



# Quick Note 050

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Configure a TransPort as a WiFi AP

July 2015

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# 1 INTRODUCTION

## 1.1 Outline

This Application Note gives a guide on configuring a TransPort router as a WiFi Access Point, providing internet access to WiFi clients as Laptop or smartphone.

## 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.

**Preconditions:** This guide assumes that the Digi TransPort has WiFi features

**Models shown:** Digi TransPort WR44

**Other Compatible Models:** All other Digi TransPort products with WiFi features.

**Firmware versions:** All Versions

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

## 1.3 Corrections

Requests for corrections or amendments to this application note are welcome and should be addressed to: [tech.support@digi.com](mailto:tech.support@digi.com)

Requests for new application notes can be sent to the same address.

## 1.4 Version

Version Number	Status
0.1	Draft
1.0	Completed 7/2015

## 2 DIGI TRANSPORT ROUTER CONFIGURATION

In order to configure the Digi TransPort, connect a PC to the ETH0 of the TransPort and log into the Web User Interface (WebUI) with a browser at the default address **192.168.1.1**. Then follow the sections below.

### 2.1 LAN Settings: ETH 0

In this AN the LAN interface of the Transport is configured on ETH 0 and left as default. The configuration can be checked going to the WEB UI at the section **Configuration – Network > Interfaces > Ethernet > ETH 0**:

Figure 2.1-1: LAN settings

Parameter	Setting	Description	CLI command
IP Address	192.168.1.1	Specifies the IP address of this Ethernet port	<i>eth 0 ipaddr 192.168.1.1</i>
Mask	255.255.255.0	Specifies the subnet mask of the IP subnet to which the unit is attached via this Ethernet port	<i>eth 0 mask 255.255.255.0</i>

## Configure a TransPort as a WiFi AP

### 2.2 LAN Settings: WiFi

Browse to **Configuration - Network > Interfaces > Wi-Fi > Global Wi-Fi Settings** and set the Country and the Channel to use for your AP following the picture/table below, then click Apply:



Figure 2.2-1: Global WiFi settings

Parameter	Setting	Description	CLI command
Country	Germany	Selecting a country from the drop down list will restrict the channels that the router will use. See table on page 51 on the User Manual ( <a href="http://ftp1.digi.com/support/documentation/90001019_K.pdf">http://ftp1.digi.com/support/documentation/90001019_K.pdf</a> ) for more info on licensed channels.	<i>wifi 0 country "Germany"</i>

## Configure a TransPort as a WiFi AP

In order to configure the WiFi AP settings, browse to Configuration - Network > Interfaces > Wi-Fi > Wi-Fi Node 0 and refer to the following picture and table, then click Apply:

The screenshot displays the configuration page for 'Wi-Fi Node 0'. Key settings include:
 

- Enable this Wi-Fi interface:** Checked.
- Description:** 'Wifi AP'.
- SSID:** 'Access Point WPA'.
- Mode:** 'Access Point'.
- Bridge instance:** '0'.
- WPA-PSK Settings:** WPA Encryption is set to 'TKIP', and the WPA pre-shared key is masked with dots.

 A table lists bridged interfaces:
 

Interface	Value
Wi-Fi Node	1
Wi-Fi Node	2
Wi-Fi Node	3
Ethernet	0

Figure 2.2-2: WiFi AP Settings

Parameter	Setting	Description	CLI command
Enable	Selected	Enable the WiFi interface and reveals the options	---
Description	WiFi Client (WAN)	A descriptive name for the Wi-Fi interface to make it easier to identify [optional]	<i>wifinode 0 descr "WiFi AP"</i>
SSID		When the Wi-Fi interface is configured to be a AP, this is the SSID that will be advertised to the Wi-Fi clients to	<i>wifinode 0 ssid "Access Point WPA"</i>
Mode	Access Point	Select the "Access Point" mode from the drop-down menu	<i>wifinode 0 mode "ap"</i>
This Wi-Fi interface is a member of Bridge instance <n> and therefore bridged to the following interfaces	0	When the Wi-Fi interface is configured to be an Access Point, in order to forward packets to and from the Wi-Fi interface it must be bridged with an Ethernet interface using a Bridge instance. In this case is left as default (0).	<i>wifinode 0 bridge_inst 0</i>

### Configure a TransPort as a WiFi AP

Interface	ETH 0	The interfaces that are currently members of the selected Bridge instance. In that case ETH 0 is added to the list (to add it, select ETH from the drop down list, type the "0" and click "add")	<i>eth 0 bridge ON</i>
Use the following security on this Wi-Fi interface	WPA-PSK	Selects the security that is used on this Wi-Fi interface. In this AN the AP is used WPA-PSK Security type	<i>wifinode 0 security "wpapsk"</i>
WPA Encryption	TKIP	The encryption algorithm to use. In this AN is used TKIP algorithm	<i>wifinode 0 wpatype "tkip"</i>
WPA Pre-Shared Key / Confirm	*****	The pre-shared key (PSK) to use. It must be between 8 and 63 characters long.	<i>wifinode 0 esharedkey "PDZxU0FFQFU="</i>

## Configure a TransPort as a WiFi AP

### 2.3 WAN Settings: ETH 1

In this Application note the primary WAN connection is ETH 1. In order to configure it, an ETH interface needs to be configured with DHCP client and NAT enabled. The following picture/table will explain how to do this configuration:

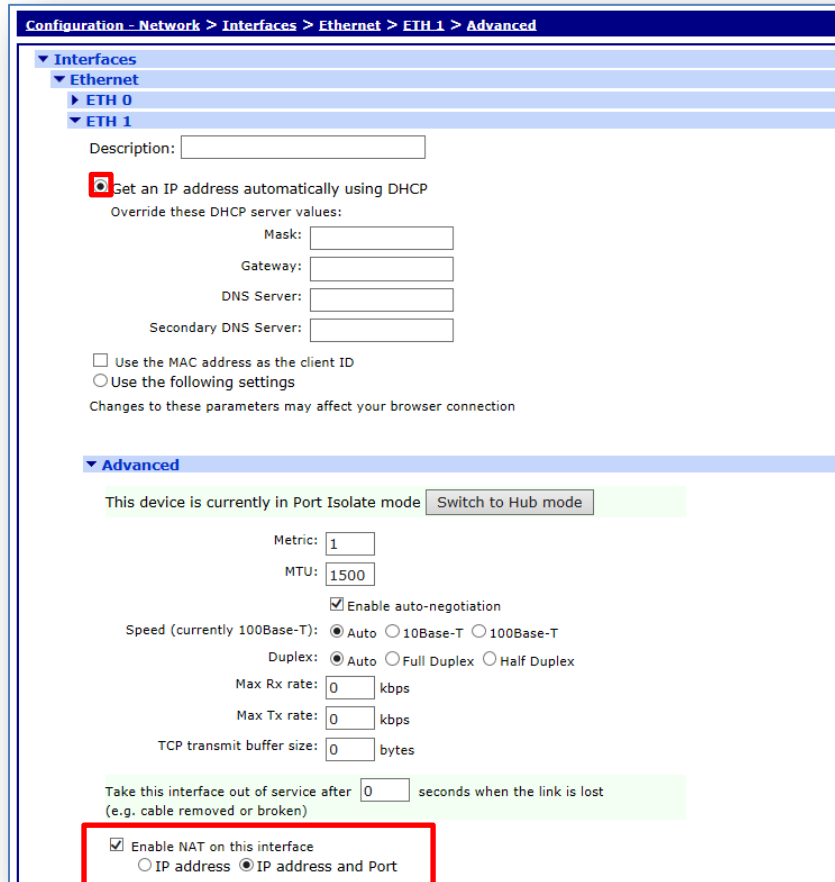


Figure 2.3-1: ETH 1 Settings

Parameter	Setting	Description	CLI command
Get an IP address automatically using DHCP	Selected	Selecting this option enables the DHCP client on this interface. In this AN is selected as the TransPort will get the IP configuration from the DHCP server through the WiFi connection	<i>eth 1 dhcpcli on</i>
Enable NAT on this interface	Selected / IP address and Port	As this Logical Eth will be the WAN interface, NAPT needs to be enabled on it	<i>eth 1 do_nat 2</i>



## 2.4 Default Route via ETH 1

Browse to Configuration - Network > IP Routing/Forwarding > Static Routes > Default Route 0 and set the primary route to point at ETH 12 as follows:

The screenshot shows the configuration page for 'Default Route 0'. The breadcrumb trail is 'Configuration - Network > IP Routing/Forwarding > Static Routes > Default Route 0'. Under the 'Default Route 0' section, there are several fields: 'Description' (empty), 'Default route via' (empty), 'Gateway' (empty), 'Interface' (set to 'Ethernet' with a dropdown arrow), and '1' entered in the adjacent text box. Below these are 'Use PPP sub-configuration' (set to 0) and 'Metric' (set to 1). An 'Advanced' section is collapsed. At the bottom, there is an 'Apply' button.

Figure 3.4-1: Primary Route via WiFi ETH 12

Parameter	Setting	Description	CLI command
Interface	Ethernet 1	The interface used to route the packets is selected from the drop-down list and the interface instance number is entered into the adjacent text box	<code>def_route 0 ll_ent "ETH"</code> <code>def_route 0 ll_add 1</code>

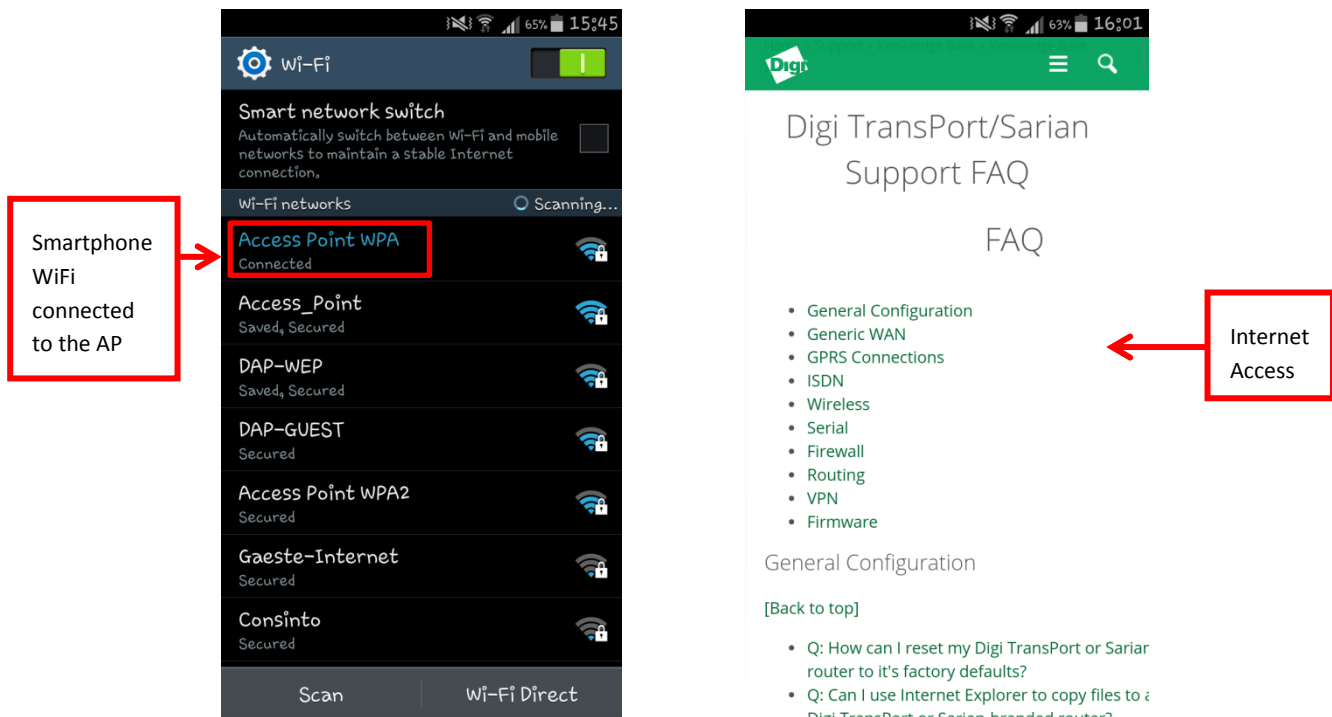
### 3 TESTING

#### 3.1 Testing the Access Point: connect a Smartphone

As soon as the AP is configured, check the eventlog (Management - Event Log), a line like the following should appear:

```
14:28:37, 12 Dec 2014,Wi-Fi Node 0 Access Point up
```

Try to connect with a smartphone, check the wifi status on the smartphone and try to navigate on internet. The smartphone status and navigation should look like the example below:



Check also the status on the Transport checking again the eventlog on Management - Event Log:

```
14:42:11, 12 Dec 2014,Wi-Fi Node 0 client joined: 78:A8:73:36:9D:87
```

## Configure a TransPort as a WiFi AP

And also check the WiFi status on the TransPort to see more details about the connection, going to Management - Network Status > Interfaces > Wi-Fi:

Management - Network Status > Interfaces > Wi-Fi

▼ Interfaces  
▶ Ethernet  
▼ Wi-Fi

Module Detected: Yes (168C:001B)  
Admin Status: Up  
Operational Status: Up  
Channel Mode: G  
Channel: 1  
MAC Address: 00:0E:8E:23:7C:AD

Bytes Received: 53192      Bytes Sent: 249125  
Packets Received: 318      Packets Sent: 514  
Receive Errors: 38      Transmit Errors: 383  
Received Packets Dropped: 0

Number of Connected Wi-Fi Clients: 1

Node	Wi-Fi Node	RSSI	Flags	Power Save	Mode	Neg. Rates (Mbps)	TX Rate (Mbps)	RX Rate (Mbps)	Capability Info
78:A8:73:36:9D:87	0	33	ERP	Awake	G	1.0, 2.0, 5.5, 6.0, 9.0, 11.0, 12.0, 18.0, 24.0, 36.0, 48.0, 54.0	1.0	1.0	ESS, Privacy, Short Preamble, Short Slottime, <input type="button" value="Disconnect"/>

Number of Access Point Connections: 0

Also the IP address that has been assigned to the smartphone can be checked going to the DHCP server status page at Management - Network Status > DHCP Status:

Management - Network Status > DHCP Status

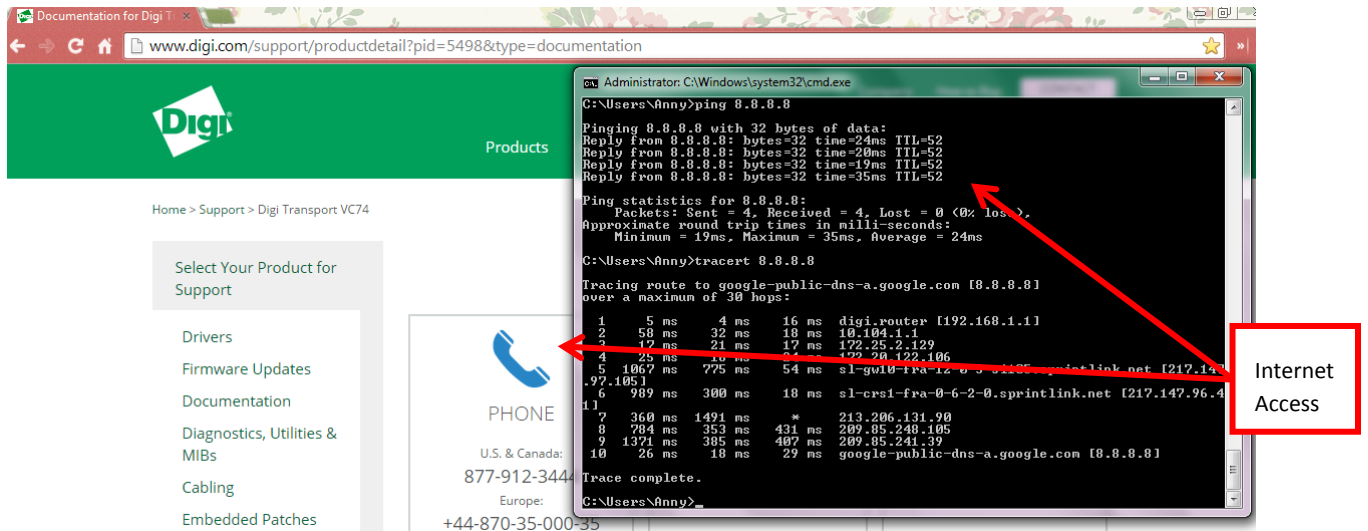
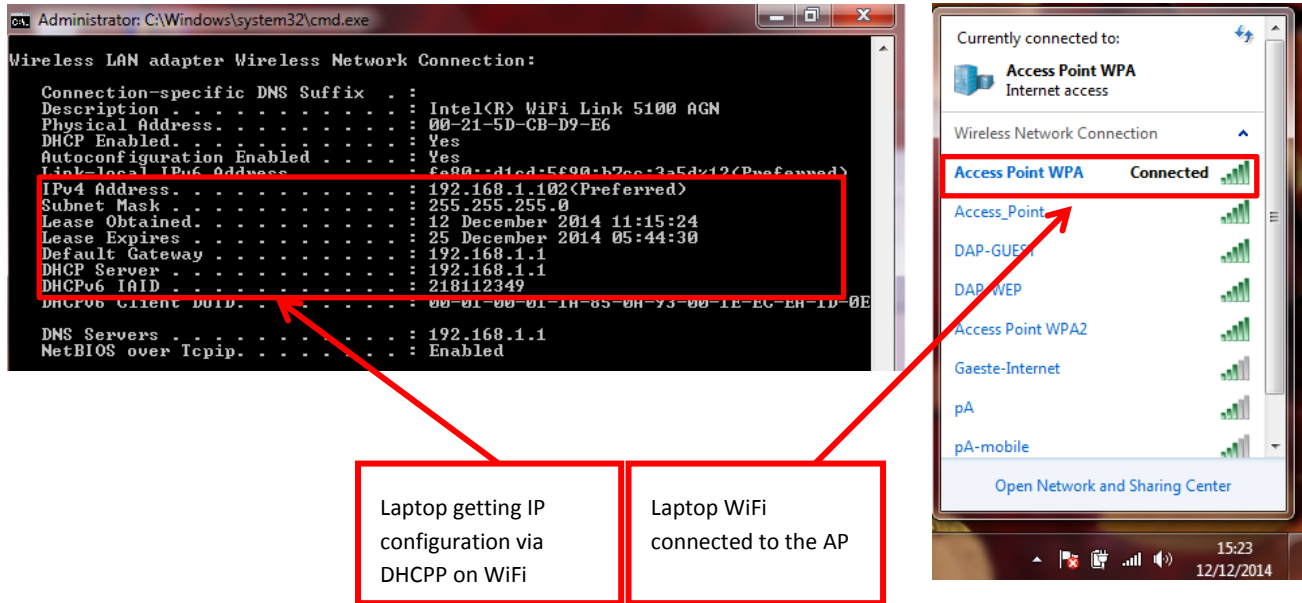
▼ Interfaces  
▶ Ethernet  
▶ Wi-Fi  
▶ Mobile  
▶ GRE  
▶ Serial  
▶ Advanced  
▶ IP Statistics  
▶ IP Routing Table  
▶ IP Hash Table  
▶ Port Forwarding Table  
▶ Firewall  
▶ Firewall Trace  
▼ DHCP Status

IP address	Hostname	Lease time left (mins)
192.168.1.100	android-a44a4cb72a53cdd8	20139

## Configure a Transport as a WiFi AP

### 3.2 Testing the Access Point: connect a Laptop

Try to connect a laptop to the AP and check that it successfully connects, an IP is assigned to it, and it has internet access:



## Configure a TransPort as a WiFi AP

Check also the WiFi status on the TransPort to see more details about the connection, going to Management - Network Status > Interfaces > Wi-Fi:

The screenshot shows the 'Management - Network Status > Interfaces > Wi-Fi' page. It displays the following information:

- Module Detected: Yes (168C:001B)
- Admin Status: Up
- Operational Status: Up
- Channel Mode: G
- Channel: 1
- MAC Address: 00:0E:8E:23:7C:AD
- Bytes Received: 2521715
- Bytes Sent: 15580931
- Packets Received: 13374
- Packets Sent: 19761
- Receive Errors: 2654
- Transmit Errors: 4994
- Received Packets Dropped: 0

Number of Connected Wi-Fi Clients: 2

Node	Wi-Fi Node	RSSI	Flags	Power Save	Mode	Neg. Rates (Mbps)	TX Rate (Mbps)	RX Rate (Mbps)	Capability Info	
00:21:5D:CB:D9:E6	0	41	ERP,	Awake	G	1.0, 2.0, 5.5, 6.0, 9.0, 11.0, 12.0, 18.0, 24.0, 36.0, 48.0, 54.0	1.0	1.0	ESS, Privacy, Short Preamble, Short Slottime,	Disconnect
78:A8:73:36:9D:87	0	34	ERP,	Sleep	G	1.0, 2.0, 5.5, 6.0, 9.0, 11.0, 12.0, 18.0, 24.0, 36.0, 48.0, 54.0	1.0	1.0	ESS, Privacy, Short Preamble, Short Slottime,	Disconnect

Disconnect All Clients

Number of Access Point Connections: 0

Refresh

Also the IP address that has been assigned to the smartphone can be checked going to the DHCP server status page at Management - Network Status > DHCP Status:

The screenshot shows the 'Management - Network Status > DHCP Status' page. It displays the following information:

- IP address: 192.168.1.100
- Hostname: android-a44a4cb72a52cdd8
- Lease time left (mins): 20154
- IP address: 192.168.1.102
- Hostname: test-PC
- Lease time left (mins): 20137

Clear DHCP Entries

## 4 TRANSPORT CONFIGURATION FILES

### 4.1 Configuration File

This is the configuration used on the TransPort in this Application Note, relevant CLI lines are highlighted:

```
'config c show'

wifi 0 country "Germany"
wifi 0 channel "1"
wifinode 0 descr "Wifi AP"
wifinode 0 ssid "Access Point WPA"
wifinode 0 security "wpapsk"
wifinode 0 esharedkey "PDZxUOFFQFU="
eth 0 IPAddr "192.168.1.1"
eth 0 bridge ON
eth 1 dhcpcli ON
eth 1 mask ""
eth 1 do_nat 2
addp 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 "ETH"
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"
ppp 0 timeout 300
ppp 1 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 r_chap OFF
ppp 3 defpak 16
ppp 4 defpak 16
web 0 prelogin_info ON
modemcc 0 info_asy_add 6
modemcc 0 init_str "+CGQREQ=1"
modemcc 0 init_str1 "+CGQMIN=1"
modemcc 0 apn "Your.APN.goes.here"
modemcc 0 link_retries 10
```

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```
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 "+CGQREQ=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
ana 0 llon ON
ana 0 lapdon 0
ana 0 asyon 1
ana 0 logsize 45
cmd 0 unitid "ss%s>"
cmd 0 cmdnua "99"
cmd 0 hostname "digi.router"
cmd 0 asyled_mode 1
cmd 0 tremto 1200
cmd 0 rcihttp ON
user 0 access 0
user 1 name "username"
user 1 epassword "KD5lSVJDVVg="
user 1 access 0
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
cloud 0 ssl ON
```

## 4.2 Hardware and Firmware

The Hardware and firmware used for this AN are reported below:

```
Digi TransPort WR44-U4T1-WE1-XX Ser#:160601
Software Build Ver5271. Oct 30 2014 06:10:52 SW
ARM Bios Ver 7.24u v39 400MHz B512-M512-F80-O0,0 MAC:00042d027359
Async Driver Revision: 1.19 Int clk
Wi-Fi Revision: 2.0
IX Revision: 1.0
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
MySQL Revision: 0.01
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
SCRIBATSK Revision: 1.0
BASTSK Revision: 1.0
PYTHON Revision: 1.0
CLOUDSMS Revision: 1.0
ARM Sync Driver Revision: 1.18
TCP Revision: 1.14
TCP Utils Revision: 1.13
PPP Revision: 1.19
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: 1.4
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
RADIUS Client Revision: 1.0
SSH Server Revision: 1.0
```



## Configure a TransPort as a WiFi AP

```
SCP Revision: 1.0
SSH Client Revision: 1.0
CERT Revision: 1.0
LowPrio Revision: 1.0
Tunnel Revision: 1.2
OVPN Revision: 1.2
QDL Revision: 1.0
WiMax Revision: 1.0
OK
```