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1 INTRODUCTION

1.1 Outline

IP Passthrough uses DHCP to pass the IP address (and DNS server) that has been assigned to a PPP interface by an ISP, to another device running a DHCP client.

In IP Passthrough mode, the configured PPP and Ethernet interfaces do not use the routing code at all (except for some special cases) when handling received IP packets. Packets received for the PPP interface are delivered directly to a specified Ethernet interface. Similarly, packets received for the specified Ethernet interface (everything except broadcasts/multicasts) are sent to the PPP interface.

“Pinhole” ports can be configured, which provide exceptions for data received on the PPP interface. These exceptions are sent up the stack as usual, allowing, for example, the unit to (still) be remotely configured using telnet and/or HTTP. Operation for all other non-participating “pinhole’d” ports however is unchanged.

**NOTE**: When IP Passthrough is configured and PPP is UP, the TransPort DHCP server provides whatever the mobile IP is (the IP assigned to the PPP interface) to the DHCP client, and assigns the first IP address in the 24-bit subnet to its own Ethernet interface. This IP address of the TransPort Ethernet interface gets passed along through DHCP to the client as its Gateway IP address. For example, if the mobile IP is 1.2.3.4 then the IP address of the Ethernet interface would be 1.2.3.1. Looking at the DHCP client, its IP address would be the same as the mobile IP (1.2.3.4) and its Gateway IP address would be the same as the TransPort’s Ethernet IP (1.2.3.1). In the case where the first address is assigned to the client, the router will take the second IP address in the 24-bit subnet range.

So, once IP Passthrough is configured and PPP is UP, the TransPort cannot be accessed anymore via the local address used before (that by default is 192.168.1.1), as it has been changed.
In order to access the router in this condition, the following options are available:

- Local Access: in order to access to the TransPort via the local ETH interface, the new address assigned to the ETH interface by the IP Passthrough configuration needs to be used. It will belong to the subnet of the PPP interface and it can simply be checked issuing the command "ipconfig /all" on the command prompt of the laptop (or similar command to get IP configuration on the device connected to the TransPort) and look for the default gateway, that will be the address to use to connect to the TransPort.

- Remote Address: with IP Passthrough configured, packets received for the PPP interface on the TransPort are delivered directly to the Ethernet interface (so routed to the device connected to it). In order to connect to the TransPort itself and not to the device behind, Pinholes need to be configured. Basically, this means to configure exceptions for some type of traffic (for example http, ssh, etc.) to this behavior, so that those particular types of traffic are not routed to the device behind, but are processed by the TransPort itself.

When IP Passthrough is configured and PPP is DOWN, the TransPort will automatically provide the IP address of 192.168.1.2 to the DHCP client and assign the IP address 192.168.1.1 to the TransPort Ethernet interface with a 24-bit subnet mask. So in this case, the TransPort will be accessible locally simply using the address 192.168.1.1.
1.2 Assumptions

This guide has been written for use by technically competent personnel with a good understanding of the communications technologies used in the product and of the requirements for their specific application. It also assumes a basic ability to access and navigate a TransPort router and to configure it with basic routing functions.

This Application Note (AN) applies to:

**Model:** Digi TransPort WR21

**Other Compatible Models:** All TransPort WR models

**Firmware versions:** 5130 and later

**NOTE:** This AN has been specifically rewritten for firmware release 5.123 and later but the original AN was testing and working for TransPorts running earlier firmware and the previous GUI. TransPorts running earlier firmware will find that the screenshots do not accurately reflect what will be seen on those older routers. Contact tech.support@digi.com if you require this document for the older GUI.

**Configuration:** This AN assumes the devices are set to their factory default configurations. Most configuration commands are only shown if they differ from the factory default.

For the purpose of this AN, the following applies:

- The TransPort WAN IP address must be in the public address range and fully routable.

1.3 Corrections

Requests for corrections or amendments to this AN are welcome and should be addressed to: tech.support@digi.com

Requests for new ANs can be sent to the same address.

1.4 Version

<table>
<thead>
<tr>
<th>Version Number</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Published</td>
</tr>
<tr>
<td>1.1</td>
<td>Updated for new GUI</td>
</tr>
<tr>
<td>2.0</td>
<td>Overall review, updated screenshot to the new GUI, rewritten/tested all for WR21, updated tests part with new tests and correction on formatting</td>
</tr>
<tr>
<td>2.1</td>
<td>Updated screenshots and instructions for new web interface, rebranding (Jun 2016)</td>
</tr>
<tr>
<td>2.2</td>
<td>Added explanation, test and logs for the case of PPP down and details on accessibility of the device. Overall revision and fix to layout (tables, figure, etc)</td>
</tr>
</tbody>
</table>
2 DIGI WR21 CELLULAR CONFIGURATION

2.1 Configure the Cellular WAN interface

CONFIGURATION - NETWORK > INTERFACES > MOBILE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIM</td>
<td>1 (PPP 1)</td>
<td>The following config will apply to SIM 1 &amp; PPP 1</td>
</tr>
<tr>
<td>Service Plan/APN</td>
<td>internet</td>
<td>Enter the APN of your mobile provider</td>
</tr>
<tr>
<td>SIM PIN/Confirm SIM PIN</td>
<td>Your PIN code</td>
<td>The SIM PIN (Optional)</td>
</tr>
<tr>
<td>Username/Password</td>
<td>APN Username</td>
<td>Contact your service provider to obtain the APN username/password (Optional)</td>
</tr>
</tbody>
</table>
2.2 Enabling IP Passthrough

IP Passthrough mode essentially turns the TransPort into a bridge, disabling NAT and routing and passing the WAN IP address from the WAN interface to the device connected on the local interface defined below.

CONFIGURATION - NETWORK > IP PASSTHROUGH

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable IP Passthrough</td>
<td>✅</td>
<td>Enable the IP Passthrough service</td>
</tr>
<tr>
<td>Local interface</td>
<td>Ethernet 0</td>
<td>Set the inside interface to ETH 0</td>
</tr>
<tr>
<td>Wan PPP interface</td>
<td>1</td>
<td>Set the WAN interface to PPP 1 (as shown in 2.1 mobile settings above)</td>
</tr>
<tr>
<td>Ethernet DHCP Mode</td>
<td>Normal/24 bit mask</td>
<td>Sets the DHCP addressing mode for the DHCP server</td>
</tr>
</tbody>
</table>

NOTE: When IP Passthrough is enabled, it will override any DHCP settings you have configured on the specified Ethernet port.
2.3 Configure the Pinholes

Pinholes are services that are terminated on the TransPort instead of being passed through to the connected device. These services are typically used to remotely manage the TransPort.

In this example, HTTP traffic will remain assigned to the TransPort so that it can be administered via the web interface.

**Important**: If you are enabling IP Passthrough from the cellular network, select the Pinholes you want to assign first, before clicking the Apply button. Otherwise, if you enable IP Passthrough and immediately click Apply (without selecting any pinholes), you WILL lose connectivity to the TransPort’s W-WAN interface.

**CONFIGURATION - NETWORK > IP PASSTHROUGH**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinhole Configuration</td>
<td>HTTP</td>
<td>Set the services which will remain assigned to the TransPort</td>
</tr>
</tbody>
</table>

**NOTE**: In some cases, if the TransPort is itself initiating IP traffic (for example, sending an email alert or features like ‘auto ping’ and firewall recovery, etc.) then there is an automatic feature which will cause the TransPort to remember **not** to forward replies to the IP Passthrough client regardless of how the Pinholes are configured.

Protocols that use fixed source ports (for example, IKE for IPSEC) will need “Pinholing” even if the TransPort is making the outgoing connection.
The ‘Other Ports’ and ‘Other Protocols’ variable text fields allow the user to Pinhole any TCP/UDP ports or protocol numbers not in the above list. If inputting multiple ports or protocol numbers, separate them by commas.

In the example below, it can be seen how a Pinholes would be configured if the TransPort (not the connected device) is required to listen on port 4000, which is used to relay incoming traffic out of serial port ASY 0.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Ports</td>
<td>4000</td>
<td>Enter the Port(s) which you want the router to own</td>
</tr>
</tbody>
</table>
3 ENABLE DHCP CLIENT ON THE IP PASSTHROUGH CLIENT

IP Passthrough should work on any DHCP Client. In this example, a Windows PC has been used.

3.1 Enable DHCP client on the PC

3.1.1 Ethernet Properties

Open the Local Area Connection Properties, highlight Internet Protocol (TCP/IP), and double click on it.
3.1.2 Internet Protocol (TCP/IPv4) Properties

In the Internet Protocol (TCP/IP) Properties, select **Obtain an IP address automatically, Obtain DNS server address automatically**, and then click **OK**.
4 TESTING

4.1 Check the assigned IP address with PPP UP

On the PC, open a Command Prompt, and then issue the `ipconfig` command to display the PC’s IP address.

As explained above, the default gateway address assigned to the DHCP client is the IP address now assigned to the ETH 0 interface of the TransPort WR, that it will now accessible via this IP:

**MANAGEMENT - NETWORK STATUS > INTERFACES > ETHERNET > ETH 0**

![Command Prompt](image)

![Management - Network Status](image)
Using the WEB UI, we can also compare the IP address of the DHCP client with the WAN IP address of the TransPort.

The IP address assigned to the PC (the DHCP client) should be the same as that given to the WAN IP address of the TransPort:

**MANAGEMENT - NETWORK STATUS > INTERFACES > ADVANCED > PPP > PPP 1.**
4.2 Check the assigned IP address with PPP DOWN

Simulate a PPP fault and check what address is assigned to the DHCP Client, the client should get an IP of 192.168.1.2 and a default gateway address of 192.168.1.1 that will be assigned to the ETH0 TransPort interface:

```
Administrator: Command Prompt

Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix : 
IPv4 Address. ............... : 192.168.1.2
Subnet Mask ................. : 255.255.255.0
Default Gateway ............. : 192.168.1.1
```

This can also be checked accessing the WEB GUI of the TransPort WR at the address it has now assigned to the ETH0 Interface (that is the default gateway assigned to the DHCP Client) 192.168.1.1:

**MANAGEMENT - NETWORK STATUS > INTERFACES > ETHERNET > ETH 0**

```
Management - Network Status > Interfaces > Ethernet > ETH 0

- Interfaces
- Ethernet
- ETH 0

IP Address: 192.168.1.1
Mask: 255.255.255.0
```
4.3 Examples with TransPort packet Analyser

In this section some examples of packet traces when the IP Passthrough mode is on and working will be shown.

4.3.1 IP Passthrough – No Pinhole

This Analyser trace shows an incoming FTP connection, destined for the TransPort WAN interface, being forwarded to the IP Passthrough client.

**NOTE**: The pinhole port for FTP is not selected and therefore the TransPort will not terminate the FTP connection.

This is an incoming FTP SYN from 217.151.242.14 to the WAN IP address 37.82.40.232 on the TransPort’s WAN interface PPP 1:

```
45 00 00 2C 19 88 00 00 6B 06 1C 64 D9 97 F2 0E E..,....k..d....
25 52 28 E8 36 F3 00 15 43 01 D4 C8 00 00 00 00 %R(.6...C........
60 02 7D 78 B1 FB 00 00 02 04 05 B4 `}x........

IP (In) From REM TO LOC       IFACE: PPP 1
45             IP Ver:        4
00             Hdr Len:       20
00             TOS:           Routine
19             Delay:         Normal
00             Throughput:    Normal
00 2C          Reliability:   Normal
19 88          Length:        44
00 00          ID:            6536
00 00          Frag Offset:   0
00 00          Congestion:    Normal
00 00          May Fragment
00 00          Last Fragment
6B             TTL:           107
06             Proto:         TCP
1C 64          Checksum:      7268
D9 97 F2 0E    Src IP:        217.151.242.14
25 52 28 E8    Dst IP:        37.82.40.232
TCP:
36 F3          SRC Port:      ??? (14067)
00 15          DST Port:      FTP CTL (21)
43 01 D4 C8    SEQ Number:    1124193480
00 00 00 00    ACK Number:    0
60 02          Flags
02              Data Offset    24
02              SYN
7D 78          Window:        32120
B1 FB          Checksum:      45563
00 00          URG Ptr:       0
02              TCP_OPT:      MSS (1460)
```
The FTP SYN is then forwarded out of the ETH 0 interface to the IP Passthrough client. Note that the destination IP address remains the same:

```
45 00 00 2C 19 88 00 00 6A 06 1D 64 D9 97 F2 0E E..,.j..,....
25 52 28 E8 36 F3 00 15 43 01 D4 C8 00 00 00 00 %R(.6...C....
60 02 7D 78 B1 FB 00 00 02 04 05 B4 `.`x........
```

IP (Final) From LOC TO REM IFACE: ETH 0

```
45       IP Ver:        4
Hdr Len:       20
00       TOS:           Routine
Delay:         Normal
Throughput:    Normal
Reliability:   Normal
00 2C     Length:        44
19 88     ID:            6536
00 00     Frag Offset:   0
Congestion:    Normal
May Fragment
Last Fragment
6A       TTL:           106
06       Proto:         TCP
1D 64     Checksum:      7524
D9 97 F2 0E Src IP:        217.151.242.14
25 52 28 E8 Dst IP:        37.82.40.232
TCP:
36 F3     SRC Port:      ??? (14067)
00 15     DST Port:      FTP CTL (21)
43 01 D4 C8 SEQ Number:    1124193480
00 00 00 00 ACK Number:    0
60 02     Flags
Data Offset 24
SYN
7D 78     Window:        32120
B1 FB     Checksum:      45563
00 00     URG Ptr:       0
02     TCP_OPT:       MSS (1460)
-------------
```

The IP Passthrough client responds with a SYN ACK which is received by the router on ETH 0:

```
45 00 00 2C 0E ED 40 00 80 00 6D 1F 25 52 28 E8 E..,.@.....%R(..
D9 97 F2 0E 00 15 36 F3 8A F6 12 B3 43 01 D4 C9 ......6.....C...
60 12 20 00 71 B9 00 00 02 04 05 B4 00 00 `.`.q........
```

IP (In) From REM TO LOC IFACE: ETH 0

```
45       IP Ver:        4
Hdr Len:       20
00       TOS:           Routine
Delay:         Normal
Throughput:    Normal
Reliability:   Normal
00 2C     Length:        44
```
IP Passthrough on a TransPort

The TransPort then sends the SYN ACK back to the originating IP address from its WAN interface PPP 1:

4.3.2 Inbound connection to a “Pinholed” TCP Port

This Analyser trace shows the start of an incoming connection to the TransPort’s web interface on port 80 (HTTP). Because the HTTP port is “Pinholed”, the packets will not be forwarded to the IP Passthrough client.

Inbound SYN packet on WAN interface PPP 1:
Outbound SYN ACK response on WAN interface PPP 1:

--- 9-7-2015 13:25:46.100 ---
45 00 00 2C 6A 62 00 00 FA 06 3C 89 25 52 28 E8...E,,jb...<.%R(.
D9 97 F2 0E 00 50 39 89 C4 F8 23 3A 6E 1F 79 C9...P9...#:n.y.
60 12 20 00 54 7D 00 00 02 04 05 78 `..T}.....x

IP (Final) From LOC TO REM IFACE: PPP 1
45             IP Ver:        4
00             Hdr Len:       20
00             TOS:           Routine
2C             Delay:         Normal
00             Throughput:    Normal
00             Reliability:   Normal
00 2C          Length:        44
6A 62          ID:            27234
00 00          Frag Offset:   0
00             Congestion:    Normal
FA             TTL:           250
06             Proto:         TCP
3C 89          Checksum:      15497
25 52 28 E8    Src IP:        37.82.40.232
D9 97 F2 0E    Dst IP:        217.151.242.14
TCP:
00 50          Src Port:      WEB (80)
39 89         Dst Port:       ??? (14729)
C4 F8 23 3A    SEQ Number:    3304596282
6E 1F 79 C9    ACK Number:    1847556553
60 12          Flags
Data Offset    24
  SYN
  ACK
20 00          Window:        8192
54 7D          Checksum:      21629
00 00          URG Ptr:       0
02             TCP_OPT:       MSS (1400)

Inbound ACK response on WAN interface PPP 1:

--- 9-7-2015 13:25:46.180 ---
45 00 00 28 40 6B 40 00 6C 06 B4 84 D9 97 F2 0E...E..(@k@.1........
25 52 28 E8 39 88 00 50 98 80 34 39 81 40 8B EE...%R(.9..P..49.@..
P........

IP (In) From REM TO LOC IFACE: PPP 1
45             IP Ver:        4
00             Hdr Len:       20
00             TOS:           Routine
00             Delay:         Normal
00             Throughput:    Normal
00             Reliability:   Normal
00 28          Length:        40
40 6B          ID:            16491
4.3.3 Outbound Connection from IP Passthrough client

Example of the IP Passthrough client making an outbound telnet connection. The trace shows the 3-way handshake of a TCP socket (SYN, SYN ACK, ACK) on port 23.

Incoming Telnet SYN packet on interface ETH 0 from the IP Passthrough client. Note that the source IP address is the same as the routers WAN interface.
The telnet SYN packet is forwarded out of the TransPort’s WAN interface (PPP 1) to the remote device:

```
45 00 00 34 28 7A 40 00 7F 06 EB B1 25 52 28 E8 E..4(z@.....%R(....
C2 D5 D6 88 D4 05 00 17 0B 34 77 5F 00 00 00 00 ........4w_....
80 02 20 00 10 C8 00 00 02 04 05 B4 01 03 03 08 .. ............
01 01 04 02 ....
```

**IP (Final) From LOC TO REM**

```
IP Ver: 4
Hdr Len: 20
TOS: Routine
Delay: Normal
Throughput: Normal
Reliability: Normal
Length: 52
ID: 10362
Frag Offset: 0
Congestion: Normal
Don't Fragment
Last Fragment
TTL: 127
Proto: TCP
Source IP: 37.82.40.232
Dest IP: 194.213.214.136
SRC Port: ??? (54277)
DST Port: TELNET (23)
SEQ Number: 187987807
ACK Number: 0
Flags
Data Offset 32
```

SYN
The incoming telnet SYN ACK response from the remote device comes in on the WAN interface (PPP 1):

<table>
<thead>
<tr>
<th>Time</th>
<th>Packet Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-7-2015</td>
<td>IP (In) From REM TO LOCIFACE: PPP 1</td>
</tr>
<tr>
<td></td>
<td>45 00 00 2C 2E BB 00 00 E9 06 BB 78 C2 D5 D6 88</td>
</tr>
<tr>
<td></td>
<td>25 52 28 E8 00 17 D4 05 A1 AB 1C 92 08 34 77 60</td>
</tr>
<tr>
<td></td>
<td>60 12 20 00 7C BB 00 00 02 04 04 88</td>
</tr>
<tr>
<td></td>
<td>IP Ver: 4</td>
</tr>
<tr>
<td></td>
<td>Hdr Len: 20</td>
</tr>
<tr>
<td></td>
<td>TOS: Routine</td>
</tr>
<tr>
<td></td>
<td>Delay: Normal</td>
</tr>
<tr>
<td></td>
<td>Throughput: Normal</td>
</tr>
<tr>
<td></td>
<td>Reliability: Normal</td>
</tr>
<tr>
<td></td>
<td>Length: 44</td>
</tr>
<tr>
<td>March 2015</td>
<td>IP Final From LOC TO REMIFACE: ETH 0</td>
</tr>
<tr>
<td></td>
<td>45 00 00 2C 2E BB 00 00 E9 06 BB 78 C2 D5 D6 88</td>
</tr>
<tr>
<td></td>
<td>25 52 28 E8 00 17 D4 05 A1 AB 1C 92 08 34 77 60</td>
</tr>
<tr>
<td></td>
<td>60 12 20 00 7C BB 00 00 02 04 04 88</td>
</tr>
<tr>
<td></td>
<td>IP Ver: 4</td>
</tr>
<tr>
<td></td>
<td>Hdr Len: 20</td>
</tr>
<tr>
<td></td>
<td>TOS: Routine</td>
</tr>
<tr>
<td></td>
<td>Delay: Normal</td>
</tr>
<tr>
<td></td>
<td>Throughput: Normal</td>
</tr>
<tr>
<td></td>
<td>Reliability: Normal</td>
</tr>
<tr>
<td></td>
<td>Length: 44</td>
</tr>
<tr>
<td>March 2015</td>
<td>IP Final From LOC TO REMIFACE: ETH 0</td>
</tr>
<tr>
<td></td>
<td>45 00 00 2C 2E BB 00 00 E9 06 BB 78 C2 D5 D6 88</td>
</tr>
<tr>
<td></td>
<td>25 52 28 E8 00 17 D4 05 A1 AB 1C 92 08 34 77 60</td>
</tr>
<tr>
<td></td>
<td>60 12 20 00 7C BB 00 00 02 04 04 88</td>
</tr>
<tr>
<td></td>
<td>IP Ver: 4</td>
</tr>
<tr>
<td></td>
<td>Hdr Len: 20</td>
</tr>
</tbody>
</table>

The telnet SYN ACK response is then forwarded to the IP Passthrough client on interface ETH 0:
The ACK response to the SYN ACK comes into interface ETH 0 from the IP Passthrough client:

```
----- 9-7-2015 13:32:35.800 ------
45 00 00 28 28 7B 40 00 00 06 EA BC 25 52 28 E8 E..((@.....%R(
C2 D5 D6 88 D4 05 17 08 34 77 60 A1 AB IC 93 ............4w....
50 10 FD C0 B5 8B 00 00 00 00 00 00 00 00 P............
```

IP (In) From REM To LOC       IFACE: ETH 0
45 IP Ver: 4
00 TOS: Routine
28 Delay: Normal
28 Throughput: Normal
40 Reliability: Normal
00 28 Length: 40
28 7B ID: 10363
40 00 Frag Offset: 0
00 Congestion: Normal
80 Don’t Fragment
80 Last Fragment
80 TTL: 128
06 Proto: TCP
EA BC Checksum: 60092
25 52 28 E8 Src IP: 37.82.40.232
C2 D5 D6 88 Dst IP: 194.213.214.136
TCP:
D4 05 SRC Port: ??? (54277)
00 17 DST Port: TELNET (23)
08 34 77 60 SEQ Number: 187987808
A1 AB IC 93 ACK Number: 2712345747
50 10 Flags
Data Offset 20
FD C0 Window: 64960
B5 8B Checksum: 46475
The ACK response from the IP Passthrough client is sent to the remote device out of the WAN interface (PPP 1):  

```
00 00               URG Ptr:      0

The ACK response from the IP Passthrough client is sent to the remote device out of the WAN interface (PPP 1):

```

<table>
<thead>
<tr>
<th>00 00</th>
<th>URG Ptr:</th>
<th>0</th>
</tr>
</thead>
</table>

45 00 00 28 28 7B 40 00 7F 06 EB BC 25 52 28 E8 E..({@.....%R(.
C2 D5 D6 88 D4 05 00 17 0B 34 77 60 A1 AB 1C 93 ..........4w`....
50 10 FD C0 B5 8B 00 00 P........

```

IP (Final) From LOC TO REM IFACE: PPP 1
45             IP Ver:        4
00             Hdr Len:       20
00             TOS:           Routine
Delay:         Normal
Throughput:    Normal
Reliability:   Normal
00 28          Length:        40
28 7B          ID:            10363
40 00          Frag Offset:   0
Congestion:    Normal
Don’t Fragment
Last Fragment
7F             TTL:           127
06             Proto:         TCP
EB BC          Checksum:      60348
25 52 28 E8    Src IP:        37.82.40.232
C2 D5 D6 88    Dst IP:        194.213.214.136
TCP:
D4 05          SRC Port:      ??? (54277)
00 17          DST Port:      TELNET (23)
0B 34 77 60    SEQ Number:    187987808
A1 AB 1C 93    ACK Number:    2712345747
50 10          Flags
Data Offset    20
ACK
FD C0          Window:        64960
B5 8B          Checksum:      46475
00 00          URG Ptr:       0
```

4.3.4 Outbound Connection from the TransPort

Example of when the router makes an outbound telnet connection. There is no change in configuration from the previous example but because the TransPort itself is the initiator, the IP Passthrough client is not involved.

The trace shows the 3-way handshake of a TCP socket (SYN, SYN ACK, ACK) on port 23.

Outbound telnet SYN packet on WAN interface PPP 1:

```
00 00          URG Ptr:      0

Outbound telnet SYN packet on WAN interface PPP 1:

```

<table>
<thead>
<tr>
<th>00 00</th>
<th>URG Ptr:</th>
<th>0</th>
</tr>
</thead>
</table>
IP Passthrough on a TransPort

--- 9-7-2015 13:41:23.990 ---

Incoming telnet SYN ACK response on WAN interface PPP 1:

--- 9-7-2015 13:41:23.990 ---
IP Passthrough on a TransPort

7D FC  DST Port:  ??? (32252)
FA 45 D8 E7  SEQ Number:  4198881511
28 7B 50 F2  ACK Number:  679170290
60 12  Flags
   Data Offset  24
SYN
ACK
20 00  Window:  8192
C6 FB  Checksum:  50939
00 00  URG Ptr:  0
02  TCP_OPT:  MSS (1160)
---------

Outbound telnet ACK response on WAN interface PPP 1:

-------- 9-7-2015  13:41:23.990 --------
45 00 00 28 8F CB 00 00 FA 06 49 6C 25 52 28 E8 
C2 D5 D6 88 7D FC 00 17 28 7B 50 F2 FA 45 D8 E8 
50 10 20 00 DD 8C 00 00 

IP (Final) From LOC TO REM  IFA: PPP 1
45  IP Ver:  4
00  Hdr Len:  20
00  TOS:  Routine
00  Delay:  Normal
00  Throughput:  Normal
00  Reliability:  Normal
00 28  Length:  40
8F CB  ID:  36811
00 00  Frag Offset:  0
00  Congestion:  Normal
00  May Fragment
00  Last Fragment

FA  TTL:  250
06  Proto:  TCP
49 6C  Checksum:  18796
25 52 28 E8  Src IP:  37.82.40.232
C2 D5 D6 88  Dst IP:  194.213.214.136

TCP:
7D FC  SRC Port:  ??? (32252)
00 17  DST Port:  TELNET (23)
28 7B 50 F2  SEQ Number:  679170290
FA 45 D8 E8  ACK Number:  4198881512
50 10  Flags
   Data Offset  20
ACK
20 00  Window:  8192
DD 8C  Checksum:  56716
00 00  URG Ptr:  0---------
### 5.1 WR21 configuration file

This is the config.da0 file used for the purpose of this AN:

```plaintext
eth 0 ipanon ON
adpp 0 enable ON
lapb 0 ans OFF
lapb 0 tinact 120
lapb 1 tinact 120
lapb 3 dtemode 0
lapb 4 dtemode 0
lapb 5 dtemode 0
lapb 6 dtemode 0
ip 0 cidr ON
def_route 0 ll_ent "ppp"
def_route 0 ll_add 1
dhcp 0 IPmin "192.168.1.100"
dhcp 0 respdelms 500
dhcp 0 mask "255.255.255.0"
dhcp 0 gateway "192.168.1.1"
dhcp 0 DNS "192.168.1.1"
sntp 0 server "time.etherios.com"
dyndns 0 epassword "PTNzVEqDFA=="
ppp 0 timeout 300
ppp 0 name "W-WAN (HSPA 3G)"
ppp 1 phonenum "+98*1#"
ppp 1 IPaddr "0.0.0.0"
ppp 1 timeout 0
ppp 1 use_modem 1
ppp 1 aodion 1
ppp 1 autoassert 1
ppp 1 ipanon ON
ppp 1 r_chap OFF
ppp 3 defpak 16
ppp 4 defpak 16
passthru 0 locadd 0
passthru 0 enabled ON
passthru 0 http ON
web 0 prelogin_info ON
web 0 showgswiz ON
modemcc 0 info_asy_add 3
modemcc 0 init_str "+CGREQ=1"
modemcc 0 init_str1 "+CGQMTN=1"
modemcc 0 apn "internet.t-d1.de"
modemcc 0 link_retries 10
modemcc 0 stat_retries 30
modemcc 0 sms_interval 1
modemcc 0 sms_access 1
modemcc 0 sms_concat 0
modemcc 0 init_str 2 "+CGREQ=1"
```
modemcc 0 init_str1_2 "+CGQMIN=1"
modemcc 0 apn_2 "Your.APN.goes.here"
modemcc 0 link_retries_2 10
modemcc 0 stat_retries_2 30
modemcc 0 sms_access_2 1
modemcc 0 sms_concat_2 0
ana 0 anon ON
ana 0 l2on OFF
ana 0 xoton OFF
ana 0 lapdon 0
ana 0 lapbon 0
ana 0 ipfilt "~21"
ap_2 0 maxdata 1500
ana 0 logsize 180
ana 0 unitid "ss%s>
ana 0 cmdnua "99"
cmd 0 hostname "digi.router"
cmd 0 asyled_mode 2
cmd 0 tremto 1200
cmd 0 rcihttp ON
user 0 access 0
user 1 name "username"
user 1 epassword "KD51SVJDVg="
user 1 access 0
user 2 epassword "PDZxU0FFQFU="
user 2 access 0
user 3 access 0
user 4 access 0
user 5 access 0
user 6 access 0
user 7 access 0
user 8 access 0
user 9 access 0
local 0 transaccess 2
sslsvr 0 certfile "cert01.pem"
sslsvr 0 keyfile "privrsa.pem"
ssh 0 hostkey1 "privSSH.pem"
ssh 0 nb_listen 5
ssh 0 v1 OFF
templog 0 mo_autooff ON
cloud 0 ss1 ON

Power Up Profile: 0
5.2 Hardware and Firmware

Digi TransPort WR21-UX2B-DE1-XX Ser#:237416
Software Build Ver5.2.11.4. Jun 5 2015 04:39:32 WW
ARM Bios Ver 7.42u v43 454MHz B987-M995-F80-08140,0 MAC:00042d039f68
Async Driver Revision: 1.19 Int clk
Ethernet Port Isolate Driver Revision: 1.11
Firewall Revision: 1.0
EventEdit Revision: 1.0
Timer Module Revision: 1.1
(B)USBHOST Revision: 1.0
L2TP Revision: 1.10
PPTP Revision: 1.00
TACPLUS Revision: 1.00
MODBUS Revision: 0.00
RealPort Revision: 0.00
MultiTX Revision: 1.00
LAPB Revision: 1.12
X25 Layer Revision: 1.19
MACRO Revision: 1.0
PAD Revision: 1.4
X25 Switch Revision: 1.7
V120 Revision: 1.16
TPAD Interface Revision: 1.12
GPS Revision: 1.0
TELITUPD Revision: 1.0
SCRIBATSK Revision: 1.0
BASTSK Revision: 1.0
PYTHON Revision: 1.0
CLOUDSMS Revision: 1.0
TCP (HASH mode) Revision: 1.14
TCP Utils Revision: 1.13
PPP Revision: 5.2
WEB Revision: 1.5
SMTP Revision: 1.1
FTP Client Revision: 1.5
FTP Revision: 1.4
IKE Revision: 1.0
PollANS Revision: 1.2
PPPOE Revision: 1.0
BRIDGE Revision: 1.1
MODEM CC (Ericsson 3G) Revision: 5.2
FLASH Write Revision: 1.2
Command Interpreter Revision: 1.38
SSLCLI Revision: 1.0
OSPF Revision: 1.0
BGP Revision: 1.0
QOS Revision: 1.0
PWRCtrl Revision: 1.0
RADIUS Client Revision: 1.0
SSH Server Revision: 1.0
SCP Revision: 1.0
SSH Client Revision: 1.0
CERT Revision: 1.0
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Tunnel</td>
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<tr>
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<td>Revision: 1.0</td>
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<tr>
<td>OK</td>
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