

Mobitex Network Control Center

NCC

Network Control Center

Optimizing operation and maintenance is the key to maximizing return on your network investment as the subscriber base grows. Simple yet powerful, the Mobitex Network Control Center (NCC) enables you to efficiently manage all aspects of the Mobitex network from a single location. In addition, the Mobitex Network Control Center provides optional interfaces for tight integration with your billing and customer care systems. A Mobitex network can be configured in an almost infinite variety of ways to meet your needs. Naturally, the configuration can also be changed as the subscriber base grows and new nodes are added to the network, or when new system software releases become available. In addition to configuring the network and supporting remote software upgrades, the configuration management system ensures that subscriber information stored in the nodes is consistent with the NCC database to which billing and customer care systems are linked. The database that controls the Mobitex network configuration defines such elements as



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Maximized return on your network investment

subnetworks, nodes, radio channels, linetypes, data connections and data channels. Individual network parameters can be changed through an online configuration process, or node parameters can be downloaded from the database for reconfiguring entire nodes. All aspects of network configuration, including upgrades of system software, can be managed and monitored from the NCC, thus eliminating site visits and significantly reducing maintenance costs.

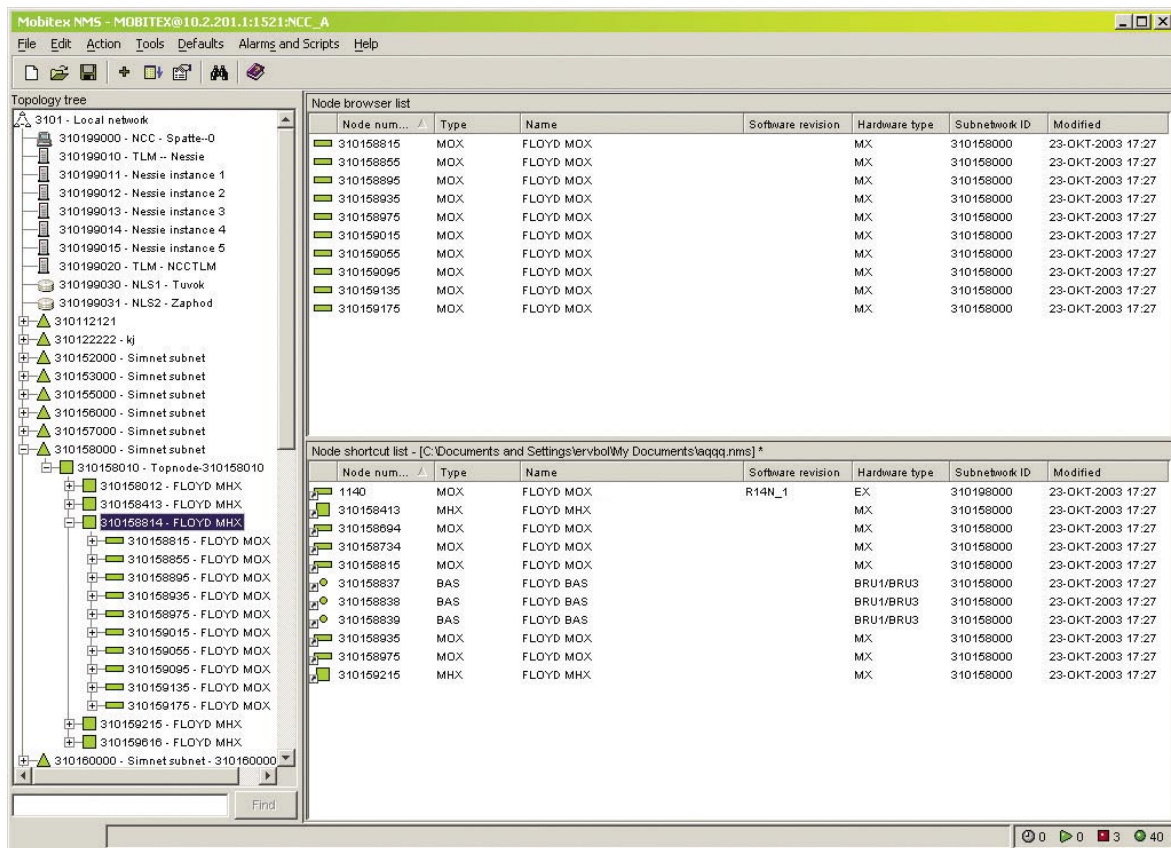
Performance management.

The NCC software naturally provides efficient performance management tools to enable operations personnel to dimension capacity and service precisely to subscriber demand. In addition to the information provided by traffic logs and fault reports, network utilization can be analyzed in real time by examining traffic at a specific network node or branch of the network. Powerful troubleshooting tools allow network hot spots to be identified, and intuitive performance management tools make it easy to calculate the

volume of traffic a group of users might generate and the number of base station channels required for handling this load. Performance parameters, such as number of subscribers and capacity, can then be optimized for each base station, thus simplifying one of the most demanding tasks for operations and sales personnel.

Fault management.

The NCC software implements a complete set of functions for fault management that allows full control and supervision of all nodes. Particularly powerful are functions that allow nodes to be controlled automatically by event-triggered script files. The fault management functions allow operations personnel to select what parameters should be monitored for each node and under what conditions an alarm should be generated. Alarms can be selectively blocked at the node level, and the text presented with any given alarm can be customized. Received alarms can be distributed and presented on a variety of devices.



The Action Routine Manager (ARM) is a component that runs event-triggered scriptfiles. These scripts can immediately notify a service engineer in the case of major faults or trigger operations and maintenance commands to automatically correct the faults, thus ensuring uninterrupted service.

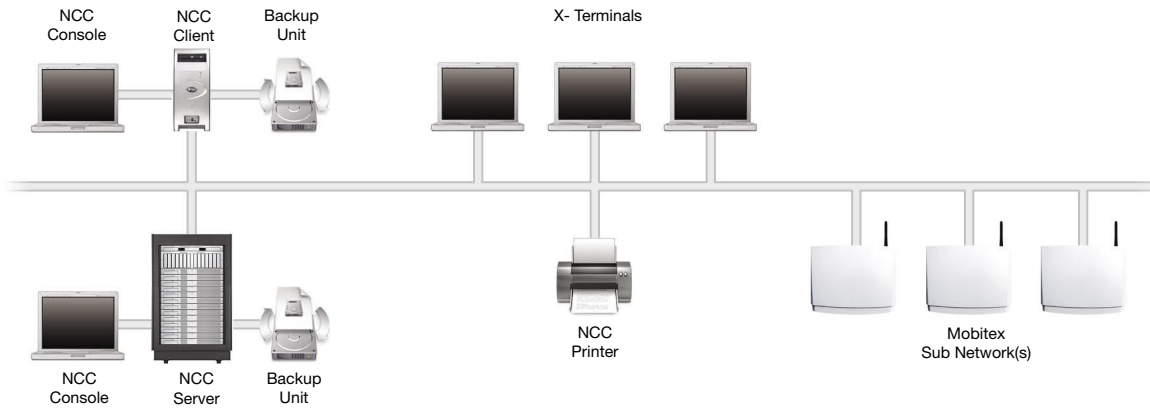
Account management.

The accounting management functions in the Mobitex NCC system provide a full set of functions that allow the operator to charge subscribers for use of network services. Billing parameters can be defined for network access and utilization that determine which accounting records will be automatically generated from network traffic logs. Account management functions will then convert these records into machine-readable invoice information and/or itemized bills for distribution or further processing by the billing or customer care systems. Because subscribers will use the network differently and at varying levels, the NCC supports the operator in defining

several sets of tariffs that allow separate charging for network access, capacity utilization, network services and administration. With these options, operators are able to distribute operational costs accordingly and maximize revenue for each subscription type.

Open interfaces.

The Mobitex Network Control Center provides open interfaces for subscriber management and billing that allow external or third-party customer care and billing systems to be used. Both the Subscription Authorisation Management (SAM) interface and the billing interface are fully documented and support easy exchange of data with external systems. For operators who cannot or do not wish to use the built-in functions for subscriber management and billing, these interfaces provide full control. The SAM interface, in particular, allows a third-party customer care system to handle all essential aspects of subscription management and service provisioning.



Hardware and software requirements

Product	Software
NCC	Server Open VMS
NCC	NMS Client
NCC	Proprietary software with embedded Oracle software

The hardware configuration consists of one basic configuration to which optional hardware can be added. The basic configuration is a non-redundant server with TCP/IP connectivity over a LAN.

Product	Hardware
NCC Server	Alpha Server - equipped with console terminal and hard disk.
NCC Client	PC Workstation – the primary tool for the network operator. It accesses the Alpha Server via a LAN.
Tape station	For backup. One tape station for the client and one for the server.
RAID System *	A RAID system is recommended for networks with more than 50 000 subscribers. The RAID system will provide faster disc access.
Printers *	A laser printer is recommended for printing NCC reports.
X-Terminal *	One or more X-terminals can be used as operator terminals, sharing the computing capacity of one common workstation. It can be a low-end Unix station or a PC running X-server software.

*Optional hardware