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INM Products

Integrated Network Management

Network Wide Backup & Restore Planning Guide

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What's inside...

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Contents

About this document

This document describes the Network Wide Backup & Restore supported by INM. Network Wide Backup & Restore is a software application that allows customer to manage network wide controller backups, which can be used to aid in network restoration after catastrophic hardware failure.

This software application provides the ability to centralize and automate backup of Network Element database and Subnetwork Controller configuration data onto an INM server.

Audience for this document

This planning guide is for the following audience:

- strategic and current planners
- provisioners
- transmission standards engineers
- network administrators

References

This document references the following Nortel Networks technical publications (NTP) and other documentation:

- *INM Planning Guide*, PG OC 98-15
- *INM Installation and Administration User Guide*, 450-3101-201
- *Network Wide Backup & Restore User Guide*, 450-3101-031

Technical support and information

Nortel Networks maintains Integrated Network Management (INM) support centers in North America and the United Kingdom (UK). Based on the location from which your account is managed, refer to one of the following sections.

Customer accounts managed in North America

INM Customer Care provides technical support for INM customer accounts managed in North America. The support provided consists of emergency and regular technical support and an INM Product Services suite of additional support services.

Use one of the following telephone numbers to reach INM Customer Care.

If you are in Canada or the US Call toll free: 1-877-684-6622 (1-877-NTINMCC)
If you are not in Canada or the US Call: 1 (country code) 613-765-7766

Emergency technical support

You can reach emergency technical support personnel outside of the regular technical support hours through an automatic paging system.

Nortel Networks provides emergency technical support for INM customers who have purchased an optional, value-added service package. The service package provides technical support outside of regular hours for critical issues for the period covered by the service package.

> ***Note:*** Access to regular technical support for all issues defined in the service package is also available for the period covered by the service package.

Issues considered critical include:

- issues that are now having an effect on, or have the potential to immediately have an effect on, services carried by the managed nodes
- issues causing the loss of network visibility or loss of fault management functionality to one or more of the managed nodes

Regular technical support

Nortel Networks provides regular technical support for INM customers who have purchased an optional, value-added service package. Call INM Customer Care:

- Monday to Friday
- 08:00 to 20:00 hrs
- eastern standard time (EST) or eastern daylight time (EDT)

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INM Product Services

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The services include:

- extended product warranty support
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- on-site installation
- technical training
- software upgrades
- extended HP warranty
- network planning and integration consultation
- Network Management System Audits and Performance Reports

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Customer accounts managed in the United Kingdom

The Nortel Networks Service Desk provides technical support for INM customer accounts managed in the UK. You can reach the Service Desk from Monday to Friday between 08:30 and 17:00 (UK local time) using the following FAX or telephone numbers:

If you are in the United Kingdom
Freephone: 0800 626 881 Telephone: 0208 361 4693 FAX: 0208 945 3456
If you are not in the United Kingdom
Telephone: +44 208 361 4693 FAX: +44 208 945 3456

EMC conformance

CE

This product/product family complies with the provisions of the Low Voltage Directive 73/23/EEC, and with the essential protection requirements of the EMC Directive 89/336/EEC as amended by 92/31/EEC, when it is properly installed and maintained and when it is used for the purposes for which it is intended.

Network Wide Backup & Restore Description

Network Wide Backup & Restore centralizes controller backup administration and storage by allowing all backup related activities to be managed at the INM platform.

The Network Wide Backup & Restore Release 1.0 features are listed below:

- Administration and Maintenance of all controller backups from 1 common graphical user interface on the INM platform.
- A centralized disk oriented storage solution for maintaining backups that is more reliable than remote tape archives. There is no longer a need to travel to remote controllers to collect backup tape archives.
- Ability to set the bandwidth consumption for the transfer of the remote backup to INM on an individual controller basis (OPCs only).
- Ability to schedule both recurring and one time backups on an individual controller basis.
- Ability to specify the storage disk used on an individual controller basis.
- Ability to maintain a specified number of backups before overwriting older backups (FIFO - First In, First Out)
- Ability to "**lock**" a specified backup. If a controller's configuration is very stable, and a certain backup has been tested, the customer might not want to have that backup overwritten by other scheduled backups. All other backups for that controller would continue to run, but would not overwrite this version. This would still allow for backups of some minor provisioning changes which might occur.
- Ability to support 2 levels of users: NOCADM for making schedule changes and READ ONLY for all others. Each installation of INM Backup & Restore can concurrently support a maximum of 1 NOCADM UI.
- Ability to initiate a restore, which transfers archived files back to the remote controller.
- Ability to support 150 controllers from each INM Backup & Restore installation where a controller can be an OPC, NP, or an EC1 MOA.

- Ability to print summaries of controllers being managed in both a readable, and comma separated value format.

Graphical User Interface (GUI)

The Network Wide Backup & Restore application is launched as a separate process from the GNB's Configuration menu.

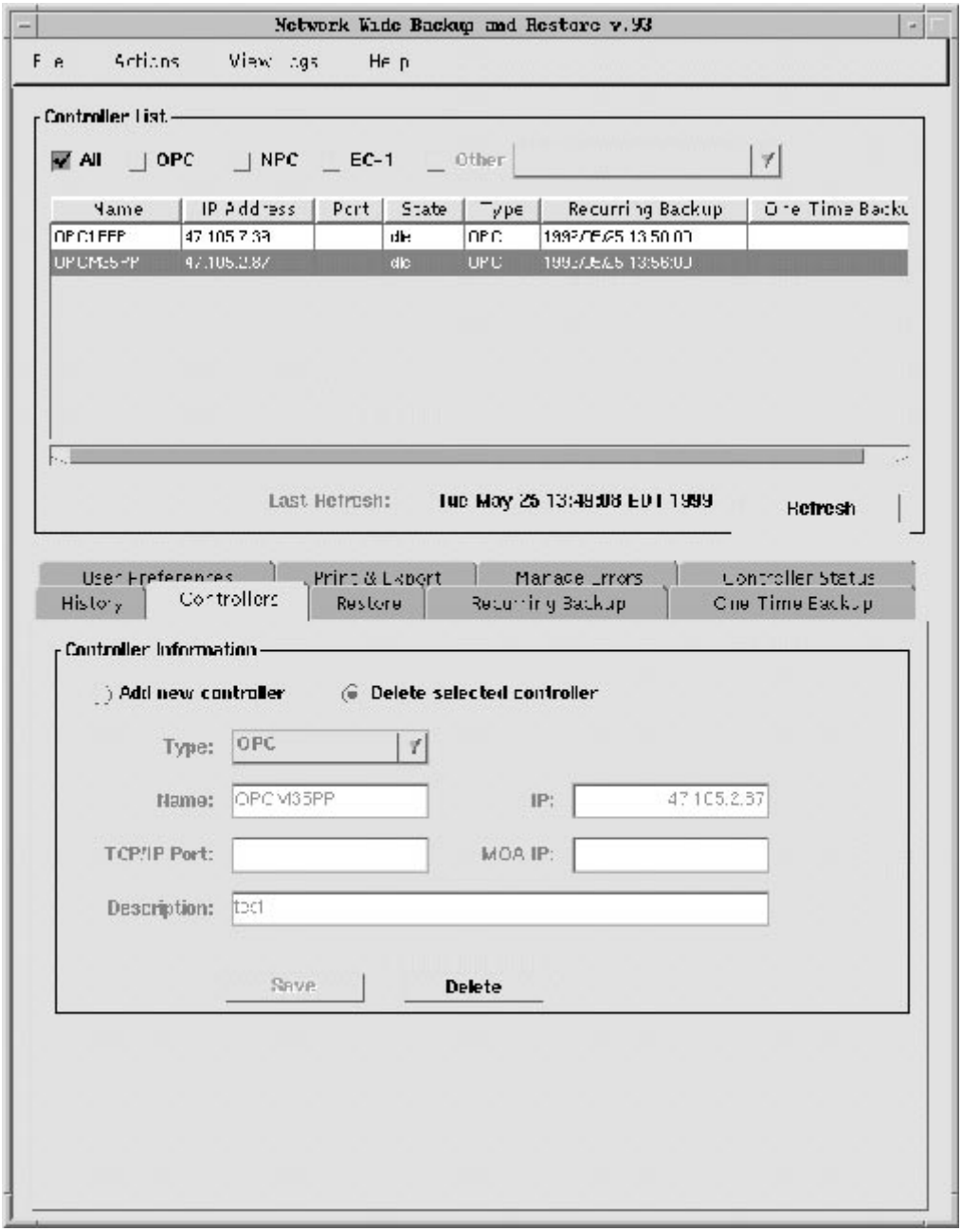
Controller List

This window contains information that the Backup & Restore application possesses about the controllers (refer to Figure 1-1). This controller list is used as the source of information for many of the tabs (History, Controllers, Restore, Recurring Backup, One Time Backup). The information that it contains is listed in Table 1-1.

Table 1-1
Controller information

Column	Description
Name	contains the name of the particular controller
IP Address	contains the IP address of the controller
Port	contains the Port of the controller (if any)
State	contains the state of the controller with respect to Backup & Restore
Ctrl Type	indicates the type of the controller
Recurring Backup	indicates the date and time of the next recurring backup (if any)
One-Time Backup	indicates the date and time of the scheduled one-time backup (if any)

Figure 1-1
Controller List window



Controller List Filtering/Sorting

This feature allows users to customize the controller list according to the options that are chosen.

The list is filtered by selecting the checkboxes that appear at the top of the controller list. The default is “All”, by de-selecting all and selecting the desired controllers, a list of controllers that fall into those contraints will be displayed. For example, if OPC and NPC were selected, then the controller list will display the controllers of type OPC and type NPC, complying to the constraints. It is possible to filter the table a controller type that does not appear as a checkbox, this is done through the “Other” checkbox and the selectable drop down window that appears.

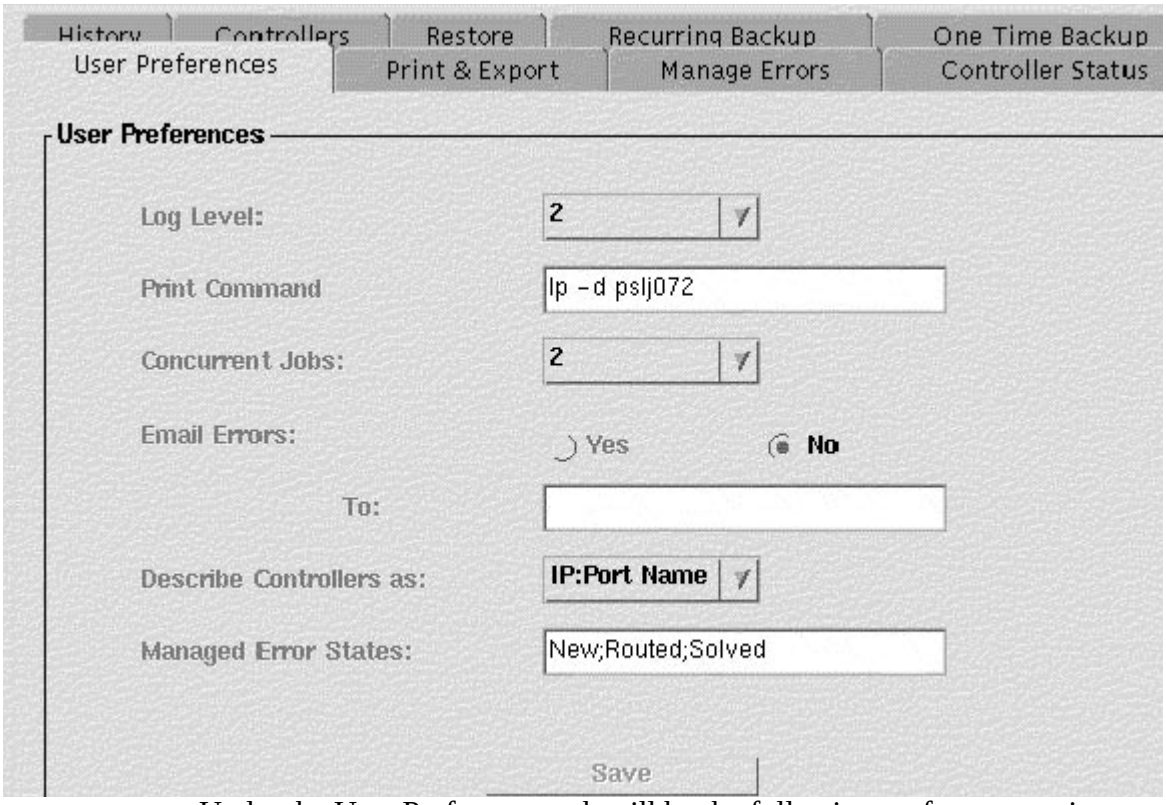
The list is sorted by clicking on the column heading that you wish to be sorted. Sorting can be done in ascending or descending order. To sort in ascending order merely click on the column heading in which you want to use as your key, to sort in descending order click on the heading again. Sorting can be done on any of the 7 columns found in the controller list window in the same fashion.

Refreshing View

The view that is displayed is a static view, correct to the time that is displayed, therefore to obtain a newer instance of the controller list and information you must click on the “Refresh” button. This will import a new instance of the controller list, correct to the date and time displayed on “Last Refresh” line.

User Preferences Tab

Figure 1-2
User Preferences tab



Under the User Preferences tab will be the following preference setting options:

Table 1-2
Preference setting options

Label	Input Widget	values	Default	Description
Log Level:	option menu	1-5	1	Amount of detail to add to the log file.
Print command:	text entry widget	max 80 char	NULL	For the Print & Export tab
Concurrent Jobs:	option menu	1-5	1	Number of concurrent ftp backup sessions possible
Email notification of Errors	radio button YES/NO	YES/NO	NO	Should errors be emailed to addresses below.
Email error messages to:	text entry widget	max 80 char	NULL	Any errors will notify these email addresses (comma separated). (80 characters max)

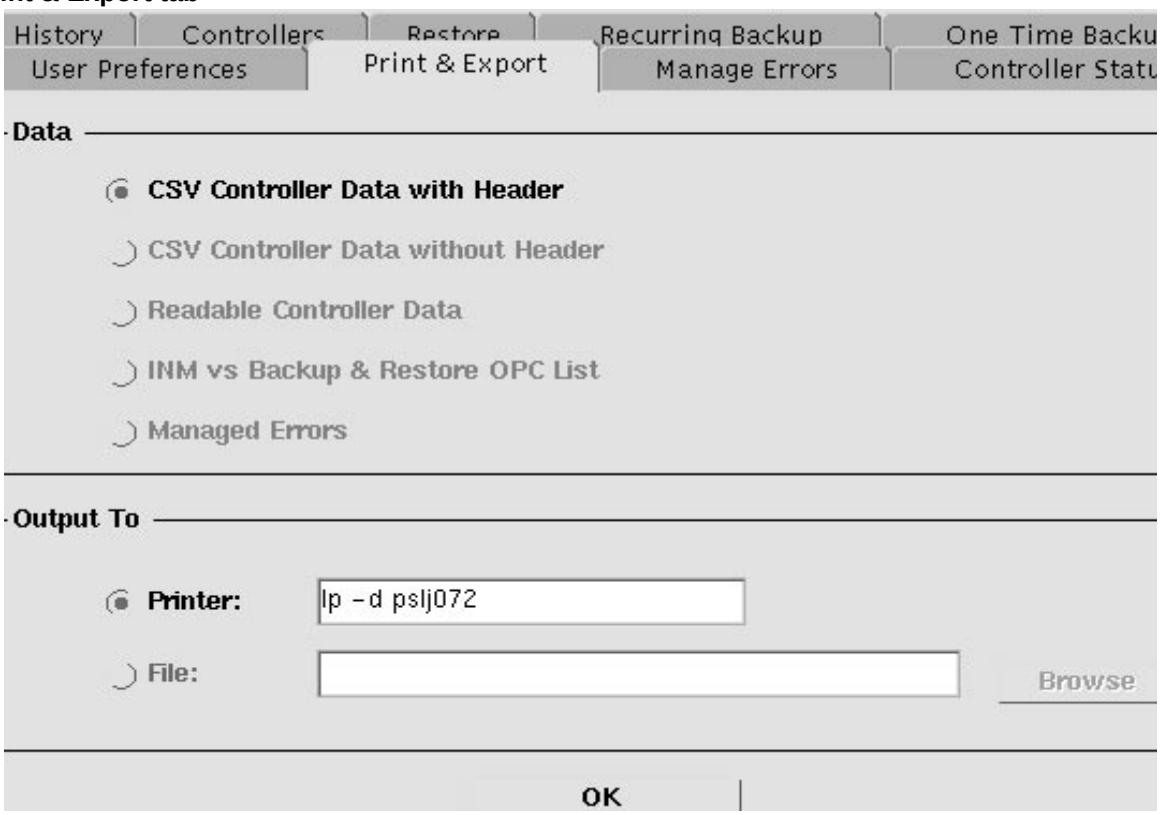
—continued—

Table 1-2 (continued)
Preference setting options

Label	Input Widget	values	Default	Description
Describe Controllers as	option menu	IP:Port, IP:Port Name, Name	IP:Port	How to describe controller in error/log messages.
Managed Error States	text entry widget	max 80 char	new	Describes States errors can be set to in the “Manage Errors” Tab.

Print & Export Tab

Figure 1-3
Print & Export tab



Under the Print & Export Tab should be the following radio button options:

- CSV Controller Data with Header
- CSV Controller Data without Header
- Readable Controller Data
- INM vs. Backup & Restore OPC List
- Managed Errors

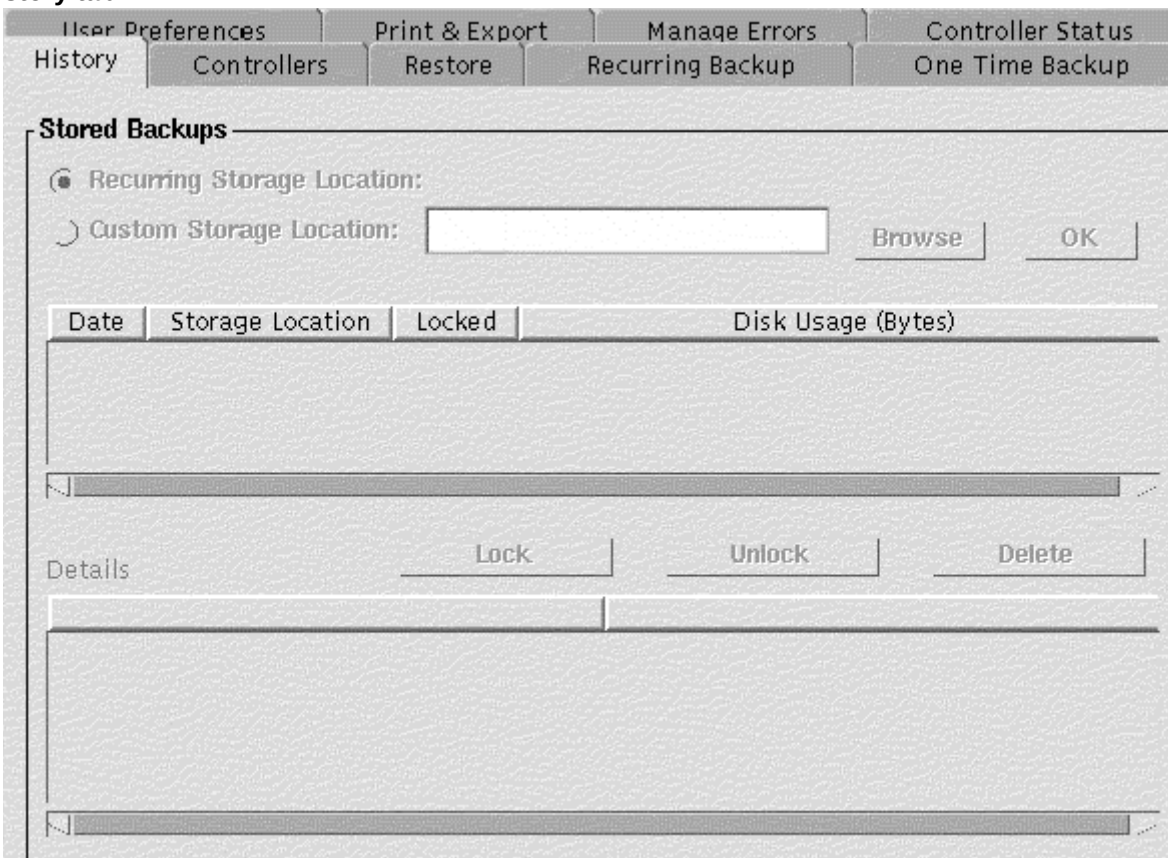
The user would first select from the above radio buttons.

The user next would select between “Printer” and “File” radio buttons (one must always be selected). If selecting “Printer”, the UI first defaults to the print command defined in the Preferences tab, but it can be changed. For “File”, the user must define an export file.

History Tab

The History Tab provides detailed information on the backups stored for a particular controller. It also provides for administration of these backup files. In addition, detailed information about a specific backup, such as the software load and the scheduled backup date, is viewable. This tab contains features in which a backup for a selected controller can be deleted, locked, or unlocked.

Figure 1-4
History tab



Recurring/Custom Storage Location

It is possible to have backups that are located somewhere other than the default location as defined in the “Recurring Backup” tab. To facilitate this possibility, the user of Backup & Restore will be able to specify a different location to look for controller backups. The default of this tab is to view the backups that are

located in the “Storage Location” defined in the “Recurring Backup” tab. To choose a custom storage Location, select the Custom Storage Location radio button and type in the directory where the backups reside. Alternatively, once the Custom Storage Location Radio Button is selected, the Browse button can be used to locate the repository for the backups desired. After the appropriate location is chosen, selecting the “OK” button, the information pertaining to these files will be filled into the tables.

Details Window Description

The Details window contains information for a particular backup. Once a backup is selected, the Details table will indicate any related data that has been sent by the controller at the time the backup was created.

The following data is mandatory and is passed from the controller to the Backup & Restore application:

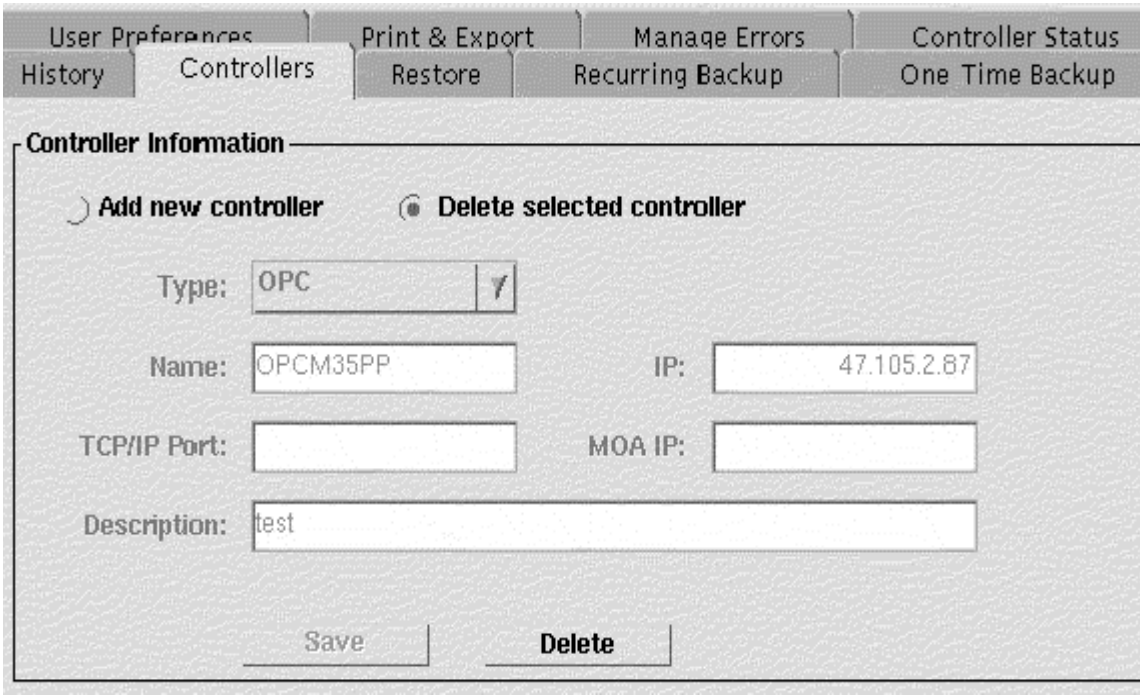
- Controller Type
- Controller Name, IP Address
- Name of Controller Software Load
- Backup Date (from controller)
- Backup Date (timestamp developed by INM)

The controller can also pass other information which will be presented in this window.

Controllers Tab

The Controllers tab enables the addition/deletion of a controller to the tool’s list of managed controllers.

Figure 1-5
Controllers tab



The Controller Tab screen contains crucial information pertaining to the Controller in question, such as the IP, MOA IP, etc. Using this component of the Backup & Restore, the controllers can be added or deleted to and from the controllers list, respectively.

Table 1-3
Controller tab information

Item	Description	Valid Inputs
Controller Type	The controller type field enables the selection of a controller from a list of pre-determined controllers.	The valid inputs for this structure is a selection from the drop down menu.
Name	Name is the unique identifier that will distinctly distinguish each controller from another.	
IP	The address in which the controller is occupying within the network.	A valid IP address for the network in question.
Port	If the selected controller needs a specific port in which it can be reached, then it is entered here.	A valid port that exists on the selected controller.
MOA IP	The IP of the MOA that is managing the connectivity to the network elements.	The IP address of the MOA.

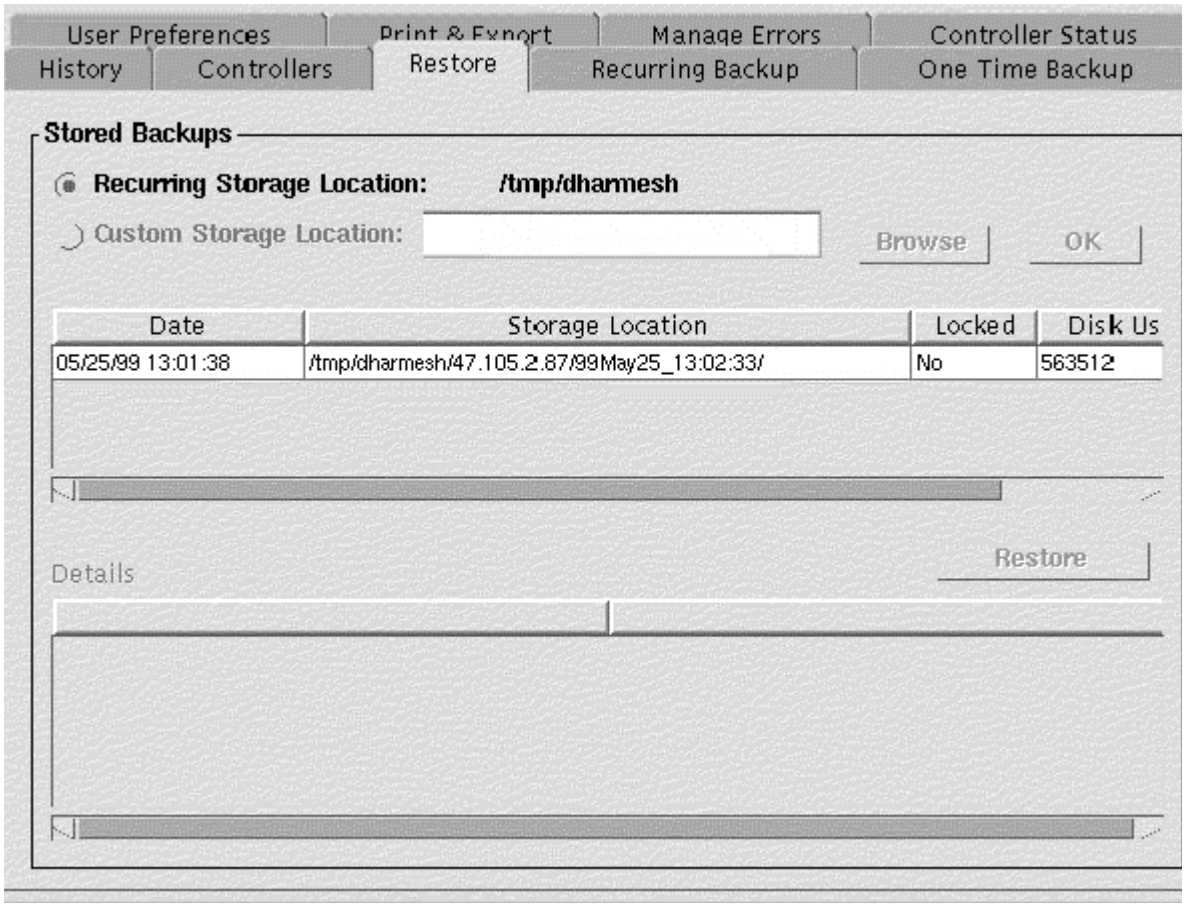
—continued—

Table 1-3 (continued)
Controller tab information

Add new controller	This is selected if a new controller is added to the network. This disables the delete feature of Save & Restore.	N/A
Delete selected controller	By choosing Delete selected controller, the information of the selected controller will then appear in the appropriate boxes.	N/A
Save	Save makes permanent all the changes that have occurred.	N/A
Delete	Delete erases the controller for the controller list	N/A

Restore Tab

Figure 1-6
Restore tab



Restore Action

After selecting a backup to restore in the “Stored Backup Window”, selecting “Restore” will start an ftp download of the file to the controller. After the download is initiated, it can be cancelled at any time using the “Cancel” button located in the Controller Status Tab. The “Cancel Restore” button will only be enabled after a restore has started. It is only possible to restore 1 controller at a time, Once a restore has commenced, the “Restore” button for all controller will be disabled.

Recurring/Custom Storage Location

For description, see section “Recurring/Custom Storage Location” of the History Tab.

Stored Backup Window Description

For description, see section “Stored Backup Window” of the History Tab.

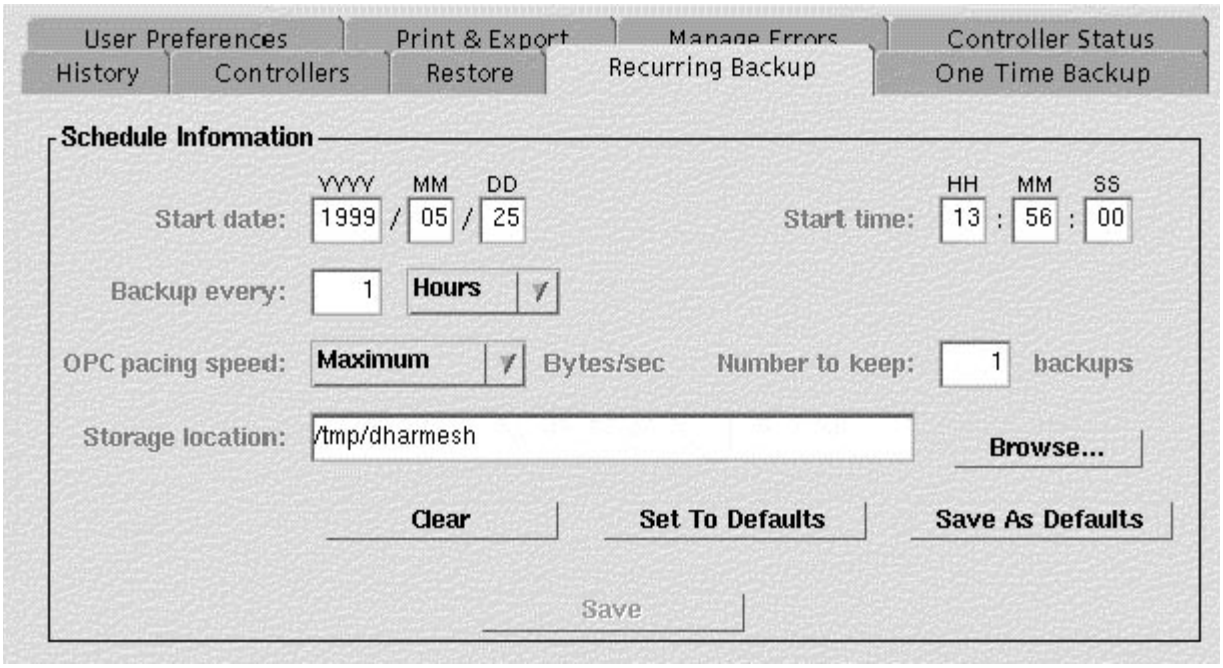
Details Window description

For description, see section “Details Window” of the History Tab.

Recurring Backup Tab

The recurring backup tab contains the information pertaining to the controller's time and storage location of the backups. Using this tab, time and storage location can be entered for Backup & Restore to perform a backup on a recursive basis.

Figure 1-7
Recurring Backup tab



Setting a recurring backup time

To set up a recurring backup time for a particular controller, select the controller and the Recurring Backup tab and by adjusting the controller's recurring attributes. The following table lays out the field type, description, and valid input.

Table 1-4
Setting a recurring backup time information

Field	Description	Valid Input
Start Date		
YYYY	Four digit calendar year.	XXXX where XXXX denotes an integer form of year.
MM	Two digit calendar month.	XX-- where XX denotes an integer between 01 - 12 inclusive.

Table 1-4 (continued)
Setting a recurring backup time information

DD	Two digit calendar day.	XX -- where XX denotes an integer between 01 - 31 inclusive.
Start Time		
HH	Two digit representation of hour on a 24 hour clock.	XX -- where XX denotes an integer between 00-23 inclusive.
MM	Two digit representation of minutes.	XX -- where XX denotes an integer between 00 - 59 inclusive.
SS	Two digit representation of seconds.	XX -- where XX denotes an integer between 00 - 59 inclusive.
Backup Every	Integer accompanied by the portion of date that the integer represents.	Integer; accompanied by Weeks, Days, or Hours from the drop down menu.
OPC pacing speed	Packet size of the backup.	Drop down menu.
Number to Keep	The number of desired backups kept as archived backups.	Integer; falling between 1 - 9.
Storage Location	The exact path to the storage location of the backup.	Path to directory on a UNIX NFS.

Save

Saving the dates, time, storage location, etc. of a recurring backup for a particular controller is done by entering the information into the appropriate form boxes and pressing the "Save" button. If there is a type error, where the information that is entered is not valid, a error dialog will pop up and alert you to such. If all the information is of a logical type, then the UI will perform the addition or modification of the recurring backup for the selected controller.

To delete a recurring backup, clear the fields using the “Clear” button and save the information.

Clear/Set To Defaults/Save As Defaults

These three actions refer to the content that is filled in the Start date, time, pacing speed, and storage location.

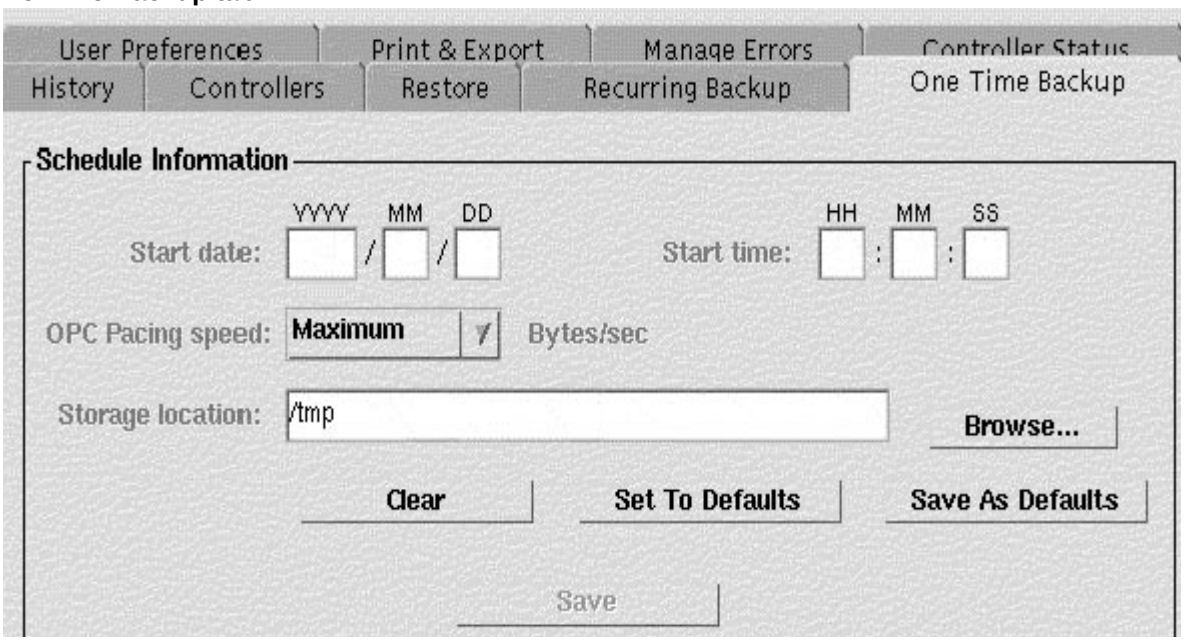
“Clear” clears all the information. It does not delete the information from the scheduler.

“Set To Defaults” action button loads default information stored by the UI into the corresponding textboxes. After the information is loaded from the data store, it is still possible to change/alter the information in the text fields.

"Save as Defaults" action button saves the current information in the data fields as the UI defaults for recurring backups. This is stored, and can be read in by the "Set To Defaults" action button. It is important to realize that this information should be generic enough to span the entire controller list, not just selected controllers.

One Time Backup Tab

Figure 1-8
One Time Backup tab



The one time backup tab allows for a backup to take place on a controller which occurs only once. A one time backup might be performed before some upgrades, testing etc.

Setting up a One Time Backup

To set up a one time backup time for a particular controller, select the controller and the One-Time Backup tab. Then set the required fields. The following table lays out the field type, description, and valid input.

Table 1-5
Setting up a One Time Backup information

Field	Description	Valid Input
Start Date		
YYYY	Four digit calendar year.	XXXX where XXXX denotes an integer form of year.
MM	Two digit calendar month.	XX-- where XX denotes an integer between 01 - 12 inclusive.

—continued—

Table 1-5
Setting up a One Time Backup information

DD	Two digit calendar day.	XX -- where XX denotes an integer between 01 - 31 inclusive.
Start Time		
HH	Two digit representation of hour on a 24 hour clock.	XX -- where XX denotes an integer between 00-23 inclusive.
MM	Two digit representation of minutes.	XX -- where XX denotes an integer between 00 - 59 inclusive.
SS	Two digit representation of seconds.	XX -- where XX denotes an integer between 00 - 59 inclusive.
OPC pacing speed	The packet size of the backup.	Drop down menu.
Storage Location	The exact path to the storage location of the backup.	Path to directory on a UNIX NFS.

Save Action
See description in “Recurring Backup” section.

Clear/Set To Defaults/Save As Defaults
See description in “Recurring Backup” section.

Network Wide Backup & Restore Compatibilities

Network Wide Backup & Restore Release 1.0 software is compatible with INM Release 5.0 and currently supports the S/DMS TransportNode product releases listed in Table 2-1.

GUI compatibilities

Table 2-1 lists the S/DMS TransportNode product releases required to obtain Network Wide Backup & Restore Release 1.0 functionality.

Table 2-1
Controller release line-up

Controller	Release	Data Backed Up
OC12	Release 14.0	NE & OPC Databases, and misc. OPC files
OC48	Release 15.0	NE & OPC Databases, and misc. OPC files
OC192	Release 6.0	NE & OPC Databases, and misc. OPC files
AccessNode	Release 18.0 Planned	NE & OPC Databases, and misc. OPC files
OC3 Express	HX - Release 5.0 CX - Release 4.0 JAPAN - Release 5.0	SP's transport/provisioning data, PM Threshold Crossings
TN-1P	Release 2	NE & OPC Databases
TN-1C	Release 1, 2, 3	NE & OPC Databases
TN-1X	Release 7, 8	NE & OPC Databases
TN-4XE	Release 1, 2, 2.02, 3	NE & OPC Databases
TN-64X	Release 2	NE & OPC Databases

Network Wide Backup & Restore Engineering Considerations

Network Wide Backup & Restore Engineering Rules

The Network Wide Backup & Restore engineering considerations for Release 1.0 are as follows:

- Since Network Wide Backup & Restore application is coresident with INM Broadband Release 5.0, the minimal bandwidth for the WAN communication link is 56 Kbits/sec. The recommended bandwidth is 1.544 Mbits (DS1).
- For an OPC connectivity to the INM and Backup & Restore workstation, the minimal recommended bandwidth for the communication link is 56 Kbits/sec.

Engineering Capacities

Disk Space Requirements

The disk space required to store controller backups is dependent on the following:

- number of controllers
- type of controllers
- number of Network Elements which store data on the controller
- number of backups maintained/controller

Following formula can be used to estimate the amount of disk space required specifically for Network Wide Backup and Restore application.

Disk_space_1 = (# of OPCs) * (5 MByte/OPC) * (# of backups to keep)

Disk_space_2 = (# of NPs) * (1 MByte/NP) * (# of backups to keep)

Disk_space_3 = (# of EC1 MOAs) * (TBD) * (# of backups to keep)

Total_disk_space = Disk_space_1 + Disk_space_2 + Disk_space_3

Estimated Time to Backup an OPC

The estimated time for OPC backup to complete is dependent on the following:

- available bandwidth
- number of controllers
- concurrent jobs setting under the user preferences of the GUI

Table 3-1
Estiimated time to backup an OPC

# of OPC	56kb/s Conc_Job=1	56 kb/s Conc_Job=5	1.544 mb/s (T1) Conc_Job=1	1.544 mb/s (T1) Conc_Job=5
1	27 minutes	27 minutes	17 minutes	17 minutes
10	135 minutes	45 minutes	27 minutes	25 minutes
50	615 minutes	165 minutes	115 minutes	65 minutes
150	1815 minutes	465 minutes	315 minutes	165 minutes

Estimated Time to Backup an NP

The estimated time for NP backup to complete is dependent on the following:

- # of NPs on the same MOA
- available bandwidth
- number of NPs

Table 3-2
Estimated time to backup an NP

# of NP	56 kb/s	1.544 mb/s (T1)
1	7 minutes	4 minutes
10	70 minutes	40 minutes
50	350 minutes	20 minutes
150	1050 minutes	600 minutes

Additional Capacities

The following table shows the engineering capacities for the backup and restore GUI usage, as well the number of simultaneous backups and restores allowed.

Table 3-3
Network Wide Backup & Restore capacities

Description	**INM Broadband Release 5.0** **HP Workstation Model** **C360**
Number of instances of the Backup and Restore GUI with Admin priviledges	1
Number of instances of the Backup and Restore GUI with View only priviledges	3
Number of simultaneous backups	5
Number of simultaneous restores	1
Number of controllers that can be added in Backup and Restore's Controllers List	150

Network Wide Backup & Restore Requirements

This section references the various requirements, both hardware and software, necessary to support the Network Wide Backup & Restore Release 1.0 software.

Hardware Requirements

Since Network Wide Backup & Restore software has to be coresident with INM Release 5.0, the recommneded hardware platforms of choice are described in INM Release 5.0 Planning Guide under the section “INM Release 5.0 Requirements”.

Operating System Requirements

HP workstations must run HP-UX Release 10.20 ACE, and HP-VUE 3.0 to support Network Wide Backup & Restore.

Again since Network Wide Backup & Restore software is coresident with INM Release 5.0, refer to INM 5.0 Planning Guide for detailed information on operating system requirements and HP-UX 10.20 software patches.

First Time Installation

If the workstation is purchased from Northern Telecom (Nortel), the HP-UX operating system is installed and configured.

However, the following tasks must be performed before installing the software:

- Connect the workstation to the local area network (LAN).
- Configure HP-UX 10.20 ACE according to the requirements for INM Release 5.0 (refer to *HP-UX System Administration Tasks* manual for this procedure).
- Modify the HP-UX kernel parameters as required (refer to *HP-UX System Administration Tasks* manual for this procedure). This procedure verifies the setup of the HP-UX kernel parameters described in INM 5.0 Planning Guide.

- Install the INM 5.0 Core software prior to the Backup & Restore software. Refer to chapter 1, “Getting Started”, and chapter 2, “Installing the INM software”, in INM 5.0 User Guide
- Install the Network Wide Backup & Restore software. Refer to chapter 2, “Installation of Network Wide Backup and Restore”, in Network Wide Backup & Restore User Guide.

TCP/IP Network Requirements

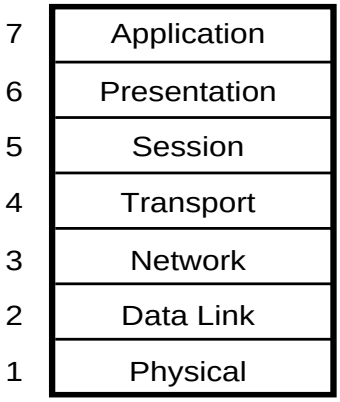
This section provides a general description of ethernet networks, TCP/IP and X.25 protocols and the requirements needed to support the operation of the Network Wide Backup and Restore application with INM Broadband.

Ethernet

The ethernet protocol is a standard defined by the Institute of Electrical and Electronics Engineers (IEEE) for communication networks. The IEEE standard 802.3 defines the layer 2 functionality in the protocol stack shown below.

Figure 5-1
OSI 7 Layer Protocol Stack

NM-00014(R5)



The characteristics of a 10-Base-T Ethernet network are:

- Maximum speed of 10 Mbits/sec
- Maximum number of 100 Ethernet devices per network
- Carrier Sense Multiple Access with Collision Detection (CSMA/CD) media access control

TCP/IP

The TCP/IP acronym stands for Transport Control Protocol/Internet Protocol. These protocols are implemented in the protocol stack as shown in Figure 5-1 on page 1. This protocol is commonly used in conjunction with ethernet networks. The TCP/IP address, also known as the IP address, is used to uniquely identify each ethernet device on a network. This address is of the form:

nnn.nnn.nnn.nnn

where nnn is a number from 0 to 255 (i.e., 47.246.0.71). This address is normally assigned by the LAN administrator in order to prevent address conflicts between ethernet devices. For more information please see Mark A. Miller, *Internetworking: A Guide to Network Communications*, MT&T Books, 1991.

LAN requirements

The definition of a Local Area Network (LAN) is a network supporting peer-to-peer communication over distances of tens of meters to several kilometers.

The LAN requirements for the INM Broadband are:

- Connectivity to the INM workstation
- Ethernet connections between the INM Broadband and the X Terminals
- Router or bridge access to remote OPC modules through a WAN
- Ethernet connection between local OPCs and INM Broadband

Routers are usually stand-alone devices which provide the capability to interface to many different types of networks, as well as to determine the optimal path to the destination. Routers are commonly used to bridge remote LANs through a WAN and can provide access to X.25, T1, frame relay, and other types of network. The router for the INM Broadband must be capable of supporting a minimum bandwidth of 56 Kbit/s for a setup consisting of the INM Broadband and two X Terminals. The routers for the OPC modules must have a minimum bandwidth of 56 Kbit/s to support 6 user sessions each. The routers should be able to support both TCP/IP and OSI protocols for future applications.

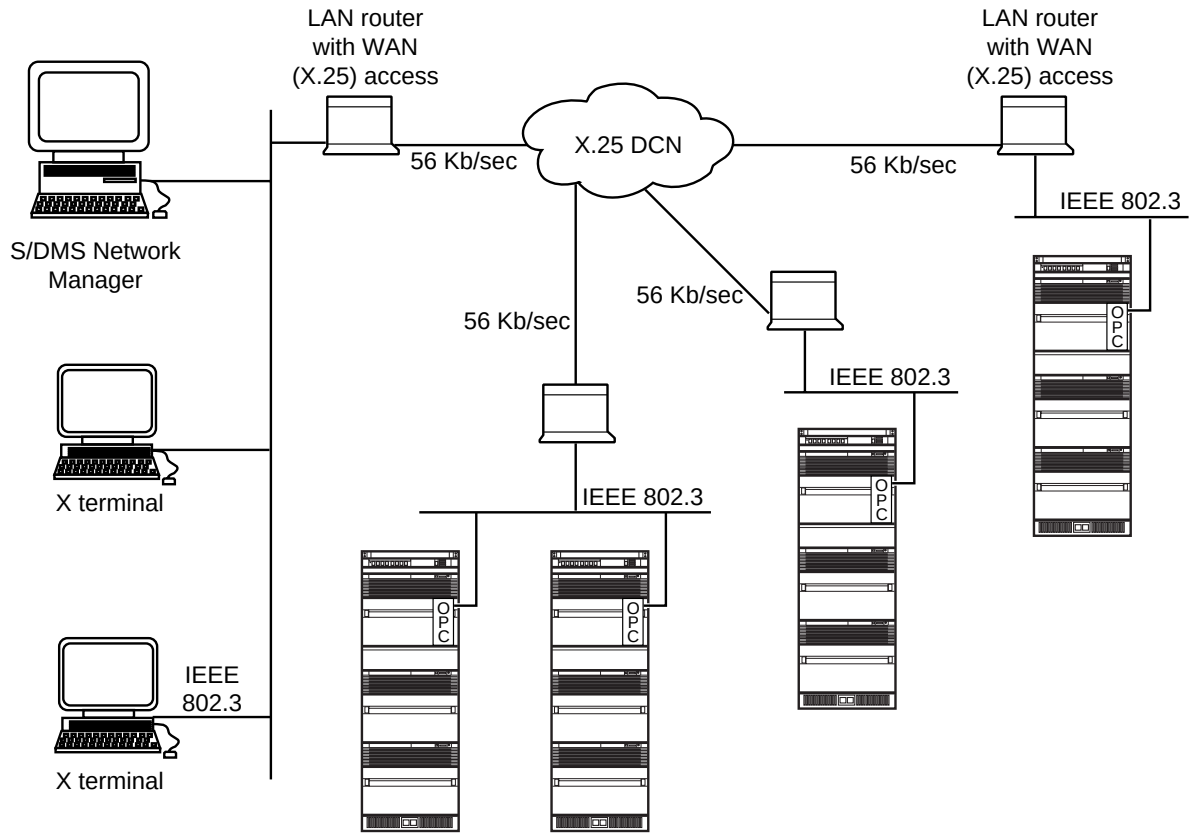
X.25

The X.25 protocol standard defines the interface to a Packet Data Network (PDN), or more specifically, it defines the Data Terminal Equipment (DTE) and Data Communications Equipment (DCE) interfaces between a synchronous packet-mode host and a PDN. The X.25 protocol suite does not, however, define the internal architecture of the PDN nor does it define the PDN's operation. An X.25 data packet network is normally used in a wide area

network for data communications to remote sites. For more information please see Mark A. Miller, *Internetworking: A Guide to Network Communications*, MT&T Books, 1991.

Figure 5-2
INM Broadband X.25 WAN Configuration

PG-0005.1



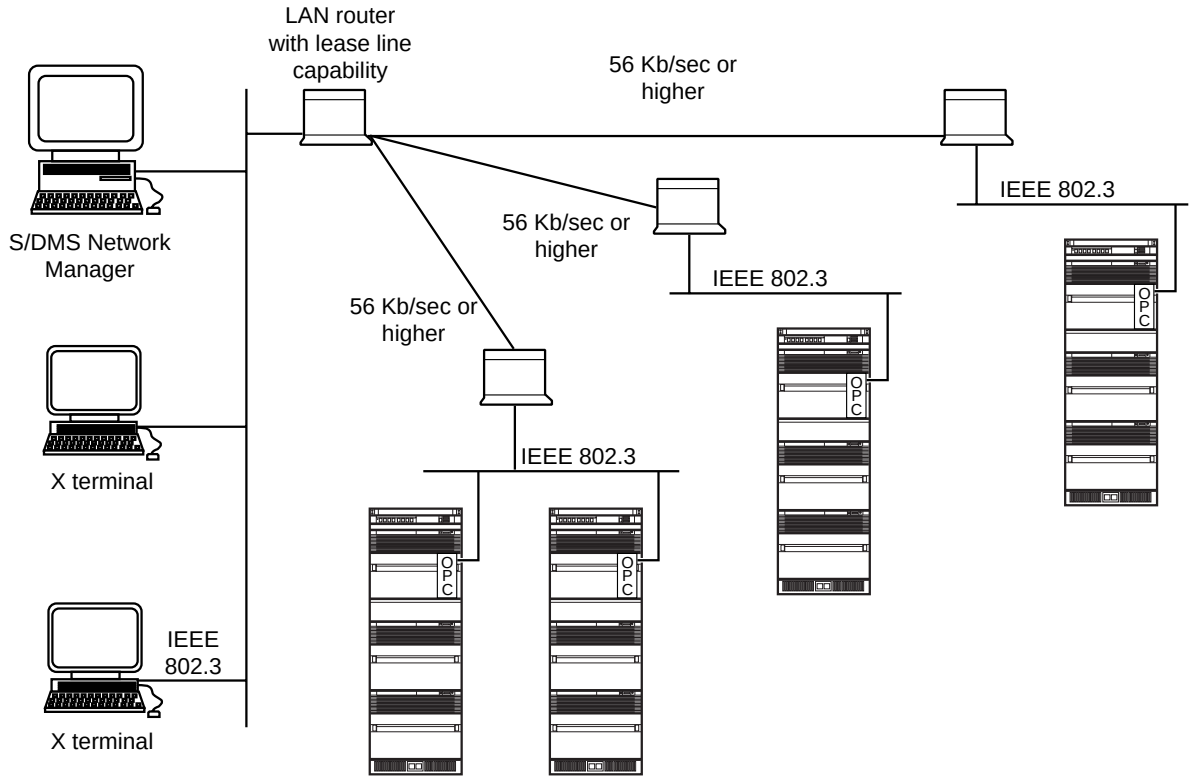
WAN requirements

The requirement for the wide area network is to provide ports to the INM Broadband at 56 Kbit/s and to the OPC modules at 19.2 Kbit/s

The definition of a Wide Area Network (WAN) is a network that ties together users or networks of users which are widely separated geographically. Typically, a WAN will use public or private telecommunications facilities, such as X.25 or T1, to provide the link between its users. If the primary functions of the INM Broadband are surveillance and provisioning, then X.25 or sub-DS0 line rates will be sufficient for the WAN, shown in Figure 5-2 on page 3. If the INM Broadband is to be used in a software delivery function, then sub-rate T1 or T1 links are recommended as shown in Figure 5-3 on page 4.

Figure 5-3
INM Broadband Leased Line WAN Configuration

PG-0005.1



Summary

Two approaches can be used to connect the INM Broadband to the OPC modules:

- If the INM Broadband and the OPC modules are co-located, then a LAN only solution may be used
- If the INM Broadband and all the OPC modules are not co-located, then a WAN solution must be used to supplement the LAN solution. Two different types of WANs can be used, X.25 and Leased Line.

List of terms

ABM

Access Bandwidth Manager

ADM

add-drop multiplexer

alarm

a signal which alerts staff to an equipment fault or problem

AN

S/DMS AccessNode

ASCII

American Standard Code for Information Interchange

balloon

a balloon-shaped object that appears on a node to indicate alarm counts

BLSR

bidirectional line switched ring

CCITT

Consultative Committee on International Telegraphy and Telephony. This committee has been replaced by the International Telecommunications Union (ITU)

CLFI

Common Language facility identifier

CMT

character-mode terminal

CNet

control network

CPC

common product code

CPG

circuit pack group

CSM

centralized software management

DARPA

Defense Advanced Research Projects Agency

DDS

digital data storage (tape)

DMS

Digital Multiplex System

DMS MAP

Digital Multiplex System Maintenance Access Position

DV45

Digital Video Codec

EDA

external device access

ftp

file transfer protocol

GNB

Graphical Network Browser

GNE

Graphical Network Editor

group

a logical collection of network elements

GUI

graphical user interface

highlighting

the graphical application of color to a node to indicate a certain alarm severity

HP

Hewlett-Packard

HP VUE

Hewlett-Packard Visual User Environment

indicator

an audible or visible alert to an alarm or status condition

ISO

International Organization for Standardization

ITU

International Telecommunications Union. This committee replaces the Consultative Committee on International Telegraphy and Telephony (CCITT).

LAN

local area network

log in

the action of opening a user interface element

log out

the action of closing a user interface element

LTE

line terminating equipment

MAPCI

Maintenance and Administration Position Command Interpreter

menu

a list of action options

menu bar

the portion of the graphical user interface that contains the status indicator, and the window menus

MOA

managed object agent, for example, an operations controller

network element (NE)

a collection of equipment at one location that functions and is administered as a single entity

node

graphic object representing groups or single network elements

NTP

Nortel Networks technical publication

NUM

Network Upgrade Manager, an OPC tool

OAM&P

operations, administration, maintenance, and provisioning

OC-3

an optical carrier signal in the SONET optical format which is three times the OC-1 rate (OC-1 is an STS-1 signal translated into an optical signal)

OC-12

an optical carrier signal in the SONET optical format which is 12 times the OC-1 rate (OC-1 is an STS-1 signal translated into an optical signal))

OC-48

an optical carrier signal in the SONET optical format which is 48 times the OC-1 rate (OC-1 is an STS-1 signal translated into an optical signal))

OC-192

an optical carrier signal in the SONET optical format which is 192 times the OC-1 rate (OC-1 is an STS-1 signal translated into an optical signal)

OPC

operations controller

OSI

Open Systems Interconnection

PEC

product engineering code

PM

performance monitoring

SAM

System Administration Manager

S/DMS

Synchronous/Digital Multiplexing System

SOC

span of control

SONET

a standard for optical transport formulated by the Exchange Carriers Standards Association (ESCA) for the American National Standards Institute (ANSI). The standard defines optical carrier (OC) levels and their electrically equivalent synchronous transport signals (STS).

span

all network elements under the control of a single operations controller (OPC)

STS-1

synchronous transport signal level 1 (SONET, 51.84 Mbit/s)

subnetwork

a graphical collection of objects organized into groups to represent the network elements monitored by INM Broadband.

system

network elements associated with the same payload

TA-1230 ring

Bellcore standard for SONET BLSR Equipment Criteria, TA-NWT-001230 (issue 2)

TCP/IP

Transmission Control Protocol/Internet Protocol

UDLC

Universal Digital Loop Carrier

UI

user interface

USM

User Session Manager

VTBM

virtual tributary bandwidth management

window

a rectangular area of a display screen used to contain a particular application

WAN

wide area network

X.25

CCITT protocol used for wide-area packet switching. OSI Data communication standard

INM Products

Integrated Network Management

Network Wide Backup & Restore Planning Guide

Standard Rel 1.0
July 1999

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