



# Building IP VPNs

*...the next generation  
of managed services*

Service Provider Operations EMEA



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## Agenda

- **PART ONE: *Service opportunities***
- **What is a VPN?**
- **Customer drivers - Why IP?**
- **What are the services?**
- **Service value propositions**
- **Horizontal and vertical market opportunities**
- **Positioning with existing managed services - what's new?**



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## Agenda cont'd

- PART TWO: *Building the infrastructure*
- Building the VPN Connectivity Framework
- Quality of service differentiation
- Security overlay
- Reporting and billing
- Going forward; VPN-Aware networks
- Conclusion



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## What is a VPN?

A definition;

- Customer connectivity deployed over shared infrastructure with security and network functionality at least equal to that expected from a private network.

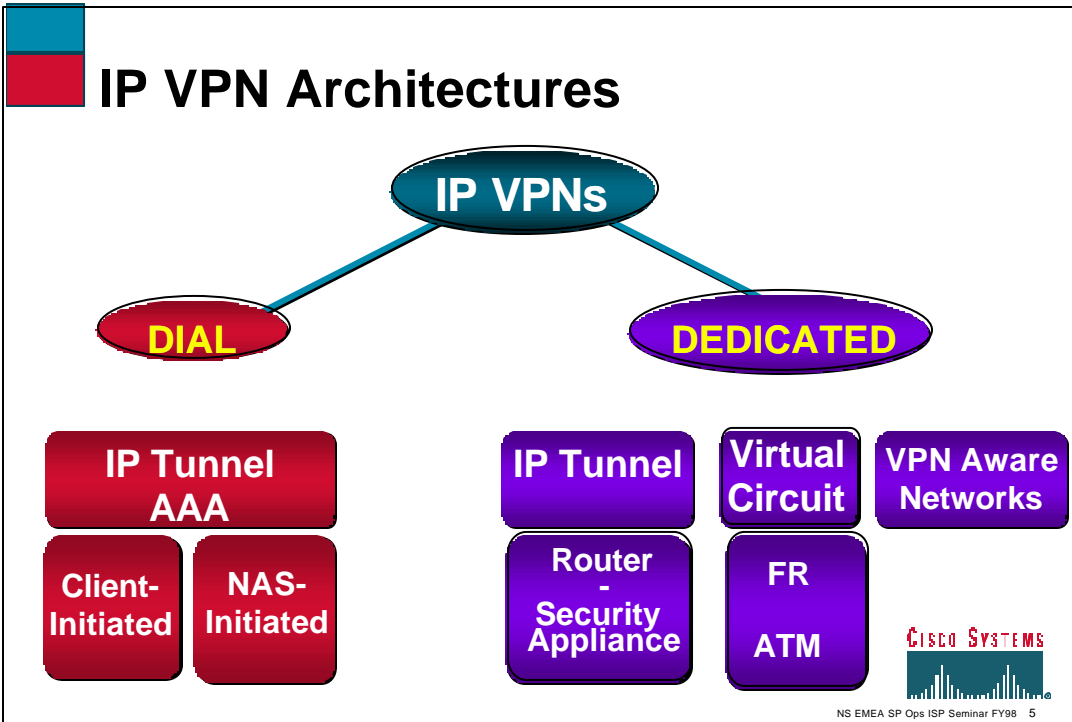
Assumption of security through “isolation”

Assumption of performance through “ownership” of links

- Data VPNs have typically been defined and constructed as OSI layer 2 Connectivity Services
- IP VPNs offer an OSI layer 3 Framework for delivery of Intelligent Services



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SP-Ops. Update  
Zurich - 3/98

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7



## Multimedia - Networking in the Fast Lane



1/27/01

- Multiple QoS types
- Higher Bandwidth Applications
- Impact on traditional traffic
- Network needs to be 'Application Sensitive'



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# Push Applications

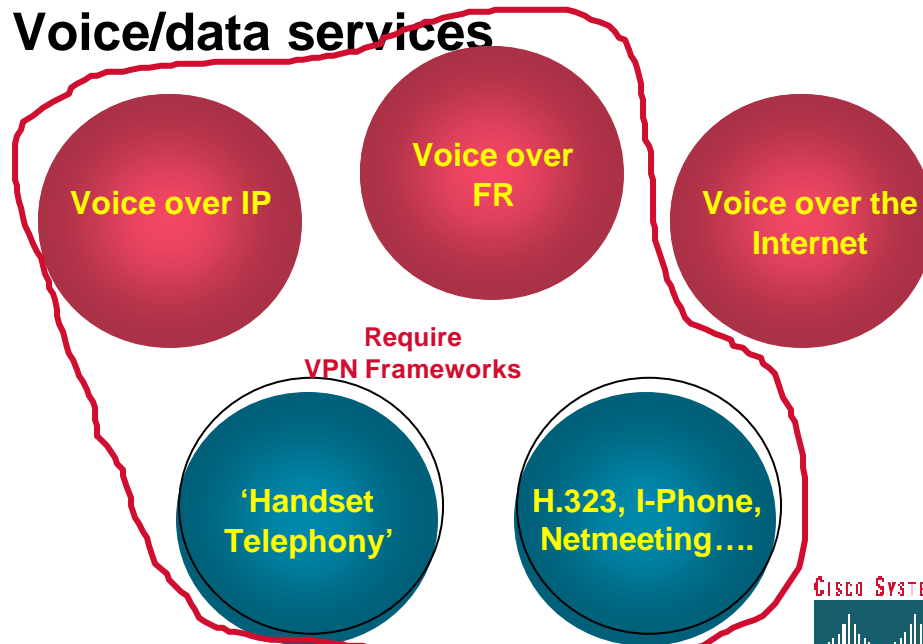
- **New Services**
  - Subscription to Channels
  - Personalized by Interest
  - Financial News Delivery
- **Impact on Network**
  - Multicasting Capabilities
  - Caching Technologies



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# Voice/data services

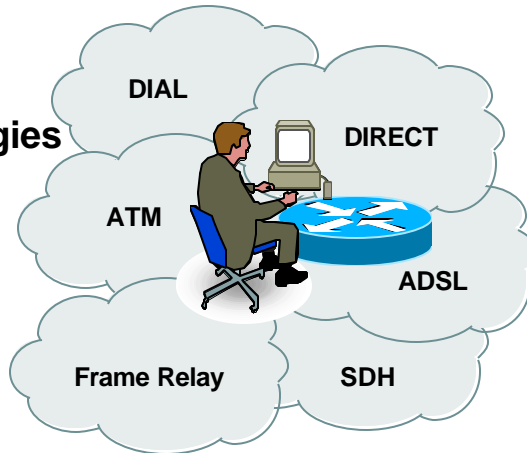


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## Services should be independent of access media

- **Multiple Access Technologies**
- **Consistent Services**
  - Services per user
  - Access method independent

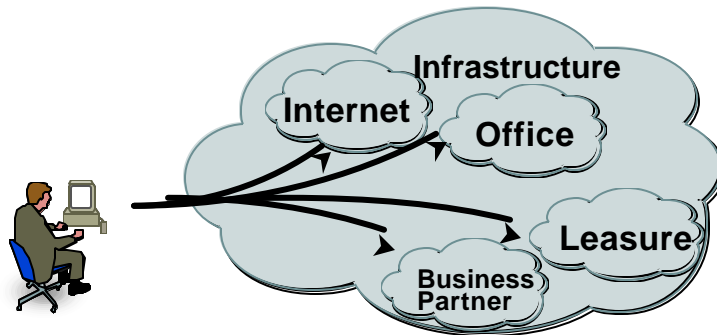


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## Multiple services, single access

**VPN Profiles;**  
QoS  
Security  
Tariff  
Multicast



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## Service Availability is Business Critical

- **Availability means User to Server**
- **Cisco's Network**  
**\$550 million**  
**in savings**  
**\$4.4 billion**  
**52% of orders**



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## Drivers for next generation services

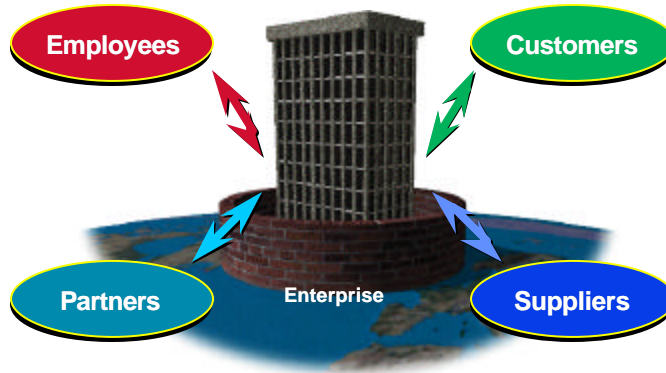
- **Connectivity and application flexibility**
  - **Global (and local) reach**
  - **'Application awareness' within service**
  - **Ubiquitous access**
- = Customer demand for *Intelligent* services**



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## IP delivers next generation services



- Inter , Intra, or Extra - all **IP** 'NET's



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## The value of Value-Add

Western European Internet Access Market			
\$m	1996	2000	CAGR 1996 - 2000
Individual Access	159	828	51.1%
Business Access	328	1801	53.1%
Value Added Services	19	340	404.7%
Retail Internet Services	506	2970	55.6%
Wholesale Internet Access	57	320	53.9%
<b>Total Internet Services</b>	<b>563</b>	<b>3290</b>	<b>55.4%</b>

**Value added service is a key differentiator**

Source: IDC Europe Nov 1996



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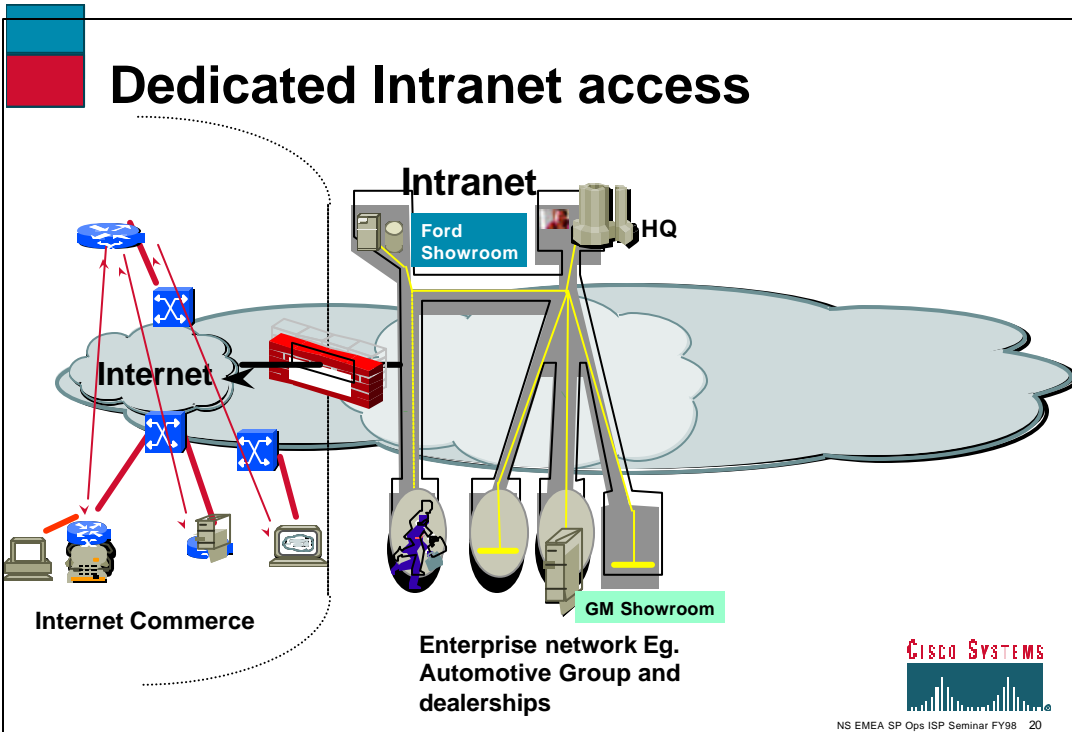
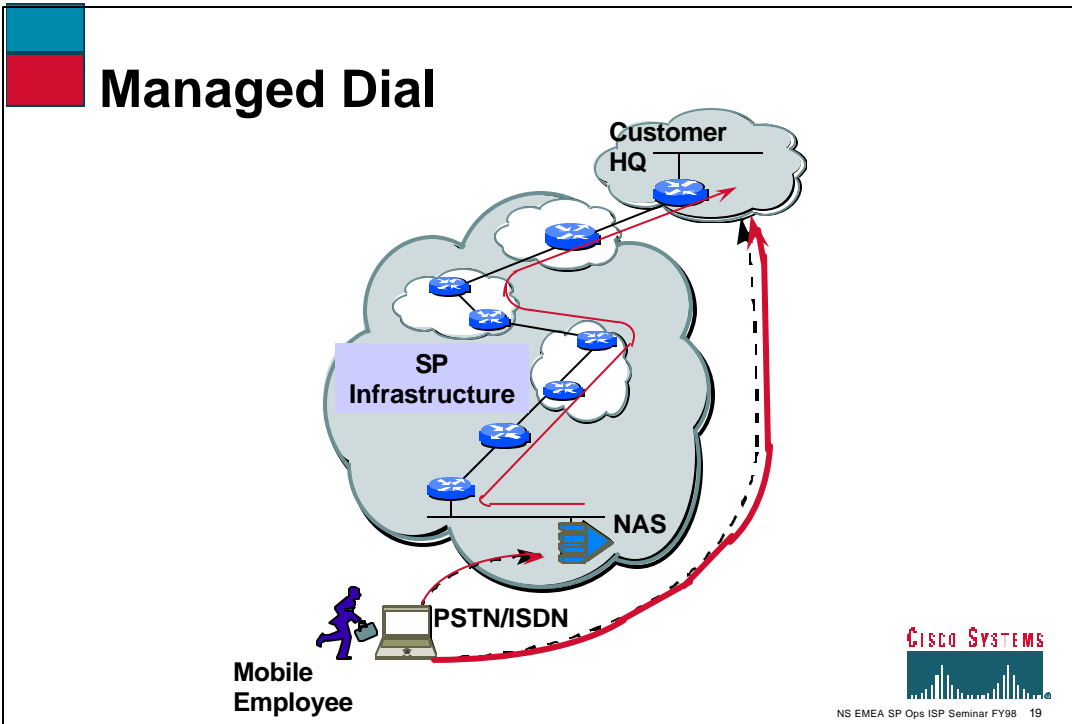


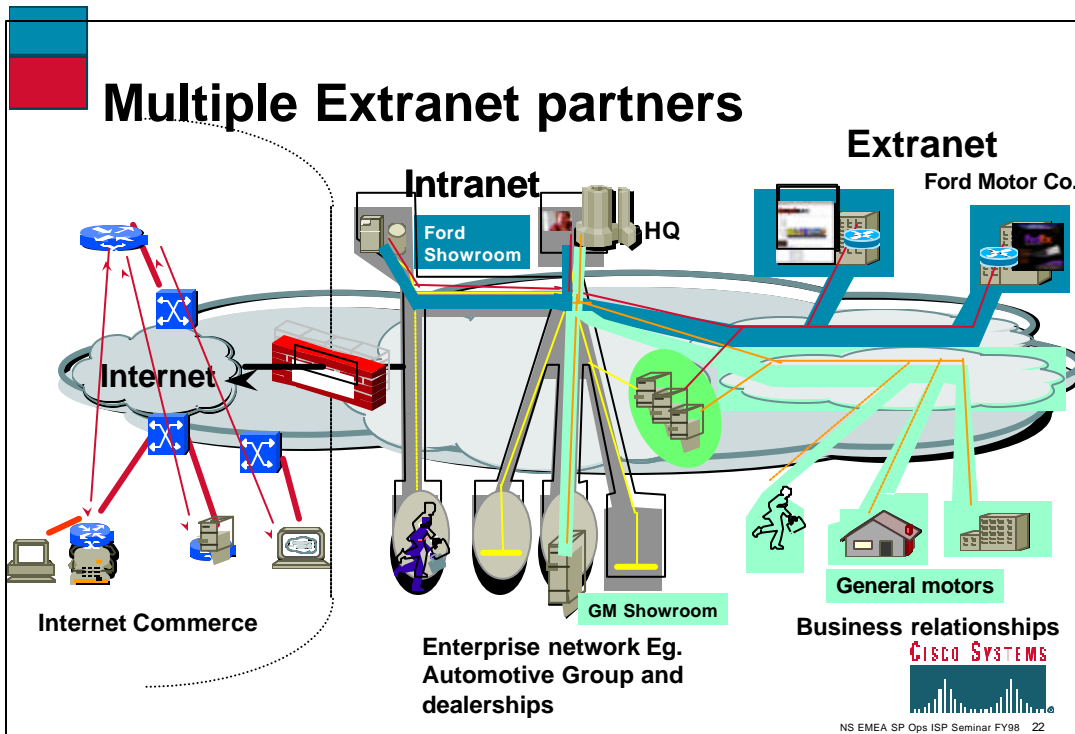
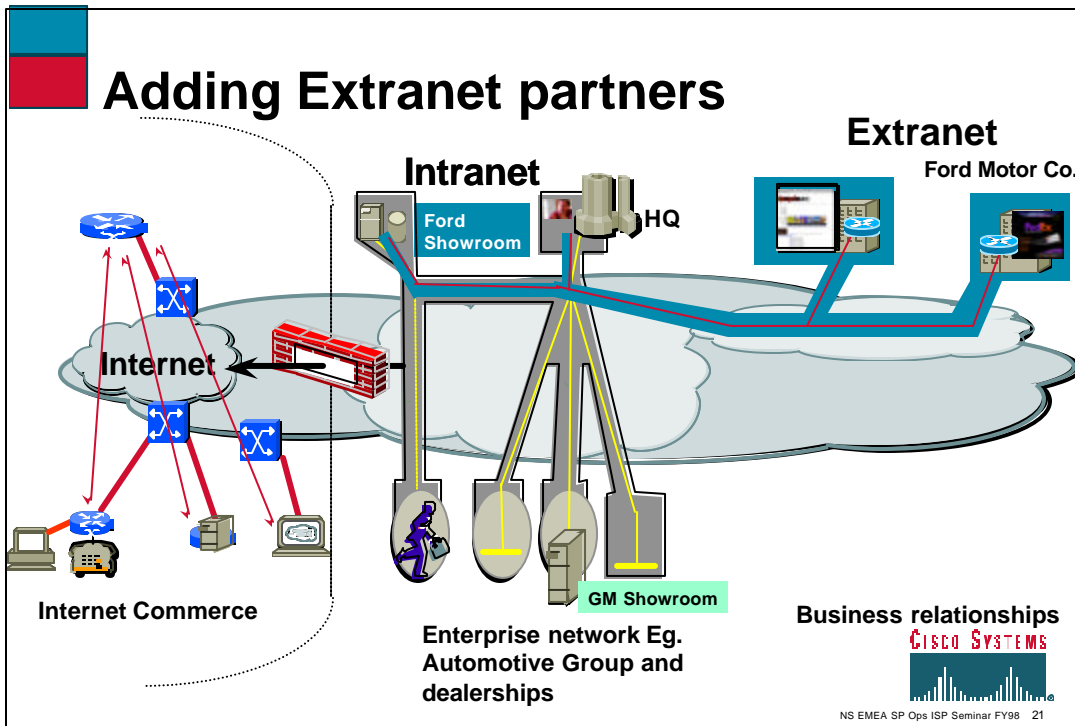
## Base service offerings

- **Managed (Corporate) Dial service**
- **Managed (dedicated) Intranet service**
- **Managed Extranet service**



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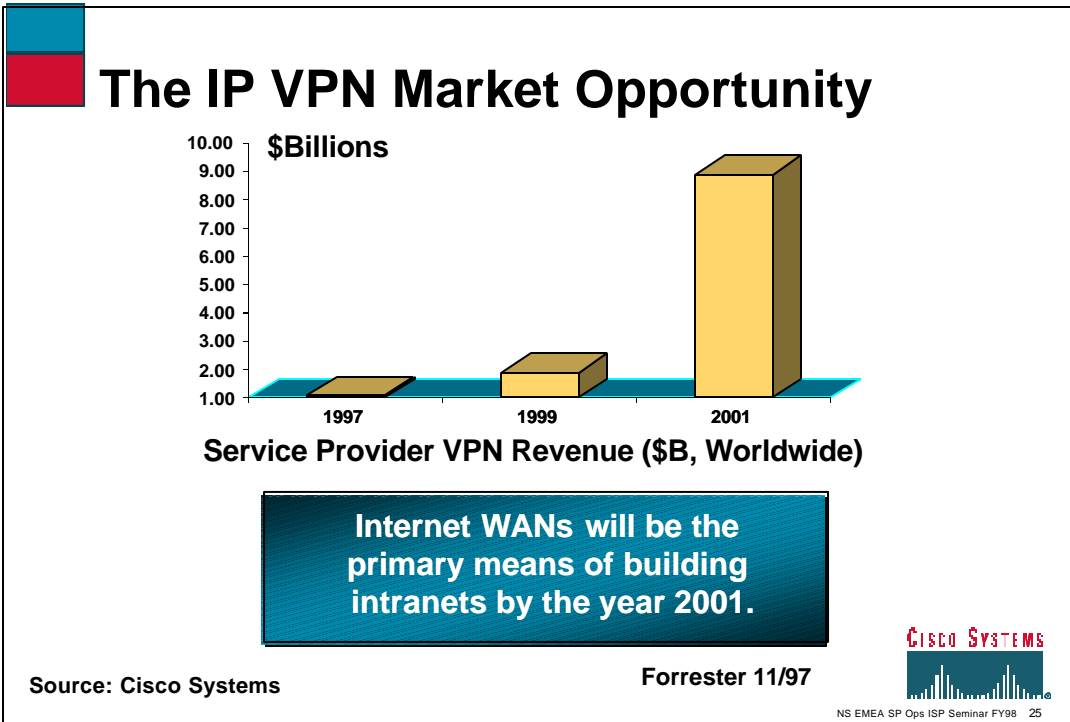


## Service provider benefits of VPNs

- Increased margin
- New market opportunities
- Reduced customer churn/increased loyalty



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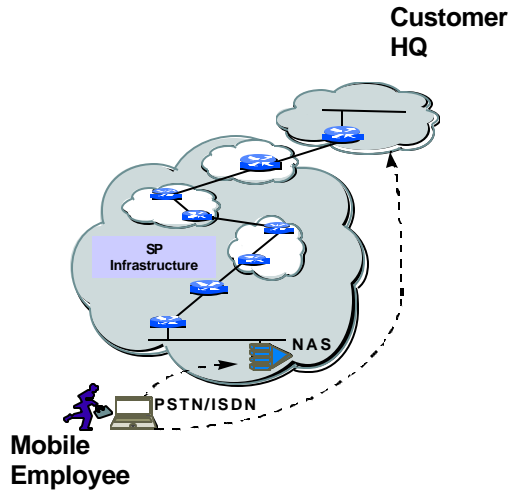
## Customer benefits

Service	Key Requirement	Value Proposition
<b>Intranet Dial</b>	Geographic Connectivity	Reduced Costs
<b>Intranet Dedicated</b>	QoS, Privacy	Flexible Connectivity
<b>Extranet</b>	Business-to- Business Connectivity	Network Commerce

**CISCO SYSTEMS**  
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# Managed Dial; Customer savings



- Amdahl has cut phone bills by 10% [\$1m] ... and get better performance

Source: Data Communications International. Nov. '97

- Infonetics research shows 'VPNs saving users from 60 to 80% of their corporate remote access dial-up costs'

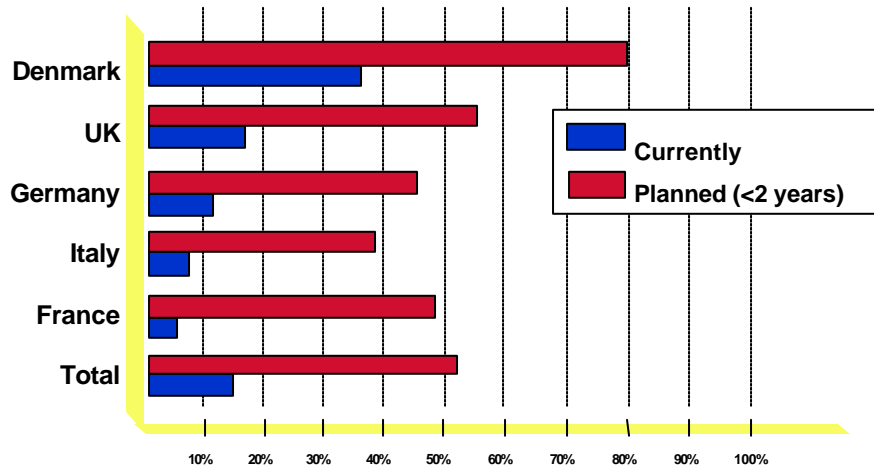
Source: Infonetics Research Inc. 1997.



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# Use of Intranets, Top 500 companies



Source: Dataquest May 1997. Top 500 Companies



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## Business benefits of Intranets

- **Cost savings**

According to a study authorised by Sun Microsystems [VPNs] save from 20 to 47% of WAN costs.

Source: Infonetics Research Inc. 1997.

- **Return on investment**

“Average ROI ..between 500% and 2500% [Sweden Post] ..payback periods..varying from less than 2 months to just over 1 year”

Source: Information Strategy, The Economist Group. Oct. '97, from IDC survey..

- **Business growth (Cisco)**

90% of Cisco’s technical enquiries using interactive web pages linked to support centre

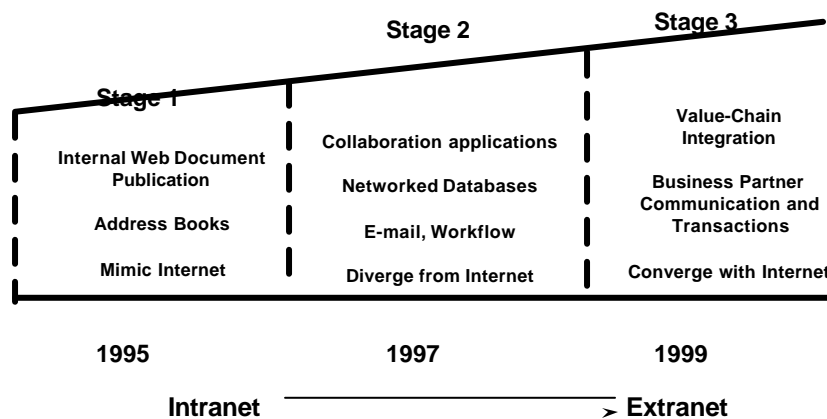
\$4bn+ run-rate of product orders



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## Evolution of Extranets



Source: Yankee Group



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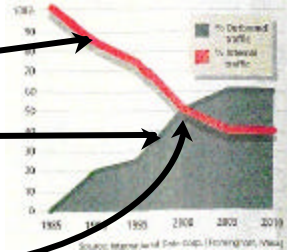


# Migration from Intranet to Extranet



## Internal Traffic: On the Outs

More and more traffic is headed to servers and devices outside the corporate network—while the internal flow is shrinking. By 2002, half of all traffic will be going in the outbound direction.



% Intranet traffic declining

% Outbound 'Extranet' traffic increasing

Intersect 2000

Source: IDC



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## PART ONE:

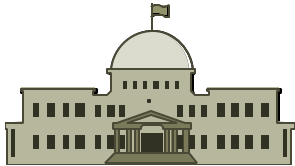
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# Market segmentation: Horizontal



- **Large organisations**

Customer relations, call centre efficiencies, partner interaction/extended EDI. Channel control and leverage.



- **Medium sized organisations**

Future sales channel, extended reach, shorter buying cycle. 'Open EDI'. Online investment less expensive than telemarketing. Growth tool



- **Small organisations**

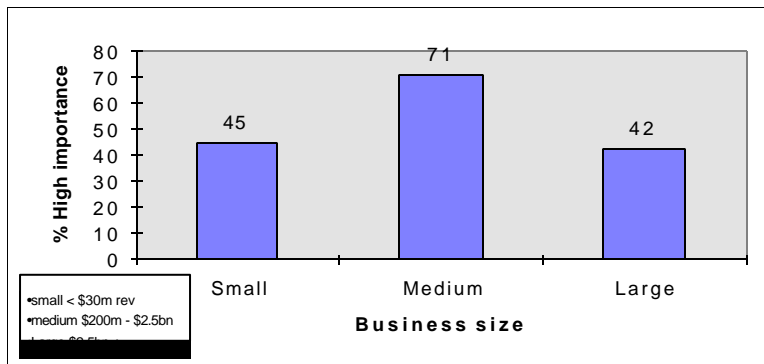
Catalogue sales, software sales, software delivery/free trials, client communications. Image.



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# Market segmentation: Importance of IP commerce



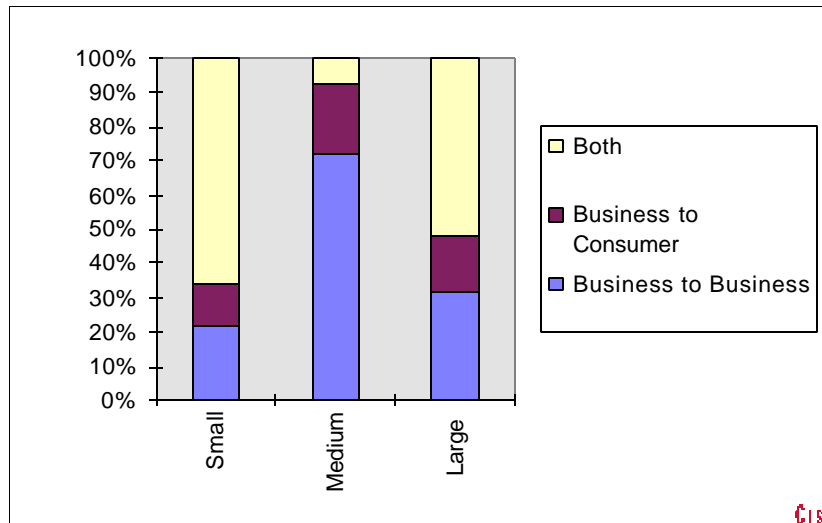
Source: IDC July 1997



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## Transaction types



Source: IDC July 1997



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## Market segmentation: Vertical

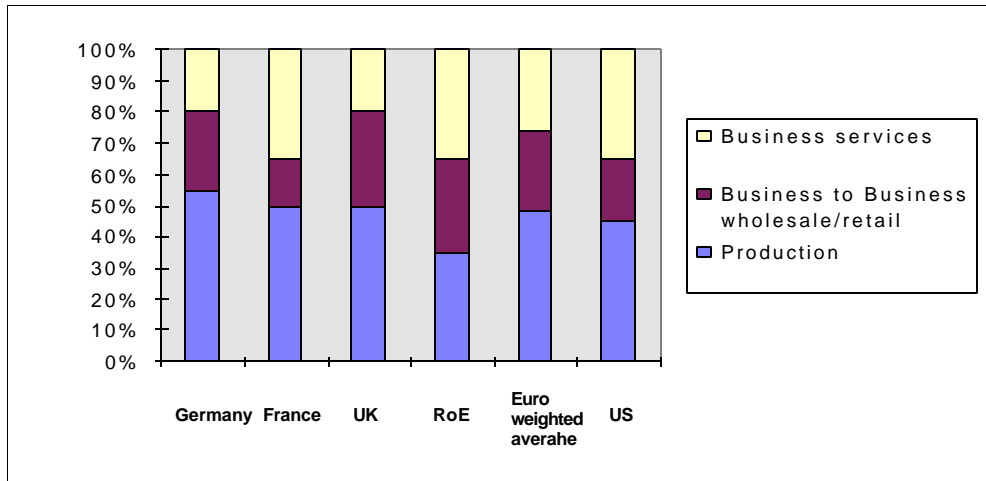
- **Production**  
Most established VAN based (EDI) commerce sector. Manufacturing.
- **Business to business wholesale/retail**  
Goods and services, value added technology resellers.
- **Business services**  
Logistics organisations, banking, insurance, multimedia, advertising, consultancy.



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## Commerce usage by sector



Source: Datamonitor July 1997



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## Market segmentation summary

- **Business based applications**
- **Small/medium sized organisations**
- **Business services, wholesale/retail**

Virtual private dial

Intranets/Extranets

Hosting



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## Agenda

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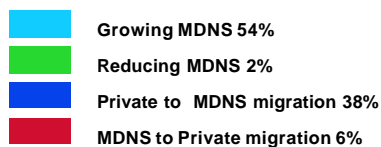
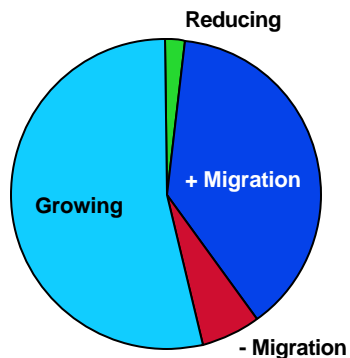
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## Drivers for MDNS

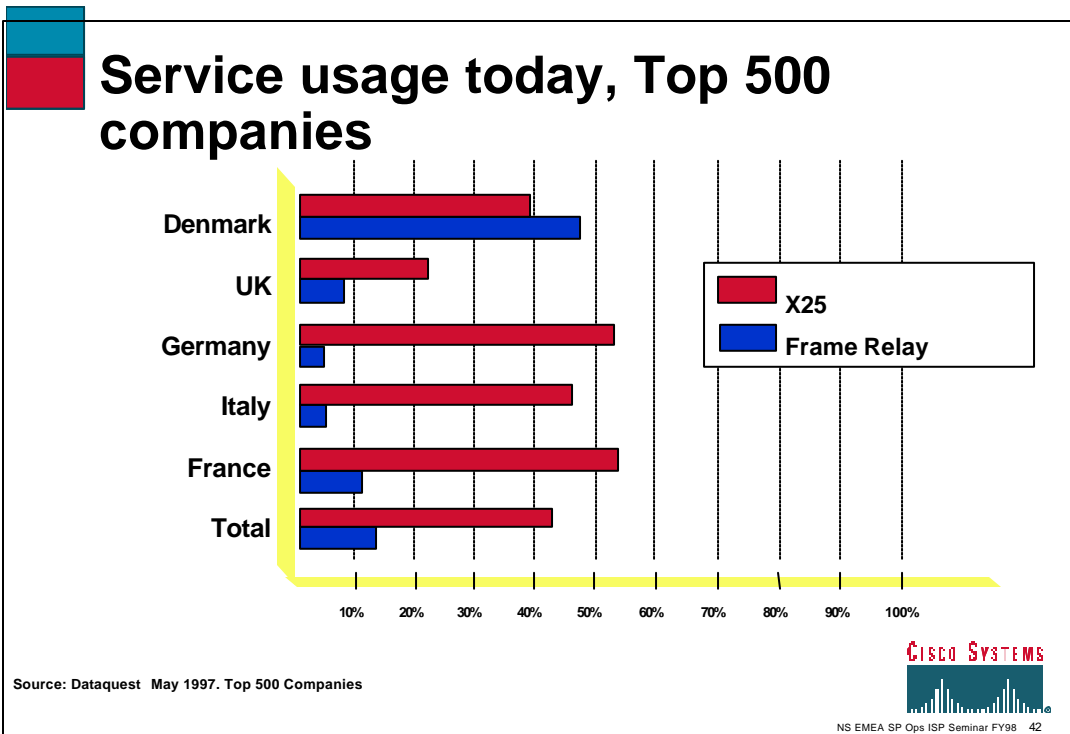
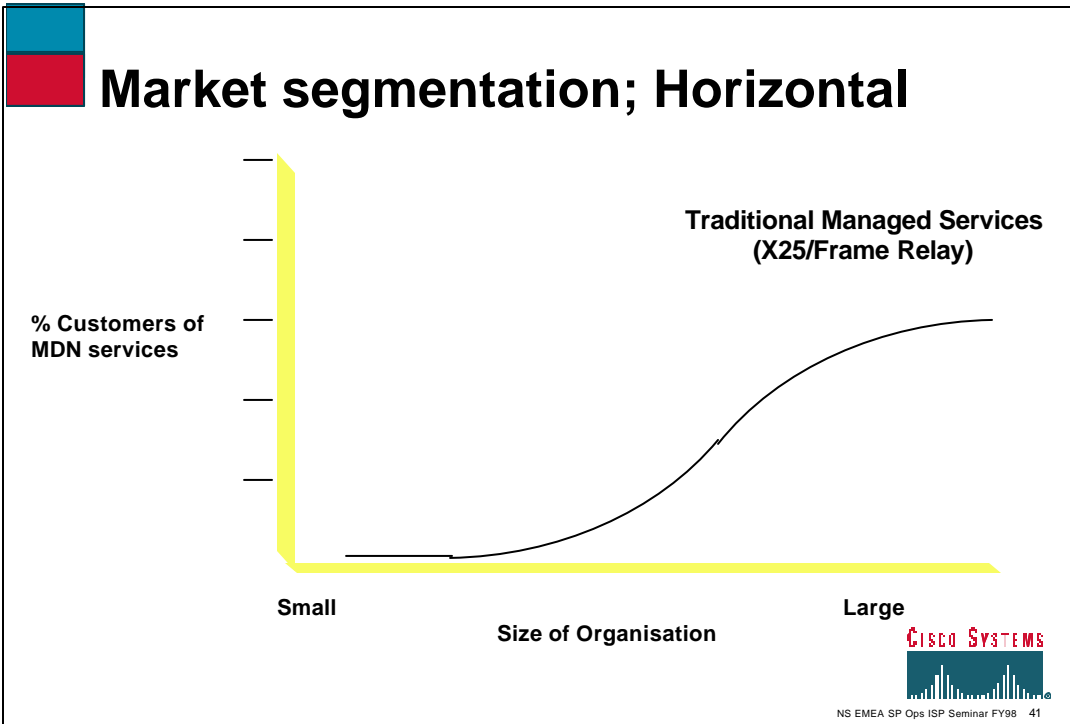


Source: Yankee Group Europe

- **Competitive edge**
- **Economies of scale**
- **Technology risk transfer**
- **Increased capacity**

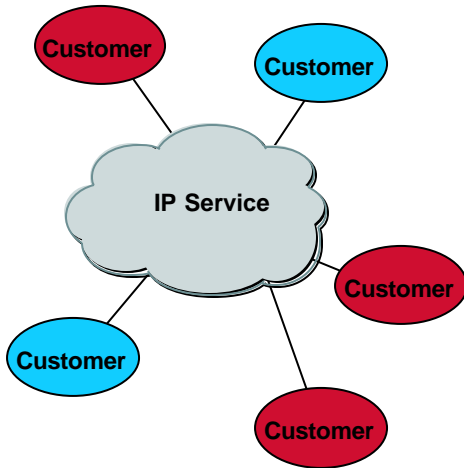


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## The managed IP service opportunity



- New customer applications
- New operational capabilities
- New markets



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## What's the Application *Plus*?

- New Customer applications

Residential/Telecommuter access

Intranet connectivity

Extranet/Communities of interest

Hosting and publishing services

Streaming multimedia

Single site businesses

Dial - Virtual Private Networks

Voice over IP/Fax over IP

Application Sensitive  
Virtual Private Networks  
Intelligent



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## What's the Operational *Plus*?

- **New operational capabilities**
  - Tariff flexibility - video, voice...
  - Application sensitive SLAs
  - Common service infrastructure
  - Security options
  - Multicast support
  - Tunneling functionality



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## Addressing service needs with TCP/IP

- **IP QoS features**
- **Secure access**
- **Encryption**
- **Dial or fixed access**
- **Roaming access**
- **ATM integration**
- **Netflow Accounting**



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# IP vs traditional service MDNS

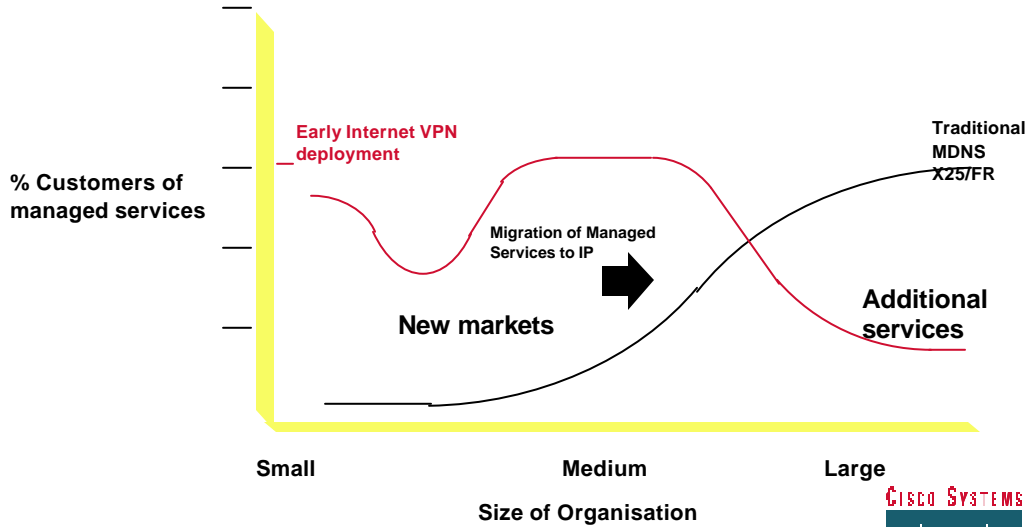
Service attribute	IP	FR/ATM	X25
Any to Any	Y	x	Y
Global coverage	Y	x	Y
Secure Corp nets	OK	Y	Y
QoS/SLA	OK	Y	OK
Access 9.6kbps - Gbps	Y	x	x
Integrated voice access	Y	Y	x
Private address translation	Y	x	x
Voice (application based) tariffing	Y	x	x



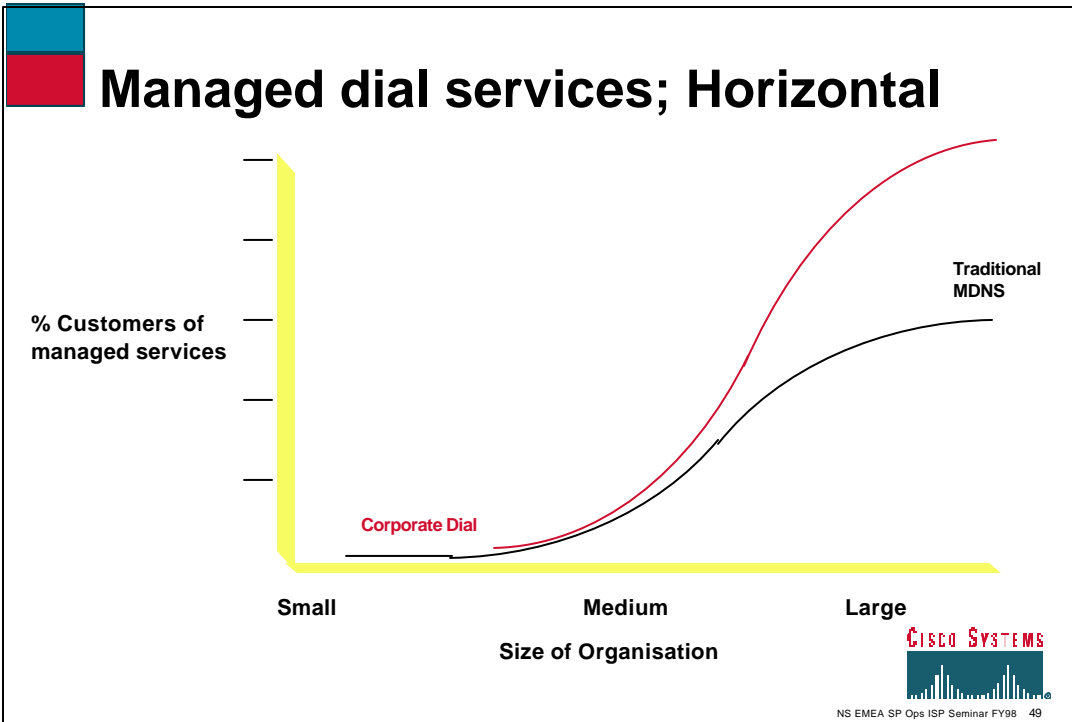
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# Market segmentation; Horizontal Dedicated access services



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## Building IP VPN frameworks

The diagram illustrates an IP VPN framework. A central cloud labeled 'IP VPN' is connected to four stylized figures representing users or devices. The figures are: a person sitting at a computer, a person walking with a briefcase, a person sitting at a laptop, and another person walking with a briefcase. The entire setup is connected to a larger cloud labeled 'SP Network'.

- **Create the virtual private environment**
- **Apply Quality of Service**
- **Add security options**
- **Implement reporting and billing**

**SP Network**

**IP VPN**

**CISCO SYSTEMS**

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## Overlay the Service features

- Corporate dial
- Intranet
- Extranet
- Voice services
- Content services (Push technology, Multicast, Cacheing, Availability)



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## *Coffee Break*



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