

Informatics

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"Year 200 compliance"- a term which no computer user can afford to ignore today....What exactly is Y2K Problem...and what needs to be done ? Find out in this Lead Story which attempts to present a perspective on the much dreaded "Millenium Bug"

Historically, computer systems have been programmed with a two-digit date field to represent the year. With the arrival of the next millenium, '00' will stand for the Year 2000. The hardware and software in many computers , however, will wrongly interpret it as 1900 in place of 2000 for all calculations, comparison, sorting etc.

As a result, many systems, which compare dates to decide which is earlier, will no longer work. Systems, which calculate length of time also, may not compute accurately. There are other possible effects of the date change in computer software, depending on the assumptions made and programming techniques used by the designer of the software.

This is what is known as the Year 2000 (Y2K) problem or some times called the millennium bug.

Nature of the Problem

🌟 **Immovable Deadline** : The Y2K problem has an immovable deadline. All the corrective steps have to be taken before the deadline i.e. before the start of Year 2000. In some applications, which project into the future, corrective steps may have to be taken even earlier.

🌟 **All Pervasiveness**: As the problem is all pervasive, i.e. it affects the hardware, software, communication sub-systems and all digital systems having firmware or software (Embedded Systems), it is a big management challenge to affect all the changes concurrently.

Legal Implications

The Year 2000 crisis is a foreseeable issue (certain and material) and widely known. Thus, the failure of an organization/ corporation to develop and implement a remedial plan may be a breach of their duty and hence may have serious legal implications.

As Y2K compliance decisions and project planning is the responsibility of the management of an organization, any inaction in this regard makes the management legally responsible.

Vendors, who have supplied non-compliant system especially in recent past, also make themselves legally responsible. The extend of liability is also dependent on the contractual terms and conditions.

Methodology

To tackle the Y2K problem in an organization effectively, a five-phase methodology is followed.

🌟 Inventory

🌟 Impact Analysis & identification of Mission Critical systems

🌟 Rectification

● Testing

● Implementation

The first phase involves, making an inventory of all the hardware, system & application software and embedded systems. The second phase involves Y2K impact analysis and identification of critical systems for priority remediation. Plan made at the end of the second phase forms the basis of monitoring by the management. Rectification is followed by rigorous testing of the entire system before implementation.

Computer Hardware

As the system date & time is taken from the hardware by the operating system for onward transmission to applications development tools and software, the basic hardware (Real Time Clock) and firmware (BIOS) need to support the complete date & time information. RTC stores the date & time except the century part, which is stored in CMOS as 19. In most of the systems, century stored in CMOS does not change to 20 at century roll over time. However, it can be reset to 20 manually by giving a full date on Jan 1' 2000. For critical on-line applications, a Y2K utility can be installed, which can monitor the change over and set the century part in CMOS to 20 automatically. Alternatively, BIOS can be suitably upgraded to support automatic century rollover.

System Software

Operating System : Support for complete date at the operating system level is also very essential. Date & time are involved in many OS commands like Directory listing, Backup etc. Incomplete date may lead to problems in chronological ordering and manipulation of file objects. Testing of OS for Y2K compliance is not easy as many different components of OS deal with date. Just testing the system date is not enough. For compliance status, one has to depend on the information from the vendor. According to the information available on the Internet, almost all the operating systems, except those supplied in late 1998 onwards require Y2K patches or new versions to be installed for Y2K compliance.

System Software Tools like office suite etc need to support complete date formats for proper functioning beyond Year 2000. Impact of Year 2000 on such tools should be known. Information about the compliance of various tools is readily available on the Internet. Patches as well as compliant version of many software tools are also available for upgradation. Tools are available which can scan a workstation, identify all off the self products loaded in the system, and produce a Y2K compliance status report for corrective action.

Applications Software

For an Application software, the following three options are possible

🌺 **Rectify** : The application may have to be made compliant by suitable modifications and testing.

🌺 **Replace** : Redevelopment in a new platform may be a better option. So it provides an opportunity to switch over to new technologies

🌺 **Retire** : The application may be in the process of getting phased out & hence would not require any action.

Data Communication Systems

Network services such as E-mail, Web services, EDI, Electronic Commerce etc. pose a serious Y2K challenge. It requires all the data communication sub-systems LAN, bridges, routers, and Communication protocols to be made compliant for above services to run successfully in Year 2000. As these services involve sub-systems across organizations, any non-compliant link in between would lead to breakdown of services. Tools are available today, which can scan a data network, identify all the devices (hardware, firmware or software), their versions and produce a compliance status report, which can be used for further corrective action.

Embedded Systems

Apart from the computer hardware & software, embedded systems i.e. systems, which have microprocessor chips with associated firmware, pose a bigger challenge for achieving Year 2000 compliance. These microchips have proliferated in very large variety of equipment. According to estimates, more than 25 billion microchips are scattered all over the world in almost all kinds of objects like VCR, elevator, medical equipment, automobiles, traffic lights, Automatic teller machines, airplanes, satellites, telecommunication systems, control systems of power & chemical plants etc. It is estimated that at least a small percentage (5-10%) of such devices will be affected by Year 2000 problem. If suitable corrective steps are not taken, malfunctioning of these devices can have serious impact on the functioning of the organizations as well as the entire society.

It has been realized the world over that fixing embedded systems is a much bigger challenge compared to fixing software and hardware systems. The organization is highly dependent on the vendor for identification of the problem (as one cannot change the date externally for testing) as well as for fixing the problem. Moreover, vendors of some of the control systems acquired a long time ago, may not be in business any more. Vendors themselves are dependent on other vendors for supply of sub-systems. Therefore, the vendor who has supplied the end equipment may not be capable of resolving all the problems. In case the problem cannot be resolved, the sub system may have to be replaced, thus increasing the cost of Y2K remediation substantially.

High Level Y2K Action Force

Recognizing the significance of Year 2000 problem, a High Level Action Force on Managing the Impact of Year 2000 Problem in India has been constituted under the chairmanship of member (Planning Commission). The Terms of Reference of the Action Force are as follows:

- To identify critical sectors in the country which are required to be monitored for handling the Year 2000 Problem in the country.
- To get Sector-specific action plan prepared by the respective organization/ agencies for remedial work related to the Year 2000 Problem.
- Periodically monitor the implementation of the Action Plans
- To make plans for Awareness building among the affected categories of organizations, the Parliament, the Press and the Public.
- To take necessary steps for the establishment of a corpus fund of Rs.700 crores to address the Year 2000 Problem in India.
- To evolve a mechanism for providing financial support, out of the Corpus fund, to various government organizations/ PSUs/ Companies and other affected organizations/ activities in handling the impact of Year 2000 Problem on the computer based activities and services offered by them.
- To keep contingent action plans for various sectors in readiness to meet possible post 1999 outbreak situations.

The Following Utility and service sectors, which are critical from Y2K perspective in India, are listed below.

- Finance - Banking & Insurance
 - Power
 - Petroleum and Natural Gas
 - Telecom
 - Surface Transport
 - Railways
 - Civil Aviation
 - Space Research
 - Atomic Energy
 - Defence
-

International Scenario

World bodies like World Bank etc. have taken initiatives to organize Y2K awareness workshops across the globe and made grants and funds available for Y2K activities.

United Nations General Assembly passed a resolution on Y2K issue and organized a special Workshop of National Y2K coordinators in December'98 to communicate the importance and urgency of the Y2K problem. Experience sharing, International cooperation and Contingency planning to deal with this gigantic man made problem, unparalleled in the history of man kind, have been emphasized.

Strategy for Success

For the organization to succeed in its Y2K compliance, the following elements would play a critical role :

• **Methodology** : The 5-step methodology described in the previous section is very critical to the success of Y2K remediation effort.

• **Y2K Coordinator** : One senior person of the management should be made responsible for the Y2K compliance process in the organization.

• **Effective Monitoring** : As the Y2K deadline cannot be moved, a strict monitoring by the management is very crucial.

🌟 **Technology updates using Internet** : Keeping upto date on the Y2K technology front is very important. And for this, there is no better tool than the Internet Compliance information on hardware, system software, Y2K tools; consultancy, downloadable patches etc. are readily available on the Internet.

🌟 **Vendor Management** : Vendor plays an important role in the Y2K compliance process. Vendor is responsible for proliferating the non-compliant systems in the first place. By his effort, he can resolve the problem once and make it available to so many of his customers. This is especially true for hardware, system software and embedded systems.

🌟 **Experience sharing** : Sharing experience and problems with other organisations in the same sector, can help in expediting the process as well as invoking better vendor cooperation and solution negotiations.

🌟 **Contingency Planning** : An organization faces Y2K risk from possible failure of Y2K compliance systems, non-compliant systems, external interfacing agencies for inputs and national infrastructure like power, telecom etc. A contingency plan needs to be made to address any of the above failures, so that functions critical to the survival of the organization can continue.

🌟 **Y2K Compliance Audit** : It is not enough that systems are reported as compliant. An external audit team should make an independent assessment of Y2K remediation effort. Any shortcoming discovered during the audit should be brought to the notice of the management for corrective action.

National Resource Web Site

A National Y2K resource Web site has been created with URL

www.nic.in/y2kactionforce

It is planned to enrich the above Year 2000 Action Force Web site on a continuous basis so that all relevant aspects of Y2K are covered with highly focussed references which are of direct use to the end users of this information. As searching the Internet directly for the required information is like searching a needle in a haystack, directly relevant information linked on this site will help the organizations spread throughout the country to make a head start.

For further assistance and information, please contact :

**Y2K Action Force Secretariat
National Informatics Centre
A-Block, CGO Complex,
Lodhi Road**

National Seminar on Y2K in Fertilizer Sector

Delhi : A Two day National Seminar on Y2K compliance in the Fertilizer Sector was jointly organised by Department of Fertilizers, NIC and IFFCO in New Delhi on June 24-25,1999. The seminar was inaugurated by Sh.A.V.Gokak, Secretary- Fertilizers and addressed by Dr.N.Seshagiri, Director General, NIC. The seminar had an overwhelming response from representatives of various Fertilizer Companies, embedded system's vendors, NIC, Fertilizer Association of India and other related organizations.



Seminar on Y2K compliance in Fertilizer Sector in progress at New Delhi

During the seminar, various presentations were made on topics such as Y2K overview, Strategy and Compliance of IT systems, Y2K issues and experience in Fertilizer sector, Embedded Systems Supplier's support for Y2K compliance, Y2K Legal issues etc. The presentation on Y2K Legal issues was made from Mumbai through Video Conferencing facility of NIC.. The participants were also made aware of the "**Govt. initiatives of Y2K compliance in the Fertilizer sector**" by the Fertilizer Informatics Division of NIC. The presentations were followed by a high level Panel Discussions on the Y2K strategy for the Fertilizer sector.

Workshops on Y2K Problem

During the course of past few months, various workshops were organised by NIC in different States to

create awareness about the Y2K problem. An account of some of the important workshops is being mentioned below :

Madhya Pradesh

NIC, Madhya Pradesh State Unit, Bhopal conducted a one-day Workshop on "Y2K Problem/Millennium Bug" on 7th May 1999. The main objective of the workshop was to create the desired awareness about the Y2K Problem, including its impact & management. Participants from nearly 16 Government Departments/Organizations, which are known to be actively involved in computerization attended the workshop, which was inaugurated by Sh R.S. Sirohi, Secretary (Planning), M.P. Government .NIC, M.P. State Unit, Bhopal had earlier embarked on an exercise, towards making all the relevant application software Y2K compliant at all the NIC Centres in the State.

Chandigarh

A Workshop on "Managing the impact of Year 2000 problems in UT Chandigarh" was jointly organized by NIC and the UT Administration on June 15, 1999. There were fifty participants from various Departments under Chandigarh Administration. Sh.K.A.P Sinha, Joint Secretary (Finance), Chandigarh Administration addressed the gathering and spoke about the problem and its impact.

Haryana

The Haryana State Electronics Development Corporation and the National Informatics Centre recently organised a seminar on "Y2K - Haryana Government initiative", which was inaugurated by the State Electronics Department Commissioner Sh. Dharam Vir. The event was attended by the heads of departments and representatives of various boards and corporations in Haryana who were asked to prepare an inventory of the hardware and software used in their Departments to ensure Y2K compliance.

Around the NIC world

- [Seminar on Data Warehousing](#)
- [MoU on Agricultural Census Computerization](#)
- [CRISP Workshop](#)
- [Session on E-Commerce at Sikkim](#)
- [NIC's Video Conferencing Facility](#)
- [Courts Computerization Drive in Himachal Pradesh](#)
- [New Web Sites on NIC's Web Server](#)
- [Technology Workshop at Jammu](#)
- [Kargil Update on the NET](#)
- [Exam Results on the NET](#)

Projects

- Bihar Budget on the CD
 - Examination Results on NIC's Web Server
 - Software for 'Community Needs Assessment' in Family Welfare Programme
-

Bihar Budget on the CD

NIC Bihar State Unit successfully completed its mission of releasing the last State Budget of the millennium on a Compact Disk. While the Country is preparing for IT led governance in the times to come, this endeavour of NIC is a stepping stone towards having E-Budget in the next millennium. The highlighting feature of this Budget CD is that it is platform independent, easy to navigate and incorporates a complete analysis of the State Budget. The CD was formally released by the State Finance Minister Sh. Shankar Prasad Tekriwal who applauded NIC's efforts for preparing computerized budget in record time.



Inauguration of Bihar Budget CD

Examination Results on NIC's Web Server

During the past quarter, results of various important examinations such as Tamilnadu SSLC, Rajasthan Board, Maharashtra Board etc. were hosted on NIC's web server. These sites received a large number of hits from students all across the country.

Based on the experience, NIC has formulated a standard pattern for hosting of similar Results in future which is being described here.

Dedicated servers were set up in Delhi and mirror sites established at State Headquarters for ensuring fast access anticipating a high traffic on the Results site. All these servers would be using Internet Information Server (4.0) as their web publishing server and SQL server (7.0) as the Database server. The technology of Active Server Pages was used as the front end to receive the request and post the result back to the User. The data needs to be originally sent in dbase format which was subsequently converted to the SQL server database and distributed among multiple database servers. In order to ensure the effective processing and transmission of simultaneous requests, the COM object would be created and used through Transaction Server to get the connectivity with the SQL server. The multiple servers were configured to work in a round robin manner for distributing the hits.

This approach was highly successful in handling heavy traffic to the Results Web Site, especially during the first few hours. Announcements of Results on the web in future may be done using the same technology. For any further details, mail to :

[mmapd @www.nic.in](mailto:mmapd@www.nic.in)



Tamil Nadu SSLC Results on the Net

Software for 'Community Needs Assessment' in Family Welfare Programme

A reporting system on Family Welfare Programme has been implemented by Ministry of Health and Family Welfare (MoHFW), Government of India with the objective that the reporting system and items to be reported should be as few as possible so as to avoid unnecessary burden of work on the Medical Officers of Health Centres and thereby facilitate regular submission of the required reports.

In this context, a software on Community Needs Assessment Approach (CNAA) has been developed by NIC, Madhya Pradesh State Unit and implemented in all the Districts in the State. The software on CNAA has also been supplied to the MoHFW, Govt of India for wide implementation in all the States of the country. A State directory with the corresponding Districts has been provided to install the software in any State and the corresponding District.

First of all the software needs to be installed for any State and corresponding district. An initial directory of all the Public Health Centres (PHC) and the First Referral Units (FRUs) may be prepared for the first time which can be edited as and when required. The software covers computerisation of Annual Action Plans and Monthly Reports.

Action Plan - Action Plans for PHCs, FRUs, Districts and State are to be prepared only once in a year. After data preparation of Action Plans for all the PHCs and FRUs, aggregated District Action Plan would be automatically prepared which is to be transmitted to State capital as well as MoHFW, GOI. At state level, all the District Action Plans are aggregated to prepare State Action Plan automatically. Facility has also been provided for data preparation of District Action Plan and State Action Plan directly.

Monthly Report - The software has been provided for computerisation of Monthly Reports from PHCs, FRUs and Districts. After data preparation for all the PHCs and FRUs, Monthly Report for district would be automatically prepared for all the items which are common. Data entry for such items of District Monthly Report which vary from the same for Monthly Report from PHCs and FRUs is to be done at district level. Facility has also been provided for data preparation for District Monthly Report directly.

The software is being further augmented which would cover the following:-

- 🌸 District-wise Output Reports giving % achievement against service needs and rank of the District in the state.

- 🌸 Health Bulletin on important parameters.

- 🌸 An Exception Report

NIC Kurnool : On the Path of Success

- NIC on the Scene
 - Important Applications
 - NICNET Services
-

Hyderabad, as capital of Andhra Pradesh, is making news both nationally and globally. But, do you know that it was Kurnool which was the capital of Andhra Pradesh when the State was formed in 1953! Kurnool had this distinction of being the capital of AP from 1st October 1953 to 1st November 1956.

Kurnool district is located in the Rayalaseema area of the State bounded at the north by the Tungabhadra and Krishna river. The District covers an area of 17,658 sq.km. and has a population of around 29,74,000.

NIC on the Scene

NIC Kurnool District Unit started functioning in the year 1988. The initial thrust was to train the district officials in making use of the IT tools. This played an important role in bringing about a sea change in the attitude of administration in making use of IT, with the right kind of support from administrators. An increasing demand from the District Administration for the use of latest IT applications facilitated the deployment of state-of-the-art pentium based workstations with high speed Internet access at the NIC Kurnool District Centre.

Important Applications

NIC Kurnool Unit has been given the privilege and responsibility, on many occasions, to process important,

time critical and confidential data relating to recruitment of Teachers, Health Assistants, Veterinary Assistants and various other category of posts for which the District Collector is responsible for recruitment.

🌸 Kurnool has large number of land acquisition related activities in the district due to Srisaillam, Telugu Ganga and other projects. All Land Acquisition particulars are captured for monitoring by Collector. NIC Kurnool Centre assisted the State Unit in processing over one lakh land acquisition compensation claims relating Srisaillam Reservoir Project which involved disbursement of more than Rs.120 crores.

🌸 Public Grievances Redressal System is in good use in the district. One of the Collectors had termed the system in use at Kurnool as a model one for use in other districts. The district collectorate also makes use of NIC facilities for preparation of all periodical reports for review by the Collector and for payroll processing. The periodical reports assist in grading the performance of various district level officers. Service matters on Revenue officials are maintained in the system for preparing panel list for promotions, etc.



A busy day at NIC Kurnool District Centre

🌸 Another important area where NIC Kurnool has helped the District Administration is implementation of various Monitoring systems such as one for water supply schemes promised by the Chief Minister of the State. Telugu Ganga Project made use of a program developed by NIC Kurnool Centre to assess easily the quantity of earth to be excavated layer wise in the project area.

🌸 Extensive Support has always been given by NIC Kurnool to the District Administration during Elections. The pilot project carried out at Kurnool for Zilla Parishad has resulted in extending this system to all districts of the State as a paid project of NIC. Provident Fund details and JRY details are also being maintained on that system together with retired employees pension details.

🌸 NIC Kurnool District Unit has also assisted in extending GISTNIC and MEDLARS services to large number of users and for disseminating village level data under DISNIC-PLAN programme. The system on Village level Development Indicators is a useful one for district administration in identifying needy villages under various schemes, especially under Remote Area Development Programmes of hilly regions.

🌐 The Unit has also been extending support to the national level projects such as District Court Computerization, District Industries Centre, FCI, Rural PLI for Dept of Posts, Employment Exchange project, Reservoir Water Level Monitoring System and for state level projects such as AP Seeds Certification Agency.

NICNET Services

With the installation of IPA VSAT, the mail transfers have become easier at Kurnool. Unixware system is configured as an smtp mail server with full Internet access facility. The District receives large number of mails from the offices of Commissioners of Land Revenue, Agriculture, Civil Supplies, Social Welfare and Secretariat. Most of the periodicals to be submitted to the Government are computerised and transmitted periodically.

NICNET facilities are also being used by FCI, Central Excise, NSSO, District Court, Industries, Zilla Pasishad, Registration department, Forest department, Health department and others. The post graduate students and doctors of Kurnool Medical College make good use of MEDLARS services through our District Unit.

NIC Kurnool District Unit is doing its best like every other NIC District Unit to promote appropriate use of IT in the District Administration. The District Administration has appreciated these services of NIC on several occasions and honoured the Unit with Merit Certificates.
