IW SPM IP configuration management

What's new

The following features are new in the SN07 software release:

A00003487 - Tri-modal provisioning

A new BEARNETS field in the MNNODE table lists the supported
bearer networks associated with the IW SPM IP.

The MULTINET_DISPLAY_ACTIVE field in the OFCVAR table controls
Tri-Modal log and operational measurement reports and fields to
display.

A00003669 - MG 4000 IP preparation

Preparation work for the MG 4000 IP modifies the following in the
MNMGPIP table:

- signalling IP address
- signalling mask
- signalling enabled status
- VLAN TCI for the signalling interface
- VLAN TCI for the bearer interface

Synchronization Resource Module

The Synchronization Resource Module (SRM) was introduced as a
timing option for the IW SPM IP.

Configuration management strategy

Configuration of the IW SPM IP is controlled by entities called data schema tables. Individual tuples in the data schema tables allow the various features and applications to be provisioned.

Limitations and restrictions

External routing must be supported on the XA-Core before datafilling IW SPM nodes. Routing is set to external by using the C7RTR command.

For immediate reference, enter the following command at the MAP terminal

```
CI>c7rtr;query_ext_routing
```

External routing is active if the output looks similar to the output below.

```
C7RTR: External Routing Activation Utility
Type HELP for a list of commands.
External Routing Status
-----------------------
External Routing:  Active.
```

Tools and utilities

Data Schema

Data schema tables are accessed using the MAP display commands.

Datafilling the IW SPM IP

The following procedure lists the necessary data schema tables required to provision an IW SPM IP.

Datafilling the IW SPM IP

At the MAP terminal

1   Datafill the PMLOADS table with the location of the IW SPM software files. Only datafill the PMLOADS table once for each resource module (RM) software load.

      Example

```
        IWS20CN
IWS20CN_010065          F02LLOADS
IWS20CN_010065          F02LLOADS            N

        GEM20CN
GEM20CN_010065          F02LLOADS
GEM20CN_010065          F02LLOADS            N
```

2   Datafill the MNPRTGRP table with the required RM protection groups.

      Example

```
SPM 14 GEM_GRP  1          GEM_GRP NRVTV  (NOSPARE MJ  RPT)$
```

3   Datafill the MNNODE table with the IW SPM node type and alarms. Use the SPM number in the ALIAS field, for example SPM 14 would be alias SPM_14.

      Example

```
SPM   14         SPM_14  IW 1 SYNC INTERNAL 15 $ (SYSB CR RPT)
                 (MANB MJ RPT)(ISTB MN RPT) (SYSBNA CR RPT)
                 (PATCHFAIL MJ RPT) (SPMREXBYP MN RPT) $
                    BRDG_ONLY (ENET_TO_IP) $
```

      Note: The BRDGCLLI field must be defined in the NETBRDGE table which associates the bridged bearer network types in the BEARNETS table.

4   Datafill the MNSHELF table with the IW SPM location information.

      Example

```
SPM  14 0   SPME    1   N   31    6 NTLX91BA NTLX51BA
SPM  14 1   SPME    1   N   31   21 NTLX91BA NTLX51BA
```

5   Datafill the MNCKTPAK table with the RM types and locations.

Example

```
SPM  14 0 7    CEM 0 $ (SYSB CR RPT) (MANB MJ RPT) (ISTB MN RPT)
               (SYSBNA CR RPT) (MANBNA MJ RPT) (HLDOVR MJ RPT)
               (HLDOVR24 MJ RPT) (VCXO70 MN RPT) (VCXO90 MJ RPT)
               (CLKOOS MJ RPT) (PATCHFAIL MJ RPT) $
               NTLX82AA        01    IWS20CN
SPM  14 0 8    CEM 1 $ (SYSB CR RPT) (MANB MJ RPT) (ISTB MN RPT)
               (SYSBNA CR RPT) (MANBNA MJ RPT) (HLDOVR MJ RPT)
               (HLDOVR24 MJ RPT) (VCXO70 MN RPT) (VCXO90 MJ RPT)
               (CLKOOS MJ RPT) (PATCHFAIL MJ RPT) $
               NTLX82AA        01    IWS20CN
SPM  14 0 9  GEM 0 1 WORKING (SYSB CR RPT) (MANB MJ RPT)
               (ISTB MN RPT) (PROTFAIL CR RPT) (PATCHFAIL MJ RPT) $
               NTLZ20BA        06    GEM20CN
SPM  14 0 10 GEM 1 1 SPARE (SYSB CR RPT)(MANB MJ RPT)(ISTB MN RPT)
               (PROTFAIL CR RPT) (PATCHFAIL MJ RPT) $
               NTLZ20BA        06    GEM20CN
```

6   Datafill the MNLINK table with the IW SPM to ENET link definitions.

Example

```
SPM 14 (1 0 10  0) (2 0 10  1) (3 0 10  2) (4 0 10  3)$
```

7   Datafill the MNMGPIP table with GEM card IP parameters.

Each IW SPM IP requires the following four separate IP addresses:

- GEMMGMIP for slot 9 - management IP address used as a placeholder during inactivity
- GEMMGMIP for slot 10 - management IP address used as a placeholder during card inactivity
- GEMBARIP - bearer IP address used by RTP packets when either card is active (the address floats between the two slots)
- GEMSIGIP - signalling IP address used by call processing messages between peer nodes when either card is active (the address floats between the two slots)

The same addresses must also be provisioned in the corresponding connecting Passport 8600 series Routing Switch.

Addresses entered in the MNMGPIP table require planning by a qualified network engineer.

Example

```
    SPM 14 0  9
172  16 121   2  255 255 255   0 172 16 121 255  172  16 121   1
172  16 121   4                 Y
172  16 121  11  255 255 255   0 172 16 121   1                  Y
        0 N 0                 0 N 0

    SPM  14 0 10
172  16 121   3  255 255 255   0 172  16 121 255  172  16 121   1
172  16 121   4                 Y
172  16 121  11  255 255 255   0 172  16 121   1                  Y
        0 N 0                 0 N 0
```

Selected field descriptions for table MNMGPIP (Sheet 1 of 2)

Field	Subfield	Description
GEMSIGIP		The GEM signalling interface address using a DMS-format IP Address range (no "dots"). The default value is 0.0.0.0 (disabled).
		Changes to this field allowed only when the GEM is INSV and the SIGIPENABLED field is set to N.
SIGSUBMASK		The GEM signalling interface mask using a DMS-format IP Address range (no "dots"). The default value is 0.0.0.0 (disabled).
		Changes to this field allowed only when the GEM is INSV and the SIGIPENABLED field is set to N.
SIGIPENABLED		GEM IP signalling enabled.
		Changing this field to Y (enabling) requires a valid address entered in the SIGIPADDR and SIGSUBMASK fields.
		Changing this field to N (disabling) has no restrictions.

Selected field descriptions for table MNMGPIP (Sheet 2 of 2)

Field	Subfield	Description
BEARVLAN		Bearer VLAN TCI
	PRIORITY	User priority
		Accepted values range from 0 through 7.
	CIF	Canonical Format Indicator
		Value is always N.
	VID	VLAN ID - a unique VLAN identification
		Accepted values range from 0 through 4095 except for NTLZ20AA, BA, and CA boards which are restricted to 255.
SIGVLAN		Signalling VLAN TCI
	PRIORITY	User priority
	CIF	Canonical Format Indicator.
		Value is always N.
	VID	VLAN ID - a unique VLAN identification
		Accepted values range from 0, and 2 through 4094. Values 1 and 4095 are reserved and not allowed for the VID.

8   The MNIPPARM table contains internet protocol parameters including codec values. This table automatically datafills with default values which may be modified to suit office requirements.

Example

```
IWSPM G711ULAW    NONE     10      0      0      0    100    0
ENABLE 6 128     OFF    ENABLE DISABLE DISABLE   N  NORTHAMERICA
20  10  20  10  20  10  20 10  20 10  20 10 20 10 20 10  20   10
20  10    1000  50  1000  1000 CP101110 6 CP101000 6
         DISABLE
```

Selected Field Descriptions

Selected field descriptions for table MNIPPARM (Sheet 1 of 2)

Field	Subfield	Description
DIFFSERV		Differentiated Services
	EF_CODEPOINT	The voice band code point consisting of the prefix "CP" followed by a 6-bit ASCII value.
		The default value is CP101110.
	EF_PRIORITY	Voice band priority.
		Accepted values range from 0 through 7. The default value is 6.
	CS5_CODEPOINT	The signalling data code point consisting of the prefix "CP" followed by a 6-bit ASCII value.
		The default value is CP101000.
	CS5_PRIORITY	The signalling data code point consisting of the prefix "CP" followed by a 6-bit ASCII value.
		The default value is CP101000.
MEDIA_INTEG		Media Integrity Indicator
	MI_STATUS	Media Integrity GEM card status. The default value is DISABLE.
		Values are ENABLE or DISABLE.

Selected field descriptions for table MNIPPARM (Sheet 2 of 2)

Field	Subfield	Description
	MI_ACTION	MI failure action.
		Values are: NONE, LOGONLY, TEARDOWN.
	MI_INTEGER	Reserved for future use.

9   This procedure is complete.

Installing and Provisioning an SRM

Prior to performing this procedure the following must be in place:

- timing cables installed to the bay
- two BITS Clocks with two available ports
- the NTCX5110 cable assembly has been installed

The following variables are used in this procedure.

Variable	Description
disk_volume	the name of the SRM load volume
srm_load_name	the load name for the SRM
spm_no	the number of the SPM
link_no	the link number (0 or 1)
slave_ms	the number of the slave MS
new_slave	the number of the new slave MS

This procedure requires pressing the Enter key for each command typed on the MAP display.

At the MAP level

1 Access table PECINV by typing

   >TABLE PECINV

2 Determine if the NTLX44AA has been datafilled by typing

   >POS NTLX44AA

If the tuple is	Do
not found	step 3
found	step 6

3 Contact the next level of support and obtain the current baseline release and exceptions associated with the pack. Then add the NTLX44AA to the table.

4 Begin the table addition by typing

   >ADD

5   Answer each of the prompts with the required datafill provided by the table range.

> **Example**

> This is an example of datafilling table PECINV.

> **>ADD**

> ENTER Y TO CONTINUE PROCESSING OR N TO QUIT

> **>Y**

> PEC:

> **>NTLX44AA**

> SSYSBASE:

> **>SPMHW 01 $**

> SSYSBASE:

> **>$**

> TUPLE TO BE ADDED:

> NTLX44AA (SPMHW 01 $) $

> ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

> **>Y**

> TUPLE ADDED

6   Exit table PECINV by typing

> **>QUIT**

7   Determine the location of the SRM loads by typing

> **>DISKUT;LF disk_volume**

8   Exit the DISKUT level by typing

> **>QUIT ALL**

9   Access table PMLOADS by typing

> **>TABLE PMLOADS**

10   Determine if the SRM load is present by typing

> **>POS srm_load_name**

> *Example*

> **>POS SYN16BK**

If the SRM load is	Do
not found	[step 11](#)

If the SRM load is	Do
found	

11   Begin the table addition by typing

>ADD

12   Answer each of the prompts with the required datafill provided
by the table range.

Example

This is an example of datafilling table PMLOADS.

>ADD

ENTER Y TO CONTINUE PROCESSING OR N TO QUIT

>Y

LOADNAME:

>SYN16CT

ACTFILE:

>SYN16CT_000001

ACTVOL:

>S00DSPM

BKPFILE:

>SYN16CT_000001

BKPVOL:

>S01DSPM

UPDACT: N

>

TUPLE TO BE ADDED:

SYN16BK

                    SYN16BK_000001   S00DSPM

                    SYN16BK_000001   S01DSPM   N

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>Y

TUPLE ADDED

13 Exit table PMLOADS by typing

>**QUIT**

14 Access table MNPRTGRP by typing

>**TABLE MNPRTGRP**

15 Begin the table addition by typing

>**ADD**

16 Answer each of the prompts with the required datafill provided
by the table range.

Example

This is an example of datafilling table MNPRTGRP.

>**ADD**

ENTER Y TO CONTINUE PROCESSING OR N TO QUIT

>**Y**

GRPKEY:

>**SPM 2 SRM_GRP 1**

SELECTOR:

>**SRM_GRP**

SWCHMODE:

>**NRVTV**

SPARING:

>**UNSPARED**

TUPLE TO BE ADDED:

SPM 2 SRM_GRP 1 SRM_GRP NRVTV UNSPARED

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.

>**Y**

TUPLE ADDED

17 Exit table MNPRTGRP by typing

>**QUIT**

18 Access table MNCKTPAK by typing

>**TABLE MNCKTPAK**

19 Begin the table addition by typing

>**ADD**

20 Answer each of the prompts with the required datafill provided by the table range.

Example

This is an example of datafilling table MNCKTPAK.

>ADD

ENTER Y TO CONTINUE PROCESSING OR N TO QUIT

>Y

CPKKEY:

>SPM 0 0 6

CPKTYPE:

>SRM

UNITNO:

>0

SRMGRPID:

>1

WKRSPR:

>WORKING

ALRMCTRL:

>SYSB CR RPT

ALRMCTRL:

>MANB MJ RPT

ALRMCTRL:

>ISTB MN RPT

ALRMCTRL:

>HLDOVR MJ RPT

ALRMCTRL:

>HLDOVR24 CR RPT

ALRMCTRL:

>LOR MJ RPT

ALRMCTRL:

>PATCHFAIL MJ RPT

ALRMCTRL:

```
>$
```
```
BITSALM:
```
>LOS MJ RPT
```
BITSALM:
```
>AIS MJ RPT
```
BITSALM:
```
>OOF MJ RPT
```
BITSALM:
```
>MTIE MN RPT
```
BITSALM:
```
>TLD MJ RPT
```
BITSALM:
```
>BPV MN RPT
```
BITSALM:
```
>CRC MN RPT
```
BITSALM:
```
>$
```
BITSAINFO:
```
>DS1 ESF
```
BITSBINFO:
```
>DS1 ESF
```
BITSOUTINFO:
```
>$
```
PQL_ARR:
```
>NA

If signaling format is:	then PQL_ARR
SF	STU
ESF with SSM messages	NA
ESFwithout SSM messages	STU

```
REV:
```
>N

```
PEC:
```

>NTLX44AA

```
RELEASE:
```

>01

```
LOAD:
```

>SYN16CT

```
TUPLE TO BE ADDED:

SPM  0 0  6 SRM 0 1 WORKING (SYSB CR RPT) (MANB
MJ RPT) (ISTB MN RPT) (HLDOVR MJ RPT)
(HLDOVR24 CR RPT) (LOR MJ RPT) $ (LOS MJ RPT)
(AIS MJ RPT) (OOF MJ RPT) (MTIE MN RPT) (TLD
MJ RPT) (BPV MN RPT) (CRC MN RPT) $ DS1 ESF
DS1 ESF $ NA N NTLX44AA 01
SYN16CT

ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
```

>Y

```
TUPLE ADDED
```

21   Exit table MNCKTPAK by typing

>QUIT

At the equipment frame

22   Ensure ESD precautions are utilized. Verify that ESD wrist strap is connected properly.

23   Remove the NTLX60AA Filler packs from card slot 6 in the lower shelf (shelf 0) of the SPM being modified.

24   Insert the SRM in card slot 6 in the lower shelf (shelf 0) of the SPM being modified.

   Note: Wait for the SRM to complete self test and the green LED lights. This step requires several minutes.

25   Connect the NTLX5110 cable assembly for the 15 pin and 9 pin DSUB connectors.

At the MAP level

26   Post the SPM to be updated by typing

>MAPCI;MTC;PM;POST SPM spm_no

27   Select the SRM by typing

>SELECT SRM 0

28 Busy the SRM by typing

    >BSY

29 Load the SRM with the SRM software load by typing

    >LOADMOD

30 Return the SRM to service by typing

    >RTS

31 Access the BITS level of the MAP by typing

    >BITS

Example of MAP display

```
SPM   2  SRM   0
LinkNo     BitsName     Status     State     SSM     AlmSev
   0       BITSA        InAct      OffL      NIL
   1       BITSB        InAct      OffL      NIL
   2       BITSOUT                 Uneq      NIL
```

32 Busy the links by typing

    >BSY link_no

33 Return the links to service by typing

    >RTS link_no

34 Repeat step 32 and step 33 for each BITS link.

35 Ensure the BITS links are both InSv, and verify one link is ACTIVE and the other INACTIVE.

36 If any BITS link or SRM alarms arise, clear them using the appropriate procedure.

37 Return to the CI level of the MAP screen by typing

    >QUIT ALL

38 In order to use the SRM for ESI timing, another SRM must be added on a separate SPM. Repeat step 14 through step 37 to add an SRM to another SPM.

    Note: Although it essentially acts as a spare SRM, the second SRM should still be datafilled as working in Table MNCKTPAK.

39 Access table SYNCLK by typing

    >TABLE SYNCLK

40 List the tuple in the table by typing

    >LIST

41   Determine the current timing configuration for the SPM using the following table.

Timing configuration cross-reference

Timing type	Example tuple
Master-external	0 STRAT3 MASTEXT F1000 ANALOG T50 OFF
Master-internal	0 STRAT3 MASTINT
SRM timing	0 STRAT3 SLAVE SPM 32 SRM SPM 33 SRM
Slave	0 STRAT3 SLAVE DTC 0 0 0 DTC 1 0 0

If the current timing configuration is	Do
Master-External or Slave	step 42
any other configuration	step 45

42   Exit table SYNCLK by typing

   >QUIT

43   Drop synchronization on the MS clock by performing the following sequence of commands:

   >MAPCI;MTC;MS;CLOCK;DPSYNC

   ```
   This action will degrade SPM OC-3 SYNC
   performance.
   ```

   ```
   Do you wish to continue?
   ```

   >Y

   ```
   Request to Drop Synchronization on Clock 1:
   Submitted
   ```

   ```
   Request to Drop Synchronization on Clock 1:
   Passed
   ```

   >QUIT ALL

44   Return to table SYNCLK by typing

   >TABLE SYNCLK

45   Change the timing configuration by typing

   >CHA

   Note: The SPM numbers datafilled in table SYNCLK should match the numbers of the SPM in which the SRM were datafilled.

46 Modify the fields as follows:

Field	Value
CLKTYPE	STRAT3
OFFCONF	SLAVE
LK0_PTYP	SPM
LK0_PNUM	2
LK0_PMTYP	SRM
LK1_PTYP	SPM
LK1_PNUM	3
LK1_PMTYP	SRM

47 Confirm the tuple change by typing

>Y

48 Exit table SYNCLK by typing

>QUIT

49

If the original configuration was	Do
Master-External or Master-Internal	step 50
OC3 line timing or Slave	step 57

50 Access the MS clock by typing

>MAPCI;MTC;MS

51 Busy the slave MS by typing

>BSY slave_ms

52 Return the slave MS to service by typing

>RTS slave_ms

53 Switch the master clock to the mate MS by typing

>SWMAST

54 Busy the new slave MS by typing

>BSY new_slave

55   Return the new slave MS to service by typing

        `>RTS new_slave`

56   Switch back to the original master MS by typing

        `>SWMAST`

57   Access the Clock level of the MS by typing

        `>MAPCI;MTC;MS;CLOCK`

Example of MAP display

```
Message Switch Clock Shelf 0 Inter-MS Link 0 1
MS 0 . Master . . .
MS 1 . Slave . . .
Shelf 0 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2
Card 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
Chain | |
MS 0 . . . . . . - - . - - - - - - - - - . - - . . . . . .
MS 1 . . . . . . - - . - - - - - - - - - . - - . . . . . .
Card 02 Alm Stat %Adj Src | Car Stat Sp PM     RMTyp SSM
MS 0 .    .   Fr +05.5 Nil | Lk0 Smp  - SPM 002 SRM   PRS
MS 1 .    .   Syn -03.0 Ms0 | Lk1 Smp  - SPM 003 SRM   PRS
Links Slipping: NA out of NA
```

58   Confirm the timing reference SRM and the SPMs just datafilled
            appear as references at the CLOCK level. Column "PM" should
            indicate SPM <number>, and column "RMTyp" should indicate
            SRM.

59   Initiate synchronization on the MS clock by typing

        `>SYNC`

        Note: The SYNC command may take several minutes to
        complete.

60   If additional assistance is required, contact the next level of
            support.

61   Return to the CI level of the MAP screen by typing

        `>QUIT ALL`

62   The procedure is complete.

Enabling TriModal Logs and OMs

This procedure describes the steps required to view multiple packet network logs and operational measurements associated with the TriModal feature.

The ability to view multiple packet network logs and operational measurements requires setting the Multi Network Display Active parameter to a value of Y in the OFCVAR table, which enables:

- TRK2NET1, TRK2NET2, OFZ2NET1, OFZ2NET2 and DPTOFCP OM groups registers to peg

- DPTNODE OM group displays node signaling type and bearer network

- IWBM 800 series logs display the bridge pool

This procedure requires pressing the Enter key after typing a command.

Enabling TriModal Logs and OMs

At the MAP terminal

1   Access the OFCOPT table by typing

     >TABLE OFCOPT

2   Position on the NETWORK_ACTIVE parameter by typing

     >POS NETWORK_ACTIVE

If the value	Do
does not equal EXTENET	step 3
equals EXTENET	step 4

3   Contact your system administrator.

     Go to step 10.

4   Access the OFCVAR table by typing

     >TABLE OFCVAR

5   Position on the MULTINET _DISPLAY_ACTIVE parameter by typing

`>POS MULTINET_DISPLAY_ACTIVE`

If the value is	Do
N	step 6
Y	step 9

6   Begin modification by typing

`>CHA`

Example

```
>cha
 PARMVAL: N
```

7   Change the parameter value to Y by typing

`>Y`

8   Accept the change by typing

`>Y`

9   Exit the OFCVAR table and return to the CI level by typing

`>QUIT ALL`

10   The procedure is complete.

Datafill additions

The following procedure shows an example of how to add a tuple to a table. This basic procedure applies to all tables.

Add datafill

At the MAP terminal

1   Enter the data schema table by typing

   >TABLE <table_name>

   and pressing the Enter key.

   where

   table_name
      is the name of data schema table.

2   Begin the tuple addition by typing

   >ADD

   and pressing the Enter key.

3   Enter the datafill for the fields and subfields of the tuple. The following is an example of entering datafill for an IW SPM IP.

```
>table mnmgpip
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
TABLE: MNMGPIP
>cha
JOURNAL FILE UNAVAILABLE - DMOS NOT ALLOWED
ENTER Y TO CONTINUE PROCESSING OR N TO QUIT
>y
GEMMGMIP: 172  16 121   2
>
SUBNMASK: 255 255 255   0

>BCASTIP: 172  16 121 255

>GWIP: 172  16 121   1
>
GEMBARIP: 172  16 121   4
>
TUPLE TO BE CHANGED:
     SPM  0 0  9 172  16 121   2   255 255 255   0 172  16 121 255
172  16 121   1    172  16 121   4
ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT.
>y
     SPM  0 0 10 172  16 121   3   255 255 255   0 172  16 121 255
```

```
172  16 121   1   172  16 121   4
```

4   This procedure is complete.

Datafill change

The following procedure shows how to change datafill in a tuple. This basic procedure applies to all tables.

Change datafill

At the MAP terminal

1   Enter the data schema table by typing

     >TABLE <table_name>

     and pressing the Enter key.

     where

         table_name
            is the name of the data schema table.

2   Position on the tuple to be deleted by typing

     >POS <table_key>

     and pressing the Enter key.

     where

         table_key
            is a unique identifier for a tuple in the table.

     Note: The range command **RAN 1** describes the subfields in the table key for most tables.

3   Change the tuple by typing

     >CHA

     and pressing the Enter key.

4   To keep datafill, press the Enter key.

     To change datafill, enter the new value and press the Enter key.

     To end a vector, enter $ followed by the Enter key.

     Note: To accept the default values in a vector such as, enter $ followed by the Enter key.

5   Confirm the tuple change by typing

     >Y

     and pressing the Enter key.

6   This procedure is complete.

Datafill deletions

The following procedure shows how to delete a tuple from a table. This basic procedure applies to all tables.

Delete datafill

At the MAP terminal

1   Enter the data schema table by typing

   >TABLE <table_name>

   and pressing the Enter key.

   where

   table_name
      is the name of the data schema table.

2   Position on the tuple to be deleted by typing

   >POS <table_key>

   and pressing the Enter key.

   where

   table_key
      is a unique identifier for a tuple in the table.

   Note: The range command **RAN 1** describes the subfields in the table key for most tables.

3   Delete the tuple by typing

   >DEL

   and pressing the Enter key.

4   Confirm the tuple deletion by typing

   >Y

   and pressing the Enter key.

5   This procedure is complete.