***Since a FreeNAS server is meant to be run behind the firewall of the router, you have two options to gain access to the server and/or its WebGUI remotely, either a VPN or a multi-hop SSH***

A Multi-Hop SSH is a SSH tunnel over WAN to the router, with a second SSH tunnel through it to FreeNAS over LAN

* Remote device -> WAN SSH -> Router -> [multi-hop begins] -> LAN SSH -> FreeNAS

Utilizing PuTTY, the router & client profiles below will be required:

* SFTP via pscp.exe in the PuTTY root directory
  + Add C:\Program Files (x86)\PuTTY to your environment path to allow access to pscp from any PowerShell/command prompt
    - System - Advanced System Settings - Environment Variables - System Variables – Path

[JuiceSSH](https://play.google.com/store/apps/details?id=com.sonelli.juicessh) [Android] automates the multi-hop by setting Connection - Advanced Settings - Connect Via to Router's Remote SSH connection

**Router** (your.ddns.com)

* Edit Lines:
  + (5) "HostName"="your.ddns.com"
  + (6) "LogFileName"="C:\\Path\\To\\PuTTY\\Logs\\SSH.OpenWRT.Remote.log"
    - Log set to "All Session Output" [Session - Logging]
  + (15) "PortNumber"=dword:00000016
    - Hex value for SSH Port # ([hex] 00000016 = [dec] 22)
    - Windows Calculator has a "Programmer" mode with hex <-> dec
  + (58) "PublicKeyFile"="C:\\Path\\To\\PuTTY\\SSHkeys\\OpenWRT.SSH.ppk"

Windows Registry Editor Version 5.00

**[**HKEY\_CURRENT\_USER\Software\SimonTatham\PuTTY\Sessions\SSH.OpenWRT.Remote**]**

"Present"=dword:00000001

"HostName"="your.ddns.com"

"LogFileName"="C:\\Path\\To\\PuTTY\\Logs\\SSH.OpenWRT.Remote.log "

"LogType"=dword:00000002

"LogFileClash"=dword:00000000

"LogFlush"=dword:00000000

"SSHLogOmitPasswords"=dword:00000001

"SSHLogOmitData"=dword:00000000

"Protocol"="ssh"

"PortNumber"=dword:00000016

"CloseOnExit"=dword:00000001

"WarnOnClose"=dword:00000001

"PingInterval"=dword:00000000

"PingIntervalSecs"=dword:00000000

"TCPNoDelay"=dword:00000001

"TCPKeepalives"=dword:00000000

"TerminalType"="xterm"

"TerminalSpeed"="38400,38400"

"TerminalModes"="CS7=A,CS8=A,DISCARD=A,DSUSP=A,ECHO=A,ECHOCTL=A,ECHOE=A,ECHOK=A,ECHOKE=A,ECHONL=A,EOF=A,EOL=A,EOL2=A,ERASE=A,FLUSH=A,ICANON=A,ICRNL=A,IEXTEN=A,IGNCR=A,IGNPAR=A,IMAXBEL=A,INLCR=A,INPCK=A,INTR=A,ISIG=A,ISTRIP=A,IUCLC=A,IXANY=A,IXOFF=A,IXON=A,KILL=A,LNEXT=A,NOFLSH=A,OCRNL=A,OLCUC=A,ONLCR=A,ONLRET=A,ONOCR=A,OPOST=A,PARENB=A,PARMRK=A,PARODD=A,PENDIN=A,QUIT=A,REPRINT=A,START=A,STATUS=A,STOP=A,SUSP=A,SWTCH=A,TOSTOP=A,WERASE=A,XCASE=A"

"AddressFamily"=dword:00000000

"ProxyExcludeList"=""

"ProxyDNS"=dword:00000001

"ProxyLocalhost"=dword:00000000

"ProxyMethod"=dword:00000005

"ProxyHost"=""

"ProxyPort"=dword:00000000

"ProxyUsername"=""

"ProxyPassword"=""

"ProxyTelnetCommand"="connect %host %port\\n"

"Environment"=""

"UserName"="root"

"UserNameFromEnvironment"=dword:00000000

"LocalUserName"=""

"NoPTY"=dword:00000000

"Compression"=dword:00000000

"TryAgent"=dword:00000001

"AgentFwd"=dword:00000000

"GssapiFwd"=dword:00000000

"ChangeUsername"=dword:00000000

"Cipher"="aes,3des,blowfish,WARN,arcfour,des"

"KEX"="dh-gex-sha1,dh-group14-sha1,dh-group1-sha1,rsa,WARN"

"RekeyTime"=dword:0000003c

"RekeyBytes"="1G"

"SshNoAuth"=dword:00000000

"SshBanner"=dword:00000001

"AuthTIS"=dword:00000000

"AuthKI"=dword:00000001

"AuthGSSAPI"=dword:00000001

"GSSLibs"="gssapi32,sspi,custom"

"GSSCustom"=""

"SshNoShell"=dword:00000000

"SshProt"=dword:00000003

"LogHost"=""

"SSH2DES"=dword:00000000

"PublicKeyFile"="C:\\Path\\To\\PuTTY\\SSHkeys\\OpenWRT.SSH.ppk "

"RemoteCommand"=""

"RFCEnviron"=dword:00000000

"PassiveTelnet"=dword:00000000

"BackspaceIsDelete"=dword:00000001

"RXVTHomeEnd"=dword:00000000

"LinuxFunctionKeys"=dword:00000000

"NoApplicationKeys"=dword:00000000

"NoApplicationCursors"=dword:00000000

"NoMouseReporting"=dword:00000000

"NoRemoteResize"=dword:00000000

"NoAltScreen"=dword:00000000

"NoRemoteWinTitle"=dword:00000000

"RemoteQTitleAction"=dword:00000001

"NoDBackspace"=dword:00000000

"NoRemoteCharset"=dword:00000000

"ApplicationCursorKeys"=dword:00000000

"ApplicationKeypad"=dword:00000000

"NetHackKeypad"=dword:00000000

"AltF4"=dword:00000001

"AltSpace"=dword:00000001

"AltOnly"=dword:00000000

"ComposeKey"=dword:00000000

"CtrlAltKeys"=dword:00000001

"TelnetKey"=dword:00000000

"TelnetRet"=dword:00000001

"LocalEcho"=dword:00000002

"LocalEdit"=dword:00000002

"Answerback"="PuTTY"

"AlwaysOnTop"=dword:00000000

"FullScreenOnAltEnter"=dword:00000000

"HideMousePtr"=dword:00000000

"SunkenEdge"=dword:00000000

"WindowBorder"=dword:00000005

"CurType"=dword:00000001

"BlinkCur"=dword:00000001

"Beep"=dword:00000001

"BeepInd"=dword:00000000

"BellWaveFile"=""

"BellOverload"=dword:00000001

"BellOverloadN"=dword:00000005

"BellOverloadT"=dword:000007d0

"BellOverloadS"=dword:00001388

"ScrollbackLines"=dword:00002710

"DECOriginMode"=dword:00000000

"AutoWrapMode"=dword:00000001

"LFImpliesCR"=dword:00000000

"CRImpliesLF"=dword:00000000

"DisableArabicShaping"=dword:00000000

"DisableBidi"=dword:00000000

"WinNameAlways"=dword:00000001

"WinTitle"="Secure Shell - FreeNAS (Remote)"

"TermWidth"=dword:00000077

"TermHeight"=dword:00000028

"Font"="Lucida Console"

"FontIsBold"=dword:00000000

"FontCharSet"=dword:00000000

"FontHeight"=dword:0000000a

"FontQuality"=dword:00000003

"FontVTMode"=dword:00000004

"UseSystemColours"=dword:00000000

"TryPalette"=dword:00000000

"ANSIColour"=dword:00000001

"Xterm256Colour"=dword:00000001

"BoldAsColour"=dword:00000002

"Colour0"="175,175,175"

"Colour1"="255,125,0"

"Colour2"="25,25,25"

"Colour3"="20,20,20"

"Colour4"="0,163,255"

"Colour5"="0,163,255"

"Colour6"="0,0,0"

"Colour7"="85,85,85"

"Colour8"="187,0,0"

"Colour9"="255,85,85"

"Colour10"="0,187,0"

"Colour11"="85,255,85"

"Colour12"="187,187,0"

"Colour13"="255,255,85"

"Colour14"="0,163,255"

"Colour15"="0,100,255"

"Colour16"="187,0,187"

"Colour17"="255,85,255"

"Colour18"="0,187,187"

"Colour19"="85,255,255"

"Colour20"="187,187,187"

"Colour21"="255,255,255"

"RawCNP"=dword:00000000

"PasteRTF"=dword:00000000

"MouseIsXterm"=dword:00000000

"RectSelect"=dword:00000000

"MouseOverride"=dword:00000001

"Wordness0"="0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0"

"Wordness32"="0,1,2,1,1,1,1,1,1,1,1,1,1,2,2,2,2,2,2,2,2,2,2,2,2,2,1,1,1,1,1,1"

"Wordness64"="1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,1,1,1,2"

"Wordness96"="1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,1,1,1,1"

"Wordness128"="1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1"

"Wordness160"="1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1"

"Wordness192"="2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,2,2,2,2,2,2,2,2"

"Wordness224"="2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,2,2,2,2,2,2,2,2"

"LineCodePage"="UTF-8"

"CJKAmbigWide"=dword:00000000

"UTF8Override"=dword:00000001

"Printer"=""

"CapsLockCyr"=dword:00000000

"ScrollBar"=dword:00000000

"ScrollBarFullScreen"=dword:00000000

"ScrollOnKey"=dword:00000000

"ScrollOnDisp"=dword:00000001

"EraseToScrollback"=dword:00000001

"LockSize"=dword:00000000

"BCE"=dword:00000001

"BlinkText"=dword:00000000

"X11Forward"=dword:00000000

"X11Display"=""

"X11AuthType"=dword:00000001

"X11AuthFile"=""

"LocalPortAcceptAll"=dword:00000000

"RemotePortAcceptAll"=dword:00000000

"PortForwardings"=""

"BugIgnore1"=dword:00000000

"BugPlainPW1"=dword:00000000

"BugRSA1"=dword:00000000

"BugIgnore2"=dword:00000000

"BugHMAC2"=dword:00000000

"BugDeriveKey2"=dword:00000000

"BugRSAPad2"=dword:00000000

"BugPKSessID2"=dword:00000000

"BugRekey2"=dword:00000000

"BugMaxPkt2"=dword:00000000

"BugWinadj"=dword:00000000

"BugChanReq"=dword:00000000

"StampUtmp"=dword:00000001

"LoginShell"=dword:00000001

"ScrollbarOnLeft"=dword:00000000

"BoldFont"=""

"BoldFontIsBold"=dword:00000000

"BoldFontCharSet"=dword:00000000

"BoldFontHeight"=dword:00000000

"WideFont"=""

"WideFontIsBold"=dword:00000000

"WideFontCharSet"=dword:00000000

"WideFontHeight"=dword:00000000

"WideBoldFont"=""

"WideBoldFontIsBold"=dword:00000000

"WideBoldFontCharSet"=dword:00000000

"WideBoldFontHeight"=dword:00000000

"ShadowBold"=dword:00000000

"ShadowBoldOffset"=dword:00000001

"SerialLine"="COM1"

"SerialSpeed"=dword:00002580

"SerialDataBits"=dword:00000008

"SerialStopHalfbits"=dword:00000002

"SerialParity"=dword:00000000

"SerialFlowControl"=dword:00000001

"WindowClass"=""

"ConnectionSharing"=dword:00000000

"ConnectionSharingUpstream"=dword:00000001

"ConnectionSharingDownstream"=dword:00000001

"SSHManualHostKeys"=""

**FreeNAS** (192.168.1.20)

* **Edit Lines:**
  + (5) "HostName"=[root@192.168.1.20](mailto:root@192.168.1.20)
  + (6) "LogFileName"="C:\\Path\\To\\PuTTY\\Logs\\SSH.FreeNAS.Remote.log"
    - Log set to "All Session Output" [Session - Logging]
  + (15) "PortNumber"=dword:00000016
    - Hex value for SSH Port # ([hex] 00000016 = [dec] 22)
    - Windows Calculator has a "Programmer" mode with hex <-> dec
  + (58) "PublicKeyFile"="C:\\Path\\To\\PuTTY\\SSHkeys\\FreeNAS.SSH.ppk"
    - plink creates the multi-hop
  + (32) "ProxyTelnetCommand"="plink -v -load SSH.OpenWRT.Remote -nc %host:%port"
    - If Router's profile name changed, update it here too
    - Profile **cannot**contain spaces
  + *Once each profile has been edited, save as a .reg & merge into registry*
    - *Once merged, you should immediately see them as profile options in PuTTY*

Windows Registry Editor Version 5.00

**[**HKEY\_CURRENT\_USER\Software\SimonTatham\PuTTY\Sessions\SSH.FreeNAS.Remote**]**

"Present"=dword:00000001

"HostName"="root@192.168.1.20"

"LogFileName"="C:\\Path\**\T**o\\PuTTY\\Logs\\SSH.FreeNAS.Remote.log"

"LogType"=dword:00000002

"LogFileClash"=dword:00000000

"LogFlush"=dword:00000000

"SSHLogOmitPasswords"=dword:00000001

"SSHLogOmitData"=dword:00000000

"Protocol"="ssh"

"PortNumber"=dword:00000b83

"CloseOnExit"=dword:00000001

"WarnOnClose"=dword:00000001

"PingInterval"=dword:00000000

"PingIntervalSecs"=dword:00000000

"TCPNoDelay"=dword:00000001

"TCPKeepalives"=dword:00000000

"TerminalType"="xterm"

"TerminalSpeed"="38400,38400"

"TerminalModes"="CS7=A,CS8=A,DISCARD=A,DSUSP=A,ECHO=A,ECHOCTL=A,ECHOE=A,ECHOK=A,ECHOKE=A,ECHONL=A,EOF=A,EOL=A,EOL2=A,ERASE=A,FLUSH=A,ICANON=A,ICRNL=A,IEXTEN=A,IGNCR=A,IGNPAR=A,IMAXBEL=A,INLCR=A,INPCK=A,INTR=A,ISIG=A,ISTRIP=A,IUCLC=A,IXANY=A,IXOFF=A,IXON=A,KILL=A,LNEXT=A,NOFLSH=A,OCRNL=A,OLCUC=A,ONLCR=A,ONLRET=A,ONOCR=A,OPOST=A,PARENB=A,PARMRK=A,PARODD=A,PENDIN=A,QUIT=A,REPRINT=A,START=A,STATUS=A,STOP=A,SUSP=A,SWTCH=A,TOSTOP=A,WERASE=A,XCASE=A"

"AddressFamily"=dword:00000000

"ProxyExcludeList"=""

"ProxyDNS"=dword:00000001

"ProxyLocalhost"=dword:00000000

"ProxyMethod"=dword:00000005

"ProxyHost"=""

"ProxyPort"=dword:00000000

"ProxyUsername"=""

"ProxyPassword"=""

"ProxyTelnetCommand"="plink -v -load SSH.OpenWRT.Remote -nc %host:%port"

"Environment"=""

"UserName"="root"

"UserNameFromEnvironment"=dword:00000000

"LocalUserName"=""

"NoPTY"=dword:00000000

"Compression"=dword:00000000

"TryAgent"=dword:00000001

"AgentFwd"=dword:00000000

"GssapiFwd"=dword:00000000

"ChangeUsername"=dword:00000000

"Cipher"="aes,3des,blowfish,WARN,arcfour,des"

"KEX"="dh-gex-sha1,dh-group14-sha1,dh-group1-sha1,rsa,WARN"

"RekeyTime"=dword:0000003c

"RekeyBytes"="1G"

"SshNoAuth"=dword:00000000

"SshBanner"=dword:00000001

"AuthTIS"=dword:00000000

"AuthKI"=dword:00000001

"AuthGSSAPI"=dword:00000001

"GSSLibs"="gssapi32,sspi,custom"

"GSSCustom"=""

"SshNoShell"=dword:00000000

"SshProt"=dword:00000003

"LogHost"=""

"SSH2DES"=dword:00000000

"PublicKeyFile"="C:\\Path\**\T**o\\PuTTY\\SSHkeys\**\F**reeNAS.SSH.ppk"

"RemoteCommand"=""

"RFCEnviron"=dword:00000000

"PassiveTelnet"=dword:00000000

"BackspaceIsDelete"=dword:00000001

"RXVTHomeEnd"=dword:00000000

"LinuxFunctionKeys"=dword:00000000

"NoApplicationKeys"=dword:00000000

"NoApplicationCursors"=dword:00000000

"NoMouseReporting"=dword:00000000

"NoRemoteResize"=dword:00000000

"NoAltScreen"=dword:00000000

"NoRemoteWinTitle"=dword:00000000

"RemoteQTitleAction"=dword:00000001

"NoDBackspace"=dword:00000000

"NoRemoteCharset"=dword:00000000

"ApplicationCursorKeys"=dword:00000000

"ApplicationKeypad"=dword:00000000

"NetHackKeypad"=dword:00000000

"AltF4"=dword:00000001

"AltSpace"=dword:00000001

"AltOnly"=dword:00000000

"ComposeKey"=dword:00000000

"CtrlAltKeys"=dword:00000001

"TelnetKey"=dword:00000000

"TelnetRet"=dword:00000001

"LocalEcho"=dword:00000002

"LocalEdit"=dword:00000002

"Answerback"="PuTTY"

"AlwaysOnTop"=dword:00000000

"FullScreenOnAltEnter"=dword:00000000

"HideMousePtr"=dword:00000000

"SunkenEdge"=dword:00000000

"WindowBorder"=dword:00000005

"CurType"=dword:00000001

"BlinkCur"=dword:00000001

"Beep"=dword:00000001

"BeepInd"=dword:00000000

"BellWaveFile"=""

"BellOverload"=dword:00000001

"BellOverloadN"=dword:00000005

"BellOverloadT"=dword:000007d0

"BellOverloadS"=dword:00001388

"ScrollbackLines"=dword:00002710

"DECOriginMode"=dword:00000000

"AutoWrapMode"=dword:00000001

"LFImpliesCR"=dword:00000000

"CRImpliesLF"=dword:00000000

"DisableArabicShaping"=dword:00000000

"DisableBidi"=dword:00000000

"WinNameAlways"=dword:00000001

"WinTitle"="Secure Shell - FreeNAS (Remote)"

"TermWidth"=dword:00000077

"TermHeight"=dword:00000028

"Font"="Lucida Console"

"FontIsBold"=dword:00000000

"FontCharSet"=dword:00000000

"FontHeight"=dword:0000000a

"FontQuality"=dword:00000003

"FontVTMode"=dword:00000004

"UseSystemColours"=dword:00000000

"TryPalette"=dword:00000000

"ANSIColour"=dword:00000001

"Xterm256Colour"=dword:00000001

"BoldAsColour"=dword:00000002

"Colour0"="175,175,175"

"Colour1"="255,125,0"

"Colour2"="25,25,25"

"Colour3"="20,20,20"

"Colour4"="0,163,255"

"Colour5"="0,163,255"

"Colour6"="0,0,0"

"Colour7"="85,85,85"

"Colour8"="187,0,0"

"Colour9"="255,85,85"

"Colour10"="0,187,0"

"Colour11"="85,255,85"

"Colour12"="187,187,0"

"Colour13"="255,255,85"

"Colour14"="0,163,255"

"Colour15"="0,100,255"

"Colour16"="187,0,187"

"Colour17"="255,85,255"

"Colour18"="0,187,187"

"Colour19"="85,255,255"

"Colour20"="187,187,187"

"Colour21"="255,255,255"

"RawCNP"=dword:00000000

"PasteRTF"=dword:00000000

"MouseIsXterm"=dword:00000000

"RectSelect"=dword:00000000

"MouseOverride"=dword:00000001

"Wordness0"="0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0"

"Wordness32"="0,1,2,1,1,1,1,1,1,1,1,1,1,2,2,2,2,2,2,2,2,2,2,2,2,2,1,1,1,1,1,1"

"Wordness64"="1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,1,1,1,2"

"Wordness96"="1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,1,1,1,1"

"Wordness128"="1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1"

"Wordness160"="1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1"

"Wordness192"="2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,2,2,2,2,2,2,2,2"

"Wordness224"="2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,1,2,2,2,2,2,2,2,2"

"LineCodePage"="UTF-8"

"CJKAmbigWide"=dword:00000000

"UTF8Override"=dword:00000001

"Printer"=""

"CapsLockCyr"=dword:00000000

"ScrollBar"=dword:00000000

"ScrollBarFullScreen"=dword:00000000

"ScrollOnKey"=dword:00000000

"ScrollOnDisp"=dword:00000001

"EraseToScrollback"=dword:00000001

"LockSize"=dword:00000000

"BCE"=dword:00000001

"BlinkText"=dword:00000000

"X11Forward"=dword:00000000

"X11Display"=""

"X11AuthType"=dword:00000001

"X11AuthFile"=""

"LocalPortAcceptAll"=dword:00000000

"RemotePortAcceptAll"=dword:00000000

"PortForwardings"=""

"BugIgnore1"=dword:00000000

"BugPlainPW1"=dword:00000000

"BugRSA1"=dword:00000000

"BugIgnore2"=dword:00000000

"BugHMAC2"=dword:00000000

"BugDeriveKey2"=dword:00000000

"BugRSAPad2"=dword:00000000

"BugPKSessID2"=dword:00000000

"BugRekey2"=dword:00000000

"BugMaxPkt2"=dword:00000000

"BugWinadj"=dword:00000000

"BugChanReq"=dword:00000000

"StampUtmp"=dword:00000001

"LoginShell"=dword:00000001

"ScrollbarOnLeft"=dword:00000000

"BoldFont"=""

"BoldFontIsBold"=dword:00000000

"BoldFontCharSet"=dword:00000000

"BoldFontHeight"=dword:00000000

"WideFont"=""

"WideFontIsBold"=dword:00000000

"WideFontCharSet"=dword:00000000

"WideFontHeight"=dword:00000000

"WideBoldFont"=""

"WideBoldFontIsBold"=dword:00000000

"WideBoldFontCharSet"=dword:00000000

"WideBoldFontHeight"=dword:00000000

"ShadowBold"=dword:00000000

"ShadowBoldOffset"=dword:00000001

"SerialLine"="COM1"

"SerialSpeed"=dword:00002580

"SerialDataBits"=dword:00000008

"SerialStopHalfbits"=dword:00000002

"SerialParity"=dword:00000000

"SerialFlowControl"=dword:00000001

"WindowClass"=""

"ConnectionSharing"=dword:00000000

"ConnectionSharingUpstream"=dword:00000001

"ConnectionSharingDownstream"=dword:00000001

"SSHManualHostKeys"=""

***[Incorporate Existing Profiles]***

* ***Existing Remote Router Profile***
  + *Merge FreeNAS profile****after****also editing the profile name on line:*
    - *(32) "ProxyTelnetCommand"="plink -v -load Remote.Router.Profile -nc %host:%port"*
* ***Existing FreeNAS Profile***
  + *Create a copy of it*
    - *Under Settings - Connection - Proxy - Telnet Command add:*
      * *plink -v -load Remote.Router.Profile -nc %host:%port*

***[Initiating Multi-Hop]***

* *Initiate Multi-Hop by opening SSH.FreeNAS.Remote profile*
  + *If utilizing a password on PKI key:*
    - *First password request: SSH.OpenWRT.Remote*
    - *Second password request: SSH.FreeNAS.Remote*

***[PSCP commands]***

* ***Push***
  + *pscp -r -i "C:\Path\To\PuTTY\SSHkeys\FreeNAS.SSH.ppk" -2 -scp -P 22 "D:\Path\To\File.txt"root@192.168.1.20:/path/to/directory*
    - ***Without utilizing PKI***
      * *pscp -r -scp "D:\Path\To\File.txt" -P 22*[*root@192.168.1.20:/path/to/directory*](mailto:root@192.168.1.20:/path/to/directory)
* ***Pull***
  + *pscp -r -i "C:\Path\To\PuTTY\SSHkeys\FreeNAS.SSH.ppk" -2 -scp -P 22root@192.168.1.20:/path/to/file.txt "D:\Path\To\Directory"*
    - ***Without utilizing PKI***
      * *pscp -r -scp root@192.168.1.20:/path/to/directory -P 22 "D:\Path\To\File.txt"*

**-r***[copy directories recursively]*

**-i** key *[private key file for user authentication]*

**-1**/**-2***[force use of particular SSH protocol version]*

**-scp***[force use of SCP protocol]*

**-P**port *[connect to specified port]*

​

***[Recommendations]***

* ***GPG4Win****(*[*website*](http://gpg4win.org/download.html)*)*
  + *PKI & SSL certificate management*
  + *Seamlessly interfaces with PuTTY & autoloads keys into pageant via Kleopatra*
* ***WinSCP****(*[*website*](https://winscp.net/eng/download.php)*)*
  + *GUI for transferring files over SSH*
  + *Explorer like drag & drop*
  + *Interfaces seamlessly with PuTTY*
* **Pageant** *(*[*part of PuTTY*](http://the.earth.li/~sgtatham/putty/0.60/htmldoc/Chapter9.html)*)*
  + *Keeps PKI keys active for a specified amount of time*
    - *GPG4Win auto loads keys into pageant*
      * *pageant only operates on the backend with Kleopatra*
    - *Best compromise between security & convenience*
    - *While using, with or without GPG4Win,****do not****leave PC unsecured*
      * *Kleopatra [GPG4Win] will kick you out after ~30 min of terminal inactivity, pageant will not*
  + ***Load Keys***
    - *pageant "D:\Path\To\PuTTY\SSHkeys\FreeNAS.ppk" "D:\Path\To\PuTTY\SSHkeys\Router.ppk"*
  + ***Load Key & Start PuTTY***
    - *pageant "D:\Path\To\PuTTY\SSHkeys\FreeNAS.ppk" "C:\Program Files\PuTTY\putty.exe"*
      * *x64: "C:\Program Files (x86)\PuTTY\putty.exe"*