

## ISDN-Router AR 80

Release Note 4.9



## New System Software:

### *Release 4.9 Revision 3*

This document describes the new enhancements, bugfixes, and changes to the AR 80 System Software for Release 4.9 Revision 3.

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## Upgrading System Software

1. Retrieve the current system software image from AGFEO's WWW server at <http://www.agfeo.de> (Section: Software).
2. With this image you can upgrade the AR 80 with the **update** command from the SNMP shell via a remote host (i.e. using telnet, minipad, or isdnlogin) or by using the **BOOTmonitor**, if you are logged in directly on the console. Information on using the BOOTmonitor can be found in the *AR 80 User's Guide* under *Firmware Upgrades*.
3. Please note that since Software Release 4.9.1 there is a new update procedure in case there is not enough memory available to perform a software update via the **update** command from the SNMP shell.

The new incremental update loads the new software image in blocks of 64 KB via TFTP and writes it to the Flash ROM immediately. Because this procedure offers no possibility to check the integrity of the image, please first use the option “-v” that verifies the image file. For more detailed information see [New Update Procedure](#) on page 14.

4. Once you've installed Release 4.9 Revision 3 you may want to retrieve the latest documentation (in Adobe's PDF format), which is also available from AGFEO's web sides at the address noted above.

**Note:** When upgrading system software, it is also recommended that you use the most current versions of *BRICKware for Windows* and *UNIXTools*. Both can be retrieved from AGFEO's web side.

## What's New in Release 4.9.3

Release 4.9 Revision 3:

Released: 18.12.98

Features:

Changes:

Bugfixes:

### Changes

#### CAPI Syslog Messages

Syslog messages of the CAPI subsystem have been modified to be more informative now. CAPI now uses unique internal application identifications to make it easier to analyze debugging output.

Examples for new syslog messages:

##### **incoming call**

```
CAPI: DBG(34.023) APPL03:09 PLCI 0x0101 dialin from  
<> to local number <>  
CAPI: INF(34.040) APPL03:09 PLCI 0x0101 incoming  
call accepted
```

##### **outgoing call**

```
CAPI: INF(371.150) APPL04:1204 PLCI 0x2E01 dialout to <>  
CAPI: INF(371.172) APPL04:1204 PLCI 0x2E01 outgoing  
call established
```

In these examples APPL04:1204 resp. APPL03:09 identify a unique CAPI application, where the first number is an application ID and the second number an internal ID, which makes it easier to assign the syslog messages to one CAPI application.

#### CAPI DATA\_B3\_IND message

CAPI DATA\_B3\_IND messages now contain a valid datablk counter.

Until now the datablk counter was unused and set to 0.

## Bugfixes

### Reboot when Establishing ISDN Connections

- In rare cases a reboot of the AR 80 occurred, when outgoing ISDN connections were established. The typical output with such kind of reboot was:

```
PANIC: MIB getnext
```

```
...
```

or

```
PANIC: kmem_free: unaligned pointer
```

```
...
```

This bug has been fixed.

### NAT on a Dial-Up Interface

- When using NAT on a dial-up interface it could occur that no more sessions were allowed, although only few active NAT sessions were opened.

This bug could be recognized, when the counter ***ipInAddrErrors*** was counted up and no more packets were routed, although the interface was up. The problem only occurred temporarily until one connection was disconnected.

This bug has been fixed.

### Dynamic IP Address Pools

- When the AR 80 acts as a dynamic IP address server, IP addresses that are “reserved” for a certain connection partner, are not assigned any longer, when the respective IP address pool is moved or deleted.

### Accepting Calls with CAPI 1.1 Applications

- When an incoming call was accepted by a CAPI 1.1 application the Called Party Number was replied automatically as Connected Number to the caller. Some simple PABX

could not handle this information and disconnected the call.

Now the Connected Number isn't sent by CAPI 1.1 applications any longer.

### **biboAdmCapiTcpPort/biboAdmTapiTcpPort**

- To change the TCP port that is used for CAPI resp. TAPI applications one can configure the MIB variable ***biboAdmCapiTcpPort*** (***biboAdmTapiTcpPort***). This configuration can also be made via Setup Tool. If you wanted to apply the changes you had to reboot the AR 80.

Now the new value is used immediately after the modification and no reboot of the AR 80 is necessary.

### **IPX: ripCircTable and sapCircTable**

- After the command `cmd=load` had been executed, the ***ripCircTable*** and ***sapCircTable*** contained each entry twice.

This bug has been fixed.

### **IPX: Configuring the NetNumber**

- When configuring a new WAN Partner using IPX, the NetNumber was reset to 0:0:0:0 and had to be corrected later manually.

This bug has been fixed.

## *Known Issue*

### Problems Accessing Compuserve for the First Time

- If the AR 80 is newly configured, used as DHCP server on the LAN and you have configured Compuserve as your ISP, it is not possible to use a browser to establish a connection with your provider for the very first time.

In such a case, the router can not find a DNS server, necessary for connections using a name-based browser. Only connections to partners with PPP encapsulation are made and not to partners with x.75\_PPP or x.75\_BTXX\_PPP, as in the case of, for example, Compuserve access.

As a workaround, we recommend using the **Ping** command to establish the very first connection to Compuserve.

You have to start a **Ping** to an IP address which is not located in your LAN and thus the router is forced to establish a connection to your ISP. The following example can be used.

On your Windows PC, select **Run...** from the **Start** menu and enter the following command:

```
ping www.agfeo.de
```

When the command is successful, a window opens where you can see the replies from "www.agfeo.de".

After that first connection was successful, a DNS server can be located and you can use the connection to Compuserve for all operations, including the use of your WWW browser.

# What was New in Release 4.9.1

Release 4.9 Revision 1:

Released: 30.10.98

Features:

Bugfixes:

Detailed Description:

## Features

### New BRICKware for Windows

With Release 4.9 Revision 1 also a new BRICKware for Windows is available, which contains the Configuration Wizard.

### New CAPI and TAPI Ports



AGFEO product specific CAPI ports have been officially registered by the IANA (Internet Assigned Numbers Authority) and have been changed as follows:

	OLD PORTS	NEW PORTS
CAPI	6000	2662

This default values are only used, when AR 80 and BRICKware are initially configured. It was necessary to introduce these changes, because in rare cases there occurred conflicts with applications, which used old CAPI and TAPI ports.

As a requirement for the operation of Remote CAPI/TAPI and the CAPI Tracer (PC) the values for the CAPI/TAPI ports configured on the AR 80 and the PC must be the same.

A software update on the AR 80 and on the PC does not change the configuration and with that also does not change the currently used port numbers. Therefore it is not necessary to change the ports after a mere update.

Nevertheless we recommend using the new ports. In the long term the new configuration will be necessary to resolve conflicts that may occur with NAT and Firewall configuration. Please notice that a wrong configuration may be a potential source of errors.





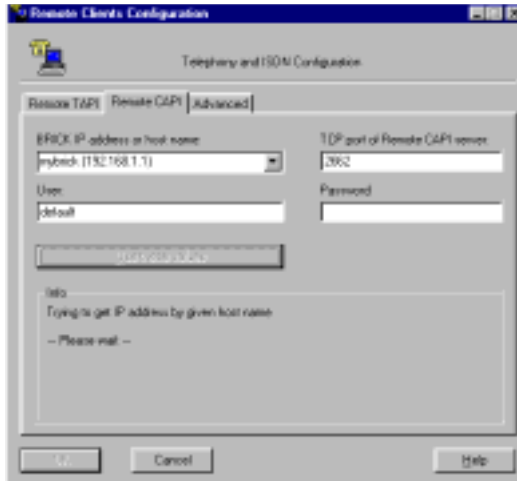
After configuring the CAPI/TAPI for the new port numbers, you must reboot the system for the changes to become effective. Also, ensure your changes have been saved to the boot configuration file using Setup Tool's Configuration Management menu, or using the "cmd=save" command from the SNMP shell. When only the BRICKware is newly installed or a new AR 80 is taken into operation or an old one is completely new installed, then the CAPI/TAPI ports must be adjusted manually. When AR 80 and BRICKware are installed completely new, no adjustments are necessary.

On the AR 80 the CAPI port is configured in Setup Tool in the Static Settings menu of the IP menu and the TAPI port in the Static Settings menu of the PABX menu.

AR 80 Setup Tool [IP][STATIC]: IP Static Settings	AGFEO GmbH & Co. KG AR80
Domain Name	bricks.com
Primary Domain Name Server	192.168.1.3
Secondary Domain Name Server	
Primary WINS	
Secondary WINS	
Time Protocol	TIME/UDP
Time Offset (sec)	0
Time Update Intervall (sec)	86400
Time Server	192.168.1.3
<b>Remote CAPI Server TCP Port</b>	<b>2662</b>
Remote Trace Server TCP Port	7000
RIP UDP Port	520
BOOTP Relay Server	
Unique Source IP Address	
SAVE	CANCEL

On the PC the CAPI/TAPI server ports are configured in the program "Remote Clients Configuration". The CAPI Tracer of

the DIME Tools can be configured when starting a Trace session (Start/New CAPI Trace).



The current Unix Tools “capitrace”, “eft”, and “efd” still use CAPI port 6000 as default setting. The ports of these programs can be changed by setting the environment variable “CAPI\_PORT” under Unix. (e.g : CAPI\_PORT=2662↵, export CAPI\_PORT↵)

## CAPI User Concept

A new CAPI User Concept has been implemented on the AR 80 that gives you greater control of access to the AR 80’s CAPI subsystem. Each network user that attempts to access the AR 80’s CAPI subsystem must first be authenticated by using a user name and password which is configured on the AR 80 (via the new *capidUserTable*.) Only if authentication is successful, the user can receive incoming calls or establish outgoing connections via the CAPI.



To take full advantage of the new CAPI User Concept mentioned above, a new BRICKware release has also been made available in Release 4.9 Revision 1. The most recent *BRICKware* version can always be retrieved from AGFEO’s WWW server at <http://www.agfeo.de> (Section: Software).

To allow for backward compatibility with older BRICKware releases, with Remote CAPI clients from other platforms, or with applications, which have implemented the Remote CAPI library a default user (Name = "default") has been defined. If the CAPI service is enabled for the default user, older BRICKware releases will still work with the new release. If disabled the CAPI service will be unavailable from older BRICKware releases. This also concerns the current versions of the Euro File Transfer Programs for Unix.

For information about configuring [CAPI Users/Passwords](#) see the [Detailed Feature Descriptions](#) on page 31

## Configuration Wizard

With the Configuration Wizard (contained in the BRICKware for Windows) AGFEO offers you a comfortable way to start running your router quick and easy. You can make a basic configuration via the serial connection with your Windows PC. The basic configuration includes all important settings of the router and access to the Internet via an Internet Service Provider (ISP).

The Configuration Wizard guides you step by step through the configuration and so thorough knowledge of networking technologies is not necessary. Graphic illustrations and a context-sensitive Oline Help System gives you additional support.

The software requirements for the Configuration Wizard are Windows 95 or later and Windows NT 4.0 or later.



Please notice that the Configuration Wizard is only meant for an initial configuration of your router. It is not possible to change an existing configuration via the Configuration Wizard, because **all existing configurations are deleted** with a new configuration entered using the Wizard.

A detailed "Quick Install Guide" for the use of the new Configuration Wizard you will find with your product respectively can be retrieved from BinTec's file server at <http://www.bintec.de> (Section: FTP Server) from your products FTP page.

## Setup Tool Menu Reorganization

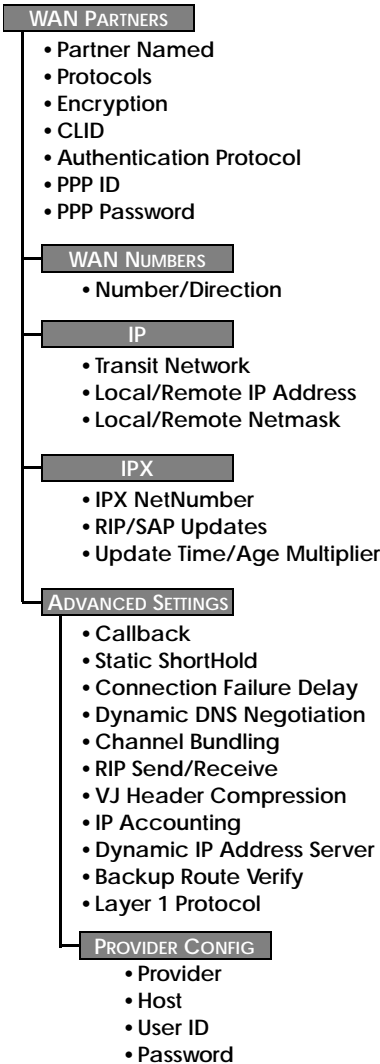
Beginning in Release 4.9 Revision 1, Setup Tool's Partner Management menus (contained in the **WAN Partners** section) have been reorganized to reflect a more logical structure. With the exception of several new configuration options ([described below](#)) these changes only affect the menu structure. Protocol specific configuration settings in Setup Tool's **WAN Partners** menu have been moved to the new/updated **PPP**, **IP**, **IPX**, and **BRIDGE** submenus.

As a guide to the new menu structure, the diagram shown on the following page shows both the old and the new menu layouts. The descriptions of existing configuration fields can be found in the most current version of the AR 80 User's Guide which is available via AGFEO's WWW Server.

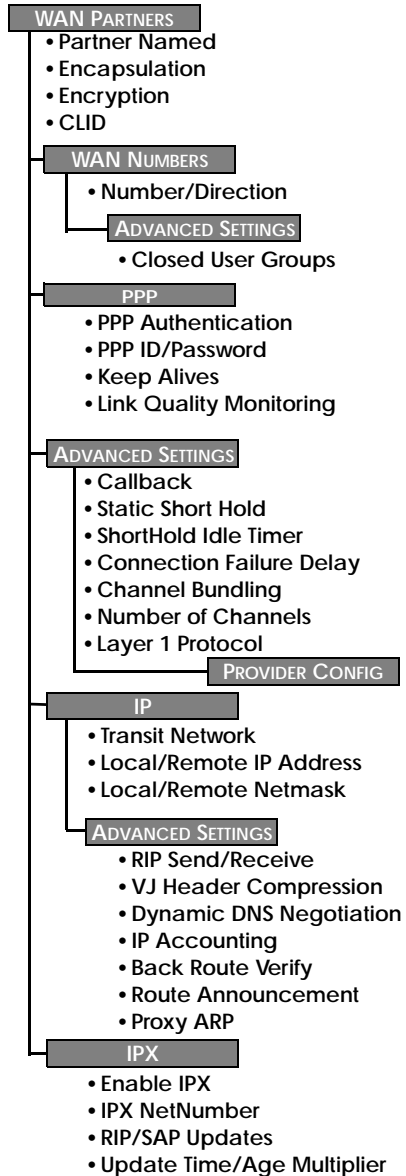
Also note that the new menu structure outlined below is also reflected in Setup Tool's **X.25** → **MPR** → , **FR** → **MPR** → , and **VPN** → submenus.

Detailed information about new configuration options appearing in this release can be found in the section [Detailed Feature Descriptions](#) on page 31.

Old Setup Tool WAN Partner Menus



New Setup Tool WAN Partner Menus



## Partner-Specific/non-Partner-Specific PPP Settings

In Setup Tool partner specific PPP settings can be configured under the new **WAN Partners** → **PPP** → menu. For information regarding the available partner-specific settings, see [New Partner-Specific PPP Settings](#) on page 33.

Default PPP settings (partner non-specific) can also be configured via the new **PPP** → menu. For information regarding these settings refer to [Global PPP Settings Menu](#) on page 32.

## New Update Procedure

Performing a software update on a running system via the **update** command (SNMP shell) requires that a contiguous block of free memory, greater than or equal to the size of the new software image, is available. In the past there occurred problems for AR 80s with 4 MB RAM, when the update application could not allocate enough memory to load a software image into RAM via TFTP.

With Release 4.9.1 the Update procedure was enhanced so that also in this case an update via the **update** command is possible.

When there is not enough memory available to load the complete image into RAM, the user is offered an incremental update. Then the new software image is loaded in blocks of 64 KB via TFTP and written to flash ROM immediately. Because this procedure offers no possibility to check the integrity of the image, there is the option **-v** that verifies the image file.

Note that independent from software image size and available RAM you can always perform an update using the BOOTmonitor.

In the following an example for the new update procedure (verifying the image file and updating the AR 80):

## 1. Verifying the image

```
AR80:> update -v tftpserver bgo491.bg
Starting File Transfer..... OK (754)
Checking new image... OK
File verifies OK
```

## 2. Updating the AR 80 with the image

```
AR80:> update tftpserver bgo491.bg
Starting File Transfer .
Your current software release is 4.8.6.
New image has release 4.9.1.
```

WARNING: There is not enough free memory (RAM) to store the new software image before writing it to flash. You can perform an incremental update (the image is written directly to flash in 64 KB increments). If you need to perform an incremental update you should restart the update using the `-v` option to verify the integrity of the new file.

Don't reboot the router during the update.

```
Do you want to perform an incremental update (y or n)
[n] ? y
Receiving and Writing to Flash ROM.....
Software update complete
Reboot now (y or n) [n] ? y
```



We recommend to first verify the software image file and to start the incremental update after a successful verification of the file.

## Transferring Configuration Files via the Serial Port

With Software Release 4.9.1 it is possible to load and save configuration files via the serial interface using the protocol XMODEM (up to now only possible via TFTP). Therefore the variable **file** is assigned the value **xmodem** or **xmodem-1k**. **xmodem-1k** uses a packet size of 1024 byte (default: 128 byte) and in general reaches a higher throughput. The packet size is defined by the

sender so that the value **xmodem-1k** only makes sense on the sending end; on the receiving end it is ignored.

To make use of this new feature you have to access your AR 80 from a computer via the serial port and a terminal program as described in Getting Started in the Chapter “Configuration” (“Over Serial Port”).

### Getting the Configuration

```
cmd=get file=xmodem path=new_config
```

loads a file received via XMODEM with the name `new_config` into the flash ROM of the AR 80.

After this command has been started the terminal program must be set to Send (Upload) and the transmission protocol (XMODEM) as well as the source file name and location must be entered. For the time of the file transfer the console cannot be used.

### Putting the Configuration

```
cmd=put file=xmodem path=boot
```

sends the AR 80's flash ROM file `boot` via XMODEM.

After this command has been started the terminal program must be set to Receive (Download) and the transmission protocol (XMODEM) as well as the destination file name and location must be entered. For the time of the file transfer the console cannot be used.

### Transmitting State Information

The previously mentioned commands only send or retrieve the configuration files containing variables with Read-Write status. They send/retrieve information from files stored in flash. Using “`cmd=state`” you can save all configuration information currently in memory. This information includes Read-Write AND Read-Only data such as status/accounting information.

```
cmd=state file=xmodem
```





If you use `cmd=put` or `cmd=state` to transfer AR 80 configuration files, you should also control access to these files for security reasons.

When nothing is specified the currently selected baud rate is used for the transfer. The transfer baud rate can be changed by adding `@baud` to the file variable, e.g.:

```
cmd=put file=xmodem@9600 path=boot
```

Possible baud rates are 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200. For transmitting data to the AR 80 (`cmd=get`) you should not select a rate higher than 9600. Selecting higher than default baud rates may result in transmission errors.

In case of transmission errors a `syslog` is generated.

This feature can only be used via the SNMP shell, not via Setup Tool.

## Credits Based Accounting System

With dial-up WAN connections it may occur that charges rise, because of configuration errors. The Credits Based Accounting System gives AR 80 administrators the ability to control charges. It allows the AR 80 administrator to limit the number of connections, the connection time and the accounted charges of every subsystem during a specified period of time.

A detailed description of this feature you can find in “Detailed Features Description” under [Credits Based Accounting System](#).

## IP Route Announcement

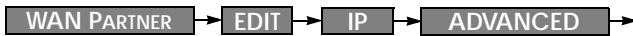
In the ***ipExtIfTable*** there is the new variable ***ipExtIfRouteAnnounce***, which adjusts for each interface under which conditions, in dependence of the ***ifOperStatus*** (***ifTable***) of the respective interface, the routes defined on this interface are propagated.

This new variable is relevant for the routing protocols OSPF and RIP.

The variable can receive three possible values:

- ***up\_only***  
The routes are only propagated, when the operational status of the interface is up.
- ***up\_dormant***  
The routes are only propagated, when the operational status of the interface is up or dormant.
- ***always***  
Independent from the operational status of the interface the routes are always propagated. If e.g. a dial-up interface is in the state “blocked”, the route is propagated.

In Setup Tool the configuration is made under



AR 80 Setup Tool [WAN][ADD][IP][ADVANCED]: Advanced Settings ()	AGFEO GmbH & Co. KG AR80																
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">RIP Send</td> <td style="width: 50%;">none</td> </tr> <tr> <td>RIP Receive</td> <td>none</td> </tr> <tr> <td>Van Jacobson Header Compression</td> <td>off</td> </tr> <tr> <td>Dynamic Name Server Negotiation</td> <td>yes</td> </tr> <tr> <td>IP Accounting</td> <td>off</td> </tr> <tr> <td>Back Route Verify</td> <td>off</td> </tr> <tr> <td><b>Route Announce</b></td> <td><b>up or dormant</b></td> </tr> <tr> <td>Proxy Arp</td> <td>off</td> </tr> </table>	RIP Send	none	RIP Receive	none	Van Jacobson Header Compression	off	Dynamic Name Server Negotiation	yes	IP Accounting	off	Back Route Verify	off	<b>Route Announce</b>	<b>up or dormant</b>	Proxy Arp	off	<div style="display: flex; justify-content: space-around; margin-top: 20px;"> <span>OK</span> <span>CANCEL</span> </div>
RIP Send	none																
RIP Receive	none																
Van Jacobson Header Compression	off																
Dynamic Name Server Negotiation	yes																
IP Accounting	off																
Back Route Verify	off																
<b>Route Announce</b>	<b>up or dormant</b>																
Proxy Arp	off																
Use <Space> to select																	

**up or dormant** specifies that the routes are only propagated, when the operational status of the interface is up or dormant and is the default value.

**up\_only** specifies that the routes are only propagated, when the operational status of the interface is up.

**always** specifies that independent from the operational status of the interface the routes are always propagated.

## Proxy ARP

The Proxy ARP (Address Resolution Protocol) is a technique to answer ARP requests for the hardware address of a particular IP address. Normally ARP requests are answered by the station the IP address belongs to. With Proxy ARP the request can be alternatively answered by the AR 80. This is useful, when a host belonging to your local network is connected via WAN (e.g. a home office).

For a detailed description of the feature Proxy ARP see BinTec's Software Reference, which is available via the WWW Server at <http://www.bintec.de> (Section: FTP Server) from your product's page.

With this software release the Proxy ARP feature has been enhanced. Proxy ARP must now also be configured on the destination WAN interface, via which the requested IP address would be routed.

For the LAN interface the variable ***ipExtIfProxyArp*** (***ipExtIfTable***) can receive the values off and on:

- ***off***  
Proxy ARP is turned off, which is the default value.
- ***on***  
Proxy ARP is turned on.

In Setup Tool Proxy ARP for the LAN can be configured in the Advanced Settings for the LAN interface.

For the WAN interface the variable ***ipExtIfProxyArp*** (***ipExtIfTable***) has been extended. When proxy ARP is turned on, ARP requests are answered in dependence of the ***ifOperStatus*** (***ifTable***) of the interface, via which the requested host can be reached. Possible values are ***off***, ***on*** and ***up\_only***:

Values for ***ipExtIfProxyArp*** on the WAN interface:

- **off**  
Proxy ARP is turned off, which is the default value.
- **on**  
The request is only answered, when the WAN interface has the **ifOperStatus up** or **dormant**. When the interface was in the state **dormant**, a connection is setup after the ARP request.
- **up\_only**  
The request is only answered, when the WAN interface has the **ifOperStatus up**. This value makes sense, when ARP requests should only be answered in case there is already an existing connection to the requested host.

In Setup Tool Proxy ARP for the WAN interface can be configured in the WAN Partner menu for the respective host in the Advanced Settings of the IP submenu.

The requirements for an answer to a ARP request from the LAN by the AR 80 are that the destination address would be routed to a different but the LAN interface and that on both interfaces (LAN and destination WAN interface) proxy ARP is turned on (**on** for the LAN interface and **on** or **up\_only** for the respective WAN interface). Beyond that the **ifOperStatus** of the WAN interface must have the demanded state.



Because of the extension of the Proxy ARP configuration to the WAN interface, which means additional security, the old configurations made with prior software releases are no longer compatible. To reach the same functionality as with an activated Proxy ARP on the LAN before, the variable **ipExtIfProxyArp** must be set to **on** for the respective WAN interface.

## Access Lists

The range of values the variable **ipFilterProtocol** (**ipFilterTable**) can receive has been extended. The following protocols can additionally be defined for filtering: RSVP , GRE, ESP, AH, IGRP, L2TP. (For protocol descriptions see [http://www.iana.org/.](http://www.iana.org/))

In Setup Tool the filters can be defined in the IP Access Lists menu.

## Pools for Dynamic IP Address Assignment

Beginning in software Release 4.9 Rev. 1 it is now possible to define separate IP Address Pools for dynamic IP address assignments. For Internet Service Providers (ISP) and other sites with many dial-in accounts, using IP address pools is convenient for defining separate user groups. One might assign “official” addresses from one pool 1 for special accounts, and assign “non-official” addresses from pool 2 for private accounts.

At connect time the AR 80 assigns an IP address from the Pool (Pool ID) defined for the respective WAN Partner. This Pool ID can be retrieved from,

1. the respective partner entry in the AR 80's ***biboPPPTable*** (using the new ***biboPPPIpPoolId*** variable),
2. a User-Record in the remote RADIUS server's users file with a AGFEO-biboPPPTable="biboPPPIpPoolId=x" tag).

See the section [IP Address Pools](#) under Detailed Descriptions for additional information (including the updated Setup Tool menus).

## WINS (NBNS) Negotiation over PPP

The AR 80 now supports WINS (NBNS = NetBios Name Server) Negotiation over PPP.

A detailed description of this new feature can be found in BinTec's Software Reference in Chapter 7 under the heading “DNS and WINS (NBNS) Negotiation over PPP”. The Software Reference can be retrieved from BinTec's FTP server at <http://www.bintec.de> (Link: FTP Server). There you can find the respective link under “Reference Manuals” on the respective product page.

## DHCP Server Functionality

The DHCP server functionality of the AR 80 has been enhanced by the features DNS (Domain Name Server) and WINS (NBNS = NetBios Name Server) Relay.

A detailed description of this new feature can be found in BinTec's Software Reference in Chapter 7 under the heading "DNS and WINS Relay". The Software Reference can be retrieved from BinTec's file server at <http://www.bintec.de> (Section: FTP Server). There you can find a link under "Reference Manuals" on the respective product page.

## Changes

### TCP Optimization

TCP packets, which are not confirmed, are now repeated earlier. This speeds up the throughput for remote CAPI, remote TAPI and Telnet.

### Configuration: State File

When writing a state file with `cmd=state` the following variables are not output respectively substituted by “\*\*\*\*” with Software Release 4.9.1:

- ♦ All values of the variables of *AGFEOsec* are not output.
- ♦ The value of the variable *AuthSecret* of the *biboPPPTable* is substituted by “\*\*\*\*”.
- ♦ The value of the variable *Secret* of the *radiusServerTable* is substituted by “\*\*\*\*”.
- ♦ The value of the variable *Secret* of the *tafServerTable* is substituted by “\*\*\*\*”.

### CAPI: PLCI and NCCI

The internal process for building the values for PLCI (Physical Link Connection Identifier) and NCCI (Network Control Connection Identifier), which are used with connections between CAPI application and AR 80, has been changed. Therefore PLCI and NCCI are now not only unique for each application, but unique on each AR 80.

### ipExtIfKeepalive

Up to now the maximum value for the variable *ipExtIfKeepalive* (*ipExtIfTable*), which defines the period between TAF short authentications, was 180 seconds. With a value higher than this “keepalive authentication” was performed continually.

Now the maximum value is 65535 seconds (about 18 hours). Above that, it is possible to turn off “keepalive authentication” by setting the variable ***ipExtIfKeepalive*** to 0.

## biboAdmBrdType

The value of the variable ***Type*** in the first entry of the ***biboAdmBoardTable***, which describes the type of AR 80, has been extended. For the AR 80 now additionally the size of the Flash and of the CPU-DRAM (Central Processing Unit - Dynamic Random Access Memory) is stated.

Example for AR 80 (1 MB Flash):

inx	Slot(*ro) PartNo(ro)	Type(ro) Connector(rw)	HWRelease(ro)	FWRelease(ro)
00	0 "AR80"	"AR80 (1/4 MB) auto	"3.1"	"2.6"

In this example (1/4 MB) stands for: 1 MB flash and 4 MB CPU-DRAM.

## Charging Information

Because some PABX signal charging information in the D-channel in currency amounts, the registration of charging information on the AR 80 has been extended.

When charging information is sent as currency amounts, the charges can be read out of the variables ***biboPPPConnCharge*** and ***biboPPPTotalCharge*** in the ***biboPPPStatTable*** and the variable ***biboPPPLinkCharge*** in ***biboPPPLinkTable***, where the charge is measured in 1/1000 of the respective currency. (E.g. receiving charging information “0.12 DM” would result in a stored value of 120 charging units.)





Please notice that when charging information is sent as currency amounts, the feature Dynamic Shorthold is not available.

When charging information is sent as units, the charges can be read out of the variables ***biboPPPConnUnits*** and ***biboPPPTotalUnits*** in the ***biboPPPStatTable*** and the variable ***biboPPPLinkUnits*** in ***biboPPPLinkTable***.

The PPP accounting strings in the syslog messages (info level) have changed, too. Now charging amounts and charging units are output, where charging amounts are measured in 1/1000 of the respective currency (see above). In dependence of which information is signalled, one of both variables is always set.

Example:

```
16:13:17 INFO/PPP: provider: outgoing connection closed, duration 21 sec, 10337 bytes received, 12235 bytes sent, 0 charging units, 120 charging amounts
```

## Bugfixes

### isdnLoginOnPPPSDispatch

- When the variable ***isdnLoginOnPPPSDispatch*** (***isdnTable***) is set to allow, incoming ISDN calls with the service indicator “telephony” should be routed to the ISDN login daemon, even though the call via the ***isdnDspLocalNumber*** has the matching service “PPP” in the ***isdnDispatchTable*** (for non-PABX products).

For products with modem hardware (FM-8MOD, CM-2XBRI,...) it happened that incoming calls with this signalization were dispatched to the PPP routing, so that no login was possible.

This bug has been fixed.

### LAPB Encapsulation with Compression

- Especially for leased line connections it occurred that with LAPB encapsulation (IP\_LAPB resp. MPR\_LAPB) and compression (V. 42bis) data transfer was not possible. The reason was an inconsistency of the compression and decompression histories, which could result from a layer 1 disconnect. In spite of this failure the value of the variable ***ifOperStatus*** (***ifTable***) was remaining “up”.

This bug has been fixed and those inconsistencies should not occur anymore.

### bibOPPLQMTable

- For dial-in connections with inband authentication the interface index was not set in the ***bibOPPLQMTable***, when PPP Link Quality Monitoring was negotiated.

This bug has been fixed.

## biboPPPTable

- Old entries in the ***biboPPPTable***, which were saved with the configuration and had a ***Type*** entry for leased line, were not cleared, when the respective module for these links was removed or plugged into a different slot.

This bug has been fixed; entries that aren't needed anymore are now deleted.

## CAPI

- Direct-Dial-In with CAPI Applications

To receive the whole Called Party Number of an incoming call at a point-to-point ISDN interface, a CAPI application has to collect the information out of several CAPI messages it receives from the AR 80.

For this purpose some applications only interpret those digits, which are signalled to them with the "INFO\_IND" message and ignore the digits in the "CONNECT\_IND" message. These digits of the "CONNECT\_IND" message were not send additionally in an "INFO\_IND" to the application.

Especially, when the Called Party Number was received completely in one message by the AR 80, the application did not get any "INFO\_IND" message and it occurred that in such a case a call was incorrectly accepted or not accepted.

This bug has been fixed.

Now all digits of the Called Party Number, which are contained in the "CONNECT\_IND" message are additionally sent in an "INFO\_IND" message.

- Data Transfer in Transparent Mode

When a CAPI application was sending data using the B-channel in transparent mode, it sometimes occurred that at the end of a transmission up to 31 byte were lost.

This bug has been fixed.

## Network Address Translation

- After receiving several broadcast packets via an interface where NAT is being performed the AR 80 either “locked-up” or inadvertently rebooted. If the system locked up the AR 80 was no longer accessible (via remote or console) and had to be switched on and off.

This bug has been fixed.

## ISDN: Alcatel 4200

- When an AR 80 connected to an Alcatel 4200 ISDN PABX tried to set up an outgoing call, a reboot occurred. This happened because charging information is transmitted in currency amounts by the Alcatel 4200 and not in units.

This bug has been fixed.

## localUdpAllowTable

- When the *localUdpAllowTable* contained more entries than the *localTcpAllowTable*, there sometimes occurred a reboot of the AR 80.

This bug has been fixed.

## CM-2XBRI and CM-1BRI/2BRI Modules

- The BRI modules stopped reception, when they received very large data packets via the B-channel. This bug occurred with installations enclosing IPX and Token Ring. It is possible that this bug also appeared with CAPI applications on the AR 80.

The bug has been fixed.

## Call Collisions with MS Callback

- Microsoft Windows clients only accept incoming calls, when before, via CBCP, a callback was negotiated. Sometimes a dial-out to these clients was conducted, which was not negotiated as described and a call collision occurred, which could cause that the MS Callback was not successful.

This bug has been fixed.

## ifconfig Command

- It was not possible to use the “ifconfig” command on a completely unconfigured AR 80 to set the AR 80’s IP address on the LAN.

This bug has been fixed.

Now you can use e.g.

```
ifconfig en1 168.1.1.1 netmask 255.255.255.0 up
to configure the IP address.
```

## Setup Tool: WAN Partner

- When configuring a new WAN partner and with that setting **IP Accounting** in the [WAN][ADD][ADVANCED] menu to **on**, the **IP Accounting** value was reset to **off**, although the menu was left with **Save**.

This bug has been fixed.

## Setup Tool: Access Lists

- On an AR 80 with access lists for more than 100 interfaces configured using the Setup Tool, there sometimes occurred a reboot.

This bug has been fixed.

## Known Bug

- B-Channel Trace

When a B-channel was traced (via the command “trace”), the throughput of this B-channel is no longer taken into account after the trace is stopped. The result is that for the dynamic channel-bundling a B-channel may be closed down too early or no additional B-channel is opened, although there is enough load on the connected channels.

## Detailed Feature Descriptions

### CAPI Users/Passwords

The new **CAPI** → menu has been added to Setup Tool for configuring CAPI users and passwords. Configuring CAPI Users is seemingly straight forward; select ADD in the **CAPI** → **USER** → submenu (shown below) to add/modify CAPI users

AR 80 Setup Tool [CAPI][User]: Configure CAPI USers		AGFEO GmbH & Co. KG AR80
Name default	Password	CAPI enabled
ADD	DELETE	EXIT

If the **capidUserTable** is empty at boot time, a default entry (as shown above) is automatically added. The default user is enabled and no password is required.

In the subsequent ADD menu define the following fields:

**Name** specifies the user name (up to 16 characters) to enable/disable CAPI access for.

**Password** specifies the password this user must authenticate with when accessing the CAPI subsystem.

**CAPI** determines whether the CAPI service is “enabled” or “disabled” for this user.

## New Setup Tool PPP Configuration Options

### Global PPP Settings Menu

The new **PPP** → menu has been added to Setup Tool’s main menu to allow you to configure default (non-partner specific) PPP settings. The PPP settings configured in this menu are only used when negotiating an incoming call that could not be initially identified via Calling Line ID.

AR 80 Setup Tool [PPP]: PPP Profile Configuration	AGFEO GmbH & Co. KG AR80
Authentication Protocol RADIUS Server Authentication PPP Link Quality Monitoring	CHAP + PAP + MS-CHAP inband none
SAVE	CANCEL
Use <Space> to select	

The possible “default” PPP settings available in this menu include:

**Authentication Protocol** = Defines the type of PPP authentication protocol to offer the caller first. Possible values include: none, PAP, CHAP, CHAP + PAP, MS-CHAP, and CHAP + PAP + MS-CHAP. Corresponds to the variable ***bi-biPPPProfileAuthProtocol*** in the ***bi-biPPPProfileTable***.

**RADIUS Server Authentication** = This entry is used to configure possible RADIUS authentication on incoming calls. When set to “inband” (the default) only inband RADIUS requests (PAP, CHAP) are sent to the defined RADIUS server. When set to “Calling Line ID” outband requests are sent to the server. When set to “both”, both requests are sent. Setting



to “none” disables RADIUS requests. This item corresponds to the variable ***biboPPPProfileAuthRadius*** in the ***biboPPPProfileTable***.

**PPP Link Quality Monitoring** = Defines whether link quality monitoring is performed for PPP links. When set to “yes”, link statistics are written to the ***biboPPPLQTable***. Corresponds to the variable ***biboPPPProfileLQMonitoring*** in the ***biboPPPProfileTable***.

### New Partner-Specific PPP Settings

Two new options, PPP Keep Alives and Link Quality Monitoring, have been added to the  →  sub-menu.

**PPP Keep Alives** = When this option is set and successfully negotiated with the peer, the AR 80 sends LCP echo requests to the remote partner every three seconds. After five unanswered requests the PPP interface’s ***ifOperStatus*** is set to “down” for leased lines (“dormant” for dial-up connections). PPP keep alives is most useful (and by default, set to “on”) for leased line interfaces. The transmission of echo requests does not affect the Short Hold timer.

**Link Quality Management** = This option allows you to tell the AR 80 to gather PPP Link Quality statistics for a specific PPP partner. When enabled, link statistics are continuously written to the AR 80’s ***biboPPPLQTable***, when a connection is established with this partner.

## Credits Based Accounting System

With dial-up WAN connections it may occur that charges rise because of configuration errors. The Credits Based Accounting System gives AR 80 administrators the ability to control charges. It allows the AR 80 administrator to watch and limit the number of connections, the connection time and the accounted charges of every subsystem during a specified period of time. If the limit is exceeded the AR 80 can't make further connections in that period of time. Syslog messages give you information about credits, when the 90% or 100% mark for each limit and each subsystem is reached. Also, each time a call is rejected a syslog message is generated.

The new ***isdnCreditsTable*** controls this feature, it is described in the current MIB Reference at <http://www.bintec.de/download/brick/doku/mibref/index.html>.

The Credits Based Accounting System can also be configured via Setup Tool described below.

### Setup Tool Menus

In the Setup Tool main menu are two items containing menus for the Credits Based Accounting System: **ISDN** and **Monitoring and Debugging**.

**ISDN** With this new item you can manage the Credits Based Accounting System.

**Monitoring and Debugging** Here you can find a new menu which enables you to monitor the incoming and outgoing connections and accounted charges.

ISDN → Credits →

AR 80 Setup Tool [ISDN][CREDITS]: Configure Credits	AGFEO GmbH & Co. KG AR80								
<p>Select Subsystem</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Subsystem</td> <td style="width: 70%;">Surveillance</td> </tr> <tr> <td>capi</td> <td>off</td> </tr> <tr> <td>ppp</td> <td>off</td> </tr> <tr> <td>isdnlogin</td> <td>off</td> </tr> </table> <p>EXIT</p>		Subsystem	Surveillance	capi	off	ppp	off	isdnlogin	off
Subsystem	Surveillance								
capi	off								
ppp	off								
isdnlogin	off								
Press <Ctrl-n>, <Ctrl-p> to scroll, <Return> to edit/select									

Here you can see for which subsystems accounting is active (Surveillance on) or inactive (Surveillance off). The default value is off. To activate accounting for a subsystem select the corresponding item and enter the detailed settings in the next step. There are three defined subsystems:

capi  
ppp  
isdnlogin



AR 80 Setup Tool		AGFEO GmbH & Co. KG
[ISDN][CREDITS][EDIT]: Configure ppp Credits		AR80
Surveillance		on
Measure Time (sec)		86400
Maximum Number of Incoming Connections		on
		2
Maximum Number of Outgoing Connections		on
		20
Maximum Charge		off
Maximum Time for Incoming Connections (sec)		on
		28800
Maximum Time for Outgoing Connections (sec)		on
		28800
	SAVE	CANCEL
Use <Space> to select		

Here you can enter the detailed settings for the subsystem you have selected before, here ppp.

**Surveillance** = Determines whether or not accounting for ppp connections is activated. If you set Surveillance on, you are able to determine the following parameters.

**Measure Time (sec)** = The observation interval in seconds. Enter an integer from 0 to 2147483647. Default value is 86400 seconds, which is 24 hours.

**Maximum Number of Incoming Connections** = The number of allowed incoming connections during the measure time. If you set it on you can enter an integer from 0 to 2147483647. Default value is off.

**Maximum Number of Outgoing Connections** = The number of allowed outgoing connections during the measure time. If you set it on you can enter an integer from 0 to 2147483647. Default value is 100 calls.

**Maximum Charge** = The maximum allowed charge information during the measure time. If you set it on you can enter an integer from 0 to 2147483647. Default value is off.

Charge information is measured in units or when charge information is sent as currency amounts, the charge is measured

in 1/1000 of the respective currency. (E.g. receiving charging information "0.12 DM" would result in a value of 120 charging units.)

**Maximum Time for Incoming Connections (sec)** = The maximum allowed time in seconds for incoming connections during the measure time. If you set it on you can enter an integer from 0 to 2147483647. Default value is 28800 seconds, which is 8 hours.

**Maximum Time for Outgoing Connections (sec)** = The maximum allowed time in seconds for outgoing connections during the measure time. If you set it on you can enter an integer from 0 to 2147483647. Default value is 28800 seconds, which is 8 hours.

Monitoring and Debugging → ISDN Credits →

AR 80 Setup Tool [MONITOR][CREDITS]: Monitor Credits	AGFEO GmbH & Co. KG AR80								
<p>Select Subsystem</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Subsystem</td> <td style="text-align: right;">Surveillance</td> </tr> <tr> <td>capi</td> <td style="text-align: right;">on</td> </tr> <tr> <td>ppp</td> <td style="text-align: right;">on</td> </tr> <tr> <td>isdnlogin</td> <td style="text-align: right;">on</td> </tr> </table> <p>EXIT</p>		Subsystem	Surveillance	capi	on	ppp	on	isdnlogin	on
Subsystem	Surveillance								
capi	on								
ppp	on								
isdnlogin	on								
Press <Ctrl-n>, <Ctrl-p> to scroll, <Return> to edit/select									

Here you can see, for which subsystems the Credits Based Accounting System is activated (Surveillance on) or not activated (Surveillance off). With selecting capi, ppp or isdnlogin you can check the remaining credits for each subsystem.



AR 80 Setup Tool		AGFEO GmbH & Co. KG	
[MONITOR][CREDITS][STAT]: Monitor ppp Credits		AR80	
	Total	Maximum	% reached
Time till end of measure interval (sec)	7794	86400	91
Number of Incoming Connections	0	2	0
Number of Outgoing Connections	0	20	0
Time of Incoming Connections	0	28800	0
Time of Outgoing Connections	0	28800	0
Charge	0		
EXIT			

Here you can see the current values.

**Time till end of measure interval (sec)** = The seconds left in the current observation interval.

**Number of Incoming Connections** = The number of established incoming connections during the current measure time.

**Number of Outgoing Connections** = The number of established outgoing connections during the current measure time.

**Time of Incoming Connections** = The accounted time for incoming connections during the current measure time.

**Time of Outgoing Connections** = The accounted time for outgoing connections during the current measure time.

**Charge** = The number of charge informations received during the current measure time.

Charge information is measured in units or when charge information is sent as currency amounts, the charge is measured in 1/1000 of the respective currency. (E.g. receiving charging information "0.12 DM" would result in a value of 120 charging units.)

## IP Address Pools

### Pool ID Selection

When dynamically assigning an IP address to a dial-in client the address, which will be assigned respectively the Pool, from which the address is retrieved is determined in the following order.

#### 1. Assigning a Static IP Address

When there exists an entry in the *ipRouteTable* for the dial-in client, where *ipRouteMask* is set to a host route (= *255.255.255.255*) and *ipRouteType* has the value *direct*, in this case the IP address stored in the variable *ipRouteDest* of this routing entry is taken to be assigned for this WAN partner.

If caller can't be authenticated locally via the MIB, RADIUS server(s) are contacted. If a server authenticates the caller, and there is a User-Record entry

```
AGFEO-ipRouteTable="ipRouteMask=255.255.255.255
                    ipRouteType=direct
                    ipRouteDest= x"
```

the IP address stored in the variable *ipRouteDest* of this entry is taken to be assigned for this WAN partner.

#### 2. Assigning an IP Address from an Address Pool

When the procedures described under 1. were not successful, the IP address is assigned from the Pools.

Once the caller is identified (either inband or outband), the WAN partner's *biboPPPTable* entry is compared. If the *IPAddress* field = "dynamic\_server" AND an address is available from the pool identified by the *PoolId* field, then a free address is assigned.

If caller can't be authenticated locally via the MIB, RADIUS server(s) are contacted. If a server authenticates the caller and there is a User-Record entry AGFEO-biboPPPTable="biboPPPIpAddress=dynamic\_server", the pool ID is determined from the User-Record entry AGFEO-biboPPPTable="biboPPPipPoolId=x".

## MIB Tables Overview

Overview of new/updated system tables used in conjunction with Address Pools for dynamic IP address assignment.

*Updated!* **biboPPPTable**

Main system table for partner-specific PPP settings. Updated to include **IpPoolId** variable.

*Updated!* **biboPPPIpAssignTable**

Contains ranges of IP addresses that make up one or more logical Address Pools. Updated to include **PoolId** and **Range** variables.

*New!* **biboPPPIInUseTable**

Contains entries for each address that is currently assigned/reserved. The AR 80 updates the entries dynamically via the **State** field.

For detailed description of individual system table fields please refer to the BIANCA/BRICK MIB Reference on the accompanying Companion CD or at [BinTec's WWW](http://www.bintec.com) site.

## Example Configuration of IP Address Pools via Setup Tool

### A. Dial-In Partner without RADIUS

**IP** → **DYNAMIC IP ADDRESS** → **ADD**      Create Address Pool

First, create/modify a Pool ID to contain IP addresses that will be available for assignment at connect time.

Pool ID	1
Number	10.5.5.5
Number of Consecutive Addresses	5

**WAN PARTNER** → **ADD**      Create Partner Interface

Here you'll need to set:



Partner Name	test
Encapsulation	<i>PPP</i>
Compression	none
Encryption	none
Calling Line ID	no

Then, in the **IP** submenu configure the AR 80 as a Dynamic IP Address server for this partner.

IP Transit Network	dynamic_server
--------------------	----------------

In the **ADVANCED SETTINGS** submenu define the Pool ID

IP Address Pool	1
-----------------	---

#### B. Dial-In Partner with RADIUS server

**IP** → **DYNAMIC IP ADDRESS** → **ADD** Create Address Pool

Next, modify a Pool ID to contain IP addresses that will be available for assignment at connect time.

Pool ID	2
Number	192.168.80.20
Number of Consecutive Addresses	20

Then you must define the following entry in the User-Record of the RADIUS server:

AGFEO-biboPPPTable="biboPPPIpPoolId=2"

## Example Configuration of IP Address Pools via SNMP Shell

In the following examples the SNMP shell input shown in the examples A.1, A.2, and B.1 must be entered in one command line.

### A. Dial-In Partner without RADIUS

1. Create an IP address pool in the ***biboPPPIpAssignTable***.

```
AR80:> biboPPPIpAssignAddress=10.5.5.5
biboPPPIpAssignPoolId=1
biboPPPIpAssignRange=5
```

2. Set the WAN partner in ***biboPPPTable*** to use Pool ID. Assuming entry 4 is the existing WAN partner we want to configure for Dynamic IP address assignment

```
AR80:> biboPPPIpPoolId:4=1
biboPPPIpAddress:4=dynamic_server
```

### B. Dial-In Partner with RADIUS server

1. Create an IP Address pool in the ***biboPPPIpAssignTable***.

```
AR80:> biboPPPIpAssignAddress=192.168.80.20
biboPPPIpAssignPoolId=2
biboPPPIpAssignRange=20
```

2. Define the following entry in the User-record of the RADIUS server:

```
AGFEO-biboPPPTable="biboPPPIpPoolId=2"
```

3. Once the caller is authenticated via a RADIUS server a temporary ***biboPPPTable*** entry is generated. The ***PoolId*** field for this entry is determined by the contents of the User-Record discussed above.

**Important Note:****Overlapping Address Pools:**

Although it's legally possible to define IP address pools that overlap (as shown below) the AR 80 will not assign an address twice.

The ***biboIpInUseTable*** is consulted for this purpose.

inx	Address(*rw)	State(-rw)	PoolId(rw)	Range(rw)
0	10.5.5.1	unused	0	2
1	10.5.5.2	unused	1	2
2	10.5.5.3	unused	2	2

With the ***biboPPPIpAssignTable*** shown above, only four IP addresses could actually be used at any given time.

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Printed in Germany  
0995

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