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Next-Generation Subscriber Access Methods

Presenter:

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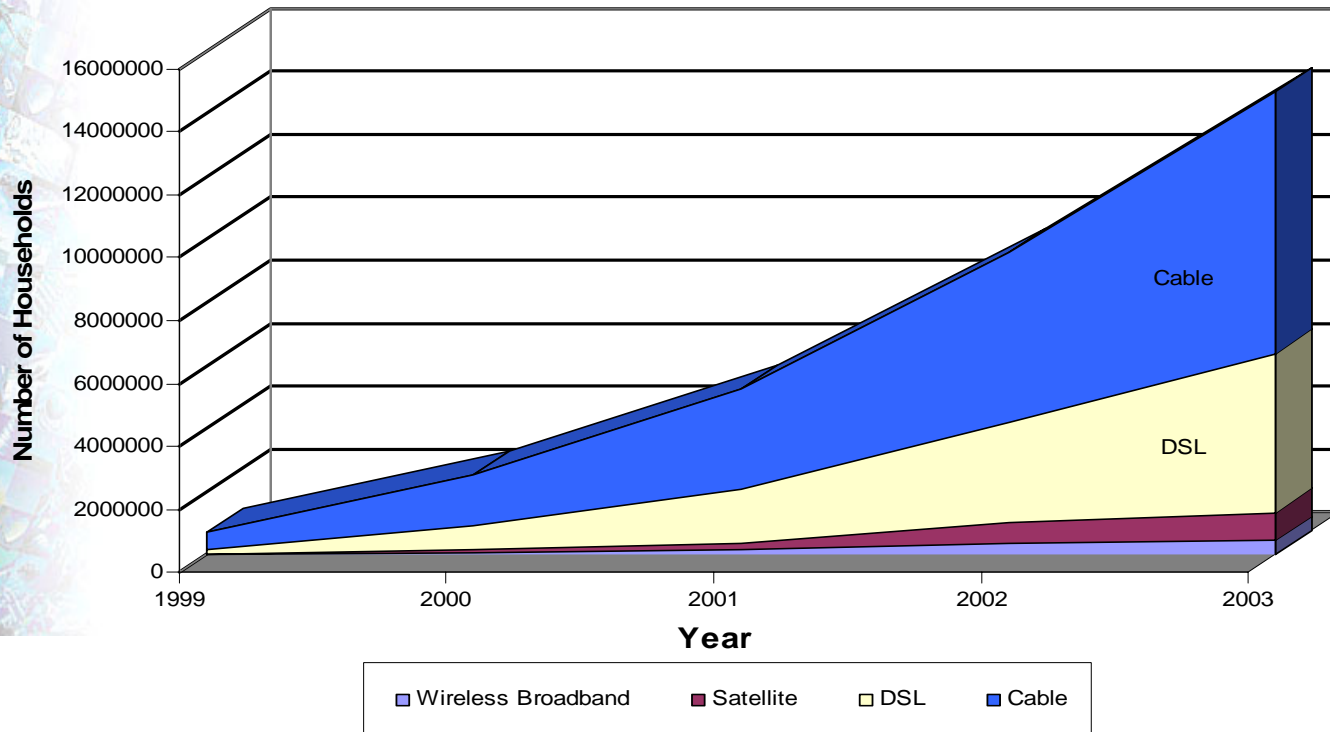
Technical Marketing Manager

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.

Growth of High Speed Internet Access (North America)



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

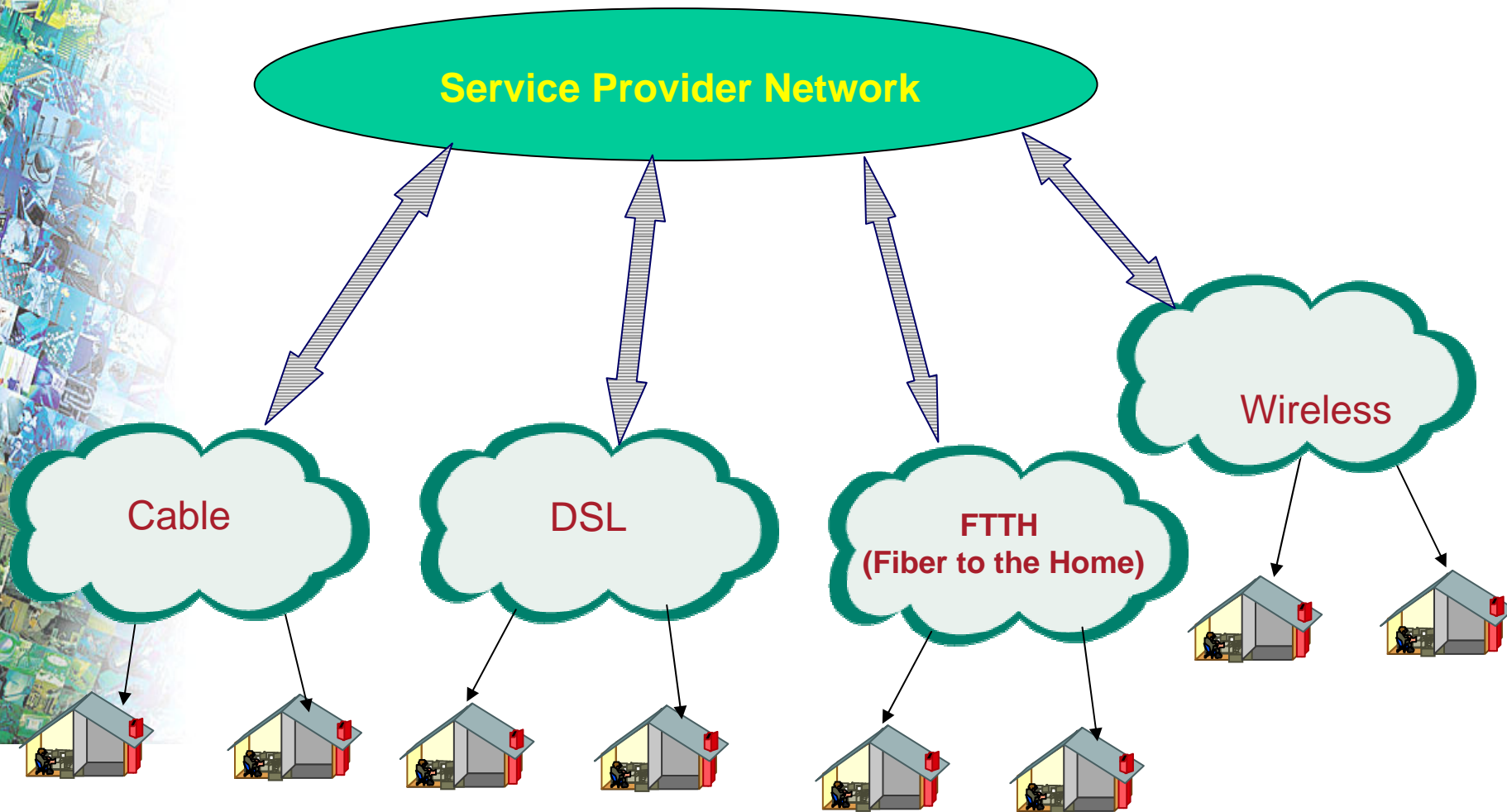
- Year 2001 - 30 Million
- Year 2002 - 50 Million

Source: Network World

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

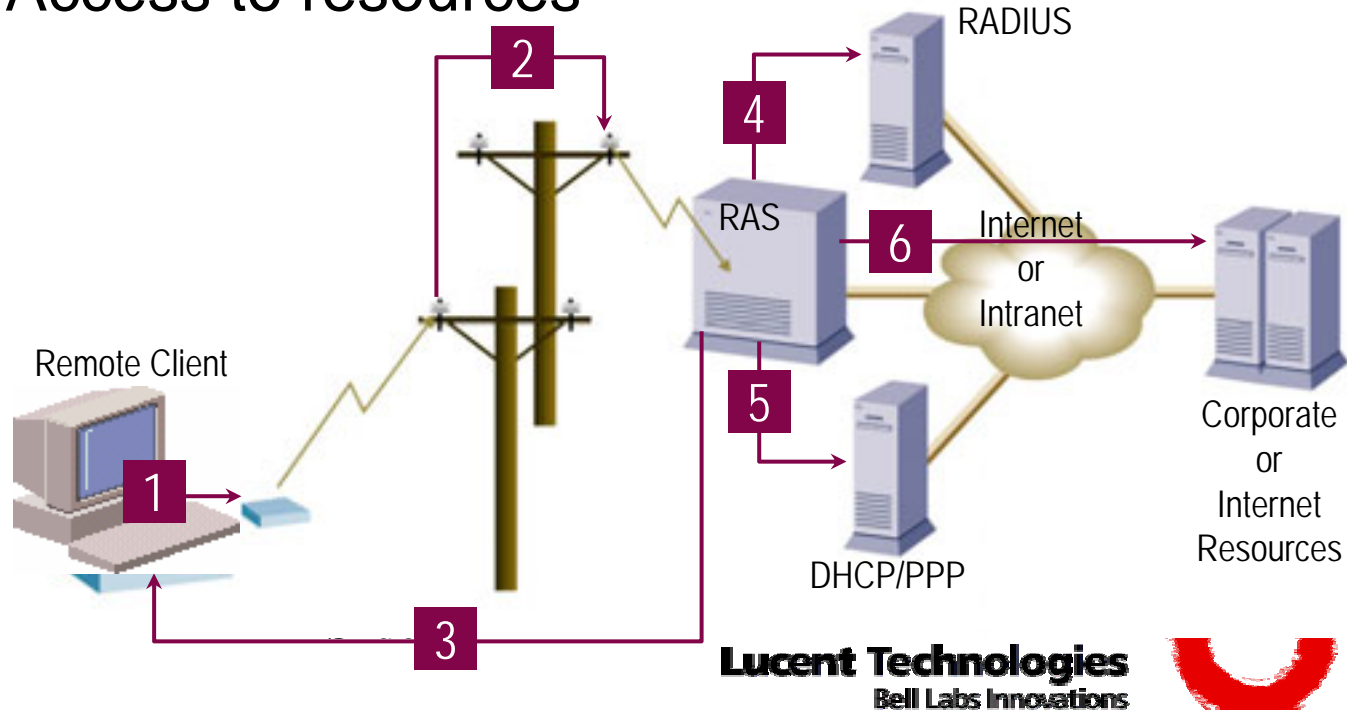


Broadband Access Options



“SnailSpeed” - Dial Up Approach

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



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

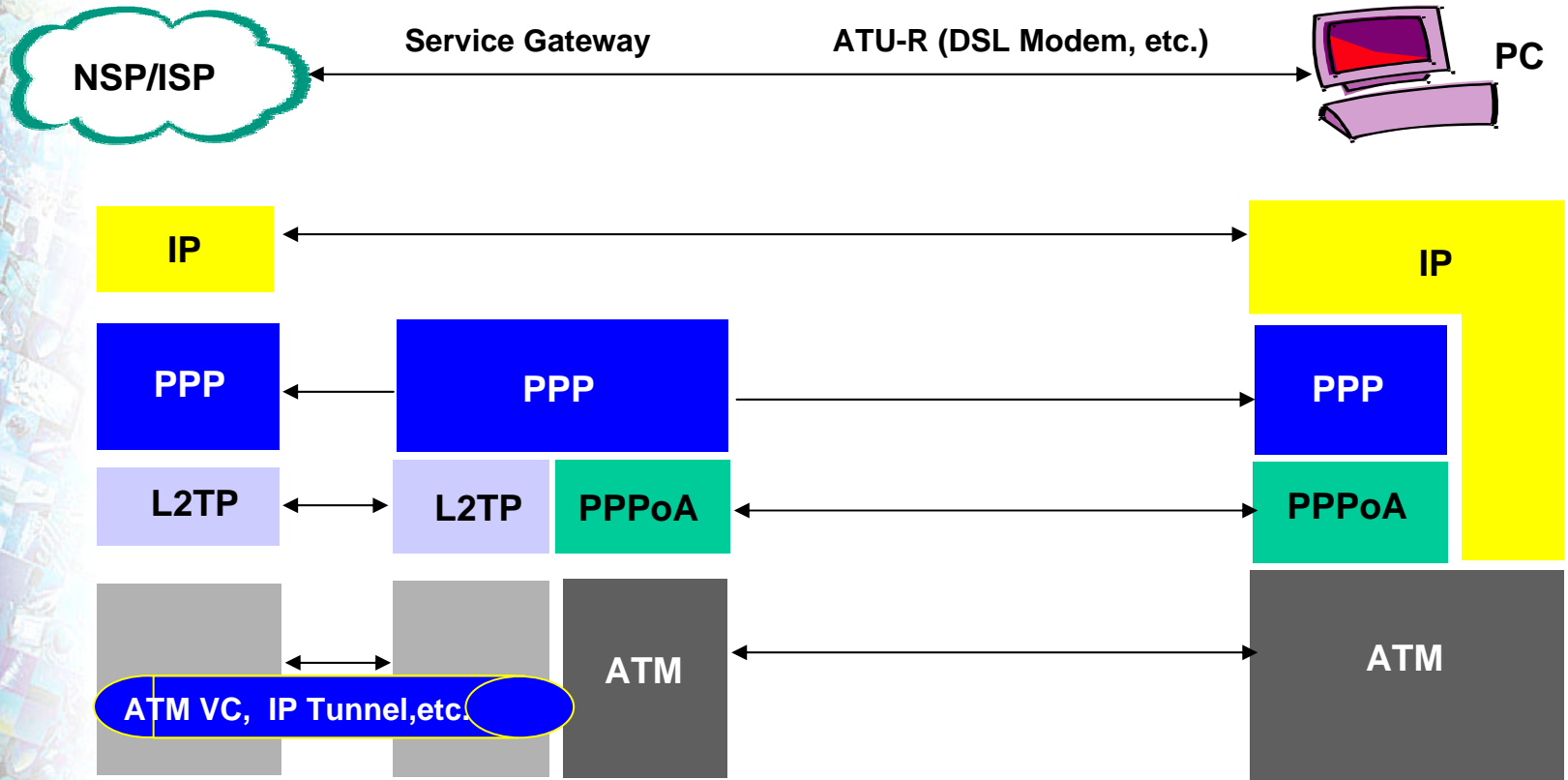


PPP Architecture Option

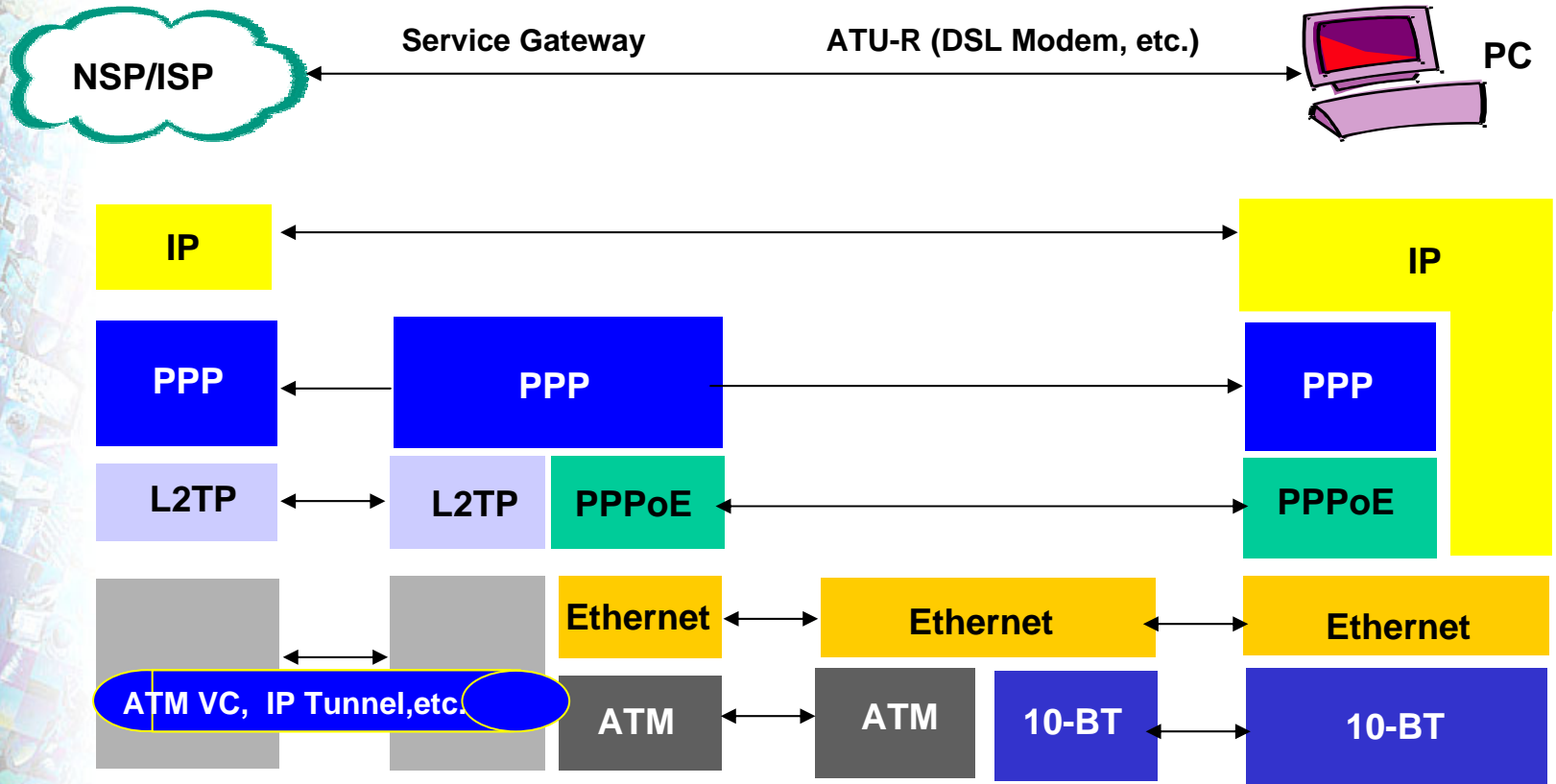
- ◆ PPP can be run over either an ATM (PPPoA) or an Ethernet (PPPoE) infrastructure.
- ◆ Requires re-configuration by the user of IP stack information
- ◆ Requires configuration of Broadband Access Device at the customer site
- ◆ Does not work with cable modems
- ◆ Can be COSTLY in the long run to implement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



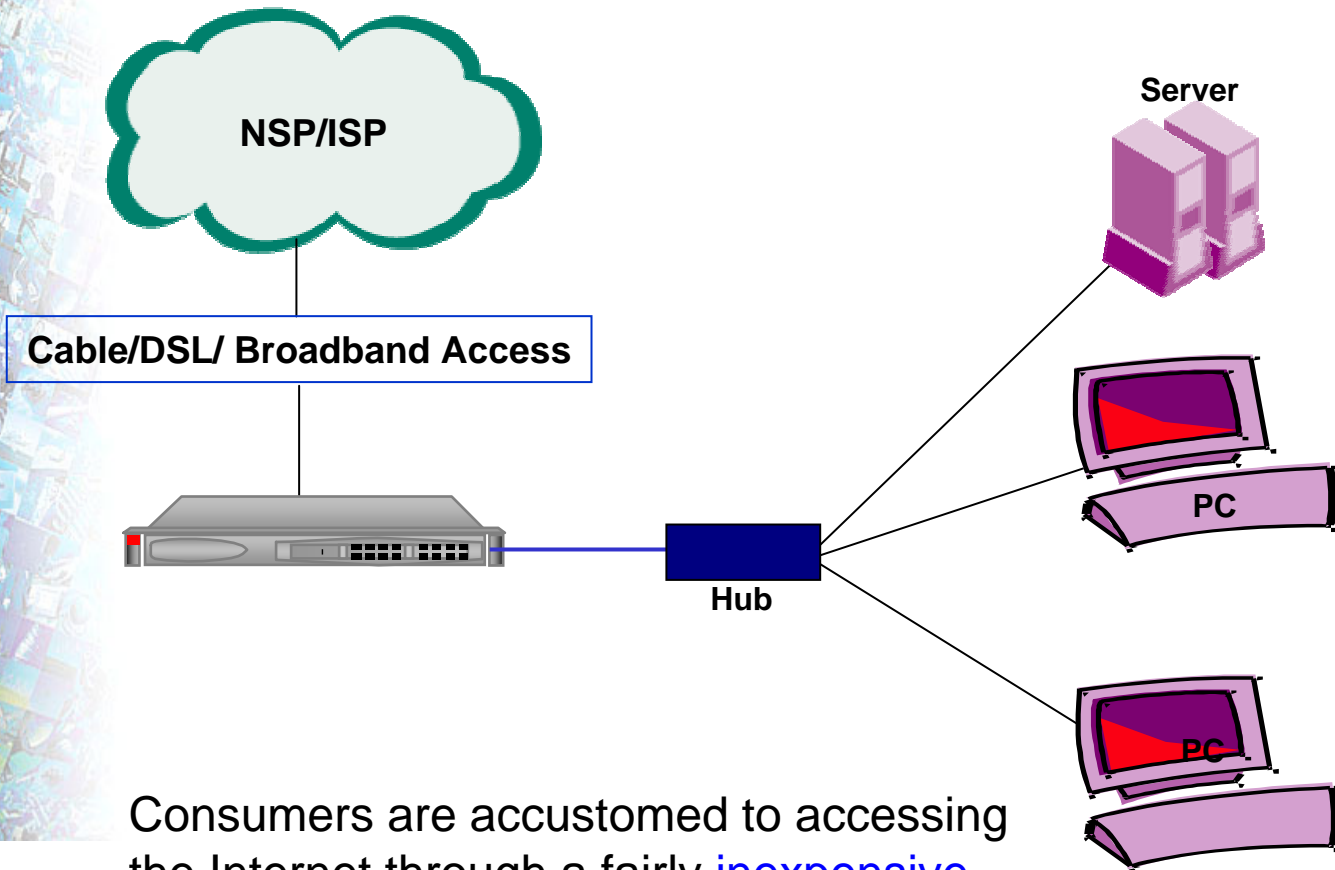
PPPoA Architecture Issues



PPPoE Architecture Issues



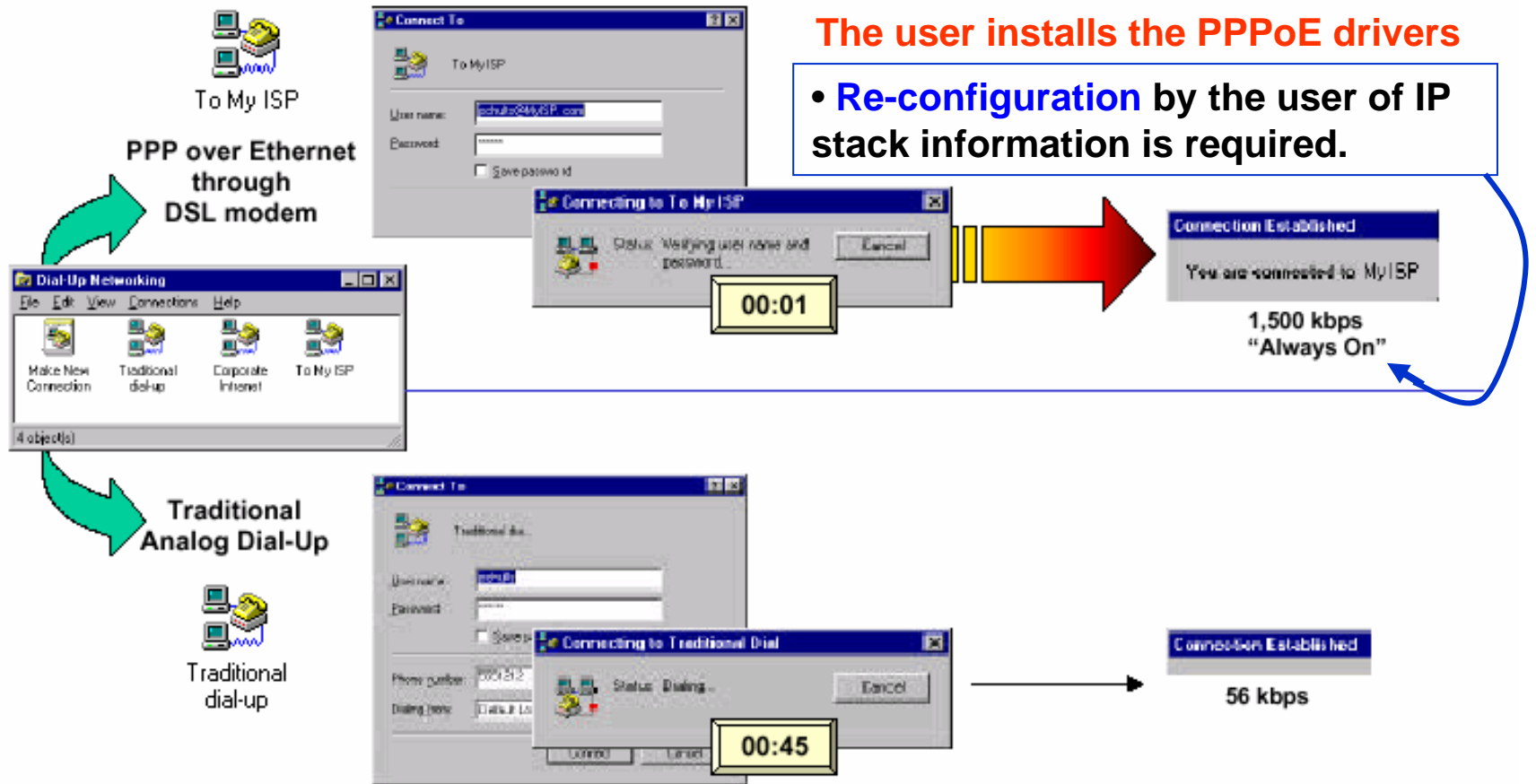
PPPoE Approach



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



Typical PPP/PPPoE

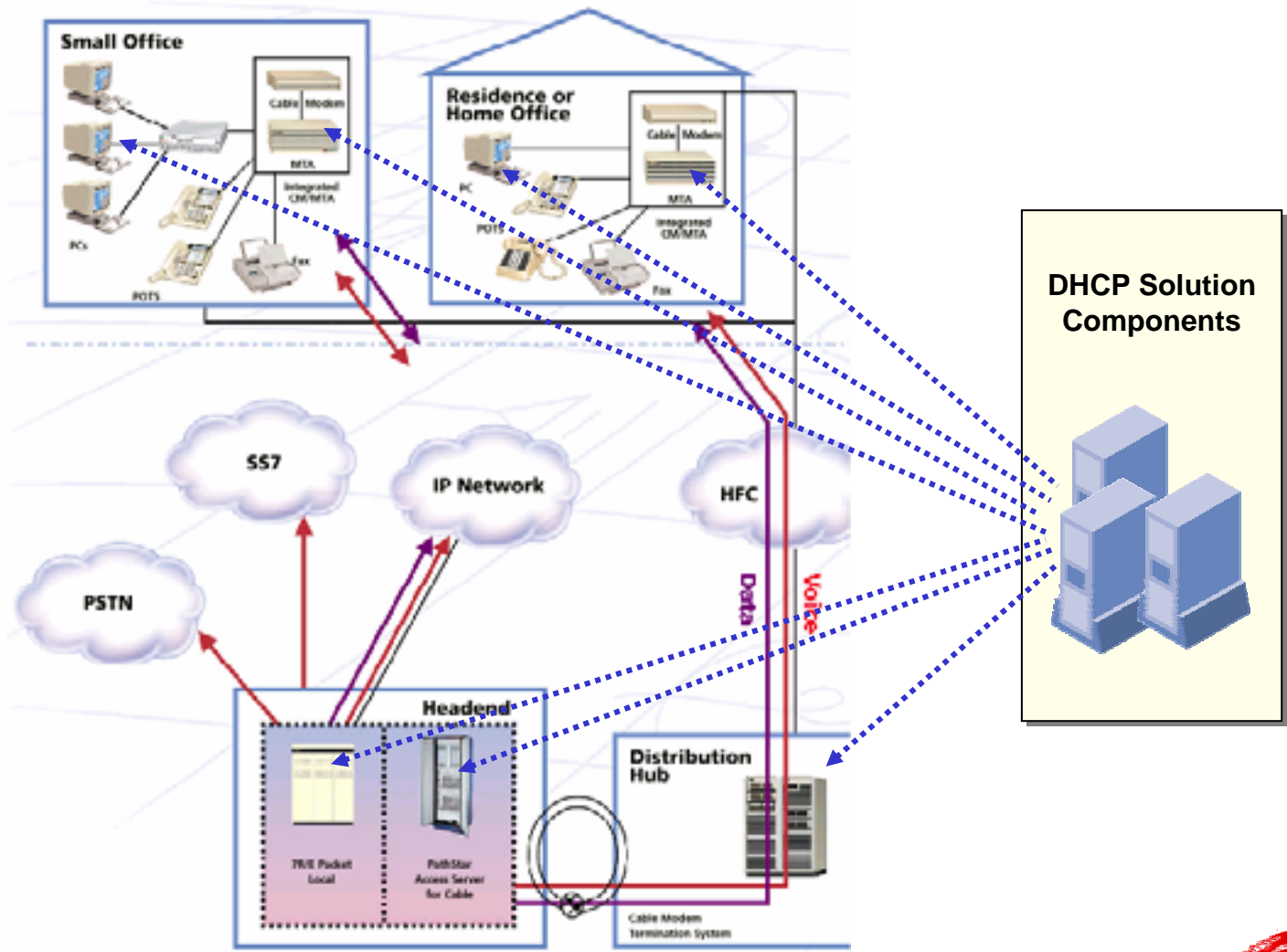


DHCP Architecture Option

- ◆ 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



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Typical DHCP Authentication

VitalAccess Self-Registration Login - Microsoft Internet Explorer

Address: http://schemer.nl/SelfReg/acnSelfRegLogin.php

New User
Click here.

New User? Click here to register and select your service.

Existing Subscribers
Click here.

Existing Subscriber? Click here to access your profile.

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VitalAccess Self-Registration: New User Information - Microsoft Internet Explorer

Address: http://schemer.nl/SelfReg/acnSelfRegNewUserInfo.php

*** Choose A User ID:**

*** Choose A Password:**

*** Confirm Your Password:**

*** First Name:**

*** Last Name:**

Address:

City:

State:

Zip:

Country:

Credit Card Number:

Expiration Date: 01 2000

* indicates a required field

- 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

The image displays two screenshots of a web browser window showing the VitalAccess self-registration process. The browser is Microsoft Internet Explorer, and the address bar shows the URL: <http://schemas.rts/SelfReg/acnSelfReg/newUserInPkg.php>.

Left Screenshot: ISP Selection

Select an ISP

- FastLink**
Internet Service Provider that provides premium Residential and Business high speed Internet access.
- Yipee Online**
Top of the line Internet Service Provider supplying speedy Internet access for the Home and Business.

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Right Screenshot: Service Package

Service Package

- FastLink Business Service**
 - High Speed Internet Access for \$19.95 per month.
 - Up to 50 times faster than dial-up connections.
 - Award-winning 24x7 customer support.
 - "Always On" connection.
 - Unlimited Internet Access 24x7.
 - Support for up to 5 PCs connected concurrently.
 - 5 FastLink eMail Accounts.
 - Business web site hosting (up to 20 MB) and tools to help you build it.
- FastLink Residential Service**
 - High Speed Internet Access for \$19.95 per month.
 - Support for one PC connected concurrently.
 - Up to 50 times faster than dial-up connections.
 - Award-winning 24x7 customer support.
 - "Always On" connection.
 - Unlimited Internet Access 24x7.
 - 1 FastLink eMail Account.
 - Personal web site (up to 12 MB) and tools to help you build it.

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

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Typical DHCP

```
Command Prompt
C:\>ipconfig

Windows NT IP Configuration
    Host Name . . . . . : donwint-nt.lucent.com
    DNS Servers . . . . . : 24.200.138.246
                          24.200.138.211
    Node Type . . . . . : Hybrid
    NetBIOS Scope ID. . . . . :
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No
    NetBIOS Resolution Uses DNS : Yes

Ethernet adapter El9201:
    Description . . . . . : 3Com EtherLink PCI
    Physical Address. . . . . : 00-B0-D2-56-27-F8
    DHCP Enabled. . . . . : Yes
    IP Address. . . . . : 24.200.138.173
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 24.200.138.1
    DHCP Server . . . . . : 24.200.138.10
```

• **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
<i>Automates IP configuration</i>	No	Yes	Yes
<i>Authenticates user each session</i>	No	Yes	No
<i>Authenticates user by device</i>	Yes	No	Yes
<i>Enables differentiated services</i>	Yes	Yes	Yes
<i>Supports multiple user sessions</i>	Yes	Yes	Yes
<i>Works easily with multiple PCs</i>	Yes	No	Yes
<i>Requires third-party client software</i>	No	Yes	No
<i>Works with DSL modems</i>	Yes	Yes	Yes
<i>Works with cable modems</i>	Yes	No	Yes
<i>Works with wireless modems</i>	Yes	No	Yes
<i>Easily supports new VoIP services</i>	No	No	Yes
<i>Easily supports interactive entertainment services</i>	No	No	Yes
<i>Easily supports streaming video services</i>	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

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