

[ DATA SHEET ]

Product:	NIS
	Operational Telecom System
Segment:	Infrastructure Operators
Division:	Security Communication

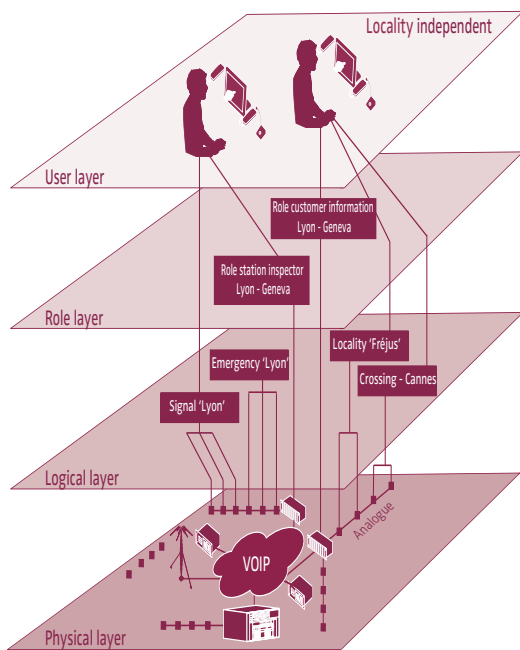


## OPERATIONAL TELECOM SYSTEM

### System Description

NIS is a third-generation communication system that combines all kinds of communication services and third-party applications in a single system. It is used primarily for safety-critical applications, i.e. by railway operators, metro systems and road traffic. By virtue of its scalable concept it is equally well suited for large networked systems and small compact systems.

NIS and its integrated third-party applications are all operated using Standard Operating Terminals (SBG) right across the board or, with reduced functionality, using the Simple Operator Terminal (EBG). System management is handled by two powerful, web-based management tools: the ConfCommander (configuration software) and the SystemMonitor (for system monitoring).



## SYSTEM FUNCTIONS

The NIS role/user concept abstracts the organizational structure from the installed hardware.

### Roaming User Profile

The operator can login to the system at any dispatcher terminal in within the network. After login the personal profile will be loaded automatically and the controller can then take over any assigned role depending on respective user rights.

### Role Management

Thanks to the powerful NIS role management the user can dynamically allocate or release operative functions. This gives the railway operator the full flexibility and enables efficient resource management and role sharing.

### Logical Targets

With the logical targets incoming calls can be grouped to logical targets. This allows temporary takeover of logical calls sources independently from the role management. The logical targets give the controller the possibility; for instance to take over the control of a track section in case of an accident, so that all incoming calls will be routed to the temporarily responsible operator.

### System operating terminals

The touchscreen of the SBG system operating terminal enables intuitive, clearly structured operation.

Icons are used to visualize states or to set up connections to calls stations by clicking destination dialling keys. Ease of use is increased further through accessories such as wireless headsets or swan-neck microphones. As an alternative to the SBG, the EBG is also available as a compact, space-saving operating terminal.

**Public Announcements**

Announcements with NIS, professional live announcements are spoken on workstations using swan-neck microphones and then transmitted via one or more loud-speakers with outstanding quality of speech. NIS allows the creation of announcement groups and uses IO output contacts to activate the selected loudspeakers and amplifiers. Unlike ordinary telephony subscribers, announcement groups can also be reserved and expanded dynamically so that the public address can be made simultaneously on all the announcement destinations. To prevent different announcements from interfering with one another, neighbouring announcement groups are automatically blocked for the duration of a public address. Audio levels are lowered at night using the day/night switchover.

**Radio Integration**

Thanks to its flexible interfaces, NIS can fully integrate analogue- and digital-radio on the controller terminal.

**Trackside and Station Phones**

Due to its comprehensive list of gateways, NIS can fully integrate different kind of emergency-/Info call station or trackside phones.

**Voice/Data –Recording**

The integrated central voice and data recording supports post-event analysis of critical operational situations.

**Integration into existing systems**

NIS is an open system which integrates extremely well into existing communication networks. Various interfaces are available for this purpose. Modular ISDN cards are used for the integration into conventional voice networks. Data points can be networked using the OPC interface for the integration of SCADA or control systems.

NIS provides the telephony functionality for 3-party systems over the CTI interface.

And finally the connection of NIS2000 allows a soft migration transition from the NIS predecessor system.

## STATION MANAGEMENT

### Integration of Video-Surveillance

Video systems by other manufacturers are integrated and controlled with NIS. From the NIS system operating workstation it is possible to connect cameras toward displays, operate tracking cameras or program and play entire video sequences. When an emergency call is coming in, the camera assigned to the emergency call point can automatically be displayed on an alarm display. This considerably increases customer safety.

### Monitoring and Control

NIS telecontrol modules are used to monitor objects such as fire extinguishers, escalators and emergency exits. Digital inputs can be configured so that they trigger alarms in the event of a state change or are simply displayed. The telecontrol modules are visualised and operated using the graphical user interface of the System Operating Terminal. The modules may consist of IO gateways, call stations with options cards from Ascom or commercially available products with ModBus interfaces.

## SYSTEM MANAGEMENT

The ConfCommander is a software tool used for the configuration and maintenance of the NIS system. The system-wide configuration is carried out centrally on a web-based workstation using user-friendly input masks. The system management suite, handles the software versions of the peripheral components and contributes significantly to the efficient maintenance of the system.

The continuous monitoring of all the NIS components is carried out by the System -Monitor. The operating state of the entire system can be viewed at a glance and in detail. Diagnostics functions such as the FEKON test (which automatically checks the transmission paths, the electronics and the audio components of call stations) enable quick intervention as soon as a fault occurs.

## FEATURES

### System features, telephony

Addressing of terminals, subscribers, logical targets and roles

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Call types emergency call and information call

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Calling Line Identification Presentation (CLIP)

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Calling Name Identification Presentation (CNIP)

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Connected Line Identification Presentation (COLP)

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Connected Name Identification Presentation (CONP)

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Abbreviated dialing

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Calls on hold, brokering, enquiry calls

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Conference calls

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Force conference

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Meet me

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Direct response

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### Specific features for Railways (EIRENE SRS V15 and FRS V7)

Functional addressing

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Multilevel precedence and pre-emption

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Group calls

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Broadcast calls

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Text messages (SMS)

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Broadcast text messages

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### Features, announcements

Live announcement to individual loudspeakers or group of loudspeakers

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Intrusion into current announcements

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Blocking of neighboring announcement groups

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Selecting and reserving of announcement destinations

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Dynamic connection of announcement destinations

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Day / night switchover

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Automatic or manual gong output prior to announcement

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### Features, Analogue radio interface

Implementation of selective calls from the analogue radio network

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PTT (Push-To-Talk)

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Either 4 or 2-wire interface to the radio network

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Squelch recognition with optical-coupler

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Radio channel selection with DTMF signaling

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Supports multiple standard tone sets (e.g. ZVEI I, ZVEI II) and customer definable tone set

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### **Digital radio interface Tetra**

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Monitoring, display of mobile subscribers

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Push-to-Talk, end-to-end status check

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Individual call

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Individual call prioritization

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Individual call, call acknowledgement

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Group calls

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SDSmessage

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### **Features, Telecontrol**

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Supports commercial IO modules with ModBus protocol by outside manufacturers or

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IO inputs are imported and displayed symbolically on SOT

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IO outputs can be either event-driven or controlled manually

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IO inputs triggers alarms or pre-programmed actions

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Provides data points to third-party systems

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### **Features, video integration of third-party video systems**

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Manual activation of cameras and monitors

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Control of tracking CCTV cameras

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Monitoring sequences

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Automatic switching of the video image for a call

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FEATURES, SYSTEM OPERATING TERMINALS		
	SBG	EBG
Login with user function / role	■	-
Parallel or exclusive role acceptance	■	-
User interface per role	■	-
Integrated online help for system functions	■	-
Multilingual capability	D, F, E, I *	D, F, E, I*
Clean Screen mode	■	-
Integrated call recording	■	-
Integrated alarm handling	■	-
Number of entries on call list	200	100
Number of entries in redial list	200	100
Destination dialing keys per terminal	1000	12 (Opt +54)
Status display on destination dialing keys	■	■
Number of entries in queue	3-50 **	-
Push to talk	■	■***
Wireless headset with hook switch and mute	■	■
Call duration display	■	■
Goose-neck microphone socket	■	-
Callback if busy (CCBS)	■	■
Intrusion if busy	■	-
Call transfer	■	■
Cancel caller's name as per ETV	■	-
Entries in queue for incoming calls	2-49	-
Hands-free operation call mode	■	■
Open listening call mode (loudspeaker and handset)	■	■
Menu keys and telephony keys selectable	■	-
Address book	■	■
Listen again	■	-

\* Additional languages available

\*\* Configurable, depending on screen size and queue position

\*\*\* Select to talk

Features, call stations					
	IP Call Station	ISDN call station	Uk0 Call Station	GSM call point	VICOS (optical IP)
Connection technology	TCP/IP	ISDN / S0	ISDN / Uk0	GSM network	TCP/IP
Connections	2-wire	4-wire	2-wire	wireless	single-/multi-mode fibre
Local or remote power supply selectable	yes	yes	yes	with solar panel	with solar panel
Max. remote distance	100 m	150 m	8 km	-	-
Max. number of destination dialing keys	4	4	4	4	4
Number of I/Os on basic card	0 / 0	1 / 1	0 / 0	2 / 2	3 / 3
OFA option with 8 inputs and 4 outputs	■	-	■	-	-
Choice of hands-free or handset operation	■	■	■	Hands-free operation	■
Operating state signalled by LED	■	Option	■	■	■
Option with 100 V loudspeaker connection	■	-	■	-	-
Option with metallically isolated audio output	■	-	■	-	-
Broadband speech quality when used as an announcement call station	G.711, G.722	-	-	-	G.711, G.722
Remote diagnostics / FEKON test	■	-	■	Remote diagnostics	■
Sabotage detection	-	■	-	■	-
Remote configuration with ConfCommander	■	-	■	■	■
Software remote download	■	-	■	-	■

**Gateways**

GSM gateway for integration of DRANOS call stations and GSM phones

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GSM-R Gateway for connection to the GSM-R Network

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Radio gateway for connection of analogue and digital radio

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PA gateway for connection of loudspeakers and PA systems

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ISDN gateway for connection to ISDN based networks (Trunks)

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Analogue/ISDN gateway for integration of analogue/ISDN devices

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UK0 gateway for connection of UK0 based devices

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**MANAGEMENT FUNCTIONS**

**Diagnostics with SystemMonitor**

Monitoring functions with SystemMonitor

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Alarm lists, acknowledgement

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Evaluation of statistics (Call Detail Records)

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Logfiles

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Version query

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SOScall trigger

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Reset call stations and hardware

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Activate / deactivate call station

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Trigger FEKON

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Display I/O states

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**Configuration with ConfCommander**

Software download

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Backup and restore

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Configuration

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GUI-Editor

---

Release update remote and automatic

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**SNMP messages**

Error notification

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**QUALITY FEATURES**

Redundancy

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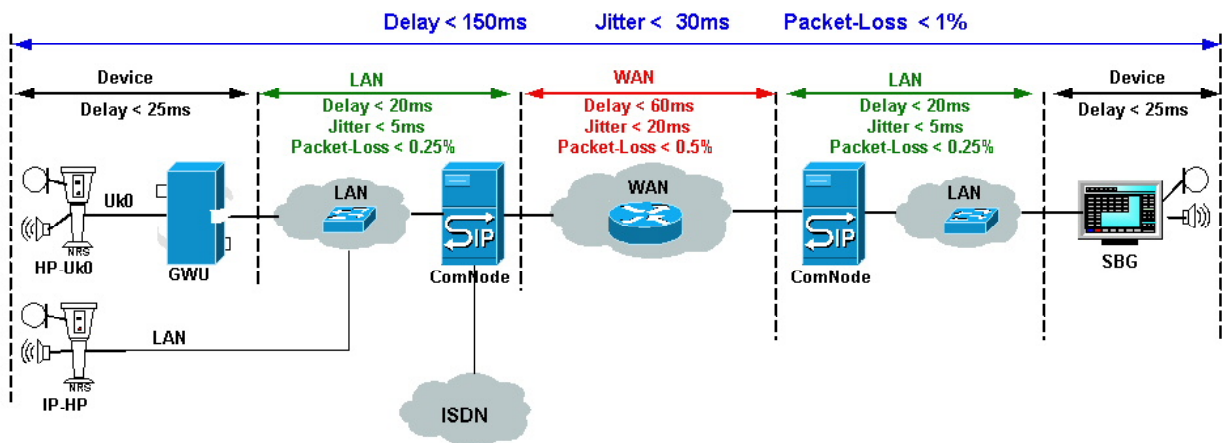
Fallback level operation

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Time synchronization

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Technical data			
System limits on NIS network level		Time measurements on the reference system with a ComNode	
Number of roles	1000	SBG start-up time	10s
Number of user	20'000	ComNode start-up time	165s
Number of ComNode per Network	100	Cluster switch time (warm-standby)	120s
Number of Network ISDN-Gateways per	120	Cluster switch time (hot-standby)	0s (no interrupt)
Number of Network Radio-Gateways	100	<b>Certifications</b>	
Number of Network GSM-R Gateways	120	CE Marking Directive	
Number of Network NIS-2000 Gateways	120	Safety	EN 60950-1
System limits on ComNode level		EMC	<ul style="list-style-type: none"> <li>▪ EN 55022 Class B</li> <li>▪ EN 55024,</li> <li>▪ EN 50121-4</li> <li>▪ EN 61000-6-1, -2</li> <li>▪ EN 61000-6-3</li> </ul>
Number of SBG	300		
Number of EBG	1'000	<b>Network requirements</b>	
Number of SIP subscriber	10'000	Jitter	< 20ms
Number of announcement gateways (half rack's)	1'200	Packet loss	< 0.5%
Number of analogue radion gateways (FNI interfaces)	800	One way latency	< 60ms
Number of Uko Gateways 3S	800	Standard jitter buffer size in the NIS and NIS gateways is 60 ms (4096 bytes).	
Number of CCTV cameras	5000	The maximum delay for good voice quality should not exceed 150 ms end-to-end; in the illustration below, these times are divided up between WAN/LAN and terminal.	
System limit network gateway level			
PRI Interfaces in the ComNode	4 ports		
BRI interfaces in the ComNode	32 ports (with extension rack)		
FXS/FXO interfaces in the ComNode	32 ports (with extension rack)		



Bandwidth requirement SIP/RTP connection G.711	100 kbit/s
Bandwidth requirement SIP/RTP connection G0.722	100 kbit/s
Bandwidth requirement SIP/RTP connection MP3	120 kbit/s

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