

# INTERNET SERVICE PROVIDER FOR LIBRARY MANAGEMENT

by

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## ABSTRACT

*The infrastructure for Internet Service for effective library management has been analyzed in this paper. The servers form a critical part of infrastructure for all library users. The Internet Service Providers (ISP) all over the world use different types of servers. In this paper an attempt has been made to see how to set up an ISP under different classes with indication of cost for such infrastructure.*

**Keywords: Internet Service Providers (ISP), Library Management - ISP**

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## **0 Introduction**

In the current age of information explosion, Libraries form the most vital forum for education. This is more so in the field of Technical Institutions, given the pace of development taking place all round the globe in the field of technical education in general, libraries in particular.

The research and developments in the Science and Technical area have evolved into multi disciplinary domain, creating huge demand on library services. The conventional libraries are ill equipped to meet this user demand and are often plagued by the inadvertent delay in the supply, and chain of information.

The developments in the area of multi-media, computer net-working, huge storage devices, high speed internet connectivity, Information highway, electronic sky writing etc. enable a user to have instant and economic accessibility to information of his/her choice.

It is an imperative for every organization particularly libraries of technical education to remain up-to-date with the latest advances in technology. Information Technology has become a principal driving force for long term economic growth. By the advances in Information Technology, say hardware, software, Tele-communications, networking, scanning technology, multi-media, the whole world has shrunk into a "Global Village".

By electronic proximity to various storehouses around the world, these libraries create

virtual worlds of information to the needy user. The multi-media storage concept adopted in these libraries increases their utility and it is now imperative for every library of Technical Institution to get baptized into the Digital age.

The challenges in the creation of such libraries are innumerable.

World Wide Web made the Internet usage more popular among the users. Internet has made it possible for us to reach any people or access any information on the Cyber Space.

The online service for library users need a powerful server either through Internet or Intranet. There are several Internet Service Providers (ISP) in the commercial arena. With a slight modification we can configure management through Internet Service Provider.

The year 1999 will go down in the history of Indian IT as the year of the private Internet Service Provider. In the early 1999, there were as many as 300 aspirants to offer various Internet-related services across the country. Although this number has dwindled down to less than 100 today, the ISP market promises much.

The government has classified potential ISP providers into three categories.

?? A National level ISP who can provide services across the country is a class 'A' ISP.

?? If it limits its activities to a particular region or state then it is a class 'B' ISP.

?? If the ISP focus only on a particular city, town or a part of a city then it qualifies as class 'C' ISP.

It is important to know what it takes to be an ISP in terms of building of the infrastructure. There are number of vendors offering various solutions for prospective ISPs in the country. It is even more interesting to know how much it costs to be an ISP.

In the market there are a number of solutions that varies in terms of cost and configuration. However, there are few parameters that an ISP has to consider while planning infrastructure.

?? **The Servers:** Servers form a critical part of infrastructure. In fact, ISPs worldwide use different types of servers – from Intel-based ones to large number crunching boxes from IBM or Sun based RISC architecture. The UNIX operating system is very popular among the ISPs because of its stability and security features. However, smaller ISPs usually bet on the cost-effectiveness and simplicity of Microsoft Windows NT. It is very common to have multiple servers or server farms for managing different functions of an ISP.

Some of the ISPs even look at a combination of servers running multiple operating systems. The servers store different software needed to manage the ISP network like billing software, helpdesk etc.

?? **Backbone connectivity:** It is usually a leased line with pipe speeds ranging from 64Kbps to 20 Mbps depending whatever VSNL\BSNL offers to the Vendors.

?? **Backbone router or switch:** Externally circuit aspect of the infrastructure, especially for Class 'A' ISP. Many Indian ISPs prefer to invest in backbone routers because they are simpler to fit into a network design. However, the best solution is a Fast Ethernet or Gigabit Ethernet switch with Layer 3 and Layer 4 capability.

?? **Remote Access Connectivity:** The options are to use an edge router or remote access server (RAS). The costs clearly depend on the number of ports.

?? **Software:** Software ranges from basic operating system to the server software. An ISP also needs software for billing, help desk and managing the network.

?? **DOT line charges:** The leasing costs of telephone lines from the BSNL.

## 1 Class A ISP

The Class A ISP is expected to target at least 20,000 to 40,000 users across the country in the very first year. This is a very stiff target considering the fact that there will be at last 7 to 8 major players in the market as competitions. The investment hence will be huge. As the number of users are expected to escalate over a period of time, scalability is the keyword as far as the solution goes.

?? **The Servers:** Almost all vendors will recommend multiple boxes of RISC\UNIX based servers. Nevertheless, it is a known fact that many ISPs are considering or have invested into Windows NT based PC servers because of their lower costs. In addition, the costs on the server also depend on the storage. Since the ISP is also expected to double up as Web content host, storage is also considered as important.

Many ISP solution providers recommended separate storage centers for security and management of data. RAID (Redundant Array of Inexpensive Disks) boxes, which could be configured to store at least 100 gigabyte of data, are recommended. The cost of the servers will be anything between Rs.25 Lakh and Rs.100 Lakh depending on the solution and data storage capabilities. It is not always necessary to have multiple centers in all cities.

?? **Backbone Connectivity:** The Class A- ISP should have at least two Mbps leased line to start off. Once the number of users goes up, then higher bandwidth is necessary. A two Mbps pipe costs around Rs.34,00,000/-.

?? **Backbone switch or router:** A good backbone router will cost about Rs.4 Lakh. Again, a Layer 4 switch, which costs around Rs.1.25 Lakh, is the best bet. A Layer 4

switch gives the ISP flexibility to even control the data accessed by the user.

?? **Remote Access Connectivity:** For a targeted user community of 20,000 a 1:50 ratio is recommended to start with and a ratio of 1:8 when the critical mark of 20,000 is reached. This implies roughly 2,500 RAS ports. The RAS ports could be as cheap as Rs.7, 000. Apart from these, there is the cost of the modems. This implies roughly an investment of Rs.1.25 Lakh.

?? **Software:** The software needed for the ISP could start as cheap as Rs.2 Lakh. This includes the operating system, the Internet Server software and the software for billing and helpdesk. At the same time, there are a number of freebies on the net, with which a little optimization becomes easy to use. There are also solutions from vendors like IBM and HP where costs are as high as Rs.50 Lakh.

?? **BSNL charges:** The line charges leasing will be as low as Rs.2, 000 per line and could cost as much as Rs.5, 000. As you see, the total cost could be as low as Rs.2.25 crore or as high as Rs.5 crore.

Such a scheme is recommended large libraries like National library.

## 2 Class B ISP

A regional player, the class B ISP has to focus on providing solutions, which have a regional touch. The class B ISP has a target of at least 8,000 users.

?? **The Servers:** The ideal option is low cost NT based servers, though, UNIX solutions are also available. An investment of Rs.15 Lakh on the server will be ideal.

?? **Backbone connectivity:** One Mbps line is good to start with. In smaller towns 64Kbps or 128 Kbps will suffice.

?? **Backbone router:** Here also the investment is not different from those of class A ISP. The costs could be as low as Rs.4 Lakh.

?? **Remote Access Servers:** Around 400 ports mean an investment of at least Rs.20 Lakh.

?? **Software:** The software costs can be as low as Rs.1, 00,000 (One Lakh). In case of class B service provider the solution will cost Rs.1.25 crore to Rs.2 crores.

This is recommended for medium scale libraries like University/IIT/REC etc.

## 3 Class C ISP

Class C ISP is a city or town based player. The target is around 2,000 users.

?? **The servers:** A Pentium II server or low cost HP or Sun server. This cost could be as low as Rs.2, 00,000.

?? **Backbone connectivity:** 64 Kbps lease line is good enough to start off. Another option is going for multiple ISDN (Integrated Services Digital Network) connection as backup in case a line goes down.

?? **Backbone router:** It is better to use a network switch than a backbone router.

?? **Remote Access Connectivity:** At least 150 ports, which cost around fifteen Lakh. Apart from this the cost of the medium has to be considered.

?? **Software:** The entire software cost including the helpdesk, billing and internal support will cost another lakh.

The class C service provider can actually pick up a solution for as low as Rs.25, 00,000 (Twenty-Five lakh). This is good for low volume libraries.

## 4 Conclusion

The KREC Library is not left behind and attempts have been made, time to time to adopt modern technology.

A decade back, this library computerized its in-house activities, catering to the needs of users. By acquiring commercial CD-ROM data bases on COMPENDEX, INSPEC they are made available in the Library. Now, planning to extend Internet service, we can access databases on various topics across the world.

This library is already using ERNET and now entered into MOU with DELNET, wherein nation wide information on Books, periodicals, article database. Inter-Library facilities and other so many advantages can be made available. This library is equipped with direct leased line for 64 Kbps Internet connections.

The 21<sup>st</sup> century is fully geared to takeoff on-line launch pad. The Govt. of India passed cyber laws act in the parliament in the year 2000. There will be a great fillip for the on-line activities in India.

?? The selling and buying of books have already become popular by several websites. One good example is Amazon.com.

?? The library management is bound to revolutionize in this decade.

In this paper, we have presented cost analyses of setting up of Internet Service Provider

in general and Library management in particular.

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