



GCS/SP-IL Interoperability Lab

Title:

Vierling ECOTEL GSM Gateway at the
Avaya IP Office 500

Date: 08. June 2009

Document: Vierling_ECOTEL_GSM-Gateway_at_the_Avaya_IP500__1_0_eng.doc

Version: 1.0

Project leader: Klaus Schlecker
+49 69 7505 3037
Schlecker@Avaya.com

Execution/ Author: Ralf Klünder Bernhard Emmert
+49 69 7505 3104 +49 9194 97-243
Kluender@Avaya.com bernhard.emmert@vierling.de

Document History

Version	Date	Reason	Name
0.1		Initial draft	Klünder
0.2	23.04.2009	Test Execution	Klünder
0.3	27.04.2009	Version for review	Klünder
0.4	25.05.2009	Including review comments	Klünder
1.0	08.06.2009	Final version after review	Klünder

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1 Introduction

This document describes the compatibility tests with the Vierling ECOTEL GSM-Gateway ISDN and Vierling ECOTEL GSM-Gateway VoIP at the Avaya IP Office 500 (IPO500). There were tested the connections TE mode, NT mode and VoIP mode (SIP) to the ECOTEL Vierling GSM gateways.

The connection of the ECOTEL Vierling GSM Gateway ISDN is carried out via the ISDN BRI module of the IP Office 500. The BRI module of the IP Office 500 offers the possibility to configure the ports as T0 or S0. The synchronization with the Vierling ECOTEL GSM gateway ISDN is carried out via the TE mode or the NT mode.

The connection of the Vierling ECOTEL GSM-Gateway VoIP is carried out via a SIP trunk to the IP Office 500.

The tests are performed under normal lab conditions. A statement concerning the behaviour under load cannot be given.

1.1 Description of the test scenarios

The figure below shows the interconnection of the Vierling ECOTEL GSM-Gateway ISDN at the IP Office 500 in TE-Mode.

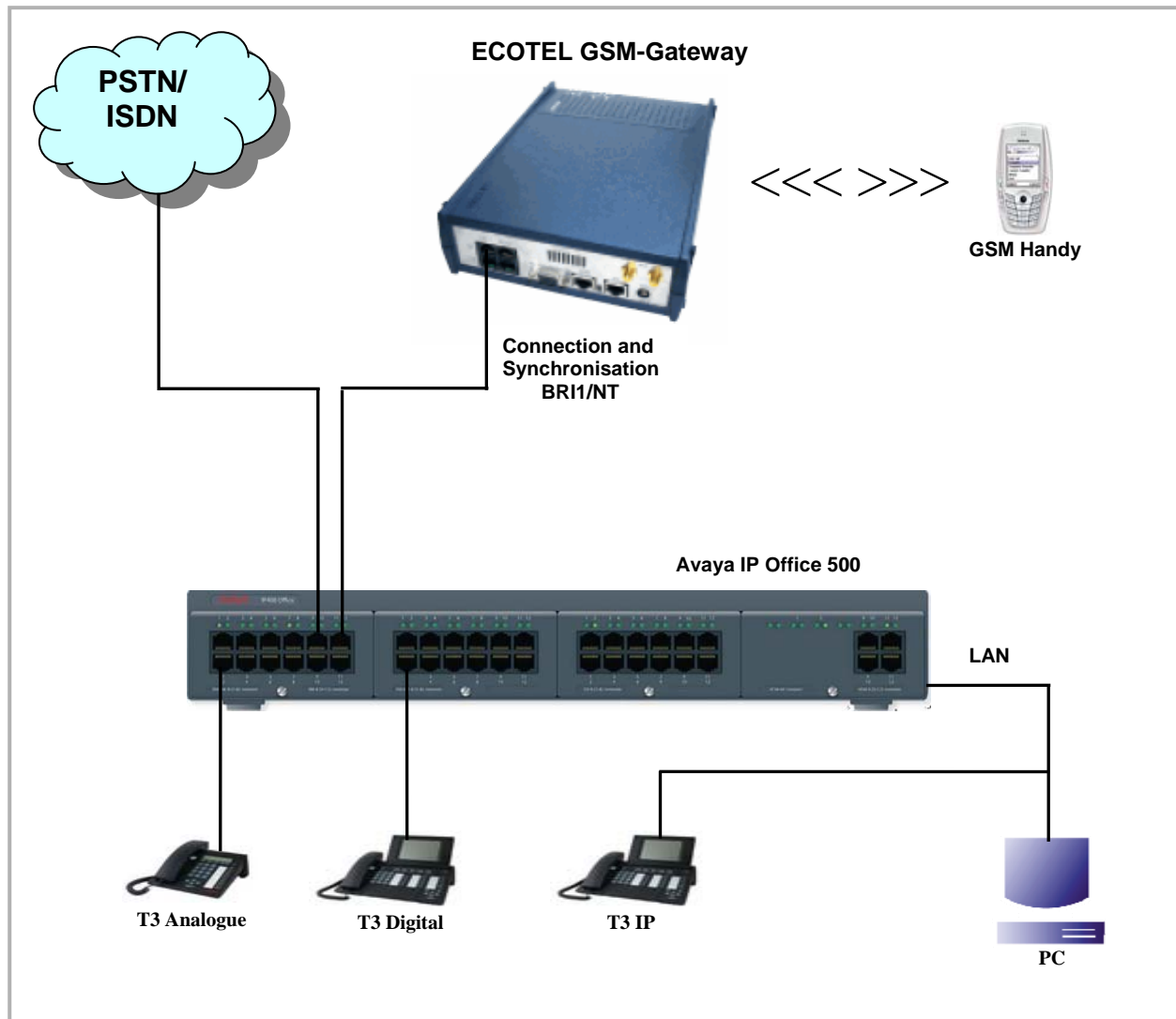


Figure 1: Test scenario TE-Modus

The figure below shows the interconnection of the Vierling ECOTEL GSM-Gateway ISDN at the IP Office 500 in NT-Mode.

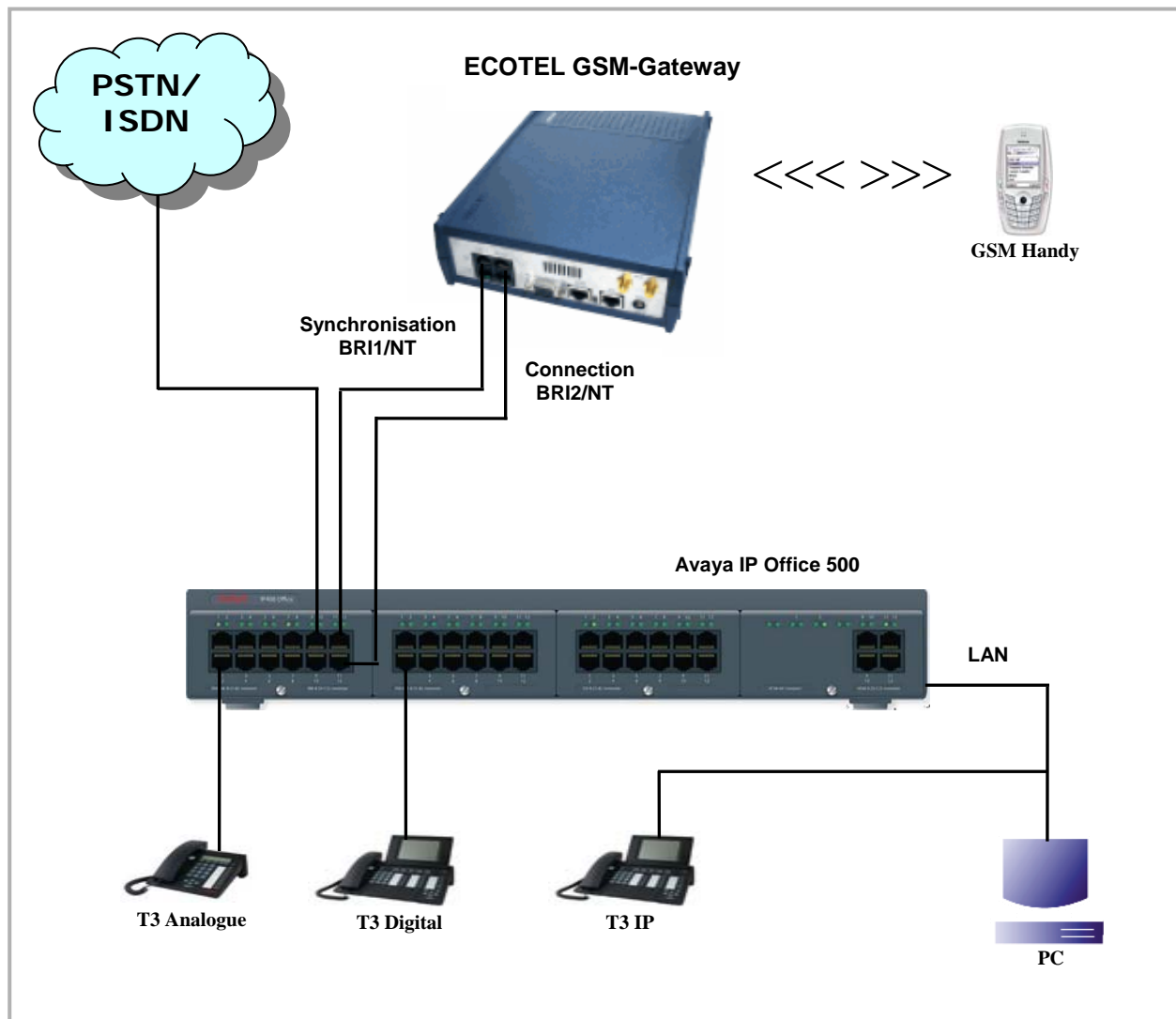


Figure 2: Test scenario NT-Modus

The figure below shows the interconnection of the Vierling ECOTEL GSM-Gateway VoIP at the IP Office 500 over SIP-Trunk.

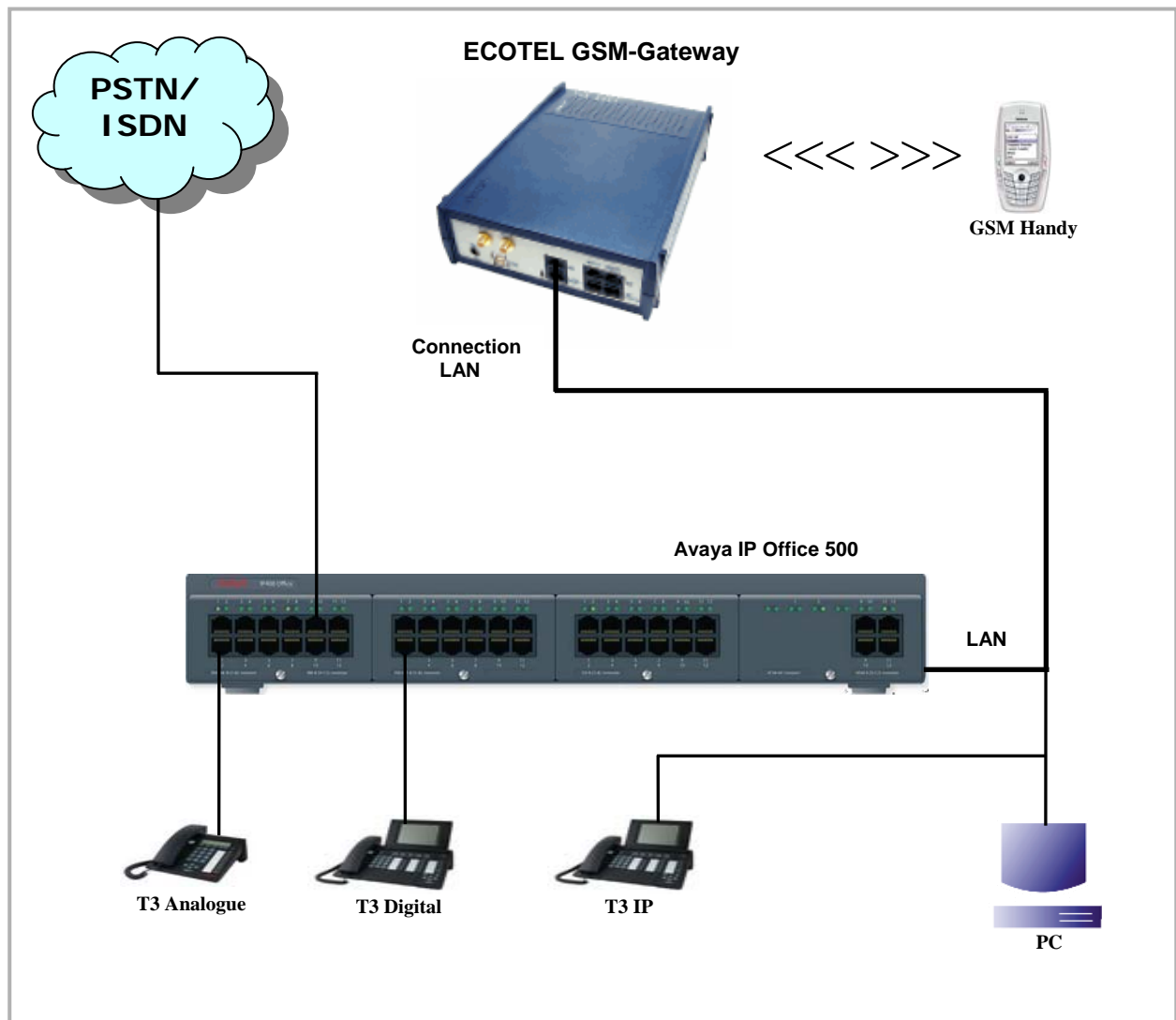


Figure 3: Test scenario VoIP-Modus

1.2 Prerequisites

General IP Office configurations

System and Software

Avaya IP Office 500 with SW-Version 4.2.14

BRI Universal (T0/S0)

Configuration tool IP Office Manager 6.2.14

Monitoring tool IP Office Monitor 6.2.14

IP Office System status 4.2.14

TK-Connection DTAG

System - LAN1

IP-Address IP 500: 135.124.84.155

Subnet mask: 255.255.255.192

User and Extensions

202 T3 Analogue

209 T3 Classic

210 T3 Comfort

230 T3 IP Classic

231 T3 IP Comfort

General Vierling ECOTEL GSM-Gateway configurations

System and Software

Vierling ECOTEL GSM-Gateway ISDN/VoIP V05.01.08

Configuration tool Vierling ECOTEL GSM-Gateway ISDN/VoIP V5.1.4.0

GSM Net SIM-Card O2

System - LAN

IP-Address ECOTEL GSM-Gateway: 135.124.84.142

Subnet mask: 255.255.255.192

IP-Address SIP-Server ECOTEL GSM-Gateway: 135.124.84.143

2 Test case descriptions and results in the TE-Modus

Nr.	Description	Result
1	<p><u>Connection:</u></p> <p>IP Office BRI-Port 3 in S0 operation</p> <p>ECOTEL GSM-Gateway ISDN Port BRI1/NT setup to TE/TE/TE</p> <p>ISDN-Cable 1:1 → ECOTEL BRI1/NT-Connector</p> <p>or</p> <p>ISDN-Cable crossover → ECOTEL BRI1/TE-Connector</p> <p>The IP Office BRI port crosses when switching from T0 to S0.</p>	
2	<p>Disconnect and re-connect the connection cable between the IP Office 500 and the ECOTEL Vierling GSM Gateway ISDN.</p> <p>System returns to normal operating</p>	ok
3	<p>SW reset on Vierling ECOTEL GSM-Gateway ISDN.</p> <p>System returns to normal operating</p>	ok
4	<p>HW reset (disconnect power supply) on Vierling ECOTEL GSM-Gateway ISDN.</p> <p>System returns to normal operating</p>	ok
5	<p>SW reset on IP Office 500.</p> <p>System returns to normal operating</p>	ok
6	<p>HW reset (disconnect power supply) on IP Office 500.</p> <p>System returns to normal operating</p>	ok

7	Outgoing call from an analogue PABX subscriber over Vierling ECOTEL GSM-Gateway ISDN.	ok
8	Outgoing call from a digital PABX subscriber over Vierling ECOTEL GSM-Gateway ISDN.	ok
9	Outgoing call from a VoIP PABX subscriber over Vierling ECOTEL GSM-Gateway ISDN.	ok
10	Outgoing call of a PABX subscriber and subsequent DTMF transmission.	n/a
11	<p>Outgoing call of a PABX subscriber with restriction of Calling Party Number presentation.</p> <p>CLIR</p> <p><i>In the ECOTEL GSM Gateway the restriction of Calling Party Number presentation is configured as "individual in the routing".</i></p> <p><i>(oI2:???d*#) n G:*31 #d</i> <i>// if CGN known, then with number</i></p> <p><i>(oI2d*#) n G:#31 #d</i> <i>// if CGN unknown, then without number</i></p>	Check on "empty" cgn is solved uncomfortably at the ECOTEL GSM gateway
12	<p>Outgoing call of a PABX subscriber with additional telephone number information, e.g. transmission of a service number.</p> <p>CLIP no screening</p>	n/a
13	<p>Outgoing call of a PABX subscriber with call forwarding.</p> <p>a: Internal call leads to a call forwarding</p> <p>b: External call leads to a call forwarding</p> <p>ECOTEL GSM Gateway "sees" the real originating number</p>	<p>ok</p> <p>ok</p>

14	Outgoing call of a PABX subscriber, enquiry call and transfer to an internal subscriber. MOH of the IP Office at the GSM mobile phone.	ok
15	Internal call of two PABX subscribers, enquiry call and transfer to GSM mobile phone.	ok
16	Outgoing call of a PABX subscriber, enquiry call and transfer to an external subscriber. MOH of the IP Office at the GSM mobile phone.	ok
17	3 Party Conference with two PABX subscribers and one GSM mobile phone.	ok
18	3 Party Conference with one PABX subscriber and two GSM mobile phones.	ok
19	Outgoing call of a PABX subscriber is rejected from the GSM mobile phone.	ok
20	Outgoing call of a PABX subscriber to a busy GSM mobile phone.	ok
21	Outgoing call of a PABX subscriber to a switched off GSM mobile phone.	ok
22	Incoming call to PABX subscriber with External Twinning (Mobil Call Control) to GSM mobile phone. Acceptance at the twinned GSM mobile phone Pick up the call (GSM <> GSM) at the PABX subscriber Acceptance at the PABX subscriber (Master)	ok ok ok
23	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to an analogue PABX subscriber.	ok

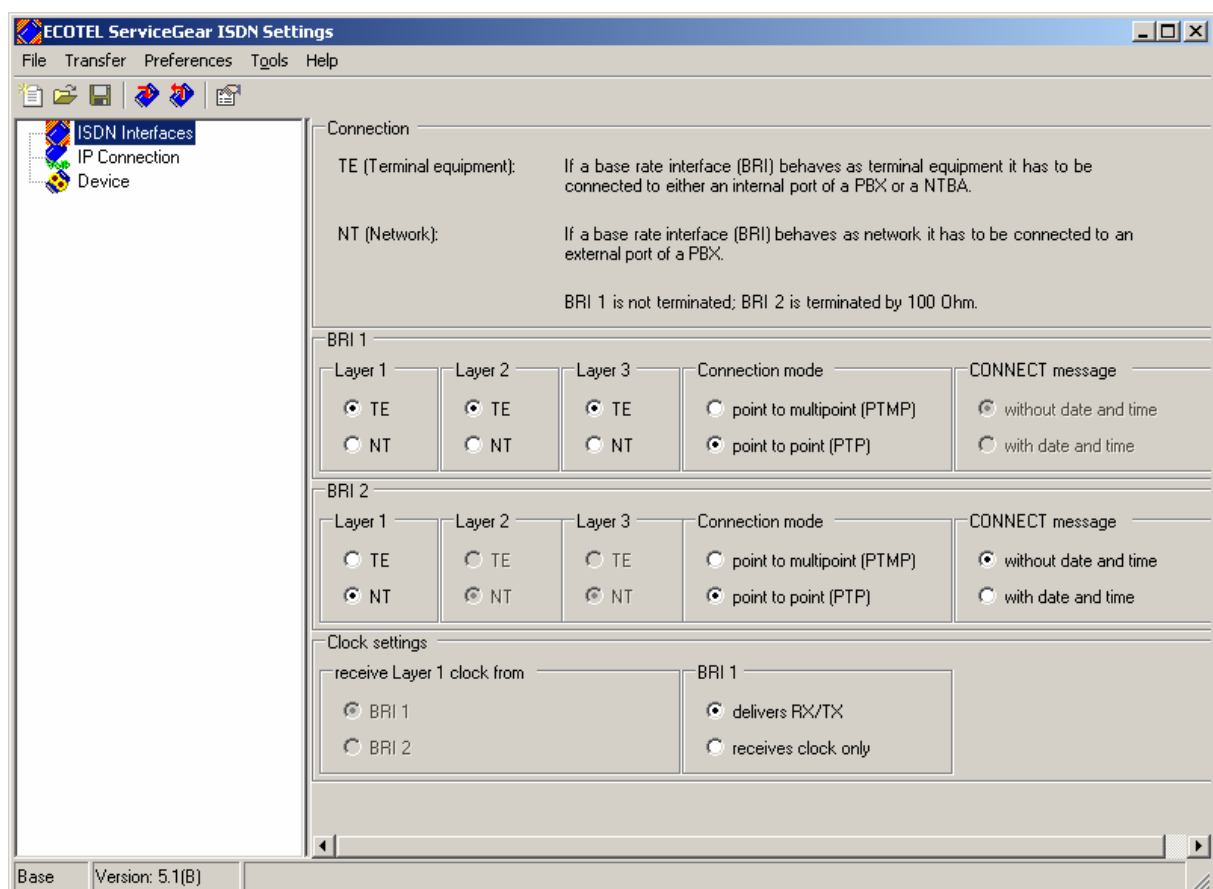
24	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to a digital PABX subscriber.	ok
25	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to a VoIP PABX subscriber.	ok
26	Incoming call from a GSM mobile phone and subsequent DTMF transmission (Voicemail control).	ok
27	Calling Party Number presentation for incoming call from a GSM mobile phone. CLIP	ok
28	Incoming call from a GSM mobile phone to a busy PABX subscriber.	ok
29	Incoming call from a GSM mobile phone to PABX subscriber with call forwarding to a second PABX subscriber.	ok
30	Incoming call from a GSM mobile phone to PABX subscriber and transfer to a second PABX subscriber.	ok
31	Incoming call from a GSM mobile phone to PABX subscriber and transfer to external subscriber.	ok
32	Recall from GSM mobile phone to PABX subscriber if call has been missed. <i>The PABX subscriber is determined over the list entries in the adaptive rerouting. The list entries are stored for 60 minutes.</i>	ok
33	Remote access via GSM	n/a, only concerns GW
34	Verification of synchronization with endurance test (approx. 14 days). <i>The ECOTEL GSM gateway is the Slave and always synchronous with the PABX.</i>	n/a

3 Configuration of the components in the TE-Modus

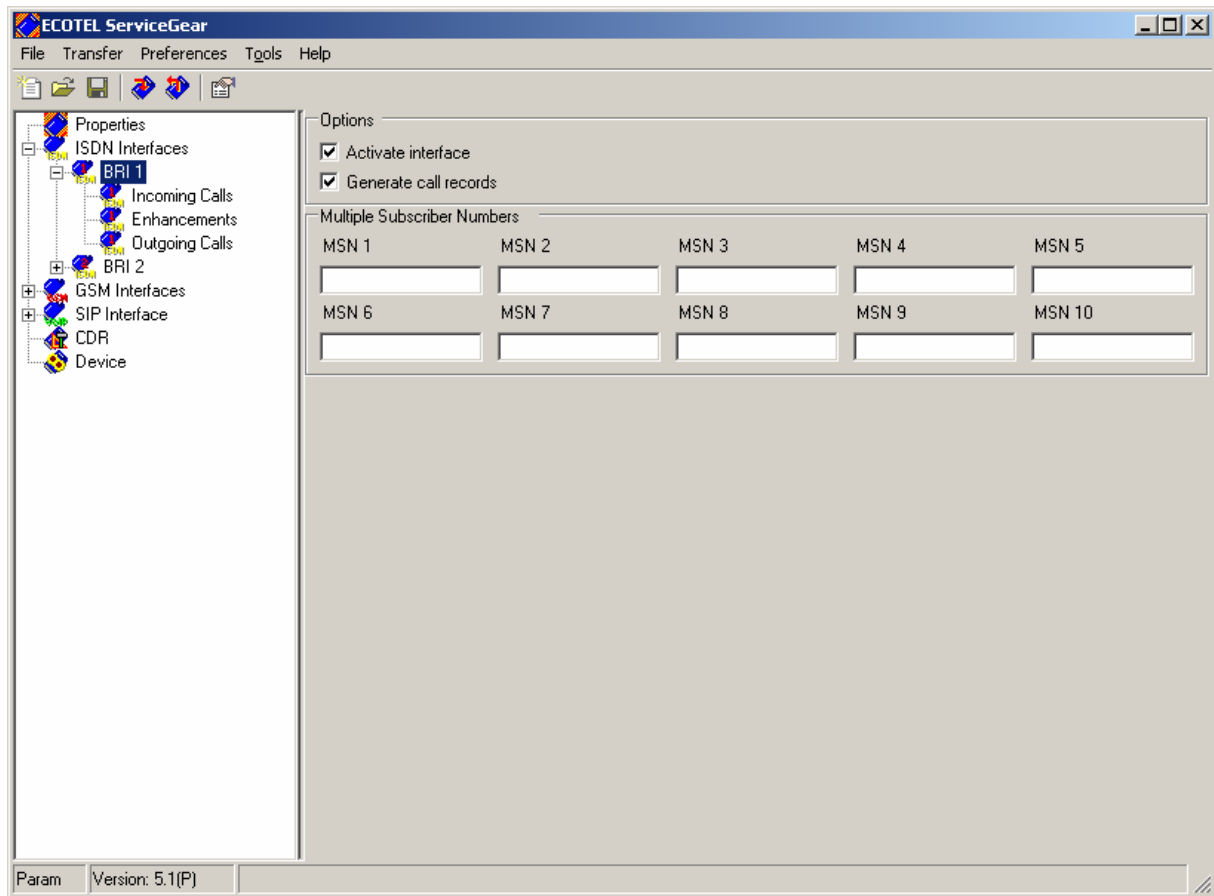
3.1 Configuration of the ECOTEL GSM-Gateway ISDN in the TE-Modus

Configuration of the Ports: BRI1 and/or BRI2 setup to TE/TE/TE and Point to Point (PTP)
For the compatibility test the Port BRI1 was used.

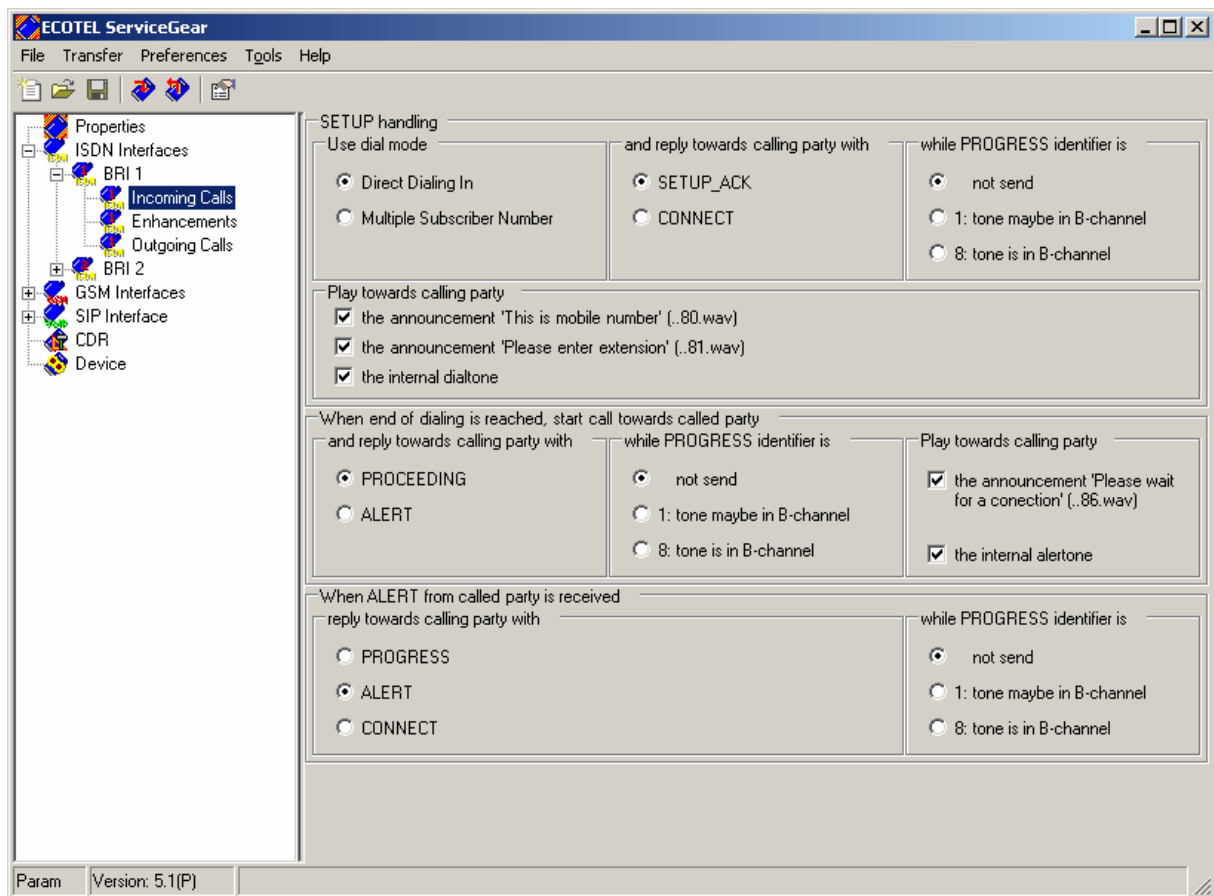
Configuration ISDN Interfaces



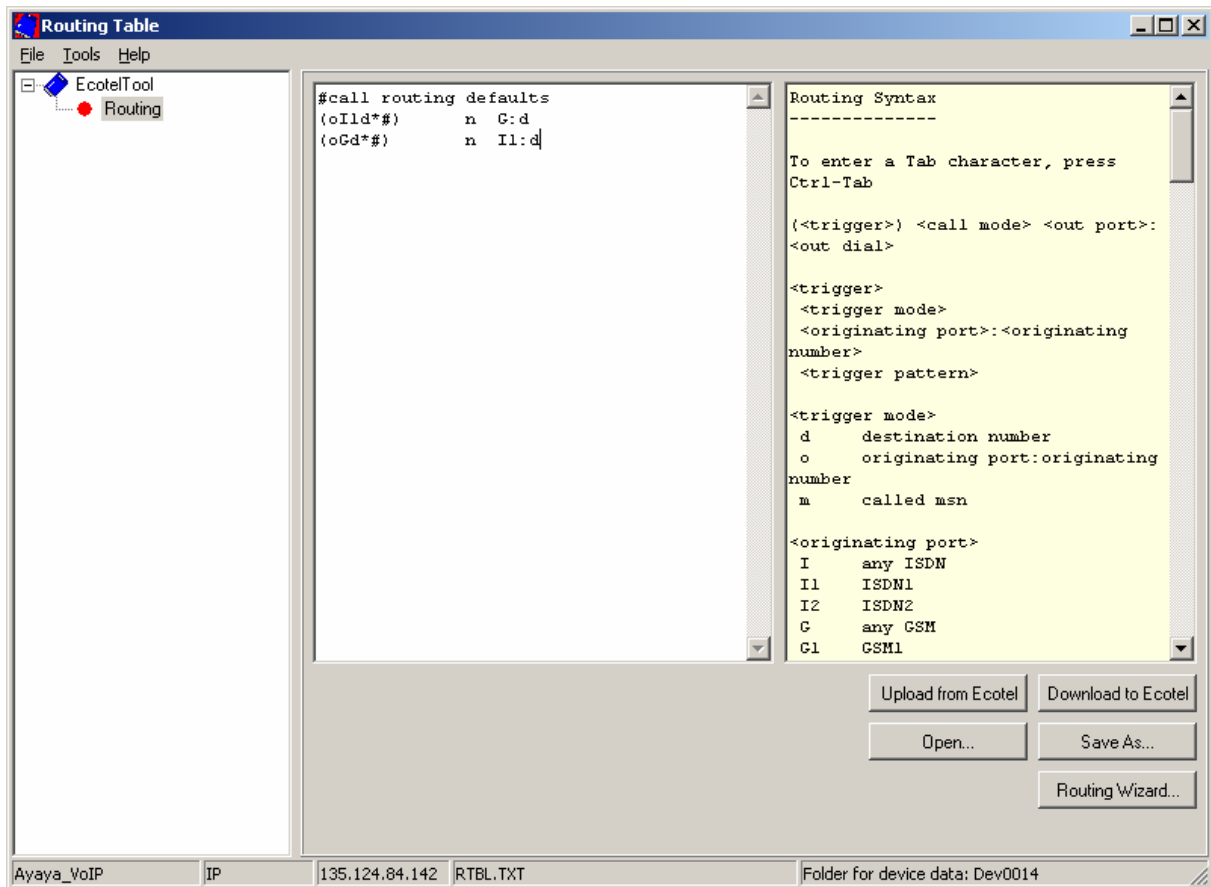
For the configuration as Point to Point (PTP), no MSN entries are necessary.



Configuration Incoming Calls



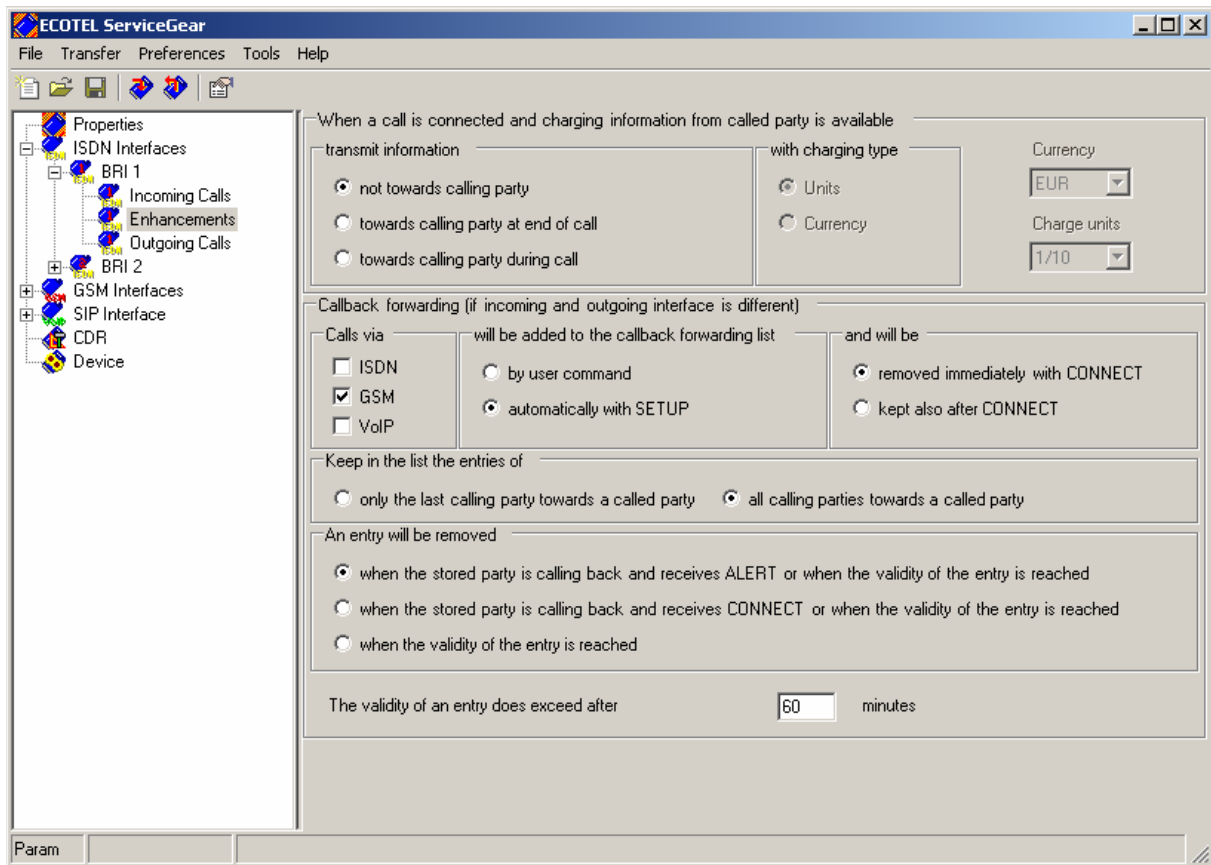
Configuration Routing Table



Automatic recall (Prefix 69; PABX main number 9073769)

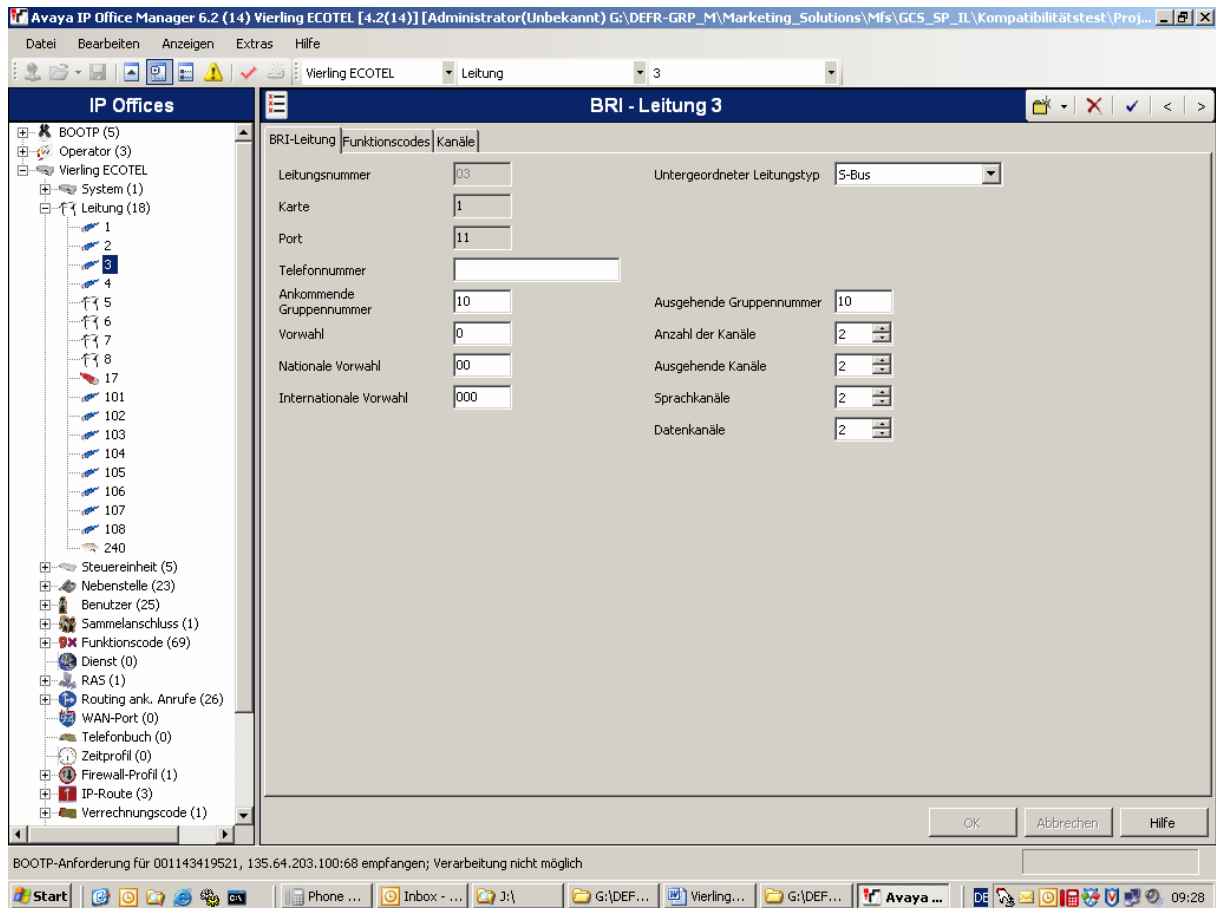
(oGd699073769*#) f I2:* // Prefix and main number will be cut off

Configuration Enhancements



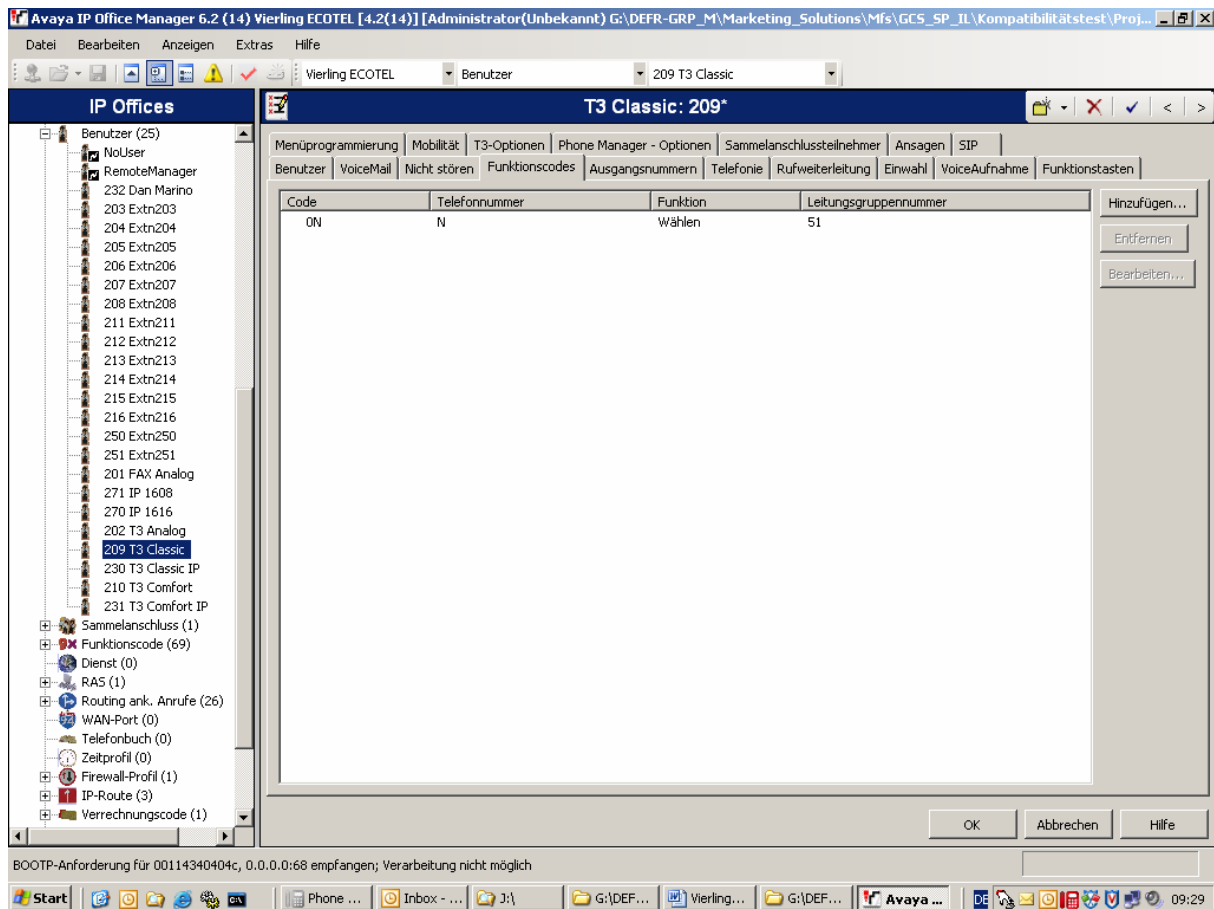
3.2 Configuration of the IP Office 500 in the TE-Modus

Configuration of the BRI Port 3 as S0



The BRI Port 3 (S0) is used for the connection and for the synchronization of the IP Office with the ECOTEL Vierling GSM Gateway ISDN.

Configuration of the function codes to get an outgoing line



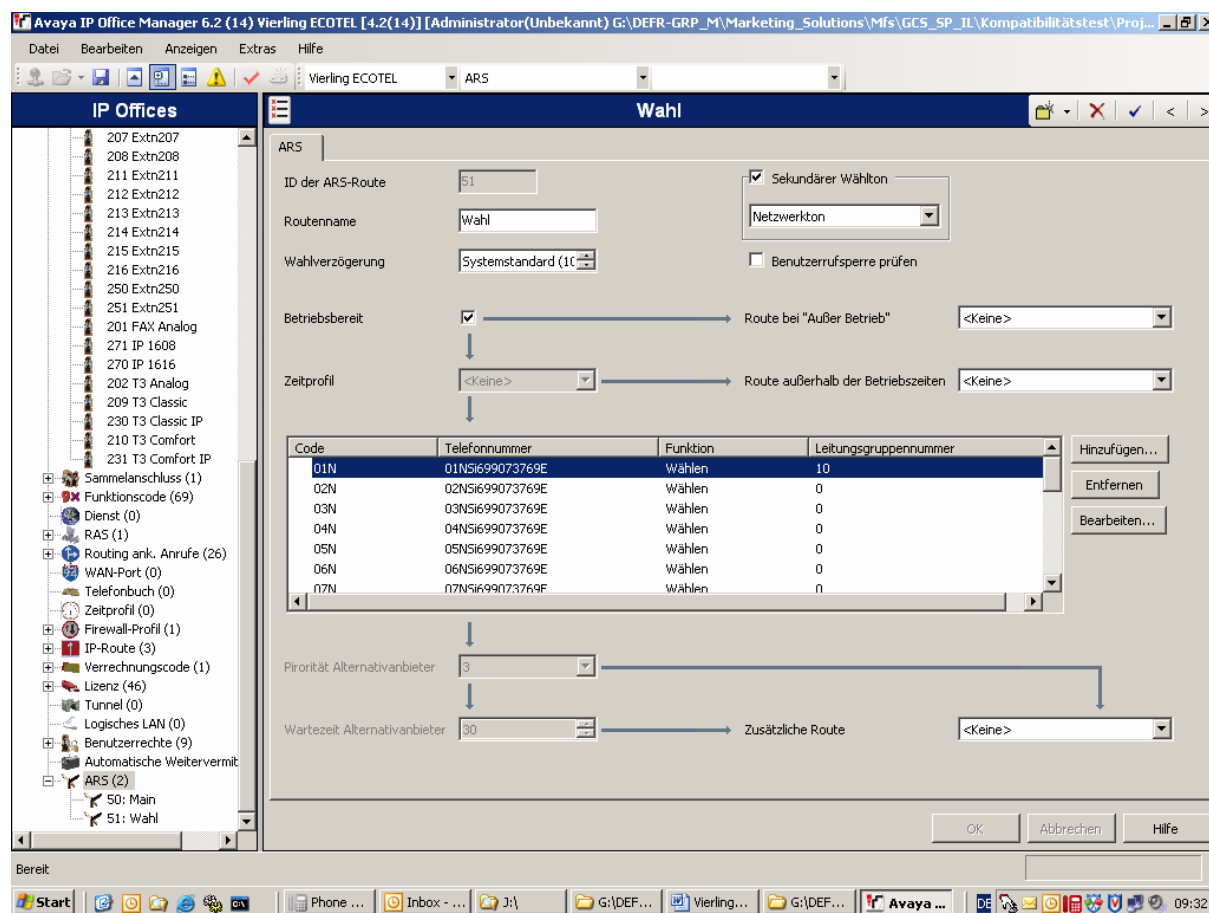
Dialing a 0 to get an outgoing line, all further dialled digits will be transferred to the line group 51 for further interpretation.

Example:

The user 209 dials the number 0016012345678. The first 0 (to get an outgoing line) will be cut off and the call number 016012345678 will be transferred to the line group 51.

The line group 51 is configured in the ARS (Alternate Route Selection).

Configuration ARS (Alternate Route Selection)



The call number 016012345678 that was submitted by the user's function code will be validated in the ARS. With the configured code 01N a matching entry will be found and the call number will be transferred to the assigned line group number. The configured Calling Party Number in the field "Telephone Number" will be transferred to the Vierling GSM-Gateway ISDN.

Example:

The call number 016012345678 is assigned to the code 01N and will be transferred to the line group 10. The line group 10 is assigned to the BRI Port 3 (S0).

Configuration Incoming Call Route

The screenshot displays the Avaya IP Office Manager interface for configuring an incoming call route. The main window shows the 'Routing ank. Anrufe' configuration for the extension '10 -9073769xxx'. The configuration is organized into three panes:

- IP Offices:** A tree view on the left showing the hierarchy of the office, including 'Vierling ECOTEL', 'System (1)', 'Leitung (18)', 'Steuereinheit (5)', 'Nebenstelle (23)', 'Benutzer (25)', 'Sammelanschluss (1)', 'Funktionscode (69)', 'Dienst (0)', 'RAS (1)', 'Routing ank. Anrufe (26)', 'WAN-Port (0)', 'Telefonbuch (0)', 'Zeitprofil (0)', 'Firewall-Profil (1)', 'IP-Route (3)', 'Verrechnungscode (1)', 'Lizenz (46)', 'Tunnel (0)', 'Logisches LAN (0)', 'Benutzerrechte (9)', 'Automatische Weitervermittlung', and 'ARS (2)'. 'Routing ank. Anrufe (26)' is currently selected.
- Routing ank. Anrufe:** A table listing the routing rules for the selected extension. The table has three columns: 'Leit...' (Leitung), 'Ankommende Rufnummer' (Incoming Number), and 'Zielfrufnummer' (Destination Number).

Leit...	Ankommende Rufnummer	Zielfrufnummer
10	-9073769xxx	#
0	-9073769101	101
0	-9073769102	102
0	-9073769201	201 FAX Analog
0	-9073769202	202 T3 Analog
0	-9073769203	203 Extn203
0	-9073769204	204 Extn204
0	-9073769205	205 Extn205
0	-9073769206	206 Extn206
0	-9073769207	207 Extn207
0	-9073769209	209 T3 Classic
0	-9073769210	210 T3 Comfort
0	-9073769211	211 Extn211
0	-9073769212	212 Extn212
0	-9073769213	213 Extn213
0	-9073769214	214 Extn214
0	-9073769215	215 Extn215
0	-9073769216	216 Extn216
0	-9073769230	230 T3 Classic IP
0	-9073769231	231 T3 Comfort IP
0	-9073769232	232 Dan Marino
0	-9073769250	250 Extn250
0	-9073769251	251 Extn251
0	-9073769270	270 IP 1616
0	-9073769271	271 IP 1608
		DialIn
- 10 -9073769xxx:** A configuration pane on the right for the selected extension. It includes tabs for 'Standard', 'Voiceaufnahme', and 'Ziele'. The 'Standard' tab is active, showing fields for:
 - Dienstindikator: Alle Sprache
 - Leistungsgruppennummer: 10
 - Ankommende Rufnummer: -9073769xxx
 - Ankommende Sub-Adresse: (empty)
 - Ankommende CLI: (empty)
 - Länderkennung: (empty)
 - Priorität: 1 - niedrig
 - Tag: (empty)
 - Warteschleifenmusik-Quelle: Systemquelle

The status bar at the bottom of the window displays the message: 'BOOTP-Anforderung für 00073b010f22, 0.0.0.0:68 empfangen; Verarbeitung nicht möglich'.

Incoming calls on the BRI Port 3 (S0) are evaluated here and submitted to the corresponding user.

The configuration with xxx indicates that three digit call numbers will be used, and transferred with # to the system. If a user with the corresponding digits in xxx is found, the call will be forwarded to him.

Example:

The incoming call number 209 on BRI Port 3 (S0) will be determined as xxx and transferred with # to the system for further interpretation. The incoming call will be transferred to the user 209.

4 Test case descriptions and results in the NT-Modus

Nr.	Description	Result
1	<p><u>Connection:</u></p> <p>IP Office BRI-Port 3 in S0 operating (synchronisation) IP Office BRI-Port 4 in T0 operating (connection) ECOTEL GSM-Gateway ISDN Port BRI1/NT (synchronisation) ECOTEL GSM-Gateway ISDN Port BRI2/NT (connection) ECOTEL Port BRI1 setup to TE/TE/TE (Clock Source) ECOTEL Port BRI2 setup to NT/NT/NT ISDN-Cable 1:1 → ECOTEL NT-Connector or ISDN-Cable crossover → ECOTEL TE-Connector</p> <p>The IP Office BRI port crosses itself when switching from T0 to S0.</p>	
2	<p>Disconnect and re-connect the connection cable between the IP Office 500 and the ECOTEL Vierling GSM Gateway ISDN BRI2/NT.</p> <p>System returns to normal operating</p>	ok
3	<p>Disconnect and re-connect the connection cable for the synchronisation between the IP Office 500 and the ECOTEL Vierling GSM Gateway ISDN BRI2/NT.</p> <p>No disturbing noises during a connection (> 30 minutes.)</p>	ok
4	<p>SW reset on Vierling ECOTEL GSM-Gateway ISDN.</p> <p>System returns to normal operating</p>	ok

5	HW reset (disconnect power supply) on Vierling ECOTEL GSM-Gateway ISDN. System returns to normal operating	ok
6	SW reset on IP Office 500. System returns to normal operating	ok
7	HW reset (disconnect power supply) on IP Office 500. System returns to normal operating	ok
8	Outgoing call from an analogue PABX subscriber over Vierling ECOTEL GSM-Gateway ISDN.	ok
9	Outgoing call from a digital PABX subscriber over Vierling ECOTEL GSM-Gateway ISDN. With AOCD reports through ECOTEL GSM gateway.	ok
10	Outgoing call from a VoIP PABX subscriber over Vierling ECOTEL GSM-Gateway ISDN. With AOCD reports through ECOTEL GSM gateway.	ok
11	Outgoing call of a PABX subscriber and subsequent DTMF transmission.	n/a
12	Outgoing call of a PABX subscriber with restriction of Calling Party Number presentation. CLIR	Not tested
13	Outgoing call of a PABX subscriber with additional telephone number information, e.g. transmission of a service number. CLIP no screening	n/a

14	<p>Outgoing call of a PABX subscriber with call forwarding.</p> <p>a: Internal call leads to call forwarding b: External call leads to call forwarding</p>	<p>ok ok</p>
15	<p>Outgoing call of a PABX subscriber, enquiry call and transfer to an internal subscriber. MOH of the IP Office at the GSM mobile phone.</p>	ok
16	<p>Internal call of two PABX subscribers, enquiry call and transfer to GSM mobile phone.</p>	ok
17	<p>Outgoing call of a PABX subscriber, enquiry call and transfer to an external subscriber. MOH of the IP Office at the GSM mobile phone.</p>	ok
18	<p>3 Party Conference with two PABX subscribers and one GSM mobile phone.</p>	ok
19	<p>3 Party Conference with one PABX subscriber and two GSM mobile phones.</p>	ok
20	<p>Outgoing call of a PABX subscriber is rejected from the GSM mobile phone.</p>	ok
21	<p>Outgoing call of a PABX subscriber to a busy GSM mobile phone.</p>	ok
22	<p>Outgoing call of a PABX subscriber to a switched off GSM mobile phone.</p>	ok
23	<p>Incoming call to PABX subscriber with External Twinning (Mobil Call Control) to GSM mobile phone.</p> <p>Acceptance at the twinned GSM mobile phone Pick up the call (GSM <> GSM) at the PABX subscriber Acceptance at the PABX subscriber (Master)</p>	<p>ok ok ok</p>

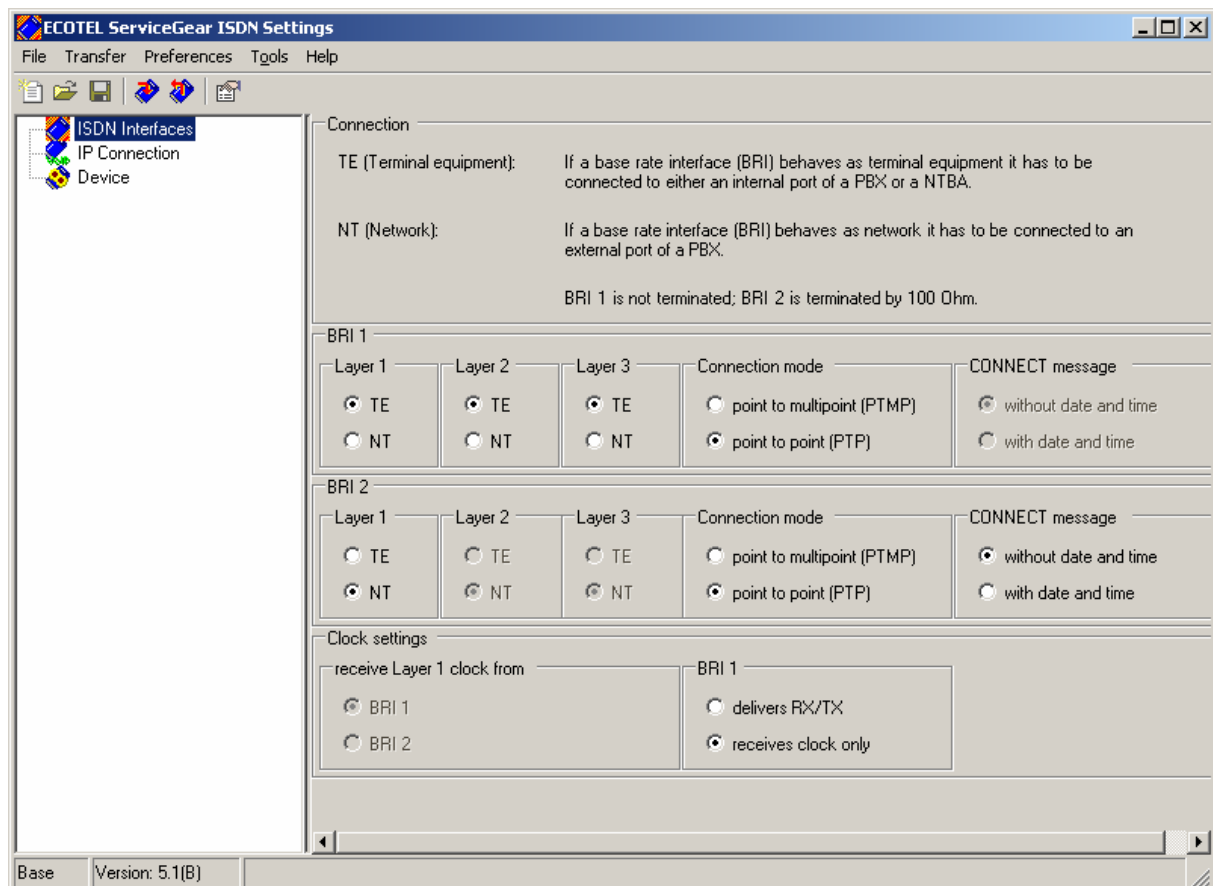
24	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to an analogue PABX subscriber.	ok
25	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to a digital PABX subscriber.	ok
26	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to a VoIP PABX subscriber.	ok
27	Incoming call from a GSM mobile phone and subsequent DTMF transmission (Voicemail control).	ok
28	Calling Party Number presentation for incoming call from a GSM mobile phone. CLIP	ok
29	Incoming call from a GSM mobile phone to a busy PABX subscriber.	ok
30	Incoming call from a GSM mobile phone to PABX subscriber with call forwarding to a second PABX subscriber.	ok
31	Incoming call from a GSM mobile phone to PABX subscriber and transfer to a second PABX subscriber.	ok
32	Incoming call from a GSM mobile phone to PABX subscriber and transfer to external subscriber.	ok
33	Remote access via GSM	Not applicable, only concerns GW
34	Verification of synchronization with endurance test (approx. 14 days). <i>The ECOTEL GSM gateway is the Slave and always synchronous with the PABX.</i>	n/a

5 Configuration of the components in the NT-Modus

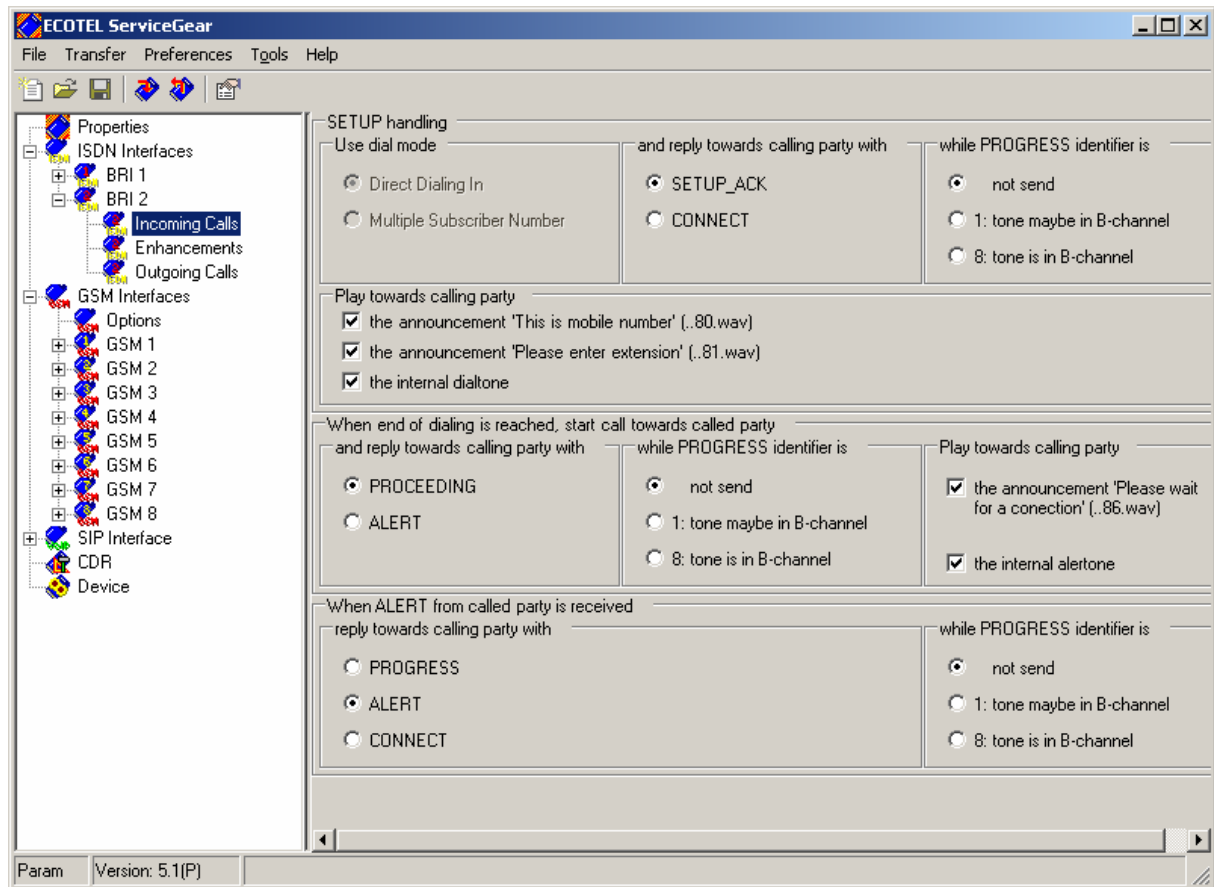
5.1 Configuration of the ECOTEL GSM-Gateway ISDN in the NT-Modus

Configuration of the Ports: BRI1 as Clock Source and BRI2 setup to NT/NT/NT

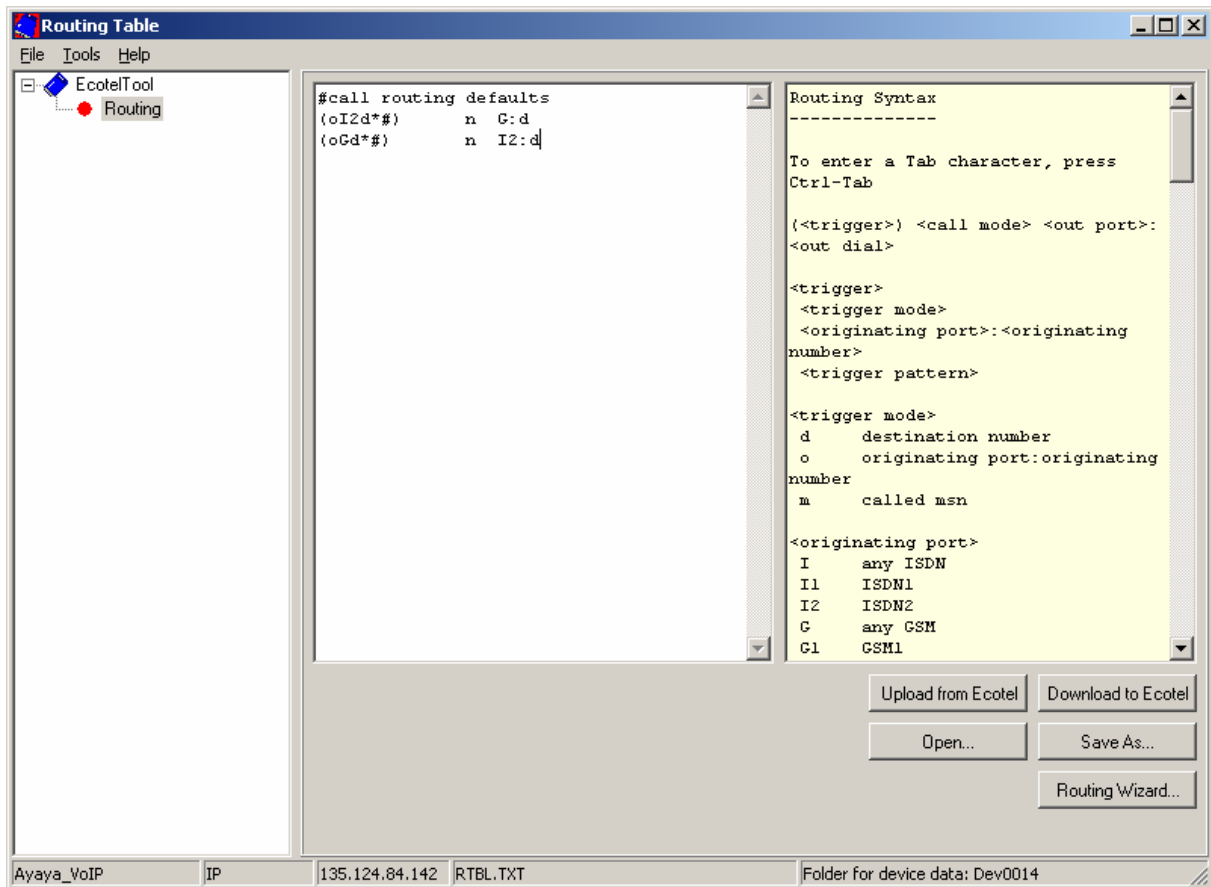
Configuration ISDN Interfaces



Configuration Incoming Calls

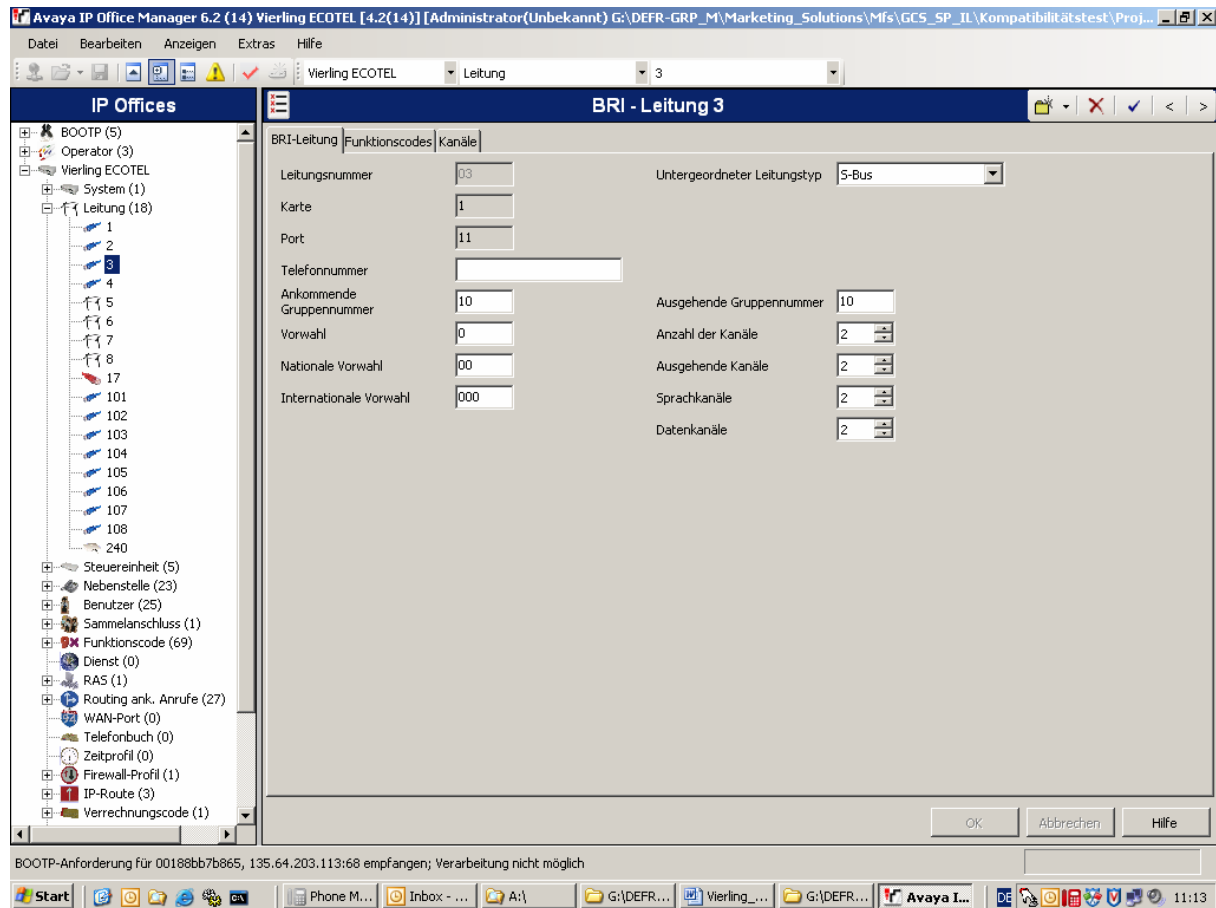


Configuration Routing Table



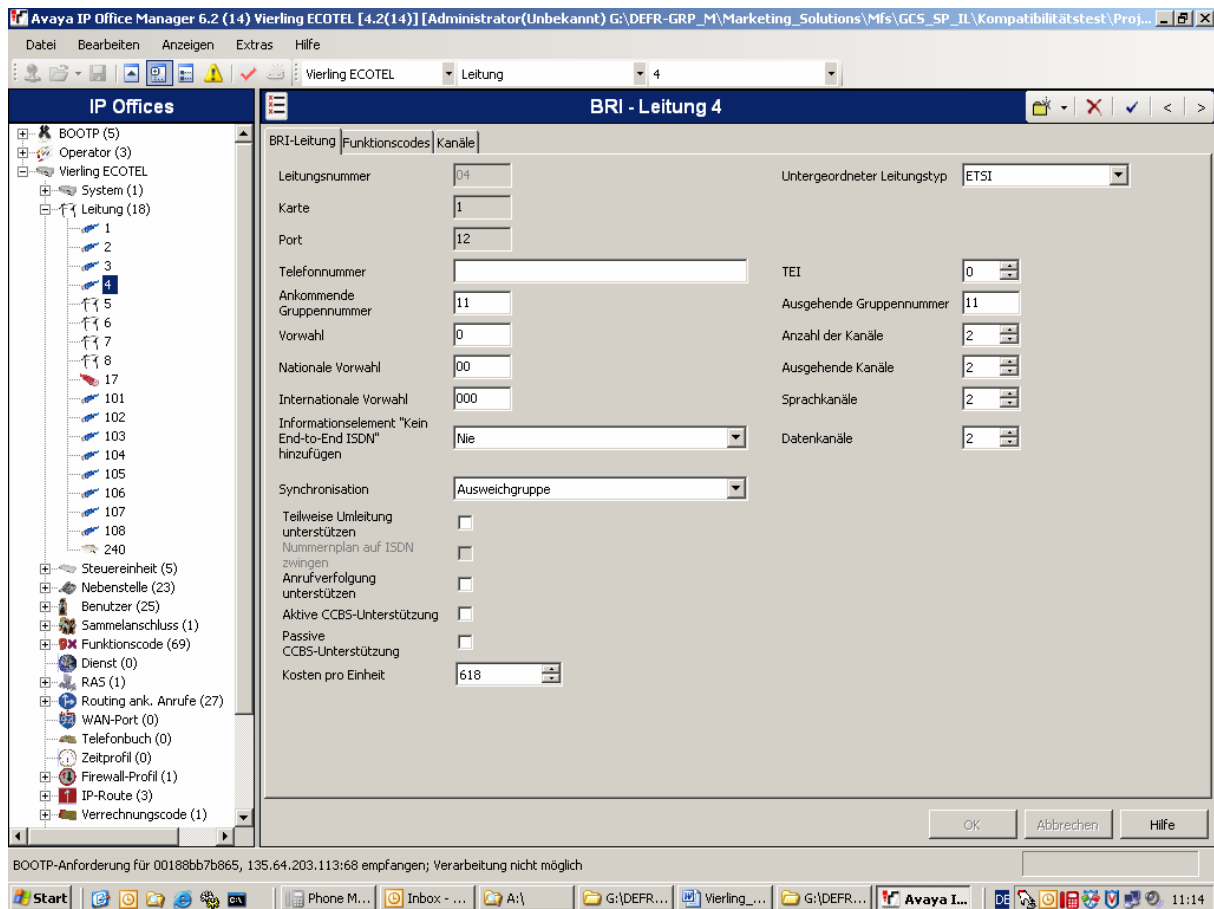
5.2 Configuration of the IP Office 500 in the NT-Modus

Configuration of the BRI Port 3 as S0 for the synchronisation



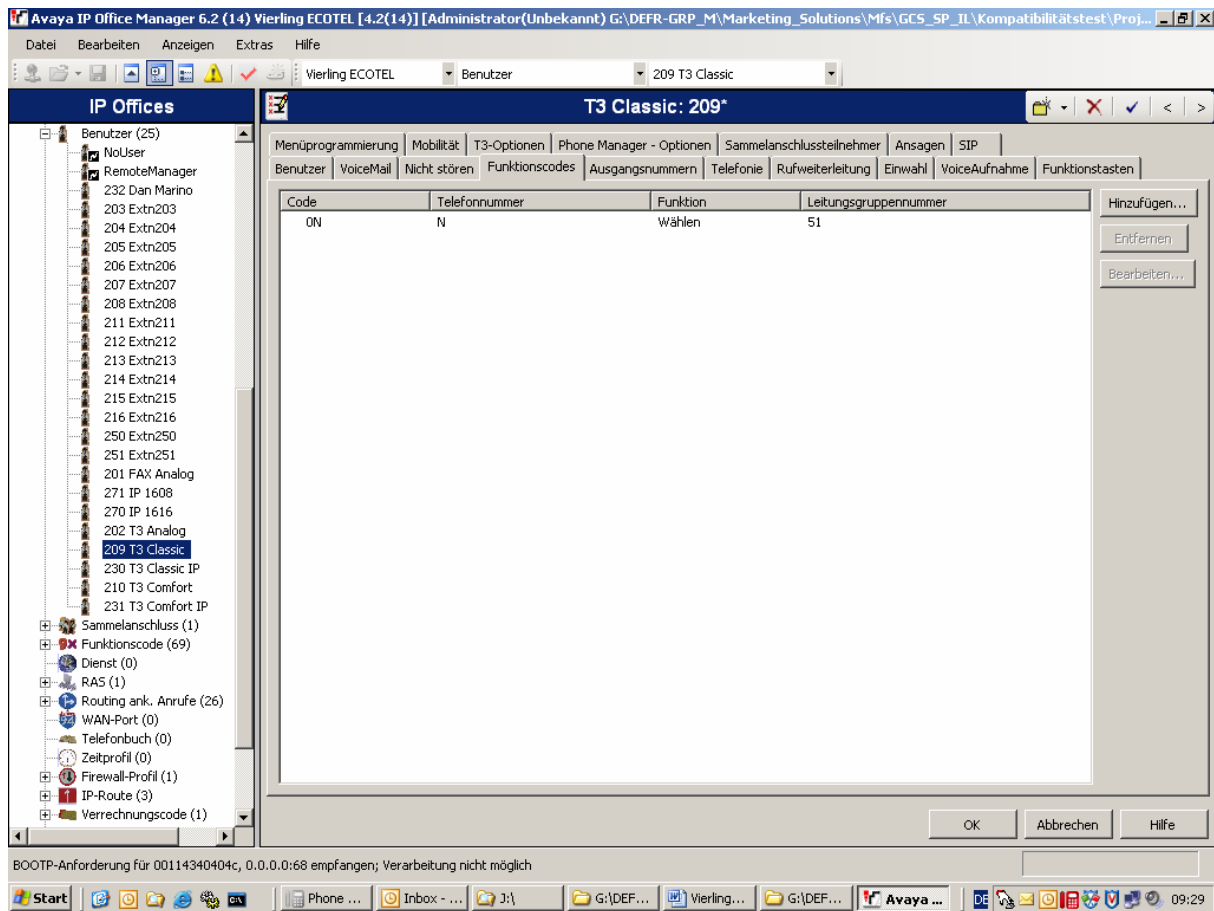
The BRI Port 3 (S0) is used for the synchronization of the IP Office with the ECOTEL Vierling GSM Gateway ISDN.

Configuration of the BRI Port 4 as T0 for the connection



The BRI Port 4 (T0) is used for the connection of the IP Office with the ECOTEL Vierling GSM Gateway ISDN.

Configuration of the function codes to get an outgoing line



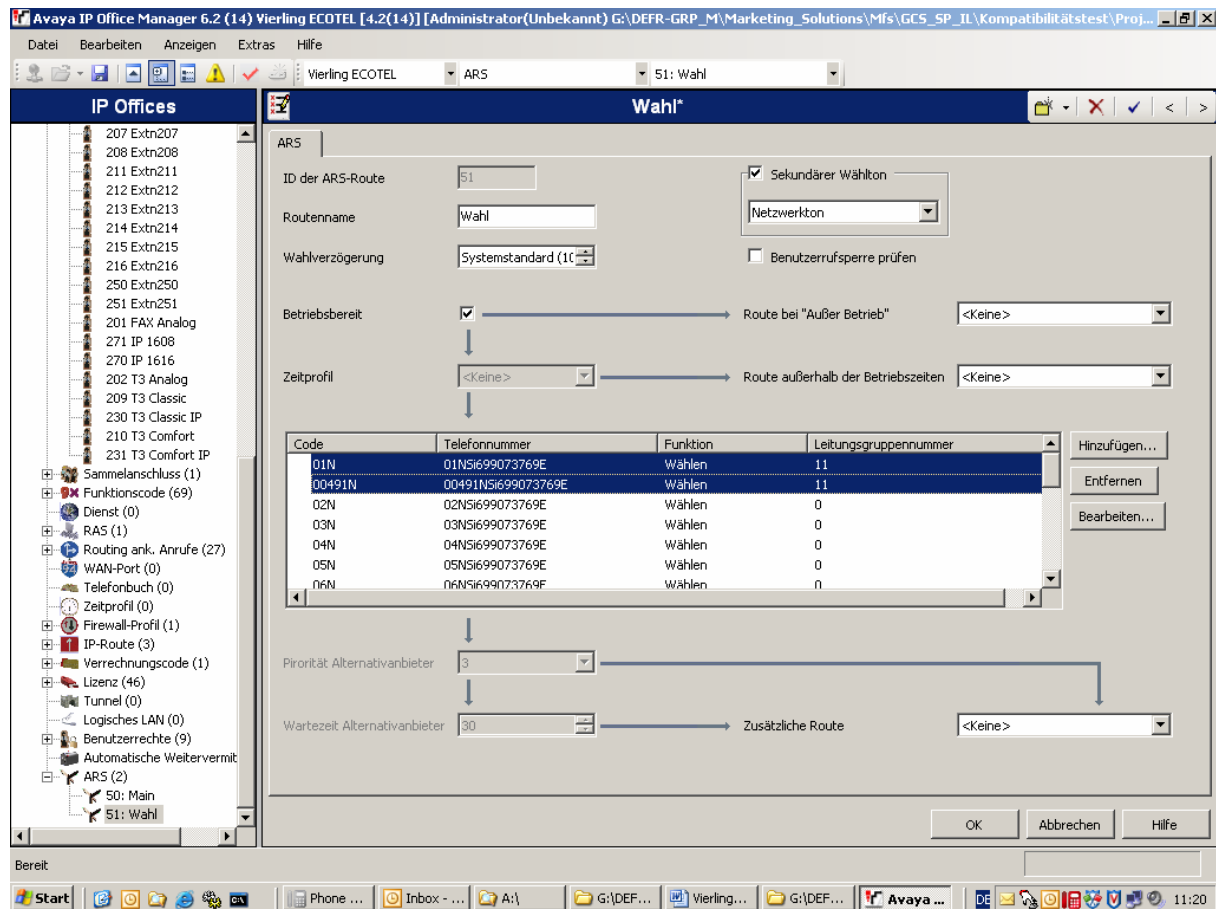
Dialing a 0 to get an outgoing line, all further dialled digits will be transferred to the line group 51 for further interpretation.

Example:

The user 209 dials the number 0016012345678. The first 0 (to get an outgoing line) will be cut off and the call number 016012345678 will be transferred to the line group 51.

The line group 51 is configured in the ARS (Alternate Route Selection).

Configuration ARS (Alternate Route Selection)



The call number 016012345678 that was submitted by the user's function code will be validated in the ARS. With the configured code 01N a matching entry will be found and the call number will be transferred to the assigned line group number. The configured Calling Party Number in the field "Telephone Number" will be transferred to the Vierling GSM-Gateway ISDN.

The code 00491N is configured for the call-back from the call list if a telephone number presentation with 004916012345678 takes place.

Example:

The call number 016012345678 is assigned to the code 01N and will be transferred to the line group 11. The line group 11 is assigned to the BRI Port 4 (T0).

Configuration Incoming Call Route

The screenshot displays the Avaya IP Office Manager interface for configuring an incoming call route. The main window shows the 'Routing ank. Anrufe' configuration for the extension '11 -9073769xxx'. The configuration is organized into three panes:

- IP Offices:** A tree view on the left showing the organizational structure, including 'Vierling ECOTEL' and various sub-units like 'System (1)', 'Leitung (18)', and 'Routing ank. Anrufe (27)'.
- Routing ank. Anrufe:** A central table listing routing rules. The first rule is highlighted, showing a three-digit extension 'xxx' being mapped to a specific user.
- 11 -9073769xxx:** A detailed configuration pane for the selected rule, showing settings for 'Standard', 'Voiceaufnahme', and 'Ziele' (Targets). The 'Ziele' section includes dropdown menus for 'Dienstindikator' (set to 'Alle Sprache') and 'Leistungsgruppennummer' (set to '11'), and text input fields for 'Ankommende Rufnummer' (set to '-9073769xxx') and 'Ankommende Sub-Adresse'.

The table in the 'Routing ank. Anrufe' pane is as follows:

Leit...	Ankommende Rufnummer	Zielfrufnummer
11	-9073769xxx	#
11	xxx	#
0	-9073769101	101
0	-9073769102	102
0	-9073769201	201 FAX Analog
0	-9073769202	202 T3 Analog
0	-9073769203	203 Extn203
0	-9073769204	204 Extn204
0	-9073769205	205 Extn205
0	-9073769206	206 Extn206
0	-9073769207	207 Extn207
0	-9073769209	209 T3 Classic
0	-9073769210	210 T3 Comfort
0	-9073769211	211 Extn211
0	-9073769212	212 Extn212
0	-9073769213	213 Extn213
0	-9073769214	214 Extn214
0	-9073769215	215 Extn215
0	-9073769216	216 Extn216
0	-9073769230	230 T3 Classic IP
0	-9073769231	231 T3 Comfort IP
0	-9073769232	232 Dan Marino
0	-9073769250	250 Extn250
0	-9073769251	251 Extn251
0	-9073769270	270 IP 1616
0	-9073769271	271 IP 1608
0		DialIn

Incoming calls on the BRI Port 4 (T0) are evaluated here and submitted to the corresponding user.

The configuration with xxx indicates that three digit call numbers will be used, and transferred with # to the system. If a user with the corresponding digits in xxx is found, the call will be forwarded to him.

Example:

The incoming call number 209 on BRI Port 4 (T0) will be determined as xxx and transferred with # to the system for further interpretation. The incoming call will be transferred to the user 209.

6 Test case descriptions and results in the VoIP-Modus

Nr.	Description	Result
1	<p><u>Connection:</u> IP Office 500 LAN1 ECOTEL GSM-Gateway VoIP LAN</p>	
2	<p>Disconnect and re-connect the connection cable between the IP Office 500 and the ECOTEL Vierling GSM Gateway VoIP.</p> <p>System returns to normal operating</p>	ok
3	<p>Disconnect and re-connect the connection cable between the IP Office 500 and the ECOTEL Vierling GSM Gateway VoIP.</p> <p>Alternative routing of an outgoing call is used if connection has been loosed.</p>	ok
4	<p>Pull the SIM card module from the ECOTEL Vierling GSM Gateway VoIP.</p> <p>Alternative routing of an outgoing call is used.</p>	✘ (1*)
5	<p>SW reset on Vierling ECOTEL GSM-Gateway ISDN.</p> <p>System returns to normal operating</p>	ok
6	<p>HW reset (disconnect power supply) on Vierling ECOTEL GSM-Gateway ISDN.</p> <p>System returns to normal operating</p>	ok

7	SW reset on IP Office 500. System returns to normal operating	ok
8	HW reset (disconnect power supply) on IP Office 500. System returns to normal operating	ok
9	Registration of the IP Office 500 to the ECOTEL Vierling GSM Gateway VoIP.	ok
10	Registration and authentication at the ECOTEL Vierling GSM Gateway VoIP. a: during registration b: at each call	ok ok
11	Supported Codecs G.711N G.711a G.729a G.726 G.723	ok ok ok ✘ (2*) ✘ (3*)
12	Outgoing call from an analogue PABX subscriber over Vierling ECOTEL GSM-Gateway VoIP (en-bloc dialling necessary). a: PABX subscriber hangs up b: Gateway hangs up	ok ok

13	<p>Outgoing call from a digital PABX subscriber over Vierling ECOTEL GSM-Gateway VoIP (en-bloc dialling necessary).</p> <p>a: PABX subscriber hangs up</p> <p>b: Gateway hangs up</p>	<p>ok</p> <p>ok</p>
14	<p>Outgoing call from a VoIP PABX subscriber over Vierling ECOTEL GSM-Gateway VoIP (en-bloc dialling necessary).</p> <p>a: PABX subscriber hangs up</p> <p>b: Gateway hangs up</p>	<p>ok</p> <p>ok</p>
15	<p>Outgoing call of a PABX subscriber and subsequent DTMF transmission.</p>	<p>n/a</p>
16	<p>Outgoing call of a PABX subscriber with restriction of Calling Party Number presentation.</p> <p>CLIR</p> <p><i>Number is specified on the configuration CLIR on Subscriber is not given Anonymous SIP URI can not be used</i></p>	<p>Calling party number is always visible at the GSM-Gateway</p>
17	<p>Outgoing call of a PABX subscriber with additional telephone number information, e.g. transmission of a service number.</p> <p>CLIP no screening</p>	<p>Preferred identifier will be ignored</p>
18	<p>Outgoing call of a PABX subscriber with call forwarding.</p> <p>a: Internal call leads to a call forwarding</p> <p>b: External call leads to a call forwarding</p>	<p>ok</p> <p>ok</p>
19	<p>Outgoing call of a PABX subscriber, enquiry call and transfer to an internal subscriber.</p> <p>MOH of the IP Office at the GSM mobile phone.</p>	<p>ok</p>

20	Internal call of two PABX subscribers, enquiry call and transfer to GSM mobile phone.	ok
21	Outgoing call of a PABX subscriber, enquiry call and transfer to an external subscriber. MOH of the IP Office at the GSM mobile phone. a: External 1 hangs up b: External 2 hangs up	ok ok
22	3 Party Conference with two PABX subscribers and one GSM mobile phone.	ok
23	3 Party Conference with one PABX subscriber and two GSM mobile phones.	ok
24	Outgoing call of a PABX subscriber is rejected from the GSM mobile phone.	ok
25	Outgoing call of a PABX subscriber to a busy GSM mobile phone.	ok
26	Outgoing call of a PABX subscriber to a switched off GSM mobile phone.	ok
27	Incoming call to PABX subscriber with External Twinning (Mobil Call Control) to GSM mobile phone. Acceptance at the twinned GSM mobile phone Pick up the call (GSM <> GSM) at the PABX subscriber Acceptance at the PABX subscriber (Master)	ok ok ok
28	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to an analogue PABX subscriber. a: PABX subscriber hangs up b: Gateway hangs up	ok ok

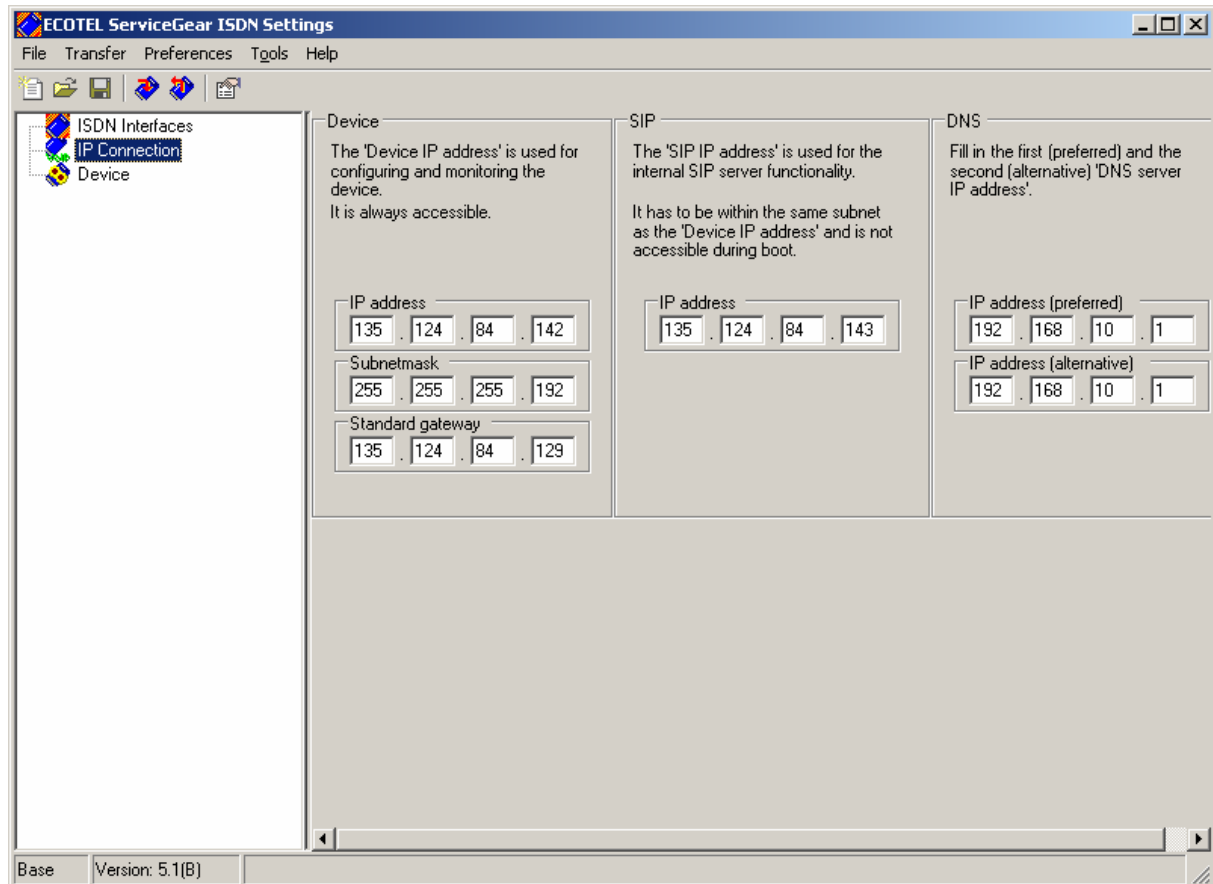
29	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to a digital PABX subscriber. a: PABX subscriber hangs up b: Gateway hangs up	ok ok
30	Incoming call over Vierling ECOTEL GSM-Gateway ISDN to a VoIP PABX subscriber. a: PABX subscriber hangs up b: Gateway hangs up	ok ok
31	Incoming call from a GSM mobile phone and subsequent DTMF transmission (Voicemail control).	✘ (4*)
32	Calling Party Number presentation for incoming call from a GSM mobile phone. CLIP	ok
33	Incoming call from a GSM mobile phone to a busy PABX subscriber.	ok
34	Incoming call from a GSM mobile phone to PABX subscriber with call forwarding to a second PABX subscriber.	ok
35	Incoming call from a GSM mobile phone to PABX subscriber and transfer to a second PABX subscriber.	ok
36	Incoming call from a GSM mobile phone to PABX subscriber and transfer to a second GSM mobile phone. a: PABX subscriber hangs up b: Gateway hangs up	ok ok
37	Incoming call from a GSM mobile phone to PABX subscriber and transfer to external subscriber.	ok

38	Remote access via GSM	Not applicable, only concerns GW
39	Verification of synchronization with endurance test (approx. 14 days).	n/a

7 Configuration of the components in the VoIP-Modus

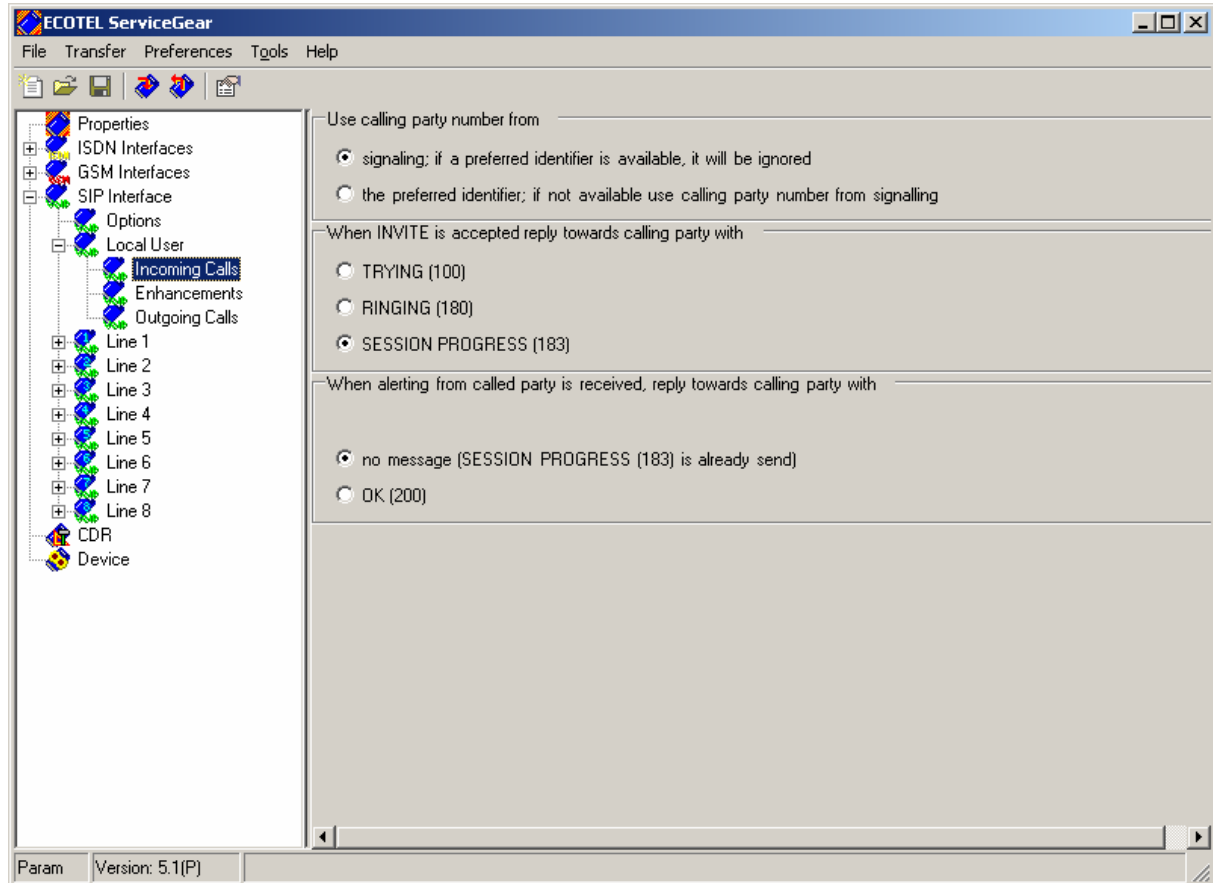
7.1 Configuration of the ECOTEL GSM-Gateway VoIP in the VoIP-Modus

Configuration IP Connection



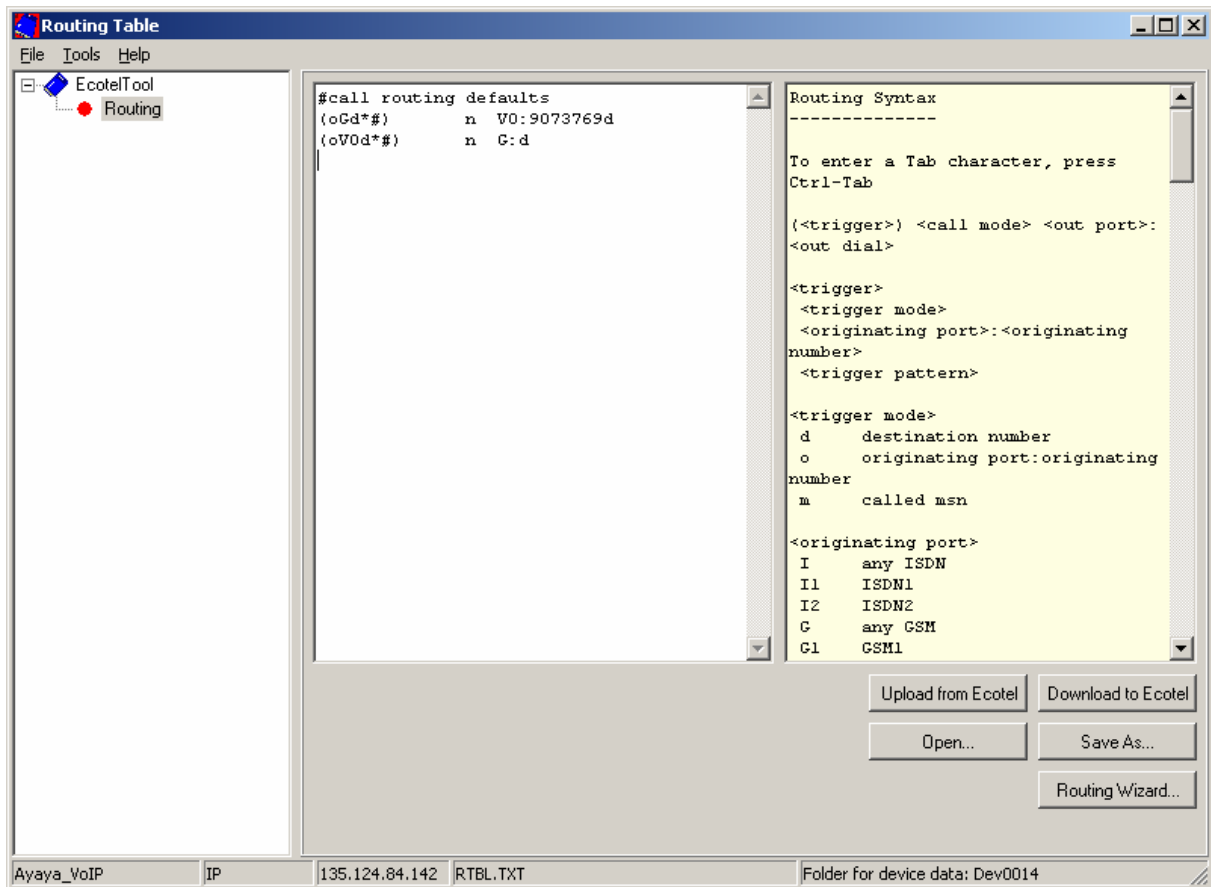
Configuration Incoming Calls

The PABX is configured as trunk client.



Session Progress on INVITE: To avoid any loss of syllables at beginning of a conversation.

Configuration Routing Table



7.2 Configuration of the IP Office 500 in the VoIP-Modus

Configuration of the SIP-Trunk without Authentication

Avaya IP Office Manager 6.2 (14) Vierling ECOTEL [4.2(14)] [Administrator(Unbekannt) G:\DEFR-GRP_M\Marketing_Solutions\Mfs\GCS_SP_IL\Kompatibilitätstest\Proj...]

File Edit View Extras Help

Vierling ECOTEL Leitung 17

IP Offices

- BOOTP (5)
- Operator (3)
- Vierling ECOTEL
 - System (1)
 - Leitung (18)
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 17
 - 101
 - 102
 - 103
 - 104
 - 105
 - 106
 - 107
 - 108
 - 240
- Steuereinheit (5)
- Nebenstelle (23)
- Benutzer (25)
- Sammelanschluss (1)
- Funktionscode (69)
- Dienst (0)
- RAS (1)
- Routing ank. Anrufe (27)
- WAN-Port (0)
- Telefonbuch (0)
- Zeitprofil (0)
- Firewall-Profil (1)
- IP-Route (3)
- Verrechnungscode (1)

SIP-Leitung - Leitung 17*

SIP-Leitung | SIP-URI

Leitungsnummer	17	Registrierung erforderlich	<input checked="" type="checkbox"/>
ITSP-Domänenname	135.124.84.143	Betriebsbereit	<input checked="" type="checkbox"/>
ITSP-IP-Adresse	135 . 124 . 84 . 143	Tel-URI verwenden	<input type="checkbox"/>
Erster Authentifizierungsname	9073769	VoIP Ruhe aus	<input type="checkbox"/>
Erstes Authentifizierungspasswort		DTMF außerhalb der Bandbreite	<input type="checkbox"/>
Erster Ablauftermin für die Registrierung	1	Lokaler Wählen	<input checked="" type="checkbox"/>
Zweiter Authentifizierungsname		Fax T38	<input type="checkbox"/>
Zweites Authentifizierungspasswort		Unterstützung von RE-INVITE	<input type="checkbox"/>
Zweiter Ablauftermin für die Registrierung	60	Codec des Anbieters verwenden	<input type="checkbox"/>
Anrufinitiation Zeitabschaltung	4	Größe des Voice-Pakets	20
		Komprimierungsmodus	G.711 ALAW 64K

Netzwerkkonfiguration

Layer 4-Protokoll	UDP	Sendeport	5060
Netzwerktopologie-Informationen verwenden	Keine	Abhörport	5060

OK Abbrechen Hilfe

BOOTP-Anforderung für 001c2309cfff, 135.64.203.99:68 empfangen; Verarbeitung nicht möglich

Start | Ph... | In... | J:|... | G:... | Wie... | G:... | In... | Tr... | Su... | Av... | 13:08

Configuration of the SIP-URI

The screenshot shows the Avaya IP Office Manager 6.2 (14) interface. The title bar indicates the user is Administrator(Unbekannt) and the current project is G:\DEFR-GRP_M\Marketing_Solutions\Mfs\GCS_SP_IL\Kompatibilitätstest\Proj... The main window is titled 'SIP-Leitung - Leitung 17'. On the left, a tree view shows the hierarchy of IP Offices, with 'Leitung (18)' expanded to show 'Leitung 17' selected. The main area displays a table for 'SIP-Leitung SIP-URI' with the following data:

Kanal	Gruppen	Über	Lokaler URI	Kontakt
1	17 17	<Keine>		

Buttons for 'Hinzufügen...', 'Entfernen', and 'Bearbeiten...' are visible on the right side of the table. At the bottom of the window, there are 'OK', 'Abbrechen', and 'Hilfe' buttons. A status bar at the bottom of the application window displays the message: 'BOOTP-Anforderung für 00188b1ba82b, 135.64.203.88:68 empfangen; Verarbeitung nicht möglich'. The Windows taskbar at the bottom shows the Start button, several open applications, and the system tray with the time 13:11.

Configuration of the SIP-Trunk with Authentication

The screenshot displays the Avaya IP Office Manager 6.2 (14) interface. The main window is titled "SIP-Leitung - Leitung 17". The left-hand pane shows a tree view of the system configuration, with "Leitung (18)" expanded to show "Leitung 17". The main configuration area is for "SIP-URIs" and includes the following fields and options:

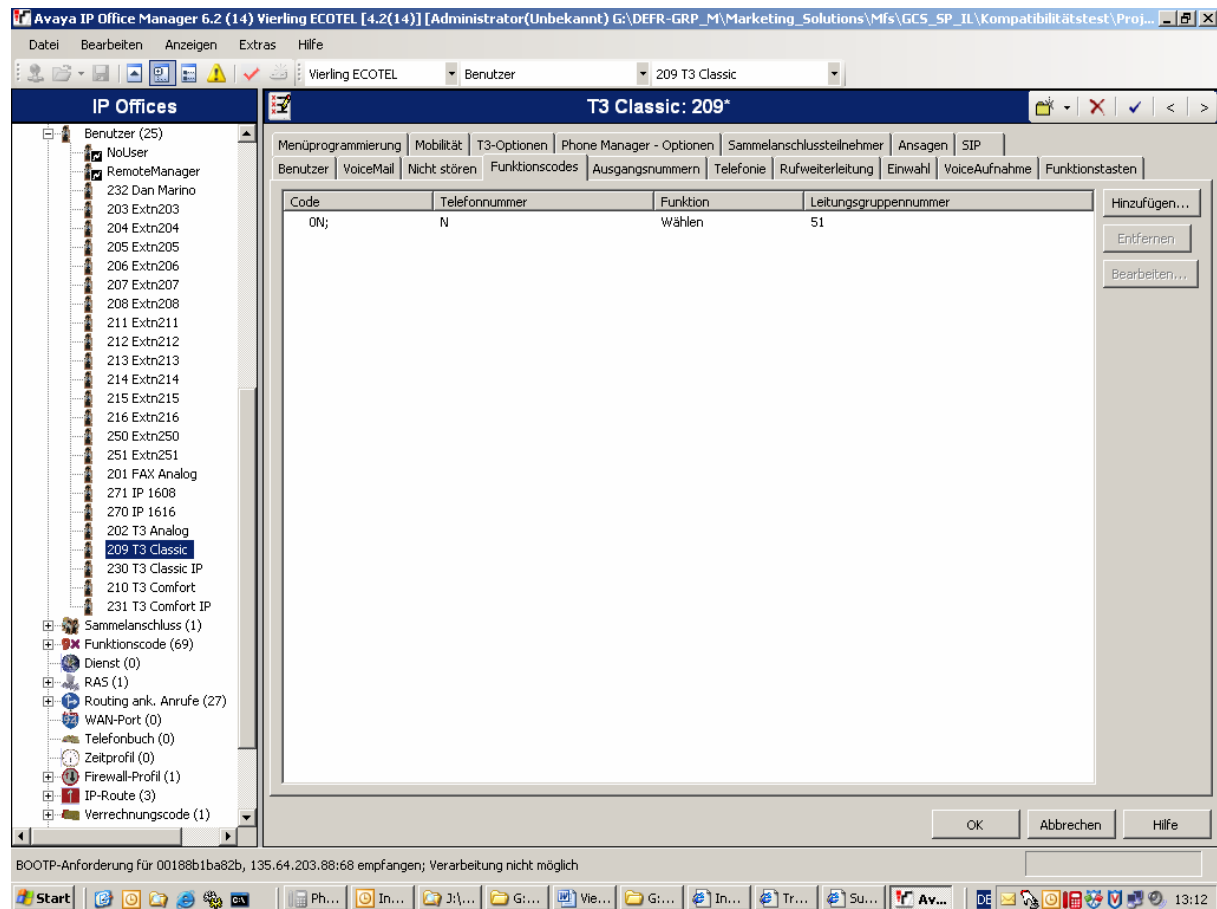
- Leitungsnummer: 17
- ITSP-Domänenname: 135.124.84.143
- ITSP-IP-Adresse: 135 . 124 . 84 . 143
- Erster Authentifizierungsname: 9073769
- Erstes Authentifizierungspasswort: 12345678
- Erster Ablauftermin für die Registrierung: 1
- Zweiter Authentifizierungsname: (empty)
- Zweites Authentifizierungspasswort: (empty)
- Zweiter Ablauftermin für die Registrierung: 60
- Anrufinitierung Zeitabschaltung: 4
- Registrierung erforderlich:
- Betriebsbereit:
- Tel-URI verwenden:
- VoIP Ruhe aus:
- DTMF außerhalb der Bandbreite:
- Lokaler Wählton:
- Fax T38:
- Unterstützung von RE-INVITE:
- Codec des Anbieters verwenden:
- Größe des Voice-Pakets: 20
- Komprimierungsmodus: G.711 ALAW 64K

Below these fields is a "Netzwerkkonfiguration" section with the following settings:

- Layer 4-Protokoll: UDP
- Sendeport: 5060
- Netzwerktopologie-Informationen verwenden: Keine
- Abhörport: 5060

At the bottom of the window, a status bar displays the message: "BOOTP-Anforderung für 000b5d9406db, 135.64.203.97:68 empfangen; Verarbeitung nicht möglich". The Windows taskbar at the bottom shows the Start button, several open applications, and the system clock at 13:31.

Configuration of the function codes to get an outgoing line



Dialing a 0 to get an outgoing line, all further dialled digits will be transferred to the line group 51 for further interpretation.

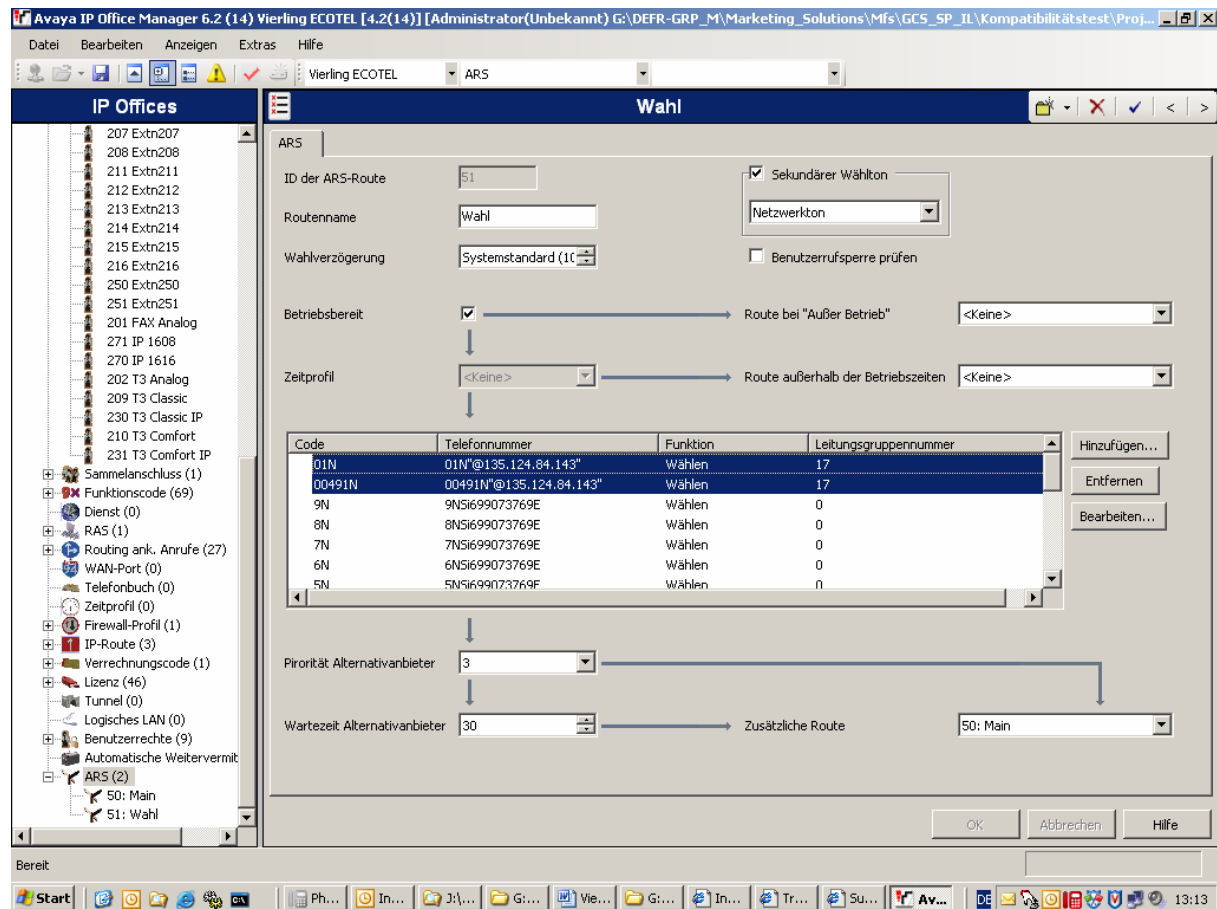
For the connection via SIP Trunk to ECOTEL GSM Gateway VoIP, it is essential to use the en-block dialling. The field "Code" in the function code must be extended with a semicolon (;). That means that the phone number will be transferred if the timer for the Dial Delay Time has expired. Manually, this can also be accelerated if the dial number will be finished with the hash key (#).

Example:

The user 209 dials the number 0016012345678 (#). The first 0 (to get an outgoing line) will be cut off and the call number 016012345678 will be transferred to the line group 51.

The line group 51 is configured in the ARS (Alternate Route Selection).

Configuration ARS (Alternate Route Selection)



The call number 016012345678 that was submitted by the user's function code will be validated in the ARS. With the configured code 01N is a matching entry found and the call number will be transfer to the assigned line group number. The configured Calling Party Number in the field "Telephone Number" will be transfer to the Vierling GSM-Gateway VoIP.

Example:

The call number 016012345678 is assigned to the code 01N and will be transferred to the line group 17. The line group 17 is assigned to the SIP-Trunk.

Configuration Incoming Call Route

The screenshot shows the Avaya IP Office Manager interface. The 'Routing ank. Anrufe' section displays the following table:

Leit...	Ankommende Rufnummer	Zielrufnummer
17	-9073769xxx	#
17	xxx	#
0	-9073769101	101
0	-9073769102	102
0	-9073769201	201 FAX Analog
0	-9073769202	202 T3 Analog
0	-9073769203	203 Extn203
0	-9073769204	204 Extn204
0	-9073769205	205 Extn205
0	-9073769206	206 Extn206
0	-9073769207	207 Extn207
0	-9073769209	209 T3 Classic
0	-9073769210	210 T3 Comfort
0	-9073769211	211 Extn211
0	-9073769212	212 Extn212
0	-9073769213	213 Extn213
0	-9073769214	214 Extn214
0	-9073769215	215 Extn215
0	-9073769216	216 Extn216
0	-9073769230	230 T3 Classic IP
0	-9073769231	231 T3 Comfort IP
0	-9073769232	232 Dan Marino
0	-9073769250	250 Extn250
0	-9073769251	251 Extn251
0	-9073769270	270 IP 1616
0	-9073769271	271 IP 1608
0		DialIn

The '17 -9073769xxx' configuration panel shows the following settings:

- Standard: Standard
- Voiceaufnahme: Voiceaufnahme
- Ziele:
 - Dienstindikator: Alle Sprache
 - Leistungsgruppennummer: 17
 - Ankommende Rufnummer: -9073769xxx
 - Ankommende Sub-Adresse:
 - Ankommende CLI:
 - Länderkennung:
 - Priorität: 1 - niedrig
 - Tag:
 - Warteschleifenmusik-Quelle: Systemquelle

Incoming calls on the SIP-Trunk are evaluated here and submitted to the corresponding user.

The configuration with xxx indicates that three digit call numbers will be used, and transferred with # to the system. If a user with the collected digits in xxx is found, the call will be forwarded to him.

Example:

The incoming call number 209 on the SIP-Trunk will be collected with xxx and transferred with # to the system for further interpretation. The incoming call will be transferred to the user 209.

8 Conclusion

The tested variants of connections functioned at first try.

For the connection to the IP Office the most default settings from the Vierling GSM Gateways ECOTEL can be used. Therefore no time-consuming configurations are necessary

The identified problems with the ECOTEL Vierling GSM Gateway VoIP should be resolved with the IP Office 5.0 GA Release.

9 Annex

9.1 Components used

Manufacturer	Device name	Version	Serial number	Miscellaneous
Avaya	IP Office 500			
Avaya	Configuration tool IP Office Manager	6.2.14		
Avaya	Monitoring tool IP Office Monitor	6.2.14		
Avaya	T3 Analogue Phone			
Avaya	T3 Classic Phone			
Avaya	T3 Comfort Phone			
Avaya	T3 IP Classic Phone			
Avaya	T3 IP Comfort Phone			
Vierling	ECOTEL GSM-Gateway ISDN/VoIP	V05.01.08		
Vierling	Configuration tool for the Vierling ECOTEL GSM-Gateway ISDN/VoIP	V5.1.4.0		
DTAG	TK-Connection			
O2	GSM SIM-Card			

9.2 Hints

9.3 Problems

(1*)

From the ECOTEL GSM Gateway comes the message "503 Service unavailable". The IP Office terminates the connection and does not use the established alternative route if this message is received.

(2*)

The G.726 codec is not supported by the IP Office.

(3*)

The IP Office provides the codec G.729 if the SIP Trunk is configured for codec G.723.

(4*)

Will be supported by the IP Office beginning with software release 5.0 and offers the following choices:

A: Inband

B: INFO

C: RFC2833-PT101

10 Open issues

11 Last page of the document