

Instructions for configuring Netware for SAA v.2.0 Server

After installing the Netware for SAA v.2.0 on the Novell 4.1 server and applying patches there are some general steps in the configuration to go through. I will list them hereafter and then describe in more detail what needs to be done by giving an example of a configuration of a connection between a mainframe and a NW4SAA server as a PU concentrator gateway with a connected downstream PU, which then is the same as our 570,670.

1. Customize the AUTOEXEC and STARTUP files on the server. Add the LOAD statements for the LAN and WAN cards, the BTRIEVE database, and the NetWare for SAA 2.0 Gateway (i.e. LOAD COMMEXEC and LOAD NWSAA).
2. Configure the Communication Executive (this and the following subjects are done on a WorkStation by either starting the MS-DOS based configuration utility CSCON or starting the windows based one). This is done by first configuring the Configure Server Information Panel and then answer on if there should be support for Audit Trail, Trace, Security, Log Local Events and Netview.
3. Configure SNA Network ID. On the screen Configure SNA Network ID you either change the default value or let it stay on default.
4. Configure Data Link Adapters. The configuration is done on the Data Link Adapters Definitions screen by pressing insert for a new adapter config, then you always give in the Logical adapter name, Link type, Logical adapter number and Service status. Depending on type there are different additional parameters to configure.
5. Configure PU and LUs. On the Configure PU Profile screen you can set default LU attributes, starting dependent LU address, number of dependent LUs, give CP a name, enable off-line test mode, status assignment of LUs activated by host, status call host at workstation attach, status PU profile start-up and logical adapter name. On the Configure Dependent LUs screen you can set VTAM LU name, lock for a session, LU type and model and preserve host session. On the Enter PU Profile Description it is possible to describe in more detail for example location and name of contact person.
6. Assign LU Resources and Access Control Lists (ACLs). On the Configure Dedicated LUs you can dedicate a LU to a person or device or group of persons, which these person(s) are is described in the access control lists.
7. Configure Downstream PU. After choosing Configure Downstream PUs and pressing insert, you give it a name and fill in starting LU address or leave at default, type in number of downstream LUs and logical adapter name. The CSCON adds new parameters according to the adapter type you have set.

Example configuration, SAA Server to downstream 670,570

This example will show how to configure a Netware for SAA v.2.0 server to connect via modem and a SDLC connection to a host on one side of the server. On the other side there is a LAN connection (Ethernet) to the downstream PU, which is the same as our 570,670. It is done on a Netware 4.10 server with Netware for SAA 2.0. Remember that you can almost always press F1, in the program, to become help.

Editing AUTOEXEC.NCF and STARTUP.NCF

Another way of configuring than editing the AUTOEXEC.NCF file is to use INETCFG by giving the command, LOAD INETCFG, at the prompt. I will not go deeper into this subject here. This program has a more user-friendly and self-instructing interface, but it's more difficult to see what happens.

The first thing to do, after installing, is to modify the AUTOEXEC.NCF file, by starting the server and then type after the prompt LOAD INSTALL. Then you get the Installations Options screen where you select NCF files options. In this menu you choose Edit AUTOEXEC.NCF file. Now you are in the AUTOEXEC file and can add the LOAD statements for the adapters. The syntax for loading IBM ISA bus 16/4 Token Ring Network Adapter is:

```
LOAD TOKEN PORT=xxx INT=xx NAME=xxxxxxxxx NODE=xxxxxx  
BIND IPX TO (logical adapter name) NET=xxxx
```

were:

TOKEN is the preinstalled driver for this card(TOKEN.LAN)

for other cards manufacturers supply own drivers

PORT is the host adapters port address

(A20 is primary adapter, A24 is secondary adapter)

INT is the interrupt setting

NAME is the logical adapter name(match the one that will be configured in CSCON and should be put in after BIND IPX TO too)

NET is NOVELL External IPX network number

NODE is used for specifying Locally Administrated Addresses. The driver default the first four digits to 4000 so you only have to enter the last 8 decimal digits.

Remarks: If there's source router bridges between server and remote node there has to be a LOAD ROUTE statement with the following syntax:

```
LOAD ROUTE BOARD=n
```

where n is the load number of the adapter.

If it had been a host connection there should be used the parameter: NODE= it is the last eight digit of the adapter address (MAC-address) and is only needed for host connections.

For the Ethernet connection the syntax will be:

```
LOAD SMC8000 INT=xx PORT=xxx NAME=xxxxxxxxx
```

```
BIND IPX TO (logical adapter name) NET=xxxx
```

were:

SMC8000 is the adapter driver(refer to manufacturers documentation)
INT is the interrupt setting
PORT is the host adapters port address
NAME is the logical adapter name
(match the one that will be configured in CICON)
NET is NOVELL External IPX network number

Remark: Frame defaults to 802.2 and this type is the only allowed for connecting to hosts, peer nodes and downstream PUs. If you want 802.3 there has to be put in FRAME=ETHERNET_802.3 after the load statement. If you have one host connection and one LAN connection it is possible to load adapter driver twice with different frames, but the LOAD statement with FRAME=Ethernet_802.3 should be first in order.

For the SDLC connection, the configuration depends on which card is used. Novell provides drivers for three adapters: IBM Multiprotocol Adapter (MPASDLC.LAN), Microdyne Synchronous Adapter and Microdyne Synchronous/V.35 Adapter (R2SDLC.LAN), and Microdyne Netware for SAA Synchronous Adapter for PC and PS/2 (R3SDLC.LAN). For other adapters please consult the NOVELL LABS Homepage. The syntax for the included drivers will be:

```
LOAD MPASDLC NAME=xxxxxxxxx  
LOAD R2SDLC INT=xx PORT=xxx NAME=xxxxxxxxx  
LOAD R3SDLC INT=xx PORT=xxx MEM=xx NAME=xxxxxxxxx
```

were:

INT is the interrupt setting
PORT is the adapters port address. Recommended 220 for primary.
MEM is the memory address for the adapter
NAME is the logical adapter name

Remark: If running Netware for SAA under OS/2 the mode parameter has to be added. We recommend Netware for SAA Synchronous Adapter for PC and PS/2.

Here's an example of an AUTOEXEC.NCF file:

```
Set Time Zone = MET-1MEST  
Set Daylight Savings Time Offset = 1.00.00  
set Start Of Daylight Savings Time = (MARCH SUNDAY LAST 2.00.00)  
set End Of Daylight Savings Time = (SEPTEMBER SUNDAY LAST 2.00.00)  
set Default Time Server Type = SINGLE  
set Bindery Context = O=IBMLAB  
file server name SAASERV  
ipx internal net 32839F8A  
SEARCH ADD SYS:SYSTEM\NWSAA  
search add sys:system\commexec  
load conlog maximum=100  
set maximum packet receive buffers=2000  
  
LOAD SMC8000 NAME=SMC8000_1_E82 FRAME=Ethernet_802.2 PORT=240 INT=5
```

```
LOAD R3SDLC NAME=HOSTSDLC_1 INT=7 PORT=220 MEM=D8000
BIND IPX DSETH_1_E82 NET=5101
```

```
mount all
load COMMEEXEC
load NWSAA
```

The next file to edit is the STARTUP.NCF. You come to it by first giving in the LOAD INSTALL and on Installation Options menu choose NCF files options and on this menu the Edit STARTUP.NCF option.

In the STARTUP.NCF you add:
set minimum packet receive buffers=500

This statement can help prevent 3270 workstations from receive network disconnection errors when there's heavy traffic on the net.

Here's an example of a STARTUP.NCF file:

```
SET RESERVED BUFFERS BELOW 16 MEG=200
LOAD KEYB Sweden
LOAD IDEATA.HAM INT=E PORT=1F0
LOAD IDEHD.CDM
SET MINIMUM PACKET RECEIVE BUFFERS=500
```

Configuring the Communication Executive

To be able to do this you start the server and if you haven't already edited the AUTOEXEC.NCF give in this command at the prompt, LOAD COMMEEXEC. Then you go to a workstation and log in as CSADMIN, password:nwsaa, and change to directory SYS:SYSTEM\CSCON were you type CSCON and the Communication Services Configuration utility will start. The first screen will prompt you to choose server and the first time there will only be one. Available Topics menu is now displayed and if you had more than one server go in on Change Current Server and change to another. Now you can go into Configure Server Information were you will get a screen, in which you can add more client protocols and describe situation of the server and maybe contact person, but it's not needed so you can just leave it at default if you like. If you want to have Netview support it's necessary to fill in Model number and Serial Number though. Next topic on the Available Topics menu is Configuring the Network Management Options. It's possible to leave all these values at default:

```
Enable Audit Trail No
Enable Trace Yes
Enable Security No
Log Local Events Yes
NetView Management No
```

If you press F1 at each choice you can see how they affect your environment. This concludes the Communication Executive configuration.

Configure SNA Network ID

From the Available Topics menu you choose Configure Communications Services and there you choose Configure the SNA Network ID. This name doesn't have any importance unless you run APPC or APPN and you don't if you configure a type 2.0 node, so you can leave it at default or change it as you like.

Configure Data Link Adapters

Start CSCON and from the Available Topics menu choose Configure Communications Services and Configure Data Link Adapters. On the (first time) empty Data Link Adapters display, press insert and you will be prompted:

Enter new logical adapter name:

Here you must write the name of the adapter and this name must match the Logical Adapter Name (NAME=) you wrote in the LOAD statement in the AUTOEXEC.NCF file. When you press enter a new screen called Define Adapter Type appears. Here you choose type of card and depending of what you choose you will get additional parameters. If you for example choose Ethernet you will get the following screen:

Configure 802.2 Adapter	
Logical adapter name:	_____SMC8000_1_E82
Logical adapter number:	_____1
Adapter service status:	_____In service
Number of local service access points:	_____2
Terminate peer link if no active APPC sessions:	_____Yes

The parameter Logical adapter name is the same as the one you typed in when you were prompted for it.

Logical adapter number is a sequence number from zero to 255 and each adapter must have a unique number within its link type.

The Adapter service status parameter has the values In service or Out of service and In service means the adapter is automatically enabled when Netware for SAA is started.

Number of local service access points (SAPs) means how many SAPs are available so the default 2 makes SAP 04 hex and SAP 08 hex available. Then if you set a higher number they increase by 4 up to 32 which is max.

This parameter screen is alike whether it's Ethernet or token ring and if you have just one of each type you normally can leave it at default.

If you choose SDLC for link connection you will get another screen which looks like this:

Configure SDLC Adapter	
Logical adapter name:	_____HOSTSDLC
Logical adapter number:	_____0
Adapter service status:	_____In service
Capable of multiple station addresses:	_____No
Default local station address:	_____C1 hex
Local station role:	_____Secondary
Hold Request to send (RTS) continuously:	_____No
Encoding option for data link adapter:	_____NRZ
Line type:	_____Nonswitched
Terminate peer link if no active APPC sessions:	_____Yes

were Logical adapter name, here too, is the one you typed in and matches the NAME= parameter in the LOAD statement for the SDLC adapter in AUTOEXEC.NCF file.

Logical adapter number is the same here as in the 802.2 list. Adapter service status, too, is the same as in 802.2 list.

Capable of multiple station addresses answers to if it's a multidrop line or not. It is recommended by Novell to answer no here anyhow, which is the default too.

Default local station address parameter is an id for this gateway seen from the host. This value you will have to get from the system responsible on the mainframe side and it corresponds to the ADDR parameter in the NCP.

Local station role can only be secondary in this configuration as we are configuring for a PU type 2.0 and there can only exist dependent LUs with a role of secondary.

Hold Request to send (RTS) continuously, if set to yes, means that you have a faster access to the line. If you have multipoint, dial-up or half-duplex line this parameter has to be set to no.

Encoding option for data link adapter is something you too need help with from the system responsible on the mainframe side. It corresponds to the VTAM NRZI= parameter.

On Line type you just give in if switched or nonswitched.

Terminate peer link if no active APPC sessions has no relevance here as it's no APPC sessions.

Configure PUs and LUs

To be able to do this, start CSCON on a client and select Configure for Host Connection on the Configure Netware for SAA menu. Here you choose Configure Host PU Profiles and on the (first time empty) Select Host PU Profile, press insert or, if there's preconfigured choose one. Thereafter you are prompted(if new) for a name of the configuration:

Enter new PU profile name:

Then the Configure PU Profile panel should appear and look like this:

```

                                Configure PU Profile SAA_MAIN

Configure default LU attributes:_____ <see
panel>
Starting dependent LU address: _____ 2
Number of dependent LUs: _____ 64
Peripheral node control point name:
_____ PU_profile_name
Offline test mode:
_____ Disable
Assign only LUs activated by the host: _____ Yes
Call host on workstation attach: _____ No
PU profile startup status:
_____ Enabled
Logical adapter name:
_____ adapter_name
```

In the Configure default LU attributes you can pre-set some values for the LUs, but unless you don't have a lot of LUs to configure you don't gain so much out of this. It still is possible to change and set the values when you configure each LU.

Starting dependent LU address can range from 2 to 254 and of course shall correspond to the ones you want to use from the VTAM configuration. Again you have to get the information from the mainframe system responsible.

Number of dependent LUs is the number of LUs you want to use. A recommendation is to keep it as low as possible, to make it easier to handle.

Peripheral node control point name is the same as CP name and is used for APPN communication and therefore isn't relevant here. Just leave it at default.

Off-line test mode is a way to simulate host connection and test the communication from a 3270 WorkStation emulation. It should be left at default No.

Assign only LUs activated by the host means, if left at default yes, you know it's an active LU you are assigning. If changed to no this implies that NW4SAA can assign a 3270 WorkStation attach request to a LU that is not activated by the host. This can lead to a situation where the user experience a black screen.

Call host on workstation attach is connected to the preceding, if that is set to no, this should be set to yes. Recommended to leave at default No.

PU profile startup status should be set to Enabled. Which makes the NW4SAA Gateway to automatically load the profile when the LOAD NWSAA is executed

Logical adapter name parameter is of course a very important parameter as it connects the PU configuration with the adapter configuration and you type in your logical adapter name here.

When you have typed in your logical adapter name you will get some additional parameters. If you have a SDLC adapter you will get:

```
Maximum frame size to transmit inbound _____ 265
Node ID (block ID/PU ID): _____ 017
00000
```

Maximum frame size to transmit inbound is the maximum number of bytes to be included in one frame. It is important that this value match the value MAXDATA in the mainframe configuration. It is too important that this value doesn't exceed the value set in the Set maximum physical receive packet size parameter in the STARTUP.NCF file. This value can take any value from: 9 bytes plus any multiple (ranging 1 to 16) of 256. Thus ranging from 265 to 4105.

Second parameter added is the Node ID(block ID/PU ID) Node ID is the combination of block ID and PU ID. The block ID is an IBM product specific number and is interpreted by the system. The block ID must also match the IDBLK value in the host definition. The block ID for 3174 node is 017 hex. This value is default and should be used too. PU ID is a binary value that uniquely identify your special equipment and match the IDNUM in VTAM config.

To configure the LUs, start CSCON, choose Configure Communications Services on the Available Topics menu, then select Configure for Host Connections on the Configure Netware for SAA menu, thereafter choose Configure Dependent LUs on the Configure Host PU Profiles menu.

This screen can look like this:

```
Netware Comm Services Config v2.0 Wednesday September4 7.33
Configure Dependent LUs _____ Host PU Profile: SAA_MAIN

LU Address  LU Type  Model  VTAM LU Name  Lock
Category:  Name

15_(0x0F)  Printer  _____  ACP3  No  Public
16_(0x10)  Printer  _____  ACP4  No  Public
17_(0x11)  Display  2  ACD3  No  Public
18_(0x12)  Display  2  ACD4  No  Public
19_(0x13)  Display  2  ACD5  No  Public
20_(0x14)  Display  2  ACD6  No  Public
21_(0x15)  Printer  _____  ACP5  No  Public
```

To change one LU, highlight it and you will get the parameters for this specific LU and can change it. The meaning of the parameters are:

PU profile name is just displayed.

LU address too is just displayed.

VTAM LU name is the name configured in the mainframe and you will get it from system responsible on the mainframe side. It is a field required for LU6.2 communication.

Session lock gives an opportunity to disable this LU. Should be no.

LU type is a required field and you choose if this LU should be printer or display. LU1 and LU3 are printer LUs. NW4SAA automatically detects printer LU type. If you chose display select model 2.

Preserve host session after disconnect means that the LU is held for a specific user. Let it stay at default no.

Configure Downstream PU and LUs

Select Configure Downstream PU on the Configure for Host Connections menu. Press insert to create a new downstream PU or choose an existing by highlighting it. If new you'll be prompted for a name:

Enter new downstream PU name: _

Type the name and press enter, then you'll get the following screen:

Configure Downstream PU Connection	
Downstream PU name (CP name): _____	DPUname
Starting downstream LU address: _____	2
Number of downstream LUs: _____	1
Logical adapter name: _____	

When you have chosen the LAN adapter you want to use for the downstream connection, you will be prompted for Maximum frame size to transmit outbound. Let it just stay at default. Next you will be prompted for is Identify downstream PU using. Press enter and here we recommend to choose the MAC address. Then you fill in the MAC address of the 570,670. The last is 802.2 remote and local SAP. Let it stay at default 04 hex.

When you're ready with the downstream PU configuration, you will get the following screen.

Configure Downstream PUs
Configure Downstream PU Connection

Configure LUs for Downstream PUs

Here you select Configure LUs for Downstream PUs. Depending on which values you put in on the downstream PU configuration screen the following screen can vary in number of LUs and addresses, but it will look about like the following.

```
Netware Comm Services Config V2.0 Wednesday 1996 September 4 16.27
Configure LUs for Downstream PUs _____ Downstream PU:
AXIS570

DLU __Address__ PU Profile__ LU Address __LU Type__ Model __VTAM LU
Name
002 __ (0x02)
```

When you get this screen you just press enter and will be prompted for which Host PU profile to choose LUs from (normally just one), press enter once more and get a new screen where all LUs from this Host PU profile are listed and you can choose one by highlighting it and press enter. This results in a connection between the downstream PU and the LU you chose from Host PU profile LUs and the screen could for example look like this:

```
Netware Comm Services Config V2.0 Wednesday 1996 September 4 16.27
Configure LUs for Downstream PUs _____ Downstream PU:
AXIS570

DLU __Address__ PU Profile__ LU Address __LU Type__ Model __VTAM LU
Name
002 __ (0x02) ____SAA_MAIN ____15 (0x0F) __Printer
_____ACP4
```

Now everything should be ready and after saving, you can go out from CICON and restart the server to have everything working. Before you restart the server we recommend to go in to the AXIS box and check that parameter AUTODIAL is set to yes.

SJN Nov 19 1996.