

## MPE: Network Installation & Configuration

The procedures to which this document attempts to be a guide are covered in detailed in the various MPEiX reference manuals and MPEiX 5.5 communicator. The document will attempt to provide the novice system manager with a guide to getting basic network services up and running.

Before installation and configuration of the network services a few prerequisites must be satisfied:

1. What is the hardware path to the network interface?
2. Is the network interface attached to the network?
3. Has the proper software been installed?
4. What is the IP address for the system?
5. What is the systems name going to be?
6. How is name resolution going to be done?
7. Routers or Gateways on the network?
8. Other devices which need to be accessed via the network?

The best way to find the hardware path for the network interface is to use the off-line diagnostic MAPPER. This utility is accessed at the ISL prompt from the ODE (Off-line Diagnostic Environment) main program. To access ODE just type ODE at the ISL prompt and ODE will launch. At the ODE prompt type MAPPER or RUN MAPPER. At the MAPPER prompt type GO (may be RUN, I can never remember) and MAPPER will generate a listing of what hardware is installed in the computer. If you have access to the other diagnostic programs, then you would be well advised to run the diagnostic on the network interface. The interface diagnostic will test the card functions down to the connection to the network.

If you can not take the system down to run MAPPER, then you can use the on-line diagnostics to try find the hardware path. You should be logged on as MANAGER.SYS to access the on-line diagnostics. Once you are logged in, then from the system prompt type SYSDIAG, then from the SYSDIAG prompt type SYSMAP, then from the SYSMAP prompt type IOMAP, then from the IOMAP prompt type GENERAL. IOMAP will then print a report on what devices is sees in the system configuration file. The LAN interface should show up, the hardware path will be the number in parentheses. (Of course you could always look in the back of the SPU cabinet or as the individual who installed the interface.)

In order to verify the software, the program NMMAINT.PUB.SYS needs to be run. It is usually run on-line from MANAGER.SYS. The program will print a report of all the network modules installed on the system. What you are looking for is a VERSION conflict or MISSING error.

If you have errors, make sure that the installation procedure for the system software completed properly. The most often cause for the network software installation to have a problem, is after the last restore is done from the CSLT tape. The system is not rebooted. MPEiX will look for modules at boot time to determine which parts of the networking services are there, if it does not find all the files. MPEiX will set a flag to tell the rest of MPEiX that networking services is not available.

It is important to determine the addressing scheme used on your network. If this is a new network which will not be connected to other networks, then things are fairly simple. All to need to do is identify the devices that will need to be accessed and assign an IP address and name to each device that the HP needs to know about. You will also need to pick a domain name.

Picking an IP address is relative simple in a close network (not connected to any other networks). You can pick an address range from the list supplies in RFC 1579 which specifies IP address allocations for private internets. It is strongly suggest that RFC 1597 is used as a guide for assigning private network address, by using the address specified in RFC 1597, the IANA (Internet Assigned Numbers Authority) have reserved three blocks of IP address for private networks.

When assigning a network name to the HP3000, it must be remembered that there are really two different type of names. The first is the NS (Network Services) name, which is composed of a Node name, followed by a Domain name, followed by a Organization name. These three names are combined and separated by periods to form the complete NS name. This name is then used by the NS subsystems to establish connections to other HP systems running NS services. The other name is the ARPA host name, which is defined in the HOSTS.NET.SYS file and the RESVLCNF.NET.SYS file. The host name is defined in the HOSTS.NET.SYS file, the Doman name is in the RESLVCNF.NET.SYS. If you are not using a DNS server on the net, then only the HOSTS.NET.SYS file is used. While it is the NS names and the ARPA names can be different, it is recommended that they be the same. This will make network management easier.

The other devices on the network that the HP3000 needs to know about, will each need a entry in the HOSTS.NET.SYS file if the name are to be resolved locally. They will also need entries in the NSDIR file if any NS service functions need to access them. If a DNS server is going to be used then the devices must be configured in the DNS database.

If you are going to be connecting the HP3000 to an existing network, then all you need to do is get an IP address, subnet mask, host name, domain name and NS name from the network administrator. If you are going to be using DNS then you will need the DNS address. If you are going to be connecting to other network via a gateway or router then you will need the routing information for each gateway or router attached to your network.

If you are going to be connecting the HP3000 to an existing NS network, then in addition to the information need in the pervious paragraph, you will need the NS proxy information and NS gateway information.

Now that you have collected all this information about the network interface on your HP3000. A long with the basic information about your local network, you will begin to apply this information into the various configuration files.

It is required that the DADCONF file is built before any network services are started. It is also recommended that the DADCONF file be rebuild after any network patch or power patch is installed. To create or rebuild the DADCONF file, HP has provided a job stream in NET.SYS call JCONFJOB. Simply stream the JCONFJOB.NET.SYS file.

The NSDIR file associates a NS node name with an IP address. Entries are made by NMMGR for each device which the NS services needs to communicate with, but which will not respond to the HP probe protocol. These are generally print servers or other HP system connected through routers or gateways which do not support HP Probe (Yes , HP's own routers do not support HP probe).

The NMCONFIG file in PUB.SYS contains configuration information for the physical LAN interface. The entries in the NMCONFIG file are maintained by the NMMGR program. In setting a network interface, it is recommended that the guided mode of NMMGR is used. The guided mode will configure the interface quickly with a minimum amount of screens to go through.

The NMMGR program is usually run from MANAGER.SYS. The first screen that appears requests that you open one of two file the NMCONFIG.PUB.SYS file or the NSDIR.NET.SYS file. (If there is not NSDIR.NET.SYS file created, it is suggested that you create one. This will eliminate a warning message during the validation process.) Open the NMCONFIG.PUB.SYS file, if the is no NMCONFIG.PUB.SYS file then you will be asked to select OPEN CONFIG an additional time to create the file.

Once you are in the Main screen, you will need to enter the Local HP 3000 node name. This is the name NS services will use to identify this system. If you already have an entry in this field and it is the one you want to use, then just select the NS function and continue. If it is the not name you want to use

then, you will have to change on the screen and save it by selecting Save Data. If you do change the name and the Domain.Organization part of the name changes, you will have to change all the Domain.Organization names in the DTS section of NMMGR as well. (e.g. Every DTC name). When you are done select NS to continue.

At this point you are in the NS Configuration screen, in this screen it is important that the local host name matches the name you entered in the Main screen. If it does not, make the necessary changes and select SAVE DATA. To continue select Guided Config.

The Network Transport Configuration screen should then appear. You must enter NI (Network Interface) name and type at this point. The NI name can be any eight character string with a leading alpha character; however, LAN1 is the customary name given to the primary NI on the system. Then enter the type of the network interface card installed in the SPU. Select Config Network to continue.

The LAN Configuration screen is where you will enter the IP address of the local system, subnet mask if any, Link name and hardware path. Enter the IP address in standard format xxx.xxx.xxx.xxx. While not required, it is recommend that a subnet mask be enter as well. The Link name can be any eight character string with a leading alpha character; however, DTSLINK is the customary name given if only one interface is installed and SYSLINK is used for the seconded. If there is only one interface installed, it Link name must match the one used in the DTS configuration. Then enter the Physical path of the LANIC. Make sure that both the Enable Ethernet and IEEE802.3 flags are set to "Y". Select Save Data with complete.

If the HP 3000 needs to communicate with other system or devices located on other networks connected via routers or gateways, then select the Neighbor Gateways.

In the Neighbor Gateways screen, enter a name for the gateway. The name can be any eight character string with a leading alpha character. Select Add to continue.

In the Neighbor Gateway Reachable Networks screen, enter the IP address of the Gateway or Router. This address must be on the same subnet as the HP 3000. If there is only one Gateway or Router on the network then you can make it the default route. This will tell the HP 3000 to send any packets whose destination is not on the local subnet to the Gateway's or Router's address to be forwarded to their destination. If you have other Gateways or Routers on the network, you can still have a default route. But you must build Gateway entries for each of the other Gateways or Routers. For each Gateway defined you must enter the reachable network address and a hop count. The reachable network field only requires the network portion of the IP address, zeros are used to represent the node number. There for if you want to send data to a IP address of 192.168.2.5, there IP Network address would look like 192.168.2.0. The IP Mask would be 255.255.255.0. The Hops would be the number of Gateways or Routes the data must transverse to reach the target. So if the subnet is connected to the same Gateway directly then the hop count is one. If the subnet is connect over a WAN the hop count must be set to the number of Gateways and Routes the data will be passed through. In most cases a hop count of two is used; however, in larger network the hop count can be very large to a maximum of 255. Select Save Data to complete the screen.

At this point you are ready to validate the configuration, Home the terminal's cursor to the COMMAND: line of NMMGR and enter VALIDATE, the press Enter. Then select Validate NETXPORT. If all the name you select are correct then the configuration should validate OK. If error occurs correct them and validate again. Enter EXIT in the NMMGR command line to exit the program. Your may have to validate DTS/LINK as week before you can exit NMMGR.

Now that the configuration have be successfully validate, you can start the network with the following commands (you should be MANAGER.SYS):

- :NETCONTROL START;NET=LOOP

- :NETCONTROL START;NET=LAN1 {or the NI name given in the NMCONFIG file}
- :NSCONTROL START

To stop the network, issue the following commands:

- :NSCONTROL STOP
- :NETCONTROL STOP