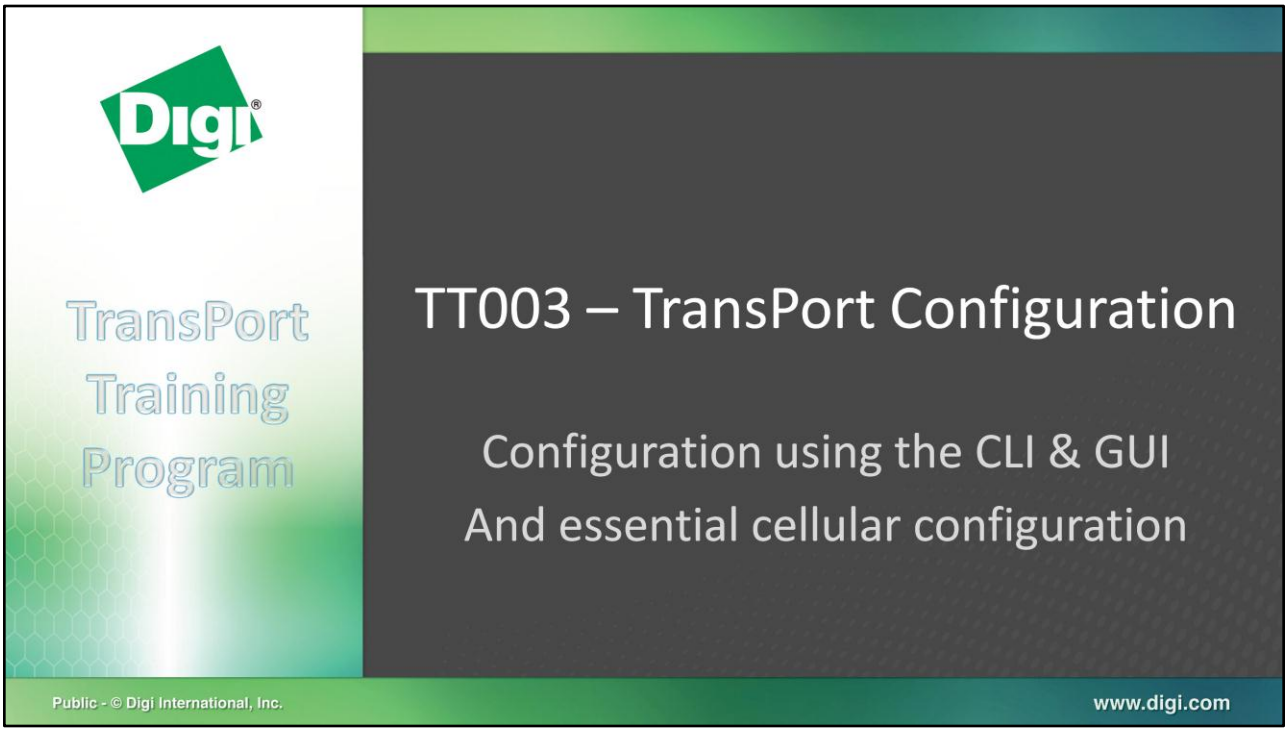

TransPort
Training
Program
TT003 – TransPort Configuration
Configuration using the CLI & GUI
And essential cellular configuration
Public - © Digi International, Inc.
www.digi.com

Minimum requirements

Ethernet cable

Serial cable

- RJ45, DB9, DB25 depending on model
- TransPort serial ports are DCE so straight-thru cable typically needed

USB to Serial converter (if PC/laptop does not have a serial port)

USB Memory stick

Appropriate SIM(s), antennas, ISP connectivity info

How to access the router, explain physical connection methods

Command Line Interface – CLI

Accessed using a terminal emulator such as TeraTerm:

Router serial interface (no login required)

Telnet

SSH

SNMP (not enabled by default, limited configuration functionality)

Device Cloud & SMS (not enabled by default)

'Execute a command' in the GUI (not fully interactive)

Interactive method – CLI
Serial port access can be configured to prompt for authentication

Graphical User Interface – GUI

Accessed using a web browser such as Firefox (HTTP or HTTPS)

Any interface with an accessible IP address, such as:

Ethernet / LAN interfaces

DSL / Cellular / WAN interfaces

Serial interface using Dial Up Networking (1.2.3.4)

HTTP is enabled by default

Interactive method – GUI
HTTP or HTTPS, one or the other. Enabling HTTPS disables HTTP. Reverting to HTTP disables HTTPS.
sockopt 0 https on|off

Other *non-interactive* methods

FTP – Upload new config.da0 to the router & reboot

FTP – Upload new .all file onto router and reboot

USB – Place config files and/or scripted commands on a USB flash drive and insert it into the USB port of the router.

FlashWriter – Used to load a .all file onto a router

Defined as non-interactive as there is no direct access to the running config by the user.

USB method (PB script explained on next slide)

- If script file is named autoexec.bat then it is executed as soon as the USB drive is inserted into the router
- If script file is named pb1.bat or pb2.bat, the reset button must be pressed 1 or 2 times to execute the relevant batch file.

The multi-function reset button

- Located dependent on model (underneath or on front)
  - see the Installation Guide for location if unsure
- Press carefully; preferably with a non-metallic device
  - Reset to factory configuration: Press and hold for 5 seconds
  - Press *n* times to execute "pb`n`.bat" file from USB drive

The button can be disabled

Disable the reset button: `cmd 0 pbreset off`

Re-enable the reset button: `cmd 0 pbreset on`

As well as being able to factory reset, the reset button can be used to run scripts on a USB flash drive inserted into the router.
USB PB script
If script file is named pb1.bat or pb2.bat, the reset button must be pressed 1 or 2 times to execute the relevant batch file.

Stuck or need help?

See the documentation on our support pages

http://www.digi.com/support

Manuals / Installation guides / Application Notes / Quick Notes / Utilities / Firmware / Knowledge base

Reference manual is ‘Digi Transport User Guide’

Where to get help

Revert to factory default configuration

CLI command – copy config.fac config.da0

GUI Menu – Administration > Factory Default Settings

Hold in reset button for 5 seconds (function can be disabled)

Load a new .all file with FlashWriter (U/P not required)

Load a new .all file with FTP (U/P is required)

What if it all goes completely wrong? How to reset to factory defaults.

Default configuration

- Most TransPort routers ship with these default settings:
  - Ethernet interface IP address (eth 0 ipaddr): 192.168.1.1
  - Ethernet interface subnet mask (eth 0 mask): 255.255.255.0
  - DHCP server enabled with starting pool address (dhcp 0 ipmin): 192.168.1.100
  - Ethernet switch mode on multi-port routers: Hub mode
  - Username = username (not case sensitive)
  - Password = password (case sensitive)

Default PPP interface numbers

- Answering interface is assigned to PPP 0

  Used by Serial Dial-Up Networking, CSD calls, PSTN, ISDN
- Cellular interface is assigned to PPP 1
- DSL interface is assigned to PPP 3

This hasn't always been the case, so in older configurations it is most likely that the interfaces will be:

Routers with DSL & cellular

PPP 0 = Answering

PPP 1 = DSL

PPP 2 = ISDN

PPP 3 = Mobile / cellular

PPP 4 = PSTN

Routers with cellular only

PPP 0 = Answering

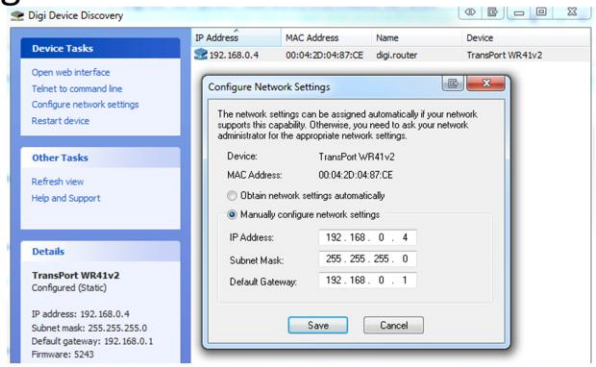
PPP 1 = Mobile / Cellular

Digi Device Discovery utility

Runs on Microsoft Windows

Detects and lists TransPort routers connected to the LAN

Allows configuration of an IP address & subnet mask



USB Support

- The front panel USB ports can be used to store extended event log or analyser output
- Can be used to copy files to and from the router
- Config files for backup can be copied to USB drive and restored later
- Firmware can be updated via USB
- Contents of the USB flash drive can be viewed using the `dir u:` command:

```
dir u:
SERIALS.TXT 1843
EVENTL~1.TXT 1449
USB.TXT 4278
MASSR1~1.TXT 1255
```

- USB can also support certain serial and GPS adapters

What We Discussed

- Access to the router CLI & GUI
- Interactive and non-interactive configuration methods
- Resetting to factory defaults
- Factory default configuration
- PPP interface numbering
- Digi Device Discovery
- USB support & features

Hands-On Practical session - CLI

- This session covers:
  - Serial port access
  - Hayes style AT commands
  - Changing settings for other ports
  - TransPort configuration commands
  - Saving configuration changes
  - Using the Event log and analyser trace from the CLI
  - Useful commands

HOPS - Serial Port Access

1. Power up your TransPort. Be sure to *lock* the power connector.
2. Connect from your PC COM port to the TransPort DB9, DB25 or RJ45 dependent on model) "ASY 0" or "Serial 0" port via straight-through (modem) cable
3. Launch your favourite terminal emulation program
   Use: 115200 baud, 8 data bits, no parity, one stop bit, no flow control
4. Send the "AT" command.
   Check that you receive "OK" back.

Remember: TransPort serial ports are **DCE**, meaning you need a straight-through (also called modem) cable to your PC serial port. Digi can provide cables as needed. They are listed on the Digi TransPort product pages at http://www.digi.com/products/wireless-routers-gateways/enterprise-routers-vpn-concentrators/. For example PN 76000858 is a Cable - DB-9 Female to DB-9 Male, 6'.

HOPS – Hayes AT commands

- TransPort supports Hayes style AT commands to be compatible with equipment that would normally connect to a modem.

ATS31=3 = Set baud rate to 115200

ATS31=0 = Set baud rate to auto baud

AT\LS = Lock speed to currently detected speed so that non-AT commands will work in auto baud mode. (e.g. dir command)

ATE1 = Turn echo "On"

ATE0 = Turn echo "Off"

ATD<number> = Dial the number supplied

ATH = Hang up

Auto baud ATS31=0 will only detect commands that start with 'A'. So once the speed is detected, AT\LS is used so other CLI commands will work.

HOPS – Hayes AT commands

- There are two sets of profiles per serial port

  `AT&V` = Show current port settings

  `AT&W` = Write current settings to profile 0

  `ATZ` = Load profile 0 settings

- Serial port profiles are saved in “sregs.dat” file. (See dir command)

HOPS – Hayes AT commands

- To access settings for ports from another serial port, telnet or SSH…

  AT\port = X (Where X = serial port number)
  Commands such as AT&W now apply to port X

- How to return to issuing commands on current serial port …

  AT\PORT

- Now, telnet to the TransPort and change the serial port speed.

HOPS – CLI Syntax

- Most TransPort CLI configuration is done using the syntax :

  Entity → ***Entity Instance*** → ***Parameter Name*** → ***Parameter Value***

  example : **`eth 0 ipaddr 192.168.1.1`**

  In the above example:

  `eth` is the entity name
  `0` is the entity instance
  `ipaddr` is the parameter name
  `192.168.1.1` is the parameter value

HOPS – CLI Syntax

- To see a list of parameters available for an entity:
  entity name . entity instance . ?
  example : **`eth 0 ?`**

- To read the value of a single parameter for an entity:
  entity name . entity instance . parameter name . ?
  example : **`eth 0 ipaddr ?`**

- To set the value of a single parameter:
  entity name . entity instance . parameter name . parameter value
  example : **`eth 0 mask 255.255.0.0`**

- ***HINT:*** *Use the* **arrow keys** *to repeat the last command, move between characters in commands, etc.*

HOPS – CLI Syntax

- Wildcards can be used to help locate CLI parameter names and display their values.

If you know an Eth 0 parameter name begins with ‘i’ you can use the CLI command with a wildcard to help locate the parameter name and its setting:

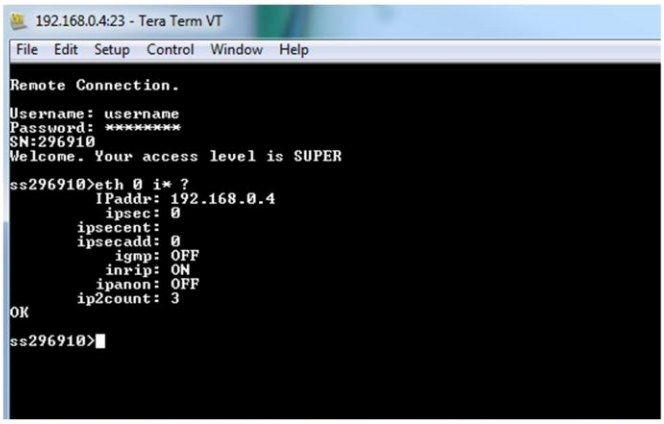
```
ss291603>eth 0 i* ?
         IPaddr: 192.168.51.1
          ipsec: 0
       ipsecent:
       ipsecadd: 0
           igmp: OFF
          inrip: ON
         ipanon: OFF
       ip2count: 3
OK
```

HOPS – Saving the config

- Most Configuration settings are saved in the **config.da0** file.
- Every parameter has a 'firmware default' value
- Most 'firmware default' values are either '0', 'blank' or 'Off'
- The config.da0 file stores *differences* from the "firmware default" values for all parameters.
- To display **running** config: `config c show`
- To display **saved** config: `type config.da0`
- To **replace saved** config with **running** config: `config 0 save`
- Please experiment with the above

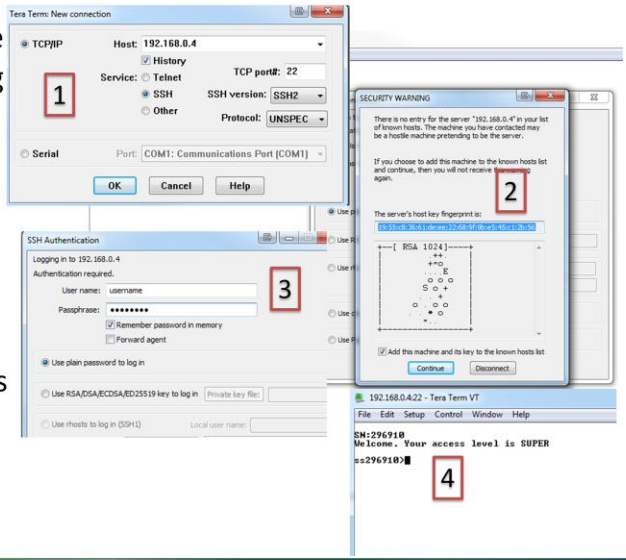
HOPS - Telnet

- The TransPort router CLI can be accessed over IP by the use of a Telnet client
- Only 1 telnet session is allowed to the router at any time.



HOPS - SSH

- The TransPort router CLI can be **securely** accessed over IP using an SSH client
- An SSH client such as PuTTY or TeraTerm is required
- TransPort routers have SSH pre-configured and listen on TCP ports 22 & 8022
- Up to 5 concurrent connections are allowed by default.



The TransPort normally listens on normal ports + 8000. e.g.: 8023, 8022, 8080, 8443.

Recommendation: If the Wireless WAN connection is allocated a public IP address that allows inbound connections, use the firewall and only allow port 8022 for SSH. Hackers scan for connection attempts on port 22 & 23.

Example firewall rule:

```
pass in break end proto tcp from any to addr-ppp 1 port=8022 flags S!A inspect-state
```

HOPS - Event log and Analyser trace

- Issue the **`dir`** command
- Every file without a 'CRC' is a *Virtual* File **NOT** stored in FLASH
- The **event log** (eventlog.txt) is a file containing system events and is stored in battery backed RAM (except on WR21 which has no NVRAM)
- The **Analyser** trace (ana.txt) contains detailed analysis of every packet or frame the TransPort sends/receives.

  The TransPort can decode every packet/frame type that it understands e.g. ARP frames, IP packets, X.25 packets etc.

  The analyser trace is stored in RAM and is lost if the power is removed.

- Use the **`type`** command to access these files, view in the Web GUI, or copy off via FTP or Web GUI

HOPS - Event log and Analyser trace

- Use the "**ana**" entity to configure the analyser trace and trace a telnet connection to your router.

```
ana 0 anon on
```

- Also turn the analyser trace on for each interface

```
eth 0 ipanon on
```

- Use the analyser to trace your telnet session

```
type ana.txt
```

- Certain events can be used to trigger SMS messages, SNMP traps or automatic emails. Automatic emails can have a snapshot of the current analyser trace and event log attached.

HOPS - debug.txt

- **debug.txt** is a special, *dynamically* built file used in troubleshooting and to send to Digi support for help
- **debug.txt** contains output from several CLI status and configuration commands and files; including:

```
ati5
hw
config c show
type config.da0
type eventlog.txt
type fw.txt
```

- Capture debug.txt via
  - Web GUI: Administration - File Management > FLASH Directory , right-click on the file name *debug.txt* and select *Save As*
  - FTP
  - CLI: “type debug.txt”
- Exercise: Extract and examine the debug.txt file from your TransPort.

HOPS – Reboot command

- The ‘reboot’ CLI command has these options:

`reboot`
Gracefully closes active VPNs, TCP connections and PPP links before rebooting

`reboot <t>`
Timed reboot, where t = minutes.

`reboot <t> secs`
Timed reboot, with the ‘secs’ keyword, t = seconds

`reboot cancel`
Cancels a timed reboot

`reboot now`
Reboots immediately, but this may leave stale sessions on other equipment

reboot 5 or reboot 10 is useful when configuring remote routers to ensure you do not get locked out by a config mistake.
First run reboot 5, then do the configuration with 5 minutes, as long as router is still working and accessible cancel the reboot. If you get locked out or loose connection due to a config mistake, the router will reboot when the reboot timer expires.

HOPS – File System Commands

- Copy files
  `copy <file_name> <new_file_name>`
- Delete files
  `del <file_name>`
- Display the file directory
  `dir`
- Lock the flash memory
  `flock`
- Unlock the flash memory to enable writes
  `funlock`
- Move files
  `move <from_file> <to_file>`
- Rename files
  `ren <old_name> <new_name>`
- Scan files for corruption
  `scan`
- Display (type out) a file's contents
  `type <filename>`
- Initiate a file upload via serial port
  `xmodem <filename>`

End of Hands-On Practical Session

Hands-On Practical Session - GUI

- This session covers:
  - Connecting to the GUI over Ethernet
  - Entity configuration via the GUI
  - Saving “entity style” configurations
  - Using the Event log and analyser trace via the GUI
  - Configuring a Cellular connection
  - Browsing the file system over the GUI
  - Configuration Files
  - Firmware Files
  - Using FTP to copy configuration files and upgrade firmware

HOPS - Connecting to the Web GUI

- When connecting to the Web GUI for the first time, the following options are available:
  - All units have a default eth 0 IP address of 192.168.1.1/24 and DHCP server enabled.
    - You can configure your PC to obtain an IP address from a DHCP server and connect an Ethernet cable directly to the router
    - NOTE: TransPort routers can detect if there is an existing DHCP server on the network. If another DHCP server is detected, the TransPort DHCP server will not respond to DHCP requests.
  - Ethernet parameters can be re-configured to match your network and the DHCP server can be disabled using the CLI through the serial port, if required.
  - The Digi Device Discovery utility can be used to re-configure the IP address.
  - A Windows DUN (Dial Up Networking) connection can be initiated through the serial port
    - See the manual for further details

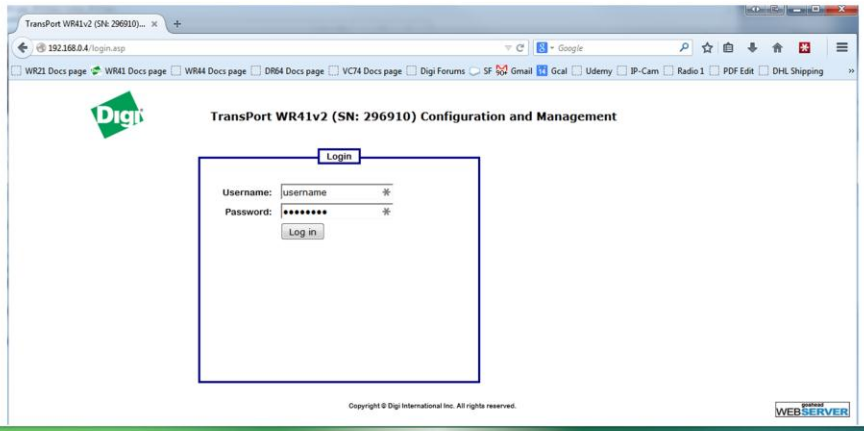
HOPS – Connecting to the GUI

1. Reconfigure the router Eth 0 IP address
   Or, use the built in DHCP server to assign an IP address to your PC
2. Open a web browser and point it to the IP address of your TransPort router.
3. Log in using the default username of "**username**" and password of "**password**"

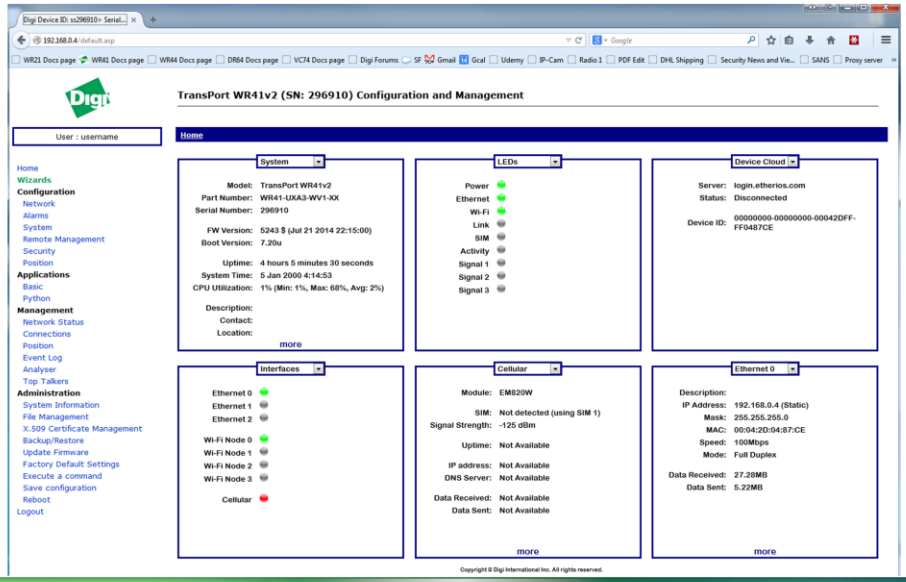
HOPS – Log in

Usernames are not case sensitive

Password ARE case sensitive.



HOPS – Initial View



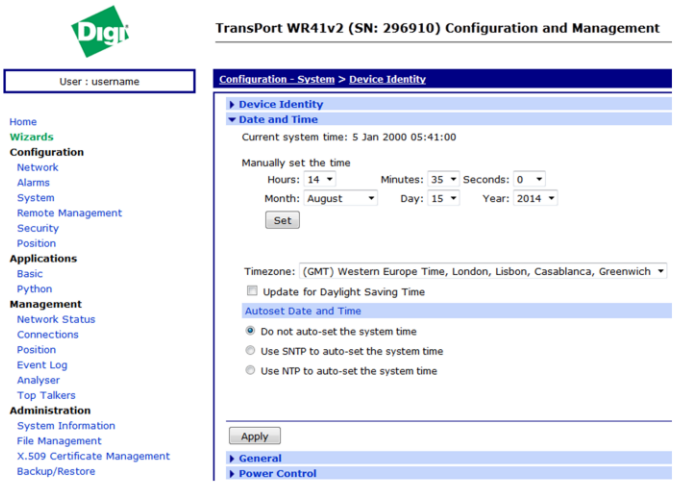
HOPS - Set System time

- If the unit has been powered off for a long time it may be necessary to set the time:

Configuration
> System
> Date and Time

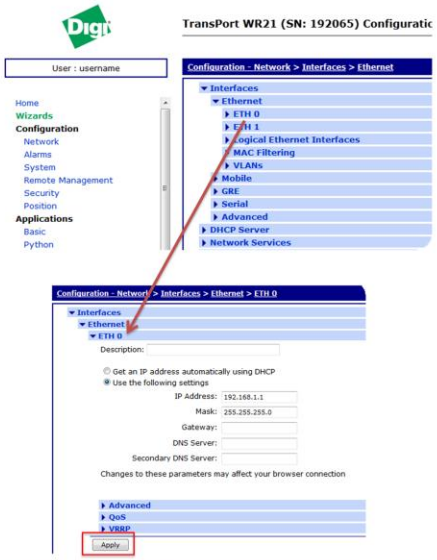
Set the time the time, date and timezone

Click **Set**



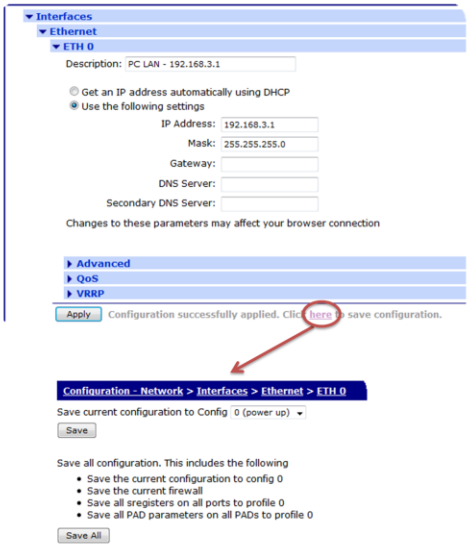
HOPS – Entity Configuration

1. Expand the Configuration menu
2. Click on the Interfaces sub menu
3. Notice that the entities and entity instances you configured from the CLI are listed in the Interfaces sub menu.
4. Open ***Ethernet > Eth 0***. Notice that the parameter names are different on the Web GUI than the CLI. They have longer more descriptive names.
5. Notice the **Apply** button. You must click Apply before moving to a new screen else your changes are lost.



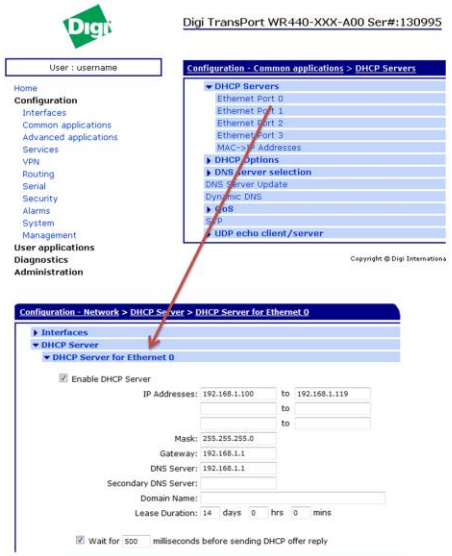
HOPS – Apply > Save

- Clicking **Apply** applies the change to the current *running* config; it does not save it permanently. If the TransPort is rebooted or loses power, your changes are lost.
- Clicking the here link will prompt you to save the running config to the stored configuration (e.g. config.da0)
- More on this later.



HOPS - DHCP Settings

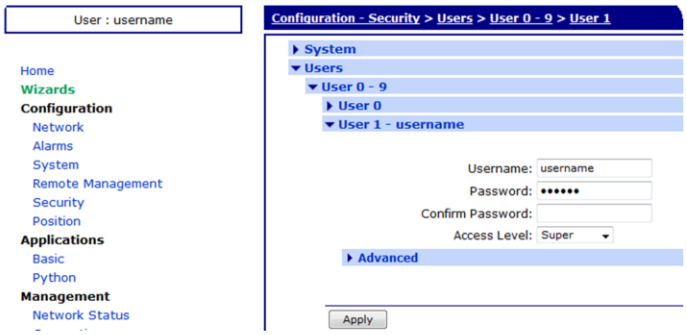
- Expand the Configuration menu. Click on the DHCP Servers sub menu. Expand the DHCP Server menu.
- One DHCP server can be allocated to each Ethernet port
- Select ***DHCP servers > Ethernet Port 0*** to view the DHCP configuration.



To disable DHCP server via CLI: `dhcp 0 ipmin !`
`In HUB MODE, DHCP server for Eth 0 will serve IP addresses on ALL ethernet interfaces.`

HOPS - User Authentication

- Basic security: The username & password should be changed from the factory defaults.



- Multiple user accounts are supported
- Permissions can be set for Read-only through Super (full admin rights)
- User accounts are also used for IPsec pre-shared keys (recommend using User 10 and higher)

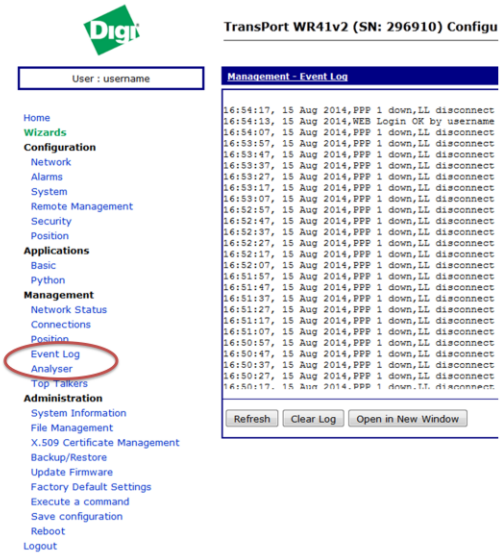
Users 10 and higher default to a low level of management access. User accounts used for IPsec PSK purposes should have the 'Access Level' set to 'None'.

HOPS – Saving the Config

1. Navigate to
   Administration > Save Configuration
2. Click OK to save to config 0 (config.da0 and pwds.da0)
3. Clicking "***Save All***" will also save the serial port settings (sregs.dat), firewall file (fw.txt) and PAD parameters (x3prof) , however this takes more time and is often not necessary.

HOPS – Event Log & Analyser Trace

- The Event Log and Analyser Trace are both available in the GUI.
- There is a separate training module on this subject, so we wont go into any detail on these now.



Have a quick look at the event log and analyser trace options before moving on.

End of Hands-On Practical Session

Essential Cellular Configuration

- APN (Access Point Name)
- Username (for the APN)
- Password (for the APN)
- SIM PIN (if enabled on the SIM)
- Enable link failure detection (Surelink)
- modemcc entity controls the cellular module

Dual SIM configuration

- Each SIM is locked to a PPP instance.

  SIM1 locked to PPP1 and SIM2 locked to PPP2
- If 2 SIMs are in use, only 1 SIM can be active at any time. This means only 1 PPP will be active at any time.
- SIMs/PPPs can be weighted so there is a preferred SIM/PPP.
- SIMs/PPPs can have equal priority if required.

Dual SIM configuration

- To detect a failure, the router can either:
  - Assume the PPP link has failed if no traffic is **received** for a specified amount of time.
  - Passively monitor TCP traffic passing through the router.
  - Actively generate ICMP traffic and monitor the responses.

Passive method may take longer to detect a link failure.

Active method will use extra data and this may incur costs.

Time based method *may* disconnect PPP when it hasn't failed.

The method used will depend on the circumstances and requirements of each individual installation.

Dual SIM configuration

- The Dual SIM Wizard will help configure the router when 2 SIMs are used.
- SIM 1 is configured using modemcc parameters:

  `modemcc 0 apn internet`
- SIM 2 is configured using modemcc '_2'parameters

  modemcc 0 apn_2 orangeinternet
- PPP, modemcc and firewall settings will be configured automatically.

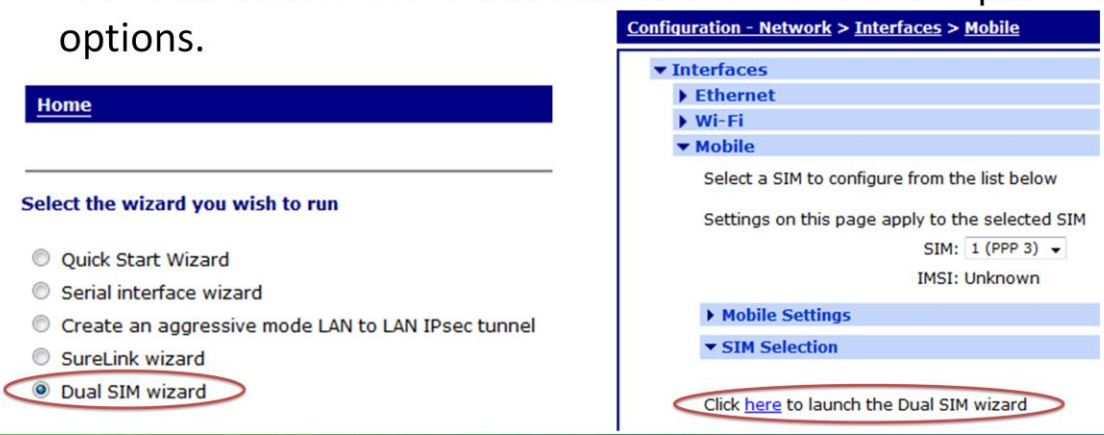
Dual SIM Wizard

- When a link failure is detected, the PPP interface can be de-activated and re-activated. The number of disconnects can be specified.

- If the PPP deactivation fails to resolve the problem, the cellular module is power-cycled and the next SIM/PPP is activated.

Dual SIM Wizard Demo

- The Dual SIM Wizard can be launched from 2 locations.
- Your instructor will run the Dual SIM Wizard and explain the options.



Home > Wizards
Or
Configuration - Network > Interfaces > Mobile > SIM Selection

SureLink / Dead-Link Detection

- Dead link detection is used on working PPP connections
- Cellular TransPort routers will monitor the PPP connection attempts by default
- If a cellular PPP connection fails to connect after 10 attempts, the cellular module will be power cycled.
  - This helps recover from an error condition in the module and also causes the module to re-register with the network in attempt to get a working PPP connection
  - This is configurable
- Cellular module power cycling will be seen in the event log as **GPRS link failed -> power cycle**

Dead-Link Scenario

- Problems may occur with an interface that does not result in the interface disconnecting or an interface deactivation failure.
  - i.e. The TransPort thinks it still has a valid IP connection, but something has happened and no traffic is able to pass.
  - This is known as a *dead-link* scenario.
- Site visits to reboot a unit are very expensive!
- TransPort routers have several different mechanisms for detecting and recovering from such a network problem.
- It is recommended that every cellular configuration contain dead-link detection.

Detecting a dead-link

- The solution is to detect the dead-link and deactivate the interface.
- There are two main types of dead-link detection
  - Active

    Generate ICMP traffic
  - Passive

    Monitor TCP or UDP traffic

    Time based, expects the router to *receive* traffic within a specified number of seconds

Active link failure detection

- An active detection mechanism sends traffic out the interface in order to test it.
  - This has the advantage of working whether or not the interface is being used for normal traffic.
- It does not matter from which end (site or central location) normal traffic is initiated
- There can be a cost associated with sending data to test the link, depending on how the wireless WAN plan is billed

Passive link failure detection

- A passive detection mechanism will monitor the IP traffic and detect if there is a problem with it.
  - Such as a TCP connection failure or excessive TCP re-transmits
- Passive detection only works if LAN hosts behind the TransPort router *initiate* the IP traffic.
- IPsec Tunnels have detection available via Dead Peer Detection.
  - The parameter 'Disconnect interface after this many consecutive auto-negotiation failures' (or 'go out of service after x consecutive auto negotiation failures') will cause the PPP link to disconnect if an IPsec VPN fails to be established after the specified number of tries.
- Time based option will disconnect the PPP interface is no traffic is received within a specified number of seconds. This may result in the PPP interface being disconnected when it didn't need to be.

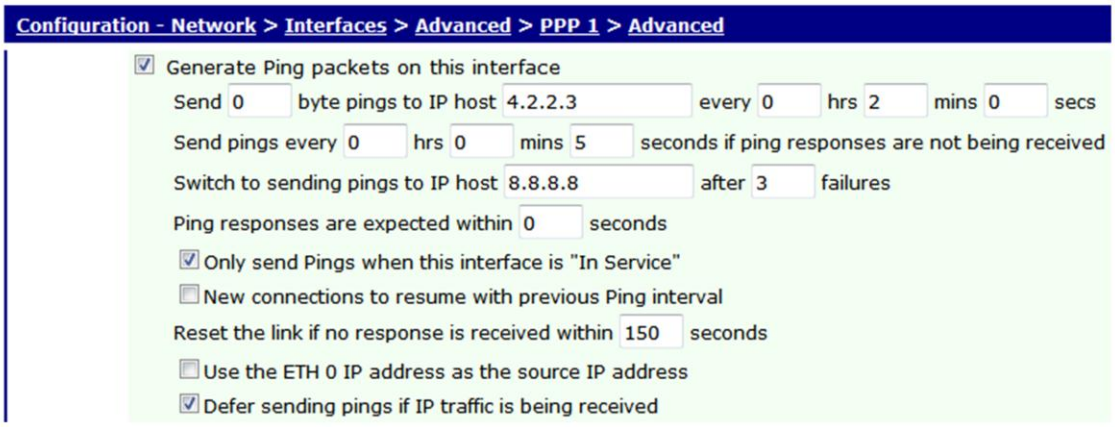
The IPSec (eroute) detection mechanism uses DPD. So it somewhat blurs the line between passive and active since the DPD function does generate active data. The current SureLink wizard has this function listed under Active configuration.

The IPSec "Go out of service if automatic establishment fails" applies to the eroute. However it is NOT related to dead link detection or SureLink.

"Disconnect interface after this many consecutive auto-negotiation failures" – refers to the PPP interface not the Eroute. In the current Web GUI (as of firmware version 5139) this parameter has been unhelpfully renamed to "go out of service after x consecutive auto negotiation failures" in the new web GUI.

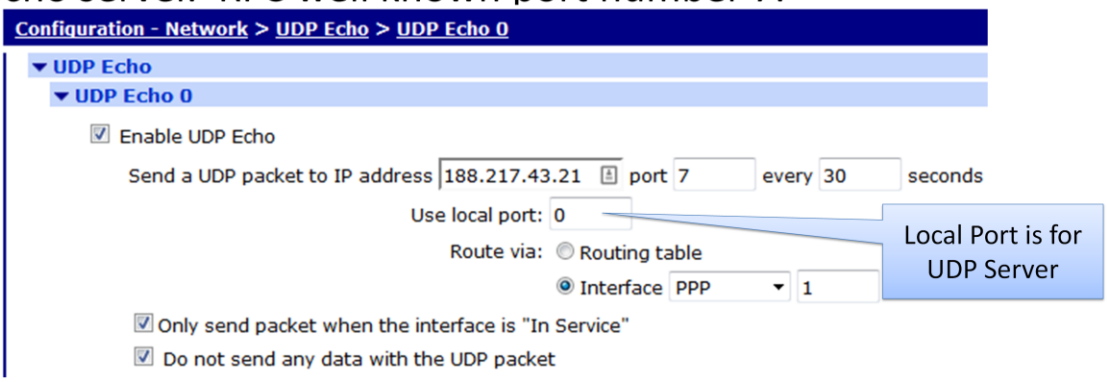
Auto Ping – Active method (manual configuration)

- ***Configuration - Network > Interfaces > Advanced > PPP 1 > Advanced***



UDP Echo– Active method (manual configuration)

- ***Configuration - Network > UDP Echo > UDP Echo 0***
- Configure the UDP client to send UDP packets to a UDP echo server. RFC well known port number 7.



It may be preferable to send UDP echoes through a an IPsec VPN to a server on a remote LAN.
Windows PCs will respond to UDP echo on port 7, just enable Simple TCP/UDP services.

UDP Echo– Active method (manual configuration)

- This UDP traffic must be monitored using the TransPort firewall.

- We wont go into any detail here as this is covered in training module:

  TT010 Using the firewall to detect problems, implement failover, testing and recovery.

SureLink Wizard

- SureLink wizard makes configuration of these dead-link detection methods simpler.
- SureLink will detect when IP traffic is unable to use the WAN link. Traffic is seemingly sent, but link is dead.
- Time based, passive and active methods.
- Can monitor 2 way UDP traffic.
- Can deactivate the PPP link when an IPsec VPN fails to establish after a specified number of attempts.

SureLink

- The modemcc entity will monitor the activation and connection attempts to the mobile network (RF level).
- If 10 network connection attempts fail, the cellular module will be power-cycled.

  The PPP entity can be configured to reboot the router after a specified number of PPP connection failures.
  In theory, this should not be required as disconnecting the PPP interface and power-cycling the cellular module should fix nearly all problems connecting to the network.

SureLink and Dual SIM

Have you noticed that:

the **SureLink / Dead-Link detection** feature

and

the **Dual SIM failover** configuration

Use many of the same configuration parameters.

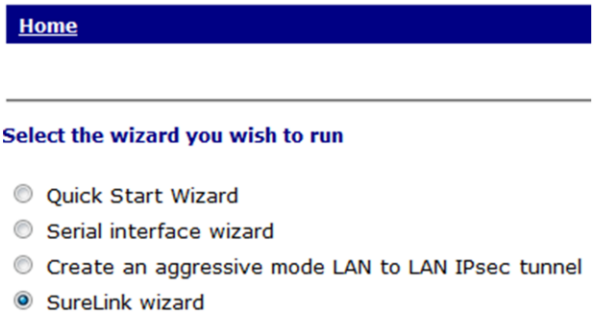
- This will help with understanding the configuration.

SureLink Demo

- The SureLink Wizard is launched from:

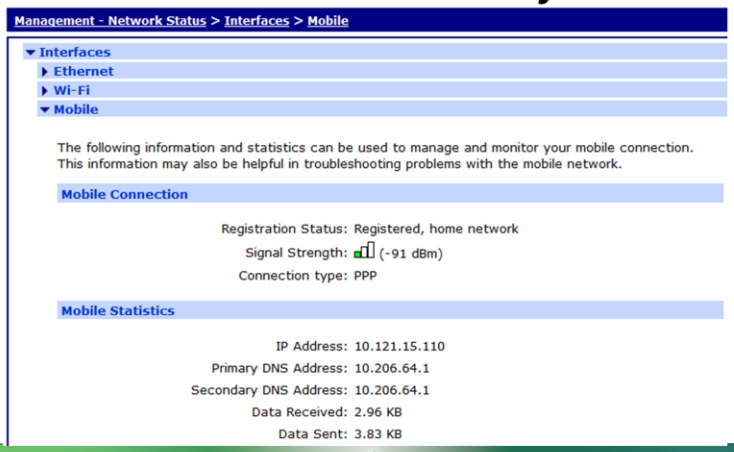
  Home > Wizards

- Your instructor will run the SureLink Wizard and explain the options.



Cellular Network Status

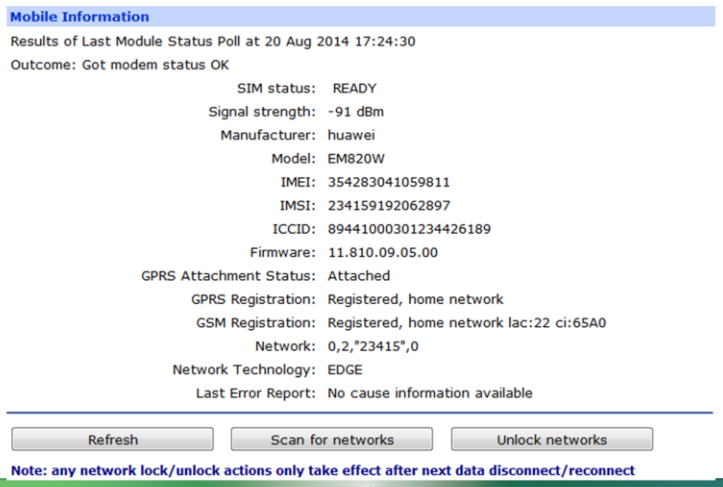
- The network status can be checked by browsing to ***Management - Network Status > Interfaces > Mobile***



Draw attention to the signal strength and IP address.

Cellular Network Status

- Further down, more detailed info relating to the SIM and network.



Draw attention to the SIM status. If the status is READY, the information is good and up to date. Anything else, then the information might be cached.
Next, see the signal strength and the cellular module make, model and firmware version on the module.
The cellular module IMEI is displayed.
The IMSI and ICCID of the active SIM as displayed.

References to GPRS are historical, you can think of this now as 'Cellular' rather than 'GPRS'
The cellular module will ATTATCH to the network first then it will REGISTER on the network. It must be attached and registered for a PPP link to come up successfully.
Certain modules will also provide information relating to the base station that holds the connection. Local Area Code and Cell ID.

Network will display as either a numeric code or the descriptive text of the network name.

The Network Technology will show which technology is currently in use. This can change as throughput increases or decreases and the network adapts to the router's requirements.

HOPS – Configuring the Wireless WAN

- TransPort routers need minimal configuration to get the mobile data connection up and running.

1. Power down the unit and insert your SIM card into slot 1
2. Power up the unit and Navigate to ***Configuration > Network > Interfaces > Mobile > Mobile Settings***
3. Configure the APN (required)
4. Extra settings dependant on SIM & Mobile Operator: SIM PIN, APN Username, APN Password
5. Choose SureLink method.

DONE! Anything else is advanced configuration.

The APN is required for all GSM/WCDMA networks.
The APN may require the use of a username and password, this is dependant on the mobile network.
The SIM may require a SIM PIN to unlock it before it can be used.

HOPS – Monitoring the Wireless WAN

- View the modem and connection status via ***Management - Network Status > Interfaces > Mobile*** (CLI: `modemstat ?`)
- Navigate to ***Management - Connections > PPP > PPP 1*** and observe the IP address. Your instructor will explain what the various fields on this screen mean. (CLI: `ppp 1 status`)
- If there is a delay in PPP coming up, navigate to ***Management - Event Log*** to try and understand the reason for any delay or failure to connect. Your instructor will explain what you are seeing in the event log.

HOPS Dual SIM Wizard

- If time allows, reset the configuration and run the Dual SIM Wizard. Review the configuration.
- Notice how some of the configuration applied is the same as the SureLink Wizard.
- Review the PPP conifguration, Firewall rules and modemcc configuration in the CLI.

HOPS – File System

- Navigate to ***Administration - File Management > FLASH Directory*** to see the equivalent of the command line `dir` command.
- Type **ftp://<router IP address>/** into your web browser. Your web browser now becomes an FTP client and after authentication allows you to upload/download most of the files stored on the TransPort's FLASH.
- Below are a sample set of files you may see stored on a TransPort's flash. Note that for the Operating System files the exact name can change between models and firmware versions.

Operating System
- sbios
- image
- image4.c1
- S5081w#D.web
- logcodes.txt

Configuration
- config.da0
- pwds.da0
- fw.txt
- sregs.dat
- x3prof

FTP – FileZilla is a better option but requires extra software to be installed on the users PC.
Mention the File Editor function, this is a basic text file editor.

HOPS – Configuration Files Backup

- TransPorts have the Web GUI option ***Administration – Backup/Restore*** where all the config files will be added to a ZIP archive for backup.
- Files can be downloaded separately using an FTP client.
- Only configuration files are required.

Required files:
config.da0 (main configuration file)
pwds.da0 (enciphered passwords)

Optional, dependant on usage:
fw.txt (firewall rules, if used)
logcodes.dif (Event log codes modifications)
sregs.dat (serial port settings, if modified from default)
x3prof (PAD profiles)
BGP or OSPF files (if used)

Backup configuration to a file on your PC or server. Options:
Include passwords in the backup file.
Include CA certificates in the backup file.
Include certificates and keys in the backup file.
Include MySQL database file in the backup file.
Include routing protocol configuration files in the backup file.

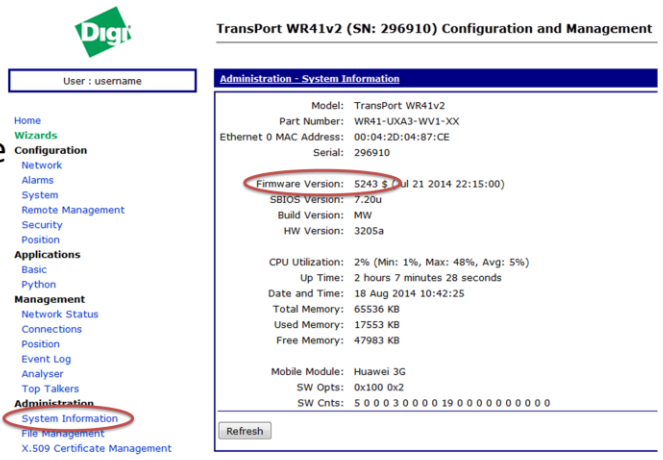
HOPS – Configuration Files Restore

- In ***Administration – Backup/Restore*** where it shows 'Restore From File', click Browse, select the ZIP file downloaded in the previous step, click Restore.
- Config files can be uploaded separately using an FTP client (this will not work with the ZIP file).
- Once the files are uploaded, reboot the router.
  Do not click 'Save' before the reboot as this will overwrite the uploaded files with the current config.

HOPS – Firmware Versions

- Firmware information can be retrieved from ***Administration - System Information***
- Firmware Version: 5243 is the important number to gather
- Via CLI: **`ATI5`** or **`ID`**

  `Software Build Ver5243`
- Compare the running firmware to the current firmware listed at www.digi.com/support



To download or view the latest firmware:

1. Go to http://www.digi.com/support/ (or ftp://ftp1.digi.com/support/firmware/transport/ for a directory listing of all files available)
2. In the Keyword box enter the model number. E.g., “wr21”
3. Click on the product listed
4. Click on Firmware for Digi Transport products
5. Select FTP (or FlashWriter if using it instead)
6. Select the appropriate firmware (usually the last one listed)
7. Select the appropriate model
8. Download the .zip file listed (names vary by version and model)

HOPS – Firmware update (GUI)

- Other procedures are available and are explained in separate training module.

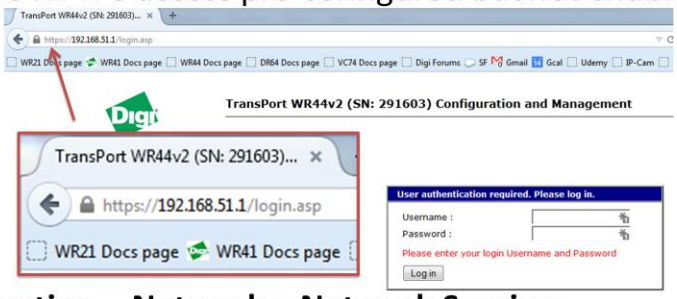
Procedure:

1. Go to www.digi.com/support and select your Transport model
2. Select Firmware for Digi Transport products
3. Look for the appropriate **FTP** firmware for your model and download the .zip file.
4. In the TransPort GUI select ***Administration – Update Firmware***
5. Click Browse, select the .zip file you just downloaded
6. Click Update.
7. Reboot after the update.

Obtain firmware from: ftp://ftp1.digi.com/support/firmware/transport/ftp/

HOPS - HTTPS

- The TransPort router Web GUI can be securely accessed via HTTPS
- TransPort routers have HTTPS access pre-configured but *not enabled*



- To enable HTTPS:
  - Web GUI: **Configuration – Network > Network Services**
  - CLI: **`sockopt 0 https ON`**
- When HTTPS is enabled, HTTP access is *disabled*.

End of Hands-On Practical Session