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Cover Story

E-MAIL SERVICES OVER NICNET

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One of the important Networking Services being provided by NIC is its Electronic Mail Service. This Story attempts to throw light on the various aspects of the E-mail services over NICNET.

E-MAIL SERVICES OVER NICNET

Electronic Mail (better known as E-Mail), "the means to exchange messages electronically", is the most commonly used Network Service. NIC provides different kinds of E-mail services to its users, over NICNET, NIC's satellite based communication network. The different types of e-mail services being provided include SMTP, UUCP and X.400. The NICNET e-mail service is distributed over many mail servers located at different NIC centres. These are inter-linked with each other such that mails can be exchanged amongst all types of services.

The E-mail service is also integrated with a X.500 directory which makes it possible to search for and locate e-mail addresses very easily. It is also possible to send fax messages through E-mail since a gateway is provided for conversion of messages for fax recipients.

The Pre-requisites

To be able to send or receive E-mail, a user requires the following :

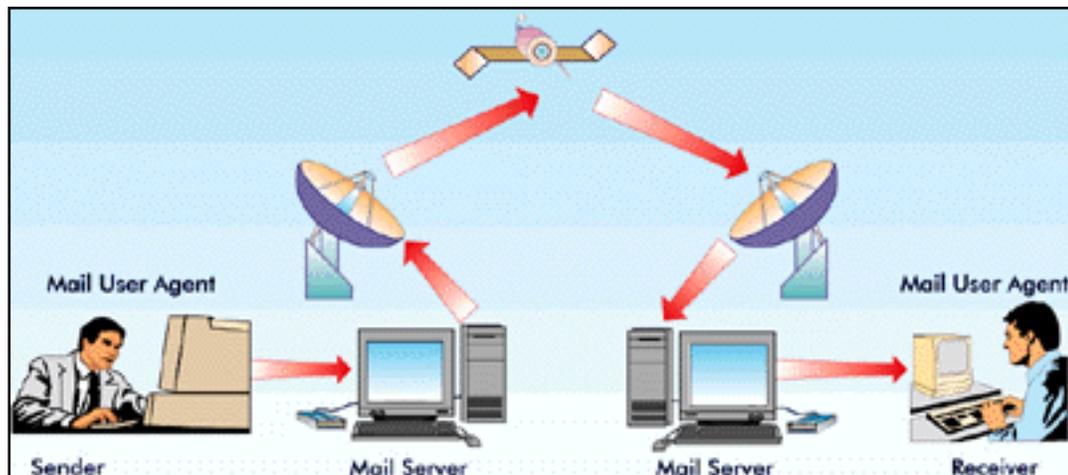
- A Computer : any computer can access the NICNET e-mail service irrespective of its platform.
 - A mail user agent software : either running on the user-end machine or on the mail server.
 - Connectivity to NICNET : either over dial-up or a dedicated link.
 - An e-mail account : on one of the NICNET mail servers.
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Mail User Agents

User Agents are the interface software which help a user in accessing the mail service effectively. These may be :

• **Remote Mail User Agent** : The most common mode of accessing a mail server is using a Windows based client machine through IP based connectivity, over dial-up or dedicated link. These Mail User Agents are an integral part of the Windows software (no additional software is required) although other mail client software may also be used. These are configured to make a connection and valid login to the mail server and automatically send or receive messages. Composition, reading and filing of messages are all taken care of, at the user's end. Thus minimum connect time is used on the mail server.

For Windows95 and above, the POP/IMAP client software is supported in mail user agents such as Microsoft Exchange client, Netscape mail agent, Eudora etc. Similarly, Enterprise mail software etc. use the P7 protocol at the client end. For a DOS-based client machine, the PCBOX User Agent is available to access the mail server.



🌟 **Local Mail User Agent** : Here the client logs onto the mail server and accesses the Local Mail User Agent (e.g. Pine, mailx etc.) running on the mail server. This may be accessed using a terminal emulation software through a dial-up or a dedicated link.

To facilitate the usage, local Mail User Agents such as Pine support Z-modem protocol for file-transfer. At the client end, higher versions of terminal emulation software such as PCPLUS, PROCOMM etc. for DOS, and NIC's Zetlink and Radix for Unix/XENIX support this protocol. This enables the transfer of files onto the server for attaching into a mail to be composed. Pine also provides a search facility, to look for and obtain a particular recipient's e-mail address in the X.500 based NIC directory.

These users occupy valuable disk space at the server since all mails lie on the server and may also be using a long duration of connect time if they compose their mails while being logged onto the server.

The selection of the type of mail user agent for the users depends upon their connectivity to the network and the resources available with them.

Connectivity to NICNET

Users can access the NICNET using the following types of connectivity :

🌟 Dial-up connectivity to the nearest NICNET node. The user accesses the network by connecting to either of the following :

- 🌟 a router or terminal server using SLIP/PPP protocol to avail the IP connectivity. Such users can use of the mail service through remote mail user agents such as the Microsoft Exchange, Eudora .etc.
- 🌟 the NICNET node's X.25 PAD. Such users are usually provided with a mail service through the use of the local mail user agents such as pine, mailx etc.

🌟 A dedicated link to the nearest NICNET node through :

- 🌟 a leased line connection
 - 🌟 a RF-link
 - 🌟 a VSAT connection
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Mail Servers

The NICNET mail servers are systems that run specific software to provide E-Mail service. There are various standards that define how messages are exchanged between two mail servers. Mail servers may have the capability to support one or more of these standards. The different mail servers based on their

standards are :

 **Simple Mail Transfer Protocol (SMTP)** : These servers use the standard TCP/IP protocol. SMTP mail supports the transport of textual as well as MIME-formatted messages. The SMTP mail server generally has a dedicated IP based connection to NICNET.

The System running as a SMTP server is configured on the DOMAIN NAME SERVER (DNS), which may either be the primary DNS or a secondary DNS.

 **UUCP/UUPC mail servers** : These are Unix/DOS machines using the configuration of Unix-to-Unix Copy Protocol(UUCP) on two communicating machines. Users with accounts on one such system access e-mail service through it, which in turn relays all the spooled user mails to the other mail server in the background mode at specified intervals of time.

UUCP is the protocol used in Unix systems and the corresponding protocol for DOS systems is UUPC.

 **X.400 Mail based NICMAIL400 service:** This service is conformant to the X.400 ITU-T recommendations. It provides the facility to handle data, voice, image and fax. A gateway is provided to transport messages between a SMTP/UUCP server and the X.400-based NICMAIL400 server in a seamless manner.

The NICNET mail servers are distributed at the various NITPU and State Centres, besides the Headquarters. This enhances the balance of E-mail load on the network. The User also experiences a good response since the network delay is minimal. These servers are interconnected to be able to exchange mails through very high speed links. The servers are in turn connected to other mail servers to further disseminate the E-mail load and take care of a larger user base. These servers also exchange mails with international servers through high-speed links.

Aides to an Effective E-mail Service

To facilitate the usage of e-mail, certain value-addition has been made to the NICNET e-mail service. Some such features are :

 **Directory Service** : Since the mail service is distributed over many servers and it is not possible to remember so many e-mail addresses, the NICNET directory service is provided on a centralized machine accessible from any node on the network.

This X.500 based directory service provides help in locating any e-mail address. This directory has a search facility to look for addresses based on the search for names or for addresses grouped as per their organizations. The directory is accessible through any commonly used browser such as Netscape, Internet Explorer etc. A mail can be directly sent to the retrieved address after a search has been completed. Mail user agents such as Pine have been customized to provide similar directory access facility. Other mail agents such as Microsoft Exchange Client and Netscape mail client can be configured to retrieve the addresses.

A 'Global Distribution List' facility is also provided. These lists are maintained by the System Administrator at the mail server and used by any User of any mail server to send mails to a common group of recipients.

 **Fax Gateway** : A fax gateway allows an e-mail user to send faxes to recipients with only a fax facility. The fax is sent as a mail message and is received at the destination server, which in turn dials the number of the recipient's fax machine and delivers the fax. Such gateways are available most mail servers located in the Headquarters as well as the NITPU centres.

Relevant Security Issues

The aspect of security assumes prime importance in this age of e-mails. Some relevant security tools are :

 **Authentication using XTACACS** : In addition to authentication of the user at the mail server, authentication is also done while accessing NICNET using XTACACS (eXtended Terminal Access Controller Access System), a protocol supported by most routers. It provides authentication, authorization and logs by creating shell accounts on the network server (where XTACACS is running) for each individual. To provide a better solution, XTACACS has been integrated with a X.500 directory server. To authenticate the user name and password, XTACACS connects to the X.500 server, which contains the list of all the valid users along with their passwords (in encrypted form) and their access permissions.

 **Handling SPAM mails** : SPAM is a term adopted by the Internet community to signify the mindless mass-posting of messages through e-mail, flooding one's mailbox. In addition to being an irritant, the major problem that these mails cause is the theft of resources. This is because an increasing number of spammers relay most or all of their mails through innocent intermediate systems. This fills the intermediate systems and its disks with unwanted SPAM messages resulting in system crashes or any other similar consequence. To take care of this problem special software has been installed in the mail servers on NICNET which detect spam-mails and reject them. An Anti-Spamming site has also been set up to help identify if a server has been targeted by a spammer and safeguard it against such attacks.

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Around the NIC world

- Training for Zila Panchayats
- NIC'S Video Conferencing Facility Utilized
- Information Technology Seminar at Calcutta
- Workshop at Bhopal
- Lecture - cum - Demo on Medlars at Dhanbad
- New Web Sites on NIC's Web Server
- NIC's Services during PM's Visit
- Computer Centre Set up at Patna

Products/Services

- **Software for Finance Department**
 - **Computerized Driving Licenses**
 - **Company Registration Software**
 - **Software for Pay Anomalies Committee**
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Software for Finance Department

The Haryana State Unit of NIC has developed a series of software to undertake the computerization of various services in the State Finance Department. Some of the highlights of the above include the following :

- **Computerization of Annual Budget** : The annual budget of Haryana State has been successfully computerized. Special software have been designed to create the blank BM forms of Non-Plan, Plan and Receipt Budget. The software causes automatic replacement of the budget estimates of the previous year with the budget estimates of the current year. The complete processing of the Non-Plan, Plan and Receipt Budget has also been carried out.
- **Daily Register Monitoring System** : This system has been developed for the Ways & Means Branch of the Department. This menu driven system involves daily entry of information like closing balance, IGA.
- **Loans Information System** : This menu driven system provides loan related details for vehicles (scooter/moped/car). Information of the Loan Applicant such as name, designation, seniority number, date of application , amount sanctioned etc. is entered and reports like earmarking number, discretionary quota cases etc. can be generated.

Daily Treasury Information System : A daily treasury information system has been developed by NIC Haryana whereby the daily net figures of Receipts & Payments are received from the Districts by the State Headquarters at Chandigarh through NICNET for further compilation/generation of reports.

Besides the above, many other computerization activities of the Finance Department such as computerization of the Resource Cell, the Budget Speech, Memorandum Explanatory on Budget, Plan Schemes Memorandum, House Building Advance Seniority List, Finance Commission Report etc. have been carried out by the Haryana State Unit of NIC.

Computerized Driving Licenses

The Pondicherry Unit of NIC has developed a software for the computerization of Driving License and Registration Certificates of vehicles in Pondicherry.

At a specially held function in Pondicherry, the Lt.Governor of Pondicherry Dr.(Smt.) Rajani Rai inaugurated the issue of computerized licenses to the general public.

For the implementation of the software, the Transport Wings of the various Districts of Pondicherry have been connected through NICNET with NIC Pondicherry to get the necessary information related to registered vehicles, licenses etc.



**Hon'ble Lt.Governor of Pondicherry, Smt. Rajani Rai,
inaugurating the issue of computerized driving licenses**

Company Registration Software

The task of managing the shareholding details of the companies in Sikkim has been very important for the Land revenue department. Envisaging this need, NIC Sikkim state unit Land Information Cell has developed a software which fulfills the requirement for better resource management of the company market. The Company Registration Information System (COMRIS) contains information about the company like authorized capital, share price, name and address and it also deals with the share holder's profile with numbers of shares held. Representation of GUI has been incorporated in designing the software with easy to use data entry and other features. It can generate list of companies with basic information like date of registration, authorize capital and the description list of share holder is also generated. In addition to this, profile of the company can be obtained which would give complete information like name of share holder having maximum shares and other details.

Software for Pay Anomalies Committee

NIC Punjab State Unit has developed a software to assist the Pay Anomalies Committee for sorting out the anomalies in Pay scales after the revision of pay scales by the Government of Punjab. The software, being extensively used by the committee has helped in comparing the Pay scales of a particular post in various Departments considering the details like eligible qualification, Feeder post, Promotional Post, Pay scales approved by previous pay commissions. The software has provision for recording expectations of the employees for each post and comments of the departments. Two different posts within the same department can also be compared so as to assist resolving of Intra-departmental anomalies.

Using this software, Government of Punjab has gathered information about sanctioned posts and their pay scales along with related fields for all the departments. This database on Pay scales will be put on State Government Intranet.

The software has been developed in GUI environment. The data entry module is developed using Visual Foxpro (Windows 95/98) as well as foxplus (SCO Unix in multiuser environment). The generalized query has been prepared in visual basic 5.0 with UDB as well as SQL Servers as backend.

Projects

- **Computerization of Statistical Details at UP**
 - **GIS for Karimnagar in Andhra Pradesh**
 - **Marking Info System for Forests**
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Computerization of Statistical Details at UP

The nodal statistical agency in Uttar Pradesh is Economics & Statistics Division (ESD) of State Planning Institute, under the Ministry of Planning. At present there is an office of the Economics & Statistics Officer in every district and a Divisional Deputy Director (Economics & Statistics) office in every division.

Zila Sankhyakiya Patrika (ZSP) is the most important annually published document of Planning Department available at district level which is being regularly published for every district in Uttar Pradesh since 1977. It contains the information at District (Total/Rural/Urban), Community Development Block and Town levels.

There are more than 3500 parameters. Most of the information is for three years i.e. current and previous two years. The major sectors covered are General Information, Area and Population, Agriculture, Animal Husbandry and Fisheries, Co-operation, Industry, General Education and Social Welfare, Health and Family Welfare, Electricity, Transport and Communication, Institutional Finance, Water Supply, Panchayati Raj, etc.

Divisional Sankhyakiya Patrika (DSP) is the consolidation of Zila Sankhyakiya Patrika and is annually published since 1981. The presentation of information is at Division and District levels.

The computerisation of Sankhyakiya Patrika in Uttar Pradesh along with Rajasthan and Andhra Pradesh was taken as a pilot project by NIC in early 1993. A menu driven, user friendly software was developed and tested in few districts. On the basis of feedback software was modified and implemented in all the districts for preparing 1994 Patrika through NIC district centres. This software captures village wise information for the generation of table 64 (having detailed information) of ZSP. Subsequently a revised software with Manual was also released for preparing Zila Sankhyakiya Patrika-1995 as per modified format of ZSP. In most of the districts ZSP,95 has already been published. The work on ZSP,96 and 97 is also in progress in the districts. Software for Divisional Sankhyakiya Patrika has also been developed. For testing this software, Moradabad

Divisional Sankhyakiya Patrika 1992 was prepared. By this software DSP 1994 has already been prepared for all the Divisions.

This system has been adopted by the Planning Department. In future, Time Series Analysis will be possible by these data bases. These data bases are being used by District Administration, Panchayat Raj Institutions and other agencies.

GIS for Karimnagar in Andhra Pradesh

The Remote Sensing and GIS Division of Andhra Pradesh State Unit of NIC has developed a GIS for Karimnagar District under the Rural Road Development Project of Government of Andhra Pradesh on the request of the District Collector.

The GIS related activities for Karimnagar District were taken up broadly under the following three phases:

🌐 Digitization of District Maps and other maps related to Rural Road Development Plan :

About 80 maps were digitised to form the complete GIS data for the district administration comprising of the layers -district boundary, mandal boundaries, village boundaries and road network frames. The Roads Frame set has been designed with road classification and the coding pattern as per the requirement of the World Bank Project. The roads have been divided into National highways, State highways, Major District Roads, Black topped roads, Unmetalled Roads, Metalled Roads and Unformed Roads.

🌐 Loading and integrating digitized data with GIS softwares, GISNIC and SPANS :

The complete GIS data has been loaded into GISNIC and SPANS software and integrated with the attribute data for few study areas like Janmabhoomi, SC Cooperation Beneficiary data, Primary Census Abstract data and Rural Road Development data.

🌐 Updation of Mandal Maps using Remote Sensing Imagery :

This has been done as a pilot study for one mandal. IRS 1C PAN data has been used to update the road network of one of the mandals since the input maps taken for the digitisation do not reflect the latest road structure.

NIC, Andhra Pradesh State Unit has taken up this work on a turnkey basis for Karimnagar district and gave necessary training to the concerned officers in making use of the digitized data under GISNIC environment for the District administration. The Project proved to be cost effective and time efficient, as it was completed in just four weeks and used products of NIC, viz., GISNIC and SPANS software.

Marking Info System for Forests

The NIC Sikkim West District Unit has developed a Marking Information System for the Forest which provides quick information required by the Department of Forests at the transit for keeping track of the resources.

Apart from the Transit details, this software makes it easy to browse all information related to Royalty, Species, Name, Memo Number and other contingencies. Another important aspect of the software is the "History Information", which is vehemently needed by the Forest Transit.

In the Limelight

NIC Rajouri-Facing tough times with courage

- NIC at Rajouri

- Helping the District Administration

Flanked on the North by the Border District Poonch and on the West by the Line of Actual Control, the NIC Centre in Rajouri District of Jammu & Kashmir is relentlessly pursuing its objectives despite the gloomy shadow of militancy in the area.

Rajouri, strategically one of the most important districts of Jammu and Kashmir, is situated at an altitude of 3000 ft - 15600 ft above the sea level. Having a population of over 4.19 lakhs, the district covers a geographical area of 2630 km. A major portion of the district comprises hilly terrain, accessible only during fair weather. The District has a historic significance as it formed a part of the Kingdom of Panchal Naresh, father of Draupdi, the wife of Pandavas in Mahabharata. Also, the District is known for the fact that Mughal Emperor Jehangir died here while returning from Kashmir Valley.

NIC at Rajouri

The NIC Rajouri District Centre became operational in 1989. In order to exploit and explore the vast opportunities offered by Information Technology aimed at improving and accelerating the planning process and implementation of socio-economic programmes, it was necessary to create mass awareness among officials of District administration and other Departments in the District. To achieve the purpose and to do the ground work , a series of training and awareness programmes were conducted. The trend of computer usage in the District showed a tremendous increase and various areas of District Administration were brought under computerization. Now , NIC Rajouri has provided a terminal each to the District Development Commissioner and the Chief Planning Officer for on-line information retrieval and to process confidential documents. Presently, various departments have come forward to draw full benefits from the computer facility, provided in

the various computer cells. The interest level of the Users is so high that shift arrangements had to be made for working even after office hours.

Helping the District Administration

Ever since its inception, the NIC District Centre at Rajouri has carried out various software development and implementation projects for the District Administration. Some of the highlights of such achievements include :

🌸 **Development of a Software for Land Acquisition and compensation to monitor the payments** : Rajouri being a border district, Army occupies vast areas of land belonging to the natives, on a rental compensation basis. Since the rent varies according to the classification of the land, the calculations involved not only take time but the procedure is tedious and accuracy still eludes. The implementation of this software has helped the District Administration a lot as the inherent procedural delays and mistakes in calculations have been done away with

🌸 NIC -Rajouri has developed an MIS on levy for the District Revenue Department. Monthly statements for levy demand, levy collection and levy payments for all agrarian and territorial Tehsils are generated by the software and sent to higher offices of the State.

🌸 The District Centre has also developed a Relief Monitoring System. In this, a database is maintained for relief distribution details covering the relief for flood, natural calamities and the militancy victims. Queries on various fields including cause, nature, type, amount disbursed etc. are available.



Users working on the Terminals in the Terminal Room

🌸 A software has been developed by the NIC -Rajouri centre for the Social Welfare Department to computerize various social assistance schemes like the National Old Age Pension Scheme, Integrated Social Security Scheme etc. The databases used by the software are updated regularly by the NIC Centre.

NIC Rajouri has the honour of becoming the first district in Jammu & Kashmir to have its map computerized, wherein various amenities are marked. This helps the administration in identifying the areas lacking a particular amenity and taking suitable measures.

🌸 NIC Rajouri actively assisted the District Administration in both Parliamentary as well as Assembly Elections. Every election related work was processed using computers right from deployment and issue of orders of election staff from the database to the poll analysis on hourly basis on the polling day.

In the words of Sh.B.A Runyal, KAS, Deputy Commissioner, Rajouri District, J&K,

"I would like to record my appreciation for the excellent and commendable work done by National Informatics Centre, District Unit Rajouri, in promoting Informatics culture in the District..... I extend my whole hearted thanks for the dedication and outstanding performance of the staff "



A view of the Console Room with NIC Staff at Rajouri
