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Performing Your Own VPN Cost Savings Analysis

This document contains instructions for performing your own VPN cost savings analysis using the ***VPN Cost Calculator*** spreadsheet (VPN_COST.XLS). The calculator is optimized for the most common type of VPN—an Internet-based Virtual Private Remote Network that employs multiprotocol tunneling—but can be used with modified pricing for a VPN that uses Virtual Private Trunking or Virtual IP Routing.

This is intended as a "how to" document, and is divided into three parts. The first part provides step-by-step instructions with general notes and procedures. The second part offers a section-by-section tutorial for "filling in the blanks" on the spreadsheet. The third part explains limitations of the calculator.

Step-by Step Instructions

The spreadsheet is fairly intuitive and easy to use, requiring only basic familiarity with Microsoft Excel®, Lotus 1-2-3®, or similar spreadsheet applications.

Performing the VPN cost savings analysis is a simple three-step process.

1. Backup the Original File and Rename Your Working File
2. Input/Change All Input Variables
3. Save and Print the Spreadsheet

A section-by-section tutorial with tips for entering variables follows STEP 3.

STEP 1: Backup the Original File and Rename Your Working File

Before changing anything, copy the original file to a backup disk/diskette. This way, you can always return to a known condition if something goes wrong! Rename any working files (using the Save As… command) each time they are changed. This allows you preserve different configurations and network scenarios.

STEP 2: Input/Change All Input Variables

The input variables required to perform a VPN cost savings analysis include:

- The *Monthly Costs* of the *Existing Private Network,* including local and long-distance *WAN Services*, *Internet Access* services, and *WAN/User Management*.
- The number of various *Site/User Connections*, by type/speed, in the *Proposed VPN*. For example, a remote LAN access VPN may have 200 mobile workers

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(*Modem/POTS* connections) and 100 full-time telecommuters (*ISDN BRI* connections), which together require two *T1* connections at the central site. All other connection types can be deleted or left as zero (0).

The spreadsheet is color-coded for your convenience.

- ***Green*** indicates those input variables that must be entered, all of which currently have a value of zero: 0 or $0. Simply select the cell to enter a numeric value, whether a *Monthly Cost* for the *Existing Private Network* or the number of connections by type/speed for the *Proposed VPN*.
- ***Blue*** indicates input variables with default values already entered. Each numeric value can be changed by selecting the cell and entering a new value. These optional variables include the monthly *WAN* and *ISP* costs for VPN site/user connections, and the percentage savings of *VPN/User Management*.
- ***Red*** indicates values that are calculated automatically. There is no need to change any of these cells, although you can because no protection is used. All equations are fairly straightforward, and should be self-explanatory to anyone familiar with spreadsheet conventions.

STEP 3: Save and Print the Spreadsheet

Before printing the spreadsheet, you may wish to change the Header and/or Footer, and use the Print Preview function to verify page fit and formatting. Then print and, of course, save your work.

Section-by-Section Tutorial

There are four sections in this spreadsheet

- Instructions
- Existing Private Network
- Proposed VPN
- Estimated Cost Savings

The *Instructions* section is a condensed version of this guide. The *Estimated Cost Savings* section contains the "bottom line" calculation showing both dollar and percentage savings of the *Proposed VPN* over the *Existing Private Network*. Only two of the sections—*Existing Private Network* and *Proposed VPN*—require input and/or changes. Details on each are provided here.

Existing Private Network Section

In this section you input the monthly costs (in the *Monthly Costs* column) for the existing private network, consisting of:

- *WAN Services* for both local access (LEC) and long-distance (IXC) for all dialup and leased lines in the private network

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- *Internet Access* charges (ISP and LEC) for all multiuser sites and individual users that currently have an Internet account
- *WAN/User Management* costs for the private network

The *Total Annual Cost* is calculated automatically.

If the current cost information you have is on an annual basis, be certain to divide by 12 to get *Monthly Costs* (e.g. enter =X/12 in the cell, where X is the annual amount).

Note that the costs here pertain to the operation and management of the wide area network (WAN) only, as well as to all user support for the network itself. An enterprise WAN includes site-to-site internetworking, remote LAN access for telecommuters and mobile workers, Internet access for all employees, and optionally, an extranet with buyers and suppliers. If replacing only a portion of the enterprise WAN with the VPN, include only that portion in the monthly costs. Specifically excluded is the local area network (LAN) and user support for PCs and all applications, as these costs should be comparable between the private and virtual private networks being compared.

Because the Internet, especially for e-mail and the Web, is an essential element of any enterprise network, this cost should be considered an existing private network expense. Access to the Internet might be provided with a single, high-speed link for the entire enterprise or, more likely, through numerous lower speed links for individual users and multiuser sites. Be sure to include all such accounts in the monthly *Internet Access* cost.

Finally, if your existing WAN employs Frame Relay services, you already have a VPN, and may find that the savings of an Internet-based VPN are insignificant. Likely, your Frame Relay VPN uses switched or permanent virtual circuits. If so, it may be worthwhile to check with your service provider(s) to learn about the benefits and availability of Virtual Private Trunking services.

Proposed VPN Section

The *Proposed VPN* section takes advantage of a VPN's single connection per site and user to define the enterprise-wide virtual private network configuration. A variety of types and speeds of connections are listed, including two "placeholders" each for leased line and dialup services. Each provides Internet access for a Virtual Private Remote Network that employs multiprotocol tunneling.

The required input for this section involves filling in the number of connections for each type/speed of service listed. Note that number of connections for each type/speed of service should include those required for both sites and users. This is particularly true of ISDN BRI, which is a popular service for small multiuser offices, SOHO environments and individual users.

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The *WAN* and *ISP* columns provide "average costs" for these monthly services. Naturally, the pricing for your actual sites and users may vary substantially by location and service provider. These average values do, however, generate a reasonable first-pass estimate. More accurate numbers can be obtained by contacting the actual local exchange carrier(s) and Internet service provider(s) you would be using for the VPN.

Adding "placeholder" services, such as different data rates or Digital Subscriber Line access, or changing the monthly WAN/ISP fees for any type/speed of service listed is a simple matter of first selecting the appropriate cell, then entering the new value. The description (e.g. "*Other Leased Line Service*") can be changed in the same way: first select the cell, then enter the new description.

The total *unit* (per connection) *Monthly Cost* (WAN/LEC and ISP) for each type/speed of service, as well as the *extended* annual cost for *all* connections (sites and users) employing all services are calculated automatically. A subtotal shows the annual cost for all services and sites/users. *VPN/User Management* costs are then calculated and added to the services subtotal to yield the *Total Annual Cost* of the *Proposed VPN*.

Finally, if the *Estimate Costs Savings* calculations result in negative numbers, check the following two likely causes:

- The monthly costs entered for the *Existing Private Network* are inaccurate. Be sure to include *all* WAN (LEC and especially IXC), Internet access and WAN/user management expenses.
- The total number of connections in the Proposed VPN exceeds the number of individual locations. With a private network, many sites may have multiple leased and/or dialup links. But with a VPN, each site/user only requires a single connection for public Internet access, semi-private extranet access and private intranet/VPN access.

It is possible, that for some applications, an Internet-based Virtual Private Remote Network would result in little or no savings. For example, an existing Frame Relay network is already a VPN that saves substantially over the equivalent network constructed of leased and dialup lines. Migrating from one VPN architecture to another, however, is unlikely to offer the same level of savings, and may even result in higher costs.

Limitations

The ***VPN Cost Calculator*** spreadsheet takes certain "short cuts" to maximize simplicity and utility. It is important that you understand each of these limitations:

- The spreadsheet focuses on those areas where VPNs and private networks differ the most: the on-going costs for WAN services and network management. All other costs, which should be roughly the same for both the *Existing Private Network* and the *Proposed VPN*, are ignored, including the initial implementation expenditure (equipment purchases, training, installation, set-up fees, etc.) and the on-going costs of equipment

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maintenance. Facilities costs, as an on-going expense, are also ignored, even though they should be less with a VPN (owing to its consolidation of equipment).

- The implementation costs of the proposed VPN can be calculated separately to determine the payback period. Simply divide the one-time implementation costs by the *Annual Dollar Savings* to obtain the payback period.
- The monthly *WAN* and *ISP* costs for the *Proposed VPN* are based on "average rates" for a Virtual Private Remote Network that uses the Internet and/or a carrier's own IP network as its wide area backbone. The spreadsheet could be used to estimate the costs and cost savings of VPNs based on other services, such as Virtual Private Trunking or Virtual IP Routing, provided the appropriate monthly costs are entered in the *WAN* and *ISP* columns.
- Similarly, the monthly *WAN* and *ISP* costs for the *Proposed VPN* reflect "average" U.S. pricing, which can vary substantially in other parts of the world. For multinational VPNs it may be necessary to check with local carriers and enter these values in the "placeholder" rows.
- *Monthly Costs* for the *Existing Private Network* are required to estimate both the *VPN/User Management* costs and the "bottom line" *Estimated Cost Savings*. Therefore, if no private network exists, or if its costs are not provided, *VPN/User Management* and *Estimated Cost Savings* cannot be calculated. Nevertheless, the spreadsheet remains useful for calculating the estimated annual cost of WAN and ISP services for a VPN.

You have our permission to proceed...

Ascend Communications, Inc. hereby grants enterprise organizations, Internet service providers (ISPs) or resellers of VPN equipment permission to use the material in the *VPN Cost Savings Analysis for the Enterprise* guide and the ***VPN Cost Calculator*** spreadsheet for estimating the costs and cost savings of Internet-based VPNs.

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