

# The Trials & Tribulations of Implementing a Wireless Network

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Novell.



# Novell's Experience

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- A Global perspective. One of the largest wireless implementations globally with over 3,500 users.
- An Asia Pacific Impementation. All Novells APAC users are wireless.
- The business drivers.
- The technical drivers.
- Wireless, not a solution in itself. Solutions and services that support wireless.
  
- WHY WIRELESS??.....a Novell perspective



# Novell's OneNet Vision

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Novell's **one Net** Vision is a world in which all types of networks - [intranets](#), the [Internet](#), and [extranets](#); corporate and public; wired to wireless - [work together as one Net](#)

to simplify the complexities of eBusiness and provide the power and flexibility organizations need to succeed in the Net economy.



# Wireless Basics

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How a wireless LAN works

What components are used in a wireless LAN

What needs can be met with wireless LANs

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## What is Wireless networking?

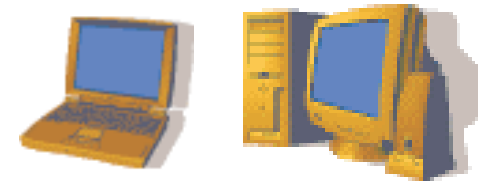
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- It is computer to computer networking using radio. The wired LAN environment mostly uses the 802.3 Ethernet standard.
- The wireless LANs now use 802.11a,b and g. The wireless LAN is an extension to the wired LAN. and it brings the benefits of Information Technology to places *and to activities* where wires won't go.
- 802.11a = 54Mbps on the 5Ghz frequency
- 802.11b = 11Mbps on the 2.4Ghz frequency
- 802.11g = 54Mbps on the 2.4Ghz frequency

# N *Client links*



**Computers  
with Radio  
cards**



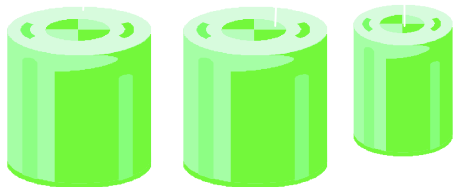
**Radio  
Links**



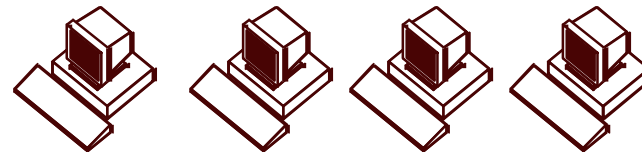
**Access Points**



**Wired LAN network**



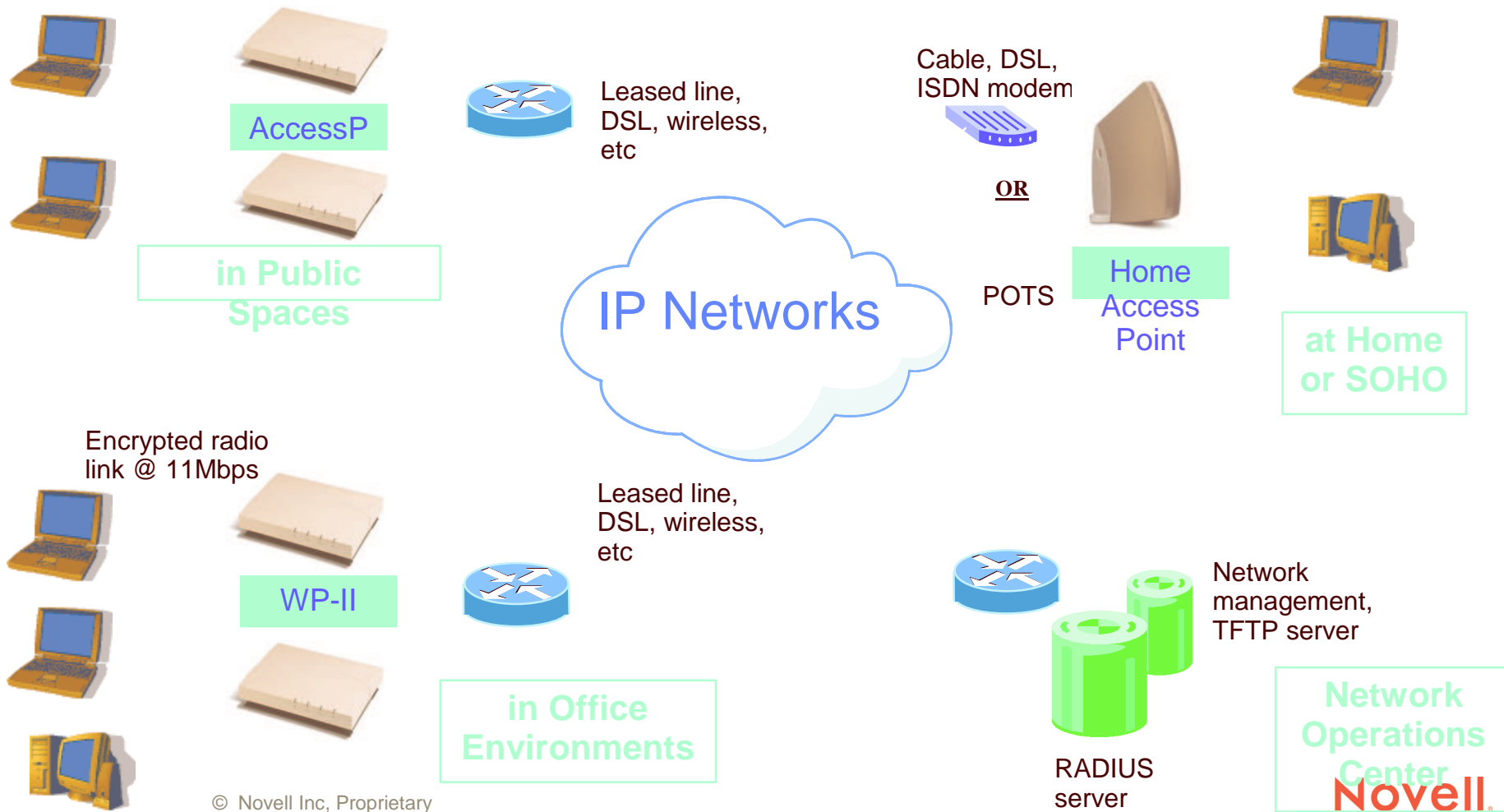
**Servers**



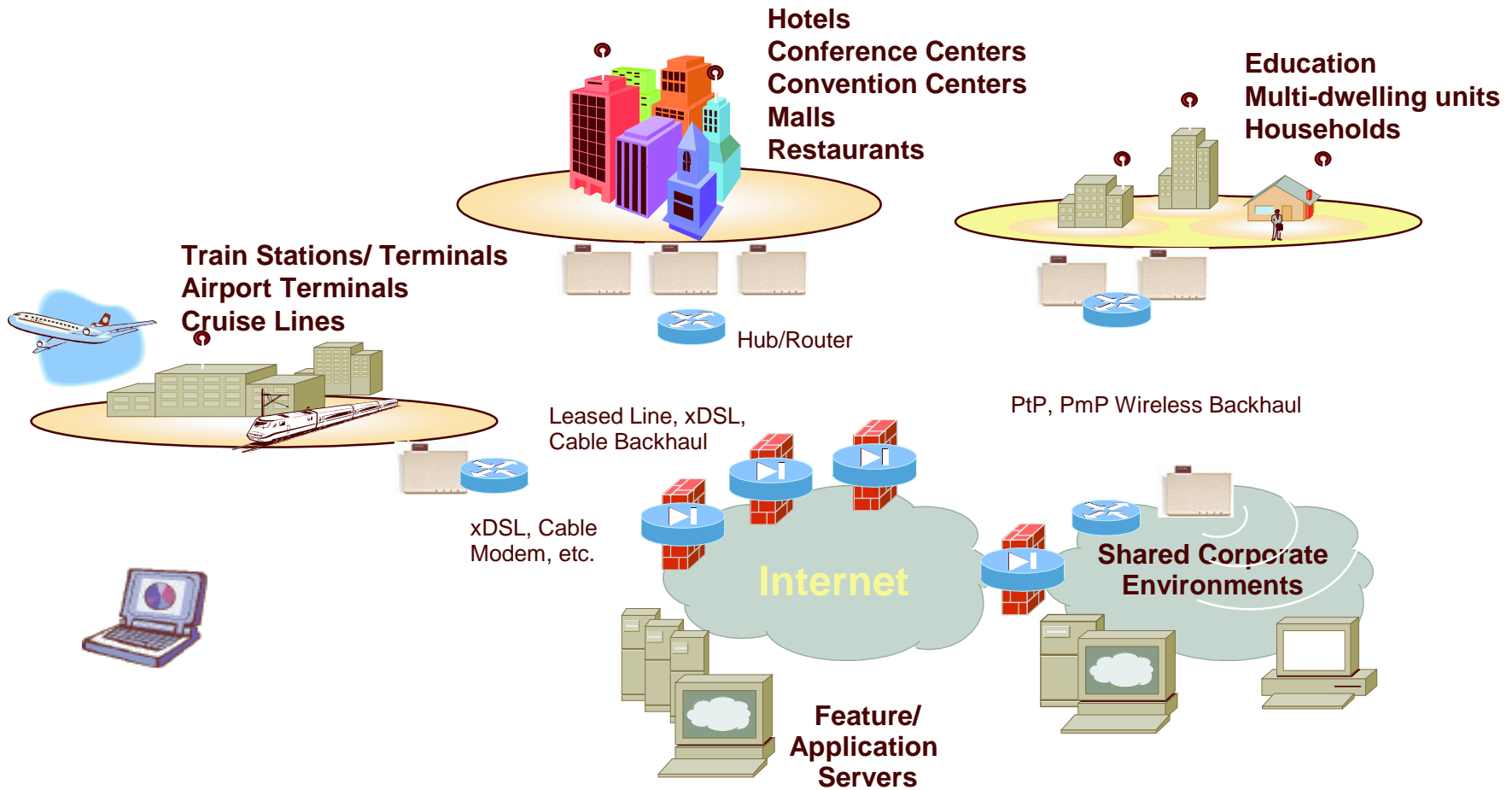
**Wired PCs**

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# Network Topology



# N Public Access



# N *Encrypted links*

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- Encryption is the optional scrambling of the data to make it unreadable to outsiders “listening in” on open radio data communications.
- Both the Access Point and the radio cards need the same encryption “key” (a string of numbers or characters) to be able to encrypt the data they send and decrypt the data they receive.
- The 802.11b standard requires the same key to be shared with all users of an Access Point.
- WEP(Wireless Encryption Protocol) can be unsecure. Always put your access points outside the firewall. Secure your workstations with a software firewall.

# N LAN to LAN

Site miles away



Headquarters location



Radio Link

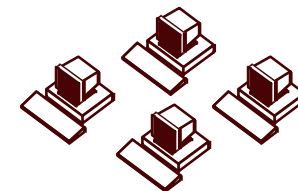
Access Points

**Outdoor Routers**  
Building to building  
LAN to LAN

**The Access Point can be upgraded to perform LAN to LAN routing using radio. Optional antennae are used to increase radio power.**

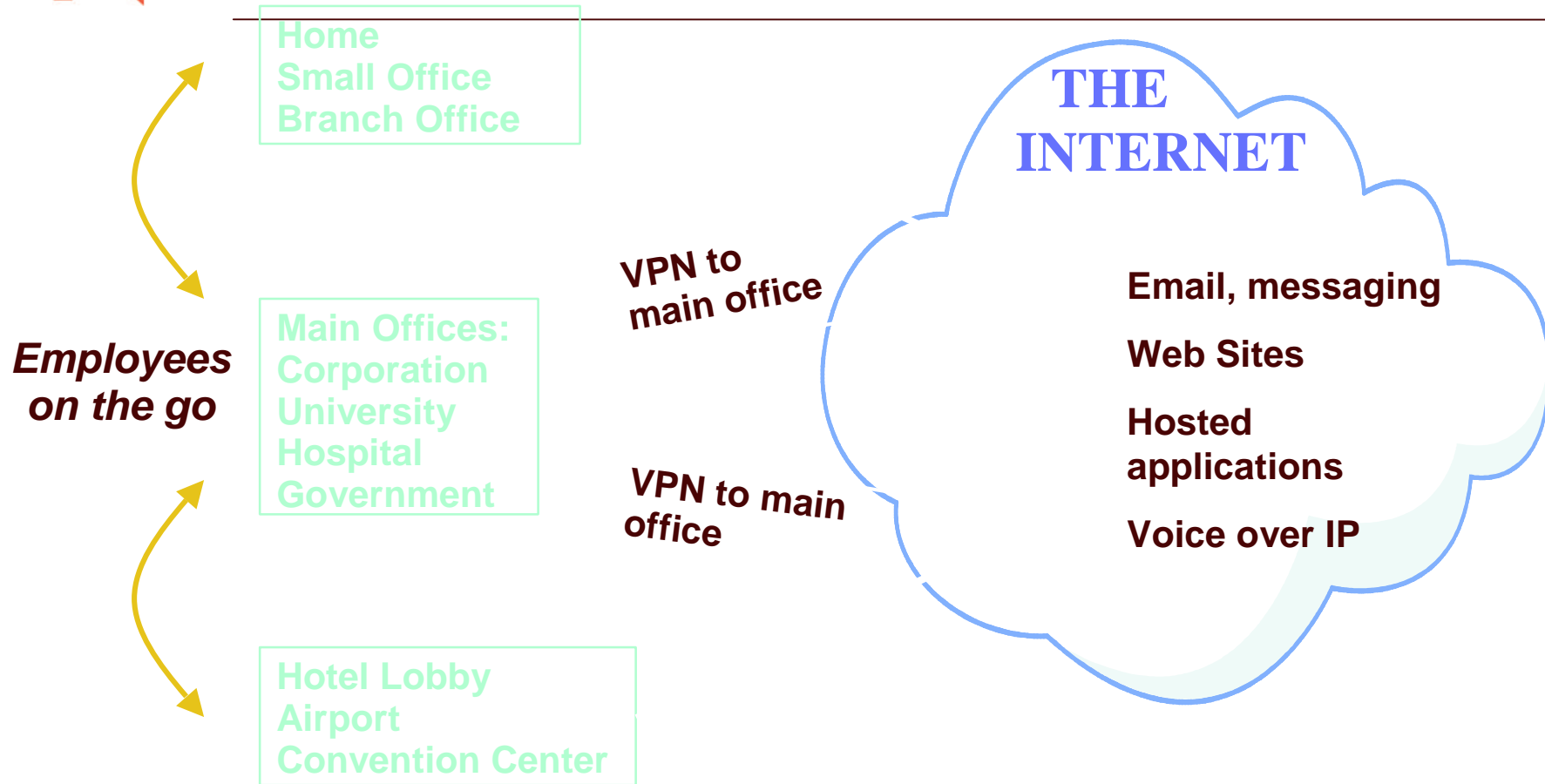


Servers



Wired PCs

# N The enterprise in motion

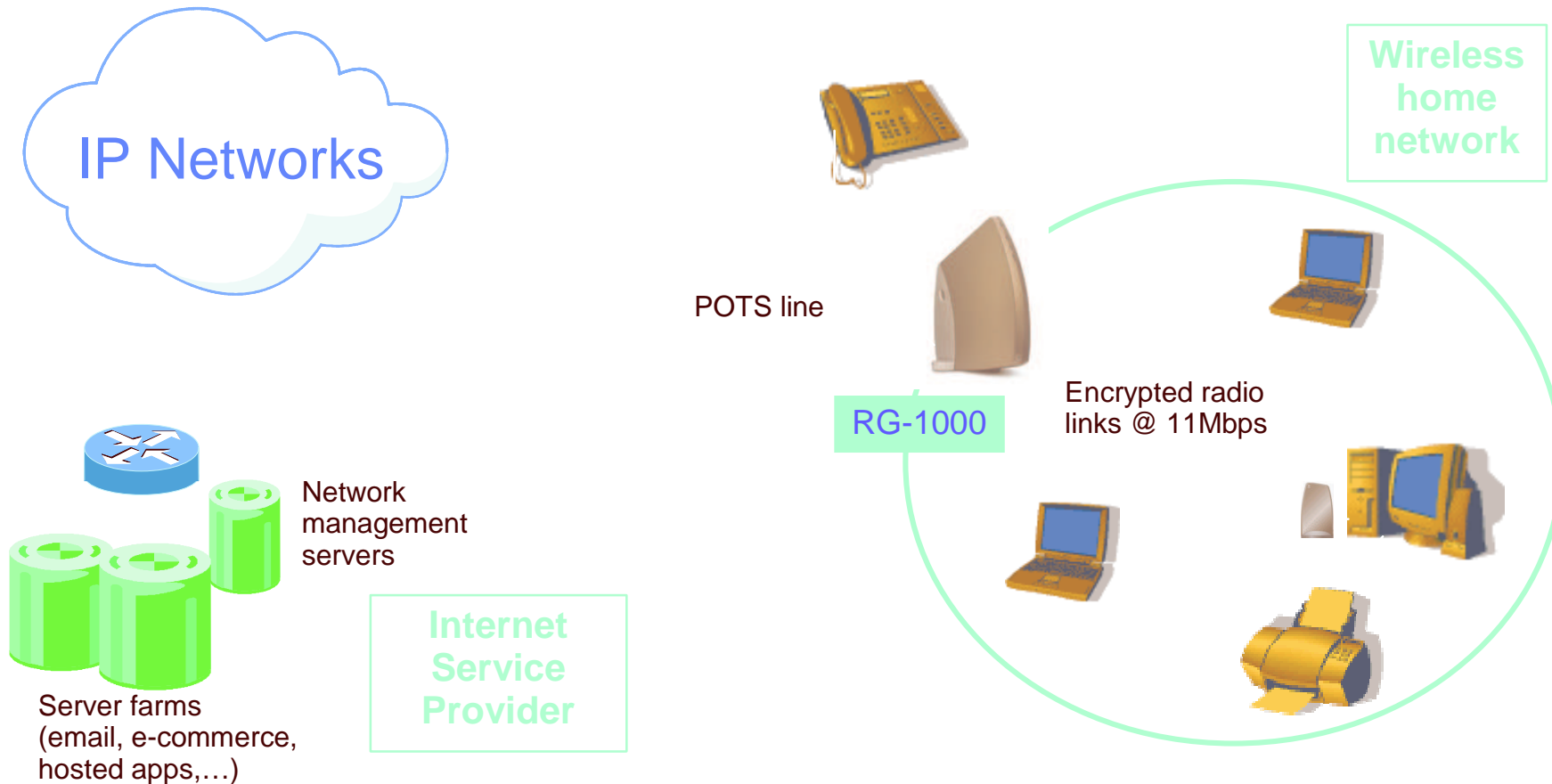


# N What's so hot about Wireless?

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- Recent improvements in equipment speed and cost make it very attractive for mainstream enterprise-wide usage.
- There is a wireless networking standard that lets different brands of equipment work together called 802.11b
- The industry has a guarantee of equipment Interoperability.
- Lots of problems can be solved with wireless technology, many new possibilities are enabled by it.
- Enterprise Business is becoming aware of it and is interested.

# N Home Network



# N Wireless Networking Benefits

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Network cabling stays put but people do not. If their connectivity is always available, they can be more productive.

Installing a wireless LAN system is fast and easy and can remove the need to pull cable through walls and ceilings.

Wireless technology allows the network to extend to where wires cannot go.

The initial investment for wireless LAN hardware *might* be higher than wired LAN hardware, but overall installation expenses and life-cycle costs can be significantly lower.

# N Radio distance and coverage

*Optional antennas extend the distances*

Speed option	Range		
	Open Plan Building	Semi Open Office	Closed Office
11 Mb (802.11b)	160 m	50 m	25 m
54 Mb (802.11g)	160 m	50 m	25 m
54 Mb (802.11a)	100 m	40 m	20 m

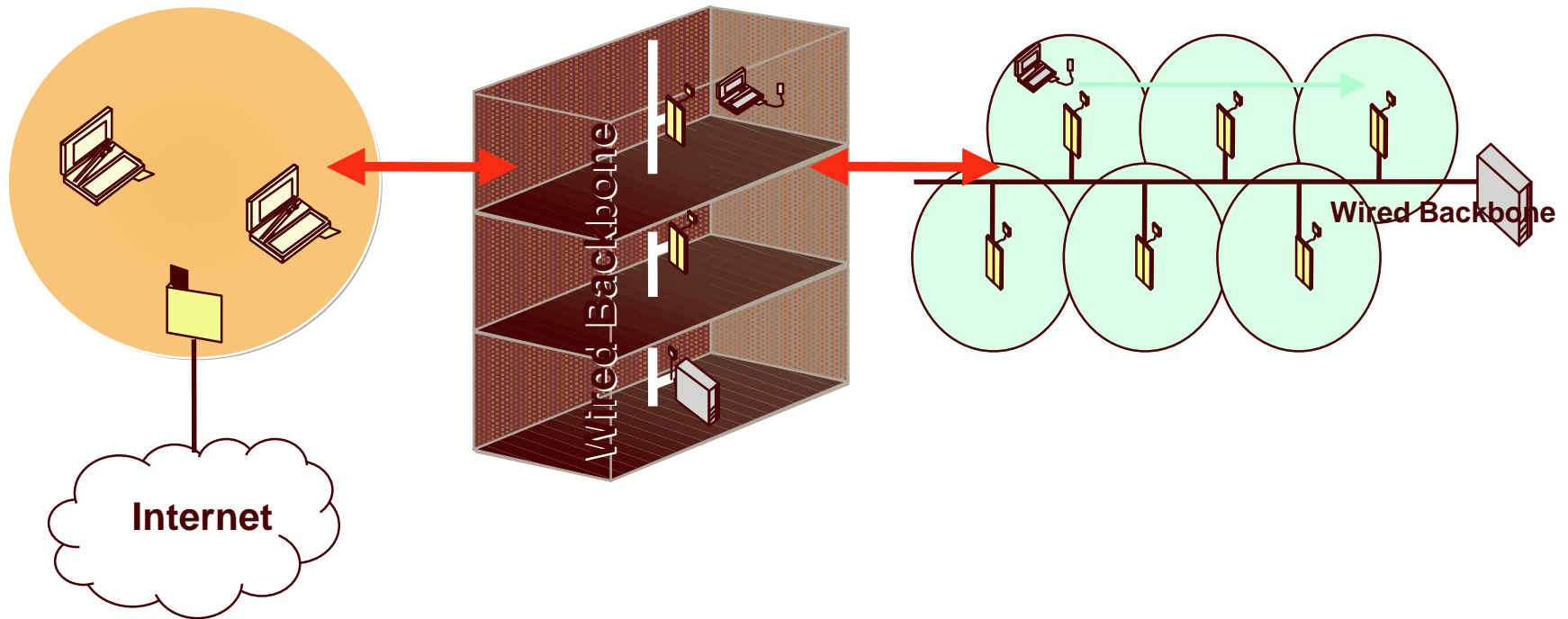
# N

# Access to corporate services, anywhere and anytime!

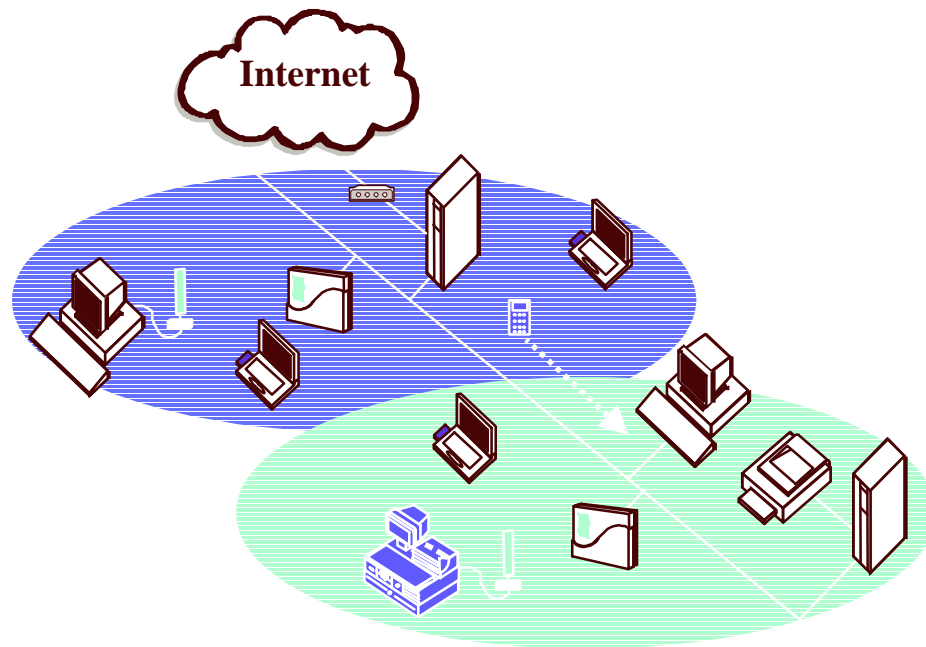
Home

Office

Conference center/  
Hotel/Airport



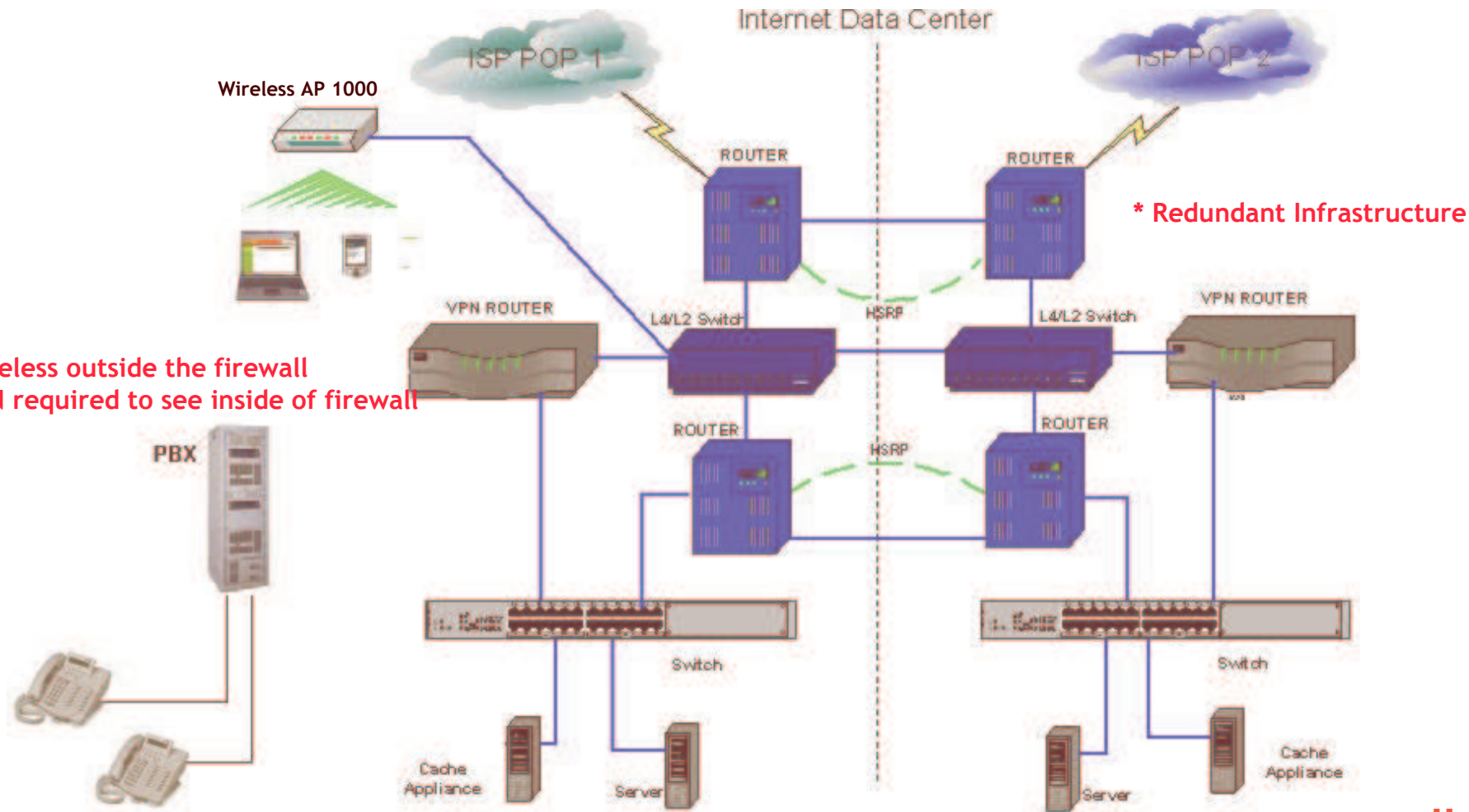
# N Novell's wireless implementation



- The Access Point with no encryption.
- Mixed 802.11a and b environment.
- Several Access Points networked together provide coverage with cell-to-cell seamless hand-over
- Access Points all outside the firewall.
- Access Points sit behind NAT.
- Software firewall to protect data from intruders.
- All corporate data is encrypted over the "wire" using SSL for web based applications or applications with built in 128 bit encryption such as GW and iFolder.
- Use Layer 4 and iChain technology to front end datacentre services.

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# Infrastructure: Tier 1

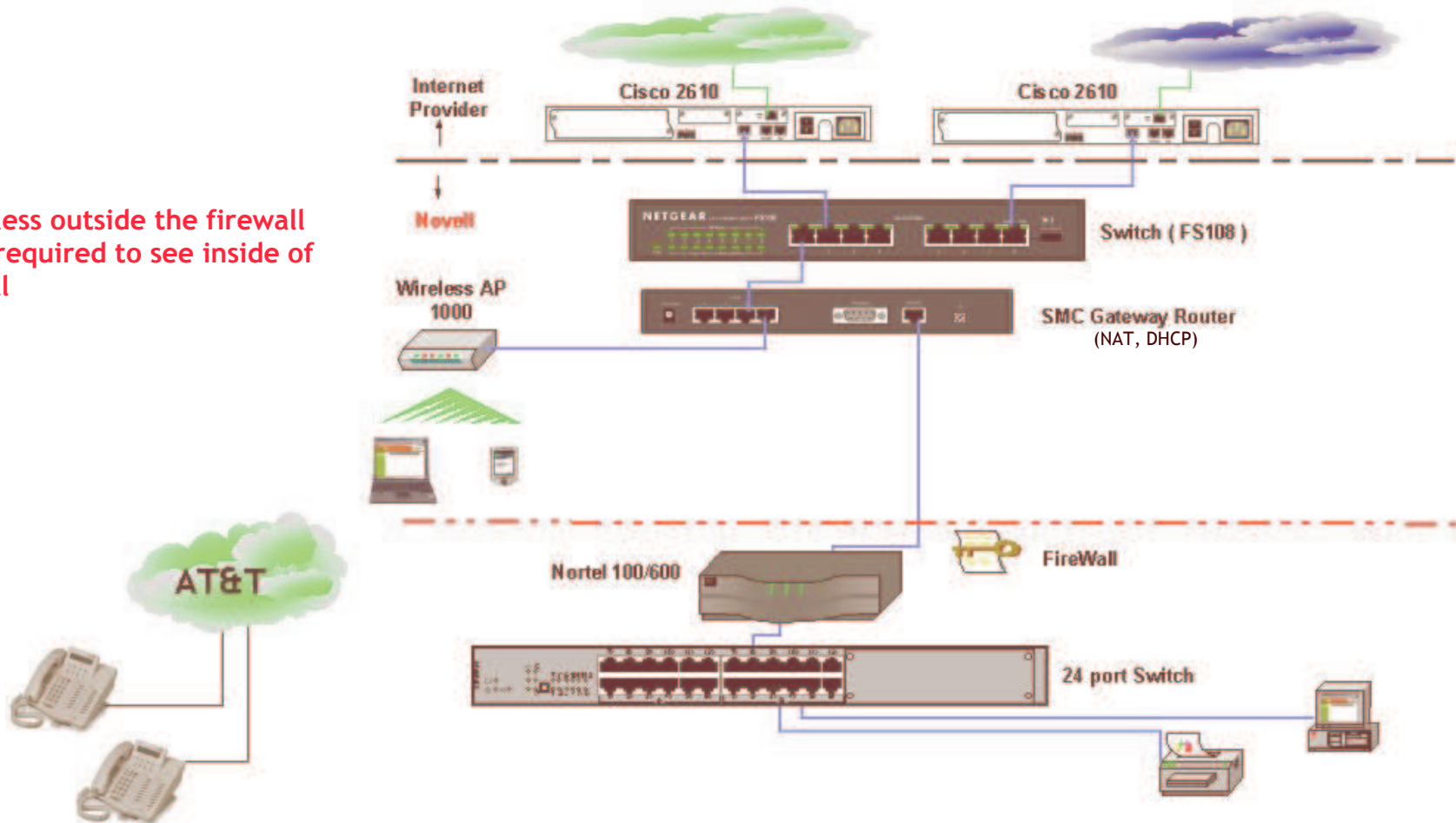


- Wireless outside the firewall
- VPN required to see inside of firewall

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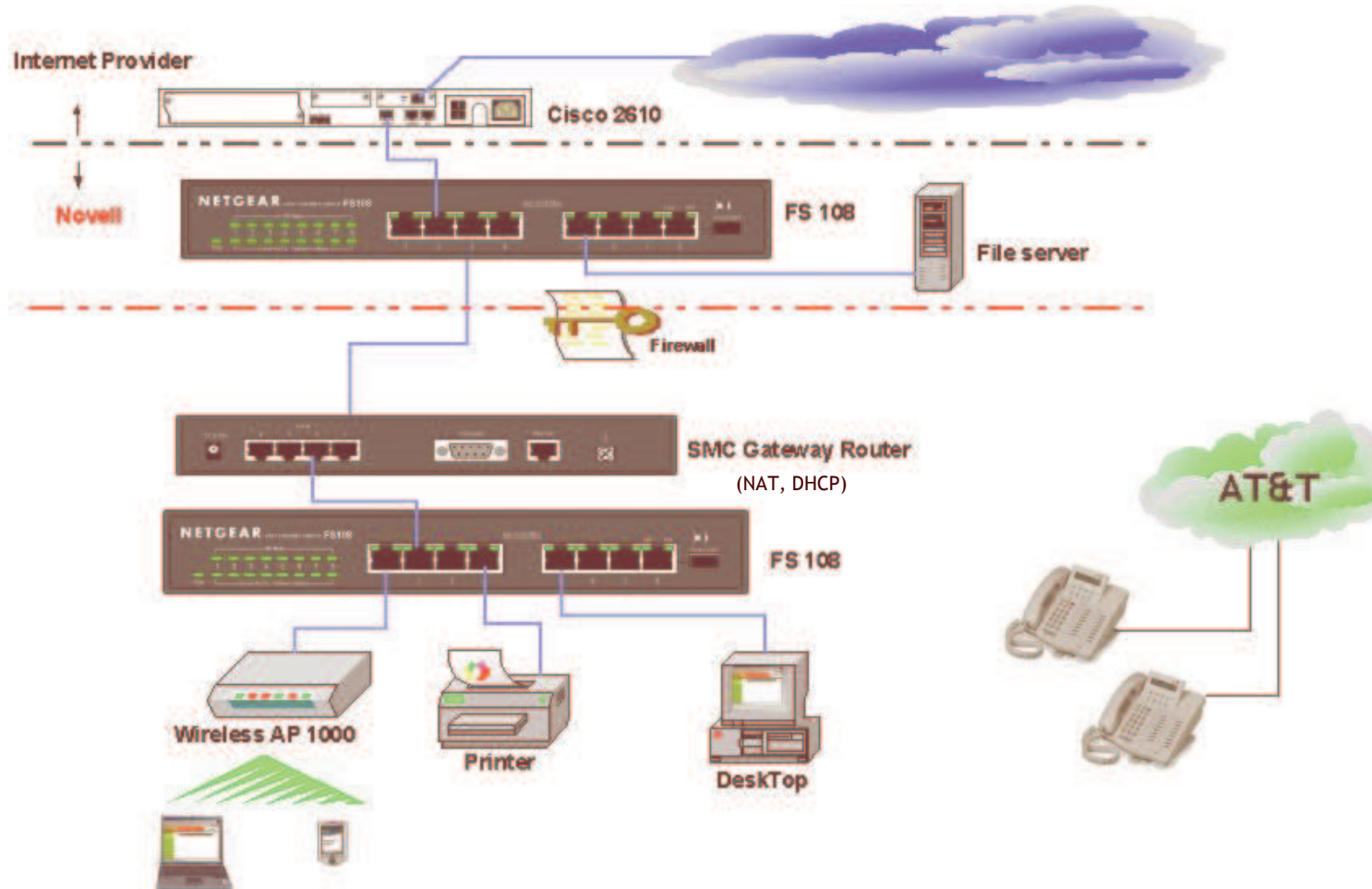
## Infrastructure: Tier 2

- Wireless outside the firewall
- VPN required to see inside of firewall



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# Infrastructure: Tier 3&4





# Wireless, anywhere, anytime

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- Once you have set up your infrastructure your staff can access corporate services over any wireless or wired technology.
- Access your data over 802.11x, GPRS, WCDMA, or iBurst....

Demonstration

Novell®