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A proposal for the coordination of SNI-related information

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General description of the REXX procedures.

SNICDRM, SNICDRSC and SNIADJ are three REXX procedures that have been written for simplifying the creation and distribution of CDRMs, CDRSCs and ADJSSCPs in a SNI network.

The three procedures require just one parameter: the NETID of the network for which VTAMLSTs are going to be produced. This network is called localnet in the rest of this description.

VTAMLSTs produced are not useable on pre-SNI VTAMs (that is, VTAMs that do not accept the NETID parameter in ATCSTRxx).

All procedures read configuration data from a set of files, whose content is described later.

SNICDRM produces:

- A file 'CDRM localnet' containing only the definitions of the CDRMs of localnet. A copy of 'CDRM localnet' must be installed on every VTAM of localnet.
- A file 'CDRMsa localnet' for every SSCP of localnet (sa is the subarea number of the SSCP), that can have SSCP-SSCP sessions with SSCPs of other networks, containing only SSCPs of other networks.
- A file 'GWNAUsa localnet' for every gateway NCP of localnet (sa is the subarea number of the gateway NCP in localnet), containing the GWNAUs representing SSCPs of other networks in localnet. These GWNAUs must be copied in the localnet portion of the NCP source deck and contain for each remote SSCP the same element address that has been used for the GWPATH statement in the 'CDRMsa localnet' files.

SNICDRSC produces:

- A file 'CDRSC localnet' containing CDRSC statements for resources of all networks. The CDRM parameter is specified only if it is obtainable from one of the input files used by the procedure (see later). A copy of 'CDRSC localnet' must be installed on every VTAM of localnet.

SNIADJ produces:

- A file 'ADJsa localnet' for each SSCP of localnet (sa is the subarea number of the SSCP), that can have SSCP-SSCP sessions with SSCPs of other networks. The 'ADJsa localnet' files contain only NETWORK statements followed by lists of ADJCDRM statements. SNIADJ EXEC does not produce a default ADJSSCP list, nor does it produce a list for network localnet. ADJSSCP lists for resources in localnet and for the SSCPs that cannot have sessions with SSCPs of other networks must be built manually.

SNICDRM calls another REXX procedure. Its name is '$SNIPASE EXEC' (SNI gwPAth SElect). $SNIPASE EXEC is called by SNICDRM EXEC when more than one GWPATH statement can be used after a CDRM statement.

In its present form, $SNIPASE EXEC enters the XEDIT environment for editing a file that contains in each line a possible path for the SSCP-SSCP session. The terminal operator can delete and/or change the order of the lines in the file. When the terminal operator exits from the XEDIT environment with the FILE or QUIT subcommands, the GWPATHs are produced in the same order as they have been left in the file.

In future versions $SNIPASE EXEC could be made smarter.

General description of the configuration files.

For each non-null network there must be a file named 'netid $SNIPUB' containing informations about that network.

In order to produce the VTAMLSTs for network localnet, the procedures need also a file 'localnet $SNIPRI', containing those informations about localnet, that can be ignored when producing VTAMLSTs for the other networks, but that are necessary for producing the VTAMLSTs of localnet. A typical example of information for the $SNIPRI file are the CDRMs that cannot have sessions with SSCPs in other net-

works. If the procedures are being used for producing VTAMLSTs for localnet and some piece of information is repeated in 'localnet $SNIPUB' and 'localnet $SNIPRI', information in 'localnet $SNIPRI' overrides information in 'localnet $SNIPUB'.

The distinction between $SNIPRI and $SNIPUB files is useful, because it helps in keeping $SNIPUB files relatively small and gives a greater independence to the various networks. Thus, when a network has to make changes that do not affect the other networks (such as, for example, adding an SSCP that will not have sessions with SSCPs in other networks or changing the subarea number of an SSCP that is represented in the adjacent networks by a GWNAU statement), no change is needed on the $SNIPUB file.

A good place for maintaining $SNIPUB files is a file server, such as NETSERV or LISTSERV. The maintainers of a network must be authorized to store new versions of the $SNIPUB file for their network in the file server. All network maintainers must be authorized to get $SNIPUB files from the file server.

There is still another file that must be kept on the file server. Its name is 'SSCPSSCP WEIGHTS'. It is used by SNIADJ EXEC for altering the standard way for selecting the "best" ADJCDRMs.

Normally SNIADJ EXEC chooses for each network the ADJCDRMs that require the smallest number of SSCP-SSCP hops. The 'SSCPSSCP WEIGHTS' file can be used to alter the order of selection of ADJCDRMs if some SSCP-SSCP hops are particularly desirable or undesirable. The format of 'SSCPSSCP WEIGHTS' is described later.

'SSCPSSCP WEIGHTS' must also be kept on the file server, and only very few persons in the network should be authorized to modify its content.

CMS filemode of input and output files.

During the initial phase, all procedures issue a

LISTFILE localnet $SNIPUB * (FIFO

command in order to determine the filemode of 'localnet $SNIPUB'.

All other $SNIPUB files and the 'SSCPSSCP WEIGHTS' file are read from the same minidisk where 'localnet $SNIPUB' has been found. If for some reasons the definitions of network NETX must be ignored, the file 'NETX $SNIPUB' must be removed from that minidisk.

'localnet $SNIPRI' is read using a CMS filemode equal to '*', therefore 'localnet $SNIPRI' can be kept on a different minidisk.

Output files are always written on the A-disk.

Statements for the $SNIPRI and $SNIPUB files.

$SNIPRI and $SNIPUB files have the same format and contain the same type of statements.

Every statement is contained in a line and is identified by a keyword. The keyword of a statement is the first token of the line. Tokens are sequences of contiguous non-blank characters. The separation between two tokens is a sequence of one or more blank characters.

All characters of a statement, that are not part of a comment, are converted to upper case before being processed.

The keyword of a statement is followed by the parameters. Each parameter is a token. Each keyword expects a fixed number of parameters. Non-blank characters following the last parameter are treated as comments. In some cases comments are copied in the output VTAMLSTs. If a statement contains less parameters than is required by the keyword, missing parameters are given a default value. A default value is assigned also when the corresponding token is '*'.

SNICDRM interprets the statements with the following keywords:

- CDRM,
- GWNAU,

- SUBAEQU,
- TITLE.

SNICDRSC interprets the statements with the following keywords:

- CDRSC,
- TITLE.

SNIADJ interprets the statements with the following keywords:

- CDRM,
- GWNAU,
- TITLE.

Statements with other keywords are simply ignored by the procedures.

It can be decided that no procedure in the future will interpret statements having a keyword equal to '*'. Thus, lines beginning with a '*' can be used as comments.

In the following description, the network described by the file that contains the statement is called 'current network'.

CDRM statement.

It has the following format:

CDRM cdrmname subarea element comment

The CDRM statement is used to define a CDRM of the current network. 'cdrmname' is the name of the CDRM, 'subarea' its subarea number and 'element' its element number (usually 1).

For the SSCPs that have GWNAUs representing them in all adjacent networks, it is not necessary to specify 'subarea' and 'element' in the $SNIPUB file.

CDRMs of the current network, that cannot have SSCP-SSCP sessions with SSCP of other networks, can be omitted from the $SNIPUB file.

CDRSC statement.

It has the following format:

CDRSC cdrscnam cdrmname comment

The CDRSC statement is used to define a resource of the current network. The $SNIPUB file must contain only the resources whose existence must be known in the other networks. 'cdrscnam' is the name of the resource and 'cdrmname' is the name of its CDRM. Usually 'cdrmname' is not specified in the $SNIPUB file.

GWNAU statement.

It has the following format:

GWNAU adjnet adjnetsa adjnetel cdrmname comment

The GWNAU statement is used to describe a GWNAU statement representing a CDRM of the current network in an adjacent network. 'adjnet' is the name of the adjacent network. 'adjnetsa' and 'adjnetel' are the subarea and element number of the GWNAU in 'adjnet' and 'cdrmname' is the name of the CDRM of the current network represented by the GWNAU.

SUBAEQU statement.

It has the following format:

SUBAEQU adjnet adjnetsa curnetsa comment

The SUBAEQU statement is used to indicate that the subarea 'adjnetsa' of the adjacent network 'adjnet' is on the gateway NCP that has subarea number 'curnetsa' on the current network.

Usually the SUBAEQU statement is not needed on the $SNIPUB file.

TITLE statement.

It has the following format:

TITLE comment

The TITLE statement is used to specify the comment that will precede the NETWORK statements of all VTAMLSTs created by the procedures.

If no TITLE statement is found, the comment lines of the VTAMLSTs will contain only blanks. If more than one TITLE statement is found, only the comment of the last statement is used.

Statements for the 'SSCPSSCP WEIGHTS' file.

The 'SSCPSSCP WEIGHTS' file contains one statement per line. Every statement has the following format:

weight < sscp1 < netid > sscp2 >

Angular brackets are used to delimit the parameters that can be omitted.

'weight' is the weight to be assigned to the SSCP-SSCP hop described by the rest of the statement. If no other parameter is contained in the statement, 'weight' becomes the default weight, that will be used for the SSCP-SSCP hops that do not appear in the SSCPSSCP WEIGHTS file. If no default weight is defined in the SSCPSSCP WEIGHTS file, SNIADJ puts the default weight equal to 50.

If 'weight' is followed by one token only, the statement is ignored.

If 'weight' is followed by two tokens, they are interpreted as two SSCPNAMEs. In this case, 'weight' becomes the weight of the SSCP1-SSCP2 hop and of the SSCP2-SSCP1 hop.

If 'weight' is followed by three parameters, the central one is interpreted as the name of an intermediate network. In this case, 'weight' becomes the weight of the SSCP1-SSCP2 and SSCP2-SSCP1 hops, but only if they use 'netid' as an inetermediate network.

For each destination network, SNIADJ prefers the ADJCDRM that can reach the destination network with a sequence of SSCP-SSCP sessions with the lowest weight.

More about SNICDRM.

The following parameters are always produced on the CDRM statements:

ISTATUS=ACTIVE,CDRDYN=YES,CDRSC=OPT

The following parameters are never produced: RECOVERY, SPAN, VPACING.

More about SNIADJ.

The first statement of SNIADJ assigns a number to maxdiff. The value of maxdiff helps SNIADJ in determining which ADJCDRMs are worth to be put in the ADJSSCP files. If a CDRM is a good candidate for being an ADJCDRM for sessions with resources on a particular network, that CDRM is inserted in the ADJSSCP file only if it does not require more than maxdiff hops than the shortest path.

Notice that a too small value of 'maxdiff' can cause the exclusion from the ADJSSCP file of the least-weight ADJCDRM.

The statement that assigns a value to 'maxdiff' should not be changed arbitrarily by the network maintainers. In order to have consistent ADJSSCP tables all over the network it is important to run every where SNIADJ with the same value of 'maxdiff'.