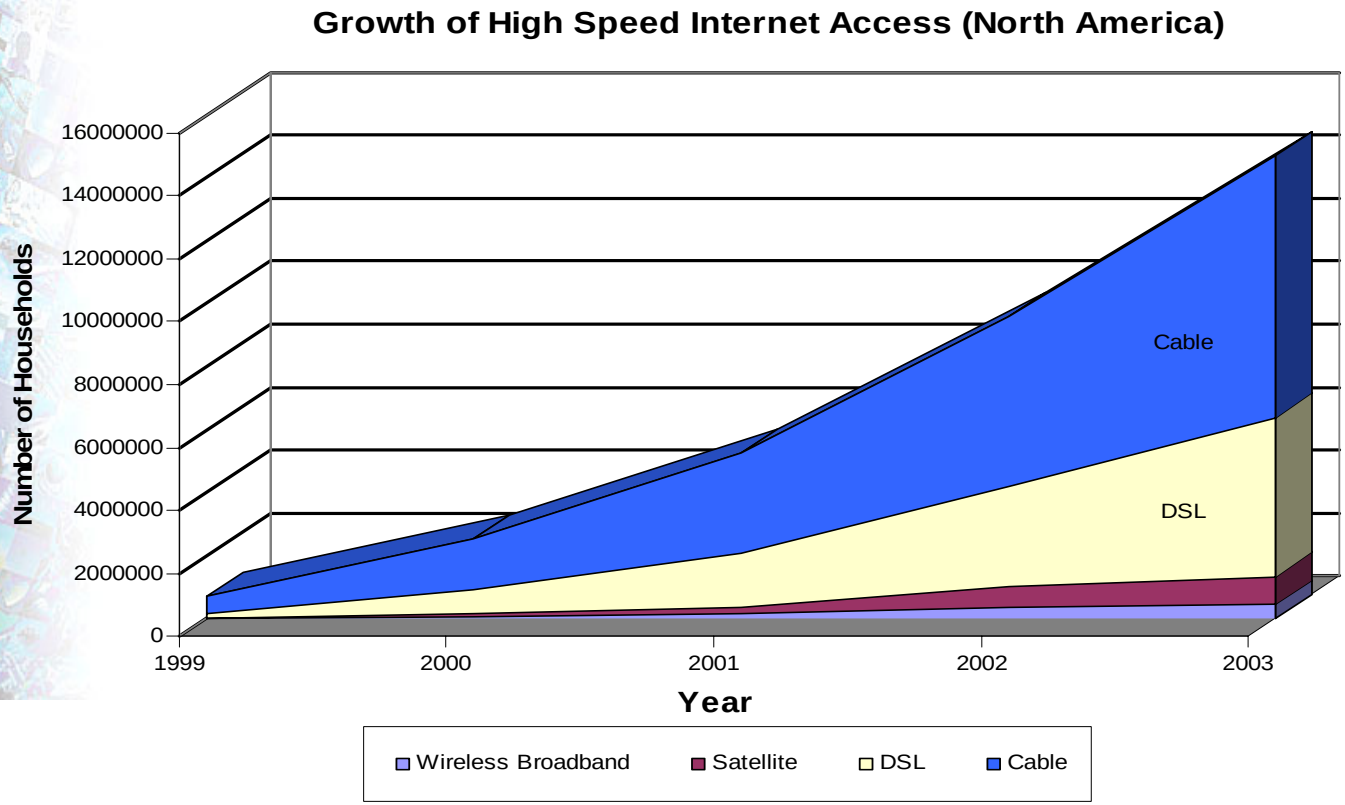
Lucent Technologies
Bell Labs Innovations

Next-Generation Subscriber Access Methods

Presenter:
Donnovan Wint
Technical Marketing Manager
Lucent Technologies

Key Growth Segments

Access providers need to plan and prepare now to support the new infrastructure that will be required to offer these high-speed services.



Lucent Technologies
Bell Labs Innovations

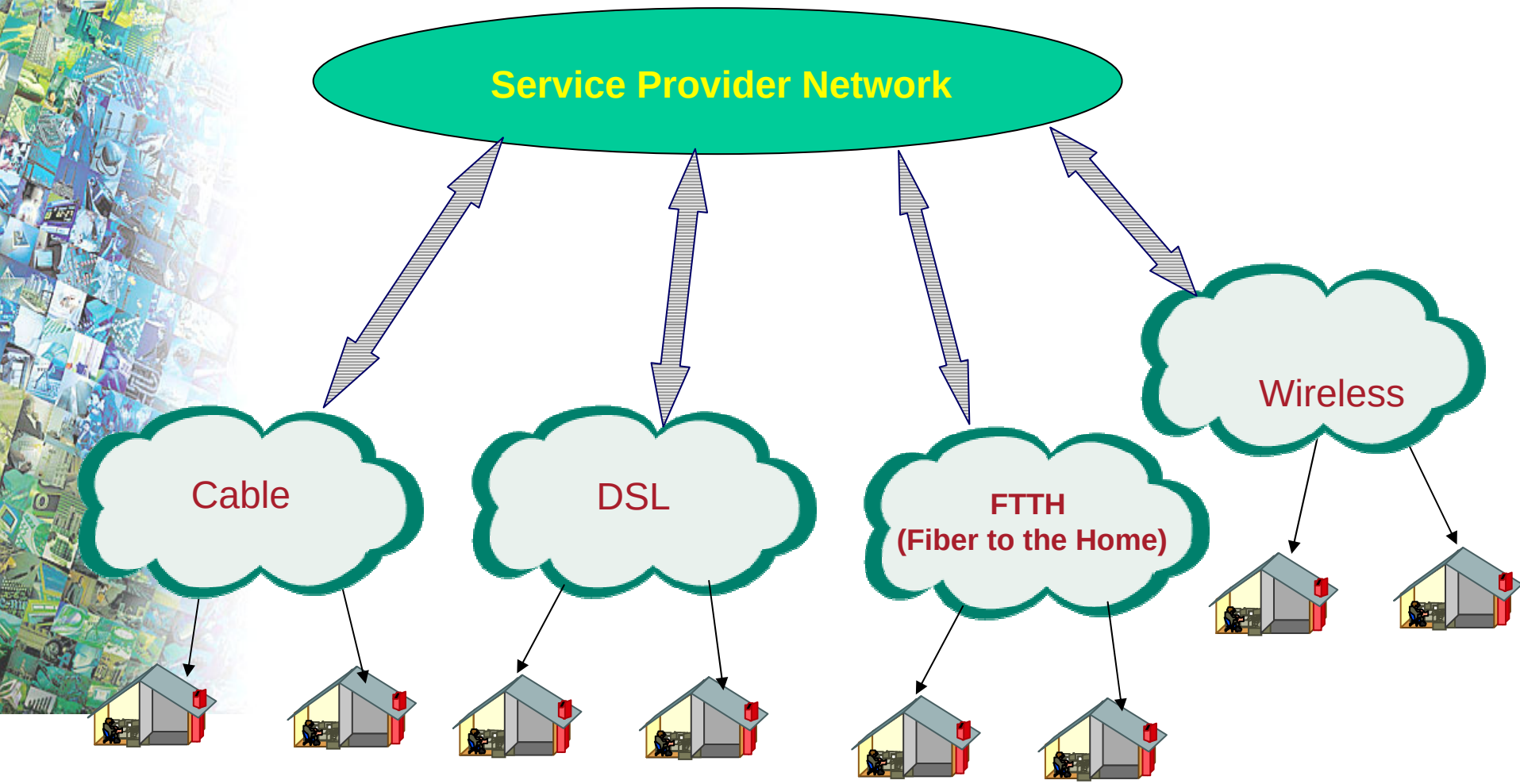
Broadband Opportunity

- **U.S. Market**
  - **Subscriber base with access cable - 25 million**
    - 5% use service today (non DOCSIS based)
    - 10% by end of 2001 (DOCSIS based)
  - **Subscriber base with access xDSL - 20 million**
    - 5% use service today
    - 7% - 10% by end of 2001
- **Target IP Addresses (Cable/DSL/ISP) worldwide**
    - Year 2001 - 30 Million
    - Year 2002 - 50 Million

Source: Network World

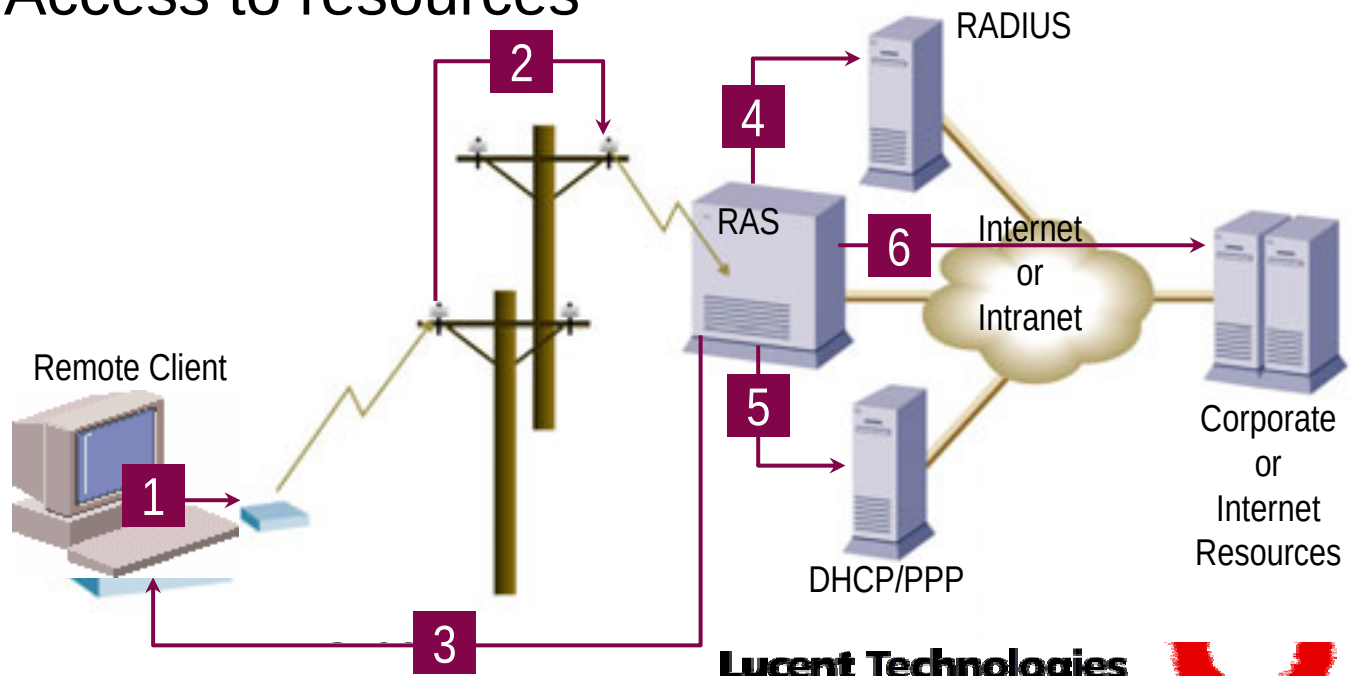
Automating the subscriber registration process and configuration of related broadband access devices is essential to the success of service providers.

Broadband Access Options



“SnailSpeed” - Dial Up Approach

1. Modem connection
2. Dial-out
3. Handshake
4. Authentication
5. IP address negotiation
6. Access to resources



Lucent Technologies
Bell Labs Innovations

What is Required to Be Successful

- Require no truck roll, that is:
  - *Require no re-configuration by the user of IP stack information.*
  - *Require no configuration of broadband access device at the customer site.*
- Use industry-standard, low-cost Ethernet NICs to connect user's PC to broadband access device.
- Leverage "proven, existing" technologies if need be … (Web, TFTP, etc.)

Broadband Architecture Options

- Static IP Addressing
- Point-to-Point over ATM (PPPoA)
- Point-to-Point over Ethernet (PPPoE)
- Dynamic Host Configuration Protocol (DHCP)

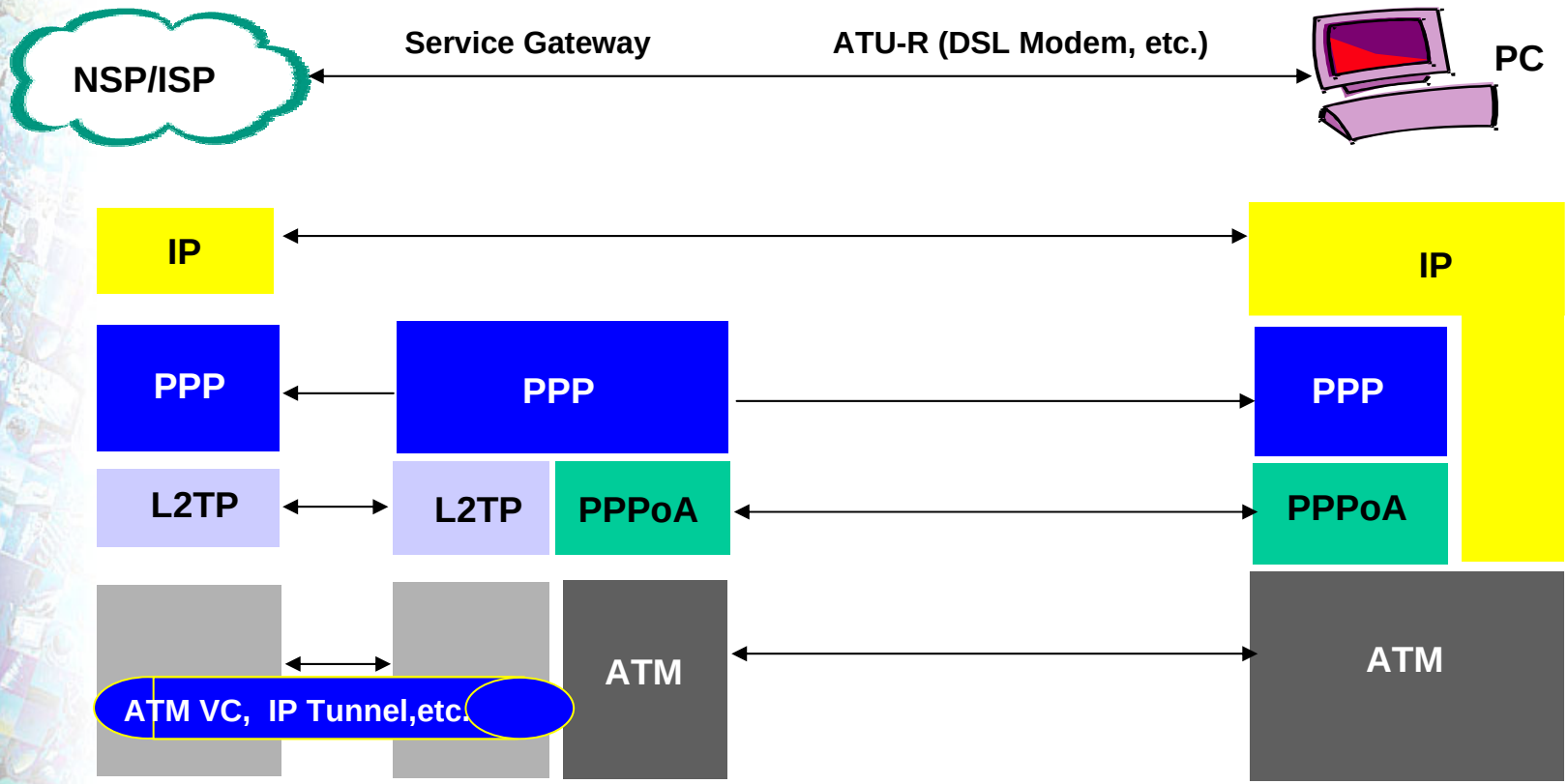
Static IP Addressing Architecture Option

- Most straightforward broadband IP configuration option
- Requires re-configuration by the user of IP stack information
- Requires configuration of broadband access device at the customer site
- Least flexible broadband IP configuration option
- Network modifications are difficult to implement
- Most costly in the end to implement and maintain

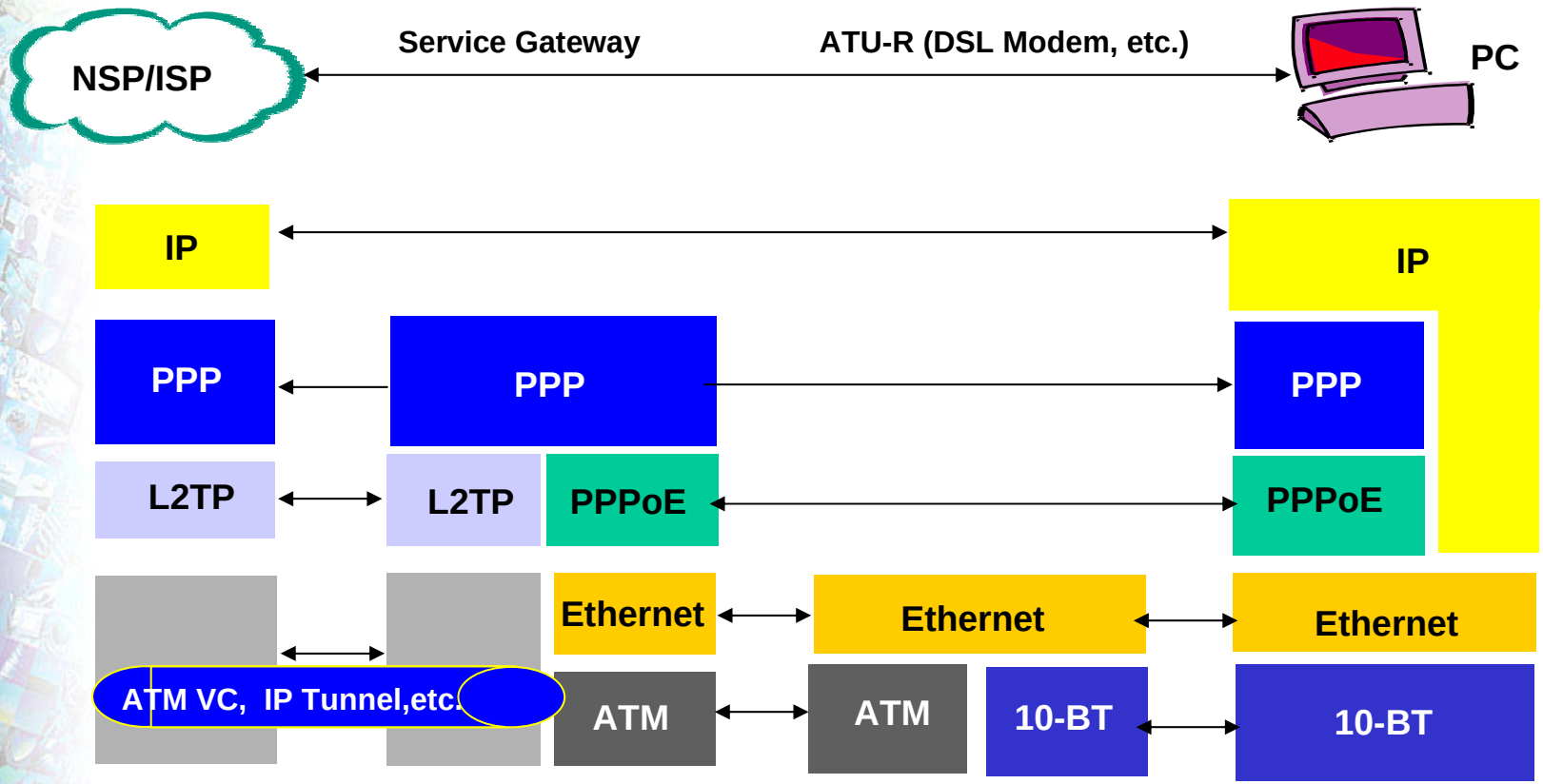
PPP Architecture Option

- PPP can be run over either an ATM (PPPoA) or an Ethernet (PPPoE) infrastructure.
- Requires re-configuration by the user of IP stack information
- Requires configuration of Broadband Access Device at the customer site
- Does not work with cable modems
- Can be COSTLY in the long run to implement and maintain

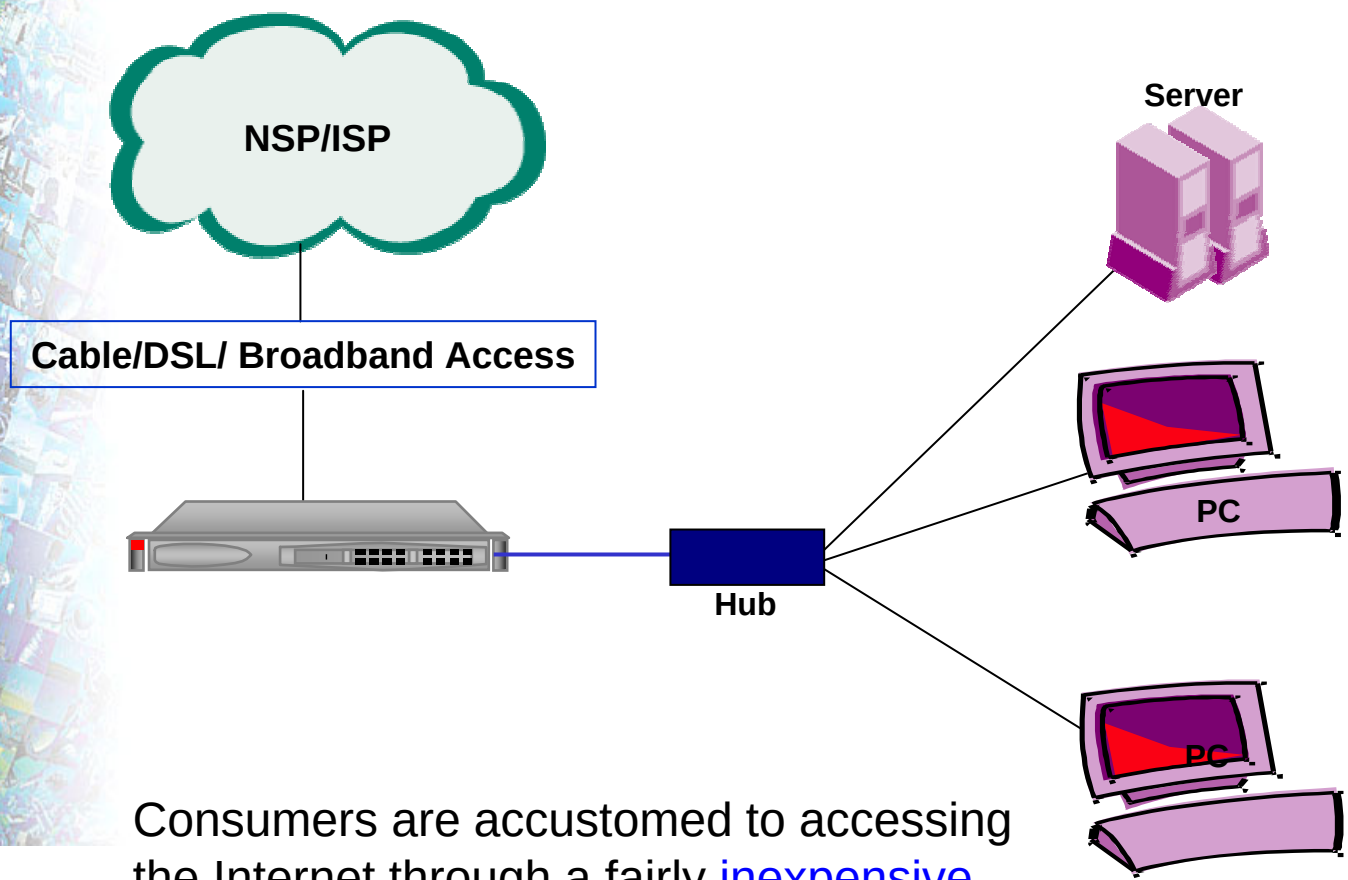
PPPoA Architecture Issues



PPPoE Architecture Issues

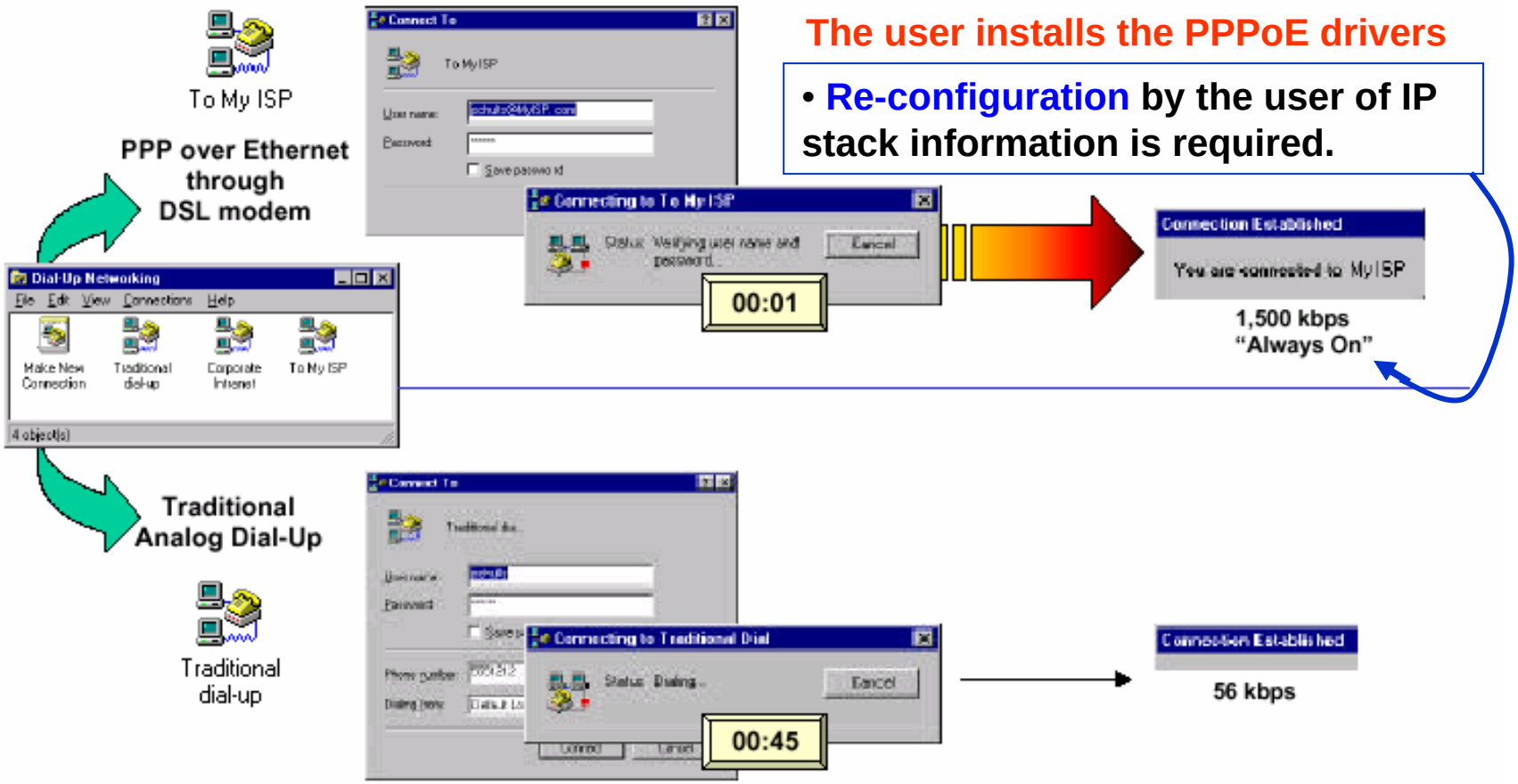


PPPoE Approach



Consumers are accustomed to accessing the Internet through a fairly inexpensive modem requiring minimal configuration.

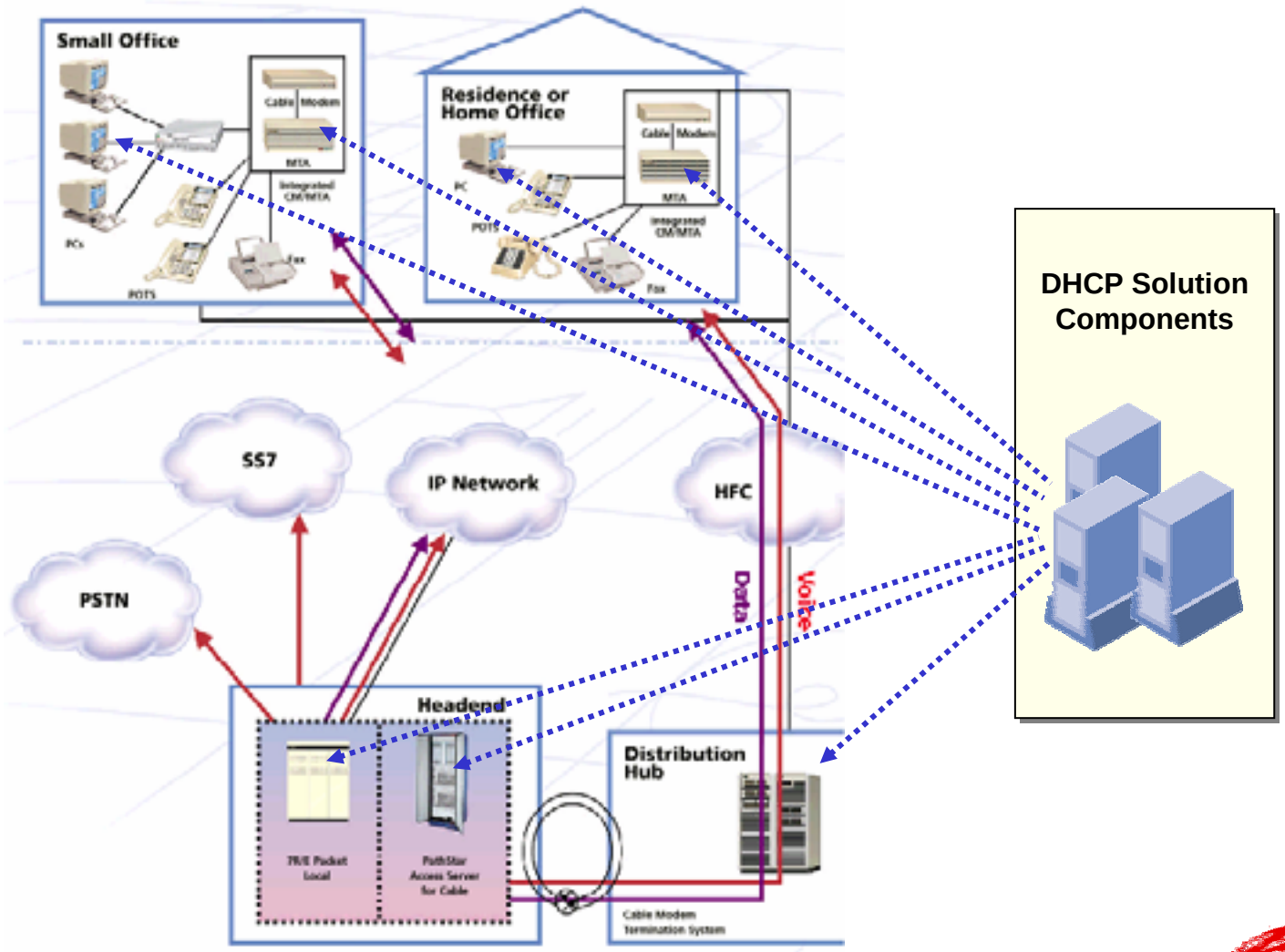
Typical PPP/PPPoE



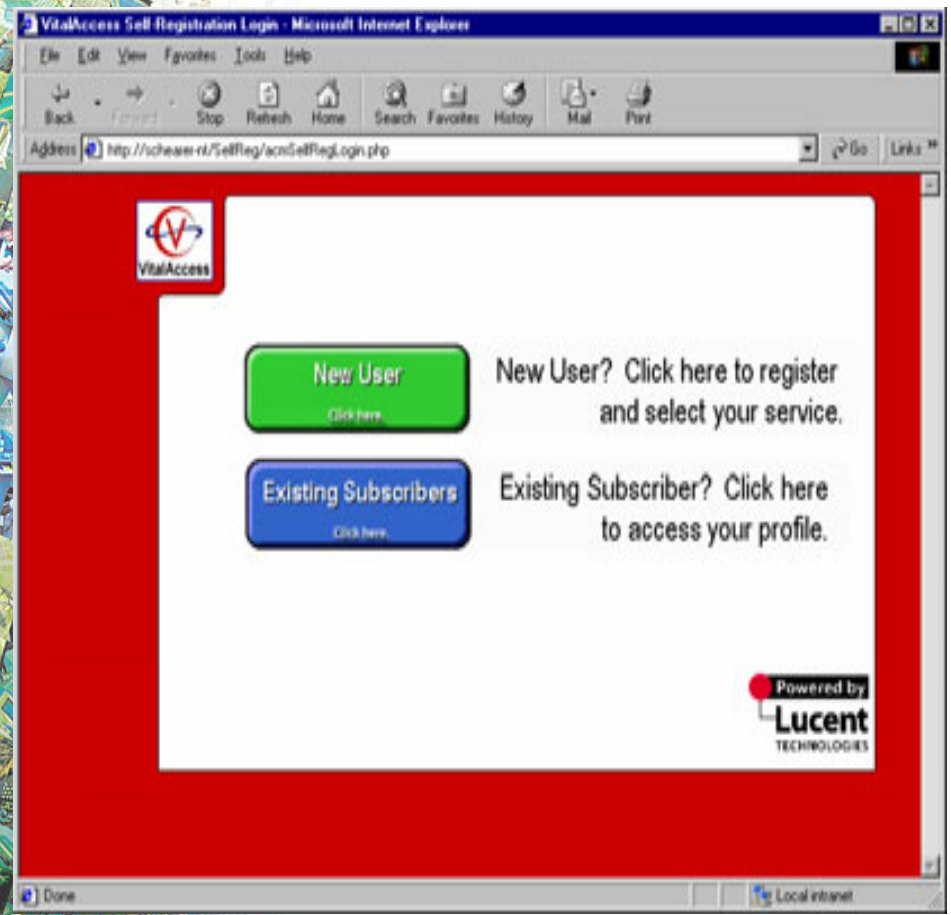
DHCP Architecture Option

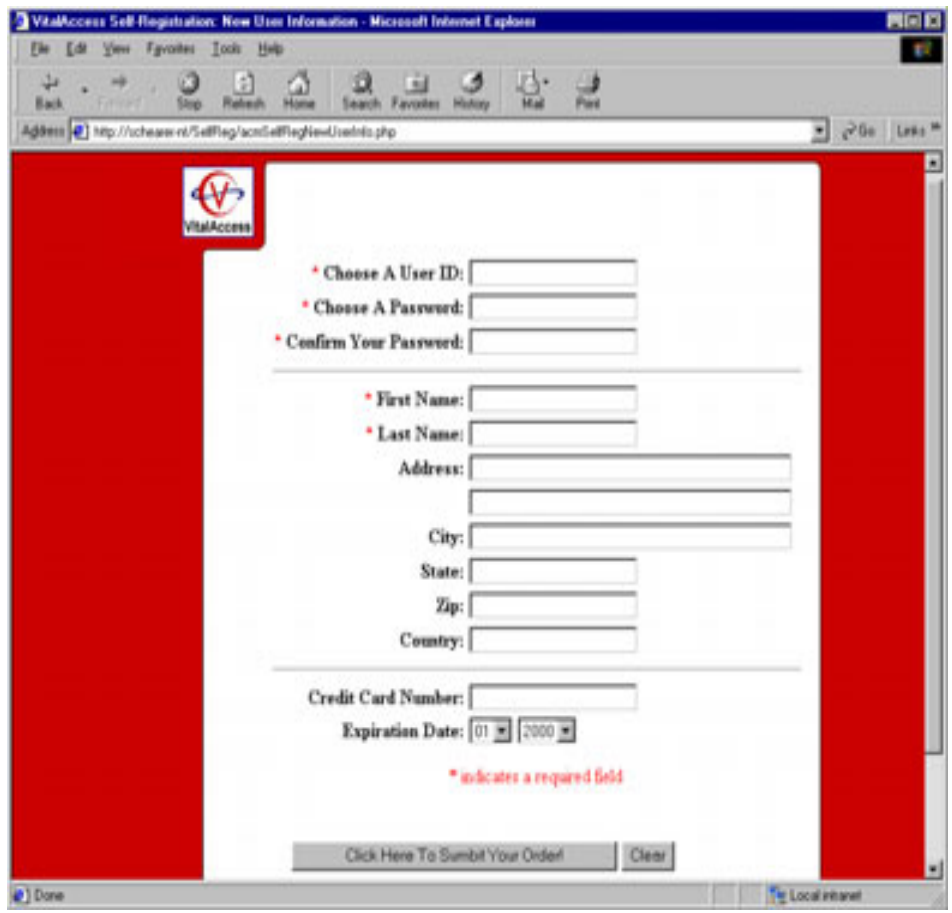
- Does not require ANY re-configuration by the user of IP stack
- Builds on the open system philosophy
- Engineered from bottom-up, not a “forced fit” implementation
- Centralized management; distributed functionality

DHCP Approach



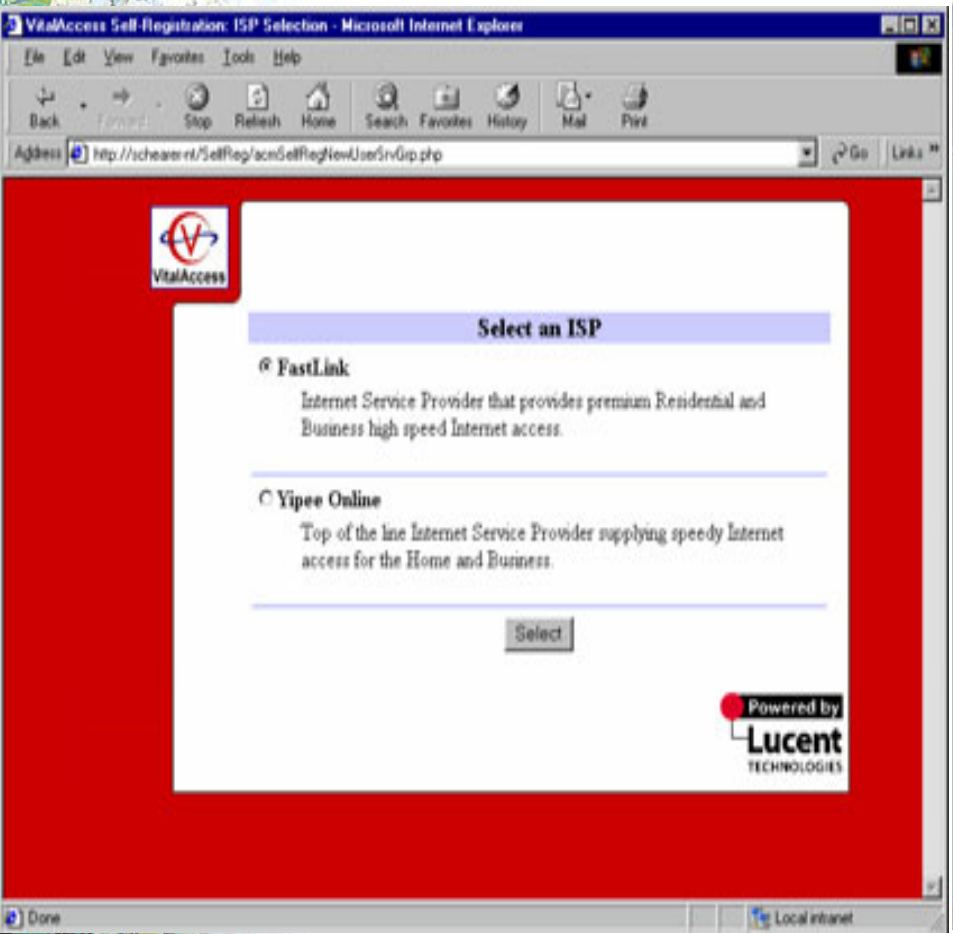
Typical DHCP Authentication

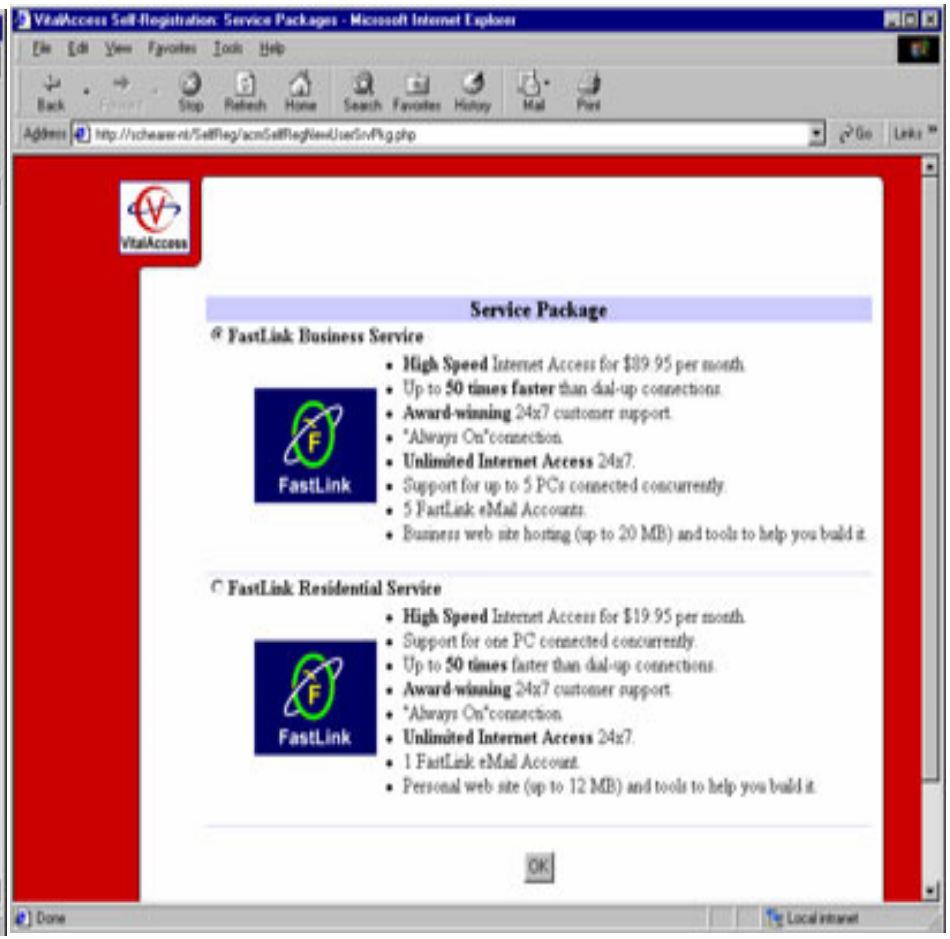




- Simple process
- Customizable screens
- Ability to leverage user-defined and customized authentication methods
- Leverages existing and proven technologies…(Web, DNS, TFTP, etc.)

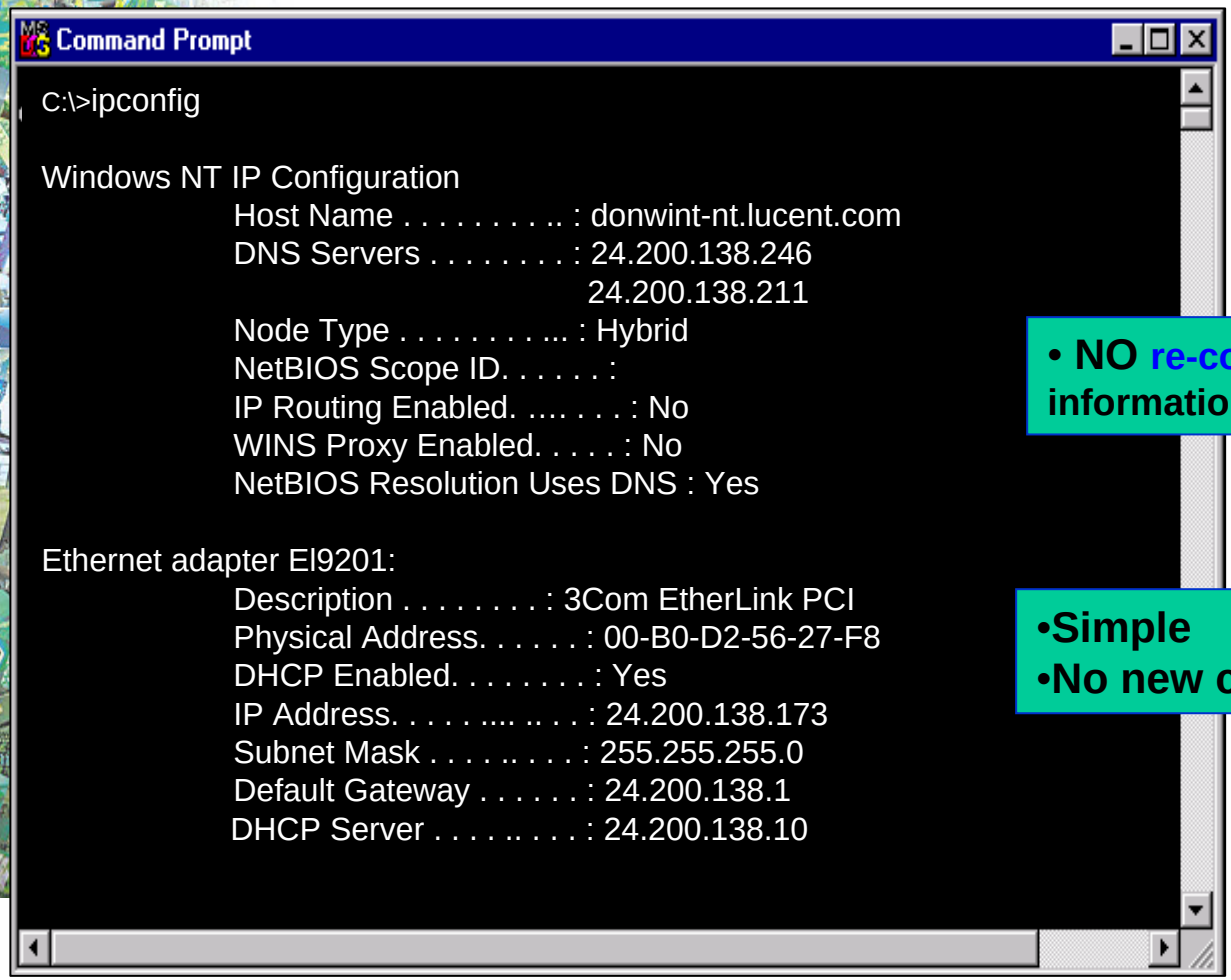
Typical DHCP Service Selection





- Select desired service
- Service selected is stored in the directory server
- Can implement callout to notify OSS system of selection
- Selections are pre-defined

Typical DHCP



- **NO re-configuration of IP stack information is required by the user.**

- **Simple**
- **No new command to learn**

How Do They Compare

Comparison Points	Static IP	PPPoE/ PPPoA	DHCP
Automates IP configuration	No	Yes	Yes
Authenticates user each session	No	Yes	No
Authenticates user by device	Yes	No	Yes
Enables differentiated services	Yes	Yes	Yes
Supports multiple user sessions	Yes	Yes	Yes
Works easily with multiple PCs	Yes	No	Yes
Requires third-party client software	No	Yes	No
Works with DSL modems	Yes	Yes	Yes
Works with cable modems	Yes	No	Yes
Works with wireless modems	Yes	No	Yes
Easily supports new VoIP services	No	No	Yes
Easily supports interactive entertainment services	No	No	Yes
Easily supports streaming video services	No	No	Yes

Summary

- Next-generation broadband access will provide huge business and growth opportunities for those who are properly prepared. Access providers need to plan and prepare now to support the new infrastructure that will be required to offer these high-speed services.

- “Always on” high-speed Internet access, enhanced on-line gaming, personal videoconferencing, on-line shopping and banking, VPN telecommuting, and entertainment-on-demand services all require configuration of the access device and the end-user PCs in a way that is standards-based, vendor-independent, and reliable.

- In preparing for tomorrow’s networks, providers need to consider several criteria when selecting a next-generation architecture, including implementing a standards-based solution, vendor interoperability, carrier-class reliability, true scalability, and manageability.

Wrap Up

Q&A

For more information

www.qip.lucent.com