SubMenu

DX 200

BSC S10.5 MS Location Services HW Implementation Procedure

NOKIA

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Summary of Revisions

Version	Date	Author	Comments
1.0-0	26-March-2002	J.Peltomäki	First S10.5 version

1 Purpose

This document describes the implementation of the Nokia DX200 SMLC BSC hardware in S10.5. The SMLC feature is available for both first and second generation DX200 BSC (BSCE and BSC2E/A). In ANSI market areas only BSC2A and BSC2i are used.

Prior to the SMLC Feature upgrade, the minimum HW requirements for the S10.5 release are met. This brings with it memory upgrade requirements. Memory requirements are defined in S10.5 Software implementation manual.

SMLC feature implementation is carried out using the HIT, which is a Microsoft Windows compatible program.

2 Feature description

The S10.5 SMLC feature is an optional feature for the DX200 Base Station Controller. The prerequisite is that the BSC fulfills the hardware requirements described in this document. The SMLC Feature does not have limitations on how many BCSU units exist.

Serving Mobile Location Center (SMLC): SLMC implements location calculation function for the BSC. This allows a GSM subscriber and/or valid mobile equipment to be positioned with MS location Services. Feature Requires new, more powerfull CPU unit CP6MX to be implemented for MCMU units. This CP6MX plug-in unit reguires also MBIF-UA (24 plug-in units) upgrades for all computer units (OMU, MCMU and BCSU) for the old BSCE and BSC2E/A models. MBIF-UA plug-in units are already installed in high capacity BSCs (BSCi and BSC2i).

Additional SMLC feature information is available in the S10.5 NED documentation.

3 Prerequisites

Persons performing the expansion work should have a good knowledge of the DX 200 system and preferably have previous DX 200 BSC expansion experience. The password of the BSC with authority 250 in all command classes and SIM cards of the operator network are needed. It is recommended that a backup is taken from the software package according to the document *'Safecopy Instructions of DX200 BSC'* before installations. This document is included in the S10.5 NED.

Stability of the BSC should be verified, prior to hardware installation work, by checking the alarm history and unit states. Alarm history should be checked for all main computer units. Diagnostics should be executed for all units which are modified during the extension. Change over should be made for all duplicated units. Diagnostics results and alarm history should be analysed to ensure that there are no problems in the BSC.

A wrist band ESD Earthing device or a corresponding method must be used when handling DX 200 hardware equipment.

It is recommended that installations are done during periods of low traffic, for example, at night time, to minimize any traffic disturbances. Each stage of the extension work should be commenced only if conditions remain stable. The BSC configuration should be returned to the last stable stage if unsolvable problems are encountered. During the extension work, the alarm situation should be monitored. All alarms which arise must be analysed and the reason for the alarm should be found. The traffic ability of the BSC is checked by testing separate call cases and following up the traffic with traffic specific commands (ZEEL, ZEEI, ZRCI, ZCEL, ZNET). If night time work is done, the operational stability of the BSC should always be checked before leaving the site.

It is recommended that all available S10.5 Change Deliveries be installed to the BSC before the upgrade. The automatic return to old package - feature must not be in use during the upgrade, since the OMU restarts may cause the system to switch the active SW package. The status of the feature can be checked with ZWSI - command.

4 SMLC hw requirements

The BSC software release S10.5 SMLC feature sets requirements for hardware. The SMLC demands faster calculations, messaging and better overal hardware perfomance.

New Hardware for the SMLC feature:

1. Processor unit CP6MX in the MCMU and DMCT2-S terminator if not already installed
2. Message bus units must be MBIF-UA for adequate performance

The new requirements are met through the introduction of a more efficient MCMU CPUs (CP6MX) and message bus interface (MBIF-UA), for both the BSCE and the BSC2E/A.

The CP6MX board is a Intel Mobile Pentium III 500MHz Microprocessor based, single board computer, with an onboard PCI bus and interface to DMC bus. Maximum 512 MB of SDRAM is accommodated via the DIMMs.

Front panel connector provides option for two lines for the serial port of the service terminal. The use of the two service terminals reguires a cable Stada C100533.

The DMCT2-S is a Bus Terminator whitch limits the DMC-bus signal voltage level to 3.5V. The CP6MX unit requires lower bus voltage level.

The interchangeability code B is required for SWADD01. Due to BSC HW Retrofit 9.0, the interchangeability A is not allowed in BSC. If the BSC HW Retrofit 9.0 has not yet been implemented, it must be installed before the SMLC BSC upgrade. See HW Technical note 7/97 for details. BSC factory deliveries with HW Retrofit 9.0 began on week 44/97.

The CP6MX plug-in unit requires modifications to the current DMC-bus. DMCT2-S terminators are added to MC1C cartridge. This changes the interchangeability of MC1C to D.

DMCT2-S terminator installation to MC1C cartridges should be verified during the SMLC upgrade, so that after the upgrade cartridges are in interchangeability D – level (material changes: new version of terminator DMCT2-S, code 72724 4001). See HW Product Change Note for Functional Change (CM) of MC1C for details.

5 Preliminary step

5.1 Upgrade Procedure execution time

Total SMLC BSC Hardware Upgrade time is 1 hour for BSCi and BSC2i and 4 hours for BSCE and BSC2E/A. Execution times for different steps in this procedure are defined later in this manual.

During the SMLC BSC upgrade the traffic is handled in a normal way.
Only effect to the normal operation is that NMS links are blocked when OMU MBIF PIU is changed (in BSCE and BSC2E/A).

5.2 The Holistic Integrated Tester, HIT

Persons performing the expansion work should have a good knowledge of HIT, before starting the upgrade work. Installation Instructions and details of HIT program are available in HIT documentation. See Document: ***HIT 2.3 User Guide.***

5.3 Installing the upgrade macro

Install the required upgrading macros. The S10.5 SMLC upgrading macros are included in the diskette **'HIT Upgrading macros S10.5'.**

Set the following HIT settings on before starting the macro:
1. Options / Interpreter / Recover Errors (tick the box)
2. Options / Environment / Enforce Promptcheck to BOTH (tick the box)
3. Options / Save Settings / default

Directory	File name	Purpose
UPGRADE	UPRSML10.LST	S10.5 SMLC upgrade
BACKUPS10.5	UPRBUP10.HIT	S10.5 software package safecopy

5.4 HIT upgrade

In S10.5, SMLC upgrade macroes are implemented to the HIT environment. In the S10.5 HIT environment, different phases are divided into the separate HIT macroes. This is done to make HIT macro and upgrade procedure more modular and easier to follow. The HIT macro language, TEL, is procedural language (like C) and makes a macro design like a program.

SMLC upgrade HIT macro modules are executed in HIT's CASE LIST window. UPRSML10.LST list is executed by either Run Menu (F9) or by the Run icon of the toolbar. If the user wishes to execute only the selected macroes from the list, those macroes can be marked by clicking the mouse while the CTRL is held down. Alternatively: position the cursor on the item and using the CTRL+UP or CTRL+DOWN arrows to highlight the line. The selected caselist lines are painted green. All the unselected lines are ignored. If no lines are manually selected, the whole caselist is excuted as a default. Double clicking an item in the list window causes the macro to be opened in the macro window.

BSC S10.5 SMLC upgrade HIT macro modules for different phases:

1. **UPRHIG10.HIT, Precheck phase**
2. **UPR1HI10.HIT, MessageBus upgrade phase**
3. **UPRSML10.HIT, MCMU upgrade phase**

Create the **MML-** device with a proper COM–port settings before starting the HIT-macro.

All the HIT upgrade phases are now using their own logfile. Later, if it comes necessary to investigate the logfiles, it is much easier to search any unexpected phenomenon from the smaller logfile, than from one big logfile containing all the upgrade phases.

All the HIT upgrade phases are using their own log file. The Logfile name is asked in the beginning of every upgrade phase. If the used name is already in use, logfile will be appended to the end of the file. However, if user wishes to use single logfile for the whole upgrade, this is possible to do by giving the same logfile name in every phase (instead of deafult logfile name).

5.5 Information from current software

It is recommended that part of the old **S10.5** hardware and software information is printed to the log file.

```
ZUSI;
ZDDE:OMU:"ZGSC";
ZDDE:MCMU,0:"ZGSC";
ZDDE:MCMU,1:"ZGSC";
ZWTI:J;
ZWTI:C;
ZWTI:U;
ZWTI:P;
ZWIP:GSW;
ZEOL;
ZDSB;
ZNET;
ZNEL;
ZNCI;
ZAHO;
```

```
ZDBD:OMU;
ZDBS:BSDATA,0;
ZDBS:EQUIPM,0;
ZDBS:OEDATA,0;
```

6 Hardware changes

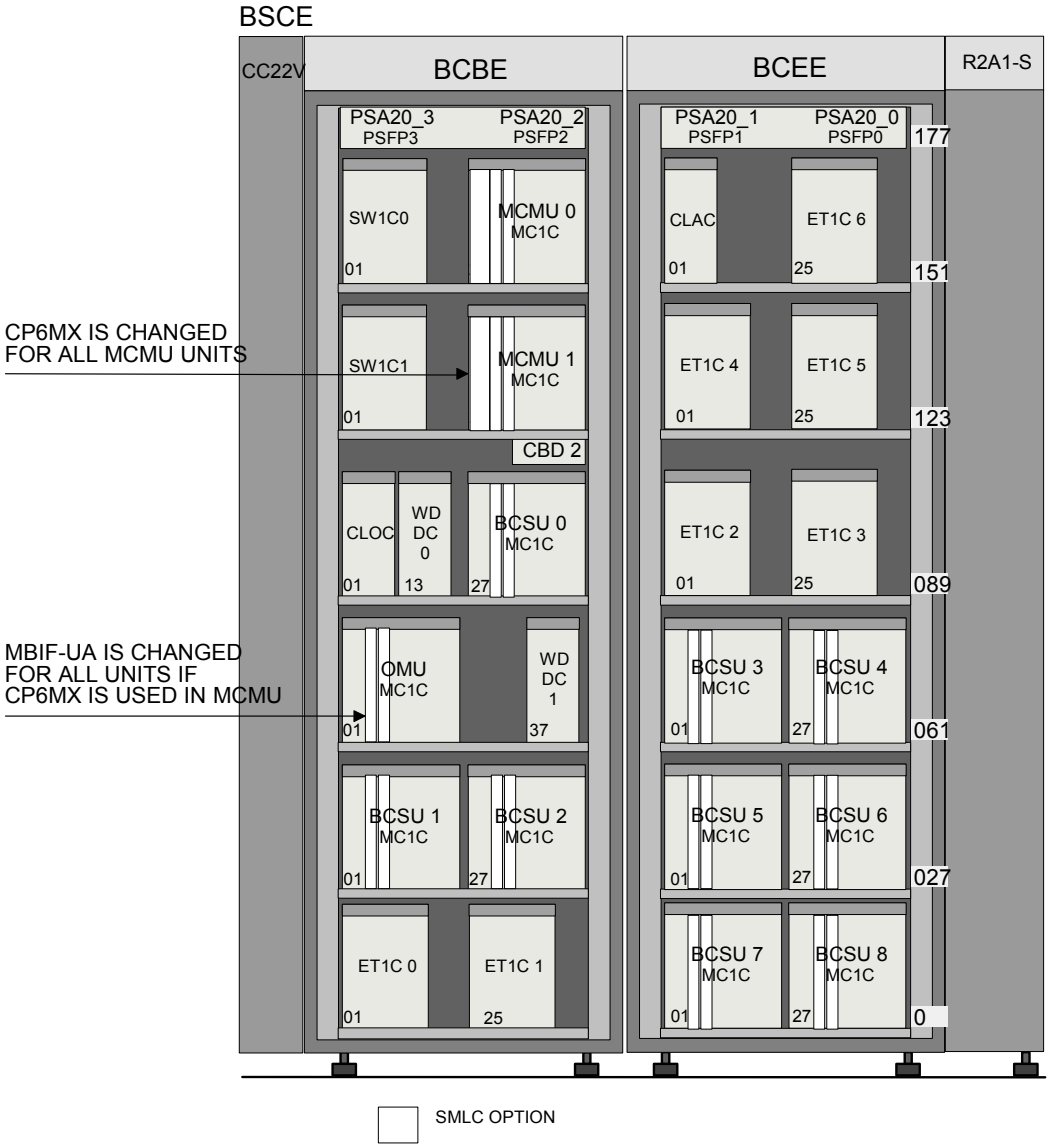
This section follows the steps in the ***UPRSML10.LST*** file. The new hardware is installed and created to the EQUIPM-database.

HW changes are recommended to be made one unit, at a time, but due to incompatibility between CP6MX and MBIF-T PIUs, the MBIF-UAs are to be changed first. The MB-upgrade is then followed by the MCMU HARDWARE upgrades.

Check that the required amount of plug-in units for the extension are available. It is also recommended to have tested spareparts available. Verify that the plug-in unit interchangeability codes and versions are correct and in accordance with the document ***DX200 BSC and TCSM Hardware Revisions List System release S10.5.*** This document is delivered in the ***S10.5*** Software Release binders.

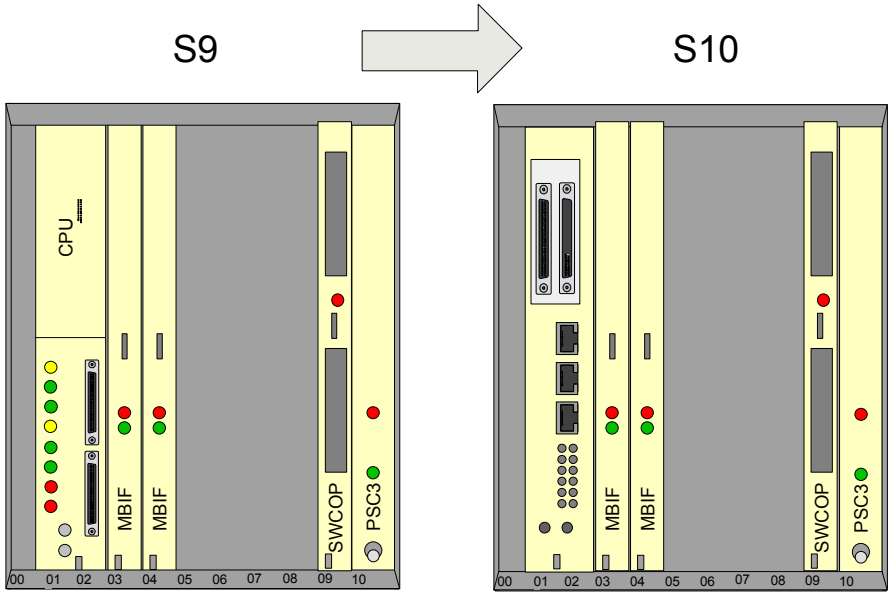
6.1 BSCE SMLC option

The following updates are made for BSCE SMLC option:
CP6MX to MCMU and MBIF-UA to all computer units.



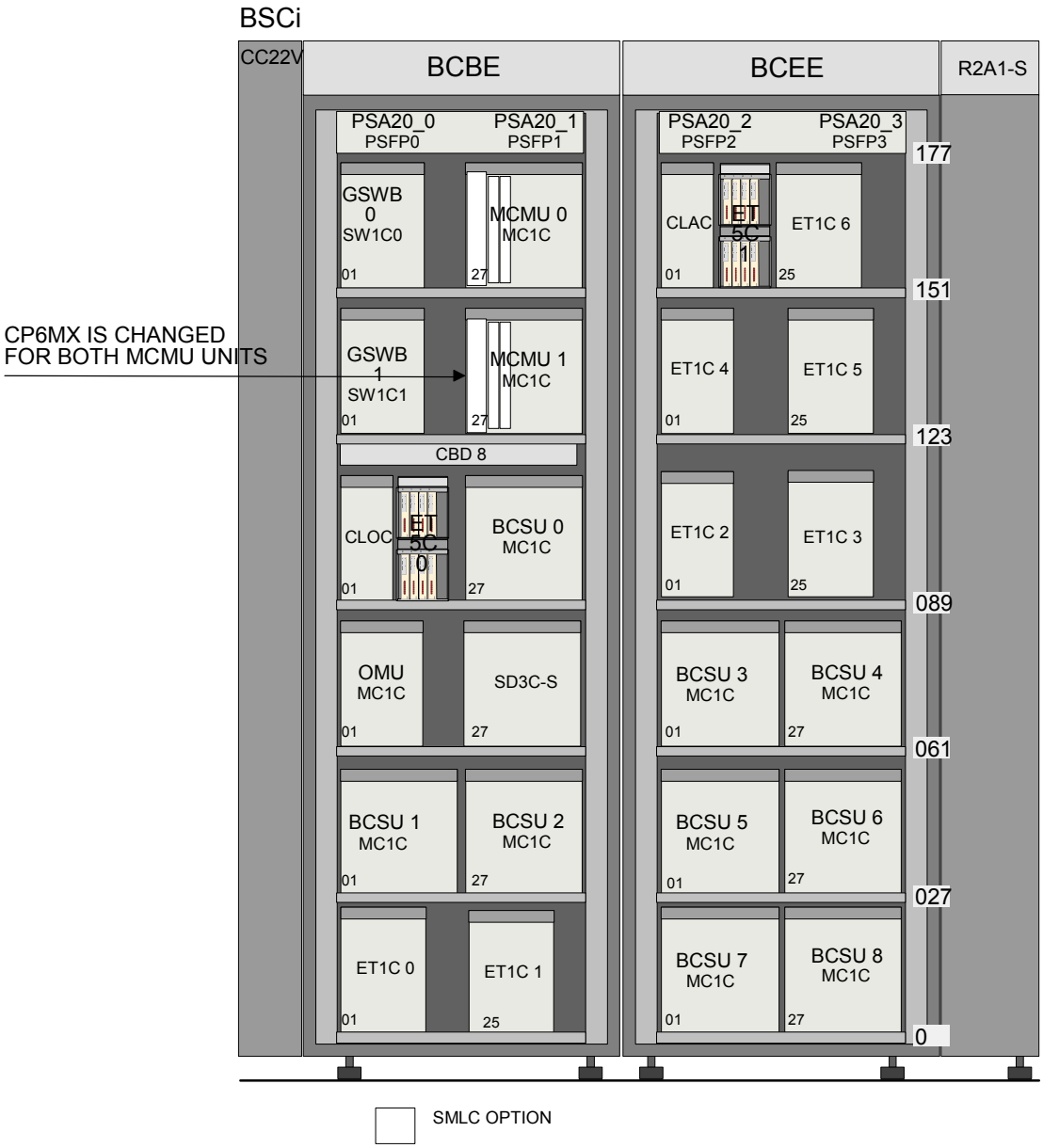
Removed HW:
1. All message bus plug-in units MBIF-T
2. CP4HL / CP4HX from the MCMU

Added HW:
1. Message bus plug-in units MBIF-UA to all computer units
2. DMCT2-S terminators to every MCMU if they are not already installed
3. CP6MX to both MCMU:



6.2 BSCi SMLC option

The following updates are made for SMLC option:
CP6MX to MCMU.

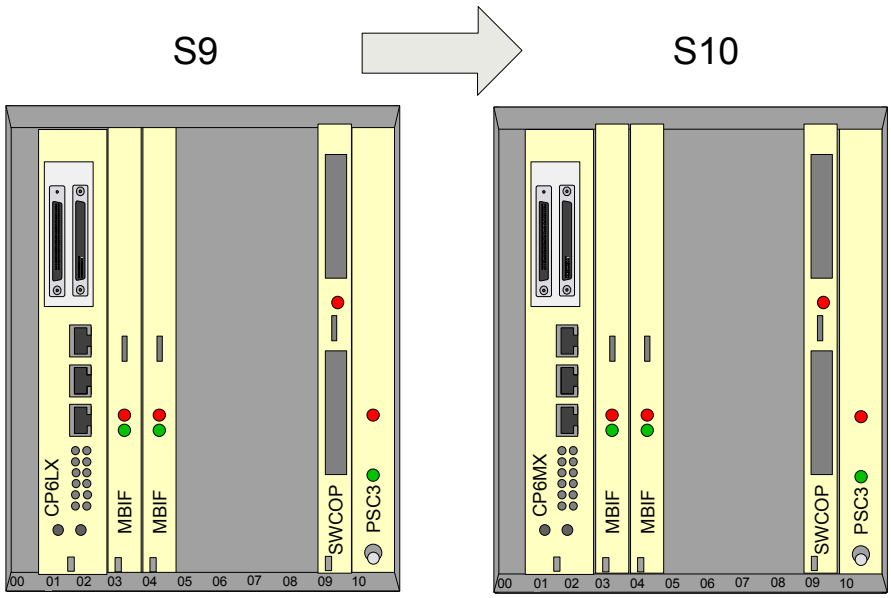


Removed HW-products

1. CP6LX from the MCMU

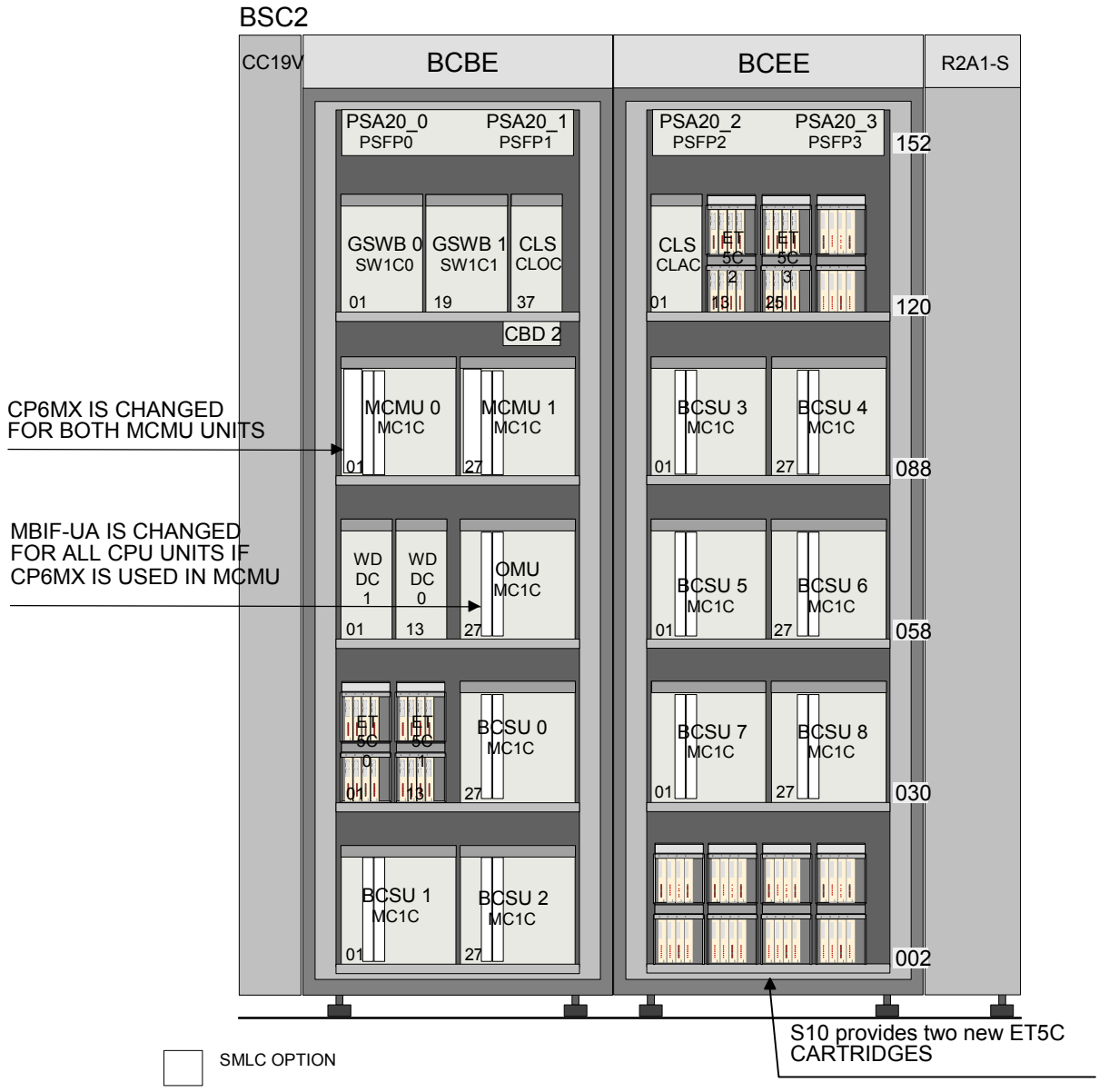
Added HW-products

2. CP6MX to both MCMU:



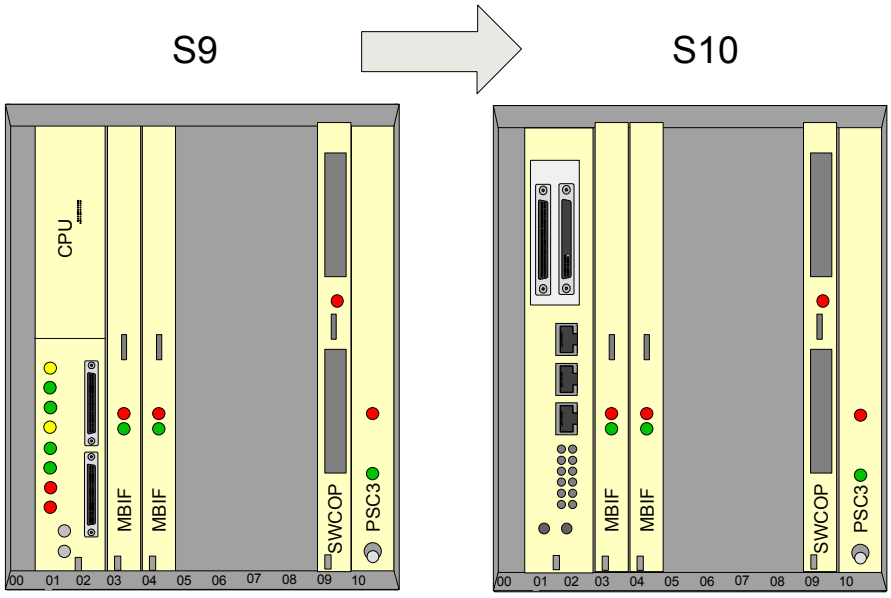
6.3 BSC2E/A SMLC option

The following updates are made for SMLC option:
CP6MX to MCMU and MBIF-UA to all computer units.



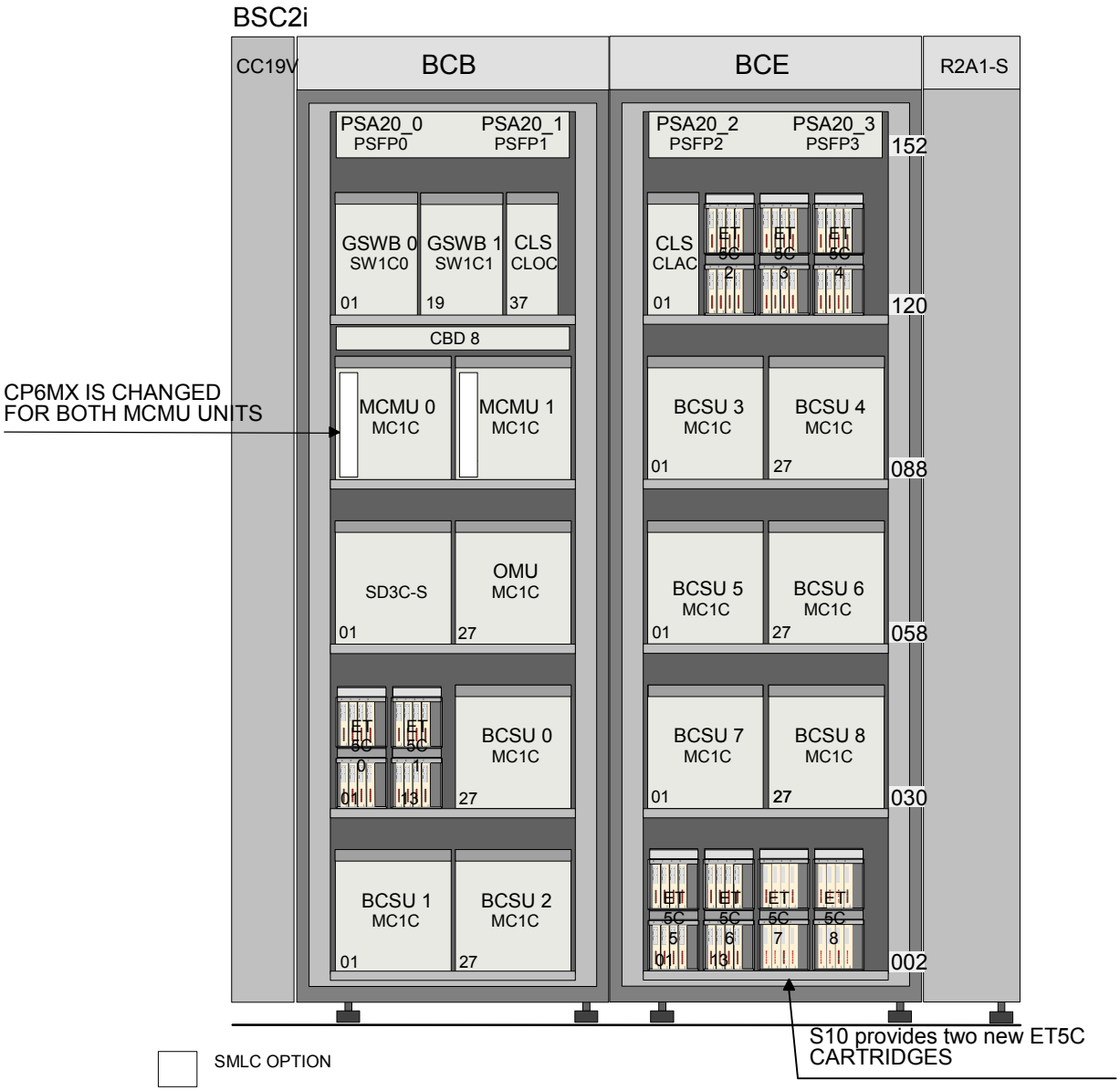
Removed HW:
1. All message bus plug-in units MBIF-T
2. CP4HL / CP4HX from the MCMU

Added HW:
1. Message bus plug-in units MBIF-UA to all computer units
2. DMCT2-S terminators to every MCMU if they are not already installed
3. CP6MX to both MCMU:



6.4 BSC2i SMLC for upgrade

The following updates are made for SMLC option to MCMU:



Removed HW-products

1. CP6LX from the MCMU

Added HW-products

2. CP6MX to both MCMU:

6.5 MB upgrade - Changing MBIF-T to MBIF-UA

This section contains instructions on how to update the message bus interface plug-in units (MBIF-T to MBIF-UA) for every computer unit in DX200 BSCE or DX200 BSC2E/A with minimal disturbance to the operation of the network element. The execution time of these steps is about 2,5 hours for a fully configured BSC and 1,25 hours for a basic rack (6 Computer units). MBIF cards are replaced one by one in every computer unit.

In the first step, the spare Message Bus is set to SE-NH state. Next, every computer unit is changed to SE-NH state one by one, and MBIF-UA plug-in units are installed to the SE-NH side of the Message Bus in all computer units. Once the plug-in units have been updated to every computer unit, MB diagnostics are performed. After that, MB switchover is executed and a new spare MB is put into SE-NH state. All computer units are then changed to SE-NH state one at a time, and MBIF-UA plug-in units are installed to the other (now in SE-NH state) side of Message bus. In the third phase, computer units are set to TE - state one at a time, and SYSB diagnostics are executed to every computer unit.

During the MB, BCSU and MCMU HW upgrade, NMS links are not locked. Therefore, NMS operators must be informed about the HW upgrade work before starting. This is to ensure that no simultaneous BSC commands, which may disturb the upgrade work, are executed from the NMS. Minimizing the NMS link down time will ensure that the loss of measurements and alarm events are minimized as well. This makes the monitoring of radio network alarms in NMS possible during the upgrade. Measurements and NMS links are blocked when OMU HW is upgraded.

The CP6MX CPU does not support MBIF-T plug-in units. Therefore, Message Buses are upgraded first. The CP4HX/CP4HL CPU supports both MBIF-T and MBIF-UA plug-in units. After the upgrade, all message bus cards must be of the same type throughout the whole message bus. Every computer unit must contain the same type of MBIF plug-in unit in both message buses.

It is recommended that the operation of the message buses is followed on the day after modification. It is also recommended that a busy hour be included in the system monitoring phase. Both message buses should be up (WO-EX and SP-EX) and no serious alarms should exist in the message or DMC buses during the day.

6.5.1 Database handling

Copy the databases from memory to disks before the MB upgrade changes. This is done to make sure that the latest information is updated to the disks.

```
ZDBC:BSDATA,0;
ZDBC:OEDATA,0;
ZDBC:EQUIPM,0;
```

Copy the files:

```
ZDFC:MCMU,<woex_mcmu>;
ZDFC:OMU;
```

Check that the database states are normal and that they are consistent with both Winchester disks. Check these with commands:

```
ZDBS:BSDATA,0;
ZDBS:OEDATA,0;
ZDBS:EQUIPM,0;
ZDBD:OMU;
```

Make sure that there are no disk updatings in queue.

```
ZDUQ;
```

The values of SIMQUE and SEQQUE must be zero (0).

The manual MB upgrade starts from MB,1. Change the MB,1 to SP-EX state (if it is in some other state):

```
ZUSC:MB,1:SP,;
```

The used MB track numbers and plug-in unit indexes are:

MB,0 : PIU **<index> =** 0
MB,1 : PIU **<index> =** 1
MB,0 : MBIF_UA **<track> =** 3
MB,1 : MBIF_UA **<track> =** 4

In the MCMUs, the MB upgrade starts from MCMU-0. Change the MCMU,0 to SP-EX state (if it is in some other state):

```
ZUSC:MCMU,0:SP,;
```

In BCSUs, the MB upgrade starts from BCSU-0. Change the BCSU,0 to SP-EX state (if it is in some other state):

```
ZUSC:BCSU,0:SP,;
```

6.5.2 MB,1 upgrade

Change the SP-EX Message Bus 1 to SE-NH state:

```
ZUSC:MB,1:TE,;
ZUSC:MB,1:SE,;
ZUSC:MB,1:SE,;
```

If the SD3C-S cartridge is going to be installed sometimes later in the (BSCE) high capacity BSC upgrade, check that Message Bus cables are installed in such a way that the SD3C-S cartridge can be installed later. The SD3C-S cartridge construction is wider than that of the WDDC1 and, therefore, the Message Bus cabling may need to be changed to make space for SD3C-S. If the current MB,1 cabling prevents SD3C-S installation, change the cabling so that the SD3C-S position is free. Change the cabling of the MB,1 in SE-NH state. Special care must be taken to avoid the disconnection of MB,0 WO-EX MB cables, when the SE-NH side is operated.

6.5.3 MB,1 upgrade, MCMU

Change the SP-EX MCMU state to SE-NH state.

```
ZUSC:MCMU,<SP_EX>:TE,;
ZUSC:MCMU,<SP_EX>:SE,;
ZUSC:MCMU,<SP_EX>:SE,;
```

Delete the MBIF-T from the MCMU HW configuration.

```
ZWTQ:MCMU,<SP-EX>:MBIF_T,1;
```

Check that the MBIF-UA plug-in unit strappings are set according to MBIF-UA strapping instructions (see appendix : *MBIF-UA C 8887 Jumper settings*).

Replace the MB,1 MBIF-T plug-in unit with the MBIF-UA in the SE-NH MCMU computer unit. Special attention should be paid to changing the MBIF-UA along the message bus 1 which is in SE-NH state. The front panel lights are switched off in both MBIF-T cards.

Create MBIF-UA to the HW configuration.

```
ZWTP:MCMU,<SP-EX>:MBIF_UA,1,4;
```

Change the MCMU state to SP-EX.

```
ZUSC:MCMU,<SP-EX>:SE,;
ZUSC:MCMU,<SP-EX>:TE,;
ZUSC:MCMU,<SP-EX>:SP,;
```

After the MB,1 MBIF_UA is installed in the computer unit, follow the alarm situation from LPT. If any problems are encountered, they must be cleared manually, before continuing the MBIF_UA installation to the next computer unit.

Perform an MCMU Switchover.

```
ZUSC:MCMU,<wo_ex>:SP,;
```

Repeat the steps in section 6.1.3 for another MCMU.

6.5.4 MB,1 upgrade, BCSU

Change the SP-EX BCSU state to SE-NH state:

```
ZUSC:BCSU,<sp_ex>:TE,;
ZUSC:BCSU,<sp_ex>:SE,;
ZUSC:BCSU,<sp_ex>:SE,;
```

Delete the MBIF-T from the HW configuration.

```
ZWTQ:BCSU,<sp_ex>:MBIF_T,1;
```

Check that the MBIF-UA plug-in unit strappings are set according to MBIF-UA strapping instructions (see appendix : *MBIF-UA C 8887 Jumper settings*).

Replace the MB,1 MBIF-T plug-in unit with the MBIF-UA in the SE-NH BCSU computer unit. Special attention should be paid to changing the MBIF-UA along the message bus 1 which is in SE-NH state. The front panel light is switched off in both MBIF-T cards.

Create MBIF-UA to the HW configuration.

```
ZWTP:BCSU,<sp_ex>:MBIF_UA,1,4;
```

Change the BCSU state to SP-EX.

```
ZUSC:BCSU,<sp_ex>:SE,;
ZUSC:BCSU,<sp_ex>:TE,;
ZUSC:BCSU,<sp_ex>:SP,;
```

After the MB,1 MBIF_UA is installed in the computer unit, follow the alarm situation from LPT. If any problems are encountered, they must be cleared manually, before continuing MBIF_UA installation to the next computer unit.

Make a BCSU switchover.

```
ZUSC:BCSU,<wo_ex>:SP,;
```

Repeat the steps in section 6.1.4 until the MB card has been changed to MBIF_UA through the MB in SE-NH state.

6.5.5 MB,1 upgrade, OMU

Change the OMU state to SE-NH state. Note that the NMS link is disconnected:

```
ZUSC:OMU:TE;
ZUSC:OMU:SE;
ZUSC:OMU:SE;
```

Delete the MBIF-T from the HW configuration.

```
ZWTQ:OMU:MBIF_T,1;
```

Check that the MBIF-UA plug-in unit strappings are set according to MBIF-UA strapping instructions (see appendix : *MBIF-UA C 8887 Jumper settings*).

Replace the MB,1 MBIF-T plug-in unit with the MBIF-UA in the OMU unit. Special attention should be paid to changing the MBIF-UA along the message bus 1 which is in SE-NH state (leds in both MBIF_Ts are on).

Create MBIF-UA to the HW configuration.

```
ZWTP:OMU:MBIF_UA,1,4;
```

Change the OMU state to WO-EX.

```
ZUSC:OMU:SE,;
ZUSC:OMU:TE,;
ZUSC:OMU:WO,;
```

After the MB,1 MBIF_UA is installed in the OMU unit, follow the alarm situation from LPT. If any problems are encountered, they must be cleared manually, before continuing to the MB state change.

Change the SE-NH MB,1 state to TE-EX.

```
ZUSC:MB,1:SE,;
ZUSC:MB,1:TE,;
```

Run diagnostics:

```
ZUDU:MB,1;
```

If the diagnostics fail, follow the procedure described in *Diagnosis Reports manual (2.5 Alarm Reference Manual)*.

Once the diagnostics have been passed, change the MB state to SP-EX.

```
ZUSC:MB,1:SP,;
```

Make a MB switchover.

```
ZUSC:MB,0:SP,;
```

6.5.6 MB,0 upgrade

In BCSUs, the MB upgrade starts from BCSU-0. Change the BCSU,0 to SP-EX state (if it is in some other state):

```
ZUSC:BCSU,0:SP,;
```

Change the SP-EX Message Bus 0 to SE-NH state:

```
ZUSC:MB,0:TE,;
ZUSC:MB,0:SE,;
ZUSC:MB,0:SE,;
```

If the SD3C-S cartridge is going to be installed sometimes later in the BSCE high capacity BSC upgrade, check that Message Bus cables are installed in such a way that the SD3C-S cartridge can be installed later. The SD3C-S cartridge construction is wider than that of the WDDC1 and, therefore, the Message Bus cabling may need to be changed to make space for SD3C-S. If the current MB,0 cabling prevents SD3C-S installation, change the cabling so that the SD3C-S position is free. Change the cabling of the MB,0 in SE-NH state. Special care must be taken to avoid the disconnection of MB,1 WO-EX MB cables, when the SE-NH side is operated.

6.5.7 MB,0 upgrade, MCMU

Change the SP-EX MCMU state to SE-NH state:

```
ZUSC:MCMU,<SP_EX>:TE,;
ZUSC:MCMU,<SP_EX>:SE,;
ZUSC:MCMU,<SP_EX>:SE,;
```

Delete the MBIF-T from the MCMU HW configuration.

```
ZWTQ:MCMU,<SP-EX>:MBIF_T,0;
```

Check that the MBIF-UA plug-in unit strappings are set according to MBIF-UA strapping instructions (see appendix : *MBIF-UA C 8887 Jumper settings*).

Replace the MB,0 MBIF-T plug-in unit with the MBIF-UA in the SE-NH MCMU computer unit. Special attention should be paid to changing the MBIF-UA along the message bus 0 which is in SE-NH state. The front panel light is switched off in both MBIF-T cards.

Create MBIF-UA to the HW configuration.

```
ZWTP:MCMU,<SP-EX>:MBIF_UA,0,3;
```

Change the MCMU state to SP-EX.

```
ZUSC:MCMU,<SP-EX>:SE,;
ZUSC:MCMU,<SP-EX>:TE,;
ZUSC:MCMU,<SP-EX>:SP,;
```

After the MB,0 MBIF_UA is installed in the computer unit, follow the alarm situation from LPT. If any problems are encountered, they must be cleared manually, before continuing the MBIF_UA installation to the next computer unit.

Make an MCMU switchover.

```
ZUSC:MCMU,<wo_ex>:SP,;
```

Repeat the steps in section 6.1.7 for another MCMU.

6.5.8 MB,0 upgrade, BCSU

Change the SP-EX BCSU state to SE-NH state:

```
ZUSC:BCSU,<sp_ex>:TE,;
ZUSC:BCSU,<sp_ex>:SE,;
ZUSC:BCSU,<sp_ex>:SE,;
```

Delete the MBIF-T from the HW configuration.

```
ZWTQ:BCSU,<sp_ex>:MBIF_T,0;
```

Check that the MBIF-UA plug-in unit strappings are set according to MBIF-UA strapping instructions (see appendix : *MBIF-UA C 8887 Jumper settings*).

Replace the MB,0 MBIF-T plug-in unit with the MBIF-UA in the SE-NH BCSU computer unit. Special attention should be paid to changing the MBIF-UA along the message bus 0 which is in SE-NH state. The front panel light is switched off in both MBIF-T cards.

Create MBIF-UA to the HW configuration.

```
ZWTP:BCSU,<sp_ex>:MBIF_UA,0,3;
```

Change the BCSU state to SP-EX.

```
ZUSC:BCSU,<sp_ex>:SE,;
ZUSC:BCSU,<sp_ex>:TE,;
ZUSC:BCSU,<sp_ex>:SP,;
```

After the MB,0 MBIF_UA is installed in the computer unit, follow the alarm situation from LPT. If any problems are encountered, they must be cleared manually, before continuing the MBIF_UA installation to the next computer unit.

Make a BCSU switchover.

```
ZUSC:BCSU,<wo_ex>:SP,;
```

Repeat the steps in section 6.1.8 until the MB card has been changed to MBIF_UA through the MB in SE-NH state.

6.5.9 MB,0 upgrade, OMU

Change the OMU state to SE-NH state. Note that the NMS link is disconnected:

```
ZUSC:OMU:TE;
ZUSC:OMU:SE;
ZUSC:OMU:SE;
```

Delete the MBIF-T from the HW configuration.

```
ZWTQ:OMU:MBIF_T,0;
```

Check that the MBIF-UA plug-in unit strappings are set according to MBIF-UA strapping instructions (see appendix : *MBIF-UA C 8887 Jumper settings*).

Replace the MB,0 MBIF-T plug-in unit with the MBIF-UA in OMU unit. Special attention should be paid to changing the MBIF-UA along the message bus 0 which is in SE-NH state (leds in both MBIF_Ts are on).

Create MBIF-UA to the HW configuration.

```
ZWTP:OMU:MBIF_UA,0,3;
```

Change the OMU state to WO-EX.

```
ZUSC:OMU:SE,;
ZUSC:OMU:TE,;
ZUSC:OMU:WO,;
```

After the MB,0 MBIF_UA is installed in the OMU unit, follow the alarm situation from LPT. If any problems are encountered, they must be cleared manually, before continuing to the MB state change.

Change the SE-NH MB,0 state to TE-EX.

```
ZUSC:MB,0:SE,;
ZUSC:MB,0:TE,;
```

Run diagnostics:

```
ZUDU:MB,0;
```

If the diagnostics fail, follow the procedure described in *Diagnosis Reports manual (2.5 Alarm Reference Manual)*.

Once the diagnostics have been passed, change the MB state to SP-EX.

```
ZUSC:MB,0:SP,;
```

6.5.10 MCMU SYSB Diagnostics

Change the SP-EX MCMU state to TE- state:

```
ZUSC:MCMU,<SP_EX>:TE,;
```

Run diagnostics:

```
ZUDU:MCMU,<sp_ex>:SYSB;
```

If the diagnostics fail, follow the procedure described in *Diagnosis Reports manual (2.5 Alarm Reference Manual)*.

Change the MCMU state to SP-EX.

```
ZUSC:MCMU,<SP-EX>:SP,;
```

Make an MCMU switchover.

```
ZUSC:MCMU,<wo_ex>:SP,;
```

Repeat the steps in section 6.1.10 for another MCMU.

6.5.11 BCSU SYSB Diagnostics

Change the SP-EX BCSU state to TE- state:

```
ZUSC:BCSU,<sp_ex>:TE,;
```

Run diagnostics:

```
ZUDU:BCSU,<sp_ex>:SYSB;
```

If the diagnostics fail, follow the procedure described in *Diagnosis Reports manual (2.5 Alarm Reference Manual)*.

Change the BCSU state to SP-EX.

```
ZUSC:BCSU,<sp_ex>:SP,;
```

Make a BCSU switchover.

```
ZUSC:BCSU,<wo_ex>:SP,;
```

Repeat the steps in section 6.1.11 until SYSB diagnostics have been executed to every BCSU.

6.5.12 OMU SYSB Diagnostics

Change the OMU state to TE- state. Note that the NMS link is disconnected:

```
ZUSC:OMU:TE;
```

Run diagnostics:

```
ZUDU:OMU:SYSB;
```

If the diagnostics fail, follow the procedure described in *Diagnosis Reports manual (2.5 Alarm Reference Manual)*. Change the OMU state to WO-EX:

```
ZUSC:OMU:WO,;
```

6.6 MCMU upgrade

The execution time of this step is half an hour. SMLC hardware is installed by using a MCMU,0 for the HW upgrade and and by making an MCMU switchover.

Change the state of the MCMU,0 to SP-EX (The GSWB extensions must be installed first to the GSW,0 to ensure that GSWB size is updated to the SWICOP process properly):

```
ZUSC:MCMU,0:SP,;
```

Change the state of the MCMU from SP-EX to state SE-NH.

```
ZUSC:MCMU,<index>:TE,;
ZUSC:MCMU,<index>:SE,;
ZUSC:MCMU,<index>:SE,;
```

Switch the MCMU cartridge power off from the PSC3 power supply.

Check the MCMU hardware with command:

```
ZWTI:P:MCMU,<index>;
```

Delete the old CPU plug-in unit (CP6LX, CP4HX or CP4HL):

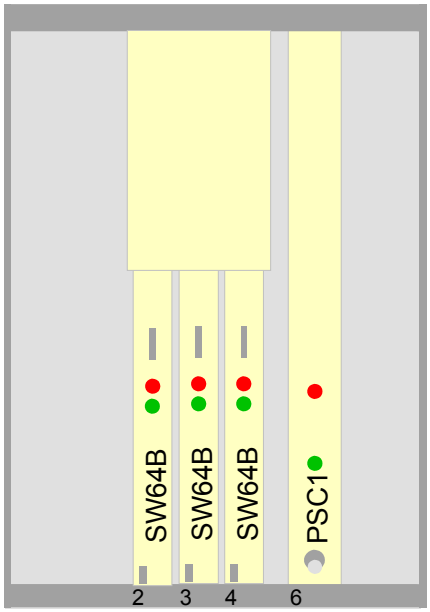
```
ZWTQ:MCMU,<index>:<CPU_type>,0;
```

Set the **CP6MX** strappings according to the instructions in appendix. Replace the CPU plug-in unit with CP6MX.

Create a CPU plug-in unit:

```
ZWTP:MCMU,<index>:CP6MX,0,2;
```

It is also possible to expand the GSWB in BSC for GPRS/EDGE (optional features) use at the same time as upgrading the MCMU in the SMLC upgrade.



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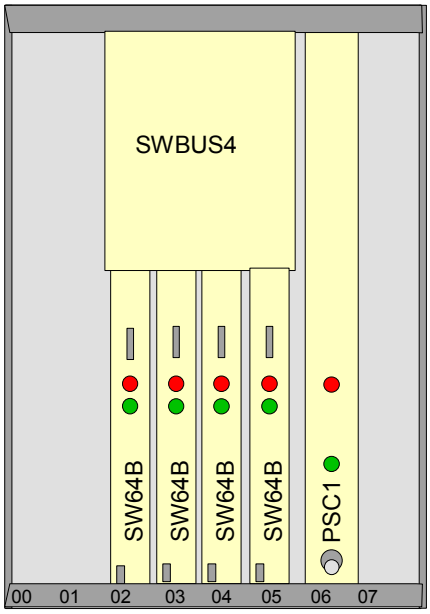


Picture 8. The SW1C cartridge extensions.

Set the SW64B strappings according to appendix. Install the plug-in unit(s) to the SE-NH MCMU's SW1C cartridge. Switch the GSWB cartridge power off from the PSC1 power supply before installing HW. Switch the power on again after the GSWB HW is installed.

Create an SW64B plug-in unit(s):

ZWTP:GSW,<index>:SW64B,2,4;

```
ZWTP:GSW,<index>:SW64B,3,5;
```

Install a SWBUS3/4 bus extender to GSWB. Install a DMCT2-S DMC-bus terminator at the back of the MCMU MC1C-cartridge. The termination block is equipped to both ends of the MC1C DMC-bus in positions R00 and R09 at the back of the cartridge. Update the interchangeability of MC1C to D. Cover the old code from the interchangeability label by using a drawing pen or replace a label when only one interchangeability code is printed on the label.

Switch the MCMU cartridge power on from the PSC3 power supply.

Change the MCMU state to TE-EX.

```
ZUSC:MCMU,<index>:SE,;
ZUSC:MCMU,<index>:TE,;
```

Run diagnostics.

```
ZUDU:MCMU,<index>;
```

If diagnostics fail, follow the steps described in **Diagnosis Reports (2.5 Alarm Reference Manual)** manual. Once the diagnostics have been passed, change the MCMU state to SP-EX.

```
ZUSC:MCMU,<index>:SP,;
```

Make an MCMU switchover.

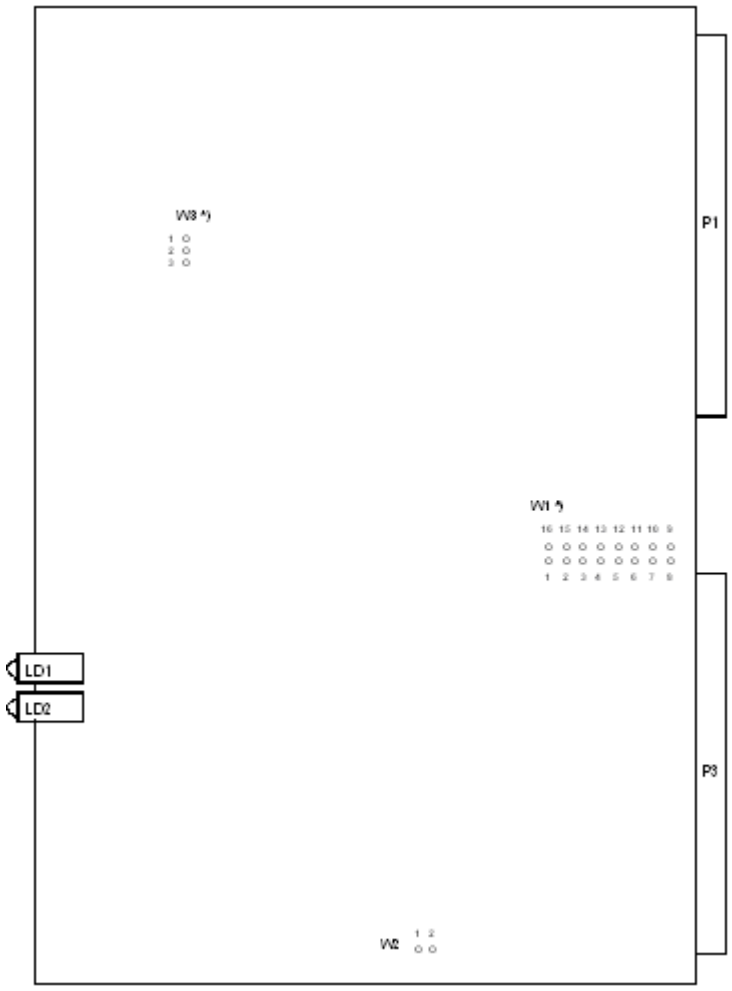
```
ZUSC:MCMU,<WO_index>:SP,;
```

Repeat these steps for another MCMU.

APPENDICES

Appendix 1. MBIF-UA C 8887 Jumper settings

Strappings of the plug-in unit MBIF-UA:

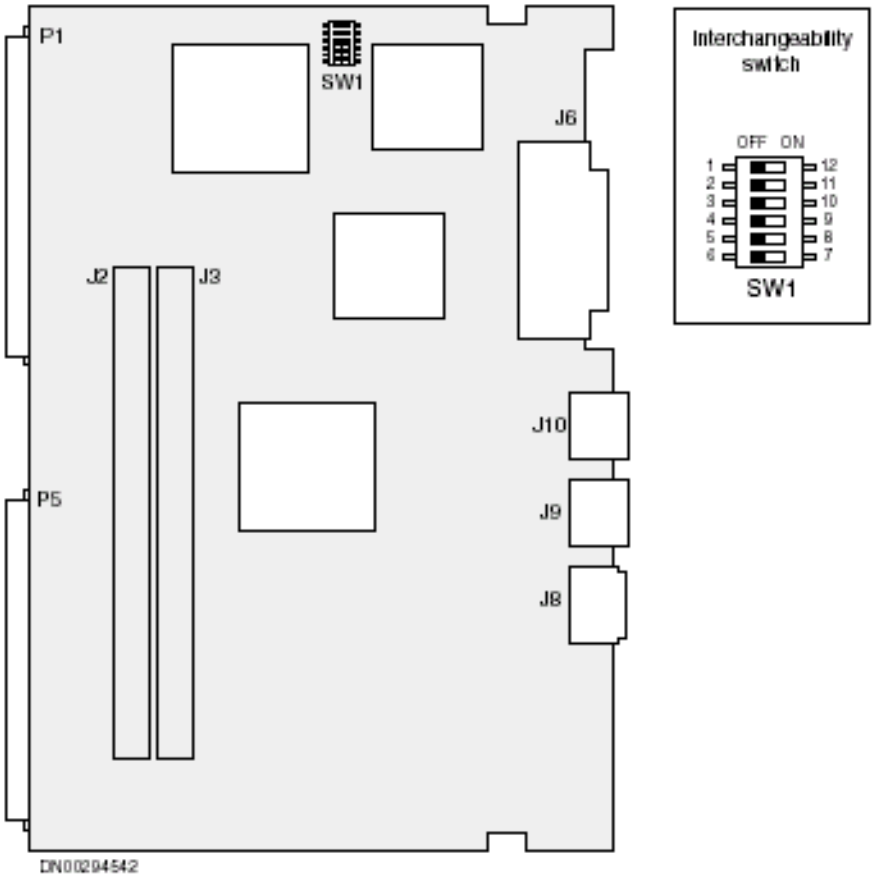


Standard settings:

Strapping Group	Connection	Note
W1	-	Wired addresses with 7 bits. Selection of frequencies with wirings.
W2	-	The MB is set to operate 16-bit mode.
W3	1-2	Reception moment 31 ns before the transmission cycle ends.

Appendix 2. CP6MX DIP-switches

There are no jumpers on CP6MX. All settings are made using the microswitches in switch package SW1:



The Switch Block consists of a 6 position DIP switch. This switch contains the four Interchangeability code bits, the MBIF status, and the DMC bus speed setting. The interchangeability lines drive to “0” when the switches are OFF.

The MBIF status drives the signal to “0” when switch is OFF. The DMC bus speed drives digital input 1 of the DMCIOB. The slow speed corresponds to switch OFF. The fast speed corresponds to the switch ON. It is up to SW to read the digital inputs, and then set the DMC speed bit (see Section Special Configuration Register 40)accordingly.

SW1	Setting	Function
6-7	OFF	MBIF status; MBIF assembled. Default setting.
	ON	MBIF status; MBIF not assembled.
5-8	OFF	DMC bus speed; slow timing mode. Default setting.
	ON	DMC bus speed; fast timing mode.
4-9	See below	DMX Interchangeability code bit 0
3-10	See below	DMX Interchangeability code bit 1
2-11	See below	DMX Interchangeability code bit 2
1-12	See below	DMX Interchangeability code bit 3

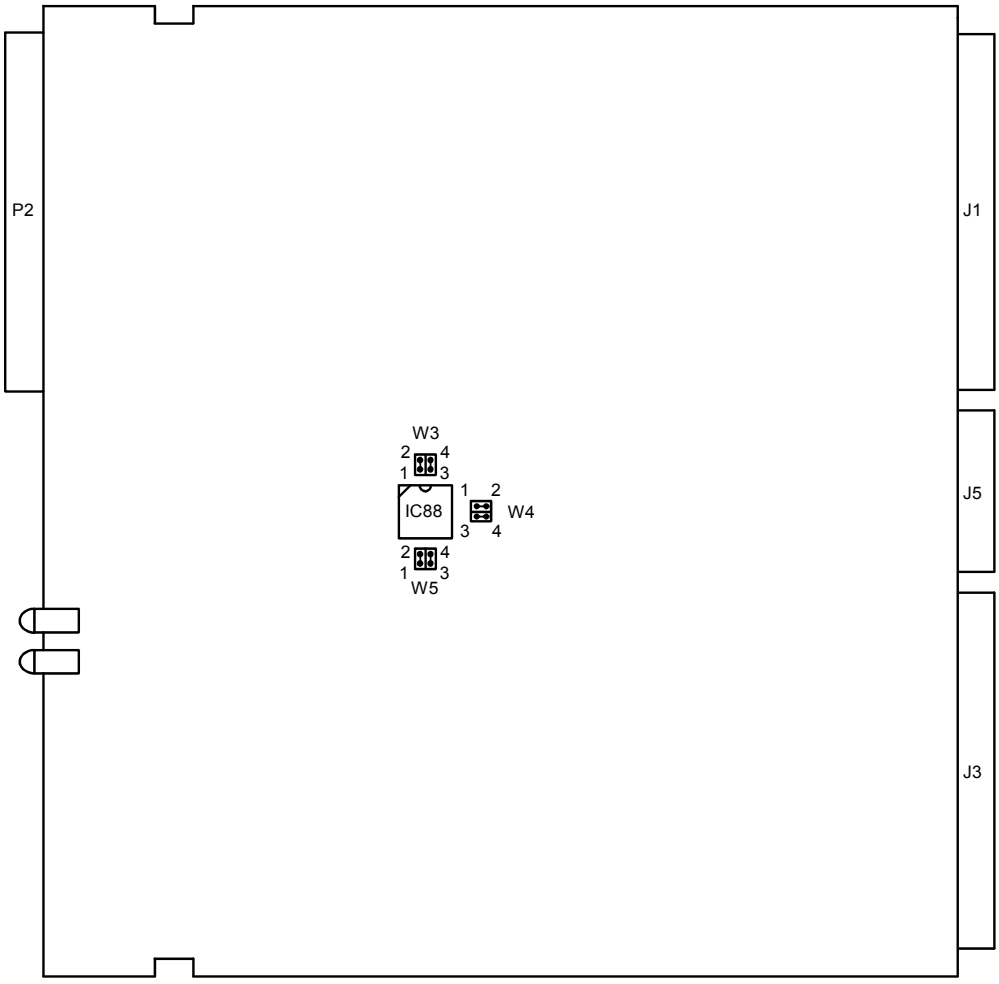
	Interchangeability code														
Switch SW1	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
4-9	X	-	X	-	X	-	X	-	X	-	X	-	X	-	X
3-10	X	X	-	-	X	X	-	-	X	X	-	-	X	X	-
2-11	X	X	X	X	-	-	-	-	X	X	X	X	-	-	-
1-12	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-

Note,In the table:
X= the corresponding switch is set to OFF
– = the corresponding switch is set to ON.

Letters I, O, and Q may not be used as interchangeability codes.

Appendix 3. SW64B Jumper settings

SW64B C 8790, jumpers of the plug-in unit:



Standard settings:

Jumper block	Connection
W3	1-2 3-4
W4	1-2 3-4
W5	1-2 3-4