



# **LUCENT'S ENTRY INTO NETWORK SECURITY**



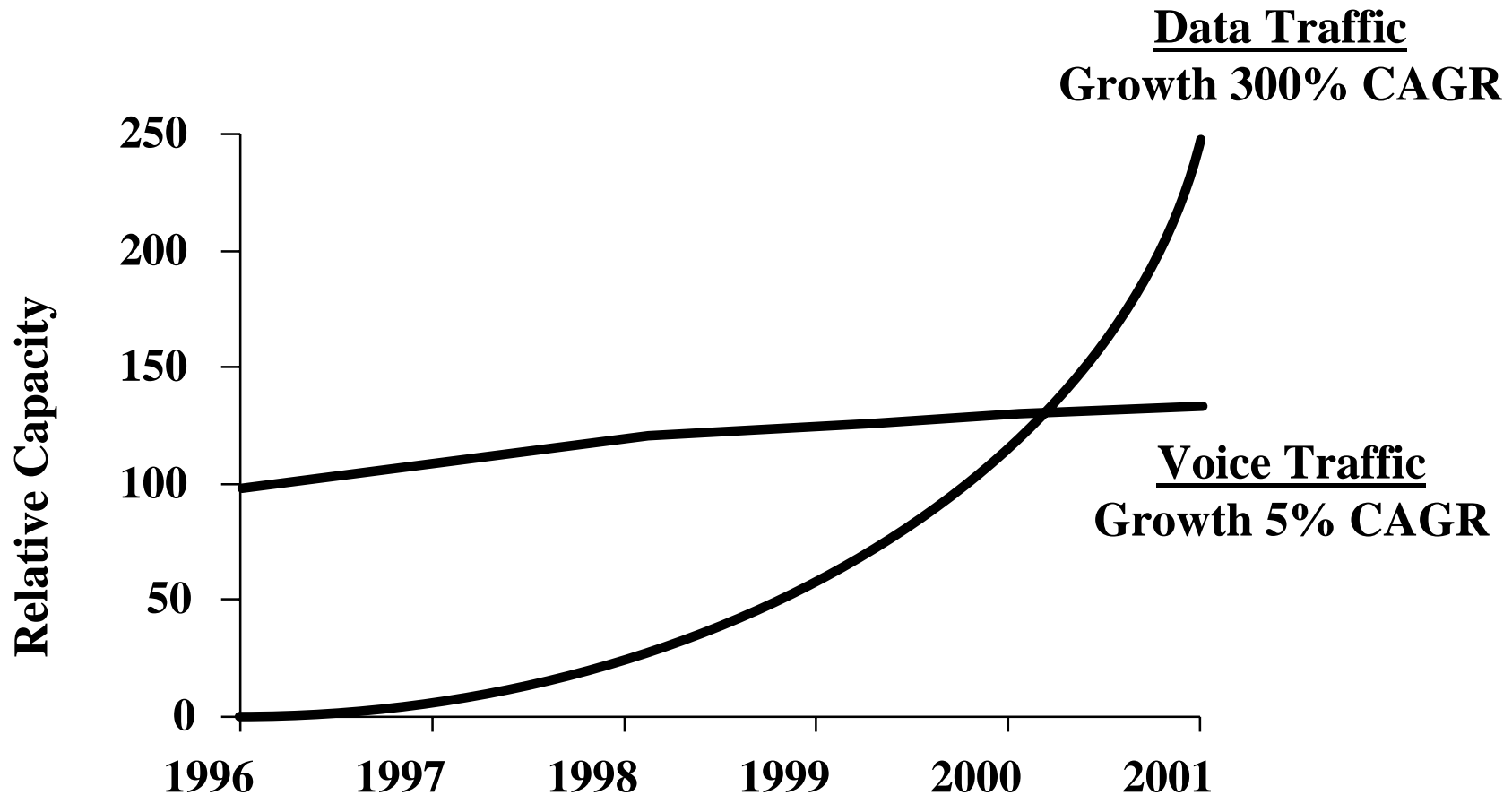
**Network and Distributed  
System Security Symposium  
March 12, 1998**

**H. M. Gittleson  
Director, Internet Security Products Group**



# Traffic Growth In Voice And Data Services

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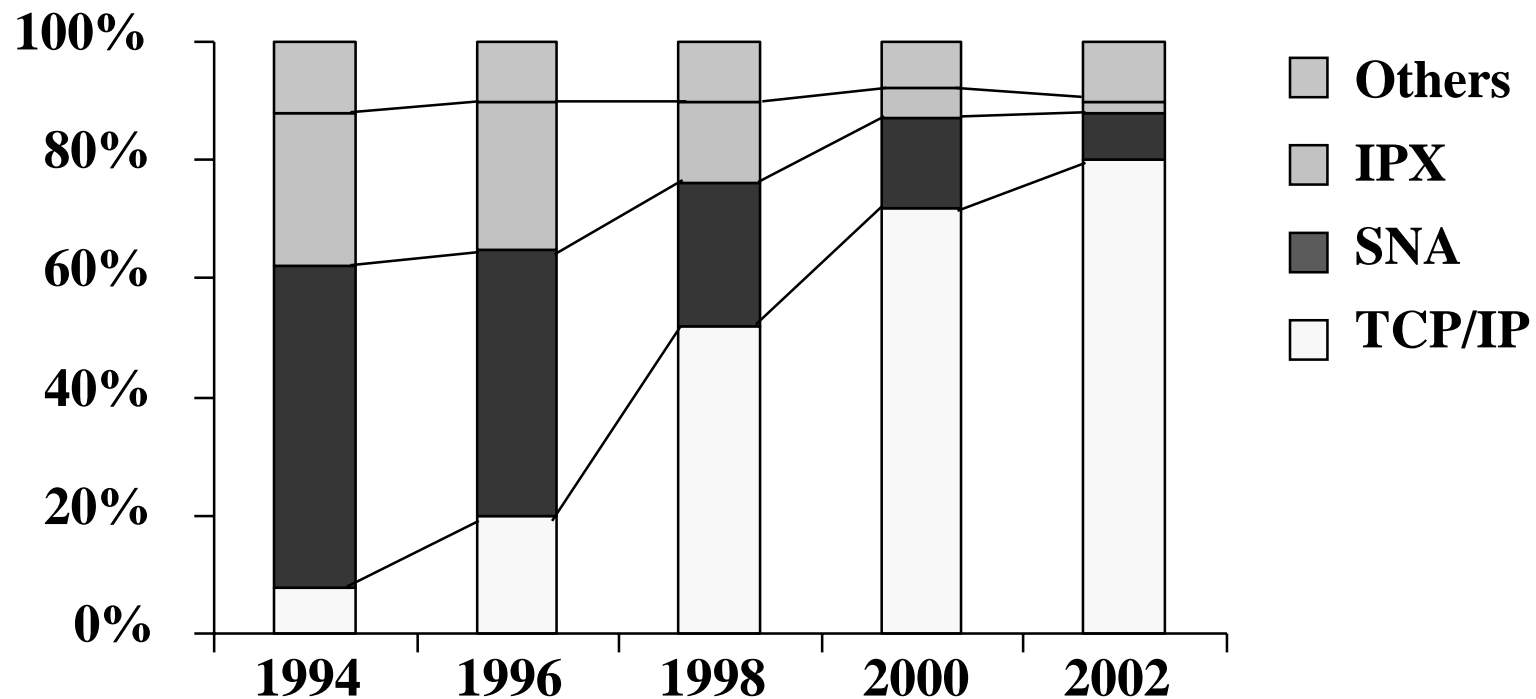


Source: Vint Cerf, MCI

# Changing Traffic Types



## Traffic Mix by Protocol US WANs



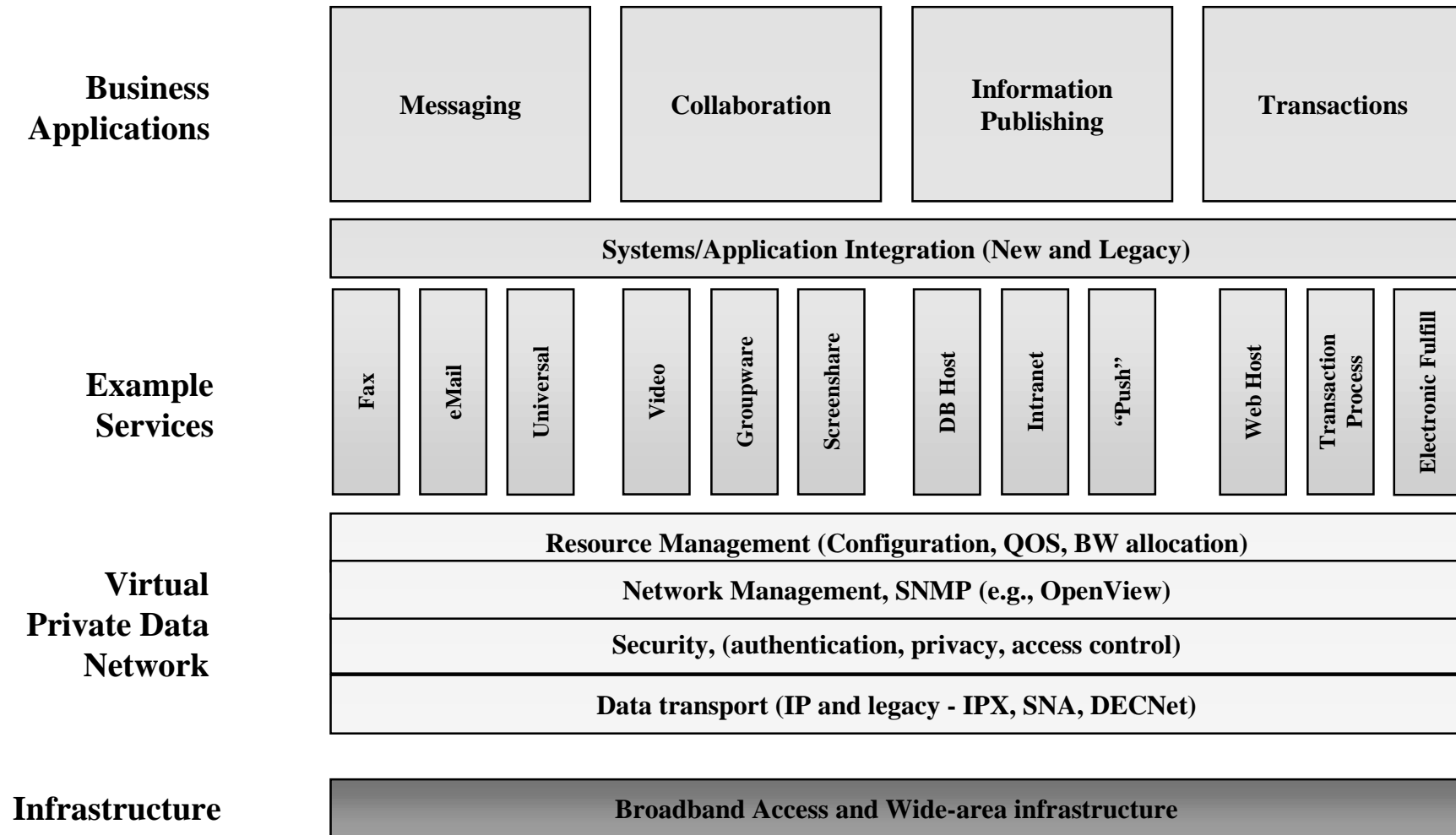
Source: Gartner Group, "The Changing Protocol Mix in Enterprise Networks" 4/1/97

*... and the traffic mix will be dominated by TCP/IP*

# Standards-Based Data Communications Architecture



## Target Architecture for Data Communications



# Value-Added Service Offerings

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## Value-added Services

### Quality of Service

- Guaranteed Bandwidth
- Redundancy

### Security

- Authorization
- Authentication
- Encryption
- User Privilege

### End-to-End Management

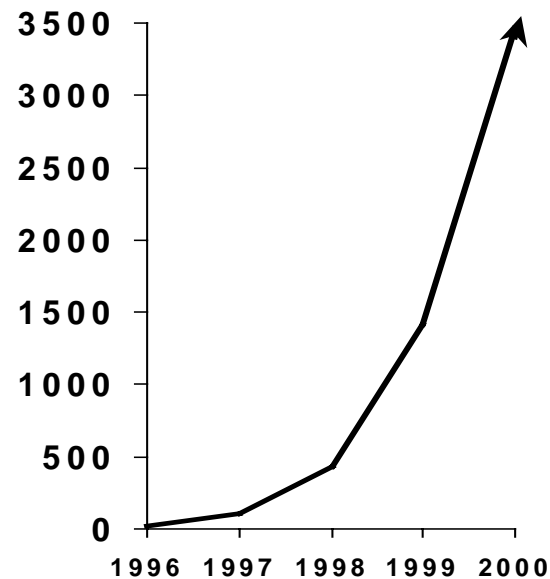
- Fault Management
- Configuration Management

### Billing

- Usage Based
- Services Based on QOS and Security

## Demand

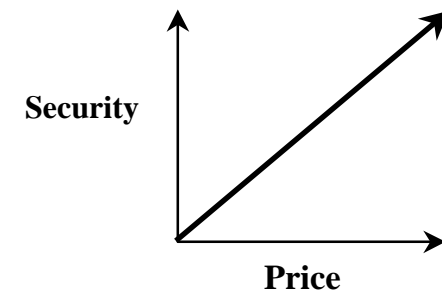
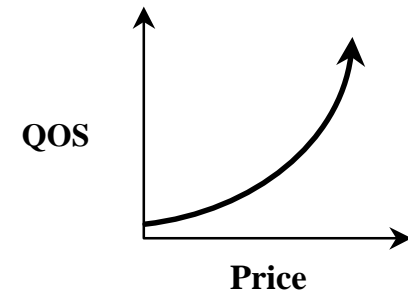
### ISP Security Services Revenue



Source: IDC

## Service Implications

\* Multiple Price Levels Per Service



*There Is a Demand for a Number of “Value-Added” IP Services That Current ILEC Data Networks Don’t Support*

# Lessons Learned In Designing The Next Generation Firewall

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- **“Hardening” a Flawed OS Is Just Delaying Disaster**
  - **NT and UNIX Do Not Provide Secure Foundations for Firewall Design**
- **Firewalls Should Be Invisible to the Network**
- **Firewalls Are Chokepoints by Design**
  - **Thus They Must Be Fast and Reliable**
- **Security Needs To Be Distributed**
  - **Separate Management and Security Functions Must Be Part of the Initial Design**
- **Capability to Share a Firewall Is Needed**
  - **Important for Service Providers and Intranets**
- **Management Server Should Be Platform Independent and Easy to Use**

# Next Generation Firewall

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**We Took the Best of What is Out There -**

- **Stateful Packet Filtering**
- **Proxy Application Gateway**
- **Bridge Level Firewall**
- **T3+ Throughput Performance**
- **Central Administration of Multiple Firewalls**
- **Network Address Translation**
- **Virtual Private Networking Based on IPSEC Standards**

# Next Generation Firewall

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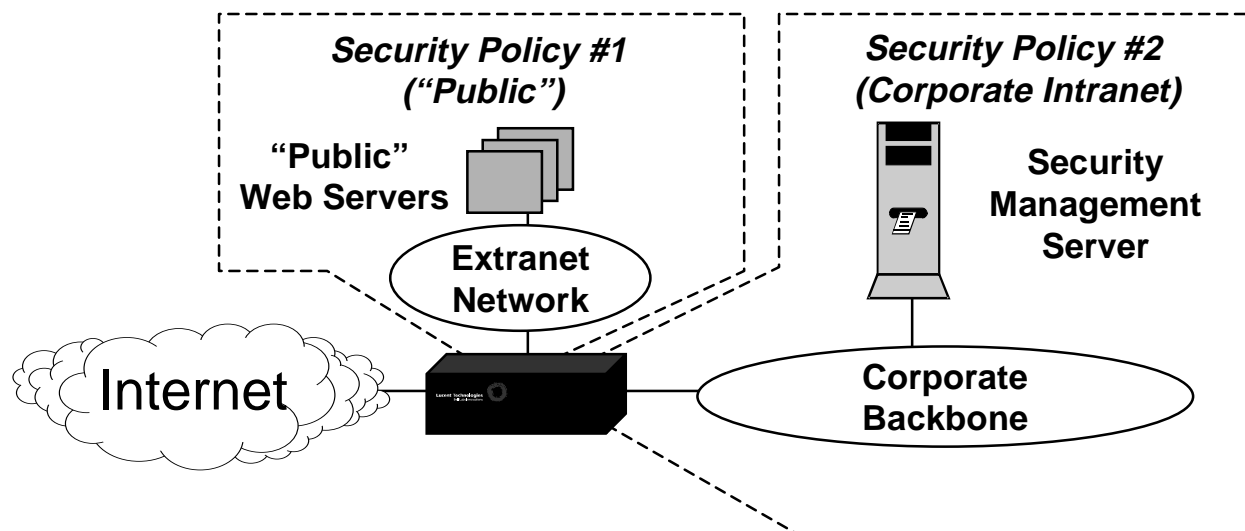
**And Made It Much Better -**

- **Created a Separate Firewall Appliance**
- **Built it on a Real-Time, Secure OS (Inferno)**
- **Added Support For Multiple Security Policy Zones \***
- **Supported Secure Multimedia Applications Without Proxies \***
- **Added Advanced Web-based Administration**
- **Separated Network Administration From Policy Management**
- **Provided a Central Audit Facility With Dynamic Alarms and Reports**
- **Provided Future Expansion With Support of Remote Proxies \***

**\* Patents pending**



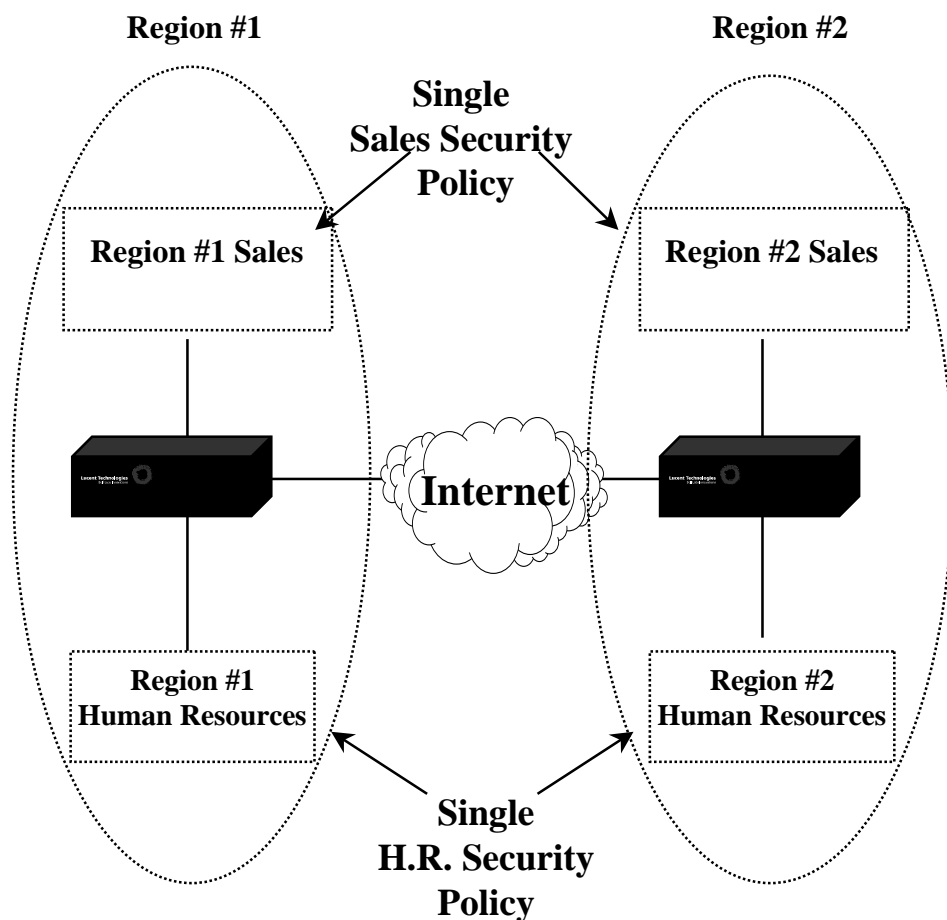
# Multiple Policies On A Single Firewall



- **One Firewall Can Support More Than One Security Policy\***
- **Control of Each Policy Is Restricted to a Unique Security Administrator**

\* Patent Pending for Bell Labs Technology

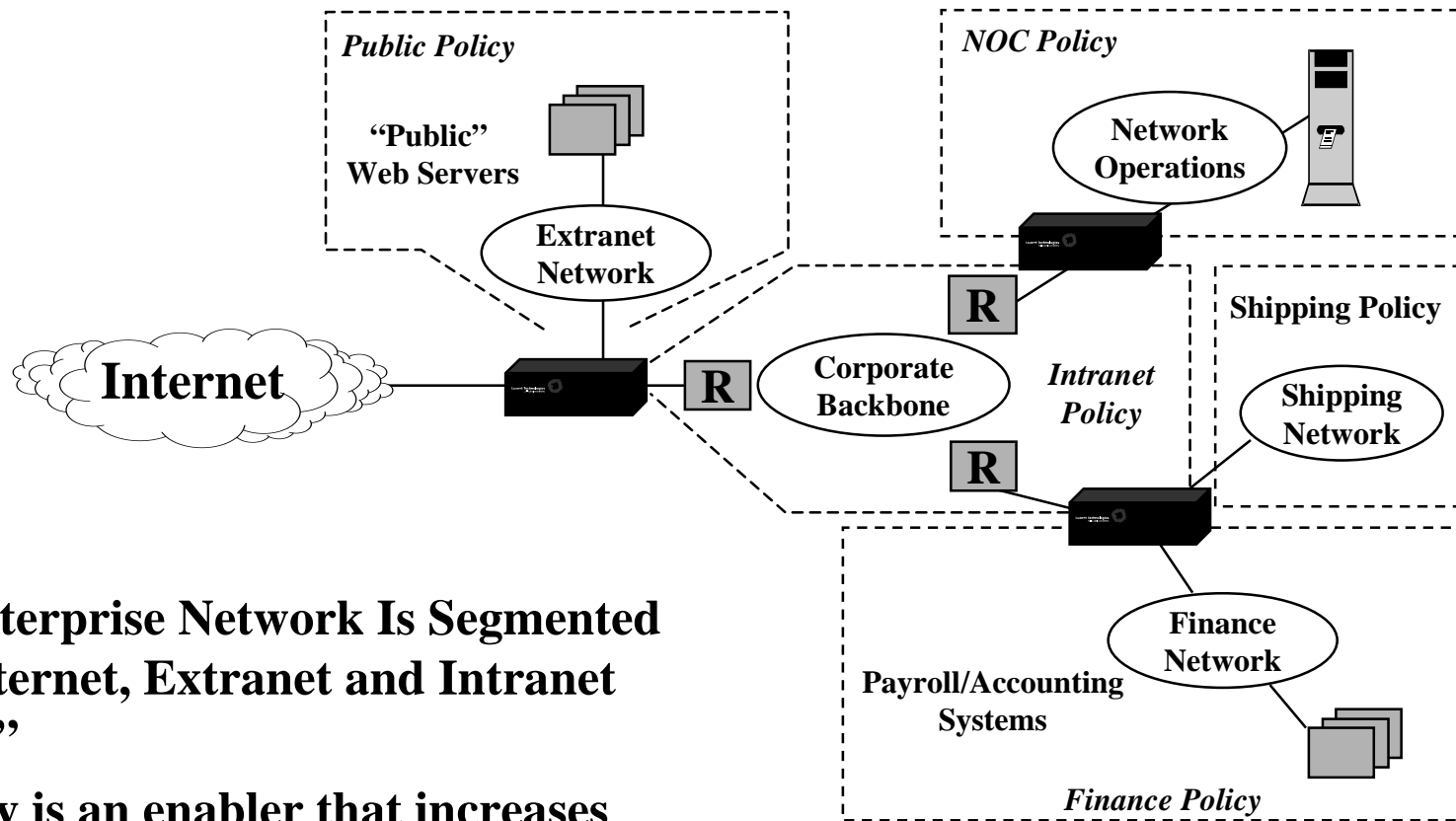
# Single Policy On Multiple Firewalls



- **Policies Are Defined Logically, Not Physically or Geographically**
- **The Same Security Policy Can Be Applied to Multiple Firewalls**

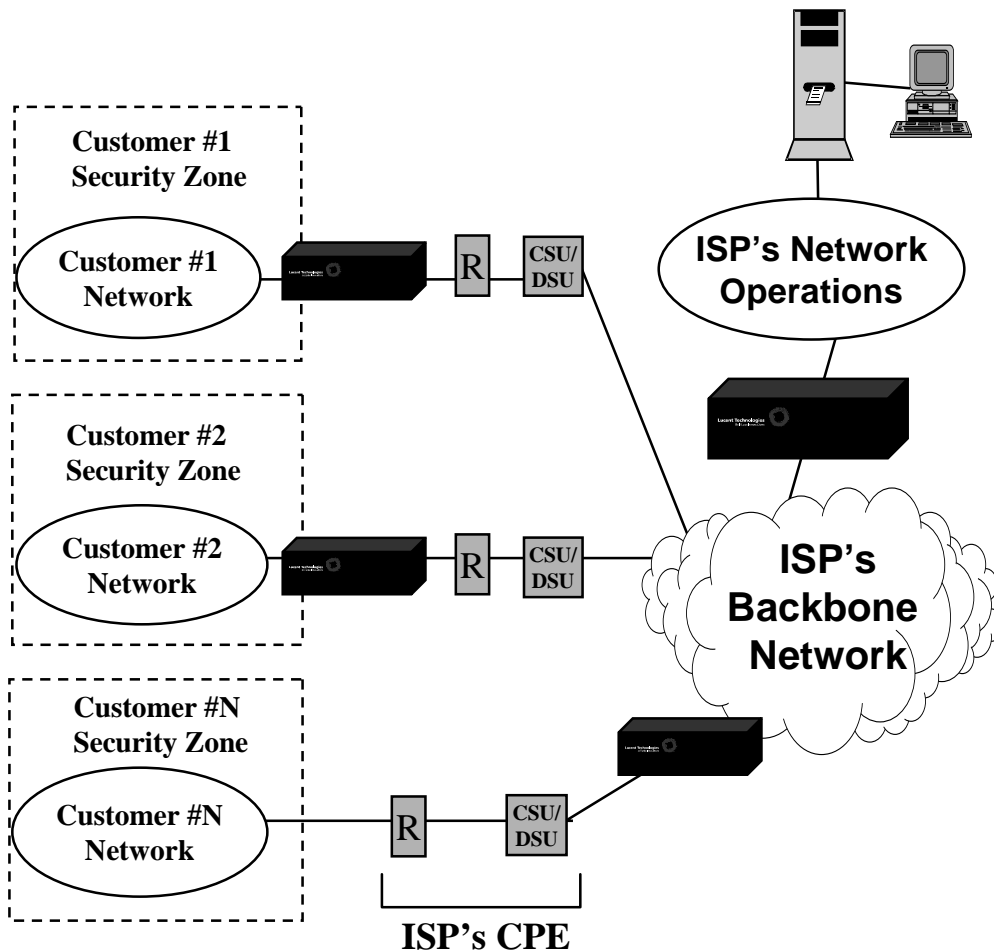
# Enterprise Security Model

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- **The Enterprise Network Is Segmented Into Internet, Extranet and Intranet “Zones”**
- **Security is an enabler that increases overall productivity--both within and outside the company**
- **Trading Partners can access information to meet their specific needs**

# Service Provider Model



- **Service Providers/ISPs Can Easily Offer Firewall Management Service**
- **Value-Add with Lower Total Cost of Ownership=Increased Profits**
- **Increase Customer Loyalty, Reduce Churn**
- **Understand Customer Needs for New Services**