Ascend

Ascending The Enterprise

Ascend Communications, Inc.
October 1997

ASCEND

Ascend Enterprise Mission

Building Secure Enterprise Remote Access Networks For Their Mission Critical Intranet, Extranet, And Remote Network Applications

Networking Manager's Challenge

- **Respond to business pressures today**
  - Meeting budget constraints with limited resources
  - Simplify operations - "Go home on time"
  - Become more competitive
- **Exceed user expectations**
  - Service quality, reliability, availability, consistency
  - Performance
  - Global non-stop support
  - Cost-effectiveness
- **Position the network for the future**
  - Broadband speeds
  - Remote Access

Do These Sound Familiar?

- Problems with supporting mobile users
- Extending your network to suppliers and partners
- Providing access to outsourced employees
- Managing your growing network
- Extending the network to international offices
- Backbone bandwidth limitations
- Security

What Do Their Users Want ?

Key User Concerns

- Using IT for increased competitiveness
- Allow flexibility in working practices
- Managing risks of technology choices
- Control escalation in cost of facilities & operations
- Manage quality of service to end users while accommodating explosive growth in data traffic

Key Networking Requirements

- Ability to respond to new networking requirements quickly
- Full solution for the support of branch office interconnectivity, Mobile and Teleworking needs
- Investment Protection
  - Evolution to broadband
  - Evolution with Internet/Intranet
  - Scalability in speed & reach
- Services consolidation and increased use of Public Services
- Effective bandwidth & resources management and increased network availability

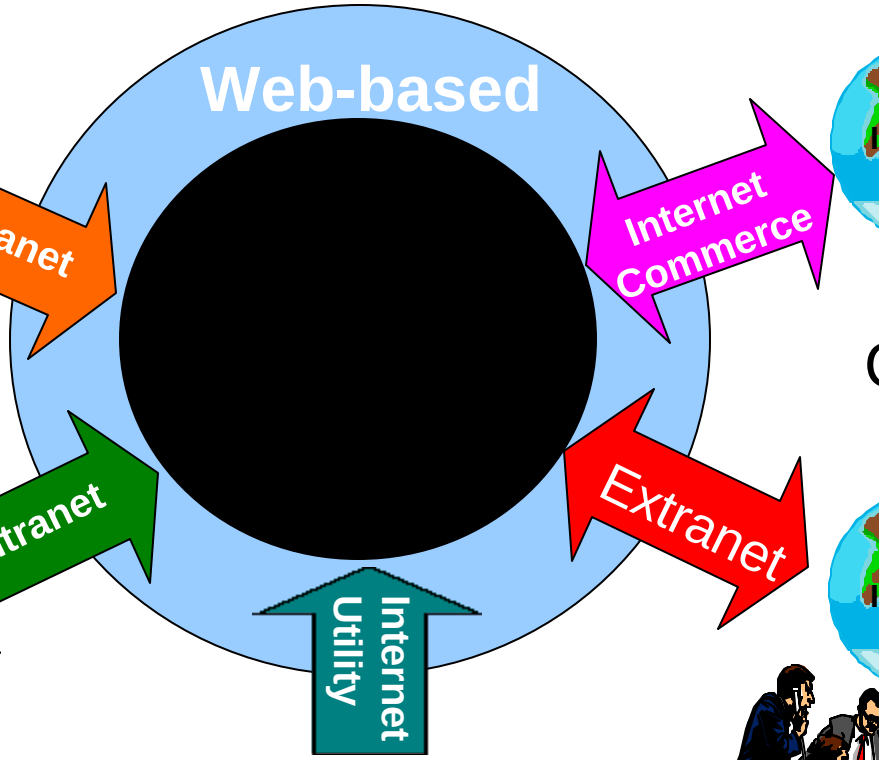
Extending the Enterprise Network & Building the Corporate Intranet

Branch Offices

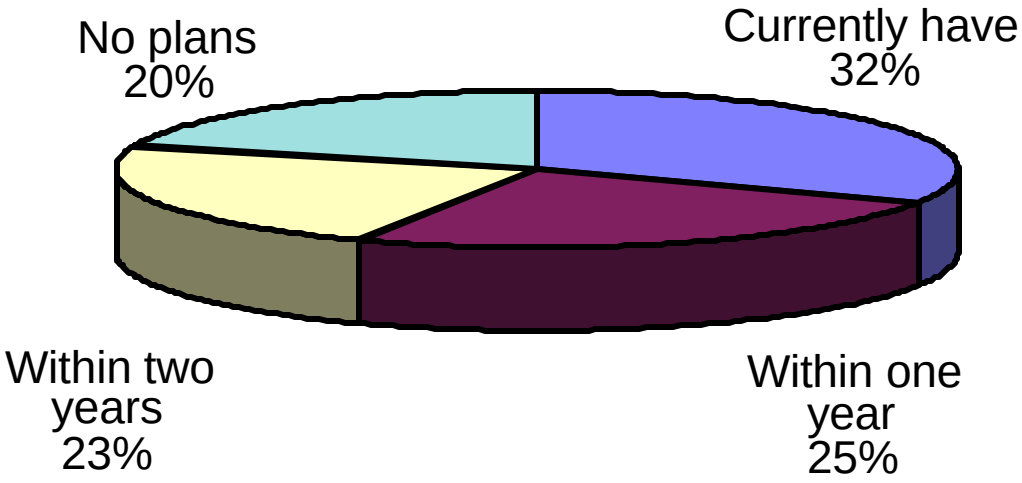
Mobile & Teleworkers

Customers

Supplier, Partners and Customers



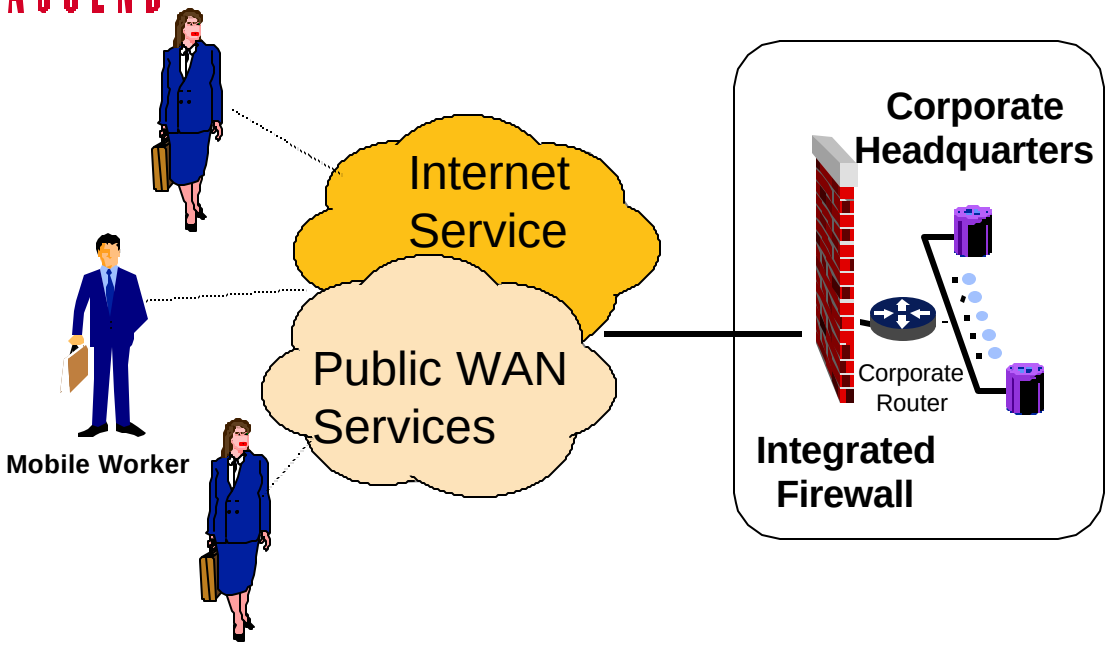
Intranet Implementation Plans

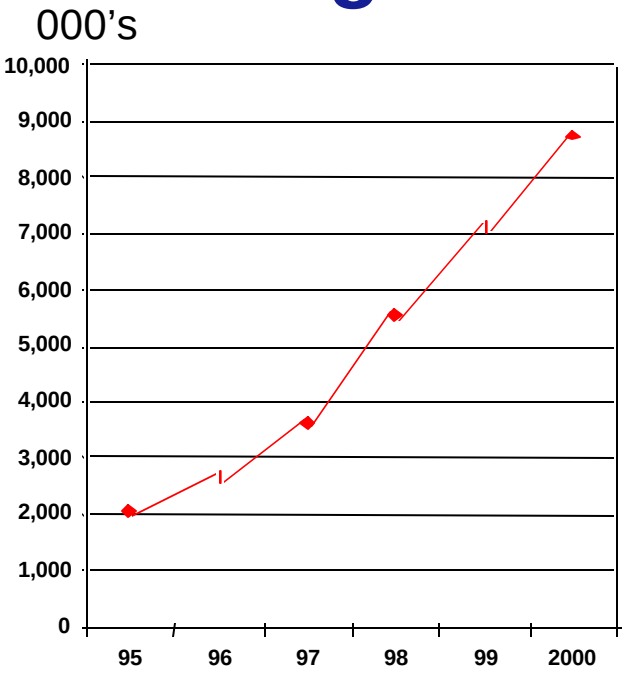


- **Intranet plans well advanced**
- **E-mail and access to Enterprise information key drivers**
- **Access rates increasing rapidly**
- **Internet as a Intranet extension (for branch office interconnection)**
- **Security main issue slowing deployment**

Source: IDC WAN Manager Survey 1997

The Growth of Mobile Working



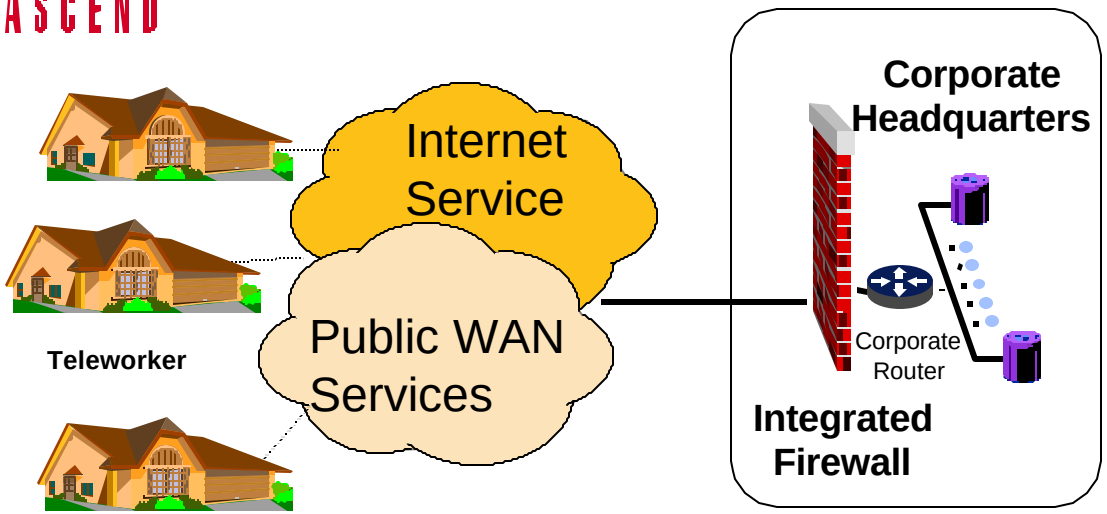


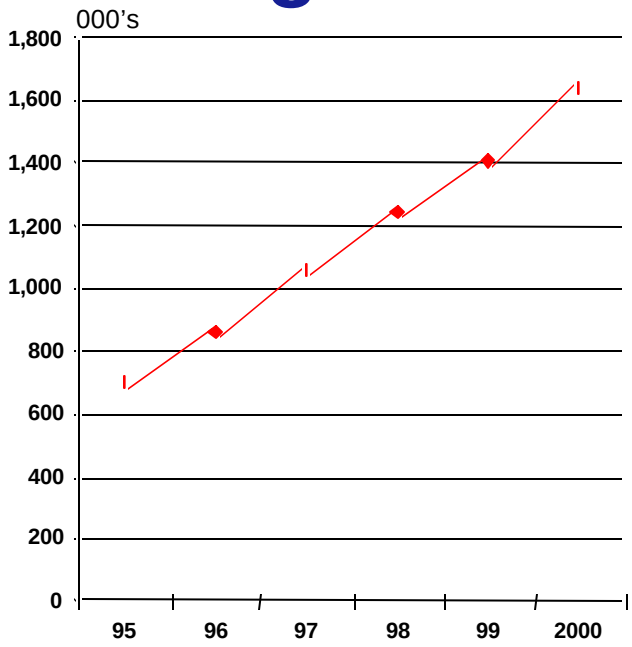
Number of Mobile Workers

- **Mobile workers are employees who regularly work outside their office or even have no permanent working location**
- **Use portable PC with data communications over PSTN, GSM or Internet to corporate resources**
- **Security is critical issue in networking design**

Source: IDC European Remote Access Survey 1997

The Growth of Teleworking



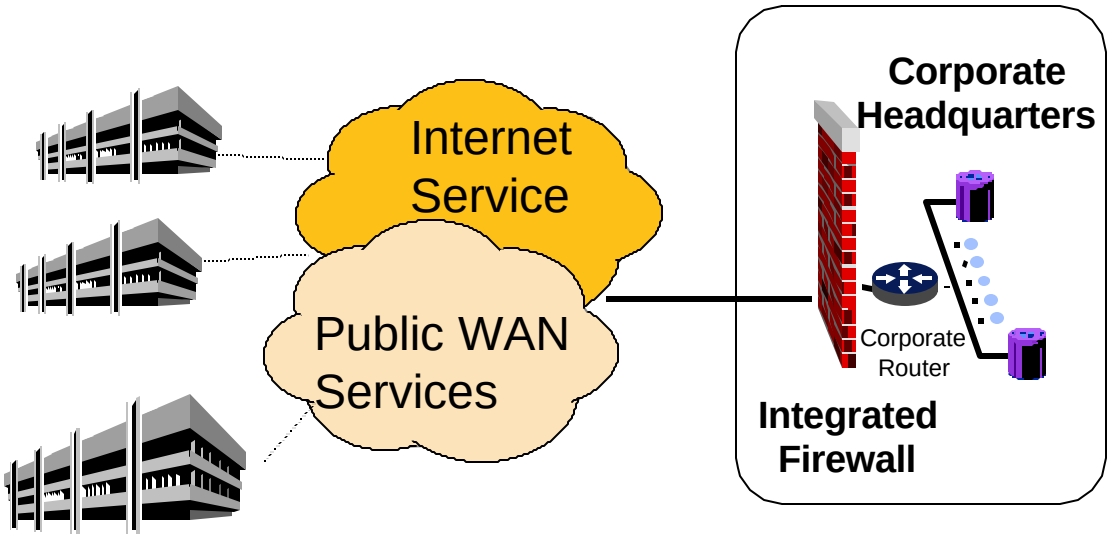


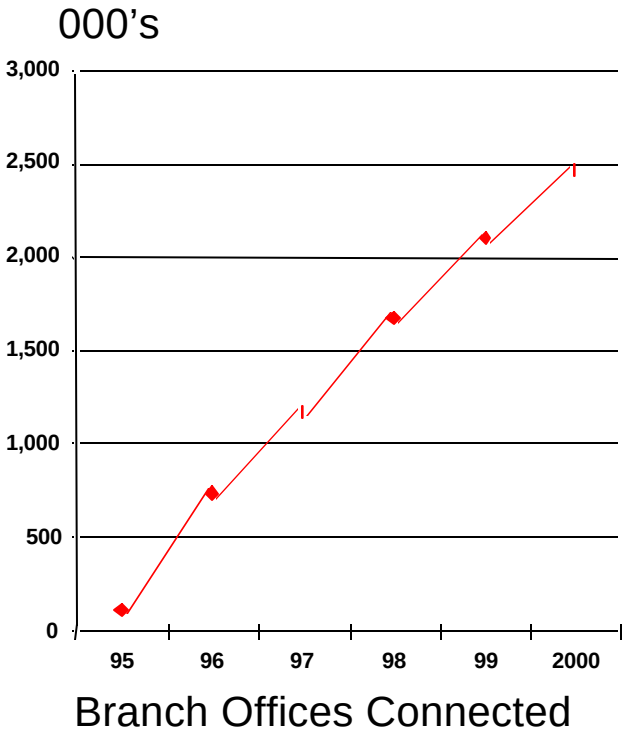
Number of Teleworkers

- **Teleworkers are employees who regularly work outside their office but their location is not mobile**
- **Teleworkers will work from their home or Teleworker office, using desktop or Portable PC connecting mainly to their office via PSTN or ISDN**
- **Security is critical issue in networking design**

Source: IDC European Remote Access Survey 1997

The Need for Branch Office Automation



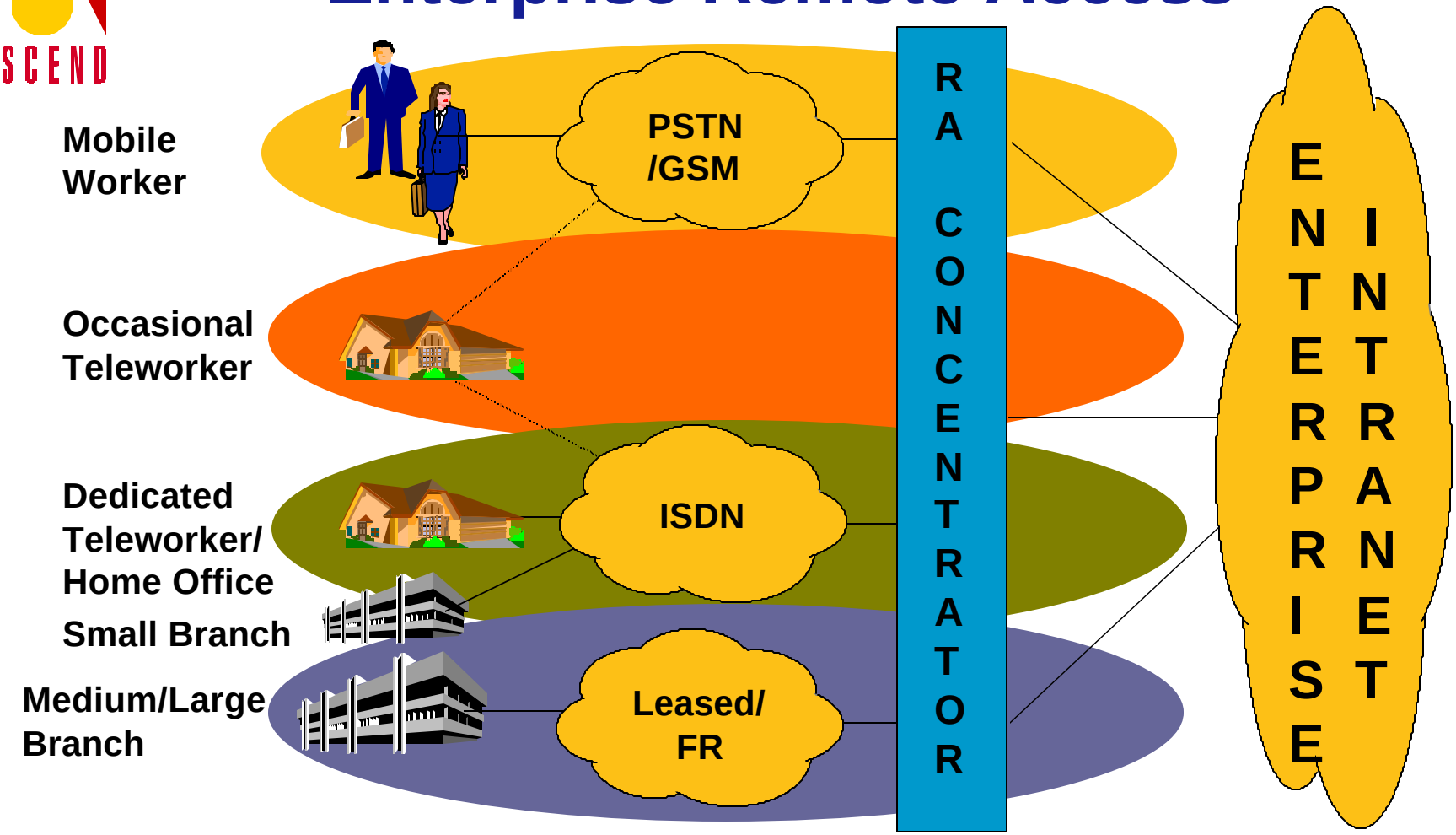


- **Branch office workers have access to same tools and information as those at corporate HQ, e.g. database access**
- **Branch office may be as small as two PCs or as large as an office with multiple LANs**
- **Connections mainly to their Enterprise backbone via ISDN, ISDN/Frame Relay, or Frame Relay**

Network Technical Considerations

- Support incumbent protocols: IP, IPX w/spoofing, AppleTalk
- Conserve IP addresses
- Flexible access services: Analog, ISDN, Frame Relay
- Consistency of applications and performance across Intranet: email, Lotus Notes, database access, web
- Limiting access of information resource by external and internal users
- Maintaining and monitoring multiple sites and users

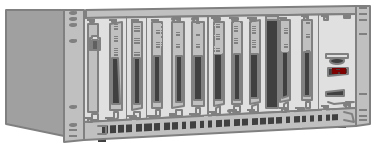
Enterprise Remote Access



Or Outsource to New Public Network .....

Ascend Defines Remote Access

Before

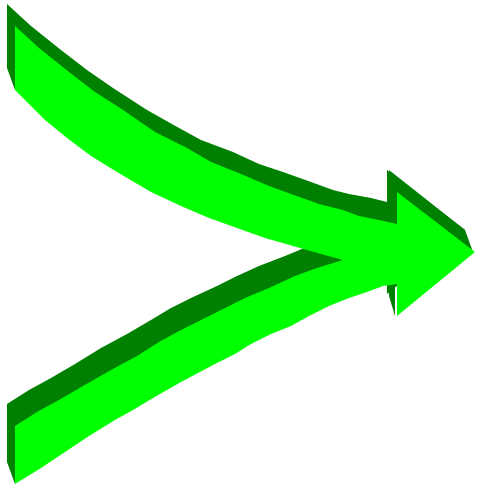


Modem Pool

Terminal Server

Router

Inverse Multiplexer



After

MAX Concentrator

- "Access Concentrators are call aggregation devices designed for dial-in applications."
- Access concentrators aggregate analog and digital calls over channelized E1/T1 lines or DS3/E3 lines.
- "Typically support between 48 and 750 concurrent calls. Functionality includes remote access server support and integrated routing."

Source: Dataquest

End-to-End Remote Access Solutions

MAX Family of Access Concentrators

MAX TNT

MAX 200Plus

MAX 1800

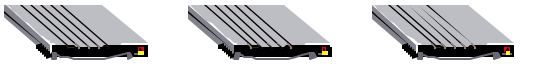
MAX 4030/4048/4060

MAX 2000/2012/2024

MAX 4000

Pipeline Family of Branch Office/ Small Office Routers

Pipeline 75 Pipeline 25-P*x* Pipeline 25



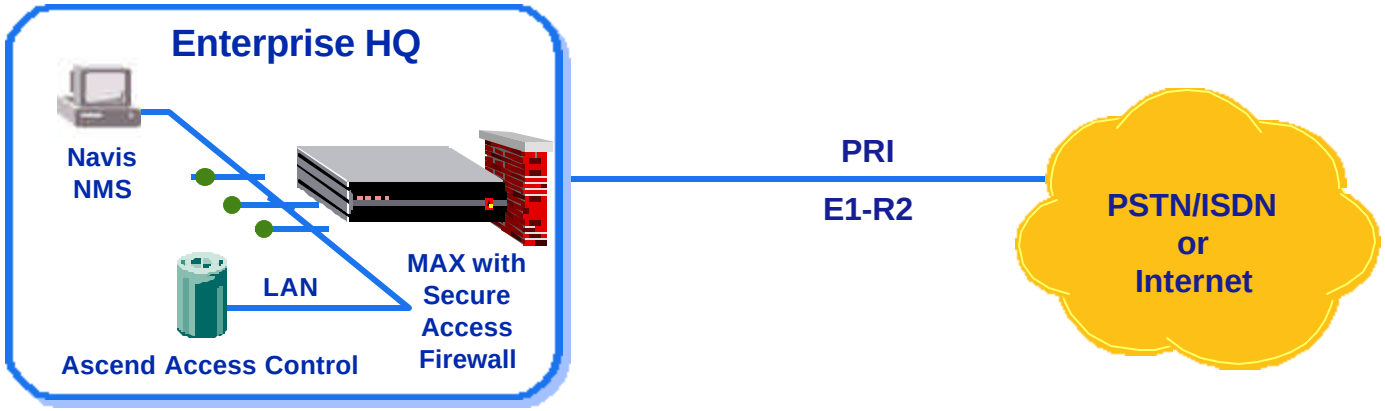
Pipeline 130 Pipeline 25-F*x* Pipeline 50

Pipeline 220 Pipeline 85

Complete hardware and software solution for fully secure, managed, scaleable remote access network

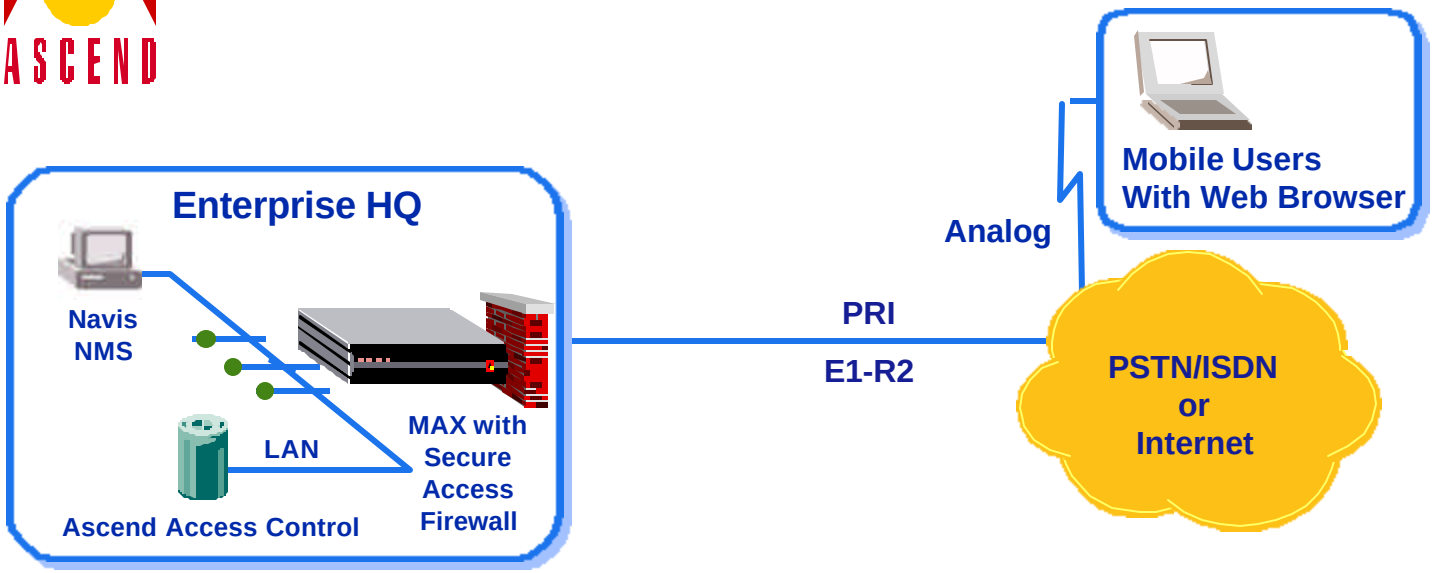
Building The Enterprise Remote Access Network

Provide Central Site Concentration



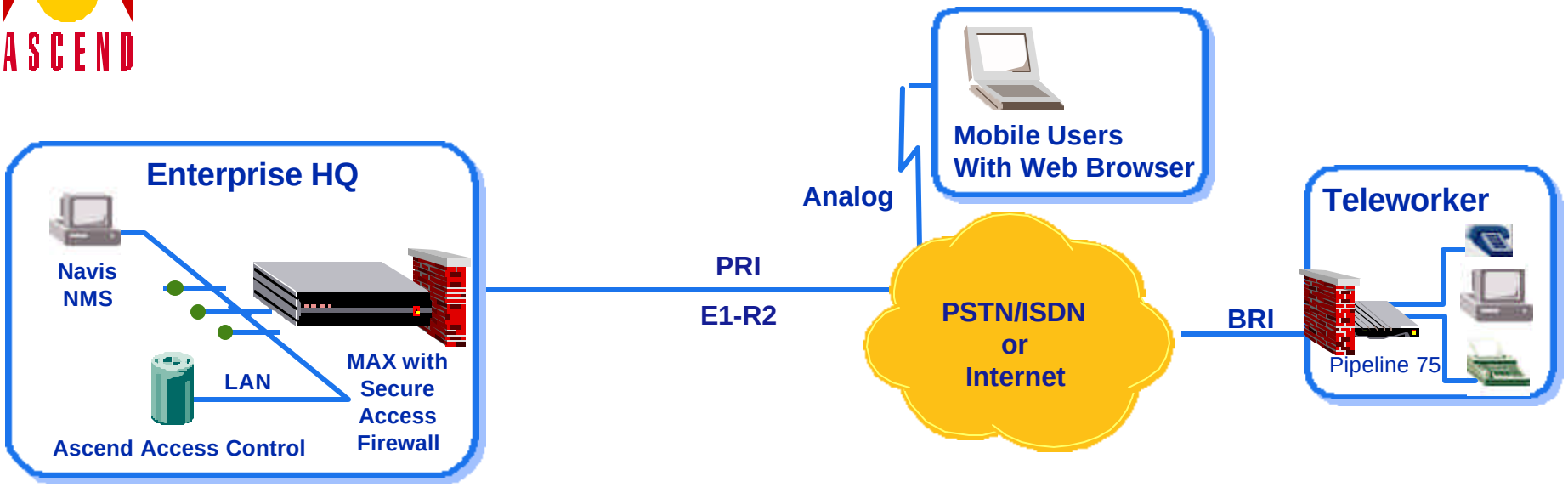
- Deploy MAX / MAX TNT at central site with Dynamic Firewall
  - IP, IPX, ARA, IP address pooling, DHCP, 56K analog, ISDN, Frame Relay
- Access Control (RADIUS) for per-user Authentication
- Token server a 2nd level of authentication using end-user Token card
- Firewall Control Manager allows users to be authenticated through web-browser

Secure Access to the Intranet for Mobile Workforce



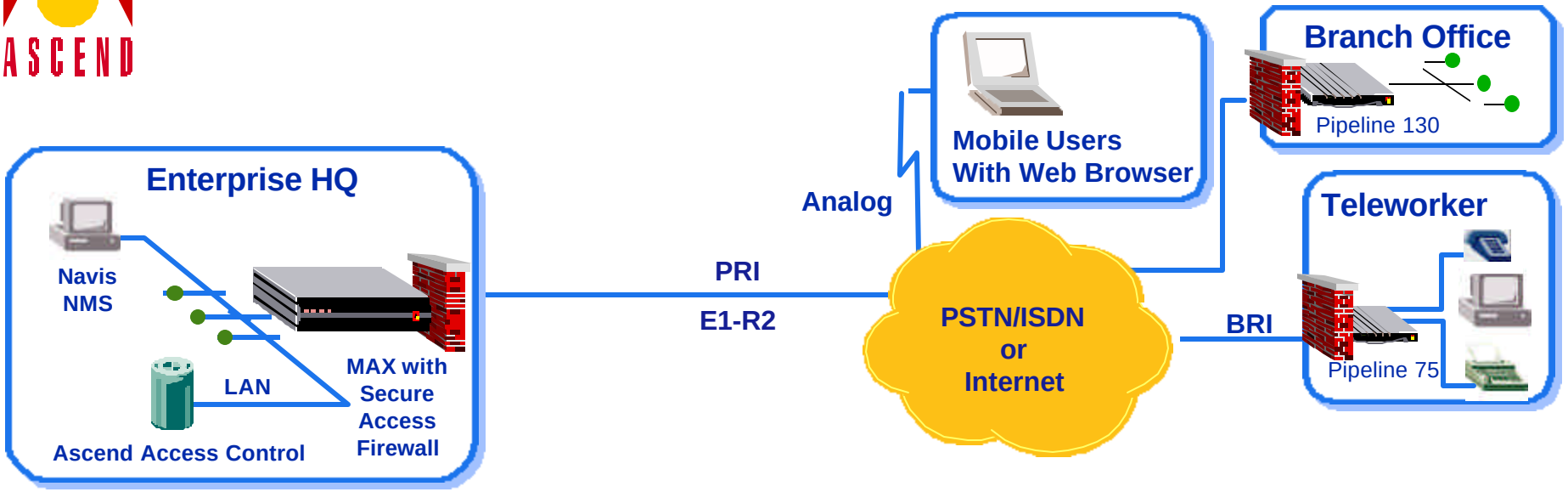
- Scalable access for 1 to hundreds of mobile users
- Support of access speeds from 1.2 Kbps to 56 Kbps

Secure Access to the Intranet for Teleworkers



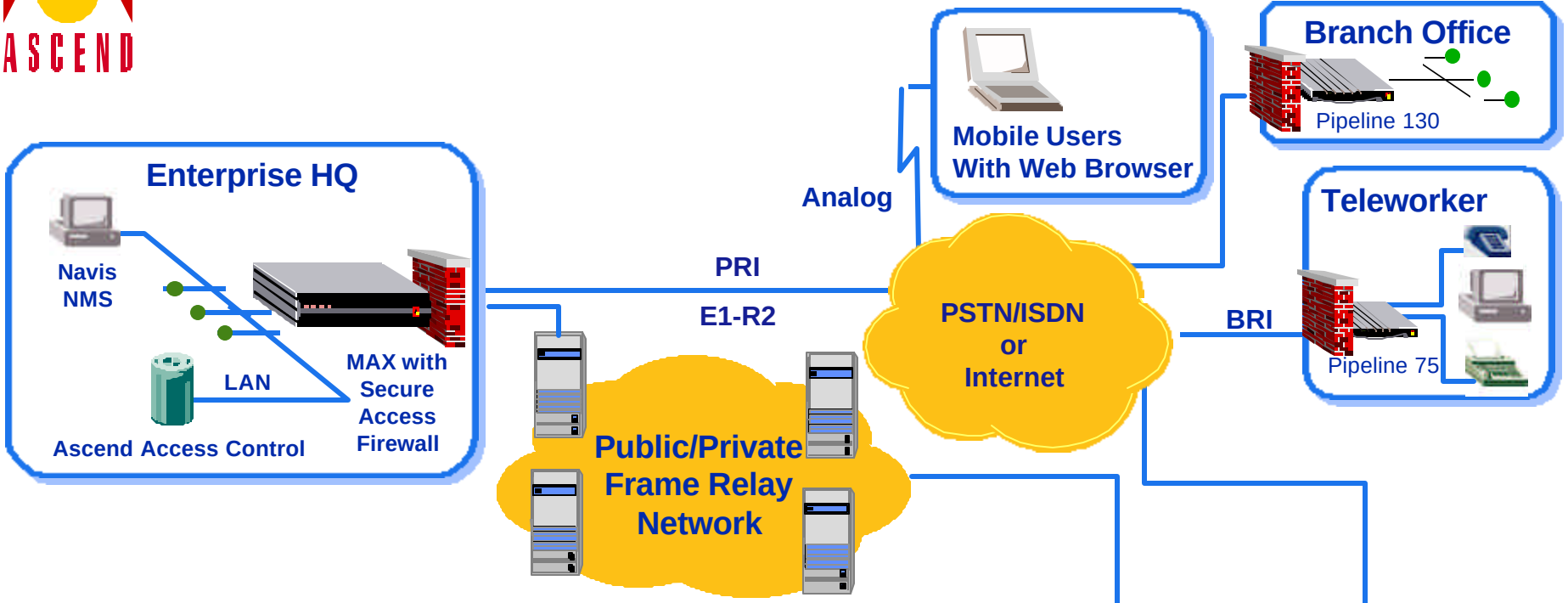
- Co-exists with existing Mobile User access
- Secure and scalable access for 1 to hundreds of Teleworkers
- Support for 64 and 128 Kbps over ISDN
- Pipeline allows telephone, fax and data to share ISDN line
- Incoming our outgoing analog call pre-empts one channel of a two-channel data call
- Eliminates extra line costs for Teleworkers

Secure Branch Office Access To The Intranet



- Co-exists with Mobile User and Teleworker access
- Secure and scalable access for branch offices
- Support for ISDN, Frame Relay or Frame Relay with ISDN backup
- Remote configuration and troubleshooting from central site
- Optional integrated 8 port Ethernet hub for small branch office installations

Secure Regional Office Access To The Intranet

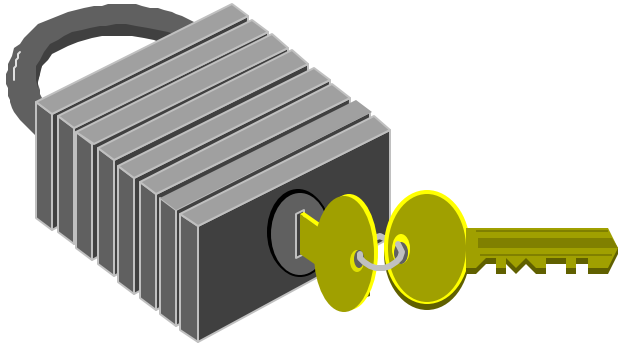


- Co-exists with Mobile User,Teleworker and Branch office access
- Secure and scaleable access for regional offices
- Support for ISDN, Frame Relay or Frame Relay with ISDN backup
- Optional VPN tunneling support for Regional Office connection through the Internet
- Remote configuration and troubleshooting from central site
- As number of Regional and Branch Offices connected over Frame Relay increases, Private Vs Public backbone option.

Concerned About Security?

You Should Be!

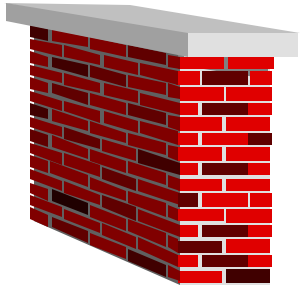
Fully Secure Access



- Dial back
- Encryption
- Password Authentication Protocol (PAP)
- Challenge Handshake Authentication Protocol (CHAP)
- Third Party Authentication methods (Digital Pathways, Security Dynamics)
- Secure Access Firewall (Local and Remote site)
- RADIUS
- Access Control
- VPN Tunneling (PPTP, L2F, ATMP, L2TP)

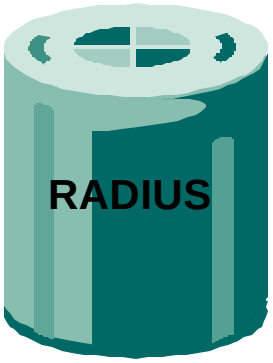
Security

Secure Access delivers:



- Unique integrated dynamic firewall technology
- Firewalling for both central and remote sites. Secure Access Manager provides configuration of remote firewalls from a central site
- Point and click GUI for installation and management of central and remote firewalls.

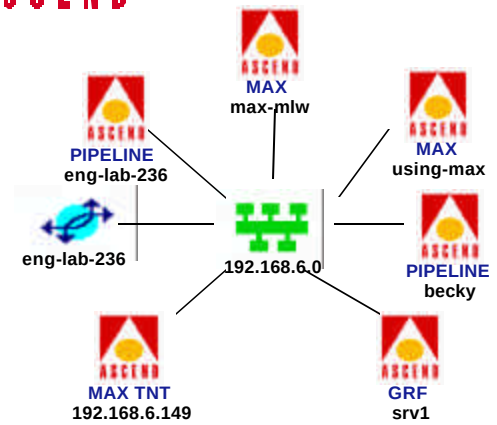
A combination to provide comprehensive network security



Access Control delivers:

- Java-based installation and management
- User identification
- User authentication
- User authorization
- Accounting
- Intranet and Virtual Private Network
- Proxy-RADIUS
- Resource management

Management From a Single Console



Navis Access delivers mission-critical tools in all key management areas

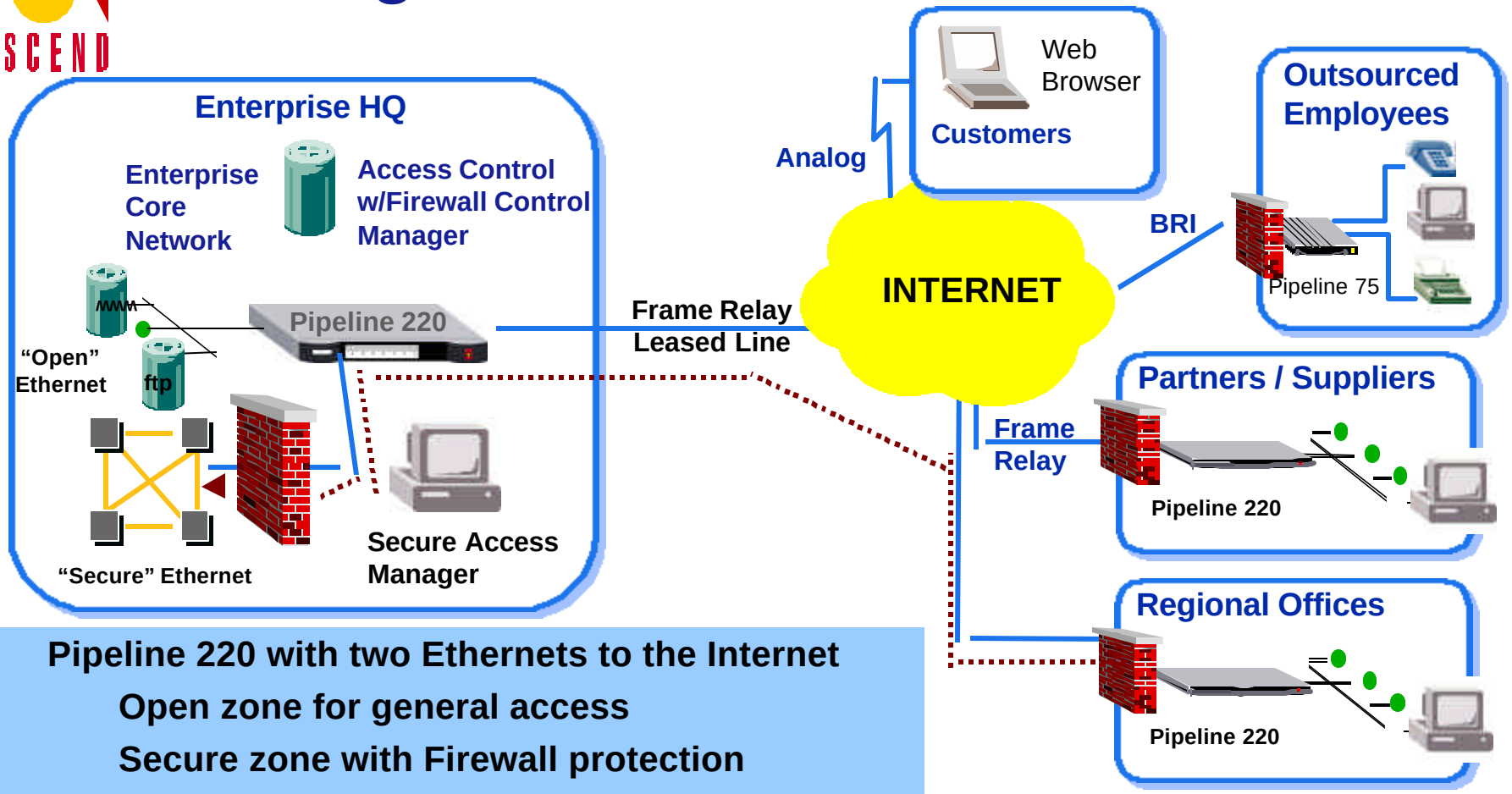
- Discovery and mapping
- Java-based Configuration for Pipeline and MAX
- Fault
- Performance
- Security and Accounting

- **Leverages client/server, IP and WEB technologies to enable distribution of management functions:**
  - Scalable and distributed to support hundreds of dispersed operators
  - Published interfaces and libraries for seamless integration into existing management infrastructures
  - Reliable and secure
  - Complete end-to-end management of all WAN services and devices
  - Enables new revenue-generating services

Applications of Expanding the Intranet to Support Extranet

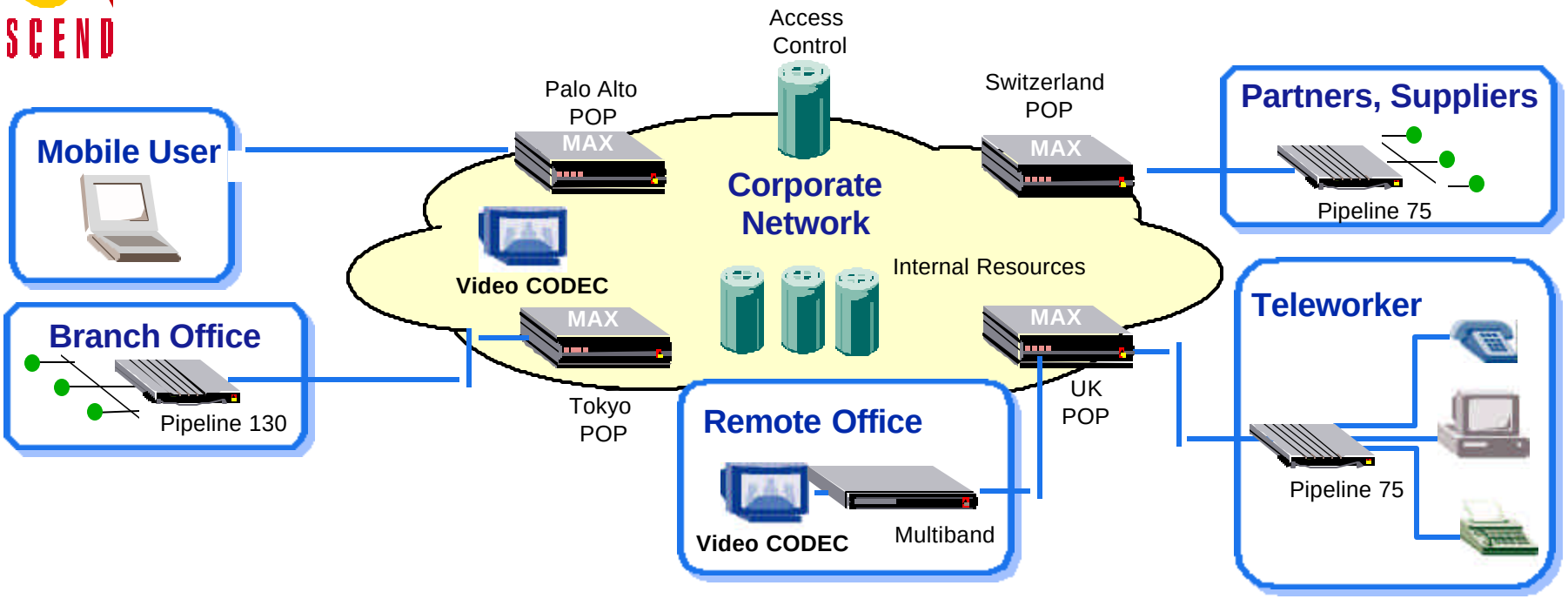
- Retail - customers can order on-line
- Insurance - supply quotations on-line / IFA access to policy details
- Banking - secure home banking
- Manufacturing - on-line order processing
- Warehousing - partner stock inventory check
- Information share - vital up to date company information both internally and to selected external partners
- Support & servicing - customer can log support calls and monitor the progress

Going To Secure Extranet Service



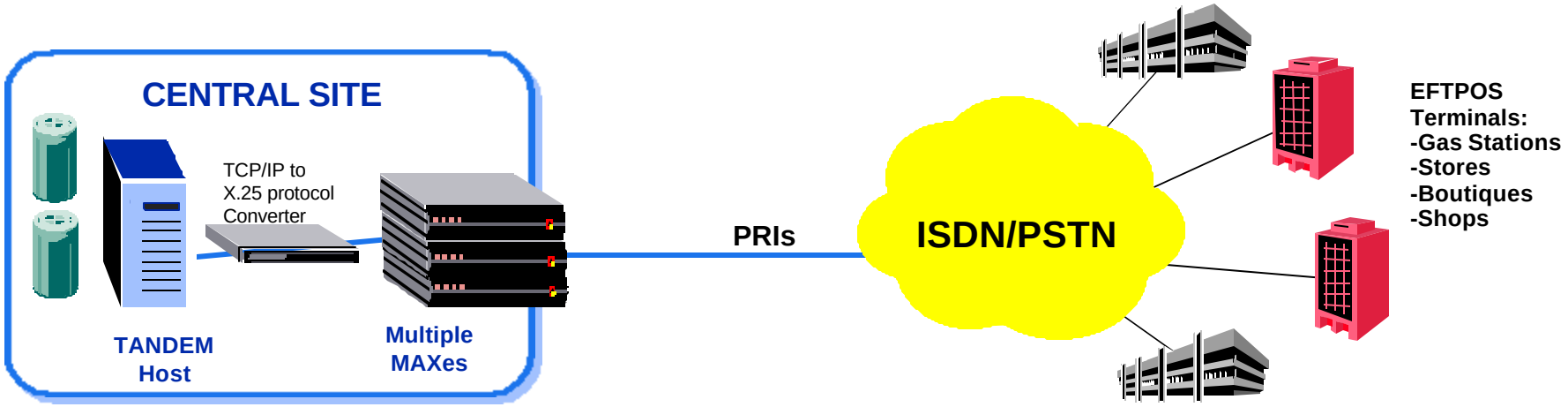
- Pipeline 220 with two Ethernets to the Internet
  - Open zone for general access
  - Secure zone with Firewall protection
- Access for customers, partners and suppliers over ISDN,analog and Frame Relay
- Authorized users (Regional Office, some partner and suppliers) go through the Firewall

Case Study: Leading Computer Manufacturer



- MAX 4000 in points of presence in Europe, US and Asia to support 100s of mobile users, teleworkers and regional offices
- Radius protocol (Access Control) for authentication of users
- Work at home program a success - used actively
- Same network for partners and suppliers being implemented

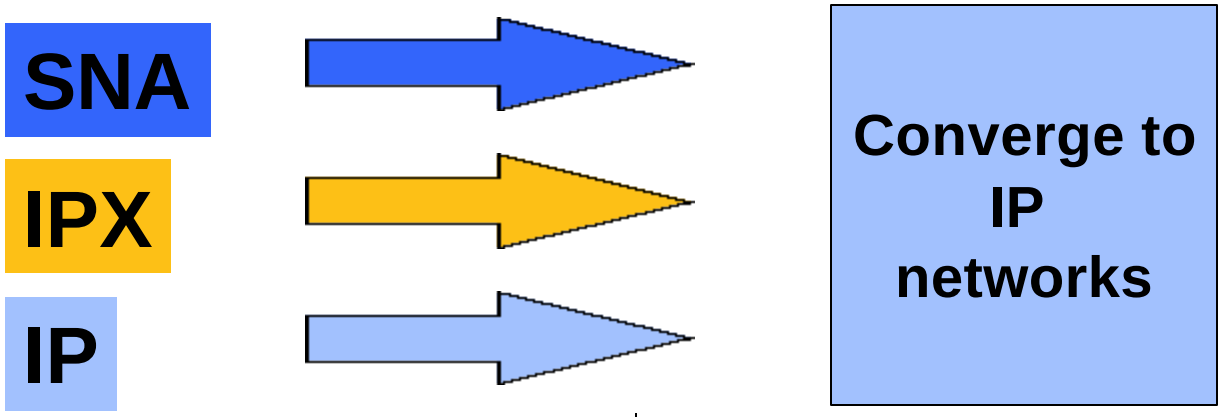
Case Study: Banksys Banking Association EFTPOS



- MAXes at the computer center handle calls from analog EFTPOS terminals from stores, shops, gas stations
- Eliminates hundreds of hard-to-manage modems
- Auto-connect upon dialed connection
- 8-bit transparent Telnet supporting encrypted data
- Protocol converter for: Telnet to X.25 PAD
- 500 digital modem ports already installed
- TCP/IP and ISDN Ready

What About The Future ?

Network Convergence To IP

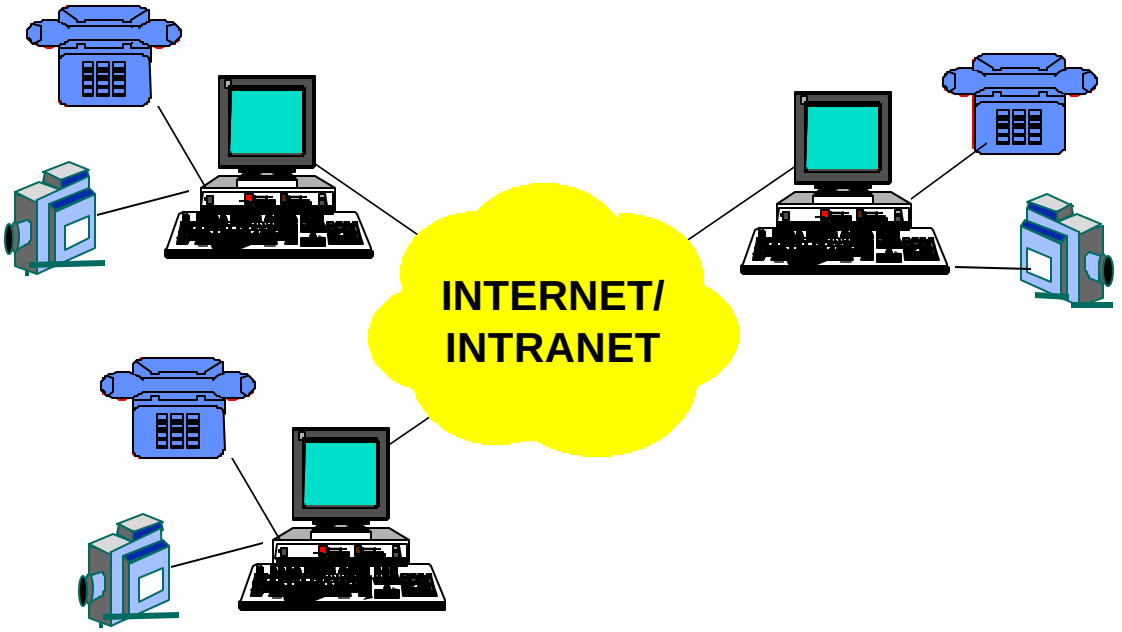


	1996	1998
50 % or more IP	36%	82%
49 % or less IP	64%	18%

Percent of 50 Fortune 1,000 Companies interviewed
Source : Forrester Research Inc

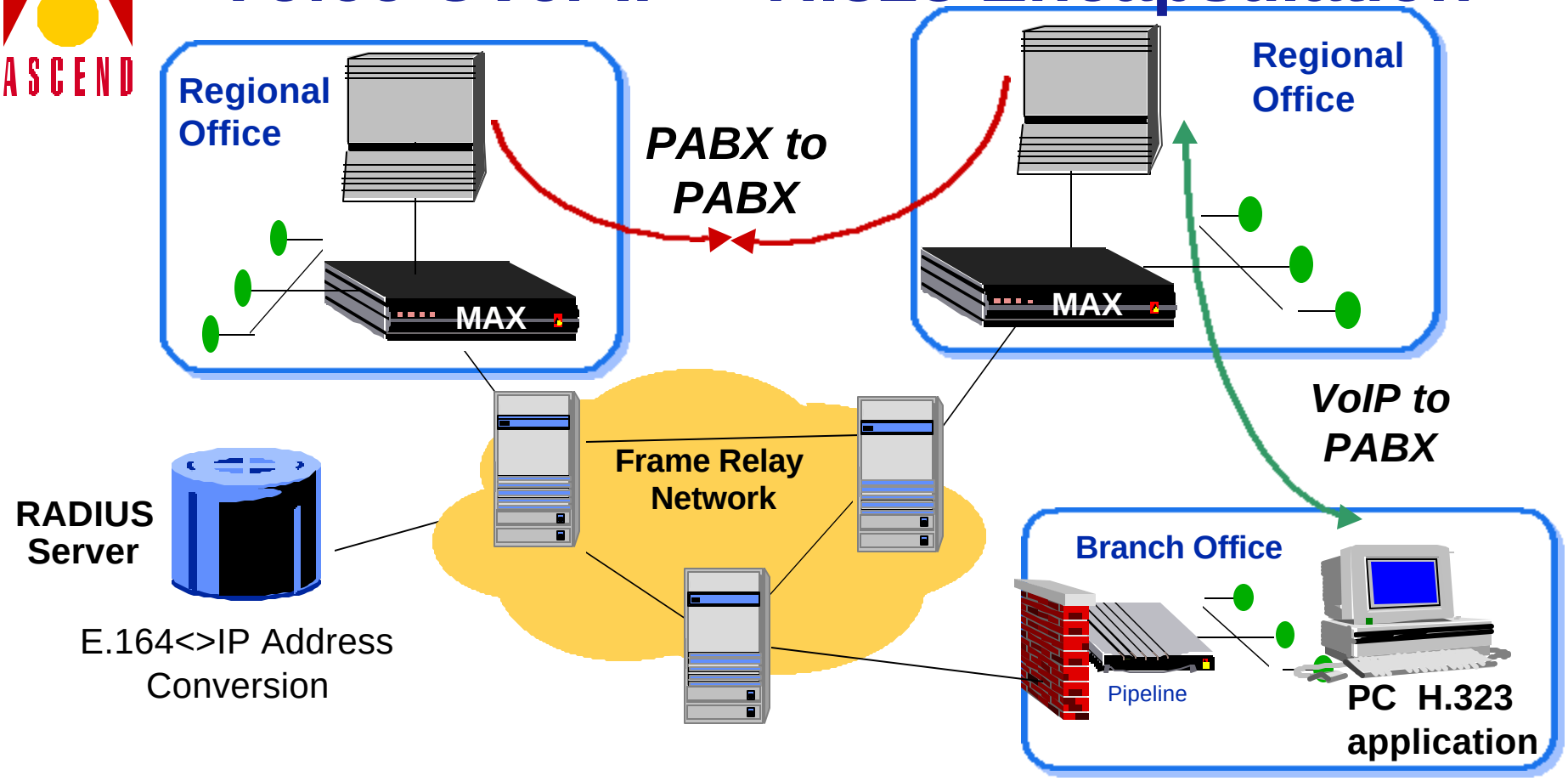
- **Traditional Enterprise data protocols are migrating to all IP, as use of Internet/Intranets expand**

Addition Of Video And Voice



- As IP networks dominate, why not add Voice and Video over IP
- Infrastructure of the Intranet & Internet networks must evolve to include QoS segmentation, scalability, and enhanced performance

Voice Over IP - H.323 Encapsulation



Implications of Internet Voice

- Significant interest by end users in application, if successful will lead to significant cost reductions
- Quality of voice improving consistently, many aggressive Enterprises evaluating solutions
- Critical technical issue is interworking PABX addressing & signaling with those in IP

Ascending The Enterprise

- **Access to central information resources is an essential business tool**
  - Cost saving benefits
  - More flexible workforce
- **Secure access for:**
  - Mobile Workers
  - Teleworkers
  - Branch Offices
- **Management of central and remote sites from a single location**
- **Future Intranet/Extranet expansion & multimedia communications**