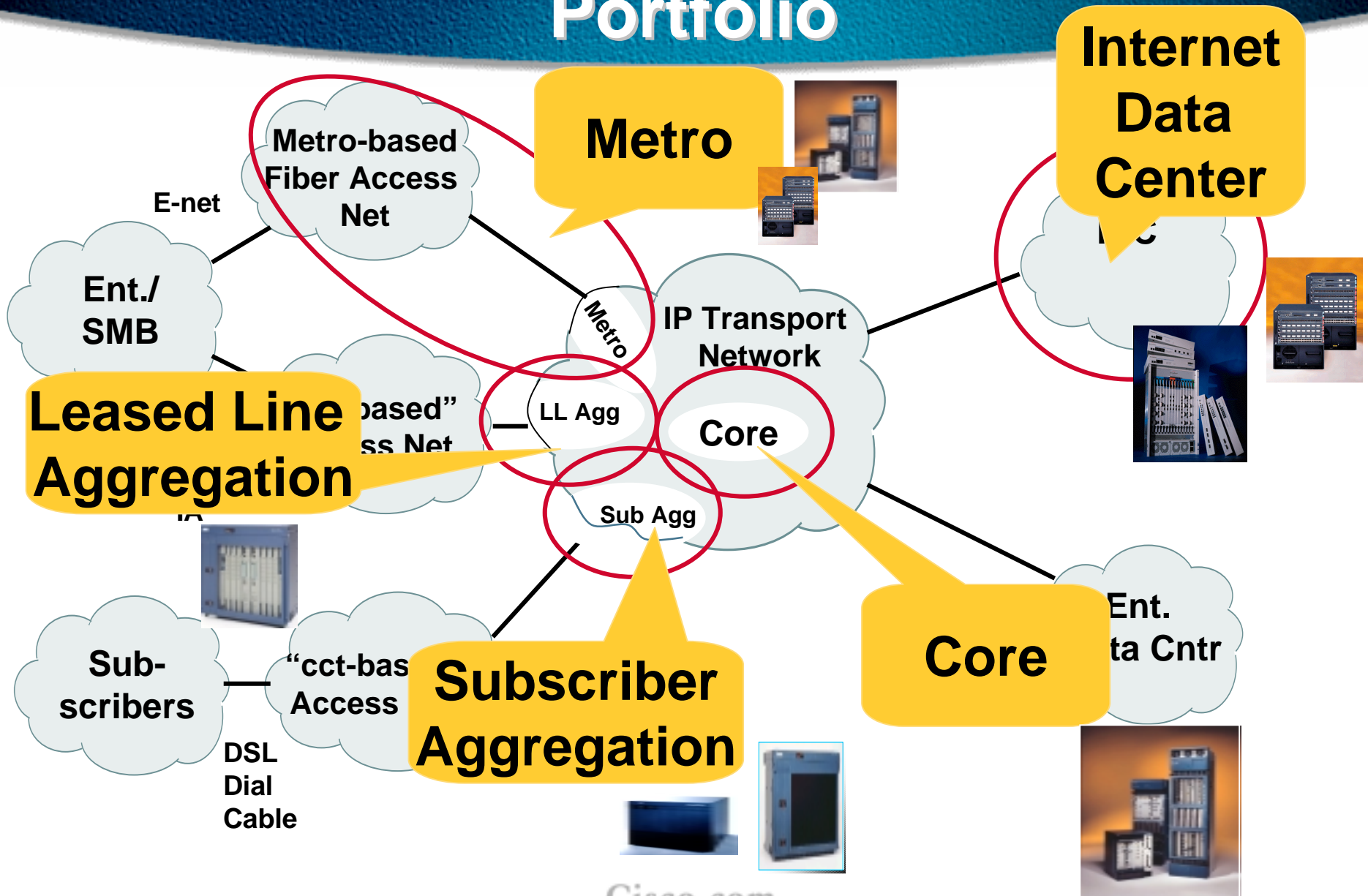
- Simplicity

- Operational expense is by far the largest recurring expense (50-70%)

- Resource constraint - increased "brain-drain"

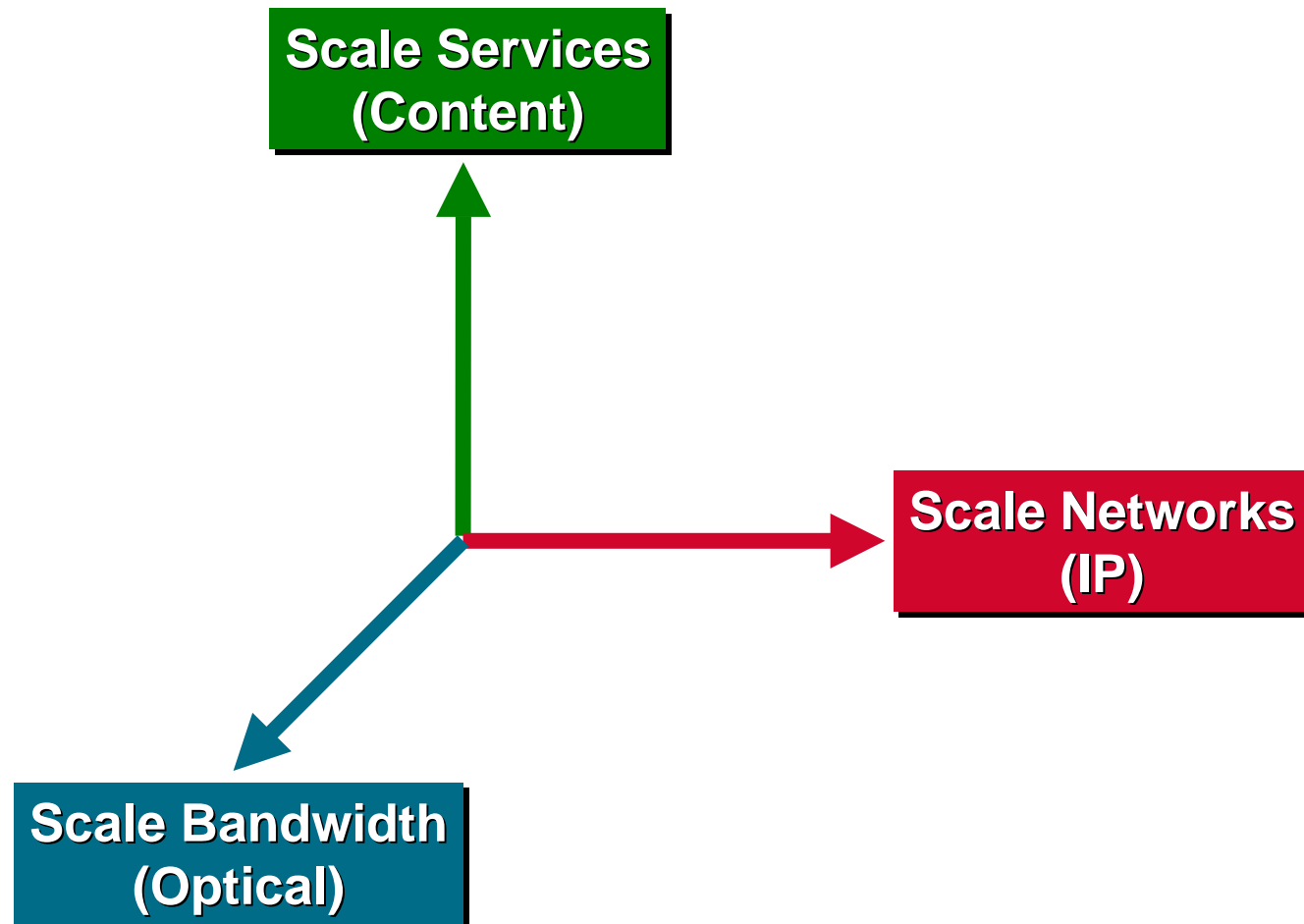


# Leading Scalable Infrastructure Portfolio

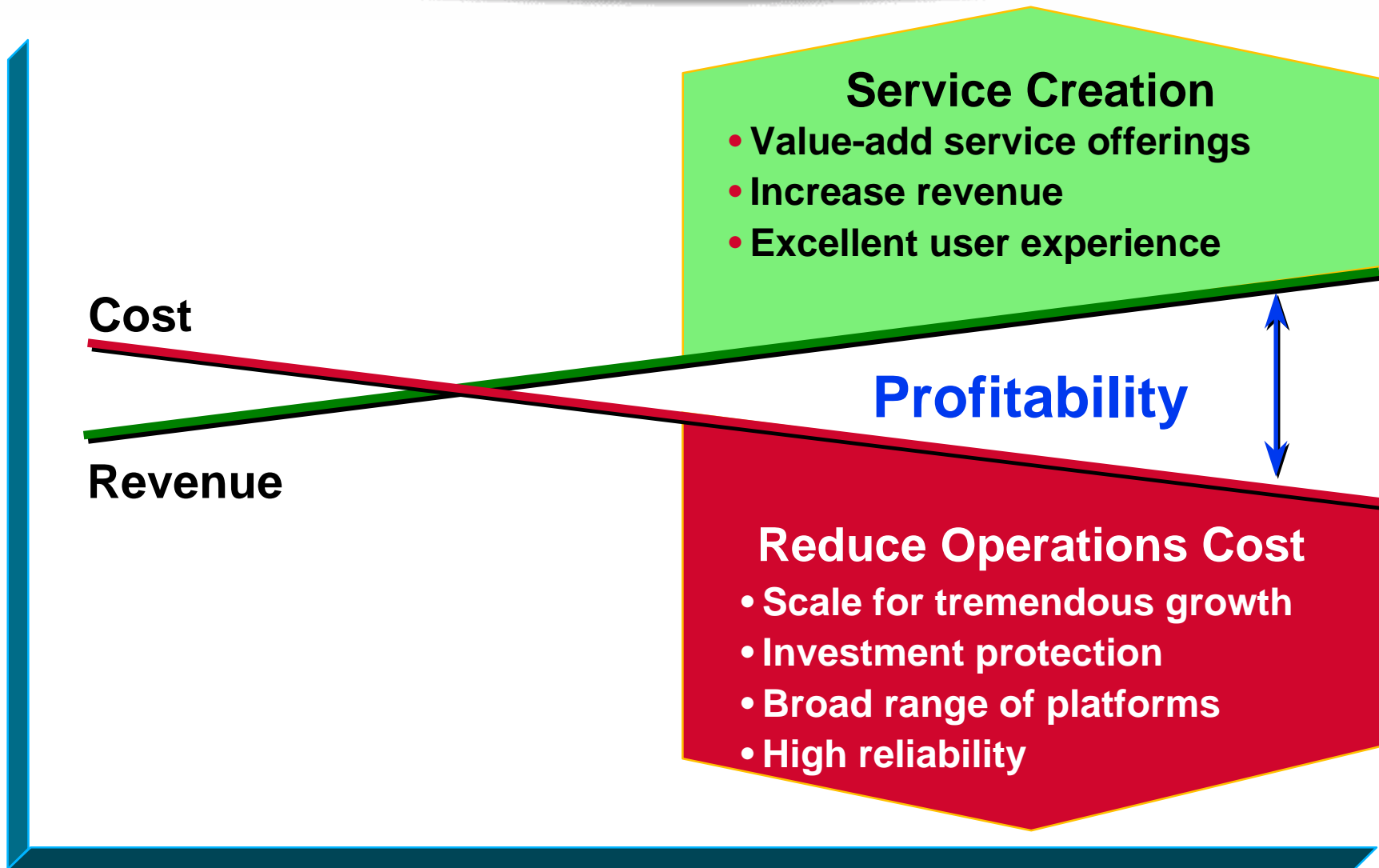




# The Three Dimensions of Successful Infrastructure



# The Road to Profitability

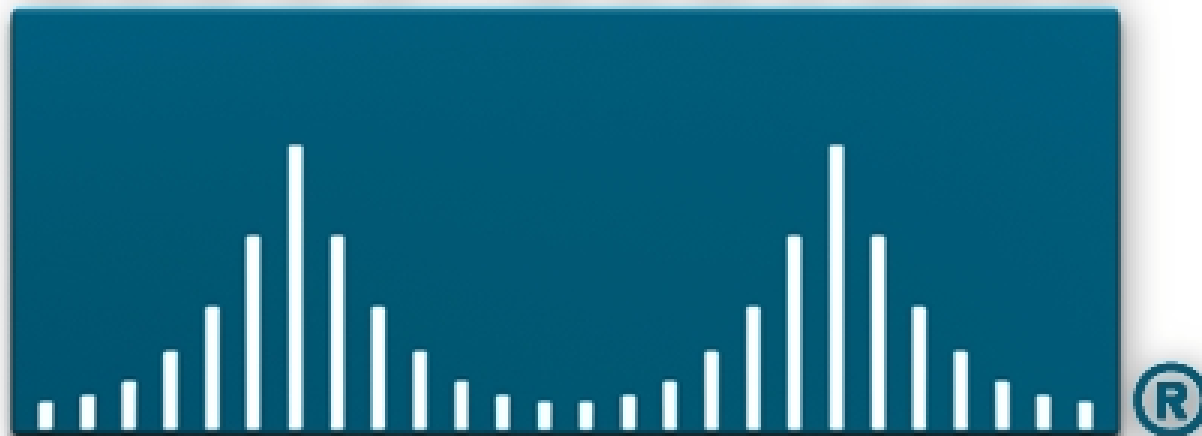


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- **Depend on leadership portfolio of infrastructure platforms that deliver Internet-scale systems**

**Scalable bandwidth, scalable networks and scalable services**

# CISCO SYSTEMS



EMPOWERING THE  
INTERNET GENERATION<sup>SM</sup>