NNRP and Future

Chapter 6

This chapter is designed to provide the student with information about the Network Node Renewal Process as well as some information about planned modifications to the new AXE 890.

OBJECTIVES:

Upon completion of this chapter the student will be able to:

- understand the driving forces behind Network Node Renewal Process (NNRP)
- give a brief description of how NNRP is performed
- account for some of the planned changes in APT and APZ in the near future (1-2 years).

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NNRP

Network Node Renewal Process (NNRP) is a generic process for upgrade and replacement of nodes in a live network. Today, there are two different scenarios for node upgrade:

- NNRP3
  The upgrade or expansion of BYB 202 core to include devices from AXE 810 (e.g. GS890 and ET155-1).
- NNRP4
  The upgrade or expansion of BYB 501 core (HWM 1.3 or HWM 1.4) to include devices from AXE 810 (e.g. GS890 and ET155-1).

DRIVING FORCES

The driving forces for the NNRP are different for NNRP3 and NNRP4:

NNRP3

- A group switch larger than 64k is needed because of changes in the network structure (operators are decreasing the number of switches in the network for cost reduction)
- A subrate switch in the group switch is needed which is larger than 4k.
- To get access to the new GEM based hardware such as ET155, transcoders and echo cancellers. These devices have significantly better price/performance than hardware available in BYB 202.

NNRP4

- A group switch larger than 128k is needed larger switches are used in the network.
- A subrate switch in the group switch is needed which is larger than 4k.
- To get access to the new GEM based hardware such as ET155-1, transcoders and echo cancellers. These devices have significantly better price/performance than hardware available in BYB 501 (pre AXE 810).
- Further cost of ownership reduction.

PROCEDURES

The main procedure is the same for NNRP3 and NNRP4. The whole idea is to change the existing TSM or GS16M subrack into a multiplexer and insert new interface boards in these magazines. The interfaces connect the old group switch to the new GEM subracks and the actual switching takes place in the new switch. The figure below shows the main principle for the NNRP4.

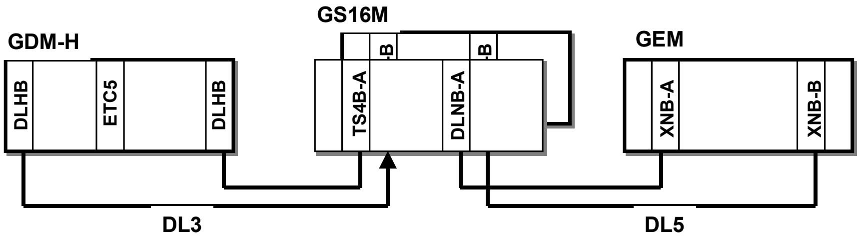

Figure 6- 1 NNRP4 upgrade

To be able to do this during traffic handling, the two planes of the group switch and the two CP sides are utilised. The main principle is to separate the CP and load the separated CP side with new group switch software. At the same time, the hardware connected to the separated side is updated while traffic is executed in the executive CP controlling the old group switch hardware. The procedure is described step by step.

- Step 1: The CP pair is separated. On the executive CP side, one plane of the existing switch core is defined as working while the opposite plane is defined as manually blocked.
- Step 2: Upgrade the TSMs (in the case of NNRP-3) or the GS16M subrack (in the case of NNRP-4) within the manually blocked plane of the existing switch core to multiplexers. The multiplexers are then physically connected via either DL3 links (NNRP-3) or DL5 links (NNRP-4) to the same plane of the new switch core.
- Step 3: The upgraded plane is then to be defined by the operator as working while the opposite plane is defined as manually blocked in the standby separated CP side. The executive CP side and the existing switch's working plane will carry the traffic. The opposite plane of the new switch core, related to the standby CP, is now active.
- Step 4: A side switch is used to bring the plane of the upgraded multiplexers and the new switch core into a traffic-processing state.

- Step 5: Following exchange verification, the CPs are brought into parallel operation. The remaining manually blocked TSMs/GS16M subracks of the existing switch core are upgraded to multiplexers and connected to the corresponding plane of the new switch core.
- Step 6: Both planes are now operating with the existing switch core (that has been converted to multiplexers) connected to the new switch core.

After the change, the switch can be "cleaned up" as the CLMs and all the CLM cables of the old switch can be removed. The old part is now synchronised from the new GS890 via the DL3/DL5 interfaces. Also the backplane HWH cables can be removed as well as the SPIB boars.

FUTURE DEVELOPMENT OF APT

A large step was taken when AXE 810 was developed. The new GEM subrack and the distributed group switch creates a flexible platform with very high traffic capacity. However, life does not stop here and the development continues. Here are some of the most important plans for the near future (1-2 years):

- A general adaptation of AXE towards the server – gateway architecture (which is called “ENGINE” for the fixed part). This includes many different functions where system structure, signalling protocols, ATM interfaces are some of them.
- An second generation ALI interface (ATM interface) will be developed which has higher capacity and smaller foot print.
- RPP will be developed so it can be included in the GEM subrack. RPP will then be the main signalling platform and some applications from RPG will be moved to RPP. Remember that RPP is already today working as a signalling terminal for the high-speed signalling links (HSL).
- Some applications from AST and PDSPL will be moved to the generic RPP platform.

FUTURE DEVELOPMENT OF APZ

Also APZ will be further developed in the future. The key-words here are capacity and reliability. Here are some important events in the near future:

- A new CP will be released in late 2001 called 212 40. That will be the first CP ever from Ericsson built with a commercial micro processor. The basis will be an Alpha processor from Compaq.
- The APZ in AXE will evolve towards a multi-processor solution. There are two tracks that will be worked on: one with functional distribution of software (different CPs run different parts of the software), and one with replicated distribution (every CP can work with call handling). The latter gives highest total processing power. The goal is to have a system at the end of 2002 which has 30x the power of an APZ 212 30.
- A Gbit Ethernet will replace the RP bus. The GEM hardware (and the SCB-RP) is already prepared for this.

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