Simple Network Administration Portal Box

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EXECUTIVE SUMMARY

S4 Consultants Inc. will be introducing "SNAP BOX" -Simple Network Administration Portal Box, in the US Market. This document includes a comprehensive analysis of the entire market, Product, Target Market, Marketing Research, Market Segmentation, Financial planning, Resource Estimates, Project Time Frame. In addition, product requirement specifications and preliminary architecture of this product are also included here.

In summary, S4 should be introducing this product into the US Market. SNAP BOX would be profit inducing product since its an unexplored market. It has only one competitor and we believe the market potential has not been explored fully. We will be introducing our product firstly in US Market and then in the next phase we will be exploring other markets like Europe, India etc depending on the outcome of our experience in US Market.

The Estimated Market size for this product is 1,600,000 (1.6 Million) Units. For SNAP BOX the End User has been classified into Small Offices, Home Offices. It includes the current businesses as well as the Start -Up companies.

Start -Ups companies are classified into Heavy Users and Low Users in terms of IT Usage. Low ITusers wants IT as an enabler, a profitable component for their business.

S4 conducted a Research study for new product introduction. The main objective of the study was to have a brief overview of the SNAP Box Market which included information about main competitors, end users, market size, financial details. In terms of Competitor, Emerge Core Network is the main and only competitor. Based on our Research findings S4 would be introducing SNAP BOX at a very competitive (in terms of Features ,Benefits & Cost) and cost effective prices. In terms of features and benefits, SNAP BOX would be far ahead of its competitor. The Research work included Qualitative as well as Quantitative tools methodology. The cluster unit included ILECs and CLEs, Mid sized vendors, Small Offices and Home Offices.

However in the final analysis the introduction is a profitable proposition for S4 consultants.

-President

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TABLE Of CONTENTS

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(Simple Network Administration Portal Box)

SCOPE OF THE PROJECT:

Most small companies cropping up these days, need IT services, such as ISP subsystem , e-mail management and networking to build their business. To revolutionize IT system operations, help to reduce overall cost of IT, and to take new heights in data serving while addressing the small business needs, we need a extremely user-friendly solution which provides nearly all the IT functions that a small company needs at a very affordable price. SNAP-BOX comes to the rescue.

SNAP-BOX is 'THE' networking solution which allows small businesses to choose the features or IT needs that best fit their particular business needs. This solution provides the scalability, reliability and manageability which translates into improved productivity and work flow.

FEATURES OF THE PRODUCT

The SNAP-BOX is an all-in-one solution, designed specifically for the needs of the small businesses and can be administered with minimal networking knowledge. This is purely designed and engineered for ease of use and completely user interface driven and highly scalable.

Main components of NAP:
Internet Service Provider (ISP) connection subsystem
Mail connection subsystem
Virtual Private Network (VPN) subsystem
Instant Message subsystem
File Sharing subsystem
Routing subsystem
Print Share subsystem

The SNAP-BOX has a rich set of features and can be upgraded as the need arises to expand their business without the need for costly software license upgrades from multiple vendors.

Salient features of the SNAP-BOX:

DHCP Server: This feature allows auto assignment of the IP addresses to hosts and can produce dynamic addresses based on Mac address.

NAT: By this feature we can have a single IP address for a whole network of computers. We can use internal IP addresses and this feature will provide a type of firewall by hiding the internal addresses.

FIREWALL: We can have all pre-configured low, medium and high levels of firewall

VPN Server: This will give 3DES encryption feature. Authentication is provided via shared secret or X.509 certificates. This supports IPSec VPN tunnels. There is no limit on number of client connections. And can communicate with Windows 2000/XP clients using native software on these systems. This will also support both fixed-IP and dynamic clients. This can also act as a VPN client, to connect distant networks, including establishing VPN tunnels between multiple servers.

FTP Server: This feature will allow sharing files to the Internet as well as Intranet with full graphical statistics.

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SNMP: This will manage several NAP-BOXES from a single location. Regular updates on the unit's operational status and notifications if a specific event occurs on the device are received.

PROXY Server: This will monitor the website access. Transparent proxy for seamless web caching. Simple to configure Access Control Lists to ban or allow specific websites.

WEB Server: This will allow Internet access and Intranet to some custom developed websites. This will support full graphical Web stats and have a simple control over individual domains.

DNS Server: This can host mail and web servers for multiple domains and can easily configure all major types of DNS records. There is no limit on number of records of any type per domain.

BACKUP Server: This gives simple and powerful server backup. Full server restore in case of Disaster. Backup can be made to tapes or a remote/network disk.

Network and Systems Monitoring with Alarm notification: This feature allows to monitor any service/server via TCP/UDP port monitoring. And has a special email notification system and can keep adjustable timeout.

NFS/STORAGE Server: This will provide snapshot feature for quick restore and provide enough storage basically in Tera bytes. File/folder are shared with access permission restriction. This can be used for both windows systems and *nix systems.

EMAIL Subsystem: This will give configurable mail box size and has common Internet standards to access email (POP or IMAP). Provides web based email for sending and receiving and scans all e-mail for viruses.

ISP connection Subsystem: The system is administrated through Graphical User Interface (GUI). LINUX operating system can be used and some routing protocols.

FILE SHARING Subsystem: This feature allows to share files among PCs on the network. And will provide a private file storage space and can easily load web pages.

NAP-BOX'S ADVANTAGES:

SNAP-BOX is so simple that a non-technical staff member can configure network services in minutes.
Disaster recovery is achieved in minutes saving downtime and dollars
Heightened security and simplified management
No certification training required
Quick and easy upgrades
The most competitive price in the market.
Works perfectly with standard hardware.

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MARKET RESEARCH AND ANALYSIS

MARKET DEFINITION:

The market for SNAP-BOX is estimated to be $96 million in USA. However, the SNAP-BOX system will be utilizing all open source components to be stored in a single compact box. We estimate the market size for the SNAP-BOX to be 160,000 units per year. At an average retail price of US$600 per unit, this results in a US$96 million USA market.

Source: US Census Bureau

- 8 million small and medium businesses compared to 8500 large companies.
- Of the 7.8 million businesses, there are 4.2 million companies of 1-4 employees.
- There are 1.5 million companies with 5-9 people and another 1.6 million companies comprise groups of 10-49.
- Businesses of 1-15 employees comprise roughly two-thirds of the SMB Market.

General definitions of these market segments will suffice. We know our home office customers tend to be heavy users, wanting high-end systems, people who like computing and computers. The low-end home office people in all probability may not buy SNAP BOX. We also know that our small business customers tend to be much less proficient on computers, much more likely to need and want hand-holding, and much more likely to pay for it.

MARKET SIZE:

At an average price of US$600 per unit we estimate the US market size for the SNAP-BOX to be US$96 million. Concerning our technology adoption rate and market penetration, we feel our product is comparable to the IT-IN-Box, an expensive IT-100 Box, manufactured by the *Emergecore* Networks. We believe that Emergecore's success is in part due to their product positioning. SNAP-BOX is an affordable, easy-to-use peripheral that also provides more than comparable functionality without the need for additional hardware. Accordingly, we anticipate rapid adoption of our technology and fast market penetration.

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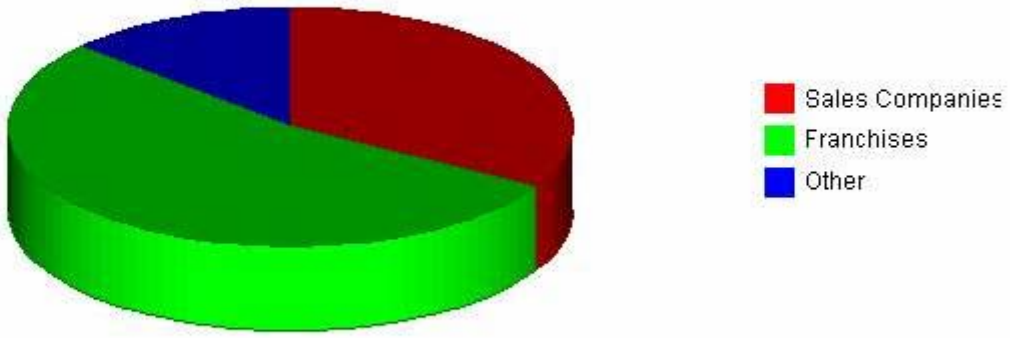
TARGET MARKET



Taking USA as the Geographical Market, our Target Market for SNAP BOX should be

a). Hardware Vendors
b). ISPs
c). Selling directly to the End Users (Through websites, local newspaper, exhibitions, mail order sources etc.)

A). Telecom Vendors- are the vendors which supply Hardware and Hardware related services to ISPs. They can be one of the channels through which we can sell our product to the ISPs.Since Initially it could be difficult for us to market our product to National /Competitive/Incumbent ISPs, so one of the ways to reach ISPs can be through Telecom Vendors.These Telecom Vendors has to be Medium or Small sized since big telecom vendors would have In-house capabilities to accomplish the task.

We can strike an alliance between major telecom vendors and S4 to sell our product to ISPs.

B). Target Market is the "Carrier " Market which includes

1). Internet Service Providers - Numbers 7100 in 2000.

2). Competitive Local Exchange Carriers(CLE)

3). Incumbent Local Exchange Carriers (ILEC)

As the price for Internet Bandwidth decreases, the competition between all the varieties of LEC's ranging from Local DSL and Cable providers to major Telephone Carriers has become increasingly fierce. And major ILECS

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are further complicating the competitive landscape by moving further into the small business and home networking space.

With the market for broadband service continues to grow, every type of carrier, large and small ,is left with two challenges

1).The need to find new additional revenue paths as the price for bandwidth decreases

2).The need to bolster Customer Retention.

So increasingly successful providers are looking to bundle value added service to the network bandwidth they sell.

Due to an increased level of Customer Churn, ISPs are increasingly looking to services such as web mail, content filtering ,anti spam and anti virus software as initial ways to increase revenue and support customer retention.

MAJOR ISP PLAYERS:

AOL+ Compuserve, MSN, Earth Link, United Online, SBC Yahoo, AT&T World Net, ComCast, Verizon & Others

To combat these new challenges, today's Carriers are evolving rapidly to develop new and unique sets of managed services that meet the following criteria:

1). New revenue sources that complement the Internet and bandwidth access.

2). Suites of services and solutions that can be offered at an attractive price point.

3). Ability to manage these services remotely.

4). Compelling managed services for home offices, branch offices or small businesses who can't afford to gain these services thru traditional channels.

5). Flexible systems and services that can scale with the customer's growth. Carriers are looking to make upgrade options attractive and available for customers without the need for an on-site reinstall.

End User

The Target Size of End User should be 10-50 Employees.

Home Office

Home offices include several types. Home offices serve as the only offices of professional firms. These are likely to be professional services such as graphic artists, writers, and consultants, also some accountants and the occasional lawyer, doctor, or dentist. There are also individuals who maintain home offices for part-time use, including "moonlighters" and hobbyists. Our marketing focus consists of professionals and entrepreneurs who maintain a full-time office.

Distribution Channels

Home Office target buyers may not expect to buy with us Directly. Many of them turn immediately to the superstores (office equipment, office supplies, and electronics) and mail order to explore other options.

Small Business

Small business in our market includes virtually any business with a retail, office, professional, or industrial location outside of someone's home, and fewer than 50 employees.

The 50employee cutoff is arbitrary.

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For these consumers and businesses it is difficult/ impossible to manage major capital expenditures for technology goods. *Technology services are important as well given that most small companies cannot afford to acquire Microsoft or Cisco Certification nor can they even consider the budgetary implications of having a dedicated Technical or IT Staff.*

RESEARCH METHODOLOGY:

For our Research Methodology, Target Market is USA. The data sources were primary as well as secondary. The main objective of the Research was to have an comprehensive Market Analysis of the SNAP BOX Market.

The Cluster Units for the Research work mainly consisted of ISPs ,Small and Medium sized Telecom Vendors. The Questionnaire consisted of Qualitative as well as Quantitative probing methods. Sample size was 400 and was divided into ILEC, CEC, Small Offices ,Home Offices and Mid Sized ISPs.

Research Methodology included Online Surveys, Telephonic Interviews, Group Discussions on the fieldwork.

We reviewed several market research data sources and extensive on-line WWW-based searching, to determine the potential markets and sales for the SNAP- BOX. Our responses to market research has been overwhelmingly positive. We believe the value proposition is real, most immediately in the SOHO, IT shops, small and medium businesses and IT professionals.

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COMPETITION

(Only Product currently in the Market)

COMPANY: EmergeCore

Cost: $1,395.00 for basic system w/ 20G-byte hard drive and 802.11b.

Advantages: All-purpose box for basic small and midsize business needs; including e-mail, Web server and file sharing.

Disadvantages: No Wi-Fi Protected Access support for wireless, no support for external USB devices except backup.

It Offers advanced Networking solutions including a "wi-fi" wireless access point, file sharing , a router, a four port switch, a firewall, an FTP Server, multiple domain support, an email server and VPN Services in an easy - to -use plug and play box.

The Core vista web, management interface provides unique flexibility in managing the services modules that comprise the 'IT IN A BOX" solution. Multiple configurable templates can be created and modified to provide a very granular level of administrative control providing management options that are unique to the Emergecore products. Emergecore provides a default set of templates, offering four levels of management control-Master Admin, Local Supervisor, Domain Supervisor and End User.

Emergecore has recently announced a major contract with a National Carrier in Vancouver, Canada. This Carrier is predominant in the SMB and SOHO market for seven of the Western states.

The hardware portion of the IT-100 is a standard set of functions - including four 10/100 Ethernet ports, an 802.11b wireless access point, two USB 2.0 ports for attaching an external hard drive or printer, and 16G-bytes of internal user disk space. The box itself is not much bigger than a DSL modem/router combination box that many service providers are offering to customers.

The IT-100 has the basics covered with e-mail, FTP and Web servers ready to go out-of-the-box. Each component must be individually configured for use through a simple Web-based configuration screen. The system includes a Web site creation tool called Web Builder that can quickly create a basic Web site. It's comparable to similar offerings from ISP vendors such as Verizon for creating a basic home page. Web Builder offers several screens where you choose from a list of site categories or themes, add contact information and choose what type of site navigation will be displayed. Overall the process is straightforward and would work for creating a simple Web site.

Configuring client e-mail programs to use the IT-100 took only a few steps. The EmergeCore Web site offers several how-to stories, including how to configure Outlook to talk to an IT-100 mail server. It didn't offer information for other e-mail clients, although the information provided in the "Outlook How-To" was generic enough that we could configure Mozilla Thunderbird to work with it.

Sharing files on a Windows network worked like a champ. To get up and running, we just needed to enter a workgroup name and NetBIOS hostname. A drawback is the lack of support for anything other than Windows NT domains - meaning we couldn't authenticate to Active Directory or join an Active Directory domain. This would only be a problem if you have a Windows 2003 server on your network acting as a domain controller.

The system's Traveler application is included to help SMBs manage trips. It offers a place to enter an itinerary, airline, hotel and rental car information for later access. While the app is straightforward and might be useful for sharing your itinerary information with others, it wouldn't be practical unless you had constant access to the Internet.

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A customer relationship management (CRM) application is also included to let SMB owners manage customer data. It's not on par with something you'd get from Siebel but it does the basics of tracking names and contact information.

Security

To protect a company's network from outside attack, the IT-100 includes a Linux-based firewall with multiple levels of protection, intrusion detection that reports on the integrity of program files, and configurable alarms. The security features are solid, based on time-tested Linux applications.

Wireless security support includes media access control address filtering (we liked how it was turned on by default), as well as username/password authentication and up to 128-bit Wired Equivalent Privacy encryption. On the downside you won't find any support for Wi-Fi Protected Access. While the box we tested did not support 802.11g, it is available as an option.

Administration

Managing the IT-100 is done through a Web browser, and can be done from anywhere with Internet access. The management console provides all the necessary information in a very readable format with a tree-view of configuration items on the left of the page, and detailed information on the right, similar to a Windows Explorer display. From the top level you see graphical and tabbed views depicting the system's status. Another nice touch is the listing of technical support phone numbers and the system's serial number on the system summary page.

A backup and restore feature lets you back up the IT-100's data locally, to an external USB storage device or over the network to a Windows file share. The automatic scheduled backup comes disabled by default, but can be easily enabled. The 20G-byte hard drive in the unit we tested was too small for more than simple e-mail storage, although you can get a 60G- or 100G-byte version.

CRM upgrade for its "IT in a Box IT-100" network appliance. The upgrade is free for existing owners of the IT 100, while new purchasers of the IT 100 or future IT in a Box models will also get the CRM software gratis.

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MARKETING STRATEGY

Our strategy is to develop leadership in several initial markets and leverage this leadership to the mass market. Our initial target market is small business owner, home office user to choose the features that best fit their particular business needs. Designed specifically for the needs of the small and medium, businesses and scalable to offering a suite of services and management tools.

Most small companies need IT services, but few can afford a full-time IT personnel. The SNAP-BOX provides nearly all the IT functions in a plug-in-play box that a small company needs at a very affordable price.

Our SNAP-BOX products offer advanced network solutions including a wireless access point, file sharing, a router, a firewall, an FTP server, multiple domain support, an e-mail server and VPN services in a small and easy-to-operate plug-and-play box.

With a global total of *150,000* small business owners, the average revenue per business is approximately *US$281,000.00* per year. We intend to sell direct to this market at a price point of *US$1,095.00*, for a market size of *US$160 million*. This compilation includes small and medium business owners, home office user.

We anticipate several benefits to result from achieving a dominant position in this niche market:

1. Securing valuable product references to our early market of business owners who wants to expand their needs;

2. Refining our whole product solution for the mass market.
We anticipate that success in our targeted niche market will lead to greater adoption in the mass market of business people

MARKETING PLAN

Our marketing strategy is to position the SNAP-BOX as an affordable and also portable, scalable and greater ease of use. We intend to offer two SNAP-BOX products, a base model retailing at US$600 and a higher-end model with a full complement of our software modules for US$1,095.The SNAP-BOX system will retail for *US$600.00*, with a retailers' discount of *30%*, or wholesale prices of US*$419.00* for the base model.

We will direct sell to customers the higher end model, which will be bundled with all the network solutions including a wireless access point, file sharing, a router, a firewall, an FTP server, multiple domain support, an e-mail server and VPN services in a small and easy-to-operate plug-and-play box for *US$1,095.00*. In addition, depending on the size of the order, we will provide site licenses for our software and the hardware at negotiated bulk rates to volume purchasers. We will continue to seek out opportunities for customizing the SNAP-BOX to address business problems faced by specific industries and provide productivity enhancement consulting and customized product application

Lastly, we intend to offer promotional packages such as rebates and experiment with software product bundles to introduce new products and extract more consumer surplus.

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Requirement Specifications

Features and Their Specifications:

1.MAIL SERVER:

Definition:

A *mail transfer agent* or *MTA(*also called a mail transport agent, mail server, or a mail exchange server in the context of the Domain Name System) is a computer program or software agent that transfers electronic mail messages from one computer to another.

The delivery of e-mail to a user's mailbox typically takes place via a Mail Delivery Agent (MDA); many MTAs have basic MDA functionality built in, but a dedicated MDA like Proclaim can provide more sophistication.

Open Source Mail Servers

A Courier-MTA (Mail Transfer Agent)

Version : Courier-0.44x
License : GPL

Introduction

Courier is a modular multi-protocol mail server that's designed to strike a balance between reasonable performance, flexibility and features.

Features

It can be configured to function as an intermediate mail relay, or as a mail server that receives mail for multiple domains and makes it accessible to mail clients.
It is a web-based administration & configuration tool.
Courier includes POP3,IMAP & webmail server, therefore local mail boxes can be accessed through POP3,IMAP & HTTP.
Built-in IMAP/POP3 aggregated proxy, so it is possible to distribute all mailboxes between multiple servers.
A separate server(or a pool of servers) accepts connections from IMAP or POP3 clients, then connects to the right server based on the mailbox the connecting client is logging into.
The webmail server includes a personal event calender.
Courier automatically converts 8-bit messages to 7-bit encoding, for relaying mail to external mail gateways.

Requirements for installing Courier

- A C++ Compiler, egcs is recommended.
- GNU make is recommended. Other make's may work but they are not guaranteed.
- Either GDBM or Berkeley DB library should be available. GDBM library is suggested.
- File system must support FIFOs. Courier will not work with AFS.
- Filesystem domain sockets must be available.
- Some optional components have additional dependencies.

B.QMAIL Server

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version : qmail-1.03
License : Especial

Introduction

Qmail is secure, reliable, efficient, simple message transfer agent. It is designed for typical Internet-connected Unix hosts. Qmail is the second most common SMTP server on the Internet, & has the fastest growth of any SMTP server.

Secure: Security is very high in qmail. It is an absolute requirement. Mail delivery is critical for users,so it must be completely secure..
Reliable: Qmail's straight-paper-path philosophy guarantees that a message, once accepted will never be lost. Qmail optionally supports maildir. Maildirs won't be corrupted even if the system crashes during delivery.
Efficient: On a Pentium under BSD/OS, qmail can easily sustain 200000 local messages per day. Qmail overlaps 20 simultaneous deliveries by default.
Simple: Qmail is vastly smaller than any other Internet MTA. qmail has one simple forwarding mechanism that lets users handle their own mailing lists. qmail-send is instantly triggered by new items in the queue, so the qmail system has just one delivery mode: fast+queued. qmail-smtpd can safely run from your system's inetd.

Features

Mailing list management is one of qmail's strengths.

- qmail lets each user handle his own mailing lists.
- qmail makes it really easy to set up mailing list owners.
- qmail supports VERPs
- SPEED---qmail blasts through mailing lists two orders of magnitude faster than sendmail.
- Automatically prevents mailing list loops, even across hosts.
- Inconceivably gigantic mailing lists. No random limits.
- Handles aliasing and forwarding with the same simple mechanism.
- supports the ezmlm mailing list manager, which easily and automatically handles bounces, subscription requests, and archives.

Efficiency

qmail's modular, lightweight design and sensible queue management make it the fastest available message transfer agent.

Setup:

- automatic adaptation to UNIX variant---no porting needed
- AIX, BSD/OS, FreeBSD, HP/UX, Irix, Linux, OSF/1, SunOS, Solaris, and more
- automatic per-host configuration
- quick installation

Security:

- clear separation between addresses, files, and programs
- minimization of setuid code
- minimization of root code
- security in depth
- optional logging of one-way hashes, entire contents

2.WEB SERVER:

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Open sources Web Servers

A. Apache Web Server:

Apache web server is a public-domain free server, developed by a group of 20 programmers. The first version was developed in 1995. It has sophisticated features , excellent performance and low price. It is absolutely free of cost. Anyone can adapt the server for specific needs as the source code is freely available.

Features of Apache 2.0:

There were few core and module enhancements made in Apache 2.0

Core Enhancements:

1. POSIX thread support on Unix systems. This improves Scalability.
2. Build system has been rewritten from scratch to be based on autoconf and libtool.
3. Apache now can support serving multiple protocols.
4. Apache 2.0 is faster and more stable on a non-Unix platform also.
5. On systems where IPv6 is supported by the underlying Apache Portable Runtime(APR) library, Apache
6. gets IPv6 listening sockets by default.
7. Apache modules can now be written as filters which act on the stream of content as it is delivered to or from the server.
8. Error response messages which are sent to the browser are displayed in various languages.
9. The often confusing Port and BindAddress directives are not present here, only the Listen directive is used for IP address binding.
10. All regular expression evaluation now uses the more powerful Perl 5 syntax.

Why move from Apache 1.3 to Apache 2.0:

Apache 1.3 is not particularly scalable on some platforms.
AIX Processes are very heavy-weight.
Apache is renowned for being portable as it works on POSIX platforms.
Porting to additional platforms is becoming difficult on Apache.
Apache will be able to use any specialized API's, to give better performance.

3.FIREWALLS:

Definition: Firewall is "a mechanism used to protect a trusted network from an untrusted network." A firewall is a system, or group of systems, that enforces an access control policy between two networks, and thus should be viewed as an implementation of policy.

Firewall should cover network access, password policy, authentication methods, and how and when encryption of data should be employed. It should also cover physical security aspects.

open source solutions for firewall

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A. IpTables:

Iptables rules filters packets based on protocol, port number, specific network interfaces and IP addresses. It can also filter based on arbitrary combinations of TCP flags, protocol state, packet fragments and more. It's stateful and able to perform packet rate limiting. It can log sufficiently detailed information about packets traversing the firewall, which is useful for intrusion detection. Iptables generally logs more information via syslog to an ASCII file. This format makes logs easy to analyze by automated parsers. Iptables has a built-in NAT implementation, but doesn't provide VPN, routing or failover.

Cons:

- Deploying an iptables firewall may make sense for companies that have competent Linux admins,but it is not for everyone
- iptable's rule language isn't as flexible .
- It has no notion of a network or service "object," which makes for longer rule sets.
- iptables has no built-in encryption support .

B. T.Rex :

T.Rex firewall is a complex application-gateway firewall. T.Rex includes a bunch of application-specific proxy servers for FTP, HTTP, Telnet, RPC/UDP.It also contains secure mail wrappers; Aproxy, a generic proxy for TCP applications. It also features NAT, packet filtering, Web caching, and a dual DNS server .There are also two tools intended for remote administration: ptelnet, a secure Telnet client, and Hoplite, a Java-based GUI administration tool that simplifies administration and is also intended for remote administration. Both tools use triple DES(Data Encryption Standard) encryption and challenge-response strong authentication for external connections.

Cons:

- Proper installation requires a good knowledge of networking in Linux and some experience with firewalls.
- There's no ICSA(Institute of Chartered Secretaries and Administrators) certification.
- This configuration isn't the ideal choice because if T.Rex is your only security outpost and the machine it runs on is broken or compromised, your secured network will be open to hackers.

C. Dante:

Dante is a circuit-level firewall/proxy and is freely available under the BSD license along with source code. Dante tries to be transparent to clients while offering detailed access-control and logging facilities to the server administrator. Dante has experimental (and incomplete) support for Microsoft Proxy, so Linux client applications can use that proxy.

D. SINUS:

The SINUS Firewall is a TCP/IP packet filter for Linux distributed under the GNU GPL license.

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Its greatest advantage is that it is easy to configure and contains a Java-based GUI management interface, called sfControl , for remote configuration and firewall management. SINUS is able to switch configurations on the fly without breaking existing TCP connections.

4. FTP(File Transfer Protocol):

Definition:

The File Transfer Protocol (FTP) is used for copying files between servers over the Internet. Most web based download sites use the built in FTP capabilities of web browsers and therefore most server oriented operating systems usually include an FTP server application as part of the software suite.

Open Sources for FTP

1. Pure-FTPd:

PureFTPd is highly secure and standard FTPServer that runs on multiple platforms. It defines as easy to use, efficient, stable and reliable. Actually can be compiled and run on Linux,OpenBSD,NetBSD,FreeBSD,Solaris,Tru64,Drawin,Irix andHP-UX.Pure-FTPd is production-quality and standard-conformant FTP server.It focuses on efficiency and ease of use. It provides simple answers to common needs, plus unique useful features for personal users as well as hosting providers.

Pure-FTPd can restrict the port range for passive connections, force the announced IP for masquerading gateways, or disable passive connections to deal with broken port forwarders.

5. PROXY SERVER:

Definition: A server that sits between a client application, such as a Web browser, and a real server. It intercepts all requests to the real server to see if it can fulfill the requests itself. If not, it forwards the request to the real server.

Open Sources

A. Squid:

Squid is a highly flexible, widely used Internet proxy caching server for Linux and other Unix platforms. As a proxy server, Squid can distribute an Internet connection to other computers within the network, connected either over an intranet or dial-up, DSL, ISDN, or cable lines.

Other major features of Squid include transparent caching, and the ability to be used as a simultaneous forward and reverse Web proxy. As a reverse Web proxy, Squid acts as a "stand-in" for the content server.

B. OOPS:

Oops is a proxy server; the main aims of its development being stable operation, service speed, main protocols support, modularity, ease at use. The program is written with the help of multithread

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technology. It certainly has both its advantages and disadvantages. The advantages are obvious: more simple program development, absence of the unforeseen blocking, capability to use several processors on multiprocessors machines with appropriate productivity increase. Disadvantages: the platforms having pthread's are just supported; some difficulties with debugging.

6. BACKUP SERVER:

To avoid loosing data that is valuable to us, we should at least backup the most important data on a different drive, and even different media (or both).

Open Source Solutions

A. BackupPC:

Introduction:

BackupPC is a high-performance, enterprise-grade system for backing up Linux and WinXX PCs and laptops to a server's disk. BackupPC is highly configurable and easy to install and maintain. Features include clever pooling of identical files, no client-side software, and a powerful Apache/CGI user interface.

BackupPC Details:

BackupPC is written in perl and extracts backup data via SMB using Samba, tar over ssh/rsh/nfs, or rsync. It is robust, reliable, well documented and freely available as Open Source on SourceForge.net.
Stable Version : BackupPC 2.1.2

Operating System : All BSD and POSIX ,linux , Solaris and Oracle platforms.

Programming Language : PERL

Intended Audience : End users/desktop,System Administrators

Topic : Backup , File systems ,Systems Administration

User Interface: Non-interactive , Web-based

Open Source Code: Available at SourceForge.net

Online Documentation is available.

B. Rsync with ssh:

Introduction:

Rsync is an open source utility that provides fast incremental file transfer. Rsync is rather versatile as a backup/mirroring tool, offering many features above and beyond the above. I personally use it to synchronize

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Website trees from staging to production servers and to backup key areas of the filesystems both automatically through cron and by a CGI script.
Here are some other key features of rsync:

1. Support for copying links, devices, owners, groups and permissions
2. Exclude and exclude-from options similar to GNU tar
3. A CVS exclude mode for ignoring the same files that CVS would ignore
4. Does not require root privileges
5. Pipelining of file transfers to minimize latency costs
6. Support for anonymous or authenticated rsync servers (ideal for mirroring)

General:

Rsync copies files either to or from a remote host, or locally on the current host (it does not support copying files between two remote hosts).

There are two different ways for rsync to contact a remote system: using a remote-shell program as the transport (such as ssh or rsh) or contacting an rsync daemon directly via TCP. The remote-shell transport is used whenever the source or destination path contains a single colon (:) separator after a host specification. Contacting an rsync daemon directly happens when the source or destination path contains a double colon (::) separator after a host specification, OR when an rsync:// URL is specified (see also the "USING RSYNC-DAEMON FEATURES VIA A REMOTE-SHELL CONNECTION" section for an exception to this latter rule).

As a special case, if a remote source is specified without a destination, the remote files are listed in an output format similar to "ls -l".

As expected, if neither the source or destination path specify a remote host, the copy occurs locally (see also the --list-only option).

Rsync Details:

rsync - faster, flexible replacement for rcp

rsync is freely available under the GNU General Public License Version 2

currently being maintained by Wayne Davison.

stable version : version 2.6.6.

7.DNS(Domain Name System):

Definition: Domain Name System (or Service or Server), an internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, therefore, a DNS service

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must translate the name into the corresponding IP address. For example, the domain name www.example.com might translate to 198.105.232.4.

Open Sources for DNS

A. BIND (Berkeley Internet Name Domain):

BIND (Berkeley Internet Name Domain) is an implementation of the Domain Name System (DNS) protocols and provides an openly redistributable reference implementation of the major components of the Domain Name System, including:

1. a Domain Name System server (named)
2. a Domain Name System resolver library
3. tools for verifying the proper operation of the DNS server

Features:

1.The BIND DNS Server is used on the vast majority of name serving machines on the Internet, providing a robust and stable architecture on top of which an organization's naming architecture can be built.

2.The resolver library included in the BIND distribution provides the standard API's for translation between domain names and Internet addresses and is intended to be linked with applications requiring name service.

3.BIND is the reference implementation of a DNS server and usually serves as the base for experimentation with DNS protocol extensions.

4.BIND is free and has been ported to many operating systems

5.BIND is the proverbial kitchen sink of DNS. This has led to familiar problems associated with legacy software: a large code base, increasing feature bloat, and severe security problems.

6. It contains features like Authoritative, recursive,slave mode, DNSSEC,IPv6, TSIG

Details:

Maintainer of BIND is : ISC(Internet Systems Consortium)

Latest Released Version of BIND is Maintenance version : 9.3.2

Operating System : Unix like

Genre : DNS Server

License : BSD License.

This is an open Source and Available for free.

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B.Djbdns:

Features:

- Authoritative
- Recursive
- Caching
- partially work for save mode.

Details :

This is also an Open Source and freely Available.

License : This is a License free software.

Creator : Daniel J. Bernstein

Operating System : Linux, Solaris

C.Posadis:

Features:

- Authoritative
- Recursive
- Caching
- Slave mode
- IPv6

Details:

This is also an Open Source and freely available.

License : GPL

Operating System : both linux and Windows

D.PowerDNS:

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Features:

- Authoritative
- Slave mode
- Caching
- recursive(via pdns_recursor)
- Partially support Ipv6

Details:

This is also freely Available Open Source.

License : GPL

Operating System : both linux and windows

8.FILE SHARING:

Open Sources Solutions

A.Easy File Sharing Software:

Introduction:

Easy File Sharing Web Server is a file sharing software that allows visitors to upload/download files easily through a Web Browser (IE, Mozilla, Netscape etc.). It can help you share files with your users, customers and partners. They can search for and download files from your computer or upload files from theirs. The files on your PC can be accessible from anywhere without special software. Easy File Sharing Web Server also provides a Bulletin Board System (Forum). It makes it easy for remote users to post messages and files to the forum. The Secure Edition adds support for SSL encryption that helps protect businesses against site spoofing and data corruption.

Key Features :

- Easy to use, Simple installation that will have you up and running in minutes.
- 128 Bit SSL (Security Socket Layer)support. Server level certificate creation.
- Instantly runs a complete web site on your PCs - does not need to install any HTTP Server such as IIS or Apache.
- Have built-in Database system, BBS system and integrated HTML/Script pages- does not need to know any HTML, ASP, PHP, CGI, ISAPI and other web technologies.

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- Designed with security as a priority, Supports searching, downloading and uploading (much easier than FTP), securely.
- Complete customisation with templates, multiple styles available for the user to choose from.
- Unlimited forums and posts, unlimited members and unlimited upload file size.
- No spyware, adware or other unwanted extra programs.
- HTTP multi-thread downloading with resuming capability.

Details:

Easy File Sharing Web Server contains several built-in systems including HTTP/HTTPS Web Server, multi-threads database system, Bulletin Board System, Server Script system, Password Protection system. Users just need to install Easy File Sharing Web Server and no other software. All without additional configuration.

We may create a virtual folder from our hard disk visitors may upload/download files to/from it. Easy File Sharing Web Server is much easier to use than a typical FTP server.

Disadvantage:

We can download the software from efssoft.com , but source code is not available for free.

B. Connect using ftp from linux:

Linux desktop users can connect to and access file shares on the snap-box using FTP over the LAN connection.

9. SNMP(Simple Network Management Protocol):

Definition: Protocol that facilitates the exchange of management information between The *Simple Network Management Protocol (SNMP)* is an application layer network devices.It is a part of the TCP/IP suit. SNMP enables network administrator to manage network performance ,find and solve network administration problems and plan for network growth.
Two versions of SNMP exist: SNMP version 1 (SNMPv1) and SNMP version 2 (SNMPv2).

Open sources for SNMP

A.SNMP4J: Open Source SNMP API for Java

Features: SNMPv3 with MD5 and SHA authentication and DES and AES 128, AES 192, and AES 256 privacy.

- Pluggable Message Processing Models with implementations for MPv1, MPv2c, and MPv3
- All PDU types.
- Pluggable transport mappings UDP and TCP are supported out-of-the-box.
- Pluggable timeout model.
- Synchronous and asynchronous requests.
- Command generator as well as command responder support.
- Free open source with the Apache license model

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- Java™ 1.4.1 or later
- Logging based on Log4J
- Row-based efficient asynchronous table retrieval with GETBULK.
- Multi-threading support.
- JUnit tests (will be available soon)

The SNMP4J-Agent pure Java SNMP agent API adds command responder support to the SNMP4J core API and comes with:

- Implementations for SNMP-TARGET-MIB, SNMP-NOTIFICATION-MIB, SNMP-FRAMEWORK-MIB, SNMPv2-MIB, SNMP-COMMUNITY-MIB, SNMP-USER-BASED-SM-MIB, SNMP-VIEW-BASED-ACM-MIB, and SNMP-MPD-MIB.
- SNMPv1,v2c,v3 multi-lingual agent support, including MD5 and SHA authentication as well as DES and AES(128, 196, 256) privacy.
- IPv4/IPv6 UDP and TCP support.
- Code generation from MIB specifications is provided through AgenPro 2 which is a language and API independent template based code generator

B.SNMP++v3.x: C++ based SNMP Software, both agent and management side.

Features:

- SNMP++v3.x is based on SNMP++v2.8 from HP* and extends it by support for SNMPv3 and a couple of bug fixes.
- SNMP++v3.x is a C++ API which supports SNMP v1, v2c, and v3.
- The version 3 support to SNMP++ and AGENT++ is provided by courtesy of Jochen Katz
- SNMP++v3.x extends the original SNMP++v2.8 by the following:
- SNMPv3 including User Security Model (USM) with:
- MD5 and SHA authentication
- DES and IDEA privacy
- Thread-safety
- Bug-fixes
- Additionally, the API had been extended by a new Target subclass named UTarget (USM based Target).
- SNMP++v3.x (and AGENT++v3.5) can be used with at least Linux, FreeBSD, Solaris 2.6 (or higher), HPUX 10/11, Digital Unix 3/4 (True64), Windows NT/2000, and CygWin.

C.NET-SNMP: Suite of SNMP v1, v2c and v3 applications for IPv4 & IPv6

Features:

It is widely used software for network management
Net-SNMP is a suite of applications used to implement SNMP v1,SNMP v2c and SNMPv3 using both IPv4 and IPv6.
Net-SNMP is available for many UNIX and Unix-like operating systems and also for Microsoft Windows.
It work on operating systems like Linux (kernels 2.6 to 1.3)and many more.

10. NAT(Network Address Translation):

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Definition: An Internet Standard that enables a Local Area Network to use one set of IP addresses for Internal traffic and a second set of addresses for external traffic. A NAT box(acts as a buffer between the Global internet and Local Network) located where the LAN meets the Internet makes all necessary IP addresses translation.

Open Sources For NAT

A.Netfilter:

Software inside this framework enables packet filtering, network address [and port] translation (NA[P]T) and other packet mangling. Netfilter is a set of hooks inside the Linux kernel that allows kernel modules to register callback functions with the network stack. A registered callback function is then called back for every packet that traverses the respective hook within the network stack. IPtables is a generic table structure for the definition of rulesets. Each rule within an IP table consists of a number of classifiers (iptables matches) and one connected action (iptables target).Netfilter, ip_tables, connection tracking (ip_conntrack, nf_conntrack) and the NAT subsystem together build the major parts of the framework.

Main Features:

- stateless packet filtering (IPv4 and Ipv6)
- stateful packet filtering (Ipv4)
- All kinds of network address and port translation (NAT/NAPT)
- flexible and extensible infrastructure
- multiple layers of API's for 3rd party extensions
- large number of plugins/modules kept in 'patch-o-matic' repository.
- packet filtering framework inside the Linux 2.4.x and 2.6.x kernel series

B.OpenVPN:

Features:

- OpenVPN is a full-featured SSL VPN solution which can accommodate a wide range of configurations, including remote access, site-to-site VPNs, WiFi security, and enterprise-scale remote access solutions with load balancing, failover, and fine-grained access-controls.
- OpenVPN implements OSI layer 2 or 3 secure network extension using the industry standard SSL/TLS protocol, supports flexible client authentication methods.
- Allows user or group-specific access control policies using firewall rules applied to the VPN virtual interface.
- OpenVPN is an Open Source project and is licensed under the GPL. Commercial licenses are also available for firms who would like to redistribute OpenVPN with their own proprietary applications.
- OpenVPN runs on: Linux, Windows 2000/XP and higher, OpenBSD, FreeBSD, NetBSD, Mac OS X, and Solaris.
- OpenVPN is built for portability. At the time of this writing, OpenVPN runs on Linux, Solaris, OpenBSD, FreeBSD, NetBSD, Mac OS X, and Windows 2000/XP.
- With OpenVPN, you can:

- tunnel any IP subnetwork or virtual ethernet adapter over a single UDP or TCP port.
- configure a scalable, load-balanced VPN server farm using one or more machines which can handle thousands of dynamic connections from incoming VPN clients.
- use all of the encryption, authentication, and certification features of the OpenSSL library to protect your private network traffic as it transits the internet.
- use any cipher, key size, or HMAC digest (for datagram integrity checking) supported by the OpenSSL library.
- tunnel networks whose public endpoints are dynamic such as DHCP or dial-in clients.

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- tunnel networks through connection-oriented stateful firewalls without having to use explicit firewall rules
- tunnel networks over NAT
- create secure ethernet bridges using virtual tap devices, and

11. DHCP(Dynamic Host Configuration Protocol):

Definition: A TCP/IP protocol that dynamically assigns an IP address to a computer. Dynamic Host Configuration Protocol (DHCP) is a communications protocol that lets network administrators manage and automate the assignment of Internet Protocol (IP) addresses in an organization's network. DHCP allows devices to connect to a network and be automatically assigned an IP address.

Open Source for DHCP

A. OpenVPN: same as above

12. PRINT SHARE:

The act of making print on one computer and is accessible to others on the network. Is a subsystem to use in offices and organizations.

Open Sources for print share sub system

A.Samba:

- With Samba services running on a Linux or Unix server, Windows users may take advantage of the same facilities to access those files or printers.
- Samba uses Universal Naming Convention (UNC) paths to refer to network hosts. Because Unix command shells normally interpret backslash characters in a special way, remember to type duplicate backslashes as shown above when working with Samba.
- Samba supports user-level security. Version 1.9.18 onwards it is added an encryption feature for user passwords that can be turned on or off. Some older Linux distributions, such as Red Hat 5.2, shipped Samba configurations having the feature available but turned off by default.

B.CUPS(Common UNIX Printing System):

- CUPS provides a portable printing layer for UNIX-based operating systems.
- It is developed and maintained by Easy Software Products to promote a standard printing solution and is the standard printing system.
- Once CUPS has been selected as the default printing system, you can then use lpadmin to make the necessary change.
- CUPS uses the Internet Printing Protocol ("IPP") as the basis for managing print jobs and queues and adds network printer browsing and PostScript Printer Description ("PPD") based printing options to support real-world printing.
- If you're running Linux machines on a Windows network, you may want to use a shared Windows printer as your output device. To do this, though, you will have to work in both operating systems to make sure all is set up properly for the printing to happen.
- License from BSD.

13.ROUTING:

Definition:- The process of moving a data packet from its local network to a remote network based on the

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address of the remote network. The packet may need to traverse many network nodes and links to reach its destination network. Routing is a complex process of determining which links and nodes will move the packet to its eventual destination

Open sources for routing

A. IPtables:

- Checks for firewall and automatically creates firewall.
- The most obvious use for a firewall is to block unwanted traffic from entering or leaving a network.
- Firewalls can also make specific connections from outside hosts to internal systems, such as a mail or Web server.

B. Freesco:

- an open source network router with static routing.
- Alternative to routing products offered by Cisco, 3-Com, Accend, Nortel etc.
- It is open source (non-proprietary), easy to use and best of all, free.
- Freesco is based on the Linux operating system and incorporates many of the features of a full operating system into software that fits on a single 1.44 meg floppy diskette.
- Freesco also incorporates firewalling and NAT which are resident within the Linux kernel to help protect you and your network.
- FREESCO runs in as little as 8 Mb RAM.
- Unique Web Control Panel.
- With Freesco, we can make:
- a simple bridge with up to 10 Ethernet segments
- a router with up to 10 Ethernet segments
- a dialup line router
- a leased line router
- an Ethernet router
- a dial-in server with up to 10 modems (with multi-port modems).
- a time server
- a dhcp server
- a http server
- a ftp server
- a dns server
- a ssh server
- a print server (requires TCP/IP printing client software)

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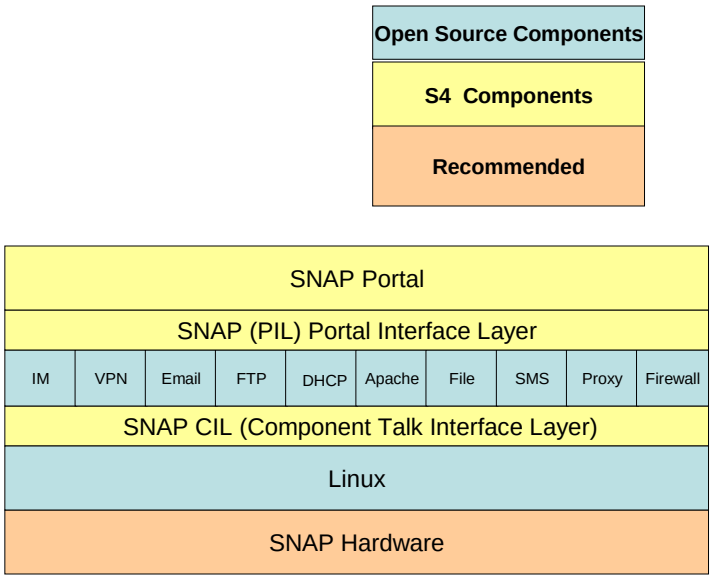
SNAP-Box Architectural Specifications

SNAP Box Architecture



Open Source Components:

1. Firewalls:Firewall is "a mechanism used to protect a trusted network from an untrusted network." A firewall is a system, or group of systems, that enforces an access control policy between two networks, and thus should be viewed as an implementation of policy. Firewall should cover network access, password policy, authentication methods, and how and when encryption of data should be employed. It should also cover physical security aspects .

The open source solutions for firewall are as follows:

a. IpTables: Iptables' rules filters packets based on protocol, port number, specific network interfaces and IP addresses. It can also filter based on arbitrary combinations of TCP flags, protocol state, packet fragments and more. It's stateful and able to perform packet rate limiting. It can log sufficiently detailed information about packets traversing the firewall, which is useful for intrusion detection. Iptables generally logs more information via syslog to an ASCII file. This format makes logs easy to analyze by automated parsers. Iptables has a built-in NAT implementation, but doesn't provide VPN, routing or failover.

b. T.Rex : T.Rex firewall is a complex application-gateway firewall. T.Rex includes a bunch of application-specific proxy servers for FTP, HTTP, Telnet, RPC/UDP. It also contains secure mail wrappers; Aproxy, a generic proxy for TCP applications. It also features NAT, packet filtering, Web caching, and a dual DNS server .There are also two tools intended for remote administration: ptelnet, a secure Telnet client, and Hoplite, a Java-based GUI administration tool that simplifies administration and is also intended for remote administration. Both tools use triple DES(Data Encryption Standard) encryption and challenge-response strong authentication for external connections.

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2. FTP: The File Transfer Protocol (FTP) is used for copying files between servers over the Internet. Most web based download sites use the built in FTP capabilities of web browsers and therefore most server oriented operating systems usually include an FTP server application as part of the software suite.

The open sources for FTP are as follows

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3. Proxy Server:A server that sits between a client application, such as a Web browser, and a real server. It intercepts all requests to the real server to see if it can fulfill the requests itself. If not, it forwards the request to the real server.

The open Sources are as follows

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4. Backup Server: To avoid loosing data that is valuable to us, we should at least backup the most important data on a different drive, and even different media (or both).At first, our backups consisted of archiving stuff on CD once in a while, and regularly backing up the important stuff to our main server.

The Open sources available are

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5. File sharing: In this subsystem users in a network can share files in a shared folder of the user with each other . This can be done in many ways.

The open sources are as follows

a. Through FTP server: It is related to FTP Server.

b. An Easy File Sharing : Easy File Sharing Web Server is a file sharing software that allows visitors to upload/download files easily through a Web Browser (IE, Mozilla, Netscape etc.). The files on our PC can be accessible from anywhere without special software. Easy File Sharing Web Server also provides a Bulletin Board System (Forum). It makes it easy for remote users to post messages and files to the forum. Easy File Sharing Web Server contains several built-in systems including HTTP/HTTPS Web Server, multi-threads database system, Bulletin Board System, Server Script system, Password Protection system.

NOTE: Easy File Sharing Software source code is not available.

6. Domain Name System:This is an Internet service which translates domain names into IP addresses. We have many open source DNS servers available . Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time we use a domain name, therefore, a DNS service must translate the name into the corresponding IP address. The DNS system is, in fact, its own network. If one DNS server doesn't know how to translate a particular domain name, it asks another one, and so on, until the correct IP address is returned.

The Open sources available for DNS are

a. BIND :BIND (Berkeley Internet Name Domain) is an implementation of the Domain Name System protocols and provides an openly redistributable reference implementation of the major components of the Domain Name System, including:

- a Domain Name System server (named)
- a Domain Name System resolver library
- Tools for verifying the proper operation of the DNS server

b. Djbdns: It is Authoritative, Recursive, Caching and partially work for slave mode.

c. Posadis: It is Authoritative, Recursive, Caching ,work for slave mode and partially supports IPV6.

d. PowerDNS:It is Authoritative, Recursive, Caching work for slave mode and partially supports IPV6.

7. Mail Server:A Mail Transfer Agent or MTA(also called as mail transport agent, mail server, mail exchange server in the context of a Domain Name System) is a computer program or a software agent that transfers electronic mail messages from one computer to another.

The open Sources for mail server are

a. Courier-MTA
b. Qmail

8. Web Server:A Web server is a computer running software that stores and delivers Web documents to a Web browser. It must have a Web server software package installed and running at all times to respond to the requests for Web pages made by Web browsers. The Web server accepts requests for documents from other computers,

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and then delivers those documents to clients running a Web browser. The Web browser then formats those documents and displays them to the user.

The open Source solution is

a. Apache web server

9. NAT(Net Work Address Translation):An Internet Standard that enables a Local Area Network to use one set of IP addresses for Internal traffic and a second set of addresses for external traffic. A NAT box(acts as a buffer between the Global Internet and Local Network) located where the LAN meets the Internet makes all necessary IP addresses translations.

The open Sources available are

Open VPN:-It is a full-featured SSL VPN solution which can accommodate a wide range of configurations, including remote access, site-to-site VPNs, WiFi security, and enterprise-scale remote access solutions with load balancing, failover, and fine-grained access-controls.

10. Print Share:The act of making print on one computer and is accessible to others on the network. It is a subsystem to use in offices and organizations.

The open Sources are as follows

a. Common UNIX Printing System (CUPS): CUPS provides a portable printing layer for UNIX-based operating systems. It is developed and maintained by Easy Software Products to promote a standard printing solution and is the standard printing system.

b. SAMBA:With Samba services running on a Linux or Unix server, Windows users may take advantage of the same facilities to access files or printers.

11. Routers:The process of moving a data packet from its local network to a remote network based on the address of the remote network. The packet may need to traverse many network nodes and links to reach its destination network. Routing is a complex process of determining which links and nodes will move the packet to its eventual destination.

The open Sources available are

a. IP Tables:It checks for firewall and automatically creates firewalls. The most obvious use for a firewall is to block unwanted traffic from entering or leaving a network. Firewalls can also make specific connections from outside hosts to internal systems, such as a mail or Web server.

b. OpenQueue: OpenQueue is an open protocol for publish-and-subscribe message queuing. This enables language-independent, loosely-coupled, asynchronous communications between applications running on different machines.

XORP(eXtensible Open Router Platform):Is an open source software router platform that is stable and fully featured enough for production use, and flexible and extensible enough to enable network research.

1. Currently XORP implements routing protocols for IPv4 and IPv6.

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2. XORP is free. It is covered by a BSD-style license and is publicly available for research, development, and use.
3. The code runs on Linux 2.4.x, Linux 2.6.x, FreeBSD, OpenBSD, NetBSD, MacOS X, and Windows Server 2003.

12. DHCP:Dynamic Host Configuration Protocol (DHCP) is a communications protocol that lets network administrators manage and automate the assignment of Internet Protocol (IP) addresses in an organization's network. DHCP allows devices to connect to a network and be automatically assigned an IP address.

The open Source available is

Open VPN

13. SNMP(simple networking protocol): The Simple Network Management Protocol (SNMP) is an application layer protocol that facilitates the exchange of management information between network devices. It is part of the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite. SNMP enables network administrators to manage network performance, find and solve network problems, and plan for network growth.

The open Sources are as follows

a. Net-SNMP: Net-SNMP is a suite of applications used to implement SNMPV1,SNMPV2, and SNMPV3using both IPv4 and IPv6. It works on operating systems like Linux (kernels 2.6 to 1.3)and many more.

b. SNMP4J: It is a free open source state-of-the-art SNMP implementation for J2SE1.4 or later. SNMP4J supports command generation (managers) as well as command responding (agents). Its clean object oriented design is inspired by SNMP++, which is a well-known SNMPv1/v2c/v3 API for C++ .

S4 Components: Need to be designed and implemented

Architectural Recommendation:

Iptables are recommended for firewalls as it has the following features

Iptables Firewall: Iptables' rules can filter packets based on protocol, port number, specific network interfaces and IP addresses. It can also filter based on arbitrary combinations of TCP flags, protocol state, packet fragments and more. It's stateful and able to perform packet rate limiting.

Performance and Scalability: iptables provides packet-filtering capability on top of the Linux stack. With sufficient hardware, iptables will keep up with the volume of packets thrown at it. iptables is strictly a one-to-one architecture, making it less scalable in large, distributed environments.

Routing: iptables use Zebra routing daemon for protocol routing on an iptables gateway. Zebra supports OSPF(Open Shortest Path First) protocol, along with many other protocols, such as BGP(Border Gateway Protocol), IGMP(Internet Group Management Protocol) and RIP(Routing Information Protocol).

Squid is recommended for proxy server as it supports many features like:

- Squid is a highly flexible, widely used Internet proxy caching server for Linux and other Unix

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platforms. As a proxy server, Squid can distribute an Internet connection to other computers within the network, connected either over an intranet or dial-up, DSL, ISDN, or cable lines

- Squid includes transparent caching, and the ability to be used as a simultaneous forward and reverse Web proxy. As a reverse Web proxy, Squid acts as a "stand-in" for the content server. In transparent caching, Web requests are intercepted by the proxy server transparently.

- Squid allows multiple caches to be configured in hierarchical relationships, through the use of ICP (Internet cache protocol). Peer-to-peer caching can come into play either for distributing load, or for sharing proxy hits among multiple service providers.

Pure-FTPd is recommended for FTP as it has many advantages like

Security: The server can run with privilege separation for paranoid security. It can even run 100% non-root, with its built-in chroot() emulation and virtual accounts. Transmission of clear text passwords and commands can be avoided .

Easy to install: We can limit the number of simultaneous users, limit their bandwidth to avoid starving your ADSL(Asymmetric Digital Subscriber Line) or cable-modem link, hide system files (chroot), have upload/download ratios, and moderate new uploads. Custom messages can be displayed at login-time (even changing fortune files) and when an user enters a new directory. Also, to avoid our disks being filled up, we can defined a maximal percentage, and new uploads will be disallowed once this percentage is reached.

Fire walling : Pure-FTPd can restrict the port range for passive connections, force the announced IP for masquerading gateways, or disable passive connections to deal with broken port forwarders.

Rsync is recommended for backup server as it supports the features like

- Support for copying links, devices, owners, groups and permissions
- Exclude and exclude-from options similar to GNU tar
- A CVS exclude mode for ignoring the same files that CVS would ignore
- Does not require root privileges
- Pipelining of file transfers to minimize latency costs
- Support for anonymous or authenticated rsync servers (ideal for mirroring)

File sharing is dependent on FTP Server

BIND is recommended for DNS as it has following features

1.The BIND DNS Server is used on the vast majority of name serving machines on the Internet, providing a robust and stable architecture on top of which an organization's naming architecture can be built.

2.The resolver library included in the BIND distribution provides the standard API for translation between domain names and Internet addresses and is intended to be linked with applications requiring name service.

3.BIND is the reference implementation of a DNS server and usually serves as the base for experimentation with DNS protocol extensions.

4.BIND is free and has been ported to many operating systems.

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5. It contains features like Authoritative, recursive,slave mode, DNSSEC,IPv6, TSIG.

Qmail(Version 1.03) is recommended as Mail Server as it has following features

Security is very high in Qmail server.
Very efficient.
It allows each user to handle their own mailing lists.
Its queue management system makes it the fastest available Message transfer agent.
Its overall performance is very high.
It is simple & smaller than any other MTA.

ApacheWebServer(Version 2.0) is recommended for web server as it supports features like

1. POSIX thread support on Unix systems. This improves Scalability.
2. Build system has been rewritten from scratch to be based on autoconf and libtool.
3. Apache now can support serving multiple protocols.
4. On systems where IPv6 is supported by the underlying Apache Portable Runtime(APR) library, Apache gets IPv6 listening sockets by default.
5. Apache modules can now be written as filters which act on the stream of content as it is delivered to or from the server.
6. Error response messages which are sent to the browser are displayed in various languages.
7. The often confusing Port and bind address directives are not present here, only the Listen directive is used for IP address binding.
8. All regular expression evaluation now uses the more powerful Perl 5 syntax.

Open VPN is recommended for NAT as it supports features like

1. Allows user or group-specific access control policies using firewall rules applied to the VPN virtual interface.
2. Open VPN is easy to use. In general, a tunnel can be created and configured with a single command and without any required configuration files.
3. Open VPN offers a management interface which can be used to remotely control or centrally manage an Open VPN daemon. The management interface can also be used to develop a GUI or web-based front-end application for Open VPN.
4. Open VPN use all of the encryption, authentication, and certification features of the Open SSL(Social Security layer) library to protect our private network traffic as it transits the Internet.
5. It can be used to choose between static-key based conventional encryption or certificate-based public key encryption.
6. Used to create secure Ethernet bridges using virtual tap devices, and

CUPS(Common UNIX Printing System) is recommended for Print Share and features are

CUPS provides a portable printing layer for UNIX-based operating systems.

It is developed and maintained by Easy Software Products to promote a standard printing solution and is the standard printing system.

1. Once CUPS has been selected as the default printing system, you can then use lpadmin to make the necessary change.
2. CUPS uses the Internet Printing Protocol ("IPP") as the basis for managing print jobs and queues and adds network printer browsing and Post Script Printer Description ("PPD") based printing options to support real-world printing.

If we are running Linux machines on a Windows network, we may want to use a shared Windows printer as our output device. To do this, though, we will have to work in both operating systems to make sure all is set up

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properly for the printing to happen.
It is licensed from BSD.

Routing is related with Firewalls .

Open VPN is recommended for DHCP.

SNMP4J is recommended for SNMP as it supports features like

1. Its clean object oriented design. It is free to get the best support and feedback from the Internet community. In addition it is a small compensation for the help we got from other open source projects.
2. SNMP4J is designed for multi-threaded environments provides high security to data.
3. Pluggable transport mappings. UDP and TCP are supported out-of-the-box.
4. Synchronous and asynchronous requests. Command generator as well as command responder support.

SNAP Portal: Need to be designed and implemented

SNAP PIL: Need to be designed and implemented

SNAP CIL: Need to be designed and implemented

SNAP Hardware:

- NVU for designing the interfaces and i-tunes
- MINI-ITX motherboard
- 40 GB hardware
- Linux as operating System
- 256MB RAM

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RESOURCE ESTIMATES AND SKILL SETS

1). Engineering Manager/Project Manager: One manager is required (This position is filled with internal Resource). The person should be B.Tech /M.Tech with 7+ yrs of experience. Should possess leadership qualities, good commercial sense, interpersonal and technical skills, should be responsible for execution of projects and must have the ability to lead the team.

The Resource estimation of this person is about *18 man* months.

2). Hiring Manager(Consulting): One manager is required (Filled with internal Resource). He/She should have minimum of 5yrs of hands in experience in consulting. Should acquire a MBA with specialization in HR or related areas of specialization from a reputed institute.

The resource estimation for this position is about 2 man months.

3). Product Architect: One architect is required (Filled with internal Resource). The person should have worked as designer developer for 5+yrs or as a senior developer or architect for 3/4 yrs.

The resource estimation of this person is 4 man months.

4). Programmer\Analyst: *8* positions are vacant for this profile. *This is an immediate need*. Resource(s) should have 3-5 yrs relevant software experience with degree in Computer Science\Engineering related. Responsibilities include but not limited to develop software programs, Fit-Gap analysis, Preparing Technical Specifications and focusing on technical issues. Experience in any of the following is required: Java /Linux, Oracle Database/Sql, HTML, Python/Zope.

The resource estimation for this position is for 6 months, 40 man months.

5. QA Engineers\Testers: We are looking for software engineers to work with the testing team and the development team. *Three* positions are vacant and the required skills for this profile is working knowledge of Unix/Linux. Good knowledge of PERL or other scripting language. Knowledge of C/C++, Java or Python a plus. At least 3 years of testing experience with BE/B. Tech (Computer Science\Engineering Related).

One engineer needed for 6 months so resource estimation of this is *6 man* months and remaining *2 engineers* are needed after the initial developments (after 6 month) for 3 man months.

The resource estimation for this position is 3 engineers required for 8 months so 12 man months.

6). User Interface Designer: One position is vacant. The person should be proficient in web designing/developing and should have experience in any of the following: ASP/HTML/JAVA/.net, VB.NET, ASP.NET, HTML, JDBC, DHTML, Java Script, Servlets, JSP, Python/Zope.

One engineer for 6 months, resource estimation will be 6 man months.

To integrate the whole system and then for testing 2 engineers are required for 3 months. So the resource estimation for this is 6 man months.

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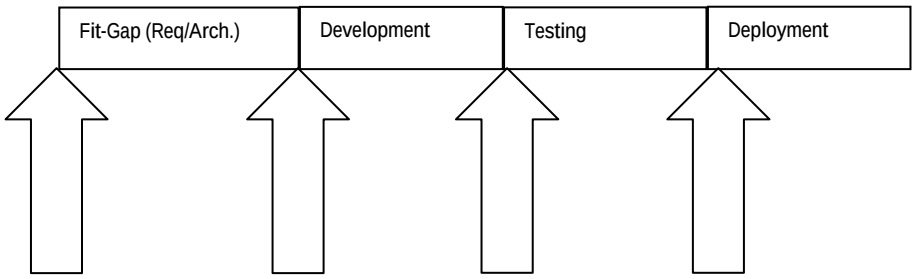
SNAP PROJECT TIME LINE

- There are basically 20 features and development time for each feature is about 3-4 months.
- The immediate need is eight Programmer\Analysts and QA Engineer\Tester.
- The total Resource Estimation for manpower is calculated to be 80 man months (approximately).
- The product will be ready, to be shipped in second quarter of 2007.

Estimated Time with one to two months bias due to Resource Constraints for the completion:

Fit-Gap Analysis:	Completed
Estimated Development Begin Date:	In Progress, Began in June , 2006
Estimated Development End Date:	April 30, 2007
Estimated Product Testing Begin Date:	June 08, 2007
Estimated Product Testing End Date:	July 31 , 2007
Estimated Date of Deployment in Market:	October 26, 2007



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BUDGET ANALYSIS

1). Engineer\Project Manager, Mr. Anant Kharche (Internal Resource).

2). Hiring Manager(Consulting): Christain Juan, came on board on Jan 1st, 2006.

3). Product Architect: Nadeem Farooq. (Internal Resource)

4). Business Process Analyst

Resource 1: Vacant ---- immediate need
Resource 2: Vacant ---- immediate need

5). Programmer\Analysts: Immediate need

Resource 1: Vacant
Resource 2: Vacant
Resource 3: Vacant
Resource 4: Vacant
Resource 5: Vacant
Resource 6: Vacant
Resource 7: Vacant
Resource 8: Vacant

6). QA Engineers\Testers:

Resource 1: Vacant---- _immediate need
Resource 2: Vacant ---- After initial development
Resource 3: Vacant ---- After initial development

7). User Interface Designer:

Resource 1: Vacant---- immediate need

Funds Utilized as of 9/01/2006 for initial phase, fit-gap and partial development: $150,000.00

Additional Funds: $ 63,662.00 (Profit & Loss statement enclosed for the year of 2004).
And $150,000.00 (Copy of 2005 Tax Returns Enclosed)

Funds Available as of September 1, 2006: $213,662.00 +
Additional Funds will be added as needed basis.

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