

**User's Guide**  
**bintec R3000w / R3400 / R3800**  
**Monitoring and Debugging**

**Purpose** This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.3.1 or later. For up-to-the-minute information and instructions concerning the latest software release, you should always read our **Release Notes**, especially when carrying out a software update to a later release level. The latest **Release Notes** can be found at [www.funkwerk-ec.com](http://www.funkwerk-ec.com).

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R&TTE Directive 1999/5/EG

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# 1 Monitoring and Debugging Menu

The fields of the **MONITORING AND DEBUGGING** menu are described below.

R3000w Setup Tool	Funkwerk Enterprise Communications GmbH
[MONITOR]: Monitoring and Debugging	MyGateway
ISDN Monitor	ATM/OAM
ISDN Credits	ADSL
xDSL Credits	
Interfaces	BRRP
Messages	
Email Alert	
TCP/IP	IP QoS
IPSec	SSHD
OSPF	
EXIT	

The **MONITORING AND DEBUGGING** menu contains submenus that enable you to locate problems in your network and monitor activities, e.g. at your gateway's WAN interface.

Menu	Meaning
ISDN Monitor	Logs incoming and outgoing ISDN calls.
ISDN Credits	Statistics of the ISDN subsystems ppp and isdnlogin.
xDSL Credits	Statistics of the xDSL subsystem PPPoE.
Interfaces	For monitoring the traffic of the individual interfaces. The interface status can also be changed via this menu ( <i>up, down, reset</i> ).
Messages	Shows system messages generated by the gateway's logging and accounting mechanism.

Menu	Meaning
TCP/IP	This menu is for monitoring the IP traffic of the individual protocols.
IPSec	This menu shows global IPSec statistics and lists the <b><i>IKE SECURITY ASSOCIATIONS</i></b> and <b><i>IPSEC SA BUNDLES</i></b> of all active IPSec tunnels.
ATM/OAM	This menu displays the current values and activities of the ATM interface.
ADSL	This menu is for monitoring an ADSL connection.
SHDSL	This menu is for monitoring an SHDSL connection.
BRRP	This menu contains statistical information about the individual “virtual routers” in BRRP.
IP QoS	This menu contains QoS-specific statistics.
SSHD	In this menu you can view existing SSH connections.

Table 1-1: Submenus in ***MONITORING AND DEBUGGING*** menu

## 2 ISDN Monitor Submenu

The *ISDN MONITOR* submenu is described below.

A list of the existing ISDN connections (incoming and outgoing calls) is displayed:

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH				
[MONITOR][ISDN CALLS]: ISDN Monitor - Calls		MyGateway				
Dir	Remote Name/Number	charge	Duration	Stack	Channel	State
out	isdnlogind/1111		101	0	B1	active
in	isdnlogind/9999		65	0	B2	active
EXIT						
(c)alls	(h)istory	(d)etails	(s)tatistics	(r)elease		

Select **c** if you have used other options and wish to return to the list of existing ISDN calls.

This menu also offers you other options:

- Select **h** to show a list of the last 20 ISDN calls (incoming and outgoing) completed since the last system start.

```

R3000w Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][ISDN HISTORY]: ISDN Monitor - History                MyGateway

  Dir Remote Number  Charge Starttime Duration Cause
in  isdnlogind/111  06:50:11  41    (0x90) normal call clearing
out isdnlogin/112   06:50:57  4    (0x90) normal call clearing
in  isdnlogind/113  06:52:04  110  (0x90) normal call clearing
in  isdnlogind/114  06:56:05  4    (0x90) normal call clearing
in  isdnlogind/115  06:56:11  0    (0x90) normal call clearing
in  isdnlogind/115  06:56:17  1    (0x90) normal call clearing
in  isdnlogind/115  06:56:23  1    (0x90) normal call clearing
in  isdnlogind/114  06:56:28  2    (0x90) normal call clearing
in  isdnlogind/114  06:56:32  1    (0x90) normal call clearing
in  isdnlogind/112  06:56:37  2    (0x90) normal call clearing
in  isdnlogind/111  06:56:51  4    (0x90) normal call clearing
in  isdnlogind/113  06:57:00  2    (0x90) normal call clearing
in  isdnlogind/111  06:57:06  1    (0x90) normal call clearing

EXIT

(c)alls      (h)istory      (d)etails      (s)tatistics      (r)elease

```

- Place the cursor on an existing or completed ISDN call and select **d** to display detailed information about this call.

```

R3000w Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][ISDN DETAILS]: ISDN Monitor - Details                MyGateway

Remote Number: 111                Direction: in      State:

Cause          (0x90) normal call clearing
Local Cause    (0xb) chan busy
Info           isdnlogind

Local Number   999
Dispatch Item  ISDN Login

Stack          0
Channel        B2
Charging Info

SIN            telephony

EXIT

(c)alls      (h)istory      (d)etails      (s)tatistics      (r)elease

```

- Select **s** to display statistics on the activity of the existing incoming and outgoing ISDN calls.



R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [ISDN STATS]: ISDN Monitor - Statistics		MyGateway	
Remote Number: 999		Direction: out	State: active
Duration 25			
Send:		Receive:	
Packets	107	Packets	107
Bytes	567	Bytes	5478
Errors	0	Errors	0
Packets/s	1	Packets/s	1
Bytes/s	5	Bytes/s	218
Load (%)	0	Load (%)	2
EXIT			
(c)alls	(h)istory	(d)etails	(s)tatistics
(r)elease			

- Select **r** to clear the tagged existing ISDN call.

The display for the **c**, **h** and **s** options is updated at 1-second intervals.



### 3 ISDN Credits Submenu

The *ISDN CREDITS* submenu is described below.

The *MONITORING AND DEBUGGING* → *ISDN CREDITS* menu shows the subsystem *PPP* and subsystem *ISDNLOGIN* and the respective *SURVEILLANCE* status.

Select a subsystem and confirm with **Return**.

The current status of the Credits Based Accounting System for the selected subsystem is displayed:

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [ISDN CREDITS] [STAT]: Monitor ppp Credits		MyGateway		
Time till end of measure interval (sec)	Total	Maximum	% reached	
	82000	86400	5	
Number of Incoming Connections	1			
Number of Outgoing Connections	10	100	10	
Time of Incoming Connections	720	28800	3	
Time of Outgoing Connections	1360	28800	5	
Charge	0			
Number of Current Incoming Connections	0			
Number of Current Outgoing Connections	0			
Number of Current Connections	0			
EXIT				

The display is updated automatically every two seconds.

The menu consists of the following fields:

Field	Description
Time till end of measure interval (sec)	Time in seconds until the end of the measuring interval.
Number of Incoming Connections	The number of incoming connections until now during <i>MEASURE TIME (SEC)</i> (see menu <i>CREDITS</i> → <i>ISDN CREDITS</i> ).

Field	Description
Number of Outgoing Connections	The number of outgoing connections until now during <b>MEASURE TIME (SEC)</b> .
Time of Incoming Connections	Total time in seconds for incoming connections until now during <b>MEASURE TIME (SEC)</b> .
Time of Outgoing Connections	Total time in seconds for outgoing connections until now during <b>MEASURE TIME (SEC)</b> . <b>(SEC)</b> .
Charge	Current charges until now (amount, units) during <b>MEASURE TIME (SEC)</b> .
Number of Current Incoming Connections	The number of current incoming connections.
Number of Current Outgoing Connections	The number of current outgoing connections.
Number of Current Connections	The total number of all current connections.

Table 3-1: Fields in the **MONITORING AND DEBUGGING → ISDN CREDITS → PPP/ISDNLOGIN → EDIT** menu



#### Hinweis

Please note that this menu is only a display of the configured values and values achieved.

Use the **CREDITS → ISDN CREDITS** menu to configure the limits.

## 4 xDSL Credits Submenu

The *xDSL CREDITS* submenu is described below.

The **MONITORING AND DEBUGGING** → *xDSL CREDITS* menu provides access to the **PPPoE CREDITS** submenu.

The current status of the Credits Based Accounting System for the PPPoE subsystem is displayed:

R3000w Setup Tool	Funkwerk Enterprise Communications GmbH		
[MONITOR] [XDSL CREDITS]: Monitor PPPoE Credits	MyGateway		
	Total	Maximum	% reached
Time till end of measure interval (sec)	82000	86400	5
Number of Outgoing Connections	10	1000	1
Time of Outgoing Connections	7260	28800	26
EXIT			

The menu consists of the following fields:

Field	Description
Time till end of measure interval (sec)	Time in seconds until the end of the measuring interval.
Number of Outgoing Connections	Current number of outgoing connections until now during <b>MEASURE TIME (SEC)</b> (see <b>CREDITS</b> → <i>xDSL CREDITS</i> → <b>PPPoE CREDITS</b> ).
Time of Outgoing Connections	Current total time in seconds for outgoing connections until now during <b>MEASURE TIME (SEC)</b> .

Table 4-1: Fields in the **MONITORING AND DEBUGGING** → *xDSL CREDITS* → **PPPoE CREDITS** menu

**Hinweis**

Please note that this menu is only a display of the configured values and values achieved.

Use the **CREDITS** → **xDSL CREDITS** → **PPPoE CREDITS** menu to configure the limits.

## 5 Interfaces Submenu

The **INTERFACES** submenu is described below.

The **MONITORING AND DEBUGGING** → **INTERFACES** menu shows the current values and activities of the gateway interfaces.

The values for two interfaces are displayed side by side:

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH			
[MONITOR] [INTERFACE]: Interface Monitoring		MyGateway			
Interface Name	en0-1			PROVIDER	
Operational Status	up			up	
	total	per second	total	per second	
Received Packets	785	2	199	1	
Received Octets	130353	128	13429	86	
Received Errors	0		0		
Transmit Packets	295	2	89	1	
Transmit Octets	22358	169	7401	84	
Transmit Errors	0		0		
Active Connections	N/A		2		
Duration	N/A		734		
EXIT	EXTENDED			EXTENDED	

The display is updated at 1-second intervals.

Select the interface to be displayed under **INTERFACE NAME**.

The menu contains the following fields:

Field	Description
Interface Name	For selecting the interface whose data are to be displayed.
Operational Status	Shows the operational status of the selected interface.
Received Packets	Shows the total number of packets received and the number per second.

Field	Description
Received Octets	Shows the total number of octets received and the number per second.
Received Errors	Shows the total number of errors received.
Transmit Packets	Shows the total number of packets sent and the number per second.
Transmit Octets	Shows the total number of octets sent and the number per second.
Transmit Errors	Shows the total number of errors sent.
Active Connections	Shows the number of currently active connections over the selected interface. <ul style="list-style-type: none"> <li>■ ISDN: Total number of active B-channels.</li> <li>■ DSL: <i>N/A</i> or <i>1</i></li> </ul> <i>N/A</i> is only shown for IPSec and Ethernet interfaces.
Duration	Shows the total duration of the logical connections over the selected interface.

Table 5-1: **INTERFACES** menu fields

Select **EXTENDED** to display additional information. You can then change the status of the interface under **OPERATION** (possible values: *set interface down*, *set interface up*, *reset*) and confirm your input with **START OPERATION**.



```
R3000w Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR] [INTERFACE] [EXTENDED]: Extended Interface                MyGateway
                               Monitoring (en1-0)
```

```
OperSt InPkts      InOctets   OutPkts   OutOctets  ActCalls  IP-Address
up      1158        90041     851       70922     2         213.6.255.218
```

Calls:

```
Stk Ch  Dir Remote Number  Local DspItem  RPckts  TPckts  Charge  Duration
0   B1  out 00101901929 4210  PPP    21    15      53
0   B2  out 00101901929 4210  PPP    8     3      50
```

IP Sessions:

```
Sourceaddress Dest-Address Prot SrcPrt DstPrt SrcIf DstIf InPkt OutPkt
```

```
EXIT      Operation >reset                START OPERATION
```



## 6 Messages Submenu

The **MESSAGES** submenu is described below.

The **MONITORING AND DEBUGGING** → **MESSAGES** menu lists all the syslog messages (recorded as per the configuration in the **SYSTEM** menu) with their sub-system (**SUBJ**) and priority (**LEV**).

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH
[MONITOR] [MESSAGE]: Syslog Messages		MyGateway
Subj	Lev	Message
INET	INF	NAT: denied incoming session in ifc 10001 prot 6 213.6.125.
PPP	DEB	Layer 1 protocol hdlc, 64000 bit/sec
PPP	DEB	ISP-ISDN: set ifSpeed, number of active connections 1/1/1
PPP	DEB	ISP-ISDN: set ifSpeed, number of active connections 2/2/2
INET	INF	NAT: denied incoming session on ifc 10001 prot 6 213.6.125.
INET	INF	NAT: denied incoming session on ifc 10001 prot 6 213.6.125.
INET	INF	refuse from if 100 prot 17 192.168.0.5:137->192.168.0.255.
INET	INF	refuse from if 100 prot 17 192.168.0.37:138->192.168.0.255.
ISDN	DEB	stack 0: deactivate
ISDN	ERR	stack 0: MDL_ERROR I
ACCT	INF	ISDN: 01.01.1970,03:26:38,03:27:23,42,334,247,11,9,,0,4711,
ACCT	INF	ISDN: 01.01.1970,03:26:42,03:27:23,83,143,93,4,3,,0,4711,
ISDN	ERR	stack 0: MDL_ERROR G
EXIT		RESET

Pressing the **RESET** button deletes all the existing entries.

Additional information for a certain message can be obtained by selecting an entry in the list and pressing **Return**.

A view opens with details of the selected list entry.

```
R3000w Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][MESSAGE]: Syslog Messages (full view)                MyGateway

Subject      INET
Level        INFO
Timestamp    Thu Jan 15  6:18:20

Message
  refuse from if 100 prot 17 192.168.0.8:137->192.168.0.255:137 (RI 1
  FI 1)

EXIT
```

This shows the complete text of the syslog message (**MESSAGE**), its subsystem (**SUBJECT**) and priority (**LEVEL**). The date and time (**TIMESTAMP**) the message was created are also shown.

## 7 Email Alert Submenu

The **EMAIL ALERT** submenu is described below.

It is possible to send syslog messages from the gateway to any syslog host. The gateway also provides for an email alert function: Depending on the configuration, e-mails are sent to the administrator as soon as relevant syslog messages occur.

Configuration is made in the **MONITORING AND DEBUGGING** → **EMAIL ALERT** menu:  
(The display contains example values)

```

R3000w Setup Tool                               Funkwerk Enterprise Communications GmbH
[ALERT NOTIFICATION]: Settings                  MyGateway

Global notification settings:

Adminstatus      : enable
SMTP Server      : mailserver01
Originator       : MyGateway@Company.org
max. Mails/min   : 6
Authentication Settings >

Current notification list:
Receiver         Expression           Time Count compress Level
admin@Comany.org *dialup*                60    1  disable  debug

ADD              DELETE              CANCEL              SAVES

```

The menu contains the following fields:

Field	Description
Adminstatus	For activating or deactivating the email alert function. Possible settings: <ul style="list-style-type: none"> <li>■ <i>enable</i> (default value)</li> <li>■ <i>disable</i></li> </ul>

Field	Description
SMTP Server	For entering the address (>> <b>IP address</b> or valid >> <b>DNS name</b> ) of the mail server to be used for sending the mail. The entry is limited to 40 characters.
Originator	Here you enter the mail address to be entered in the sender field of the email.
max. Mails/min	Here you can limit the number of outgoing mails per minute. Possible values are 1 to 30, the default value is 6.
Last Error	This value is only shown in the event of an error and contains the last error message that occurred.

Table 7-1: **EMAIL ALERT** menu fields

The notification rules already configured are shown in the bottom part of the menu window. You can configure a new rule or edit an existing one with **ADD/EDIT**:

R3000w Setup Tool	Funkwerk Enterprise Communications GmbH				
[ALERT NOTIFICATION] [ADD]	MyGateway				
Notification rule configuration:					
Receiver	: admin@Company.org				
Contents	: *dialup*				
Level	: debug				
Timeout	: 60				
Messages	: 1				
Compress	: disable				
Select subsystems:					
<X> ACCOUNT	<X> ISDN	<X> INET	<X> X25	<X> CAPI	<X> PPP
<X> CONFIG	<X> SNMP	<X> X21	<X> ETHER	<X> RADIUS	<X> OSPF
<X> MODEM	<X> RIP	<X> ATM	<X> IPSEC	<X> AUX	
SAVE	CANCEL				

The menu consists of the following fields:

Field	Description
Receiver	<p>Here you enter the email address of the receiver.</p> <p>The entry is limited to 40 characters.</p>
Contents	<p>You must enter a "regular expression" here. This must occur in a syslog message as a necessary condition for triggering an alert.</p> <p>The entry is limited to 55 characters.</p> <p>Bear in mind that without the use of wildcards (e.g. "*"), only those strings that correspond exactly to the entry fulfill the condition. The "regular expression" entered therefore usually contains wildcards. To be informed of all syslog messages of the selected level, just enter "*".</p> <p>Example: To record all messages that contain the character string "dialup", enter <i>*dialup*</i> as <b>CONTENTS</b>.</p>
Level	<p>Here you select the syslog level at which the string configured in the <b>CONTENTS</b> field must occur to trigger an email alert.</p> <p>Possible settings are all the values available in the <b>MESSAGE LEVEL FOR THE SYSLOG TABLE</b> field of the <b>SYSTEM</b> menu; the default value is emergency.</p>
Timeout	<p>Enter the maximum number of seconds the gateway must wait after a relevant event before it is forced to send the alert mail.</p> <p>If <b>MESSAGES</b> is configured, the mail is sent when the number of messages entered is reached, even if the timeout entered here has not yet expired.</p> <p>Possible values are 0 to 86400. A value of 0 deactivates the timeout and the default value is 60.</p>

Field	Description
Messages	<p>Enter the number of syslog messages that must be reached before an email alert is sent for this case. If <b>TIMEOUT</b> is configured, the mail is sent when this expires, even if the number of messages has not been reached.</p> <p>Possible values are 1 to 99; the default value is 1.</p>
Compress	<p>Here you can select whether the email alert text is to be shortened. The mail then contains syslog messages with identical text only once plus the number of relevant events.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <i>disable</i> - default value</li> <li><input type="checkbox"/> <i>enable</i></li> </ul>
Select subsystems	<p>Here you select the subsystems to be monitored. Select a subsystem with the arrow keys and activate or deactivate it with the space bar.</p>

Table 7-2: **EMAIL ALERT** → **ADD/EDIT** menu fields

The **EMAIL ALERT** menu provides access to the **AUTHENTICATION SETTINGS** menu.

## 7.1 Authentication Settings Menu

The submenu **Authentication Settings** is described below.

Your gateway supports a possibly required SMTP-authentication for Email Alert. The configuration is carried out in the **MONITORING AND DEBUGGING** → **EMAIL ALERT** → **AUTHENTICATION SETTINGS** submenu (the screenshot contains example values):



R3000w Setup Tool	Funkwerk Enterprise Communications GmbH
[ALERT NOTIFICATION] [SMTP]: Authentication	MyGateway
SMTP Authentication Settings:	
<pre> Server needs Authentication : SMTP after POP       POP3 Server :       Username   :       Password   :       POP3 Timeout: 600 </pre>	
SAVE	CANCEL

The menu offers the following options:

Field	Value
Server needs Authentication	<p>Here you choose the desired SMTP authentication.</p> <p>Available choices are:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <i>none</i> (default value)</li> <li><input type="checkbox"/> <i>Enhanced SMTP</i></li> <li><input type="checkbox"/> <i>SMTP after POP.</i></li> </ul>
POP3 Server	Domain name or IP address of the POP3 server to which the authentication is sent.
Username	Username for login to the email server.
Password	Password for login to the email server.
POP3 Timeout	<p>Time after which the authentication is considered invalid.</p> <p>Possible values are 60 to 3600 seconds, default is 600.</p>

Table 7-3: **MONITORING AND DEBUGGING → EMAIL ALERT → AUTHENTICATION SETTINGS**



## 8 TCP/IP Submenu

The *TCP/IP* submenu is described below.

The **MONITORING AND DEBUGGING** → *TCP/IP* menu shows the statistics for connections with the >> ICMP, >> IP, UDP and TCP protocols.

**IP STATISTICS** is shown when the menu is opened:

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [IP]: IP Statistics		MyGateway	
InReceives	3912	OutNoRoutes	0
InHdrErrors	0	ReasmTimeout	500
InAddrErrors	0	ReasmReqds	0
ForwDatagrams	0	ReasmOKs	0
InUnknownProtos	0	ReasmFails	0
InDiscards	0	FragOKs	0
InDelivers	3321	FragFails	0
OutRequests	9	FragCreates	0
OutDiscards	0	RoutingDiscards	0
ICMP Statistics	TCP Statistics	UDP Statistics	
EXIT			
I (C) MP	( I ) P	( U ) DP	( T ) CP

The meaning of the MIB variables can be found in the **MIB Reference** in the IP group of the ip, icpm, tcp and udp tables. (These are located in the download section of bintec products at [www.funkwerk-ec.com](http://www.funkwerk-ec.com).)

You can obtain the respective list either by selecting the **ICMP STATISTICS**, **IP STATISTICS**, **UDP STATISTICS** and **TCP STATISTICS** menus, or by pressing the buttons indicated in the help line at the bottom edge of the window:

- Select **C** to display statistical data for ICMP.
- Select **I** to display statistical data for IP.
- Select **U** to display statistical data for UDP.
- Select **T** to display statistical data for TCP.



## 9 IPSec Submenu

The **MONITORING AND DEBUGGING → IPSEC** submenu provides access to the following submenus:

- **GLOBAL STATISTICS**
- **IKE SECURITY ASSOCIATIONS**
- **IPSEC SA BUNDLES**

Here you can show the global IPSec statistics, IKE Security Associations and IPSec Security Associations Bundles. The menu accordingly has three submenus, which are described in the following chapters.

### 9.1 Submenu Global Statistics

All the fields in the **MONITORING AND DEBUGGING → IPSEC → GLOBAL STATISTICS** menu are read only, i.e. you can show the statistics here, but cannot make any changes to the configuration.

The menu has the following structure (the values shown are only examples):

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [IPSEC] [STATS]: IPsec Monitoring -		MyGateway	
Global Statistics			
Peers	Up	: 10 /16	Dormant: 6      Blocked: 0
SAs	Phase 1:	10 /30	Phase 2: 10 /30
Packets	In	Out	
	Total :	850	600
	Passed :	50	50
	Dropped:	30	40
	Protect:	770	510
	Errors :	0	0
EXIT			

The display is updated every 1 second.

The meaning of the fields and their values is given below:

Field	Description
Peers Up	Shows the number of active peers ( <b>OPERSTATUS</b> = <i>up</i> ) from the number of configured peers.
Peers Dormant	Shows the number of inactive peers ( <b>OPERSTATUS</b> = <i>dormant</i> ).
Peers Blocked	Shows the number of blocked peers ( <b>OPERSTATUS</b> = <i>blocked</i> ).
SAs Phase 1	Shows the number of active phase 1 SAs ( <b>STATE</b> = <i>established</i> ) from the total number of phase 1 SAs. (See <a href="#">“Submenu IKE Security Associations”</a> on page 30.)

Field	Description
SAs Phase 2	Shows the number of active phase 2 SAs ( <i>STATE = established</i> ) from the total number of phase 2 SAs. (See <a href="#">“Submenu IPSec SA Bundles”</a> on page 32.)
Packets In/Out	Shows the number of packets that have been processed in a certain way: <ul style="list-style-type: none"> <li>■ <i>Total</i>: The total number of processed packets.</li> <li>■ <i>Passed</i>: The number of packets forwarded in plain language.</li> <li>■ <i>Dropped</i>: The number of packets discarded.</li> <li>■ <i>Protect</i>: The number of packets protected by IPSec.</li> <li>■ <i>Errors</i>: The number of packets in which errors occurred during processing.</li> </ul>

Table 9-1: **MONITORING AND DEBUGGING → IPSEC → GLOBAL STATISTICS**

## 9.2 Submenu IKE Security Associations

The next monitoring submenu (**MONITORING AND DEBUGGING → IPSEC → IKE SECURITY ASSOCIATIONS**) shows statistics for the IKE SAs. The menu has the following structure (the values shown are only examples):

```

R3000w Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR] [IPSEC] [IKE SAS]: IPsec Monitoring -                MyGateway
                             IKE SAs

T: xch.-Type: B=Base             I=Id-prot.  O=auth-Only A=Aggressive
A: Auth-Meth: P=P-S-Key         D=DSA-sign. S=RSA-sign. E=RSA-encryption
R: Role      : I=Initiator      R=Responder
S: State     : N=Negotiate      E=Establ.    D=Delete W=Waiting-for-remove
E: Enc.-Alg  : d=DES D=3ES      B=Blowfish  C=Cast R=Rijndael T=Twofish
H: Hash-Alg  : M=MD5           S=SHA1     T=Tiger    R=Ripemd160
type 'h' to toggle this help

Remote ID                      Remote IP Local ID          TARSEH
C=DE,O=TC TrustCenter AG,OU=TC 10.1.1.2 C=DE,O=TC Trust ISREBM

                                DELETE          EXIT
  
```

The meaning of the characters in the **TARSEH** column (last column on the right below the help section of the menu window) is explained at the top of the menu window; the example shown above therefore has the following meaning:

Field	Description
Remote ID	Shows the ID of the remote peer. Authentication in the example uses certificates; the remote ID thus consists of quotes from the peer's certificate.
Remote IP	Shows the official IP address of the remote peer.



Field	Description
Local ID	Shows the local ID. This ID also consists of quotes from the certificate used for authentication.
TARSEH	Shows the combination of the parameters explained in the help section of the menu window. The example ISREBM thus means: <ul style="list-style-type: none"> <li>■ Exchange type: id_protect (<i>I</i>)</li> <li>■ Authentication method: RSA signatures (<i>S</i>)</li> <li>■ Role: Responder (<i>R</i>)</li> <li>■ Status: Established (<i>E</i>)</li> <li>■ Encryption algorithm: Blowfish (<i>B</i>)</li> <li>■ Hash algorithm: MD5 (<i>M</i>)</li> </ul>

Table 9-2: **MONITORING AND DEBUGGING → IPSEC → IKE SECURITY ASSOCIATIONS**

You can toggle the help sector by pressing the **h** button.

### 9.3 Submenu IPSec SA Bundles

The next submenu (**MONITORING AND DEBUGGING** → **IPSEC** → **IPSEC SA BUNDLES**) shows the IPSec Security Associations negotiated in IPSec phase 2. The menu has the following structure:

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH					
[MONITOR] [IPSEC] [IPSEC BUNDLES]:		IPSec Monitoring -				MyGateway	
IPSec SA Bundles							
Local	LPort	Pto	Remote	RPort	CEA	In	Out
192.168.1.9/24	0	all	192.168.2.0/24	0	-E-	888	1232
DELETE		EXIT					

The fields have the following meaning:

Field	Description
Local	Shows the local ►► <b>IP address</b> , the address range or the network protected by this SA.
LPort	Shows the local ►► <b>port</b> number or port number range protected by this SA.
Pto	Shows the layer 4 protocol of the data traffic protected by this SA (0 = any).
Remote	Shows the remote IP address, the address range or the network protected by this SA.
RPort	Shows the remote port number or port number range protected by this SA.

Field	Description
CEA	Shows which IPSec protocols are used for the SA. <ul style="list-style-type: none"><li>■ C = IPComp</li><li>■ E = ESP</li><li>■ A = AH.</li></ul>
In	Shows the number of bytes received via this SA.
Out	Shows the number of bytes sent via this SA.

Table 9-3: **MONITORING AND DEBUGGING → IPSEC → IPSEC SA BUNDLES**

Note that the display of the tagged entry is not updated.



## 10 OSPF Submenu

The *OSPF* submenu is described below.

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH			
[MONITOR] [OSPF]: OSPF Monitor		MyGateway			
Interface	DR	BDR	Admin Status	State	
en0-1	N/A	N/A	passive	N/A	=
en0-1-snap	N/A	N/A	passive	N/A	
vss8-0	N/A	N/A	passive	N/A	
vss8-0-snap	N/A	N/A	passive	N/A	v
Neighbor	Router ID	Interface	Retx Queue	State	
Area	Type	Link State ID	Router ID	Sequence	Age
EXIT					

The **MONITORING AND DEBUGGING → OSPF** menu is used for monitoring OSPF information (see manual chapter **IP → ROUTING PROTOCOLS → OSPF**).

The OSPF monitor is arranged horizontally in three sections and shows information about OSPF interfaces, the detected neighbor and the Link State Database entries.

**Interfaces** The **INTERFACES** section lists all activated OSPF interfaces (i.e. interfaces that have not been set to **OFF** in the **IP → OSPF → INTERFACES** menu).

Field	Description
Interface	Name of interface.

Field	Description
Designated Router (DR)	<p>IP address of designated router.</p> <p>The designated router generates network links and distributes these to all gateways within the BMA network (BMA = Broadcast Multi Access Network, e.g. Ethernet, FDDI, Tokenring).</p> <p>A designated router is not shown for non-BMA networks, e.g. X.25, Frame Relay, ATM.</p>
Backup Designated Router (BDR)	IP address of backup designated router.
Admin Status	Shows the OSPF Admin Status ( <i>active</i> or <i>passive</i> ) of the interface.
State	<p>The OSPF status of the interface shown here (<b>OSPFIFSTATE</b>) can have the following values:</p> <ul style="list-style-type: none"> <li>■ <i>down</i>: OSPF is not running on this interface.</li> <li>■ <i>wait</i>: The initial phase of the OSPF, in which the DR and BDR are determined.</li> <li>■ <i>PTP</i>: The interface is a point-to-point interface. DR or BDR are not shown.</li> <li>■ <i>DR</i>: The gateway is the designated router within the BMA network.</li> </ul>

Field	Description
State (cont.)	<ul style="list-style-type: none"> <li>■ <i>BDR</i>: The gateway is the backup designated router within the BMA network.</li> <li>■ <i>DRouter</i>: Another gateway is designated router or backup designated router within the BMA network.</li> </ul>

Table 10-1: OSPF monitor section **INTERFACE**

**Neighbor** The **NEIGHBOR** section lists the neighbor gateways that have been identified via the HELLO protocol.

Field	Description
Neighbor	The IP address of the neighbor gateway.
Router ID	The system-wide router ID of the neighbor gateway.
Interface	The interface over which this neighbor gateway was identified.
Retx Queue	<p>The size of the Retransmission Queue of this neighbor gateway.</p> <p>Periodic Link State Advertisements are sent to each "neighbor". The counter is incremented by 1 each time an advertisement is sent. The counter is decremented by 1 if an acknowledge (LSA of the neighbor) is received. If the two neighbors are not synchronous (link interrupted), the "Retx Queue" counts up continuously. This enables detection of the neighbor that cannot be reached direct.</p> <p>If a maximum (usually 3) is exceeded, the Link State Database is adjusted and sent to all gateways in the area via multicast.</p>

Field	Description
State	<p>The OSPF status with this neighbor gateway can have the following values:</p> <ul style="list-style-type: none"> <li>■ <i>init</i>: The initial phase. A HELLO packet is received from the neighbor.</li> <li>■ <i>twoWay</i>: Bidirectional communication with the neighbor. The HELLO packets sent are accepted by the neighbor gateway (with correct parameters).</li> <li>■ <i>EXstart</i>: The exchange of Database Description packets between the gateways has started.</li> <li>■ <i>exchange</i>: Active exchange of Database Description packets with the neighbor.</li> <li>■ <i>loading</i>: The gateway now exchanges Link State Advertisements with the neighbor.</li> <li>■ <i>full</i>: The Link State Databases of the gateway and its neighbor are now synchronized.</li> </ul>

Table 10-2: **NEIGHBOR** section

**LSDB** The headers of all Link State Advertisements (LSA) are listed in the section for the Link State Database.

Field	Description
Area	The area database to which the LSA is assigned.
Type	The LSA type. There are five LSA types: Router Link, Network Link, Summary Link, Summary ASBR, and AS External.
Link State ID	The Link State ID of the LSA. The meaning of the Link State ID depends on the type of advertisement.



Field	Description
Router ID	Identifies the gateway that has generated this LSA.
Sequence	The sequence number of the advertisement. Sequence numbers enable the gateway to determine whether its database is up to date or it must request an update.
Age	The age of the LSA (in seconds)

Table 10-3: **LSDB** section



## 11 ATM/OAM Submenu

The *ATM/OAM* submenu is described below.

The **MONITORING AND DEBUGGING** → *ATM/OAM* menu shows statistics values for the ATM interface.

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [ATM]: ATM Interface Monitoring		MyGateway	
ATM Interface		fccca-3-0	
Operational Status		up	
RX Rate (b/s)	1184000	TX Rate (b/s)	160000
Received Octets	0	Transmit Octets	0
Received Errors	0	Transmit Errors	0
		Transmit Discards	0
OAM F4 (Virtual path level) >			
OAM F5 (Virtual channel level) >			
EXIT			

The display is updated at 1-second intervals.

The menu contains the following fields:

Field	Description
ATM Interface	Name of ATM interface.
Operational Status	Shows the operational status of the ATM interface. Possible values: <i>up</i> , <i>down</i> .
RX Rate (b/s)	Shows the data rate in the receive direction in bits per second.
Received Octets	Shows the total number of octets received.

Field	Description
Received Errors	Shows the total number of errors in the receive direction.
TX Rate (b/s)	Shows the data rate in the transmit direction in bits per second.
Transmit Octets	Shows the total number of octets sent.
Transmit Errors	Shows the total number of errors in the transmit direction.
Transmit Discards	Shows the number of packets discarded in the transmit direction.

Table 11-1: **ATM/OAM** menu fields

## 11.1 OAM F4 (Virtual path level) Submenu

The **OAM F4 (VIRTUAL PATH LEVEL)** submenu is described below.

The **MONITORING AND DEBUGGING → ATM/OAM → OAM F4 (VIRTUAL PATH LEVEL)** menu shows the OAM statistics for a virtual path (OAM level F4; OAM: Opera-

tion, Administration and Maintenance; for more information see **ATM User Network Interface Specification** and **ITU I.160**).

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [ATM] [OAM F4]: OAM Interface Monitoring		MyGateway		
Virtual path connection (VPC)		Vpi:1		
Operational Status		end to end up		
F4 OAM flows	End to end		Segment	
	RX	TX	RX	TX
AIS	0	0	0	0
RDI	0	0	0	0
CC	0	0	0	0
Loopback	0	0	0	0
EXIT				

The menu contains the following fields:

Field	Description
Virtual path connection (VPC)	Selection of the VPI value of the connection over the virtual path.

Field	Description
Operational Status	<p>Shows the operational status of the VPC.</p> <p>Possible values:</p> <ul style="list-style-type: none"><li>■ <i>end to end up</i>: The connection between the endpoints of the VPC is active.</li><li>■ <i>end to end down</i>: The connection between the endpoints of the VPC is inactive.</li><li>■ <i>local up end to end unknown</i>: The local endpoint is active. The status of the remote endpoint is unknown.</li><li>■ <i>local down</i>: The local endpoint is inactive. The status of the remote endpoint is unknown.</li></ul>

Field	Description
End to end or Segment	<p>Indicates the number of received (RX) and transmitted (TX) monitoring and error alarm signals at the endpoints of the VPC (<b>END TO END</b>) or for the segment connection (segment = connection of the local endpoint to the next connection point) (<b>SEGMENT</b>):</p> <ul style="list-style-type: none"> <li>■ <b>AIS</b>: Number of AIS cells (Alarm Indication Signal) since the last change of the router's internal AIS status. Is sent as soon as a transmission error is detected or an error message is received from another unit in the transmission path.</li> <li>■ <b>RDI</b>: Number of RDI cells (Remote Defect Indication) since the last change of the router's internal RDI status. Error alarm signal that is passed to all stations in the direction of data flow.</li> <li>■ <b>CC</b>: Number of CC cells (Continuity Check) during the current CC activation sequence.</li> <li>■ <b>Loopback</b>: Number of loopback cells within this sequence.</li> </ul>

Table 11-2: **OAM F4 (VIRTUAL PATH LEVEL)** menu fields

## 11.2 OAM F5 (Virtual channel level) Submenu

The **OAM F5 (VIRTUAL CHANNEL LEVEL)** submenu is described below.

The **MONITORING AND DEBUGGING → AMT/OAM → OAM F5 (VIRTUAL CHANNEL LEVEL)** menu shows the OAM statistics for a virtual channel (OAM level F5; for

more information see **ATM User Network Interface Specification** and **ITU I.160**).

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH		
[MONITOR] [ATM] [OAM F5]: OAM Interface Monitoring		MyGateway		
Virtual channel connection (VCC) Vpi:1 Vci:32				
Operational Status end to end up				
F5 OAM flows	End to end		Segment	
	RX	TX	RX	TX
AIS	0	0	0	0
RDI	0	0	0	0
CC	0	0	0	0
Loopback	0	0	0	0
EXIT				

The menu contains the following fields:

Field	Description
Virtual channel connection (VCC)	Selection of the VPI/VCI combination for the connection over the virtual channel.



Field	Description
Operational Status	<p data-bbox="802 286 1239 312">Shows the operational status of the VCC.</p> <p data-bbox="802 329 975 355">Possible values:</p> <ul data-bbox="802 377 1309 760" style="list-style-type: none"><li data-bbox="802 377 1309 440">■ <i>end to end up</i>: The connection between the endpoints of the VCC is active.</li><li data-bbox="802 462 1309 526">■ <i>end to end down</i>:The connection between the endpoints of the VCC is inactive.</li><li data-bbox="802 548 1309 645">■ <i>local up end to end unknown</i>: The local endpoint is active. The status of the remote endpoint is unknown.</li><li data-bbox="802 667 1309 760">■ <i>local down</i>: The local endpoint is inactive. The status of the remote endpoint is unknown.</li></ul>

Field	Description
End to end or Segment	<p>Indicates the number of received (RX) and transmitted (TX) monitoring and error alarm signals at the endpoints of the VCC (<b>END TO END</b>) or for the segment connection (segment = connection of the local endpoint to the next connection point) (<b>SEGMENT</b>):</p> <ul style="list-style-type: none"> <li>■ <i>AIS</i>: Number of AIS cells (Alarm Indication Signal) since the last change of the router's internal AIS status. Is sent as soon as a transmission error is detected or an error message is received from another unit in the transmission path.</li> <li>■ <i>RDI</i>: Number of RDI cells (Remote Defect Indication) since the last change of the router's internal RDI status. Error alarm signal that is passed to all stations in the direction of data flow.</li> <li>■ <i>CC</i>: Number of CC cells (Continuity Check) during the current CC activation sequence.</li> <li>■ <i>Loopback</i>: Number of loopback cells within this sequence.</li> </ul>

Table 11-3: **OAM F5 (VIRTUAL CHANNEL LEVEL)** menu fields

## 12 ADSL Submenu

The **ADSL** submenu is described below.

The **MONITORING AND DEBUGGING** → **ADSL** menu shows connection parameters and information about the hardware used (**ATU-R**: ADSL Transceiver Unit Remote Terminal End, i.e. the local ADSL unit; **ATU-C**: ADSL Transceiver Unit Central Office End, i.e. the ADSL unit at the local exchange).

R3000w Setup Tool	Funkwerk Enterprise Communications GmbH	
[MONITOR] [ADSL]: ADSL monitoring	MyGateway	
Physical parameters	ATU-R	ATU-C
Vendor ID	0x4753504e	0x54535443
Version number		0xffffffff
Current status	no defect	no defect
Current output power	12	18
Current noise margin	30	24
Current attenuation	32	27
Channel parameters		
Tx rate (Kb/s)	160	1184
ATU-R Performance parameters		
Framing (LOF)	0	Received blocks 10496810
Signal (LOS)	0	Transmitted blocks 586838
Power (LPR)	0	Corrected blocks 0
Errored seconds (ES)	0	Uncorrect blocks 2
EXIT		

The menu contains the following fields:

Field	Description
Vendor ID	The ID of the equipment manufacturer.
Version Number	The manufacturer's version number, which is sent by the ATU as part of the initialization message.

Field	Description
Current status	<p>Current status of ATU-R or ATU-C.</p> <p>Possible values:</p> <ul style="list-style-type: none"> <li>■ <i>no defect</i>: The line is working correctly.</li> <li>■ <i>loss of framing</i>: Error, as no valid frame has been received.</li> <li>■ <i>loss of signal</i>: Error, as no signal is received.</li> <li>■ <i>loss of power</i>: Error due to loss of power.</li> </ul>
Current output power	The total output power sent by this ATU and measured during the last activation phase.
Current noise margin	The noise margin of the received signal measured by this ATU in dB.
Current attenuation	Line attenuation, i.e. measured difference between transmit and receive power.
Tx rate (kb/s)	Current data transmission rate in the transmit direction in kbits per second.
Framing (LOF)	Number of Loss of Framing errors since router reset.
Signal (LOS)	Number of Loss of Signal errors since router reset.
Power (LRP)	Number of Loss of Power errors since router reset.
Errored seconds (ES)	Number of 1-second intervals with 1 or more CRC, LOS or SEF (Severely Errored Frame) errors (Errored Seconds) since router reset.
Received blocks	Number of all received blocks since router reset.
Transmitted blocks	Number of all transmitted blocks since router reset.

Field	Description
Corrected blocks	Number of all blocks with corrected errors since router reset.
Uncorrect blocks	Number of all blocks with uncorrected errors since router reset.

Table 12-1: **ADSL** menu fields



## 13 SHDSL Submenu

The **SHDSL** submenu is described below.

The **MONITORING AND DEBUGGING → SHDSL** menu shows information on the SHDSL endpoint and parameters of the SHDSL connection.

R3800 Setup Tool	Funkwerk Enterprise Communications GmbH
[MONITOR] [SHDSL]: SHDSL monitoring	MyGateway
SHDSL interface	pin 4-5
Physical parameters	
Current status	no defect
Current SNR margin	20
Current loop attenuation	2
Performance parameters	
CRC anomalies	0
Errored seconds (ES)	0
Severely errored seconds (SES)	0
Loss of sync word (LOSW) seconds	0
Unavailable seconds (UAS)	0
Received blocks	30523523
Transmitted blocks	30523524
EXIT	

The menu contains the following fields:

Field	Description
SHDSL interface	Here you select the wire pair for which the connection parameters are to be displayed.

Field	Description
Current status	<p>Contains the current state of the endpoint.</p> <p>Possible values:</p> <ul style="list-style-type: none"> <li>■ <i>no defect</i>: There are no defects on the line.</li> <li>■ <i>power backoff</i>: Indicates enhanced Power Backoff.</li> <li>■ <i>device fault</i>: Indicates a vendor-dependent diagnostic or self-test fault has been detected.</li> <li>■ <i>dc continuity fault</i>: Indicates vendor-dependent conditions that interfere with span powering such as short and open circuits.</li> <li>■ <i>snr margin alarm</i>: Indicates that the SNR margin has dropped below the alarm threshold.</li> <li>■ <i>loop attenuation alarm</i>: Indicates that the loop attenuation exceeds the alarm threshold. (not supported by GlobeSpan !)</li> <li>■ <i>losw failure alarm</i>: Indicates a forward LOSW alarm.</li> <li>■ <i>config init failure</i>: Endpoint failure during initialization due to paired endpoint not able to support requested configuration.</li> <li>■ <i>protocol init failure</i>: Endpoint failure during initialization due to incompatible protocol used by the paired endpoint.</li> </ul>



Field	Description
Current status (cont.)	<ul style="list-style-type: none"> <li>■ <i>no neighbor present</i>: Endpoint failure during initialization due to no activation sequence detected from paired endpoint.</li> <li>■ <i>loopback active</i> : A loopback is currently active at this Segment Endpoint.</li> </ul> <p>This is intended to supplement ifOperStatus. Note that there is a 1-1 relationship between the status bits defined in this object and the notification thresholds defined elsewhere in this MIB.</p>
Current SNR margin	The current SNR margin for this endpoint as reported in a Status Response/SNR message.
Current loop attenuation	The current loop attenuation for this endpoint as reported in a Network or Customer Side Performance Status message.
CRC anomalies	Count of CRC anomalies on this endpoint since the xU was last restarted.
Errored seconds (ES)	Count of Errored Seconds (ES) on this endpoint since the xU was last restarted.
Severely errored seconds (SES)	Count of Severely Errored Seconds (SES) on this endpoint since the xU was last restarted.
Loss of sync word (LOSW) seconds	Count of Loss of Sync Word (LOSW) Seconds on this endpoint since the xU was last restarted.
Unavailable seconds (UAS)	Count of Unavailable Seconds (UAS) on this endpoint since the xU was last restarted.
Received blocks	Count of all encoded blocks received on this channel within the mandatory 15 minute interval.

Field	Description
Transmitted blocks	Count of all encoded blocks transmitted on this channel within the mandatory 15 minute interval.

Table 13-1: **SHDSL** menu fields

## 14 BRRP Submenu

The **BRRP** submenu is described below.

R3000w Setup Tool			Funkwerk Enterprise Communications GmbH		
[BRRP] [MONITOR]: Virtual Router Monitoring			MyGateway		
VrID	Prio	State	Interface	Master-IP-Addr	Errors
1	100	down	en0-1-1	0.0.0.0	0
EXIT					

The **BRRP** menu displays a list of all "virtual routers".

The list contains the following data:

Column	Description
VrID	ID of the "virtual router"
Prio	Configured priority: <ul style="list-style-type: none"> <li>■ 255 = Master</li> <li>■ &lt;255 = Slave</li> </ul>
State	The current state of the BRRP gateway in the "virtual router".
Interface	Interface within the "virtual router"
Master-IP-Addr	IP address of the virtual interface of the master.
Errors	Total sum of received defective packets.

Table 14-1: Virtual Router Monitoring List

Detailed statistical information about the individual “virtual routers” are displayed by positioning the cursor on the desired “virtual router” list entry and pressing the **Return** key.

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[BRRP] [MONITOR] [DETAILS]: Virtual Router Details		MyGateway	
Virtual Router ID	1		
Virtual Router State	backup		
Become Master	2		
Advertisements Received	23536		
Advertisement Interval Errors	0		
Version Errors	0		
Authentication Errors	0		
Authentication Type Mismatch	0		
Invalid Authentication Type	30		
Invalid Type Packets Received	0		
Packet Length Errors	0		
IP TTL Errors	0		
Checksum Errors	0		
EXIT			

The **BRRP** menu consists of the following fields:

Field	Description
Virtual Router ID	Here you select the ID of the “virtual router” whose statistics you wish to see.
Virtual Router State	<p>The current state of the BRRP gateway in the “virtual router”. This field can have the following values:</p> <ul style="list-style-type: none"> <li>■ <i>initialize</i>: The BRRP gateway waits for a startup event.</li> <li>■ <i>backup</i>: The BRRP gateway monitors the reachability of the master router.</li> <li>■ <i>master</i>: The BRRP gateway forwards packets to &gt;&gt;&gt; <b>IP addresses</b> that are linked to this router.</li> </ul>

Field	Description
Become Master	The total number of state transitions of the BRRP gateway to <i>master</i> .
Advertisements Received	The total number of BRRP advertisements received by BRRP gateway.
Advertisement Interval Errors	The total number of BRRP advertisement packets received whose advertisement interval differs from that configured on the local BRRP gateway.
Version Errors	The total number of BRRP packets received with unknown or unsupported version number.
Authentication Errors	The total number of BRRP packets received with wrong <b>AUTHENTICATION KEY</b> .
Authentication Type Mismatch	The total number of packets received in which the <b>AUTHENTICATION TYPE</b> is known, but not the same as the authentication type configured locally.
Invalid Authentication Type	The total number of packets received with a completely unknown authentication type.
Invalid Type Packets Received	The number of BRRP packets received by the “virtual router” with an invalid value in the ‘type’ field of the BRRP header. The correct value for ‘type’ is ‘1’ (‘advertisement’).
Packet Length Errors	The total number of packets received with a smaller packet length than the length specified in the BRRP header.
IP TTL Errors	The total number of BRRP packets received by the “virtual router” with IP TTL (Time-To-Live) not equal to 255.
Checksum Errors	The total number of BRRP packets received with an invalid BRRP checksum.

Table 14-2: **BRRP** menu fields



## 15 IP QoS Submenu

The **MONITORING AND DEBUGGING** → **IP QoS** submenu is described below.

The **IP QoS** menu shows QoS-specific statistics information for interfaces to which a QoS Scheduling algorithm has been assigned. These values are taken from the **IFTABLE** and cannot be changed.

R3000w Setup Tool	Funkwerk Enterprise Communications GmbH
[MONITOR] [IP QoS]: IP QoS Interface Monitoring	MyGateway
Interface	ethoa50-0
Operational Status	up
Nominal Transmit Rate	2048000
Maximum Transmit Rate	192000
Received Packets	1075
Received Octets	66650
Transmit Packets	2334382
Transmit Octets	144731684
QoS Policy Statistics >	
EXIT	

Using the arrow keys or the space bar on your keyboard, you can choose which interface statistics you want to be displayed. The following values are shown:

Field	Description
Interface	Displays the selection of the interface for which QoS has been configured and whose QoS statistics are to be displayed.
Operational Status	Displays the current operational status of the selected interface ( <b>OPERSTATUS</b> in the <b>IFTABLE</b> ).
Nominal Transmit Rate	Displays the maximum overall data transmission rate in bits per second. The value displayed corresponds to <b>IFTABLE: SPEED</b> .

Field	Description
Maximum Transmit Rate	Displays the maximum data rate specified for this interface in bits per second in the transmit direction (the value is specified in the <b>INTERFACES AND POLICIES</b> → <Interface> → <b>QoS SCHEDULING AND SHAPING</b> submenu).
Received Packets	Displays the number of packets received over the selected interface since the last change to the <i>up</i> status. The counter for Ethernet Interfaces, however, is not reset by a state transition.
Received Octets	Displays the number of octets received over the selected interface since the last change to the <i>up</i> status. The counter for Ethernet Interfaces, however, is not reset by a state transition.
Transmit Packets	Displays the number of packets sent over the selected interface since the last change to the <i>up</i> status. The counter for Ethernet Interfaces, however, is not reset by a state transition.
Transmit Octets	Displays the number of octets sent over the selected interface since the last change to the <i>up</i> status. The counter for Ethernet Interfaces, however, is not reset by a state transition.

Table 15-1: **MONITORING AND DEBUGGING** → **IP QoS** menu fields

## 15.1 QoS Policy Statistics Submenu

The **QoS POLICY STATISTICS** submenu is described below.

Opening the **MONITORING AND DEBUGGING** → **IP QoS** → **QoS POLICY STATISTICS** menu normally shows a view of the distribution of the whole bandwidth in the form of a bar graph (values are taken from the **QoSPOLICYSTATTABLE**, the refresh rate is set to one second).



```

R3000w Setup Tool                               Funkwerk Enterprise Communications GmbH
[MONITOR] [IP QoS] [STATISTICS]: QoS Bandwidth    MyGateway
                                                Distribution (ethoa50-0)

load      XXX agreed      ::: agreed but bounded    *** overbooked
^
|
+ 100    42      41  19
|
|
|
|
|
|
|
|
|
+-----+-----+-----+-----+-----+-----+-----+----->
        HP      1     2     3     DEF      classes
EXIT

(d)istribution  (c)lasses  (t)os  (i)nterface statistics

```

The graph shows the percentage share of the individual configured QoS packet classes in terms of the total bandwidth (**MAXIMUM TRANSMIT RATE**). The bars contain the bandwidth distribution of the QoS packet classes.

The meaning of the different graphical representation of the bars is as follows:

- **agreed (xxx)**: Share of the packets within the guaranteed bandwidth for this QoS packet class.
- **agreed but bounded (:::)**: Share of the packets within the maximum guaranteed bandwidth for this QoS packet class.
- **overbooked (\*\*\*)**: Overbooking of the guaranteed (not bounded) or maximum (bounded) bandwidth. This overbooking is only allowed in the "not bounded" mode.

Detailed statistics values can still be displayed. You can change the display with the following keyboard shortcuts as described in the help line:

- **c = classes**: Display of statistics values for classes
- **t = tos**: Display of statistics values for TOS
- **i = interface statistics**: Display of statistics values for interfaces

- *d* = distribution: returns to the default display (bar graph).

The **RESET STATISTICS** button resets all values in the respective window to 0. Since data are collected from different tables of the MIB, only the counter used for the current view is actually reset.

### CLASSES

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH						
[MONITOR] [IP QOS] [STATISTICS]: QoS Class		MyGateway						
Statistics (ethoa50-0)								
Class	Pkts	Send	Dropped	Queued	Octs	Send	Dropped	Queued
DEF	0	0	0	0	0	0	0	0
N 1	0	0	0	0	0	0	0	0
N 2	167550	355049	22	22	6702000	19172646	880	880
N 3	292021	735122	405	405	1168080	39696588	16200	16200
HP	19695	0	13	13	7878320	0	520	520
EXIT				RESET STATISTICS				
(d)istribution		(c)lasses		(t)os		(i)nterface statistics		

The following values (taken from the **QOSPOLICYSTATTABLE**) are shown:

Field	Description
Class	<p>Displays the Class Type of the configured QoS packet class.</p> <p>Abbreviations have the following meaning:</p> <ul style="list-style-type: none"> <li>■ N = normal</li> <li>■ HP = high priority</li> <li>■ DEF = default</li> </ul>

Field	Description
Pkts	Displays the number of packets of this QoS packet class: <ul style="list-style-type: none"> <li>■ <i>Send</i>: Packets sent</li> <li>■ <i>Dropped</i>: Packets dropped</li> <li>■ <i>Queued</i>: Packets in the queue</li> </ul>
Octs	Displays the number of octets of this QoS packet class: <ul style="list-style-type: none"> <li>■ <i>Send</i>: Octets sent</li> <li>■ <i>Dropped</i>: Octets dropped</li> <li>■ <i>Queued</i>: Octets in the queue</li> </ul>

Table 15-2: **QoS POLICY STATISTICS** → **CLASSES** submenu fields**TOS**

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH				
[MONITOR] [IP QOS] [STATISTICS]: TOS Statistics		MyGateway (ethoa50-0)				
TOS	OutPkts	OutOctets	InPkts	InOctets	PktsDropped	OctetsDropped
00	0	0	0	0	0	0
01	0	0	1135	68100	0	0
10	0	0	700	18000	0	0
EXIT		RESET STATISTICS				
(d)istribution	(c)lasses	(t)os	(i)nterface statistics			

The following values (taken from the **QOSTOSSTATTABLE**) are shown:

Field	Description
TOS	Displays the value of the TOS field of the IP packet.
OutPkts	Displays the number of packets sent with the value entered under TOS.
OutOctets	Displays the number of octets sent with the value entered under TOS.
InPkts	Displays the number of packets received with the value entered under TOS.
InOctets	Displays the number of octets received with the value entered under TOS.
PktsDropped	Displays the number of packets dropped with the value entered under TOS.
OctetsDropped	Displays the number of octets dropped with the value entered under TOS.

Table 15-3: **QoS POLICY STATISTICS** → **TOS** submenu fields

### INTERFACE STATISTICS

R3000w Setup Tool	Funkwerk Enterprise Communications GmbH
[MONITOR] [IP QoS] [STATISTICS]:	QoS Interface MyGateway
	Statistics (ethoa50-0)
Transmit Packets	2469015
Transmit Octets	98760600
Queued Packets	417
Queued Octets	16680
Dropped Packets	1090901
Dropped Octets	43636040
EXIT	RESET STATISTICS
(d)istribution	(c)lasses
(t)os	(i)nterface statistics

The following values (taken from the **QOSIFSTATTABLE**) are shown:

Field	Description
Transmit Packets	Displays the number of packets sent over the selected interface.
Transmit Octets	Displays the number of octets sent over the selected interface.
Queued Packets	Displays the number of packets in the queue of the selected interface.
Queued Octets	Displays the number of octets in the queue of the selected interface.
Dropped Packets	Displays the number of packets dropped at this interface.
Dropped Octets	Displays the number of octets dropped at this interface.

Table 15-4: **QoS POLICY STATISTICS** → **INTERFACE STATISTICS** submenu fields



## 16 SSHD Submenu

The fields of the *SSH DAEMON* menu are described below.

In the **SECURITY → SSH DAEMON → MONITORING** menu you can view the SSH client connection that is set up.

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [SSHD]: SSH Daemon active Sessions		MyGateway	
User	IP-Address	State	Connect-Time
admin	192.168.1.1:2013	active	Thu Jan 1 4:51:07 2005
EXIT			

If you select the connection by pressing **Return**, the following details are shown:

R3000w Setup Tool		Funkwerk Enterprise Communications GmbH	
[MONITOR] [SSHD] [SESSIONS] [] [DETAILS]: SSH Daemon		MyGateway	
Session Details			
Account	admin		
Connection State	active		
Remote IP-Address	192.168.1.1:2013		
Negotiated Cipher	aes128-cbc		
Negotiated MAC	hmac-sha1		
Negotiated Compression	none		
Established Time	00:06:02		
Total Bytes IN	26616		
Total Bytes OUT	31180		
EXIT			

These details inform about the following values:

Field	Value
Account	The account used for the client's successful login.
Connection State	The connection state of this client.
Remote IP-Address	The IP address and port of this client.
Negotiated Cipher	The cipher negotiated with this client.
Negotiated MAC	The MAC (message authentication code) negotiated with this client.
Negotiated Compression	The compression algorithm negotiated with this client.
Established Time	Duration of the SSH connection.
Total Bytes IN	The number of bytes received from this client.
Total Bytes OUT	The number of bytes received from this client.

Table 16-1: Fields of the **MONITORING AND DEBUGGING** → **SSH DAEMON** → **EDIT** menu



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