User's Guide

bintec R1200 / R1200w(u) / R3000 / R3000w / R3400 / R3800(wu)

Monitoring and Debugging

Version 2.9

Purpose

This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.4.10 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.

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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
        X.25 Monitor
        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.
X.25 Monitor	Protocols incoming and outgoing X.25 calls.
Interfaces	For monitoring the traffic of the individual interfaces. The interface status can also be changed via this menu (*up*, *down*, *reset*).

Menu	Meaning
Messages	Shows system messages generated by the gateway's logging and accounting mechanism.
TCP/IP	This menu is for monitoring the IP traffic of the individual protocols.
IPSec	This menu shows global IPSec statistics and lists the ***IKE Security Associations*** and ***IPSec SA Bundles*** of all active IPSec tunnels.
OSPF	This menu is for monitoring the OSPF information.
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    v

 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

                                          Total   Maximum   % reached
Time till end of measure interval (sec) 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 ***MEASURE TIME (SEC)*** (see menu ***CREDITS*** ➜ ***ISDN CREDITS***).

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

Note

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 ***Measure Time (sec)*** (see ***Credits*** ➜ ***xDSL Credits*** ➜ ***PPPoE Credits***).
Time of Outgoing Connections	Current total time in seconds for outgoing connections until now during ***Measure Time (sec)***.

Table 4-1: Fields in the ***Monitoring and Debugging*** ➜ ***xDSL Credits*** ➜ ***PPPoE Credits*** menu

Note

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 X.25 Monitor Submenu

The *X.25 MONITOR* is described below.

The ***MONITORING AND DEBUGGING*** ➜ ***X.25 MONITOR*** menu initially displays all active X.25 connections. These calls include leased and dialup connections that have been set up via public X.25 networks or ISDN.

```
R3000w Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][X.25 CALLS]: X.25 Monitor                              MyGateway

From        To          Calling Addr    Called Addr     Duration




EXIT

 (c)alls         (h)istory         (d)etails         (s)tatistics
```

As in the ISDN Monitor menu the menu options (c, h, d and s) are displayed art the bottom of the screen. These options open up lists containing certain statistics on X.25 calls.

The `(c)` listing displays all active X.25 connections again.

The ***(H)ISTORY*** listing shows the last ten terminated X.25 connections (incoming and outgoing) since the last system reboot.

```
R3000w Setup Tool              Funkwerk Enterprise Communications GmbH
[MONITOR][X.25 HISTORY]: X.25 Monitor                          MyGateway

  From        To          Starttime Duration Cause




EXIT
```

Additional information on active and terminated calls can be displayed by selecting a call entry from the `(c)alls` or `(h)istory` list and press `d`.

The ***(D)ETAILS*** listing shows specific information on individual active or terminated calls.

```
R3000w Setup Tool              Funkwerk Enterprise Communications GmbH
[MONITOR][X.25 DETAILS]: X.25 Monitor - Details                MyGateway

  Clear Cause  (0x0d) not obtainable  Clear Diag  (0x43) invalid called
                                                          DTE add
  Proto ID     ?                      State

  Source:
     Interface      local
     VC Number      ??
     X.25 Address
     Link Address

  Destination:
     Interface      ??
     VC Number      ?
     X.25 Address   ??
     Link Address

  Packet Size (In/Out)   ?/?          Window Size (In/Out)  ?/?
  EXIT
```

The ***(S)TATISTICS*** listing shows the transfer activities of individual active X.25 calls.

```
R3000w Setup Tool              Funkwerk Enterprise Communications GmbH
[MONITOR][X.25 STATISTICS]: X.25 Monitor                      MyGateway

 From        To          Calling Addr    Called Addr     Duration


EXIT
```

6 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. ■ ISDN: Total number of active B-channels. ■ DSL: *N/A* or *1* *N/A* is only shown for IPSec and Ethernet interfaces.
Duration	Shows the total duration of the logical connections over the selected interface.

Table 6-1: ***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
```

7 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 subsystem (***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.

8 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: ■ *enable* (default value) ■ *disable*

Field	Description
SMTP Server	For entering the address (➤➤ **IP address** or valid ➤➤ **DNS** name) 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 8-1: ***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	Here you enter the email address of the receiver. The entry is limited to 40 characters.
Contents	You must enter a "regular expression" here. This must occur in a syslog message as a necessary condition for triggering an alert. The entry is limited to 55 characters. 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 "*". Example: To record all messages that contain the character string "dialup", enter **dialup** as ***CONTENTS***.
Level	Here you select the syslog level at which the string configured in the ***CONTENTS*** field must occur to trigger an email alert. Possible settings are all the values available in the ***MESSAGE LEVEL FOR THE SYSLOG TABLE*** field of the ***SYSTEM*** menu; the default value is emergency.
Timeout	Enter the maximum number of seconds the gateway must wait after a relevant event before it is forced to send the alert mail. If ***MESSAGES*** is configured, the mail is sent when the number of messages entered is reached, even if the timeout entered here has not yet expired. Possible values are *0* to *86400*. A value of *0* deactivates the timeout and the default value is 60.

Field	Description
Messages	Enter the number of syslog messages that must be reached before an email alert is sent for this case. If ***TIMEOUT*** is configured, the mail is sent when this expires, even if the number of messages has not been reached. Possible values are *1* to *99*; the default value is *1*.
Compress	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. Possible settings: ■ *disable* - default value ■ *enable*
Select subsystems	Here you select the subsystems to be monitored. Select a subsystem with the arrow keys and activate or deactivate it with the space bar.

Table 8-2: ***EMAIL ALERT*** ➜ ***ADD/EDIT*** menu fields

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

8.1 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:


     Server needs Authentication  : SMTP after POP
                    POP3 Server :
                    Username    :
                    Password    :
                    POP3 Timeout: 600




          SAVE                                CANCEL
```

The menu offers the following options:

Field	Value
Server needs Authentication	Here you choose the desired SMTP authentication. Available choices are: ■ *none* (default value) ■ *Enhanced SMTP* ■ *SMTP after POP.*
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	Time after which the authentication is considered invalid. Possible values are *60* to *3600* seconds, default is *600*.

Table 8-3: ***MONITORING AND DEBUGGING → EMAIL ALERT → AUTHENTICATION SETTINGS***

9 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.)

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.

10 IPSec Submenu

The ***Monitoring and Debbuging*** ➜ ***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.

10.1 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 (***OperStatus*** = *up*) from the number of configured peers.
Peers Dormant	Shows the number of inactive peers (***OperStatus*** = *dormant*).
Peers Blocked	Shows the number of blocked peers (***OperStatus*** = *blocked*).
SAs Phase 1	Shows the number of active phase 1 SAs (***State*** = established) from the total number of phase 1 SAs. (See “Submenu IKE Security Associations” on page 34.)

Field	Description
SAs Phase 2	Shows the number of active phase 2 SAs (***STATE*** = *established*) from the total number of phase 2 SAs. (See "Submenu IPSec SA Bundles" on page 36.)
Packets In/Out	Shows the number of packets that have been processed in a certain way: ■ *Total*: The total number of processed packets. ■ *Passed*: The number of packets forwarded in plain language. ■ *Dropped*: The number of packets discarded. ■ *Protect*: The number of packets protected by IPSec. ■ *Errors*: The number of packets in which errors occurred during processing.

Table 10-1: ***MONITORING AND DEBUGGING*** ➜ ***IPSEC*** ➜ ***GLOBAL STATISTICS***

10.2 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: ■ Exchange type: id_protect (*I*) ■ Authentication method: RSA signatures (*S*) ■ Role: Responder (*R*) ■ Status: Established (*E*) ■ Encryption algorithm: Blowfish (*B*) ■ Hash algorithm: MD5 (*M*)

Table 10-2: ***MONITORING AND DEBUGGING ➜ IPSEC ➜ IKE SECURITY ASSOCIATIONS***

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

10.3 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 ➤➤ **IP address**, the address range or the network protected by this SA.
LPort	Shows the local ➤➤ **port** 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. ■ *C* = IPComp ■ *E* = ESP ■ *A* = AH.
In	Shows the number of bytes received via this SA.
Out	Shows the number of bytes sent via this SA.

Table 10-3: ***MONITORING AND DEBUGGING ➜ IPSEC ➜ IPSEC SA BUNDLES***

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

11 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)	IP address of designated router. 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). A designated router is not shown for non-BMA networks, e.g. X.25, Frame Relay, ATM.
Backup Designated Router (BDR)	IP address of backup designated router.
Admin Status	Shows the OSPF Admin Status (*active* or *passive*) of the interface.
State	The OSPF status of the interface shown here (***OSPFIFSTATE***) can have the following values: ■ *down*: OSPF is not running on this interface. ■ *wait*: The initial phase of the OSPF, in which the DR and BDR are determined. ■ *PTP*: The interface is a point-to-point interface. DR or BDR are not shown. ■ DR: The gateway is the designated router within the BMA network.

Field	Description
State (cont.)	■ *BDR*: The gateway is the backup designated router within the BMA network. ■ *DRouter*: Another gateway is designated router or backup designated router within the BMA network.

Table 11-1: 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	The size of the Retransmission Queue of this neighbor gateway. 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. If a maximum (usually 3) is exceeded, the Link State Database is adjusted and sent to all gateways in the area via multicast.

Field	Description
State	The OSPF status with this neighbor gateway can have the following values: ■ *init*: The initial phase. A HELLO packet is received from the neighbor. ■ *twoWay*: Bidirectional communication with the neighbor. The HELLO packets sent are accepted by the neighbor gateway (with correct parameters). ■ *EXstart*: The exchange of Database Description packets between the gateways has started. ■ *exchange*: Active exchange of Database Description packets with the neighbor. ■ *loading*: The gateway now exchanges Link State Advertisements with the neighbor. ■ *full*: The Link State Databases of the gateway and its neighbor are now synchronized.

Table 11-2: ***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 11-3: ***LSDB*** section

12 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                    fcca-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: *up*, *down*.
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 12-1: ***ATM/OAM*** menu fields

12.1 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	Shows the operational status of the VPC. Possible values: ■ *end to end up*: The connection between the endpoints of the VPC is active. ■ *end to end down:*The connection between the endpoints of the VPC is inactive. ■ *local up end to end unknown*: The local endpoint is active. The status of the remote endpoint is unknown. ■ *local down*: The local endpoint is inactive. The status of the remote endpoint is unknown.

Field	Description
End to end or Segment	Indicates the number of received (RX) and transmitted (TX) monitoring and error alarm signals at the endpoints of the VPC (***END TO END***) or for the segment connection (segment = connection of the local endpoint to the next connection point) (***SEGMENT***): ■ *AIS*: 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. ■ *RDI*: 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. ■ *CC*: Number of CC cells (Continuity Check) during the current CC activation sequence. ■ *Loopback*: Number of loopback cells within this sequence.

Table 12-2: ***OAM F4 (VIRTUAL PATH LEVEL)*** menu fields

12.2 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	Shows the operational status of the VCC. Possible values: ■ *end to end up*: The connection between the endpoints of the VCC is active. ■ *end to end down:*The connection between the endpoints of the VCC is inactive. ■ *local up end to end unknown*: The local endpoint is active. The status of the remote endpoint is unknown. ■ *local down*: The local endpoint is inactive. The status of the remote endpoint is unknown.

Field	Description
End to end or Segment	Indicates the number of received (RX) and transmitted (TX) monitoring and error alarm signals at the endpoints of the VCC (***END TO END***) or for the segment connection (segment = connection of the local endpoint to the next connection point) (***SEGMENT***): ■ *AIS*: 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. ■ *RDI*: 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. ■ *CC*: Number of CC cells (Continuity Check) during the current CC activation sequence. ■ *Loopback*: Number of loopback cells within this sequence.

Table 12-3: ***OAM F5 (VIRTUAL CHANNEL LEVEL)*** menu fields

13 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	Current status of ATU-R or ATU-C. Possible values: ■ *no defect*: The line is working correctly. ■ *loss of framing*: Error, as no valid frame has been received. ■ *loss of signal*: Error, as no signal is received. ■ *loss of power*: Error due to loss of power.
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 attentuation, 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 13-1: ***ADSL*** menu fields

14 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.

```
R3400 Setup Tool                Funkwerk Enterprise Communications GmbH
[MONITOR][SHDSL]: SHDSL monitoring                              MyGateway


  Physical parameters

    Current status                  no defect
    Current SNR margin              127
    Current loop attenuation        -128


  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                        0
    Transmitted blocks                     0

  EXIT
```

The menu contains the following fields:

Field	Description
Current status	Contains the current state of the endpoint. This is a bitmap of possible conditions. The various bit positions are: ■ noDefect: There no defects on the line. ■ powerBackoff: Indicates enhanced Power Backoff. ■ deviceFault: Indicates a vendor-dependent diagnostic or self-test fault has been detected. ■ dcContinuityFault: Indicates vendor-dependent conditions that interfere with span powering such as short and open circuits. ■ snrMarginAlarm: Indicates that the SNR margin has dropped below the alarm threshold. ■ loopAttenuationAlarm: Indicates that the loop attenuation exceeds the alarm threshold. (not supported by GlobeSpan !) ■ loswFailureAlarm: Indicates a forward LOSW alarm. ■ configInitFailure: Endpoint failure during initialization due to paired endpoint not able to support requested configuration. ■ protocolInitFailure: Endpoint failure during initialization due to incompatible protocol used by the paired endpoint.

Field	Description
Current status (cont.)	■ noNeighborPresent: Endpoint failure during initialization due to no activation sequence detected from paired endpoint. ■ loopbackActive : A loopback is currently active at this Segment Endpoint. 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.
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 14-1: ***SHDSL*** menu fields

15 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: ■ *255* = Master ■ *<255* = Slave
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 15-1: Virtual Router Monitoring List

Detailed statistical information about the individual “virtual routers” are displayed by positionning 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	The current state of the BRRP gateway in the “virtual router”. This field can have the following values: ■ *initialize*: The BRRP gateway waits for a startup event. ■ *backup*: The BRRP gateway monitors the reachability of the master router. ■ *master*: The BRRP gateway forwards packets to ➤➤ **IP addresses** that are linked to this router.

Field	Description
Become Master	The total number of state transitions of the BRRP gateway to *master*.
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 ***Authentication Key***.
Authentication Type Mismatch	The total number of packets received in which the ***Authentication Type*** 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 15-2: ***BRRP*** menu fields

16 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 (***OPERSTATUS*** in the ***IFTABLE***).
Nominal Transmit Rate	Displays the maximum overall data transmission rate in bits per second. The value displayed corresponds to ***IFTABLE: SPEED***.

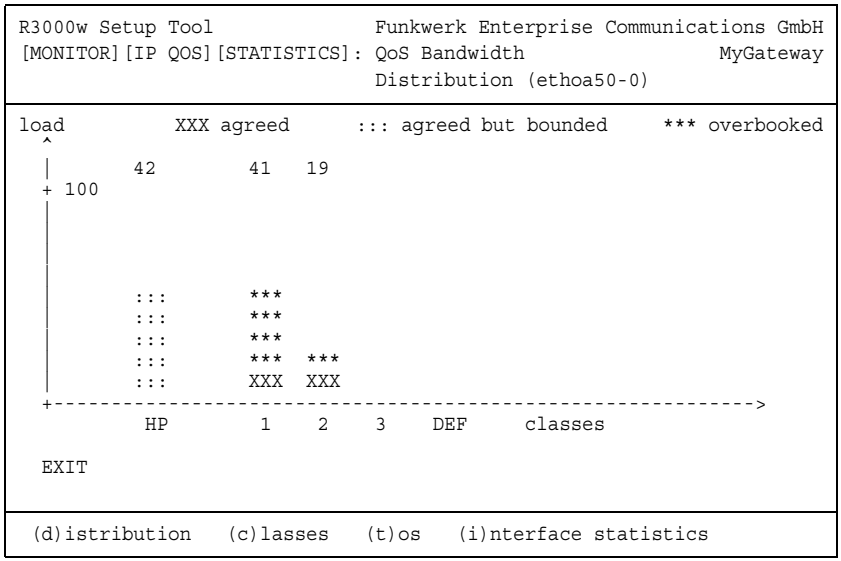
Field	Description
Maximum Transmit Rate	Displays the maximum data rate specified for this interface in bits per second in the transmit direction (the value is specified in the ***Interfaces and Policies*** ➜ *<Interface>* ➜ ***QoS Scheduling and Shaping*** submenu).
Received Packets	Displays the number of packets received over the selected interface since the last change to the *up* 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 *up* 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 *up* 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 *up* status. The counter for Ethernet Interfaces, however, is not reset by a state transition.

Table 16-1: ***Monitoring and Debigging*** ➜ ***IP QoS*** menu fields

16.1 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).



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
N 1        0      0       0           0       0        0
N 2        167550 355049  22          6702000 19172646 880
N 3        292021 735122  405         1168080 39696588 16200
HP         19695  0       13          7878320 0        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	Displays the Class Type of the configured QoS packet class. Abbreviations have the following meaning: ■ N = normal ■ HP = high priority ■ DEF = default

Field	Description
Pkts	Displays the number of packets of this QoS packet class: ■ *Send*: Packets sent ■ *Dropped*: Packets dropped ■ *Queued*: Packets in the queue
Octs	Displays the number of octets of this QoS packet class: ■ *Send*: Octets sent ■ *Dropped*: Octets dropped ■ *Queued*: Octets in the queue

Table 16-2: ***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 16-3: ***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 16-4: ***QoS Policy Statistics*** ➜ ***Interface Statistics*** submenu fields

17 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 17-1: Fields of the ***Monitoring and Debugging ➜ SSH Daemon ➜ EDIT*** menu

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