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bintec Workshop

LAN-to-LAN Connection over PPTP

Version 0.9

Purpose

This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.1.4 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

CE marking for all EU countries and Switzerland

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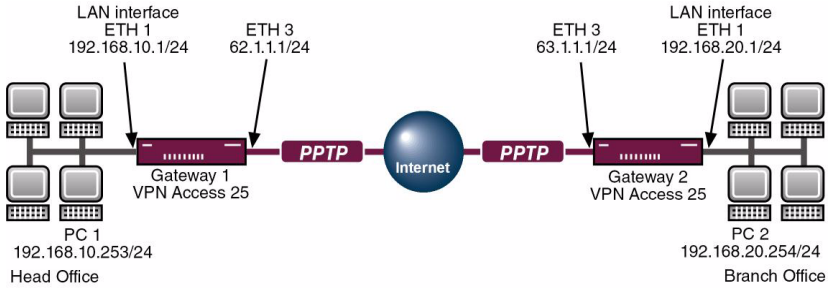
How to reach Funkwerk Enterprise Communications GmbH

Funkwerk Enterprise Communications GmbH Suedwestpark 94 D-90449 Nuremberg Germany Telephone: +49 180 300 9191 0 Fax: +49 180 300 9193 0 Internet: www.funkwerk-ec.com	Bintec France 6/8 Avenue de la Grande Lande F-33174 Gradignan France Telephone: +33 5 57 35 63 00 Fax: +33 5 56 89 14 05 Internet: www.bintec.fr

1 Introduction

1.1 Scenario

The following chapters describe the configuration of a VPN tunnel between two Bintec VPN Access 25 gateways over PPTP (Point-to-Point Tunneling Protocol) with 3DES encryption. The Setup Tool is used for the configuration.



1.2 Requirements

- Configure your PC (see User's Guide Part **Access and Configuration**).
- Connect your LANs to the Ethernet interfaces (ETH1) of the two gateways.
- Configure the Internet connection for each of the two gateways (see Bintec FAQ: **Internet leased line with fixed IP address**).

2 Configuration of Gateway 1

2.1 Configuring IP Address of LAN Interface (ETH1)

- Go to ***ETHERNET UNIT 1***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[SLOT 0 UNIT 1 ETH]: Configure Ethernet Interface              Gateway1


      IP Configuration              Manual
           local IP Number          192.168.10.1
           local Netmask            255.255.255.0
           Second Local IP Number
           Second Local Netmask
           Encapsulation            Ethernet II
           Mode                     Auto
      MAC Address


      Bridging                     disabled
      Advanced Settings >
      Virtual Interfaces >

           SAVE                                  CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
local IP Number	Defines the IP address at which the gateway can be reached in the local network.
local Netmask	Associated netmask.

Table 2-1: Relevant fields in ***ETHERNET UNIT 1***

Proceed as follows to define the necessary settings:

- Enter your local IP address under ***LOCAL IP NUMBER***, e.g. *192.168.10.1*.
- Enter your associated netmask under ***LOCAL NETMASK***, e.g. *255.255.255.0*.

- Leave all the other settings as they are.
- Press **SAVE** to confirm your settings.

2.2 Configuring IP Address of VPN Interface (ETH3)

- Go to ***ETHERNET UNIT 3***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[SLOT 0 UNIT 3 ETH]: Configure Ethernet Interface              Gateway1

          IP Configuration            Manual
               local IP Number        62.1.1.1
               local Netmask          255.255.255.0
               Second Local IP Number
               Second Local Netmask
               Encapsulation          Ethernet II
               Mode                   Auto
          MAC Address



          Bridging                    disabled
          Advanced Settings >
          Virtual Interfaces >

               SAVE                                  CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
local IP Number	Defines the IP address at which the gateway can be reached on the Internet.
local Netmask	Associated netmask.

Table 2-2: Relevant fields in ***ETHERNET UNIT 3***

Proceed as follows to define the necessary settings:

- Enter your static public IP address under ***LOCAL IP NUMBER***, e.g. *62.1.1.1*.
- Enter your associated netmask under ***LOCAL NETMASK***, e.g. *255.255.255.0*.
- Leave all the other settings as they are.
- Press **SAVE** to confirm your settings.

2.3 Adding and Configuring a VPN Interface

2.3.1 Configuring VPN Partners

- Go to ***PPTP*** ➜ ***ADD***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
PPTP] [ADD]                                                  Gateway1

  Partner Name                      PPTP to Gateway2

  Encapsulation                     PPP
  Encryption                        DES3 168
  Compression                       none


  PPP >
  Advanced Settings >


  IP >


            SAVE                              CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
Partner Name	Designation of connection.
Encapsulation	Transmission protocol used.

Field	Meaning
Encryption	Type of encryption.

Table 2-3: Relevant fields in ***PPTP*** ➜ ***ADD***

Proceed as follows to define the necessary settings:

- Enter any desired name under ***PARTNER NAME***, e.g. *PPTP to Gateway2.*
- Set ***ENCAPSULATION*** to *PPP*.
- Select a type of encryption under ***ENCRYPTION***, e.g. *DES3 168*.
- Leave ***COMPRESSION*** set to *none*.
- Change to ***PPP*** >.

2.3.2 PPP Settings

- Go to ***PPTP*** ➜ ***INTERFACE*** ➜ ***PPP***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[PPTP][EDIT][PPP]: PPP Settings (vpn)                          Gateway1


     Authentication                 CHAP + PAP
     Partner PPP ID                 Gateway2
     Local PPP ID                   Gateway1
     PPP Password                   secret

     Keepalives                     off
     Link Quality Monitoring        off


              OK                                  CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
Authentication	Type of authentication must be the same as at the remote terminal.

Field	Meaning
Partner PPP ID	Name of remote terminal.
Local PPP ID	Own name.
PPP Password	Password for the VPN connection; must be the same as at the remote terminal.

Table 2-4: Relevant fields in ***PPTP ➜ INTERFACE ➜ PPP***

Proceed as follows to define the necessary settings:

- Select the type of authentication under ***AUTHENTICATION***, e.g. *CHAP + PAP*.
- Enter a name under ***PARTNER PPP ID***, e.g. *Gateway2*.
- Enter a name under ***LOCAL PPP ID***, e.g. *Gateway1*.
- Enter any desired password under ***PPP PASSWORD***, e.g. *secret*.
- Leave all the other settings as they are.
- Press **OK** to confirm your settings.

2.3.3 Advanced Settings

- Go to ***PPTP ➜ INTERFACE ➜ ADVANCED SETTINGS***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[PPTP][EDIT][ADVANCED]: Advanced Settings (vpn)              Gateway1

  Callback                                  no
  Static Short Hold (sec)                   120

  Delay after Connection Failure (sec)      10
  PPTP Mode                                 PPTP PNS


  Extended Interface Settings (optional) >


  Special Interface Types                   none

            OK                                        CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
Static Short Hold	Time between the last data packet sent and clearing the connection.
Delay after Connection failure	The defined time for which the interface changes to the *blocked* state if the connection is not set up successfully.
PPTP Mode/Client	The configuration of this menu item is irrelevant for a Bintec-to-Bintec connection. The PPTP connection between the two Bintec gateways will be set up regardless of what you select as PPTP mode.

Table 2-5: Relevant fields in ***PPTP*** ➜ ***INTERFACE*** ➜ ***ADVANCED SETTINGS***

Proceed as follows to define the necessary settings:

- Enter a time under ***STATIC SHORT HOLD (SEC)***, e.g. *120*.
- Enter a time under ***DELAY AFTER CONNECTION FAILURE (SEC)***, e.g. *10*.
- Set ***PPTP MODE*** to the *PPTP PNS* mode.
- Leave all the other settings as they are.
- Press **OK** to confirm your settings.

2.3.4 IP Settings

- Go to ***PPTP*** ➜ ***INTERFACE*** ➜ ***IP*** ➜ ***BASIC SETTINGS***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[PPTP][EDIT][IP][BASIC]: IP Settings (vpn)                      Gateway1


  Dynamic PPTP VPN                          no
  Identification by IP Address              no
  PPTP VPN Partner's IP Address             63.1.1.1
      via IP Interface                      en0-3
  Use Gateway                               no
  Local PPTP VPN IP Address                 62.1.1.1
  Local IP Address

  IP Address Negotiation                    static

  Default Route                             no

  Remote IP Address                         192.168.20.0
  Remote Netmask                            255.255.255.0

           SAVE                                   CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
PPTP VPN Partner's IP Address	Static public IP address of remote terminal.
Local PPTP VPN IP Address	A static public IP address.
Remote IP Address	Network address of the LAN at the remote terminal.
Remote Netmask	Netmask of the LAN at the remote terminal.

Table 2-6: Relevant fields in ***PPTP*** ➜ ***INTERFACE*** ➜ ***IP*** ➜ ***BASIC SETTINGS***.

Proceed as follows to define the necessary settings:

- Enter the static public IP address of the remote terminal under ***PPTP VPN PARTNER'S IP ADDRESS***, e.g. *63.1.1.2*.
- Enter the local static public IP address under ***LOCAL PPTP VPN IP ADDRESS***, e.g. *62.1.1.1*.
- Set ***DEFAULT ROUTE*** to *no*.

- Enter the network address of the remote network under ***Remote IP Address***, e.g. *192.168.20.0*.
- Enter the netmask of the remote network under ***Remote Netmask***, e.g. *255.255.255.0*.
- Leave all the other settings as they are.
- Press **SAVE** to confirm your settings.
- Select **EXIT**.
- Press **SAVE** to confirm your settings.

Return to the main menu and finally save your new configuration in the flash memory with **EXIT and Save as boot configuration and exit**.

3 Configuration of Gateway 2

3.1 Configuring IP Address of LAN Interface (ETH1)

- Go to ***ETHERNET UNIT 1***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[SLOT 0 UNIT 1 ETH]: Configure Ethernet Interface              Gateway2


       IP Configuration            Manual
            local IP Number        192.168.20.1
            local Netmask          255.255.255.0
            Second Local IP Number
            Second Local Netmask
            Encapsulation          Ethernet II
            Mode                   Auto
       MAC Address


       Bridging                    disabled
       Advanced Settings >
       Virtual Interfaces >

           SAVE                                  CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
local IP Number	Defines the IP address at which the gateway can be reached in the local network.
local Netmask	Associated netmask.

Table 3-1: Relevant fields in ***ETHERNET UNIT 1***

Proceed as follows to define the necessary settings:

- Enter your local IP address under ***LOCAL IP NUMBER***, e.g. *192.168.20.1*.
- Enter your associated netmask under ***LOCAL NETMASK***, e.g. *255.255.255.0*.

- Leave all the other settings as they are.
- Press **SAVE** to confirm your settings.

3.2 Configuring IP Address of VPN Interface (ETH3)

- Go to ***ETHERNET UNIT 3***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[SLOT 0 UNIT 3 ETH]: Configure Ethernet Interface              Gateway2

       IP Configuration              Manual
            local IP Number          63.1.1.1
            local Netmask            255.255.255.0
            Second Local IP Number
            Second Local Netmask
            Encapsulation            Ethernet II
            Mode                     Auto
       MAC Address




       Bridging                      disabled
       Advanced Settings >
       Virtual Interfaces >

            SAVE                                  CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
local IP Number	Defines the IP address at which the gateway can be reached on the Internet.
local Netmask	Associated netmask.

Table 3-2: Relevant fields in ***ETHERNET UNIT 3***

Proceed as follows to define the necessary settings:

- Enter your static public IP address under ***LOCAL IP NUMBER***, e.g. *63.1.1.1*.
- Enter your associated netmask under ***LOCAL NETMASK***, e.g. *255.255.255.0*.
- Leave all the other settings as they are.
- Press **SAVE** to confirm your settings.

3.3 Adding and Configuring a VPN Interface

3.3.1 Configuring VPN Partners

- Go to ***PPTP*** ➜ ***ADD***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
PPTP] [ADD]                                                  Gateway2

  Partner Name                      PPTP to Gateway1

  Encapsulation                     PPP
  Encryption                        DES3 168
  Compression                       none


  PPP >
  Advanced Settings >


  IP >


           SAVE                              CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
Partner Name	Designation of connection.
Encapsulation	Transmission protocol used.

Field	Meaning
Encryption	Type of encryption.

Table 3-3: Relevant fields in ***PPTP*** ➜ ***ADD***

Proceed as follows to define the necessary settings:

- Enter any desired name under ***PARTNER NAME***, e.g. *PPTP to Gateway1.*
- Set ***ENCAPSULATION*** to *PPP*.
- Select a type of encryption under ***ENCRYPTION***, e.g. *DES3 168*.
- Leave ***COMPRESSION*** set to *none*.
- Change to the ***PPP*** submenu.

3.3.2 PPP Settings

- Go to ***PPTP*** ➜ ***INTERFACE*** ➜ ***PPP***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[PPTP][EDIT][PPP]: PPP Settings (vpn)                          Gateway2


     Authentication                 CHAP + PAP
     Partner PPP ID                 Gateway1
     Local PPP ID                   Gateway2
     PPP Password                   secret

     Keepalives                     off
     Link Quality Monitoring        off



                OK                                CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
Authentication	Type of authentication must be the same as at the remote terminal.

Field	Meaning
Partner PPP ID	Name of remote terminal.
Local PPP ID	Own name.
PPP Password	Password for the VPN connection; must be the same as at the remote terminal.

Table 3-4: Relevant fields in ***PPTP*** ➜ ***INTERFACE*** ➜ ***PPP***

Proceed as follows to define the necessary settings:

- Select the type of authentication under ***AUTHENTICATION***, e.g. *CHAP + PAP*.
- Enter a name under ***PARTNER PPP ID***, e.g. *Gateway1*.
- Enter a name under local ***PPP ID***, e.g. *Gateway2*.
- Enter any desired password under ***PPP PASSWORD***, e.g. *secret*.
- Leave all the other settings as they are.
- Press **OK** to confirm your settings.

3.3.3 Advanced Settings

- Go to ***PPTP*** ➜ ***INTERFACE*** ➜ ***ADVANCED SETTINGS***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[PPTP][EDIT][ADVANCED]: Advanced Settings (vpn)              Gateway2

  Callback                                  no
  Static Short Hold (sec)                   120

  Delay after Connection Failure (sec)      10
  PPTP Mode                                 PPTP PNS


  Extended Interface Settings (optional) >


  Special Interface Types                   none

           OK                                       CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
Static Short Hold	Time between the last data packet sent and clearing the connection.
Delay after Connection failure	The defined time for which the interface changes to the *blocked* state if the connection is not set up successfully.
PPTP Mode/Client	The configuration of this menu item is irrelevant for a Bintec-to-Bintec connection. The PPTP connection between the two Bintec gateways will be set up regardless of what you select as PPTP mode.

Table 3-5: Relevant fields in ***PPTP*** ➜ ***INTERFACE*** ➜ ***ADVANCED SETTINGS***

Proceed as follows to define the necessary settings:

- Enter a time under ***STATIC SHORT HOLD (SEC)***, e.g. *120*.
- Enter a time under ***DELAY AFTER CONNECTION FAILURE (SEC)***, e.g. *10*.
- Set ***PPTP MODE*** to the *PPTP PNS* mode.

- Leave all the other settings as they are.
- Press **OK** to confirm your settings.

3.3.4 IP Settings

- Go to ***PPTP*** ➜ ***INTERFACE*** ➜ ***IP*** ➜ ***BASIC SETTINGS***.

```
VPN Access 25 Setup Tool                    Bintec Access Networks GmbH
[PPTP][EDIT][IP][BASIC]: IP Settings (vpn)                      Gateway2

  Dynamic PPTP VPN                          no
  Identification by IP Address              no
  PPTP VPN Partner's IP Address             62.1.1.1
      via IP Interface                      en0-3
  Use Gateway                               no
  Local PPTP VPN IP Address                 63.1.1.1
  Local IP Address

  IP Address Negotiation                    static

  Default Route                             no

  Remote IP Address                         192.168.10.0
  Remote Netmask                            255.255.255.0

          SAVE                                   CANCEL

Use <Space> to select
```

The following fields are relevant:

Field	Meaning
PPTP VPN Partner's IP Address	Static public IP address of remote terminal.
Local PPTP VPN IP Address	Own static public IP address.
Remote IP Address	Network address of the LAN at the remote terminal.
Remote Netmask	Netmask of the LAN at the remote terminal.

Table 3-6: Relevant fields in ***PPTP*** ➜ ***INTERFACE*** ➜ ***IP*** ➜ ***BASIC SETTINGS***

Proceed as follows to define the necessary settings:

- Enter the static public IP address of the remote terminal under ***PPTP VPN PARTNER'S IP ADDRESS***, e.g. *62.1.1.1*.
- Enter the local static public IP address under ***LOCAL PPTP VPN IP ADDRESS***, e.g. *63.1.1.1*.
- Set ***DEFAULT ROUTE*** to *no*.
- Enter the network address of the remote network under ***REMOTE IP ADDRESS***, e.g. *192.168.10.0*.
- Enter the netmask of the remote network under ***REMOTE NETMASK***, e.g. *255.255.255.0*.
- Leave all the other settings as they are.
- Press **SAVE** to confirm your settings.
- Select **EXIT**.
- Press **SAVE** again.

Return to the main menu and finally save your new configuration in the flash memory with **EXIT** and **Save as boot configuration and exit**.

4 Result

You have configured a PPTP connection between two Bintec **VPN Access 25** gateways. Data are now transferred secure over a public network according to the type of encryption selected.

4.1 Checking the Connection

The connection is set up by the head office with a ping. You can trace the setup of the PPTP connection by entering the command `debug all` in the command line of gateway 1.

Enter the following in the command line of the PC at the head office:

```
C:\>ping 192.168.20.254
```

```
Running Ping for 192.168.20.254 with 32 bytes of data:

Answer from 192.168.20.254: Bytes=32 time=60ms TTL=62
Answer from 192.168.20.254: Bytes=32 time=57ms TTL=62
Answer from 192.168.20.254: Bytes=32 time=56ms TTL=62
Answer from 192.168.20.254: Bytes=32 time=55ms TTL=62

Ping statistics for 192.168.20.254:
    Packets: sent = 4, received = 4, lost = 0 (0% loss),
approx. time in milliseconds:
    minimum = 55ms, maximum = 60ms, mean = 57ms
```

Enter the following in the command line of gateway 1:

```
Gateway1:> debug all
```

```
00:48:00 INFO/INET: dialup if 10001 prot 1 192.168.10.253:2048->192.168.20.254:10332
00:52:05 DEBUG/PPP: PPTP to Gateway2: connect to <63.1.1.1>
00:52:05 DEBUG/PPP: PPTP to Gateway2 62.1.1.1(ID 0)/63.1.1.1(ID 7), 1/2/1: PPTP call identified
00:52:05 DEBUG/PPP: 62.1.1.1/63.1.1.1(vpn25 BinTec (VPN Acc version: 256/712), 1/3: PPTP control
connection established
00:52:05 DEBUG/PPP: PPTP to Gateway2 62.1.1.1(ID 0)/63.1.1.1(ID 7), 1/2/3: event: 0, state: 1 ->
3
00:52:05 DEBUG/PPP: PPTP to Gateway2 62.1.1.1(ID 7)/63.1.1.1(ID 7), 1/2/3: event: 4, state: 3 ->
3
00:52:05 DEBUG/PPP: PPTP to Gateway2 62.1.1.1(ID 7)/63.1.1.1(ID 7), 1/2/3: PPTP call established
00:52:05 DEBUG/PPP: PPTP to Gateway2 62.1.1.1(ID 7)/63.1.1.1x(ID 7), 1/2/5: event: 2, state: 3 -
> 5
00:52:05 DEBUG/PPP: Layer 1 protocol pptp
00:52:05 DEBUG/PPP: PPTP to Gateway2: set ifSpeed, number of active connections: 0/0/0
00:52:06 DEBUG/PPP: PPTP to Gateway2: triple DES encryption negotiated
00:52:06 DEBUG/PPP: PPTP to Gateway2: CCP RX uses 3DES-168 SW encryption
00:52:06 DEBUG/PPP: PPTP to Gateway2: CCP TX uses 3DES-168 SW encryption
00:52:06 DEBUG/PPP: PPTP to Gateway2: set ifSpeed, number of active connections: 1/1/1
00:52:06 DEBUG/PPP: PPTP to Gateway2: outgoing connection established
```

As the debug extract shows, a PPTP connection has been set up successfully.

4.2 Overview of Configuration Steps

Field	Menu	Description	Compulsory field
local IP Number	***ETHERNET UNIT 1***	e.g. *192.168.10.1*	Yes
local Netmask	***ETHERNET UNIT 1***	e.g. *255.255.255.0*	Yes
local IP Number	***ETHERNET UNIT 3***	e.g. *62.1.1.1*	Yes
local Netmask	***ETHERNET UNIT 3***	e.g. *255.255.255.0*	
Partner Name	***PPTP → ADD***	e.g. *PPTP*	Yes
Encapsulation	***PPTP → ADD***	*PPP*	Yes
Encryption	***PPTP → ADD***	e.g. *DES3*	Yes
Authentication	***PPTP → ADD → PPP***	e.g. *CHAP + PAP*	Yes
Partner PPP ID	***PPTP → ADD → PPP***	e.g. *Gateway1*	Yes
Local PPP ID	***PPTP → ADD → PPP***	e.g. *Gateway2*	Yes
PPP Password	***PPTP → ADD → PPP***	e.g. *secret*	Yes
Static Short Hold	***PPTP → ADD → ADVANCED SETTINGS***	e.g. *120 sec*.	Yes
Delay after Connection Failure	***PPTP → ADD → ADVANCED SETTINGS***	e.g. ***10 SEC***.	Yes
PPTP Mode	***PPTP → ADD → ADVANCED SETTINGS***	*PPTP PNS*	Yes
PPTP VPN Partner's IP Address	***PPTP → ADD → IP SETTINGS***	e.g. *63.1.1.1*	Yes
Local PPTP VPN IP Address	***PPTP → ADD → IP SETTINGS***	e.g. *62.1.1.1*	Yes
Default Route	***PPTP → ADD → IP SETTINGS***	*No*	Yes
Remote IP Address	***PPTP → ADD → IP SETTINGS***	e.g. *192.168.10.0*	Yes
Remote Netmask	***PPTP → ADD → IP SETTINGS***	e.g. *255.255.255.0*	Yes