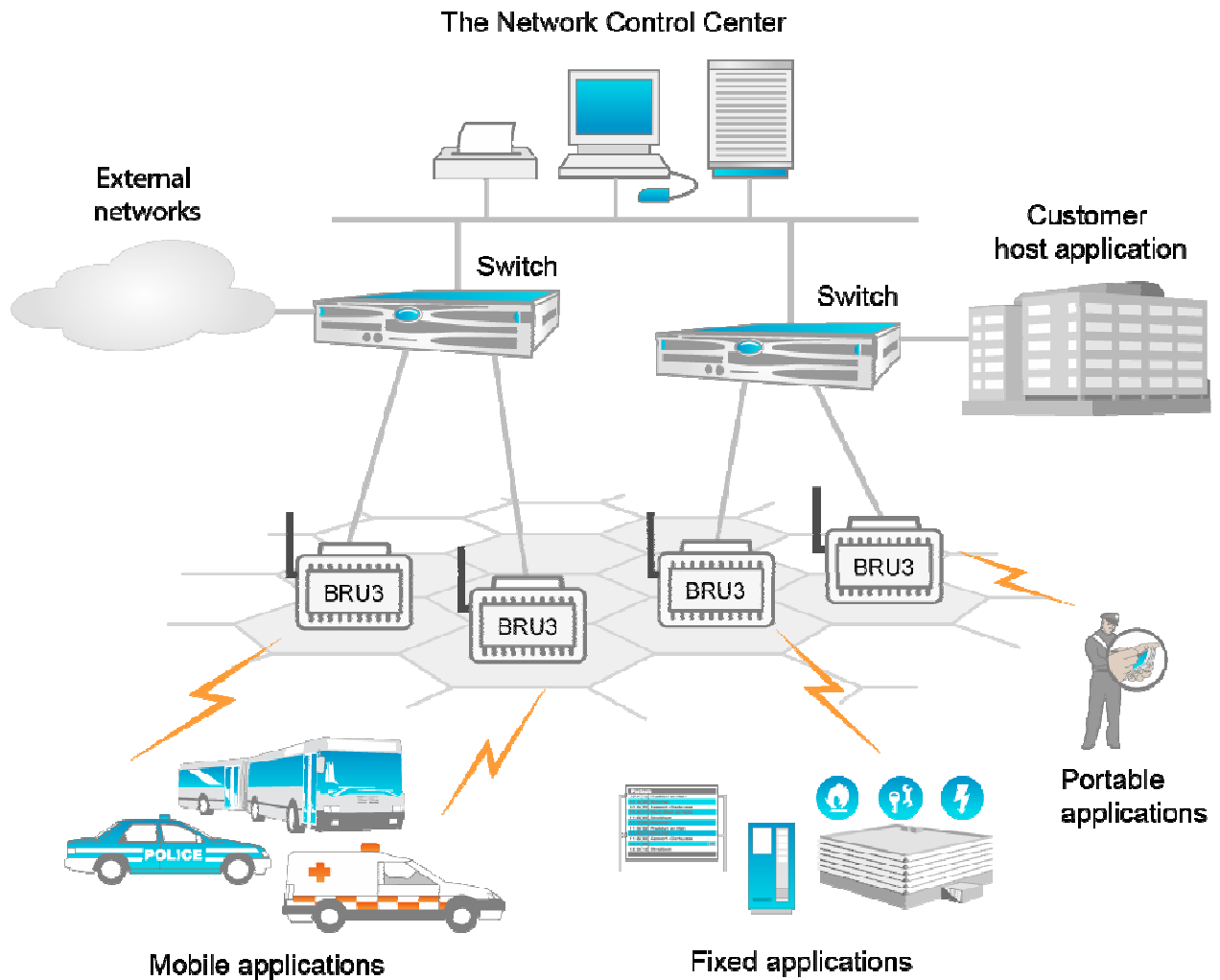


Mobitex Product Catalogue



The contents of this document are subject to revision without notice due to continued progress in methodology, design, and manufacturing.

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Contents

1	Introduction	3
2	Network Architecture	3
2.1	Small Mobitex Network	3
2.2	Large Mobitex Network	4
3	Network Components.....	6
3.1	Network Control Centre	6
3.2	MOX (MSN) Switch	9
3.3	Radio Base Station BRU3	14
3.4	Radio Base Station BRU1	17
3.5	Mobitex Support Platform (MSP)	19
3.6	Deprecated Network Products	22
4	Mobitex NTE Standard Network Functions.....	25
4.1	Network Configuration	25
4.2	Maintenance and Fault Management.....	25
4.3	Charging and Account Management	26
4.4	Subscription Administration	26
4.5	Network Features	26
5	Network Wide Feature Packages.....	30
5.1	Public Transport Feature Packages.....	30
5.2	Public Safety Feature Packages.....	34
5.3	Machine-to-machine (M2M) Feature Packages	37
5.4	Feature Descriptions	40
6	Test Equipment	45
6.1	Stand-Alone Mobile Test Equipment	45
6.2	Sniffex Radio Protocol Analyzer	46
7	Software Packages.....	47

1 Introduction

This product catalogue includes all standard Mobitex NTE products that are available for ordering e.g. hardware, software and feature packages with extended network functions. The catalogue describes functions and products available for Mobitex NTE System Release R10. Excluded in this catalogue are upgrade options for MX switches, spare parts and functions for Mobitex NTE releases prior R8. These products can be found in the *Upgrade and Spare Parts Catalogue*.

2 Network Architecture

The Mobitex network features a very flexible and scalable network design, supporting a full range from small networks comprising a few nodes to very large networks including thousands of base stations. A network can easily be expanded in size by adding more equipment as the customer base grows or when a larger coverage area is needed.

2.1 Small Mobitex Network

A minimal Mobitex network consists of a few base stations, each serving a radio cell providing coverage of a given area, and a switch, called an area exchange (MOX), that interconnects the base stations and routes traffic. At the top level a network control centre (NCC) is connected to the MOX (MSN). Base stations provide wireless access to mobile subscribers, while fixed terminals are connected to the MOX (MSN) using IP (MDOT) or X.25.

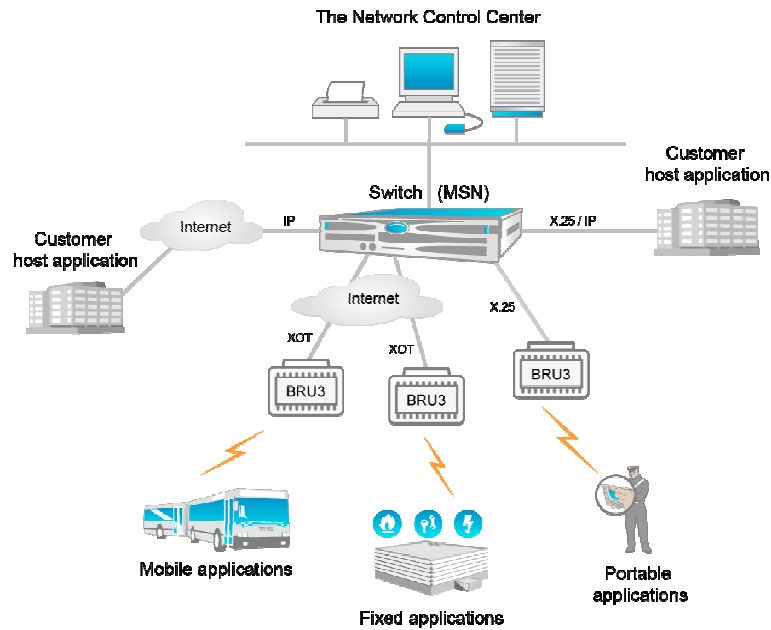


Figure 1 Small Network Configuration

2.2 Large Mobitex Network

Larger Mobitex networks may contain up to thousands of base stations and several switches which each form a sub-network. A sub-network consists of a MOX (MSN) switch together with its base stations to cover a selected area (area coverage or capacity coverage). Redundancy can be built where base stations can roam to other switches. Fixed terminals or application hosts can be connected either to a single switch or to several switches using the Host Group Functionality.

Each sub-network is similar to the small Mobitex network architecture with a MOX (MSN) as the top node and base stations below. The NLS and DRR services are used to keep track of in which sub-network nodes and subscriptions resides. At the highest level, there is a network control centre (NCC) that is connected to all sub-networks.

The Network Control Center (NCC)

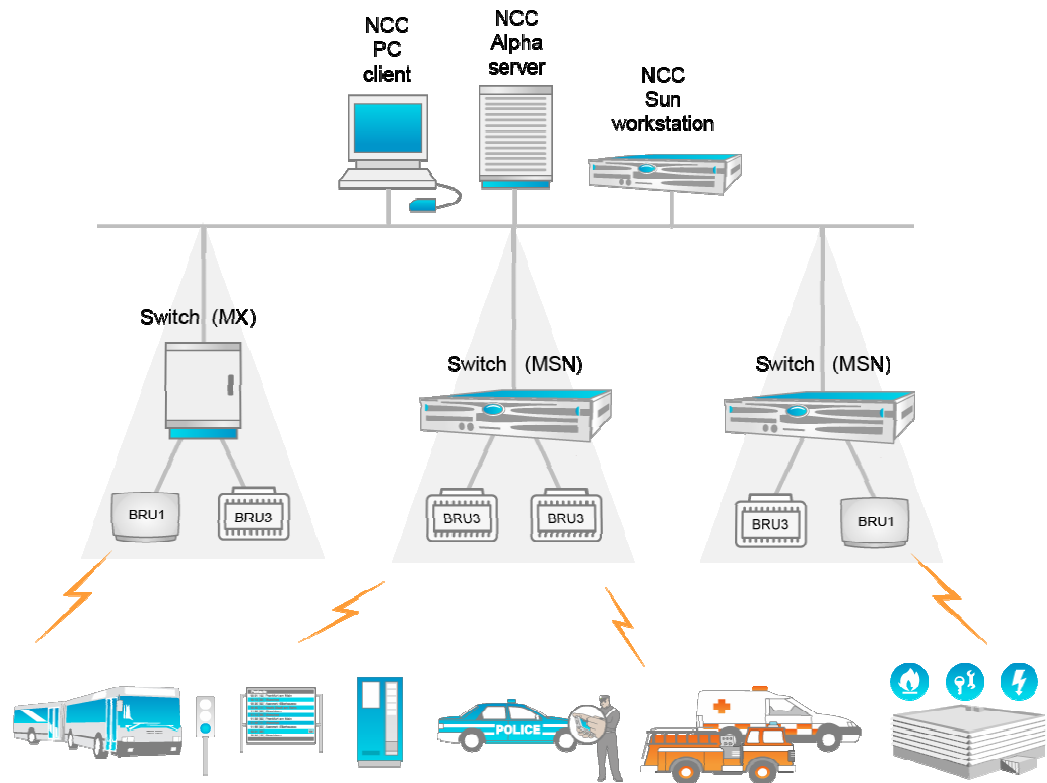


Figure 2 Large Network Configuration

3 Network Components

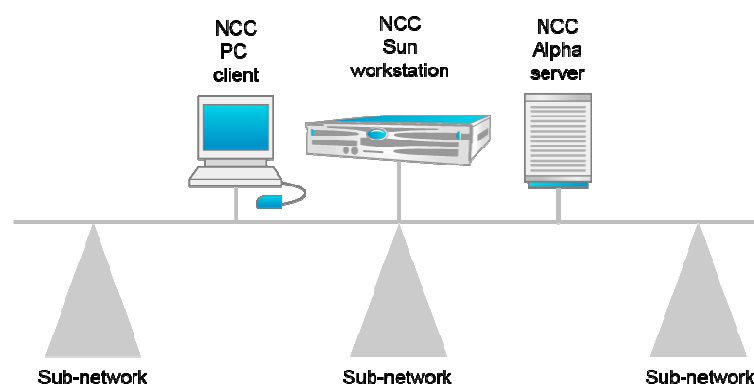
3.1 Network Control Centre



Network supervision and configuration is conducted from the Network Control Center (NCC). The NCC contains a database that holds the Mobitex network configuration and defines such elements as sub-networks, switches, base stations, line types, data connections and data channels. The NCC allows the operator to efficiently manage all aspects of the network from a single location via a graphical user interface. It is also possible to configure an Alternative NCC to obtain even higher redundancy, see section 5.

The Mobitex Network Control Center is based on an Alpha Server running the Open VMS operating system, and contains an embedded Oracle database and proprietary Mobitex software. A Java-based application called NMS Client is used as front-end application for configuring the network.

The Network Control Center (NCC)



The NCC requires in rough outline the following hardware:

- Alpha/OpenVMS Server running NCC Server software.
- PC client running Windows 2000/XP for the NMS Client application. X-client software shall also be installed on the PC to be able to use SAM-Client which runs on a Sun Server.
- A MSP (a Sun Server, see section 3.5 Mobitex Support Platform (MSP) for more information) to run the SAM Client application.

The hardware configuration of the Network Control Centre is related to the customer requirements and the size of the Mobitex Network. The preferred third party equipment may also be different for different countries.

Ordering Data

NCC Hardware

The NCC Hardware specified below are complete kits, including computer, monitor, keyboard, operating system etc. Some parts such as printers and backup stations may be optional.

NCC Alpha Hardware Configuration

FAB 801 100

An Alpha server with OpenVMS operating system.

SUN Workstation for Mobitex NCC (MSP)

FAB 801 3704/5

See section 3.5 to select the appropriate variant of the MSP. The MSP server is required to run the Subscription Authorization Manager program SAM Client.

Note! SAM Client may be co-located with other products on the MSP.

NCC Software Licenses

RTU - NCC Software

FAL 104 5036

Software license for the basic NCC software i.e. NCC Server, NCC Client and NMS Client. The NCC Server software includes Oracle database software.

The RTU NCC Software includes 2 simultaneous user licenses and Right to Connect (RTC) license for up to 500 Mobitex subscriptions. Note that RTC licenses for the network nodes are not included.

RTU - 2 Additional NCC Users

FAL 104 5068

This is an incremental license that allows 2 additional simultaneous NCC users.

Subscription Licenses

RTC - 500 Additional Subscriptions

FAL 104 5088/1

This license is an incremental license that allows 500 additional subscriptions in the network. The license is available for networks with less than 5.000 subscriptions.

RTC - 1000 Additional Subscriptions

FAL 104 5088/2

This license is an incremental license that allows 1.000 additional subscriptions in the network. The license is available for networks with between 5.000 to 10.000 subscriptions.

RTC - 5000 Additional Subscriptions

FAL 104 5088/3

This license is an incremental license that allows 5.000 additional subscriptions in the network. The license is available for networks with more than 10.000 subscriptions.

Network Size Licenses

For each network node (MOX switches and base stations) a Right to Connect License is needed. Refer to section 5 Network Wide Feature Packages.

NCC Optional Features

For optional features, refer to section 5 *Network Wide Feature Packages*.

3.2 MOX (MSN) Switch



The new MOX (MSN) Switch serves as an area exchange unit for Mobitex networks with integrated DRR and NLS functionality¹.

It is possible to connect fixed terminals to the MOX (MSN) using IP-based protocol (MDOT) or X.25. The native support of MDOT eliminates the need for a separate IAS.

Base stations can be connected to the MOX (MSN) using either XOT or X.25. The native support of XOT for base station connectivity provides cost effective way of connecting base stations.

Connections to other sub-networks and the NCC use IP-based protocols.

The MOX(MSN) switch offers 4 gigabit-ethernet ports. Optionally, if X.25 shall be used it offers 4 (if necessary upgradeable to 8) physical I/O ports for X.25 connectivity, The MOX(MSN) can handle up to 512 connections to network nodes and fixed terminals. The MOX (MSN) Switch can be quickly and easily installed and is easy to upgrade. Software can be downloaded remotely using standard IP-protocols.

The MOX (MSN) Switch holds routing data for all subscribers currently roamed into its branch of the network. It compiles and forwards billing information and statistics to the Network Control Center (NCC) and stores undelivered data packets in a mailbox for subscribers using this. The MOX (MSN) Switch also supervises the functional status of its software and sends status reports to the NCC.

¹ The switch is delivered with the MOX(MSN) application and the the DRR/NLS (MoLS) application which together provides the MOX top-node functionality, the DRR functionality and the NLS functionality.

The MOX (MSN) Switch guarantees maximum scalability and flexibility in Mobitex networks. It provides redundancy in the case of line or hardware failure and can be configured to achieve line and switch redundancy.

NB! The MOX (MSN) is always a top-node. It cannot be installed inferior to an MHX.

NB! The MOX (MSN) can be installed in new networks and in existing networks as a sub-network top-node together with MX-based sub-networks.

3.2.1 **DRR (MoLS)**

MoLS is a software application running on the MSP platform providing either DRR or NLS functionality to the Mobitex network. Whether the MoLS provides DRR or NLS functionality is determined by the installed node software license.

The DRR keeps track of in which sub-network a subscription is located. This information is used for traffic routing.

The DRR (MoLS) can be quickly and easily installed and is easy to upgrade. Software can be downloaded remotely using standard IP-protocols.

The DRR (MoLS) guarantees maximum scalability and flexibility in Mobitex networks. Redundancy is obtained by using two MSP's running the DRR (MoLS) application. Subscription location data is automatically replicated between the two instances.

Two DRR (MoLS) running on two different MSPs are required in a redundant DRR configuration. The DRR (MoLS) cannot cooperate with a DRR (MX).

There can be maximum two DRR (MoLS) in a Mobitex network.

NB! The DRR (MoLS) can be installed in new networks and in existing networks together with MX-based MHX and MOX switches. If DRR (MoLS) shall be used, existing BIU based DRRs must be uninstalled.

3.2.2 **NLS (MoLS)**

MoLS is a software application running on the MSP platform providing either DRR or NLS functionality to the Mobitex network. Whether the MoLS provides DRR or NLS functionality is determined by the installed node software license.

The NLS (Node Location Service) keeps track of in which sub-network a network node is located. This information is used for traffic routing.

The NLS (MoLS) can be quickly and easily installed and is easy to upgrade. Software can be downloaded remotely using standard IP-protocols.

The NLS (MoLS) guarantees maximum scalability and flexibility in Mobitex networks. Redundancy is obtained by using two MSP's running the NLS (MoLS) application. Node location data is automatically replicated between the two instances.

Two NLS (MoLS) running on two different MSPs are required in a redundant NLS configuration.

There can be maximum two NLS (MoLS) in a Mobitex network.

NB! The NLS (MoLS) can be installed in new networks and in existing networks together with MX-based MHX and MOX switches.

Ordering Data

The MOX (MSN) switch requires MSP hardware, a Right-To-Use (RTC) node software license and a Right-To-Connect (RTC) switching capacity license. Additional functionality is available in optional feature packages.

MOX (MSN) Hardware

FAB 801 3704/1 MSP for MOX (MSN)

This Telco grade server is highly recommended to host the MOX (MSN) node.
See section 3.5.

FAB 900 0001/1 Sun Solstice X.25 9.2 (optional)

This optional product is required for MOX (MSN) if it is necessary to provide X.25 connectivity.
See section 3.5.

FAB 900 0002/1 Sun High Speed Serial Interface Adapter (optional)

This optional product is required for MOX (MSN) if it is necessary to provide X.25 connectivity.
See section 3.5.

MOX (MSN) Software Licenses

FAL 104 5499/1 MSN Software License

This license is a Right-To-Use (RTC) node software license which enables the use of the MSN software for a specific node. With this license the MSN database will be able to handle up to 70,000 subscribers.

Note! If more subscribers are needed, a larger TimesTen database license is required.

Bundled with this product are:

FAL104 5500/1 MSN Switching Capacity License

Included license for switching capacity is 10,000 user packets/hour.

FAL 104 2843 NLS (MoLS) Software License

A right to use license for the NLS node.

Note! There can be maximum two NLS nodes in a Mobitex network.

FAL 104 6129 DRR (MoLS) Software License

A right to use license for the DRR node.

Note! There can be maximum two DRR nodes in a Mobitex network.

FAL 104 6254 MSN X.25 Connectivity License

This license enables the possibility to use X.25 to for fixed terminal and base station connectivity.

Note! This license requires that the Sun server is equipped with:

- Sun Solstice X.25 9.2 FAB 900 0001/1
- Sun High Speed Serial Interface Adapter FAB 900 0002/1

FAL 104 6259 MSN XOT Base Station Connectivity License

This license enables the possibility to use XOT for base station connectivity.

FAL 104 6451 MSN MDOT Host Connectivity License

This license enables the possibility to use MDOT for fixed terminal connectivity. The license eliminates the need for a separate IAS.

FAL104 5500/x MSN Switching Capacity License

The “x” in the product number denotes the switching capacity as x *10000 packets/hour.

The following variants are available:

x	Licensed Switching Capacity
1	10,000 user packets/hour (included in FAL 104 5499/1)
2	20,000 user packets/hour
3	30,000 user packets/hour
4	40,000 user packets/hour
5	50,000 user packets/hour
6	60,000 user packets/hour
7	70,000 user packets/hour
8	80,000 user packets/hour
9	90,000 user packets/hour
10	100,000 user packets/hour
15	150,000 user packets/hour
20	200,000 user packets/hour
25	250,000 user packets/hour
30	300,000 user packets/hour
35	350,000 user packets/hour
40	400,000 user packets/hour
45	450,000 user packets/hour
50	500,000 user packets/hour
60	600,000 user packets/hour
70	700,000 user packets/hour
80	800,000 user packets/hour
90	900,000 user packets/hour
100	1,000,000 user packets/hour

3.3 Radio Base Station BRU3



The BRU3 is a mini base station for Mobitex networks that advances radio technology to a new level and offers exceptional functionality for wireless data networks. The self-contained unit is extremely compact and designed to deliver unparalleled performance over a wide range of operating conditions.

Suitable for both outdoor and indoor applications, the BRU3 is simple to install and maintain. AC power, battery backup and a line modem are integrated into the unit. Software can be installed and upgraded remotely over the network or on site from a portable PC. Built-in functions support automatic supervision and remote configuration of the radio base station.

When planning coverage in a Mobitex network that must support low-power (portable) modems and indoor coverage, the BRU3 is a natural choice. The BRU3 provides a single full-duplex channel with extremely high radio sensitivity. The BRU3 features a radio protocol that improves coverage and maximizes data payloads and power-saving functions, such as sleep mode, that greatly extend battery life for the radio modems.

For operators, the BRU3 offers compelling advantages that include cost-effective indoor coverage within dedicated areas, as well as low-cost coverage when extending the network to new service areas. Extremely efficient use of radio spectrum allows the BRU3 to support as many as 2,500 terminals on a single channel.

Ordering Data

The BRU3 radio base station requires both hardware and a Right to Use (RTU) software license and a RTC license to be able to be connected in a network. The BRU3 hardware is available in several variants listed in *Table 1 BRU3 Variants*.

BRU3 Hardware

Base Radio Unit 3 (BRU3)

ANNA 805 08/xx

These BRU3 variants are complete kits with cables, mounting equipment for wall or pole, and main power connection kit.

Designation	Product number	Mains	Filter	Tx MHz	Rx MHz	Country
BRU 3901-D	ANNA 805 08/2	115/230 V	Duplex	935.1 - 940.9	896.1 - 901.9	USA/Can/Brazil
BRU 3901-T	ANNA 805 08/4	115/230 V	TX/RX	935.1 - 940.9	896.1 - 901.9	USA/Can/Brazil
BRU 3900-D *	ANNA 805 08/52	115/230 V	Duplex	935.1 - 940.9	896.1 - 901.9	USA/Can
BRU 3900-T *	ANNA 805 08/53	115/230 V	TX/RX	935.1 - 940.9	896.1 - 901.9	USA/Can
BRU 3901-D	ANNA 805 08/22	115/230 V	Duplex	935.1 - 940.9	896.1 - 901.9	Korea
BRU 3901-T	ANNA 805 08/23	115/230 V	TX/RX	935.1 - 940.9	896.1 - 901.9	Korea
BRU 3901-D	ANNA 805 08/28	115/230 V	Duplex	935.1 - 940.9	896.1 - 901.9	Venezuela
BRU 3901-T	ANNA 805 08/29	115/230 V	TX/RX	935.1 - 940.9	896.1 - 901.9	Venezuela
BRU 3402-D	ANNA 805 08/6	230 V	Duplex	426.6 - 429.5	416.6 - 419.5	France
BRU 3402-T	ANNA 805 08/7	230 V	TX/RX	426.6 - 429.5	416.6 - 419.5	France
BRU 3404-D	ANNA 805 08/10	230 V	Duplex	423.9 - 426.6	413.9 - 416.6	France
BRU 3404-T	ANNA 805 08/11	230 V	TX/RX	423.9 - 426.6	413.9 - 416.6	France
BRU 3405-D	ANNA 805 08/12	230 V	Duplex	423.9 - 426.6	413.9 - 416.6	Holland
BRU 3405-T	ANNA 805 08/13	230 V	TX/RX	423.9 - 426.6	413.9 - 416.6	Holland
BRU 3414-D *	ANNA 805 08/37	230 V	Duplex	440.0 - 440.6	425.5 - 426.1	UK city
BRU 3408-D *	ANNA 805 08/18	230 V	Duplex	423.9 - 426.6	413.9 - 416.6	Belgium
BRU 3408-T *	ANNA 805 08/19	230 V	TX/RX	423.9 - 426.6	413.9 - 416.6	Belgium
BRU 3410-D *	ANNA 805 08/24	230 V	Duplex	415.7 - 418.0	406.2 - 408.5	Australia
BRU 3410-T *	ANNA 805 08/25	230 V	TX/RX	415.7 - 418.0	406.2 - 408.5	Australia
BRU 3422-T *	ANNA 805 08/55	230 V	TX/RX	421.25 - 421.75	428.25 - 428.75	Australia
BRU 3412-D	ANNA 805 08/32	230 V	Duplex	423.9 - 426.6	413.9 - 416.6	Singapore
BRU 3412-T	ANNA 805 08/33	230 V	TX/RX	423.9 - 426.6	413.9 - 416.6	Singapore
BRU 3419-D	ANNA 805 08/46	230 V	Duplex	419.5 - 420.5	412.5 - 413.5	Sweden

Designation	Product number	Mains	Filter	Tx MHz	Rx MHz	Country
BRU 3419-T	ANNA 805 08/47	230 V	TX/RX	419.5 - 420.5	412.5 - 413.5	Sweden
BRU 3416-D *	ANNA 805 08/38	230 V	Duplex	421.0 - 423.9	411.0 - 413.9	EU
BRU 3416-T *	ANNA 805 08/39	230 V	TX/RX	421.0 - 423.9	411.0 - 413.9	EU
BRU 3801-D	ANNA 805 08/54	115/230 V	Duplex	864.0 - 870.0	819.0 - 825.0	China

Table 1 BRU3 Variants

** These models does NOT have the built in V.32/V.32bis line modem.*

BRU3 Software License

RTU - BRU3 Software

FAL 104 5069

One Right to Use license per BRU3 is required.

BRU3 Features

For features, refer to section 5 *Network Wide Feature Packages*.

Base Station Spare Parts

Spare parts and replacement units of the BRU3, are described in the *Upgrade and Spare Parts Catalogue*.

3.4 Radio Base Station BRU1



The Mobitex BRU1 is an indoor low cost single channel, low power radio base station. It is scalable in terms of number of subscriptions and provides coverage for up to 500 mobile terminals within a limited area, such as office buildings, shops, workshops, theatres and sport arenas.

The BRU1 base station is designed for indoor operation with simple wall mounted installation and has integrated Rx/Tx antenna. The BRU1 makes it possible to install a base station in an extremely cost effective manner by reducing site costs. Site costs are kept at a minimum since the BRU1 can be mounted directly on the wall, has an integrated antenna and is powered by a standard AC/DC converter.

The BRU1 also offers two connectivity alternatives that let you choose the most cost effective connectivity solution - either X.25 protocol via a serial communication port or XOT (X.25 over TCP/IP) over an IP network via an built in Ethernet port.

Software can be installed remotely over the network or on site from a portable PC. Built-in functions support automatic supervision and remote configuration.

Ordering Data

The BRU1 radio base station requires both hardware and a Right to Use (RTU) software license and a RTC license to be able to be connected in a network.

BRU1 Hardware

Base Radio Unit 1 (BRU1)

HRB 104 72/x

The BRU1 variants are complete kits with mounting equipment and antenna. The BRU1 requires a 24V DC power supply. For other variants, please contact Your Mobitex Sales Contact.

Designation	Product number	Tx MHz	Rx MHz
BRU19	HRB 104 72/9A	935.1 - 940.9	896.1 - 901.9

Table 2 BRU1 variants

BRU1 Software License

RTU - BRU1 Software

FAL 104 3469/250

The license is limited for up to 250 subscribers per BRU1. One Right to Use license per BRU1 is required.

BRU1 Features

For features, refer to section 5 *Network Wide Feature Packages*.

3.5 Mobitex Support Platform (MSP)



The Mobitex support platforms are Unix based servers with Solaris operating system required by Mobitex support nodes and gateways, such as the MOX (MSN), NLS (MoLS), DRR (MoLS) and IAS. The NCC application SAM also runs on a Mobitex Support Platform. The server used for MOX (MSN), DRR (MoLS) and NLS (MoLS) is Telco graded to ensure highest possible availability of Mobitex network services.

The Mobitex Support Platform is available in the standard variants described below.

MSP for MOX (MSN)

FAB 801 3704/1

A Telco grade server used to host the MOX (MSN) switch, the NLS (MoLS) service and the DRR (MoLS) service.

This product contains:

1 Sun Netra 240 equipped with 1 CPU.

Optional Products:

Sun Solstice X.25 9.2

FAB 900 0001/1

See product description below.

Sun High Speed Serial Interface Adapter (HSI-board)

FAB 900 0002/1

See product description below. The Sun Netra 240 can be equipped with up to 2 SunHSI boards.

NCC SAM Client**FAB 801 3704/5**

Intended for networks where the network configuration suggests that NCC SAM Client should be hosted on a separate server.

The NCC SAM Client application may be co-located on any other MSP in the network.

This product contains:

1 Sun Fire V210

NB! To be able to run NCC SAM Client it is necessary to use a PC equipped with a PC X-server software (e.g. Starnet X-Win 32). This is more cost-effective than having to install a graphic board in the Sun-server.

IAS (Deprecated)**FAB 801 3704/6**

Intended for networks with MOX (MX) switches where MDOT host connectivity is needed for hosts connected to MOX (MX) switches. This MSP variant provides the IAS functionality only.

The IAS shall not be used together with the MOX (MSN) switch because the MOX (MSN) provides native MDOT support.

This product contains:

1 Sun Fire V240, 1 CPU and 1 GB RAM-memory.**Sun Solstice X.25 9.2****FAB 900 0001/1**

See product description below.

1 Sun High Speed Serial Interface Adapter (HSI-board)**FAB 900 0002/1**

See product description below. Up to two HSI-boards can be installed in the Sun Fire V240.

*Optional Product:***Sun High Speed Serial Interface Adapter (HSI-board)****FAB 900 0002/1**

Additional HSI-board. The Sun Fire V240 can be equipped with 2 SunHSI boards.

HSI Cable RS449 for MX/B-SUN**RPM 113 6078/30000**

30 meter cable required to connect an IAS (equipped with HSI board) with an MX/B.

Sun Solstice X.25 9.2

FAB 900 0001/1

Sun software driver for X.25. This product must be installed in the Sun server for the IAS and optionally for the MSN to provide X.25 connectivity.

Sun High Speed Serial Interface Adapter (HSI-board)

FAB 900 0002/1

SunHSI-board. This product must be installed in the Sun server for the IAS and optionally for the MSN to provide X.25 connectivity.

3.6 Depreciated Network Products

The products listed in this section are still available for networks using older equipment.

3.6.1 MOX (MX) Switch



The MOX (MX) Switch serves as an area exchange unit for Mobitex networks and connects fixed terminals and gateways to the network. The MOX (MX) functions as a scalable packet switching node for radio base stations and other sub-networks. The MOX (MX) switch offers 32 physical I/O ports and up to 512 connections to network nodes and fixed terminals. If needed it is possible to upgrade the hardware to contain up to 96 physical I/O ports. The MOX Switch can be quickly and easily installed and is easy to upgrade. Software can be downloaded remotely over the network or on site from a portable PC.

The MOX (MX) Switch holds subscription data for all subscribers currently roamed into its branch of the network. It compiles and forwards billing information and statistics to the Network Control Center (NCC) and stores undelivered data packets in a mailbox for subscribers using this. The MOX (MX) Switch also supervises common alarms for the cabinet, monitors the functional status of its hardware and software and sends status reports to the NCC.

The MOX (MX) Switch guarantees maximum scalability and flexibility in Mobitex networks. It provides redundancy in the case of line or hardware failure and can be configured to achieve line and switch redundancy.

Ordering Data

The MOX switch requires MX/B hardware and a Right to Use software license and a RTC license to be able to be connected in a network. Additional functionality is available in optional feature packages.

MOX Hardware

MX/B 4 I/O Board, BIU Installed**ANNA 802 05/53**

MX switch equipped with 4 I/O Board 20 (32 ports) and BIU.

MOX Software Licenses

RTU - MX Software Basic Capacity**FAL 104 5087**

The Basic MX Software enables a switching capacity of up to 100 000 packets/hour. One license is required for each installed MX.

RTC - Enhanced Switching Capacity to MX**FAL 104 5087/1**

Enhanced switching capacity enables a switching capacity of up to 250 000 packets/hour. One license is required for each MX with enhanced switching capacity.

RTC - High Switching Capacity to MX**FAL 104 5087/2**

High switching capacity enables for the maximum switching capacity of the switch. See Release Notes for the Mobitex System Release the switch is running on for information about the maximum switching capacity. One license is required for each MX with high switching capacity.

MOX Optional Features

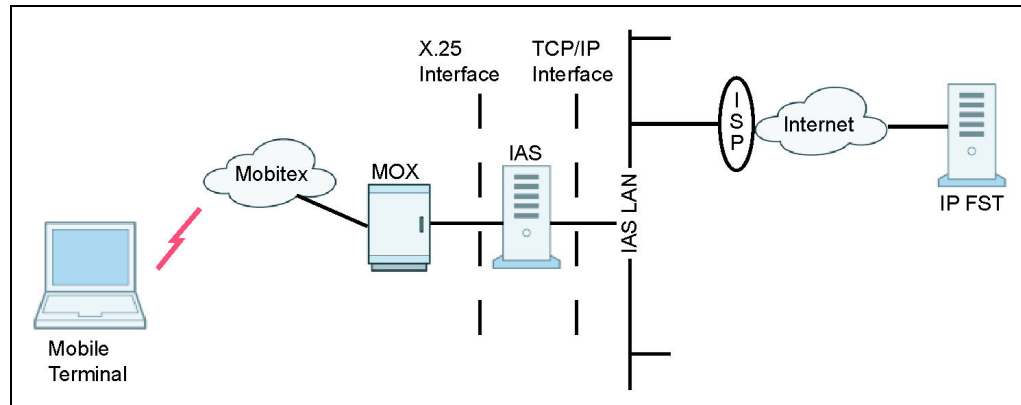
For optional features, refer to section 5 *Network Wide Feature Packages*.

Upgrade Options and Spare Parts

Upgrade options and spare parts for the MX switch and software licenses, such as additional I/O Board 20, BIU Kit, RAM Memory, switching capacity etc., are described in the *Upgrade and Spare Parts Catalogue*.

3.6.2 IP Access Server Software

The IP Access Server (IAS) is an optional component that provides IP (MDOT) connectivity for Mobitex networks with MOX (MX) switches. The IAS increases the choice of host connection types by addressing the market need for IP connectivity to Mobitex networks and provides an alternative method of connecting fixed terminals (FST) to the network.



The IAS is connected to an area exchange (MOX(MX)) where it provides an interface between the Mobitex network and IP-connected fixed terminals. Operators are thus able to offer a more cost-effective connection to the network. Fixed terminals with an IP connection can connect to Mobitex via the IAS, which supports any IP-capable bearer, meaning that fixed terminals are able to connect to the Mobitex network over the Internet.

The IAS shall not be used to connect hosts to a MOX (MSN) because the MOX (MSN) provides native IP (MDOT) connectivity.

Prerequisite: MSP hardware platform, see section 3.5.

4 Mobitex NTE Standard Network Functions

This chapter describes Mobitex standard network functionality included in the Basic feature packages defined in chapter 5.

The main functionality for the Mobitex network is to deliver user data packets between subscribers, which may be wireless terminals or application hosts. The network nodes involved in transferring the user data between the subscribers are the BAS and MOX nodes. The network also keeps track of each user's location.

Mobitex accommodates true push functionality. Without being asked for, a host can initiate a transmission to a remote device, i.e. the host pushes the information to the device.

The Mobitex radio protocol includes functions that dramatically reduce the power consumption of portable and handheld devices by allowing a terminal to go into a low power sleep mode and wake up at regular intervals to receive packets.

In the Mobitex system, packets are either delivered or a negative acknowledgement is sent back to the sender indicating that the data must be re-sent.

Mobitex also has store and forward functionalities, where packets can be temporarily stored in a Mailbox for terminals that are switched off or out of coverage.

The network nodes also has several congestion control functionalities to minimize impact of occasional peaks in traffic load, and to reduce network traffic e.g. when a subscriber is temporarily unavailable.

4.1 Network Configuration

Mobitex network configuration, such as defining sub-networks, nodes, radio channels, line types, data connections is performed from the NCC via a Graphical User Interface (GUI). The NCC also enables remote software upgrades of the network nodes. Configuration of network nodes can also be performed on-line, i.e. network nodes can be updated with new parameter values without need to restart.

4.2 Maintenance and Fault Management

A complete set of functions for fault management that allows full control and supervision of all nodes is available in the NCC. 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. Received alarms can be used to automatically trigger action routines.

The network nodes have several measurement points that allows gathering of statistics on traffic load, line utilization, radio performance, memory utilization etc.

4.3 Charging and Account Management

All network nodes generate traffic logs for each packet that has been transferred to a subscriber. These are automatically sent to the NCC, which provides a set of functions that allow the operator to charge subscribers for their network usage. Billing parameters can be defined for network access and utilization. Account management functions will then convert these records into machine-readable invoice information.

Open interfaces that allow operators to use external third party applications for billing purpose are available.

4.4 Subscription Administration

Subscription administration is performed in the NCC. Subscriptions can be created, changed, terminated, and also be blocked temporarily. For each subscription a set of services, such as the mailbox service, can be administrated.

The NCC also provides an open interface that allows operators to use external third party applications for subscription administration.

4.5 Network Features

Check of Electronic Serial Number

The Electronic Serial Number (ESN) is a security functionality that allows the network operator to protect the system from unauthorized terminals. The ESN for each subscription is stored both in the mobile terminal and in the radio base station into which the terminal has roamed. The network compares the two numbers and if the terminal ESN is determined to be illegal, the terminal is blocked and unable to communicate with the network.

This functionality is always included.

Closed User Group (CUG)

Closed User Group is a service used by subscriber groups in a network that do not wish to communicate with other subscribers outside the CUG. Subscribers within a closed user group cannot receive packets from, or send packets to, subscribers outside the group. It is possible for a subscriber to be a member of up to eight different closed user groups at the same time. Closed User Groups provide a very high level of security, since this functionality is built into the network, and are often used by public safety organizations, for example.

This functionality is always included.

Battery Saving Mode

The Mobitex radio protocol includes functions that dramatically reduce the power consumption of portable and handheld devices by allowing a terminal to go into a low power sleep mode and wake up at regular intervals to receive packets. For example, the low power operation extends battery life for handheld devices up to three weeks on a standard AA battery. A mobile terminal subscribing to this service can alternate between this mode and the normal mobile mode.

This functionality is always included.

Mobile Location Positioning

The Mobile Location In User Traffic (MLUT) functionality makes it possible for application hosts (FST or HG subscription) to request the approximate geographic location of a mobile subscription. The location is defined as the base station to which the mobile terminal is currently roamed and is transferred to the application host by replacing the time stamp field in the user data MPAK with the location information in user packets it receives from mobile terminals.

This functionality is always included.

Note: The application host is fully responsible for enabling or disabling this function.

Online Reconfiguration of Network Nodes (OLR)

It is possible to reconfigure network nodes online from the NCC without distributing new configuration files and without having to restart the node or its communication units. All reconfigurations made in the NCC are stored in the NCC database and on disk in the nodes and are considered as permanent.

The following list provides an overview of the kinds of configuration changes that can be performed:

- Add or remove a fixed terminal
- Add or remove a network node/branch
- Add or remove a radio channel
- Modify radio channel parameters
- Modify data connections to nodes and fixed terminals.

This functionality is always included.

Traffic Controlled Roam Flag

The Traffic Controlled Roam Flag function makes it possible to limit the number of subscribers on a radio base station in peak traffic situations, in order to secure a certain throughput of traffic.

When the traffic load increases to a predefined level (configurable) the roam flag transmission on the system channel will be disabled. This will prevent further mobile terminals from roaming into the radio base station, while mobile terminals already roamed in still have access to the radio base station.

When the traffic load decreases below another predefined level (also configurable) the roam flag transmission will be re-enabled, thus allowing mobile terminals to roam in to the radio base station again.

This functionality is always included.

Mailbox

If the receiver of a Mobitex message cannot be reached and the receiver subscribes to the network mailbox service, the message may be stored in a network mailbox in the MOX. A copy of the message, indicating that the message was put in the mailbox, will be returned to the sender. When the receiver is active again on the network, the mailbox is emptied and the contents are delivered to the subscriber. The mailbox service can be ordered by the sender for each individual message by using a subscription flag in the message header.

This functionality is always included.

Other Mobitex Functionality Licenses included by default

- Enable network configuration of redundant DRR (additional hardware/node software licenses to get redundant DRR not included)
- Enable network configuration of redundant NLS (additional hardware/node software licenses to get redundant NLS not included)
- Alarm Reduction
- NSAM OI UDP Interface
- Autonomous Base Stations Shutdown
- Multiple Sub-networks
- B-party Malfunction List
- NGI (depreciated, MX based sub-networks only)
- Access Control
- Extended Low Power
- Fast Re-activation
- Sweep5
- Improved Radio Sensitivity

5 Network Wide Feature Packages

Mobitex offers pre-packaged software feature packages that make it possible to implement the network service capabilities needed today, and readily upgrade with additional features as the needs grow and change over time, e.g. at network or subscriber expansions.

Three main feature packages are available to address the most common needs of different segments; Public Transport (PT), Public Safety (PS) and Machine-to-machine (M2M). Each network is categorized into one of the three segments PT, PS or M2M based on how the network is used. The Basic Feature Package within a segment is mandatory. Dependent on segment, various optional feature packages are available to even further tailor for individual needs.

All Feature Packages are licensed with a Right to Use license (RTU) and a number of Right to Connect licenses (RTC) dependent on the size of the network.

The features included in the various feature packages are summarized in Table 3 Feature Packages in section 5.4.

Note: Some features may require additional hardware components in the network.

5.1 Public Transport Feature Packages

The Public Transport packages targets operators and companies looking for a reliable data network at a cost efficient price to be used for e.g. wireless workforce management, real time passenger information, automatic vehicle control and location information etc. Networks classified as Public Transport networks are typically addressing various transportation needs as well as M2M (Machine-to-Machine).

5.1.1 Public Transport Basic Feature Package

The *Public Transport Basic Feature Package* includes the minimum software features optimized to keep investment costs as low as possible.

It is suitable for small network configurations that consist of one switch and relatively few base stations (see section 2.1), but also for larger networks.

RTU - Basic PT Features

FAL 104 5074

One Right to Use License per network is required to enable the functionality.

RTC - Basic PT Feature to Node

FAL 104 5074/1

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.1.2 Public Transport - Enhanced Redundancy

The enhanced redundancy feature package includes several redundancy features that provide configuration options for maximum availability of the network. To fully utilize the redundancy features included in this package, the network should consist of at least two MSP's running MOX(MSN), NLS (MoLS) and DRR (MoLS) applications. See section 3.5.

Prerequisite: PT - Basic Feature Package

RTU - Enhanced Redundancy for PT

FAL 104 5075

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Alternative Network Pathways
- Host Group Addressing
- Altered Host Group Addressing
- Positive acknowledgement (POSACK)
- Multiple Connections (deprecated, MX based sub-networks only)
- Alternative Top Node (deprecated, MX based sub-networks only)
- Subscription Mirroring in top-nodes (deprecated, MX based sub-networks only)
- ANP Between Sub-Networks for base stations

RTC - Enhanced Redundancy for PT to Node**FAL 104 5075/1**

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.1.3**Public Transport - Enhanced Radio Capacity**

The Enhanced Radio Capacity contains features that allow an operator to enhance roaming performance and radio capacity in highly utilized areas.

Prerequisite: PT - Basic Feature Package

RTU - Enhanced Radio Capacity for PT**FAL 104 5076**

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Base Group
- Prioritized Roaming

RTC - Enhanced Radio Capacity for PT to Node**FAL 104 5076/1**

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.1.4 Public Transport - Radio Priority

The Radio Priority feature enables the operator to give selected user groups higher priority on the radio channel, thus resulting in higher service levels and premium value to the end user.

Note: Not available in current Mobitex NTE software release, but can be implemented upon order.

Prerequisite: PT - Basic Feature Package

RTU - Radio Priority for PT

FAL 104 5077

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Radio Priority

RTC - Radio Priority for PT to 100 Users

FAL 104 5077/1

Right to Connect License that allows 100 Users to be included in a privileged Radio Priority Group. The license is incremental.

5.1.5 Public Transport - Alternative NCC

The Alternative NCC feature will improve the availability to the network management system in the event of a disaster such as fire, flooding, earthquake etc. at the Ordinary NCC location.

Prerequisite: The Alternative NCC feature requires one additional RTU NCC software License and additional NCC HW as described in section 3.1 Network Control Centre.

Prerequisite: PT - Basic Feature Package

RTU - Alternative NCC for PT

FAL 104 5078

One Right to Use License per network is required to enable the functionality.

5.2 Public Safety Feature Packages

The Public Safety packages specifically targets governments, emergency organizations and security companies with focus on superior availability, reliability and security, and where communication must never fail.

Networks classified as Public Safety networks are typically those used by police, ambulance, fire brigades, security organizations and governmental authorities.

5.2.1 Public Safety Basic Feature Package

The *Public Safety Basic Feature Package* is designed to achieve a system with maximum availability. This is obtained by several redundancy features that eliminates or minimizes down time that could occur because of scheduled or unscheduled outages such as human errors, system faults, maintenance, link failures, data failures and disasters.

To fully utilize the redundancy features included in this package, the network should consist of at least two MSP's running MOX(MSN), NLS (MoLS) and DRR (MoLS) applications. See section 3.5.

RTU - Basic PS Features

FAL 104 5070

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Alternative Network Pathways
- Alternative Network Pathways between Sub-networks for Base Stations.
- Host Group Addressing
- Altered Host Group Addressing
- Positive acknowledgement (POSACK)
- Multiple Connections (deprecated, MX based sub-networks only)
- Alternative Top Node (deprecated, MX based sub-networks only)
- Subscription Mirroring in top-nodes (deprecated, MX based sub-networks only)

RTC - Basic PS Features to Node**FAL 104 5070/1**

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.2.2 Public Safety - Enhanced Radio Capacity

The Enhanced Radio Capacity contains features that allow an operator to enhance roaming performance and radio capacity in high-utilized areas.

Prerequisite: PS - Basic Feature Package

RTU - Enhanced Radio Capacity for PS**FAL 104 5071**

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Base Group
- Prioritized Roaming

RTC - Enhanced Radio Capacity for PS to Node**FAL 104 5071/1**

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.2.3 Public Safety - Radio Priority

The Radio Priority feature enables the operator to give selected user groups higher priority on the radio channel, thus resulting in higher service levels and premium value to the end user.

Note: Not available in current Mobitex NTE software release, but can be implemented upon order.

Prerequisite: PS - Basic Feature Package

RTU - Radio Priority for PS**FAL 104 5072**

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Radio Priority

RTC - Radio Priority for PS to 100 Users**FAL 104 5072/1**

Right to Connect License that allows 100 Users to be included in a privileged Radio Priority Group. The license is incremental.

5.2.4 Public Safety - Alternative NCC

The Alternative NCC feature will improve the availability to the network management system in the event of a disaster such as fire, flooding, earthquake etc. at the Ordinary NCC location.

Prerequisite: The Alternative NCC feature requires one additional RTU NCC software License and additional NCC HW as described in section 3.1 Network Control Centre.

Prerequisite: PS - Basic Feature Package

RTU - Alternative NCC for PS

FAL 104 5073

One Right to Use License per network is required to enable the functionality.

5.3 Machine-to-machine (M2M) Feature Packages

The M2M packages are designed for network operators who focus on monitoring and control of remote equipment, such as power and.

5.3.1 M2M Basic Feature Package

The *M2M Basic Feature Package* includes the minimum software features optimized to keep investment costs as low as possible while supporting a large number of remote terminals.

High availability may be obtained by several redundancy features that eliminates or minimizes down time that could occur because of scheduled or unscheduled outages such as human errors, system faults and crashes, maintenance, data failures and disasters. To fully utilize the redundancy features included in this package, the network should consist of at least two MSP's running MOX(MSN), NLS (MoLS) and DRR (MoLS) applications. See section 3.5.

It also contains features that allow an operator to enhance radio capacity in high-utilized areas.

The recommended network architecture for the M2M Basic Feature Package consists of at least one switch to fully make use of the included redundancy features.

RTU - Basic M2M Features

FAL204 2001

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Positive acknowledgement (POSACK)

RTC - Basic M2M Features to Node Package

FAL204 2002

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.3.2 M2M - Enhanced Redundancy

The enhanced redundancy feature package includes several redundancy features that provide configuration options for maximum availability of the network. To fully utilize the redundancy features included in this package, the network should consist of at least two MSP's running MOX(MSN), NLS (MoLS) and DRR (MoLS) applications. See section 3.5.

Prerequisite: M2M - Basic Feature Package

RTU - Enhanced Redundancy for M2M **FAL204 2003**

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Alternative Network Pathways
- ANP Between Sub-Networks for BAS
- Host Group Addressing
- Altered Host Group Addressing

RTC - Enhanced Redundancy for M2M to Node **FAL204 2004**

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.3.3 M2M - Enhanced Radio Capacity

The Enhanced Radio Capacity contains features that allow an operator to enhance roaming performance and radio capacity in high-utilized areas.

Prerequisite: M2M - Basic Feature Package

RTU - Enhanced Radio Capacity for M2M **FAL204 2005**

One Right to Use License per network is required to enable the functionality.

Included licenses:

- Base Group
- Prioritized Roaming

RTC - Enhanced Radio Capacity for M2M to Node **FAL204 2006**

One Right to Connect License for each installed node of type MOX(MSN), BRU3 and BRU1 is required.

5.3.4 M2M - Radio Priority

The Radio Priority feature enables the operator to give selected user groups higher priority on the radio channel, thus resulting in higher service levels and premium value to the end user.

Note: Not available in current Mobitex NTE software release, but can be implemented upon order.

Prerequisite: M2M - Basic Feature Package

RTU - Radio Priority for M2M

FAL204 2007

One Right to Use License per network is required to enable the functionality.

Included license:

- Radio Priority

RTC - Radio Priority for M2M to 100 Users

FAL204 2008

Right to Connect License that allows 100 Users to be included in a privileged Radio Priority Group. The license is incremental.

5.3.5 M2M - Alternative NCC

The Alternative NCC feature will improve the availability to the network management system in the event of a disaster such as fire, flooding, earthquake etc. at the Ordinary NCC location.

Prerequisite: The Alternative NCC feature requires one additional RTU NCC software License and additional NCC HW as described in section 3.1 Network Control Centre.

Prerequisite: M2M - Basic Feature Package

RTU - Alternative NCC for M2M

FAL204 2009

One Right to Use License per network is required to enable the functionality.

5.4 Feature Descriptions

This section contains detailed descriptions of all features included in the different feature packages. The *Mobitex NTE Standard Network Functionality*, which is included in PT - Basic, PS - Basic and M2M - Basic is described in chapter 4.

Feature Feature Package	Mobitex NTE Standard Network features (see chapter 4)	Alternative Network Pathways	Alternative Network Pathways between Sun-networks for BAS	Positive Acknowledgement	Host Group Addressing	Base Group Multi Channel Capacity	Prioritized Roaming	FST Minimum Value	Radio Priority	Alternative NCC
PT – Basic	X									
PT - Enhanced Redundancy		X	X	X	X					
PT - Enhanced Radio Capacity						X	X			
PT - Radio Priority									X	
PT - Alternative NCC										X
PS – Basic	X	X	X	X	X					
PS - Enhanced Radio Capacity						X	X			
PS - Radio Priority									X	
PS - Alternative NCC										X
M2M – Basic	X			X		X	X	X		
M2M – Enhanced Redundancy		X	X		X					
M2M – Enhanced Radio Capacity						X				
M2M - Radio Priority									X	
M2M - Alternative NCC										X

Table 3 Feature Packages

5.4.1 Miscellaneous

X.25 Gateway (Deprecated)

The X.25 gateway provides connectivity for X.25 applications without the need for implementation of the Mobitex network layer protocol.

The X.25 gateway also provides several X.25 options to transfer Mobitex MAN numbers to and from X.25 hosts in the X.25 Call User Data (CUD) field.

Note! X25 Gateway functionality can only be used on MOX (MX).

Adjustable FST Min Throughput (Deprecated)

Adjustable FST Min Throughput provides the possibility to predefine and adjust the minimum level of the throughput value for an FST. This can be used to prevent the FST throughput from decreasing to an unacceptable low throughput level during congestion in a Mobitex network.

Note! Adjustable FST Min Throughput functionality can only be used on MOX (MX).

5.4.2 Redundancy and Availability Features

Alternative Network Pathways

Alternative Network Pathways (ANP) adds redundancy and makes it possible to configure alternative network pathways to other switches than the one a base station currently resides in. This gives increased redundancy possibilities for the network operator. In case of line failure or switch failure the base station can connect to an alternative switch.

Alternative Network Pathways between Sub-networks for Base Stations

Similar to Alternative Network Pathways (ANP) described above, but also usable in a flat sub-network architecture when MOX acts as top node in the sub-networks. This option must be used if ANP are to be used together with the MOX (MSN) node. This feature requires the ANP feature described above.

The license for this feature is installed in the NLS nodes.

Note! If a redundant NLS is used, both NLS nodes requires a license.

Host Group Addressing

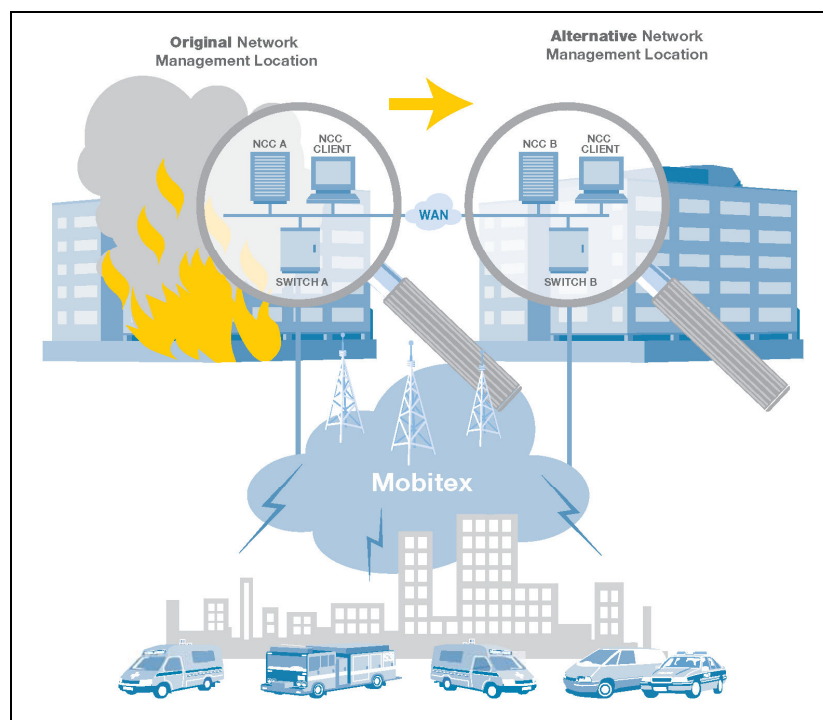
Host Group Addressing enables redundant access for fixed computer hosts via multiple access points to the Mobitex network. When a Host Group is used, two or more connections from fixed terminals are required. In this case, the Host Group subscriber is simultaneously logged in on all connections. If one connection fails, the traffic is routed to one of the other connections.

Positive Acknowledgement

Positive Acknowledgement gives the sender of a packet the possibility to get a confirmation when a specific packet has been successfully delivered to the receiver. When the receiving terminal acknowledges the message, the network sends a copy of the message to the originator.

The Positive Acknowledgement function also makes it possible to use Back In Coverage notification, which enables user applications to be notified when a specific subscription is back in coverage. This means that repeated attempts to communicate with subscriptions that are temporarily out of coverage may be eliminated.

Alternative NCC



The Alternative NCC feature will improve the availability to the network management system in the event of a disaster such as fire, flooding, earthquake etc. at the Ordinary NCC location. The Alternative NCC is a standby NCC installation at another site, which enables full functionality and physical redundancy at all times.

The operator will get notified if the Ordinary NCC is not running and the Alternative NCC can be activated. Network nodes will automatically connect to the Alternative NCC when it is made active. Network configuration data in the Ordinary NCC is automatically replicated to the Alternative NCC to ensure accurate network information.

The Alternative NCC has the same functionality as the Ordinary NCC and the operator can configure, control and monitor the Mobitex network from the Alternative NCC or a remote NMS client. Several NMS client computers can be installed at different locations and connect either to the Ordinary or Alternative NCC server and provide remote management possibilities.

Besides the use of an Alternative NCC in the case of disaster the Alternative NCC can be used to make NCC Server maintenance less critical and allows longer maintenance window.

Prerequisite: The Alternative NCC feature requires one additional RTU NCC software License and additional NCC HW as described in section 3.1 Network Control Centre.

5.4.3 Base Station and Radio Features

Base Group Functionality

Base Group functionality provides increased traffic capacity in a cell area by automatically and uniformly distributing the traffic load between multiple base stations in the same geographical coverage area.

Basically, a group of radio base stations with as similar coverage areas as possible is designated as a Base Group, in which the individual radio base stations are members. A Base Group can contain up to eight members, each supplying one radio channel.

Prioritized Roaming Capability

Prioritized Roaming functionality enables the use of "hot spot" base stations to influence roaming behavior and traffic distribution for specific areas or applications.

When a mobile terminal roams into a new radio base station, it receives a list of neighbor base stations. In ordinary roaming, the mobile roams in to the base station with the highest signal strength. With Prioritized Roaming the mobile selects a base station to roam into based on both signal strength and the priority that the operator has set for the base station.

Note: Prioritized Roaming requires that the mobile terminal has implemented support for this function.

Radio Priority

Some user groups may demand premium service levels during all circumstances. In such case, the Radio Priority function allows the operators to determine how much of a radio channel's random access capacity should be reserved for priority users. The prioritized area may be the whole network or a single base station. The Radio Priority function can be turned on or off and configured remotely from the NCC. The priority group can also be changed while the base station continues to operate without interruption. Within a network, several user groups can be included in a Priority Group, and the same group may be used on several base stations. Group members are automatically given higher priority on the radio channel.

6 Test Equipment

6.1 Stand-Alone Mobile Test Equipment

The Stand-Alone Mobile Test Equipment (SA-MTE) is a versatile testing environment that allows Mobitex radio modem manufacturers, network operators and application developers to make effective tests of their equipment and applications without the need for an ordinary Mobitex network.

The SA-MTE can emulate radio link traffic and single radio link frames. The test equipment is capable of generating both correct and erroneous frames.

There are also some basic radio link monitoring possibilities that can give the user basic information about the behavior of the DUT (Device Under Test). The test results can be logged for off-line analysis and processing.

The SA-MTE can be used for 8 kbps, 400, 800 or 900 MHz Mobitex systems/radio modems. The radio link protocol is compatible with MIS R4A as used in system releases NTE, R14E and R14N.

Ordering Data

The SA-MTE consists of the SA-MTE Kit and a BRU3 base station with the output signal level from the BRU3 limited to approximately 100mW. The BRU3 variant is ordered separately, see section 3.3 for BRU3 ordering information.

SA-MTE Kit

FAB 102 547

The SA-MTE kit includes the RS-232 cable connecting the PC to the BRU3, an RF connector all SA-MTE software and SA-MTE documentation

The SA-MTE front-end application is delivered on CD-ROM media to be installed on a PC. The front-end application requires a PC running Windows 2000 or higher.

6.2 Sniffex Radio Protocol Analyzer

The Sniffex radio protocol analyzer is a versatile PC-based tool for monitoring radio traffic and troubleshooting. The tool decodes transmission on radio channels in real time and presents the results to the user on a PC screen. The Sniffex is available in a desktop version and a portable version.

The primary application areas for the Sniffex are:

- Analyzing and measuring traffic volume on a pair of radio channels.
- Studying communication characteristics between the mobile and the base station.
- Developing and debugging Mobitex applications.

Prerequisite: A PC running Windows 2000 or higher with 2 available COM ports. One free PCI slot for the desktop version or one free PCMCIA slot for the portable version.

Ordering Data

Sniffex

The Sniffex system includes the following:

- Sniffex software and User Manual (both delivered on a CD).
- One A/D sampling card (National Instruments PCI-MIO-16E-1 for the desktop version or DAQ Card 6062E for the portable version) plus software.
- Two radio scanners (ICOM IC-PCR1000).
- LF, data and power cables.

7 Software Packages

Software packages are CD-ROM kits with all software files and Client Library for the selected product. The packages may also include a delivery binder with release information.

N.B. The software packages do not include any software licenses and the packages can only be ordered if the customer has necessary software licenses for the software.

Mobitex NTE

Mobitex NTE - Basic Software on CD **FAB 801 3627/1**

All basic software files and Client Library for Mobitex NTE delivered on CD-ROMs.

Mobitex NTE - TLM Server Software on CD **FAB 801 3628/1**

All TLM server software files delivered on CD-ROM.

Demo Application for Socket Based NSAM Open Interface on CD **LZY 232 131**

Demo application for Socket Based NSAM Open Interface.

N.B. This software is delivered "as is" and Mobitex Technology AB takes no liability for the use of the software. For a full description on the software license for this product, please view the included source code

Mobitex IAS (Deprecated)

Mobitex IAS - Software on CD **FAB 801 2965/1**

All software files and Client Library for Mobitex IAS delivered on CD-ROMs.

IP Host Application Example on CD **LZY 232 130**

Application example for an IP Host.

N.B. This software is delivered "as is" and Mobitex Technology AB takes no liability for the use of the software. For a full description on the software license for this product, please view the included source code

MPAK Router (Deprecated)

MPAK Router - Software on CD **FAB 801 1901/1**

All software files and Client Library for MPAK Router delivered on CD-ROMs.

This software packet shall only be used in old networks using MX-hardware.