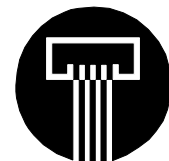


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Building Your Virtual Private Network Service

The process of developing and launching a Virtual Private Network product begins with understanding customer needs and finding a fit between those needs and your business and financial objectives. The fit will help define the appropriate service offering and pricing, and as customer needs and your business objectives change, should drive management of the service.

The following section is written from the perspective of the product marketing group, outlining tasks typically assumed by the product manager. The steps are loosely outlined in the order they are performed. Some steps must be partly or fully accomplished before undertaking the next step; however some steps can be performed in parallel. It is possible to launch a Virtual Private Network service in as little as three months. A three month launch would require that you perform many of the following steps simultaneously.

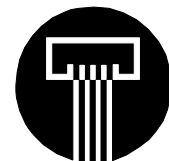
Step 1: Understand the Market

Key to the long-term success of your company's Virtual Private Network service is a clear understanding of the target customers' needs and competitive environment. Focus on a manageable segment of the market by targeting your service – small and medium size businesses, horizontal markets such as manufacturing, high tech or healthcare. Map your core competencies with the target market's needs.

Interview Prospective Customers

Defining your strategy and targeting your service should start with primary market research – talking to your prospective end users. Interview end users either in person or via telephone to fully understand their needs. Understand the needs that are not being met or are being met inadequately by other service providers or products (Is the Internet alone meeting their needs? Pure transport such as Frame Relay? How are they meeting their telecommuters needs? Their business partners'? The information you obtain from these interviews, combined with a competitive analysis, will help you to design your offering and position it appropriately in the marketplace.

Ask potential customers questions that will help you understand their requirements for Virtual Private Networking (Are they worried about security on the Internet?), what they look for in a supplier, and their company profile. Use the interview to gain end-user perceptions of your competitors.



Conduct Competitive Analyses

There are many sources for competitive information, including service provider marketing literature, press releases, articles, your sales force, a service provider World Wide Web home page and end users. You may be able to purchase market studies which summarize competitors offerings --or commission one tailored to your needs. The most realistic assessment of competitors typically comes from end users. Currently more a number of network service providers are offering Virtual Private Network services. Don't re-invent the wheel, check out what they are offering and do it better.

Identify your competitors' strengths and weaknesses in the follow areas:

- Company image
- Product features
- Pricing structure
- Rates
- Pre-Sales support
- Service Delivery
- Technical support
- On-going maintenance and management
- Customer network management
- Billing
- Account management.

By thoroughly understanding your competitors' strengths and weaknesses, you can perform a gap analysis. A gap analysis is used to determine your competitors' service problems or deficiencies. Your competitors' weaknesses are obvious targets for differentiation. The results of the customer interviews and competitive analysis will give you the tools to develop your preliminary differentiation strategy and product positioning.

Step 2: Define Business and Financial Objectives

Understanding your business and financial objectives plays a critical role in developing your Virtual Private Network service. These objectives will drive and influence all facts of product development. The service definition, price structure and rates, competitive positioning and feature development should reflect these objectives.

In this step, determine your measurements for success. Not all objectives are financial or related to market share and profit margin. Examples of strategic business objectives are:



- Increase market share
- Acquire new accounts
- Increase account retention and longevity
- Create a competitive market advantage or respond to a competitive threat
- Create or maintain an image as a value-added service provider, or gain experience in offering value-added services so that this image may evolve in the future.

Understanding your financial goals will help you formulate your business case and plan. The objectives will also have a major influence on the product definition, product positioning, and distribution strategy.

- Maintain thirty-five percent operating profit margin
- Increase revenues in existing accounts via pull—through sales of other services (utilize Virtual Private Network services to pull through voice services)
- Gain revenues of \$3-\$15 million in the first three years.

Not all business and financial objectives coexist. For example, a primary business objective of increasing market share and revenues might warrant a penetration pricing strategy inconsistent with business or financial objectives of maximizing profit margin in the first two years.

Step 3: Define the Service Offering

Analyze Your Company's Strengths and Weaknesses

Before defining your offer, look critically at your company's core competencies and weaknesses. Encourage those involved in the analysis to be realistic in their assessments. You must thoroughly understand your company's strengths and shortcomings to define an offer that takes advantage of those strengths yet allows your company to improve its weaknesses. A good reputation is an asset and should be carefully managed and protected.

If your company is weak in a specific area, you may want to investigate partnerships or acquisitions of firms that complement your strengths. For example, if your customer require value-added services, you could partner with firms with specialized knowledge that would be difficult and time consuming to duplicate.



Develop Your Competitive Strategy

Before defining your service, decide on your competitive strategy. Determine if you wish to be the low-price provider, if you want to have a highly-differentiated offer – something perceived as unique, or if you want to focus on a particular buying group. Do not pursue all strategies simultaneously.

Look at your current market strategy. It is probably unwise to enter the market with a position that clashes with your existing market position, especially if you are selling your offering into your existing customer base.

Profile Target Customers

Identify the characteristics of the target customer based on your competitive strategy, your company's core strengths and your business goals. Following are sample characteristics of Virtual Private Network services customers:

- Require connectivity for remote workers or telecommuters
- Require secure, economical connectivity with suppliers or distributors
- Sales or assets of more than \$5 million
- Business integration is considered a strategic asset
- Information dissemination is considered a strategic asset
- Have near term requirement to integrate with their supply chain.

As the service definition and differentiation strategy emerge, the profile of the target customer will become more specific.

Draft Preliminary Service Definition

The service definition reflects your company's chosen competitive strategy, business goals, customer needs, strengths and partnerships and future plans. Your first step should be to outline your service offering's features and benefits. Make a comprehensive list of features and capabilities and identify which of those features must exist at market entry and which can be included in future enhancements. Understand where you want to be in the future so that you can start paving a smooth evolution and migration path to future services.

Step 4: Develop a Preliminary Business Case

Check out the template that follows in section V of this document. The steps outlined in the template will provide a framework for your business planning and should lead to realistic financial forecasts. Revise the entries with updated information as you approach service launch, and fine tune the cost and revenue forecasts based on empirical data obtained after launch.



Step 5: Design and Build the Service Delivery Infrastructure

Once the business case is approved, it's time to design and implement the infrastructure necessary to deliver your company's Virtual Private Network service. During this phase, the product manager must work closely with a project manager to deploy an appropriately designed infrastructure and associated service delivery processes.

Step 6: Beta Test the Offering

It is a good idea to connect two test customers to the service just after implementation. Beta tests help the operations and engineering groups work out the kinks in the process and stabilize the network and service delivery processes. They also provide an excellent source of information and feedback to the product marketing group. Encourage beta customers to review and comment on the proposed product definition, price structure and rates and marketing program and materials.

A focus group with your beta customers, after using the service for a month, can give you valuable data for measuring customer satisfaction and improving the service definition as well as determining how the service delivery capabilities can be improved. Hold a similar debriefing with internal staff responsible for service delivery.

Step 7: Finalize the Service Definition

Using the information from beta customer experiences and the collective experience of your delivery organization, finalize the service definition.

Step 8: Establish Pricing Structure and Rates

The pricing structure you develop has significant impact on your competitive positioning and overall market success. The price structure has the single greatest impact on who buys the service and how it is used. The following should be considered when determining price structure:

- What buying behaviors do we wish to encourage?
- Can these behaviors be encouraged through a discount as opposed to price structure?
- What are my competitors pricing structure weaknesses?
- Is more than one price structure necessary to achieve service objectives?
- What limitations do order entry, operations and billing place on the price structure?



Develop your rates by reviewing cost, market willingness to pay and competitive position. Consider issues such as:

- What portion of the physical network cost will be included in the connectivity charge?
- What amortization schedule will be used for these costs?
- What range of discounts will be offered?

Step 9: Modify the Business Case

Modify the business case as you learn more about the customer base, distribution channels, competitive environment, service definition and pricing to reflect any changes in cost or revenue estimates.

Step 10: Develop Service and Support Systems

Establish a cross-functional product development team to create service delivery methods and procedures. The cross-functional team should meet regularly to develop the process from pre-sales to billing.

The team may consist of representatives from the following areas:

- Marketing
- Pricing Administration
- Sales And Sales Support
- Order Entry
- Provisioning
- Operations
- Customer Service
- Accounting
- Billing
- Network Planning
- Engineering
- Regulatory/Legal
- Information Systems

The team must also define system requirements to support the new service including:

- Mandatory, preferred or “nice to have” requirements
- Timeframes to develop solutions for requirements
- Workaround solutions and procedures
- Ways to minimize system enhancement costs.



Define processes and establish corresponding procedures. Examples include:

Sales and Sales Support

- Standard proposal templates
- Process for creating proposals
- Pricing tools

Order Entry

- Service order form and technical information sheet
- Process for obtaining circuit descriptors
- Forms and process for ordering customer equipment
- Forms and process for modifying customer connection
- Process for expedited orders
- Online order mechanism for sales or customers
- Process for verifying technical and billing information
- System modifications for entering and tracking orders
- Process for ordering management console/service

Provisioning

- Process for provisioning connection
- Process for equipment provisioning and configuration
- Process for indication of orders in jeopardy
- Process for warehousing and deploying customer premise equipment

Installation

- Process for coordinating installation dates
- Solution for equipment staging and on-site installation
- End-to-end acceptance testing procedures

Maintenance, Monitoring and troubleshooting

- Procedures for entering and tracking trouble tickets
- Escalation procedures
- Process and rules for on-site dispatch
- Process for billing customers for on-site visits and other one-time maintenance, time and/or materials charges
- Ability for system to distinguish different maintenance packages
- Ability for customers to enter and track trouble tickets online
- Process and tools to collect network traffic statistics



Network Management

- Ability to partition the network
- Customer network management for “as needed” connectivity to business partners
- Access to usage and billing information

Billing

- Process for billing customers for basic service, equipment sale or lease, value-added services
- Integrated billing solution for all services
- Process for reflecting service credits on bill
- Ability to track/measure usage to Virtual Private Network sites
- Ability to link billing to performance parameters and service-level contracts
- Electronic invoicing and payment

Customer Service

- Online service information for customers
- Online support service/help desk
- Process for handling billing adjustments
- Process for handling service modifications/additions

Pricing Administration

- Process for handling requests for non-standard pricing
- Process for cross-product discounts
- Process for developing, implementing and communicating price changes
- Process for filing pricing with regulatory agencies
- Process for obtaining pricing from partners

Finance

- Process for selling and leasing/financing equipment
- Process for renting equipment

Regulatory

- Process for filing tariffs or meeting other requirements
- Process for checking regulatory requirements in all areas where service is provided

Taxes

- Process for correctly taxing service
- Process for taxing value-added services and equipment



Network Equipment

- Process for tracking equipment usage and ordering new equipment
- Process for upgrading equipment so that customers are minimally impacted
- Process for escalating service questions
- Process for accepting competitive information, new service suggestions, service modifications
- Process for information distribution to field engineering.

Step 11: Establish Distribution Channels

Distribution channels constitute the most important element in the product launch strategy. There are several issues to consider.

Align the Service and Target Market with the Distribution Channel

Ensure that the service definition targets a customer base that the distribution channel already contacts or is in a very good position to penetrate. If the sales channels do not line up with the target market's decision-maker, modify the distribution channel strategy. This is important for direct sales, telesales and channel sales.

Minimize Channel Clash

The distribution strategy for a service may include a direct sales force, telesales force and third-party channel sales (such as a systems integrator, value-added reseller or distributor). If they compete, put mechanisms into place to ensure minimal channel clash and keep customers from getting caught in the middle. Provide comprehensive training to all members of your sales channel. Training can be in person, in writing, on video or audio tapes or via video conference. Tools should include brochures, videos, diskettes, written technology primers, presentations, seminars and workshops.

Develop a Compensation and Promotion Program

If the service does not have an attractive compensation plan, it will not succeed. A new product will sell only if customers demand it, competitors push it, or the compensation plan encourages it. Develop a sound compensation program and augment it with a promotional program to create short-term excitement and momentum. Elements of the promotional program should encourage sales to learn and sell the service.



Step 12: Create a Marketing Program Plan

The marketing communications strategy includes all aspects of explaining the service to potential clients. It can include brochures and collateral, presentations, training tools, advertisements, seminars and workshops and direct mail campaigns. The most important guideline in developing the plan and creating the materials is to separate the technology from the business benefits to customers. Technology should not be a primary focus of marketing communications or materials.

The initial service launch may include a marketing communications saturation campaign that targets sales, internal support, customers and prospects, the media, analysts and consultants. The objective of the launch is create early excitement and sales momentum so that the service has the best possible chance of meeting its business objectives.

Step 13: Conduct Training

Focus training both internally and externally. Training can take many forms – sales training, customer seminars and workshops – but it is training nevertheless.

Internally Focussed Training

Training is an important aspect of the service launch process; however one round of training is not all that is required to prepare your sales force to sell the service. Therefore, the training program should include a recurring component for new people and those who need refresher courses. You may want to hold initial training classes in person and tape them for future reference. Video and audio training tapes are a good way to augment in-person training.

Write down information about the service and its benefits for easy reference. The benefits can be in hardcopy form or on your Web site for electronic access and distribution.

Training should stress the benefits to the sales person of selling the service, and the benefits to the customer who buys it. It should also focus on applications, how to qualify prospects and how to sell the service. In addition you'll need training modules for executives, customer service, operations personnel, finance and billing, pricing administration and other internal support groups.

Externally Focussed Training

Training seminars for customer and prospects are a good way to introduce your service to them and get their feedback. Training can be part of a sales seminar open to many prospects or conducted one-on-one during a sales visit.



Technology or service “primers” can also serve as external training (i.e. white papers). You can also use video tapes and training diskettes; however although customers often take them, they rarely take the time to view them.

Step 14: Launch

Product launch should consist of the following elements:

- *Distribution of the Sales Release Package* – Typically including the service description, pricing, compensation and promotions, collateral and presentations.
- *Public Announcement and Press Release* – Including pre-briefing the analyst and consultant community a week before the formal announcement and granting an “exclusive” to one publication to cover the story early.
- *Sales Blitz and Customer Seminars* – An optional component that can be utilized to generate early momentum for the new service. It can include sending out key marketing or executive personnel to discuss the service with customers or holding a series of customer seminars or other events that focus on announcing and explaining the service.

Step 15: Ongoing Service Management

After service release, ongoing management of the service begins. Typically, this includes regularly revisiting the previous topics.

- *Management Information* – Track cost and revenue information, identify trends and problems, distribute monthly management summaries on the service progress. Measure actual sales against revenue forecasts in business plan.
- *Sales Support* – Provide ongoing support to field sales and sales engineers, answer questions, review network designs and provide design assistance, provide strategic prospect presentations, provide ongoing product training, keep sales collateral updated.



- *Product Management* - Work with internal departments to address ongoing product issues. Monitor market for positioning changes due to competitive environment and customer requirement changes. Monitor sales for product weaknesses, opportunities, and feature requirements. Develop 90-day product plan, update quarterly, and distribute to management of all supporting departments.
- *Small Enhancements* – Define, price and develop internal support procedures for small product modifications which do not require major development efforts (including pricing).
- *Product Promotions* – Develop product promotions to encourage sales or to encourage behavior patterns within the sales force or prospect/customer base; monitor effectiveness and results.
- *Product Strategy* – Develop and refine marketing strategy for products, translate into marketing message, develop ongoing advertising plans.
- *Proactive Review and Adjustments* – Proactively interview clients, sales analysts for feedback on market positioning, product performance and new requirements.
- *Pricing Administration* – Provide ongoing pricing support to field sales, including individual case pricing, discounting, packaging. Use competitive information on relative price position generated from field sales as input for maintaining price position objectives.
- *Competitive Intelligence* - The best source of competitive information is sales and your customers, although printed media and outside consultants can also play an important role. Keeping the product positioned requires a methodical procedure for gaining competitive intelligence. In addition, you'll need a method for communicating competitive intelligence and competitive advantages/disadvantages, to sales.
- *Market Research* – It's important to keep yourself, management, sales and support teams well educated concerning the success of the product. Measure your success against internal goals and against your competitors' sales. Use the market intelligence you gather to feed back into the product development and enhancement process. The process should include gathering and analyzing information about the customer base and the architecture of your customers' networks.

If you understand the information requirements for good ongoing product management as you develop and launch the service, you can put the systems support and processes in place to help gather and analyze information quickly and cost-effectively. At launch time, establish formal feedback mechanisms between marketing and all supporting departments and between sales and supporting departments such as operations, marketing, pricing administration and product development/engineering.



Virtual Private Networks – Service Development Model

This section provides information and guidelines to help you build the business case for your company to offer Virtual Private Network services. The section includes a financial model template that will help you understand the financial implications of providing Virtual Private Network services.

Some entries in the financial model will be easier to estimate than other due to availability of information. The steps outlined below will provide a framework for your business planning that should lead to realistic financial forecasts. The business model should be a living document that is updated periodically. We suggest that you revise the entries with updated information as you approach service launch, and fine tune cost and revenue forecasts based on empirical data obtained after launch.

Step 1: Determine Factors Affecting Revenue Estimates

Estimating revenue is arguably the most critical and difficult part of the business planning process. It is very important that you identify the variables that influence revenue projects. By understanding these variables, and examining the effects that changes to them will have on revenue, you can improve revenue estimates.

Sales Force

Sales force size is a major variable affecting revenue. Generally, the larger the sales force, the larger the selling potential. If, however, the sales force is not familiar with your target market or knowledgeable about Virtual Private Network services and how to sell them, then sales force size will be of no initial benefit. If the sales force is familiar with the target customer base, and is well trained to sell Virtual Private Network services, the sales volume will be higher from the outset, and a large sales force will benefit revenue.

Incentives will also affect sales revenues. If the sales force compensation plan encourages the sales force to concentrate on Virtual Private Network services sales, the sales volume will be higher than if the sales force is not motivated by an appropriate compensation plan.

Current Market Position

Your company's position in the Virtual Private Network services market is a significant factor in your success. If your company is viewed as the low-cost/no-frills service provider in the market, then initially, it will be difficult to change your image to that of a premium service provider. Not only is your current market position important, but so are your company's relative competitive advantages. You should consider the following potential competitive advantages when estimating revenue:

- Well trained value-added data services sales force



- Unique cost advantages (i.e., low-cost infrastructure, network operations, etc.)
- Large installed base of customers utilizing other data networking services
- Technological differentiators (LDAP integration, encryption, high availability, high speed access)
- Other value-added services which can serve as complementary services (i.e. managed network and consulting services)
- Existing infrastructure usable for delivering Virtual Private Network services
- Extensive field support capabilities.

Necessary Market Preconditions

As part of the business planning process, your company must determine if there is sufficient market requirement for Virtual Private Network services to launch and sustain the business. If, for example, there is not an installed base of companies who understand and utilize data network services, then your business cannot succeed. Conversely, if prospects are satisfying their Virtual Private Network services need through “800” services and private lines, EDI and Frame Relay services, they may be experiencing high monthly bills and process inefficiencies that Virtual Private Network services could alleviate.

Initial market reconnaissance is required to understand the needs and problems of your target market to ensure that your Virtual Private Network services will satisfy market needs.

Step 2: Estimate Customers and Customer Connection Requirements

Variables such as number of new customers, existing customers, connection speed, and customer locations should be estimated three years into the future. These estimates can have an effect on the accuracy of the revenue and cost figures.

Step 2A – New Customers

Project by month the number of new customers that will be added to the network. Be realistic about the length of the sales cycle. Include equipment and circuit installation time frames.

Step 2B – Existing Customers

If you’ve sent a customer an invoice, he is an existing customer. Generally, any new customers from the previous month are added to the list of existing customers for the new month (less any disconnections). This figure ties in closely with revenue. As you add customers, your revenue increases proportionally.



Step 2C – Total Customers

The total customer entry is simply the number of new customers plus the number of existing customers. This line is useful in evaluating the current costs of the network. For example, ten new customers may require additional network and personnel resources, as reflected in the network and operating costs, before they become revenue producing. There will always be lag time between costs and revenues as network capacity must often be added to sustain growth. The faster the network grows, the more effect this lag time has on cash flow. Billing in advance, instead of in arrears, helps minimize lag time.

Step 2D – Connection Speeds

To accurately forecast revenues and costs, determine the connection speeds of your target customers. Most Virtual Private Network services customers connect at dial rates of 28.8 Kbps or higher and dedicated speeds of 56 Kbps or higher. Determine the needs of your target market, anticipate the mix of connections, and estimate pricing to predict revenue.

Step 3: Estimate Revenue

After examining the market variables that influence revenue projections, look at the three best methods for estimating revenue. Use all three methods to find a range for revenue, and then focus on discrepancies. The amounts will never match exactly, but you should understand why one estimate is substantially different from another if this is the case.

Step 3A – Sales Force Estimates

A popular way to estimate sales and revenues is to request a forecast from the sales force. This method has some advantages over other methods. The main advantage is that the sales force is closest to your potential customers and in the best position to judge whether prospects are likely to buy Virtual Private Network services. This method also allows the sales force to have input into the forecasts that they will be responsible for meeting.

There are also several drawbacks with this approach. The single biggest drawback is that the sales force may not know anything about the market for Virtual Private Network services and therefore will be unable to provide valid projections.

The second drawback is the uncertainty of predicting sales before development of the service definition and pricing structure. Forecasting sales without service definitions and prices is difficult because these factors affect demand. Finally, the sales force will be strongly influenced by the level of support infrastructure, the compensation plan, and other variables, and they have no way to factor these items into their projections.



Step 3B – Market Share Estimates

You can use market share estimates in one of two ways. First, if there is already a developed Virtual Private Network services market in your target market area, simply take the current market figures and assume you will garner “x” percent of the market. Second, if there is a similar market in your region, or a service similar to Virtual Private Network services (i.e. “value added” Internet or other data services), use that market as an example for estimating market share.

Where a market for Virtual Private Network services already exists, estimate the percentage of the market you can achieve by considering the advantages and disadvantages your service/company has over competitors. After arriving at a percentage, translate that into revenue.

The drawback to this approach is its failure to account for a number of factors, including the number of sales people selling the service, the competitive advantages/disadvantages of the service, the relative price positioning, and the actual cost of the service. Estimating revenues in this way is fast and easy, but typically inaccurate.

Step 3C – Average Network Estimates

A third method for estimating revenue is to use the customer estimates discussed in Step 2. Based on the number of customers, and the speed and type of their connections, you can estimate revenue. To determine revenue based on these figures, you must make some assumptions about pricing. If there are Virtual Private Network services competitors in your target market, evaluate what they offer and base your estimate on a percentage of that rate. For example, if you know that company X is offering VPN T-1 connectivity at \$1,095 to \$2,095 per month and dial at \$1.50 to \$2.55 per hour, then you might decide to position your product at ten percent below (or above) that rate. Multiply this figure by the estimated dial or dedicated T-1 customers from Step 1, and the result is the estimated revenue from dial or dedicated T-1 connections. Repeat this step for other connectivity options to calculate the total estimated revenue.

Step 3D – Subtract Disconnect Revenue

Just as important as determining initial revenue figures and growth projections, is budgeting for disconnects. You can safely assume that there will be no disconnects within the first three months of service. After that, a safe assumption is > three percent for each following month.



Step 3E – Net Revenue

After you estimate profit according to each of the three methods above and subtract the revenue associated with disconnects, the result is net revenue. You will have one net revenue amount for each forecasting method.

Step 4: Estimate Cost of Goods Sold

This is perhaps the toughest but most important section to complete. To estimate cost of goods sold, you must consider all costs associated with delivering Virtual Private Network services. These costs consist of network infrastructure, backhaul and depreciation, as well as operating costs for network provisioning, installation, monitoring and customer support. The model assumes that your service delivery infrastructure is built around the Internet. The model also assumes that you own the underlying network.

Step 4A – Determine Network Infrastructure Charges

Network charges will vary depending upon costs associated with your network backbone infrastructure. These costs will depend upon anticipated demand for capacity and areas of service. Fewer data switches in your network equals lower backbone costs, but higher backhaul charges. If you already have a network infrastructure that can support the IP traffic generated by Virtual Private Network services, only add those costs that will be incurred to support the additional traffic.

Cost per Dedicate Circuit

This figure will be unique to your location and circumstances. Use the cost figure your company uses for figuring current dedicated Internet or Frame Relay costs (if applicable). Otherwise use the cost figure your company uses for figuring private line costs.

Cost per V.90 Dial User

This figure will be unique to your location and circumstances. Use your current local access charges where applicable.

Total Network Infrastructure Cost

Multiply average distance between switches by the cost per circuit mile/kilometer to obtain a per circuit-distance cost per link. Add in local access charges for dial users. If you already have a network in place, add only costs for expanding bandwidth or adding switch capacity to support the new service.



Step 4B – Backhaul Charges

Backhaul charges refer to the network infrastructure costs associated with delivering local traffic to the nearest switch. As you add more switches the average backhaul per circuit declines and margins increase.

Average Backhaul Distance

Consider the locations from which traffic will originate and weigh the anticipated demand from each. Calculate the distance from these locations to the nearest switch. Average the distance per location for the most popular locations.

Total Backhaul Charges

Sum the customers and average backhaul distance to determine total backhaul charges.

Step 4C – Estimating Operations Costs

Operations costs will increase as a step function driven by the number of customers. You may use either a fully-loaded or incremental approach to estimating operations costs. Operations will require four or five experts in TCP/IP, tunneling and security protocols and operations to staff it during the day. To address critical problems during off-peak hours, each of these experts could have a pager and laptop for remote troubleshooting.

In addition to estimating salary costs, you must take into consideration required network management tools and other overhead. This may include workstations, office space, training, etc.

Make assumptions about how many customers each technician can support. The number of trouble tickets per day influences this number; track maintenance history to determine a pattern. In general, add a new technician when the cost of overtime begins to justify another full-time salary.

Benefits

Estimate benefits as a percentage of the employees' annual compensation. The industry average is 30 to 35 percent, but many companies have a standard figure specific to their company.



Step 4D – Depreciation

Calculate depreciation of equipment within your network dedicated to delivering Virtual Private Network services using your company's standard depreciation schedule. This applies to such equipment as TCP/IP switches, routers, CS/DSU/s, network management and trouble ticket systems, uninterruptable power supplies and other network equipment used solely to deliver the service.

Calculate depreciation of equipment owned by your company and deployed at a customer's site using your standard depreciation schedule. This covers and data transmission equipment you supply as part of your service.

Number of Backbone Switches

Include the number of TCP/IP backbone switches if applicable.

Number of Dial Access Concentrators

Include the number of dial access concentrators if applicable.

Internal Software Development

Billing and operating support system platforms may require internal software development. These costs are part of the product development process and therefore included in the capital costs. Internal software solutions may be phased in and should be projected throughout the forecast period.

Total Capital Invested

Sum the above costs to arrive at the total capital figure. You will use this figure to calculate total monthly depreciation.

Depreciation Factor

Use the depreciation factor to calculate what portion of a piece of equipment is "used" in a certain month. Most companies use a standard figure for depreciation and you should use that figure in this step.

Monthly Depreciation

Multiply the monthly capital figure by the monthly depreciation figure to obtain monthly depreciation.



Step 4E – Total Cost of Sales

Add the figures from the network facilities, backhaul, depreciation and operations sections to arrive at a total cost-of-sales figure.

Step 4F – Gross Profit

Subtract the total cost of sales from the net revenue figure to determine the estimated gross profit figure.

Step 5: Operating Expenses

Step 5A – Sales

One of the largest expenses is sales. Sales expenses include commissions, travel, and an allocation of expenses from other departments that might travel or in other ways aid the sales process. Most organizations have groups of support personnel assisting sales with administration.

The expenses associated with sales are usually high in the initial stages of product introduction, but decrease over time.

Step 5B – Marketing

Marketing expenses include marketing personnel and department overhead costs, and the costs for advertising and marketing communications specifically targeted at Virtual Private Network services customers.

Calculate marketing overhead costs based on the incremental costs associated with offering a Virtual Private Network service. Do not consider costs that exist prior to the introduction of the service.

Step 5C – Engineering

Involve the engineering organization in the initial and ongoing capital budgeting process. In addition, this group is usually responsible for selecting a platform for the Virtual Private Network service. Calculate costs as discussed for marketing and sales.

Step 5D – Network Planning

Network planning forecasts network demand and manages customer traffic based on network sales. Calculate costs as previously discussed.



Step 5E – Overhead

Overhead includes costs associated with supporting Virtual Private Network services not included in the previous categories. Examples include accounting services, legal expenses, real estate facility costs, and a portion of senior management time. Consider overhead a variable expense and calculate it as a percentage of revenue. Estimating overhead at five to ten percent of revenue is average. Typically this figure will be higher in initial implementation and decrease as procedures and policies settle.

Step 5F – Field Support and Engineering

If your company plans to deploy and maintain equipment at the customer site, estimate the number of employees needed to do this successfully. The number of employees required will vary depending upon the number of customers, the equipment's mean time between failure and mean time to repair, each customer's level of service, and geographic areas covered. For example, if you offer on-site support, seven days a week, 24 hours per day with two hour response time within your entire service area, you will require more employees than if you limit on-site support to business hours on weekdays, a next day response time and provide service only within 20 miles of major metropolitan areas.

Assuming that a given piece of equipment fails every two years, and it takes four hours to repair each failure, with a 20 percent buffer for the possibility that two sites have simultaneous failures – a single field engineer, working 1,600 hours a year, can support approximately 333 devices.

Step 5G – Estimating General and Administrative Costs

The figure will probably be between 0.3 and 0.8 percent of revenue. If your company already has a standard percentage for other projects, use it.

Step 5H – Total Operating Expenses

Sum the sales, marketing, engineering, network planning, overhead, general and administrative, and field support and engineering amounts in Step 5 to determine total operating expenses. This figure is the total amount of expenses associated with delivering Virtual Private Network services.

Step 6: Operating Profit

Calculate the estimated operating profit by subtracting the total operating expense from the gross profit figure. Operating profit shows the Virtual Private Network services earnings and excludes interest due on debt, taxes and corporate depreciation on items such as real estate facilities.



Step 7: Cash Flow from Operations

Cash flow from operations is the amount of cash available to sustain and grow the business. Cash flow is simply operating profit plus depreciation. Add depreciation back into this figure since it is a non-cash expense.

Step 8: Net Cash Flow

Net cash flow is cash flow from operations less capital expenditures. For the first few years, while the network is in a high-growth mode and capital expenditures are relatively high, this number will probably be negative. Calculating net cash flow is done on a period-by-period basis. A net cash flow that is negative for a long time is not necessarily bad, since it probably means you are making investments in new facilities and equipment to keep up with high customer demand.

Step 9: Cumulative Cash Flow

The cumulative cash flow figure shows the amount of total cash “profit” or “loss” for a project. It helps determine if additional external funding is necessary and when it might be needed. To calculate this, sum all previous months’ net cash flow figures.

Step 10: Calculate Basic Financial Information

As part of every business case there should be some basic financial ratios/calculations. Below are a few of the most useful for management when evaluating a new venture.

Step 10A – Break-Even and Cumulative Break-Even

Two very important calculations are break-even and cumulative break-even. They provide a number, expressed in months or years, for when your Virtual Private Network services are expected to have positive operating profits.

Calculate break-even by determining during what month your Virtual Private Network services first show a profit. This break-even point marks when revenue exceeds costs. This indicates to management how long more money will be spent than earned from providing the service.

An equally important figure is cumulative break-even. The difference between break-even and cumulative break-even is that cumulative break-even shows when the cumulative operating losses are recovered by operating profits. Since this takes into account all losses for previous months, this figure is always higher than break-even.



Step 10B – Payback

“When will we get back out initial investment?” is often one of the first questions asked by management. The answer is called payback. It occurs when the initial investment has been recovered via operating cash flow. Calculate payback by subtracting operating cash flow from the initial investment figure.

Step 10C – Return on Investment

Most companies use the return on investment (ROI) percentage when evaluating a new project or looking at the performance of an already implemented project. ROI takes into account the time value of money concept, which states that a dollar today is worth more than a dollar tomorrow. To get a valid ROI for you Virtual Private Network services decision you should look at a three-to-five year period. But don't only look at ROI and other financial figures when evaluating Virtual Private Network services. You also need to consider the non-financial benefits such as image, customer retention and future integration with other products. You can only make the best decision by taking into account both the financial and non-financial aspects of introducing a Virtual Private Network service.

Step 11: Think About the Future

Remember that completing this base business case is only the first step in a continuous process. You must update your figures and assumptions as you gather more information and begin to deploy your Virtual Private Network service.

As your network grows, your service can and should evolve from a basic service to include more enhanced features. These enhancements can be added to the original business case or studied separately.

Future enhancements your company may offer include software distribution and consulting services. Keeping these potential future enhancements in mind when you roll out a basic service will make it easier to roll out these services in the future.



	Year One	Year Two	Year Three	Year Four
Existing Customers				
New Customers				
56 Kbps Dedicated				
128 Kbps Dedicated				
256 Kbps Dedicated				
512 Kbps Dedicated				
T-1 Dedicated				
Dial				
ISDN				
xDSL				
Total Customers				
Disconnects				
56 Kbps Dedicated				
128 Kbps Dedicated				
256 Kbps Dedicated				
512 Kbps Dedicated				
T-1 Dedicated				
Dial				
ISDN				
xDSL				
Total Disconnects				
Revenue Estimates				
1. Sales Force Forecast				
2. Market Share Percent				
3. Average Network Size				
Estimated Discount Percent	3.00%			
Less Disconnect Revenue				
Net Revenue #1				
Net Revenue #2				



Net Revenue #3				
Cost of Goods Sold				
Network Facilities				
Backhaul				
Operations Cost				
Depreciation				
Total Cost of Goods Sold				
Gross Profit #1				
Gross Profit #2				
Gross Profit #3				
Operating Expenses				
Sales				
Marketing				
Engineering				
Network Planning				
Field Support/Engineering				
Overhead				
Total Operating Expenses				
Operating Profit #1				
Operating Profit #2				
Operating Profit #3				
Cash Flow #1				
Cash Flow #2				
Cash Flow #3				
Net Cash Flow #1				
Net Cash Flow #2				



Net Cash Flow #3				
Break-Even				
Cumulative Break-Even				
Payback				
Return on Investment				



Virtual Private Networks – Choosing Your Partner

The profitability squeeze is on. The competition is eating at your margins and attacking your customer base. How do you retain and grow your market share, eliminate churn, increase profitability and provide innovative services that your customers want and you can provide? Bay Networks is here to help you - and Virtual Private Network Services are the solution.

Why Virtual Private Networks – *and Bay?*

Bay provides the most comprehensive Virtual Private Network solutions available today. Bay's technology building blocks allow you to offer innovative and highly profitable services that will grow your customer base, eliminate churn, and position you to enter new service markets. Why Bay?

- Generate increased revenues and profitability through new services such as:
 - ✓ Managed services – provide end-to-end Virtual Private Network services to enterprise including managed:
 - Customer premise equipment (Bay hubs, routers and switches are industry leaders in price/performance)
 - Security services
 - Directory integration (only Bay equipment currently integrates support for LDAP) and Domain Name services
 - Software distribution services
 - IP address management (only Bay offers a comprehensive IP address management solution – NetID)
 - Asset management services
 - ✓ Extranet “affinity” programs
 - Sign up a “supply chain” and offer access and managed services as a total package, increasing revenue impact and account stability
 - ✓ Consulting services
 - Security policies and audits
 - Network “health checks”
 - Network design
 - ✓ Wholesale access to junior providers
 - ✓ New customer premise equipment offerings.
- Only provider of key technology “enablers” integrated into an easy to implement and manage system solution



- ✓ Access methods – dial, ISDN, xDSL, cable modems, frame relay dedicated IP
- ✓ Core switching fabric integration in an “open systems” environment
- ✓ Tunneling protocols – PPTP, L2TP, L2F
- ✓ Authentication, security and filtering – Radius, SecurID, AXENT, IPSec, DES encryption, profile screening, FIREWALL-1 partnership
- ✓ Emerging wide area network switching support – Multi Protocol Label Switching (MPLS) in partnership with leading telecom vendor Ericsson
- ✓ Multimedia support across all product families
- ✓ Lightweight Directory Access Protocol integration – TODAY
- ✓ RSVP, IPv6, policy management – TODAY
- ✓ IP Address management for the service provider and the enterprise – NetID
- ✓ Optivity network management systems – leader in SNMP-based network management and Web-based systems – Call Reporter for SLA monitoring.
- Bay Lightning Launch program for service providers
 - ✓ Documentation
 - ✓ Training
 - ✓ Support
 - ✓ “How to” for development of your services quickly and successfully
- Bay partners program
 - ✓ Service description baselines
 - ✓ Sales support
 - ✓ Collateral
 - ✓ Joint marketing campaigns targeted at your customers.

You want to deliver Virtual Private Network services to your customers today. Bay Networks is YOUR Virtual Private Network services partner. Bay Network provides:

- Unmatched price/performance
- Reliability – no software or hardware are released before their time
- Feature rich solution set
- Interoperability with your core network systems and architectures
- Systems management from both your and your customers’ view.

Virtual Private Network solutions from Bay Networks – reality, not rhetoric.

