



*Implementing
Backup for DSL Services
Targeted to
Small Businesses*

netopia.[®]



THE MARKET FOR BACKUP SERVICES

The Internet has become a mission-critical application for small and medium size businesses in today's global economy. Loss of Internet connectivity can result in lost direct sales opportunities from online purchases and sever external data communications with teleworkers, branch offices, partners and suppliers. The loss of access to real-time information on sales, inventory, and connectivity to other applications and services further adds to losses by decreasing efficiency and worker productivity.

Serious businesses require around-the-clock network reliability and availability. Because no network, however robust, is 100% fail-proof, any business-class service must include some form of redundancy. A redundant link to the Internet insures a business against downtime and the consequent loss of revenues and employee productivity.

Historically, large corporations have implemented backup strategies to prevent losses due to network downtime. As smaller businesses become increasingly dependent on the Internet for e-commerce and other mission-critical applications, there is a corresponding need for a backup strategy to ensure full time connectivity.

Until now, backup was only available on traditional leased line services such as Frame Relay over T1 and DDS. These connections are typically too expensive for small businesses, leaving only two options: the slow lane of dialup V.90 or usage-based ISDN.

With the availability of backup technology for Digital Subscriber Line (DSL), businesses can now affordably enjoy always-on, high-speed Internet connectivity and protection from downtime.

THE COST OF DOWNTIME

Internet downtime can seriously impact a business' bottom-line. A typical service level agreement (SLA) that guarantees 99% to 99.9% uptime means that a business will still have to account for lost revenue resulting from the .01% to 1% downtime. For a small business with annual revenue of \$6 million, annual revenue loss due to Internet downtime can equal up to \$6,000. Add in lost employee productivity, and losses can be much higher.

REVENUE LOSS AT 1% INTERNET DOWNTIME

Company's Gross Annual Revenue	\$6,000,000
% of Revenue attributed to Internet activity	10%
Annual Revenue attributed to Internet activity	\$600,000
% Internet Downtime	1%
Total Annual Revenue Loss	\$6,000

EMPLOYEE PRODUCTIVITY LOSS AT 1% INTERNET DOWNTIME

Number of Employees	20
Average Hourly Rate	\$20
Annual Hours Lost Per Employee	12
<i>(50 Weeks x 40 Hours x 1% Downtime) - 40% Conservative Margin</i>	
Annual Cost of Loss of Productivity	\$4,800

THE BASICS OF BACKUP TECHNOLOGY

Backup, in its most simple form, consists of any method of providing redundant Internet connectivity in case of primary line failure. Implementing backup for DSL is essentially the same method as used in traditional leased lines, such as T1 and DDS. The router at the customer premise handles switching to a V.90 or ISDN backup connection in the event of primary line failure. Ideally, this switch should be automatic and transparent to most network users, while still allowing robust management and reporting to the person in charge of networking systems within the small business.

Today, a small business can choose from three hardware configurations for implementing a backup solution with DSL:

1. Use a DSL router that comes equipped with an integrated V.90 or ISDN port for automatic failure recovery. This configuration is a complete stand-alone solution that is typically more cost-effective and, with no external cables or external equipment, has fewer points of potential failure.
2. Use a router with a V.35 port and a V.90 and/or ISDN module slot. The primary WAN line is connected to an external DSL DSU and then to the V.35 interface on the router, while dial backup is configured by installing a V.90 analog or ISDN module/card in the router's module slot. This configuration, using a router such as a Cisco 2500, is typically more expensive and too complex to configure and maintain for most small businesses.
3. Use a DSL router that is equipped with a serial port for interconnectivity with a stand-alone V.90 modem or an ISDN terminal adapter. Typically, a cable connecting the DSL CPE to the dial-up modem is required. This configuration is useful for customers that wish to use their legacy V.90 or ISDN equipment, but has more points of potential failure.

No matter which option is chosen, the router should come equipped with features that give users easy-to-use, yet comprehensive control over their backup implementation. These features should include Automatic or Manual Backup Mode, Dial-on-Demand, Failure Recovery Delay, Scheduled Connections, and other features that allow users complete customization of backup implementation.

The ubiquity and cost-effectiveness of a V.90 analog line make it an ideal insurance against the loss of Internet connectivity. However, if critical applications include operating Internet-accessible servers on the LAN, then maintaining a higher bandwidth backup connection becomes more important. Due to speed and fast connection process, ISDN may be a better choice for backup recovery in these situations.

EXPAND OPPORTUNITIES, INCREASE PROFITS

By offering V.90 or ISDN backup for DSL services targeted to small businesses, Service Providers can greatly expand business opportunities and increase profits.

Open New Markets

Adding backup options to DSL enables Service Providers to reach businesses that previously wouldn't consider DSL because of concerns over service reliability and the lack of recovery-on-fail options. These businesses include larger corporations, branch office situations, and any company that is considering replacement of existing Frame Relay connections.

Differentiate DSL Service Offerings

With the ever increasing competition in the DSL space, serious businesses will look for the highest value service offering that meets their requirements for cost-effective, business-class service. Service Providers that can offer DSL services, bundled with value-added business-class services such as backup, will have a unique advantage over the competition.

Support Higher Margins

When bundled with DSL service packages, value-added features, like backup, allow Service Providers to increase margins. Businesses will value the ability to implement a backup strategy and will be willing to pay a premium for such services.

Increase Customer Retention

By adding a backup option package, consumers will see their Service Provider as offering 'cutting-edge' solutions. They will be able to count on the fact that their Service Provider understands the needs of small businesses. This confidence will increase loyalty and reduce churn.

Backup should be one of a Service Provider's many value-added offerings that can also include Web hosting, Application and Email hosting, Domain Name Registration, DSL Bonding, and VPN.

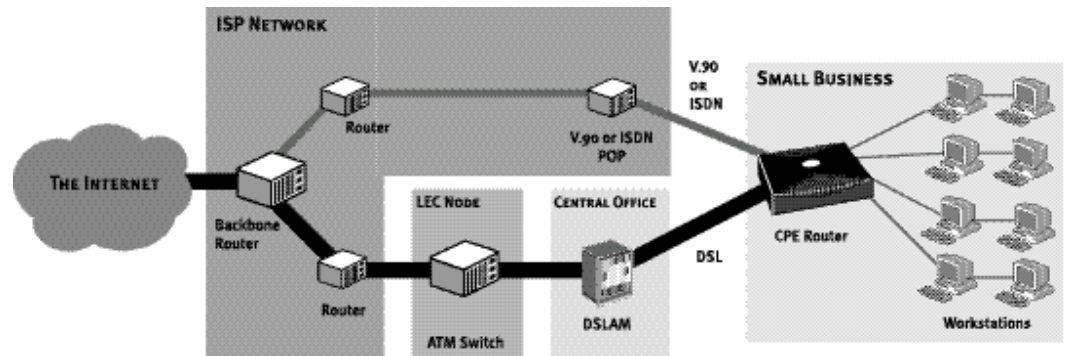
TECHNICAL REQUIREMENTS FOR PROVIDING BACKUP FOR DSL

Service Providers can provide two levels of backup service to small business DSL customers depending on their needs. For small businesses that do not host LAN-based Internet servers, basic backup that restores Internet access to users on the LAN is sufficient. Businesses that additionally need to ensure the redundancy of Internet connectivity for LAN based servers require a backup implementation that preserves two-way Internet connectivity.

Which method a Service Provider decides to offer is dependent on network architecture and whether the routers support backup communication protocols such as OSPF, IGRP and BGP.

BACKUP FOR BASIC INTERNET ACCESS

To implement a backup service that restores Internet access to DSL customers, Service Providers must have access to a V.90 or ISDN-enabled POP router that will accept analog or ISDN Backup calls and give the DSL CPE a new IP address to identify the newly-activated backup connection. This is the simplest way to provide backup. If the DSL CPE supports NAT, all the users on the customer's LAN side will benefit from the backup service, thus ensuring businesses the productivity that is leveraged from critical Web-based applications such as email communication and business research. This backup method, while easy to implement and good enough for many small business situations, is not ideal for networks that have LAN-based servers.

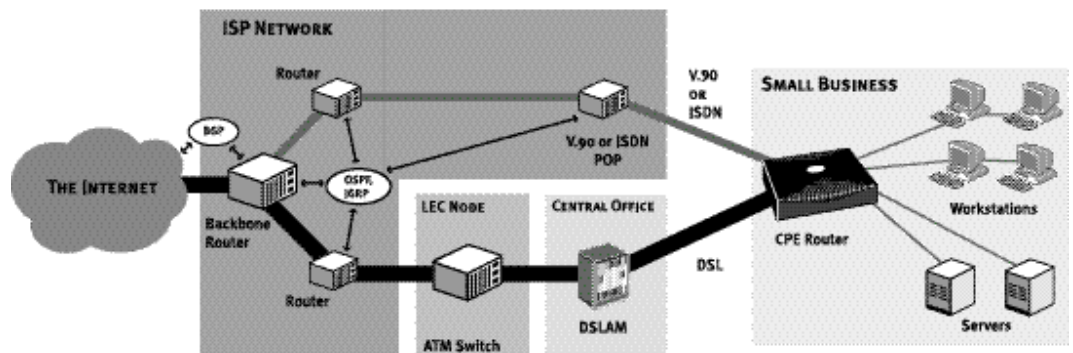


BACKUP FOR LAN-BASED INTERNET SERVERS

To implement a V.90 or ISDN backup service that restores Internet access to LAN-based Internet servers, a Service Provider must have a V.90 or ISDN-enabled POP router that can accommodate a backup connection when the primary line is down. This V.90 or ISDN POP router must also be able to run interior routing protocols such as OSPF or IGRP between itself and the router that connects to the DSL segment of the ISP network. In case of DSL line failure at the CPE, OSPF and IGRP allow the V.90 or ISDN POP router to exchange routing information and update routing tables.

The backbone router must run an exterior routing protocol such as BGP to communicate with routers outside its own network and exchange routing information on the newly-activated backup router.

This will enable the backbone router to receive all traffic from the Internet that is intended for the DSL CPE and forward it to the backup router, which then forwards the traffic to the DSL CPE and the LAN. When the fixed IP addresses of LAN servers become entered as static routes in the V.90 or ISDN POP router, this backup process restores access to the Internet and all LAN server-based services.



NETOPIA BACKUP SOLUTIONS FOR DSL

Netopia DSL Routers come equipped with backup features that give small businesses complete control over their backup connection. A Failure Recovery Delay feature ensures that the connection only switches to backup mode when the primary line fails and has not been merely interrupted. Users can configure a Failure Recovery Delay of 30 seconds to 15 minutes before the backup port is enabled. In addition, the router also comes with other user-configurable features such as Primary WAN Switchback Delay for primary WAN line switchback activation. The 'Scheduled Connections' feature allows configuration of the preferred backup-on-demand activation schedule, e.g., during business hours only or a permanent "nailed-up" backup connection.

Netopia DSL Routers come with integrated dial-up backup, enabling a small business to have complete control over backup strategy. Additionally, Netopia also supports a second option for implementing dial backup through use of an external dial-up modem connected to the router's auxiliary serial port. The second backup option requires an add-on cable (the TE6/DB25 Aux Port Modem Cable). The value of this second option is in providing backward compatibility to customers who already own a stand-alone dial-up modem. In both backup implementations, the Netopia router can be configured to detect primary DSL line failure automatically, and upon detection, activate the backup connection, re-route traffic to the backup line and immediately restore Internet access to users on the LAN.

NETOPIA DSL EQUIPMENT WITH INTEGRATED BACKUP

SDSL

FRAME-BASED

- R7120 SDSL Router w/Integrated V.90 Backup
- R7131 SDSL Router w/Integrated ISDN Backup

ATM-BASED

- R7220 SDSL Router w/Integrated V.90 Backup
- R7231 SDSL Router w/Integrated ISDN Backup

IDSL

- R3120 IDSL Router w/Integrated V.90 Backup

ADSL

G.LITE, G.DMT INTEROPERABLE

- R6120 ADSL Router w/Integrated V.90 Backup
- R6131 ADSL Router w/Integrated ISDN Backup



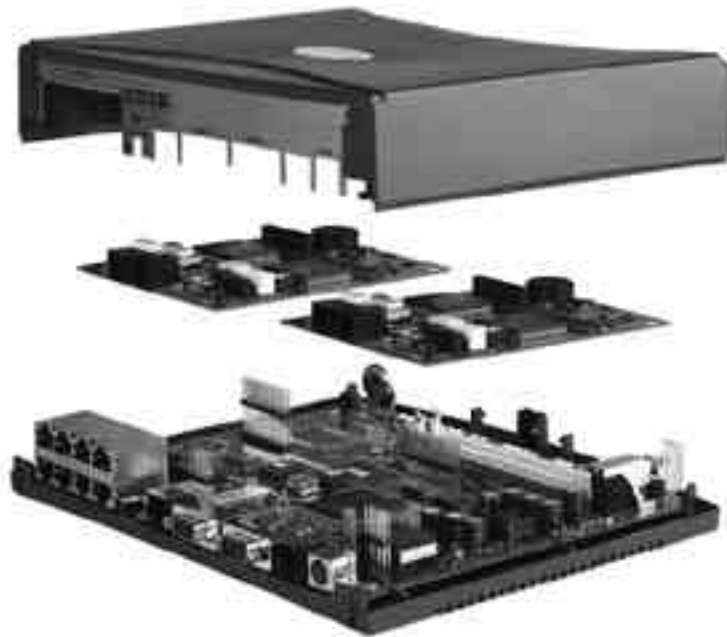
SUMMARY

To meet the needs of small and medium size businesses, Service Providers must offer DSL service packages that incorporate backup functionality. Backup provides businesses with the redundancy necessary to ensure full-time access to mission critical applications and resources from the Internet.

Only Netopia offers easy-to-use, business-class DSL Equipment that integrates v.90 or ISDN backup. Netopia DSL Equipment comes with unique features that give small businesses the power to take full advantage of the opportunities that the Internet offers.

Netopia's unique features also enable Service Providers to open new markets, differentiate their DSL service offerings, support higher margins, and increase customer retention.

For more information on Netopia DSL Equipment call 1-800-NETOPIA, or log on to www.netopia.com/equipment.





Corporate Headquarters

2470 Mariner Square Loop
Alameda, CA 94501-1010
(510) 814-5100
Fax (510) 814-5020

Europe

2, rue du Docteur Lombard
92130 Issy-Les-Moulineaux
France

Customer Service

(510) 814-5000

Internet

www.netopia.com/equipment

