SightLine APPLICATIONS

EAN-Network Configuration

PN: EAN-Network-Configuration

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Alerts

The following notifications are used throughout the document to help identify important safety and setup information to the user:

> ⚠ **CAUTION:** Alerts to a potential hazard that may result in personal injury, or an unsafe practice that causes damage to the equipment if not avoided.

ⓘ **IMPORTANT:** Identifies crucial information that is important to setup and configuration procedures.

Used to emphasize points or reminds the user of something. Supplementary information that aids in the use or understanding of the equipment or subject that is not critical to system use.

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1 Overview

This document describes network management and configuring such as static IP address for the 1500-OEM and 3000-OEM. It additionally covers setting telemetry destination and port. General knowledge of IP addressing is recommended.

1.1 Associated Documents

EAN-Startup Guide 1500-OEM: Describes steps for connecting, configuring, and testing the 1500-OEM video processing board on the 1500-AB accessory board.

EAN-Startup Guide 3000-OEM: Describes steps for connecting, configuring, and testing the 3000-OEM video processing board on the 3000-IO interface board.

Interface Command and Control (IDD): Describes the native communications protocol used by the SightLine Applications product line. The IDD is also available as a local download on the Software Download page.

Panel Plus User Guide: A complete overview of settings and dialog windows in Panel Plus. Located in The Help menu of the Panel Plus application.

1.2 SightLine Software Requirements

Windows 7, 8, or 10 required for use with the Panel Plus application.

The 3000-OEM (REV C) requires firmware 2.24.xx and higher.

ⓘ **IMPORTANT:** The Panel Plus software version should match the firmware version running on the board.

2 Default IP Addressing

Dynamic Host Configuration Protocol (DHCP) is supported by all SightLine OEM products. This support allows SightLine systems to automatically obtain an Internet Protocol (IP) address. This assignment includes the subnet mask and default gateway.

If a DHCP server is not available on the connected network, each system will then default to a predefined IP address in the Link Local address space.

1500-OEM predefined IP address: 169.254.1.180, 255.255.0.0 subnet mask, and no gateway is defined.

3000-OEM predefined IP address: 169.254.1.181, 255.255.0.0 subnet mask, and no gateway is defined.

This predefined assignment supports the implemented address block of 169.254.0.0/16. If a Windows PC starts without a static or DHCP assigned IP address, it will default within this same address block (and subnet).

These addresses are only valid on the link, i.e., as a local network segment or point-to-point connection that a host PC is connected to. These addresses are not routable and cannot be the source or destination of packets crossing the internet.

3 Discover Systems on the Network

When opening the Panel Plus software, it will broadcast an *SLDiscover* packet on the connected network to look for any SightLine systems (see the IDD). All systems that respond will be displayed to the *SightLine Boards* dropdown menu on the *Connect* tab. An example is shown in Figure 1.

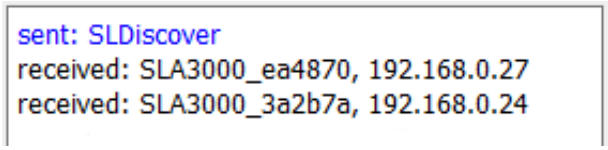


Figure 1: SLDiscover Command Sequence

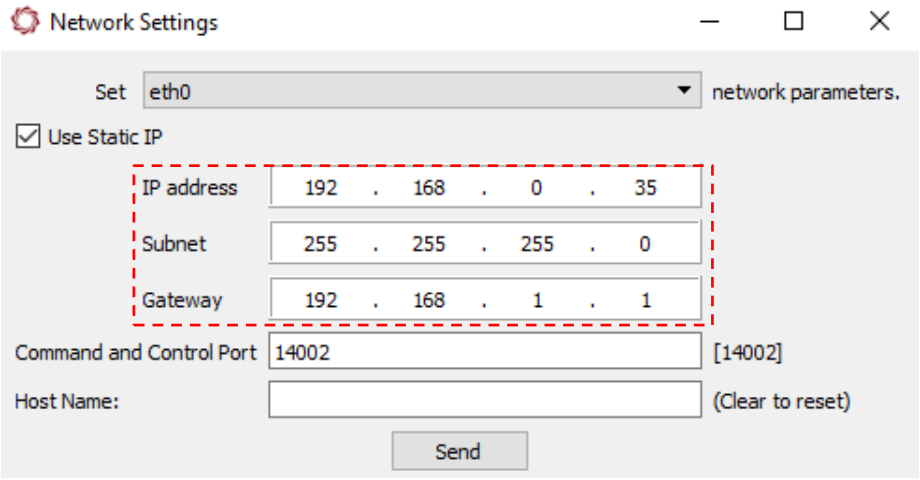
It is important to know the address of the system that you want to connect with and to ensure the host PC is on the same network/subnet:

- The default IP address of the 1500-OEM (when no DHCP server is available) is the local-link address of 169.254.1.180.
- The default IP address of the 3000-OEM (when no DHCP server is available) is the local-link address of 169.254.1.181.

If the board you are looking for is not shown see Connection Issues for more information.

4 Define Static IP Address

1. Connect to the board using the Panel Plus application. See the 1500-OEM Startup Guide or the EAN-Startup Guide 3000-OEM for connection instructions.
2. Once connected to the board, from the main menu go to *Configure* » *Network Settings*.
3. Select the checkbox for *Use Static IP*. Enter the IP Address, Subnet, and Gateway address.
4. Click the *Send* to update the parameter file.



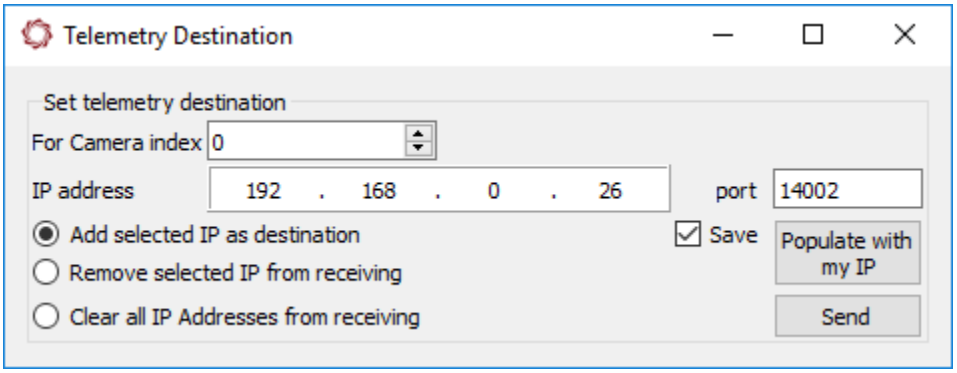
5. Save and activate the settings:
   a. Main menu » *Parameters* » *Save to Board*.
   b. Main menu » *Reset* » *Board*.
   c. After the system reboots reconnect to the board. Make sure the board connects.
6. After rebooting the board will now have the newly assigned IP address.

Make sure to change the IP address on the host PC to an address on the same logical subnet.

5 Telemetry Destination IP Addresses

The destination IP address for telemetry will typically be the IP address of the gimbal control system, the autopilot program, or Ground Control Station.

1. From the main menu in Panel Plus go to *Configure* » *Telemetry Destination*
2. In the Telemetry Destination dialog window, select the camera index number. This will be the source camera for the pixel telemetry.
3. Set the destination IP address and port. Telemetry is sent as a UDP packet and the port will be a listening UDP port on the remote system.
4. Select the *Add selected IP as destination*, and then click *Send*. Up to five telemetry destinations may be added.



To enter additional telemetry destination after the maximum (5) has been reached, a destination IP address will need to be removed. Use the Remove selected IP from receiving and then click Send.

To clear all the telemetry destination IP addresses, select Clear all IP Addresses from receiving and then click Send.

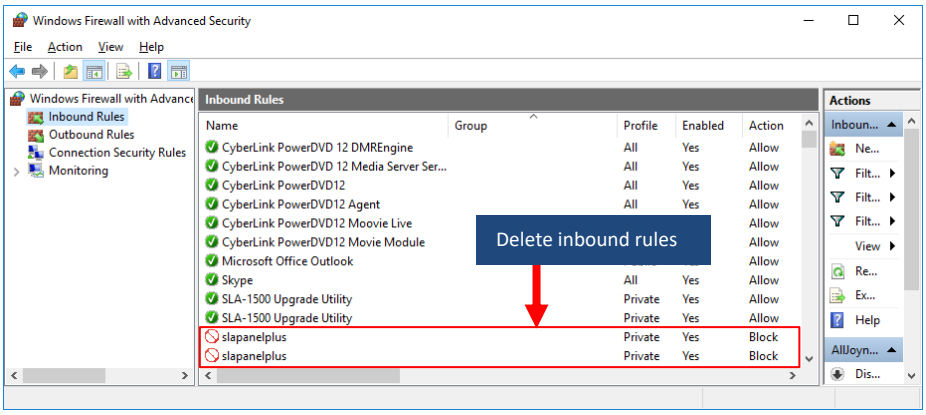
5. From the main menu, go to *Parameters* » *Save to board*.
6. From the main menu, go to *Reset* » *Board* or power cycle the board.
7. Wait for the system to boot, and then reconnect to the board.

6 Connection Issues

6.1 Windows Firewall

Failure to allow access in the Windows Security Alert prompt upon initial startup of the Panel Plus application can cause connection issues.

1. Close the Panel Plus software application and open the Window Firewall Security Manager on the host PC.
2. Go to *Inbound Rules* and delete the two *slapanelplus* rules (TCP and UDP).
3. Re-start the Panel Plus application and allow access in the Windows Security Alert prompt window.



6.2 Serial Connection

Many network connection issues are related to either cabling, IP addresses conflicts, or subnets not matching properly.

A serial port can be used for troubleshooting if a network connection cannot be established.

The Panel Plus software will automatically recognize serial ports and list them in the dropdown menu for available connections.

See the Serial Communications section in the EAN-Startup Guide 1500-OEM or the EAN-Startup Guide 3000-OEM for setting up a serial connection in Panel Plus.

ⓘ **IMPORTANT:** If connecting to the serial port on the 1500-OEM or 3000-OEM from a host PC, the connection may require a null modem serial cable or adapter for proper communications. The pinout for this cable can be found in the ICD-1500-OEM or ICD-3000-OEM.

If you are still having issues and require additional support, please contact Support.

6.3 Change Panel Plus Network Interface Metric

Panel Plus connection issues occur when multiple network interface controllers (NICs) exist on a PC. Network interface metrics can be changed to allow the use of a wireless adapter for general internet access (web browsing, etc.) and all Panel Plus to use a local LAN (hard wired interface) connection to the SightLine system.

The Network Sharing user interface will vary based on the Windows version.

To change the network interface metric:

1. Go to the *Network Sharing Center* in Windows. In all versions of Windows, it is located in the Control Panel.
2. Click on *Change Adapter Settings*.
3. Right click on the local area network adapter and select properties.
4. Click on Internet *Protocol Version 4 (TCP/IPv4)*, and then click on *Properties*.
5. Click on *Advanced*.
6. Uncheck the *Automatic metric* check box. Set the interface metric to 1. A low number designates this adapter. Click *OK* in the dialog windows and close.
7. Select a new wireless adapter and repeat the process above. Set the interface metric higher than 999.
8. Disable and re-enable the adapters (or reboot PC) for the settings to take effect.

7 Advanced Networking Tip and Techniques

SightLine OEM products run a version of embedded Linux on the ARM processor. Many network related services and network capabilities can be accessed. Additional functionality (such as Ethernet to serial passthrough) can be accomplished with the Panel Plus software interface.

7.1 Terminology

SLA-hardware	General purpose term to describe any OEM product sold by SightLine
Target	Refers to the Linux Kernel running on SLA hardware
Host	Refers to the host PC used to interface with SLA-hardware
root@slaNNNN#	Linux command prompt on target, where NNNN is either 1500 or 3000
$	Linux command prompt on host

Prior to firmware release 2.25, the 1500-OEM command prompt was DM-37x#. Some figures below still reflect this.

7.2 Tool Summary

Table 1: Tool Summary

Utility	Description
SSH (Secure Shell)	Allows users to logon to target and execute commands
FTP	Allows users to move files from host to target
SCP (Secure Copy)	Used to transfer files from host to target
TC (Traffic Control)	Used to modify the flow of Ethernet packets
VCONFIG	Create and remove virtual Ethernet devices (VLAN)
NETSTAT	Used to display networking information such as open ports
ROUTE	Used to create route tables
IFCONFIG	Used to configure network interfaces
ETHTOOL	Used to modify Ethernet interface parameters
IPERF	Industry standard network performance measurement tool

7.3 Third Party Utilities

Use of third party support tools and utilities are integral to the integration and support of SLA-products. SightLine Applications offers the links shown below as a convenience. Users that download third party tools do so at their own risk and are bound to the usage agreements contained for each product.

There are many tools and utilities that are available on the web that provide identical functionality. Developers should use the tools that works best for their application.

FTP - FileZilla	FTP client utility
Tera Term	Terminal emulator (command console)
Wireshark	Network protocol analyzer

7.4 User Names and Passwords

SightLine uses the following conventions for usernames and passwords shown in Table 2.

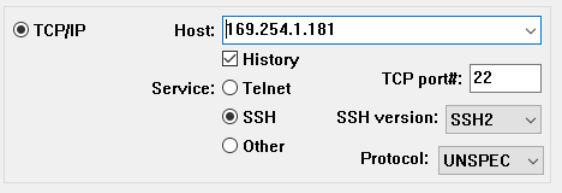
Table 2: Username and Passwords

System	User name	Password
Target Hardware	*root*	*root*
Host (PC)	*slroot*	*slroot*

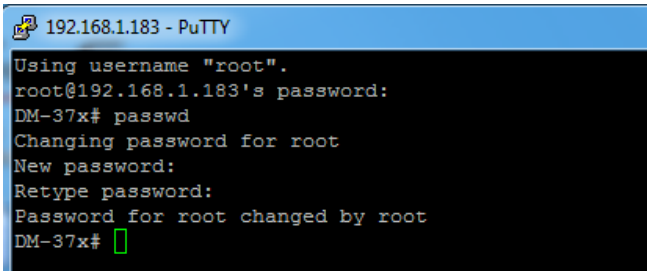
7.5 Change Target Default Password

ⓘ **IMPORTANT:** Use discretion when performing this operation. Some SightLine documentation and software such as Panel Plus assumes *root* is used as the default username and password. Changing this default behavior may render some operations unavailable.

1. Use Tera Term (or similar) to establish an SSH session to the target.

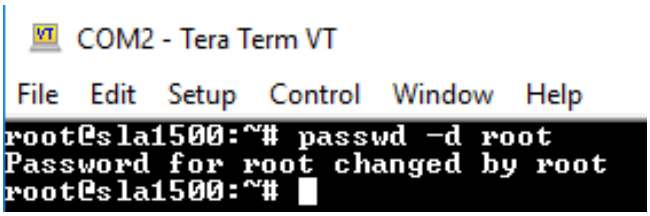


2. Login using the default username and password: *root*
3. At the command prompt type `passwd`. Enter a new password and follow the prompts. Use characters and numbers to create a strong password.



7.6 Remove Passwords

The utility *passwd* can also be used to remove a password. Type: `# passwd -d root`

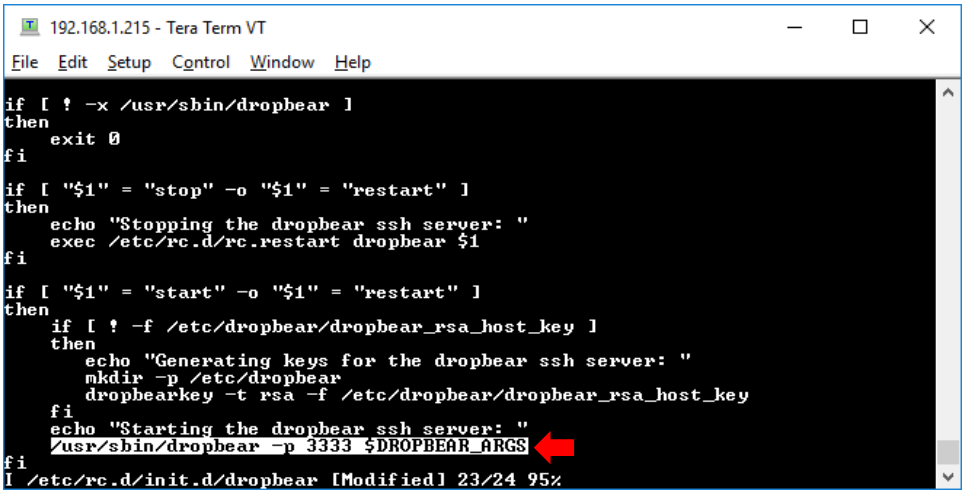


7.7 Default Inbound SSH Port

SightLine systems listen for incoming SSH connections on port 22 by default. The inbound SSH port may be changed by editing the *dropbear* SSH server configuration file.

7.7.1 1500-OEM - Changing the Inbound SSH port

1. Open a terminal emulator and establish an SSH session to the target.
2. From the *DM-37x#* prompt enter: `vi /etc/rc.d/init.d/dropbear`
3. Press the (I) key to enter insert mode.
4. Insert `-p port` between `/usr/sbin/dropbear` and `$DROPBEAR_ARGS` in the second to last line. Port 3333 is used in the example below:

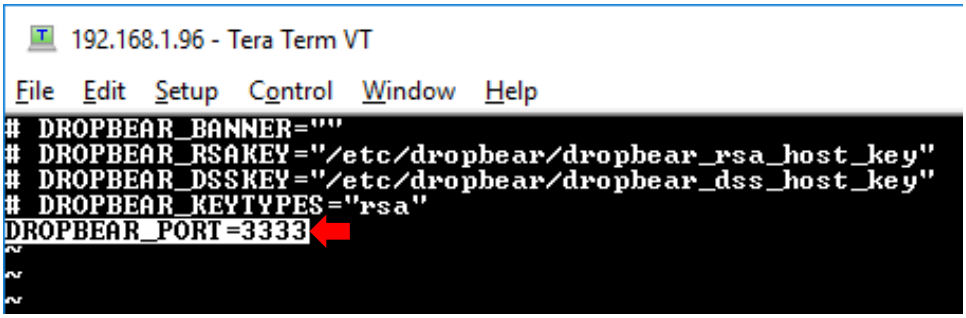


5. Press the *Escape* key, then type: `wq` and press Enter to save the file and exit the vi editor.
6. From the *DM-37x#* prompt enter: `reboot`
7. Once the board has rebooted establish an SSH session via the specified port to verify the change.
8. Optional: from the *DM-37x#* prompt enter `netstat -l` to view active connections. `(null):port` should appear in the under the local address column with the state `LISTEN`.

7.7.2 3000-OEM - Changing the Inbound SSH port

1. Open a terminal emulator and establish an SSH session to the target.
2. Remount the filesystem with write access. From the *root@sla3000:~#* prompt enter:

   `mount -w -o remount /`
3. From the *root@sla3000~#* prompt enter: `vi /etc/default/dropbear`
4. Press the (I) key to enter insert mode.
5. Add a new line containing `DROPBEAR_PORT=port` to the end of the file. Port 3333 is used in the example below:



5. Press the *Escape* key, then type: `wq` and press *Enter* to save the file and exit the vi editor.
6. From the *root@sla3000~#* prompt enter: `reboot`
7. Once the board has rebooted, establish an SSH session via the specified port to verify the change.
8. Optional: from the *root@sla3000~#* prompt enter `netstat -l` to view active connections. `(null):port` should appear in the under the local address column with the state `LISTEN`.

7.8 Assign Multiple IP Addresses to Single NIC

It is possible to route specific traffic to different networks. This process is referred to as multihome. In this example, the target has the existing IP address of *192.168.1.183*. The other network segment has an IP address of *192.168.0.42*.

1. Establish an SSH session to the target.
2. To view the current settings, type: `ifconfig`
3. To add another IP, type: `ifconfig eth0:1 192.168.0.42 netmask 255.255.255.0 multicast up`

   Both IP addresses (192.168.1.183 and 192.168.0.42) are now accessible on the LAN.

eth0:1 can be changed as appropriate to match your system. For example, eth0:1 is already in use on the 3000-OEM, therefore eth0:2 or similar can be used.

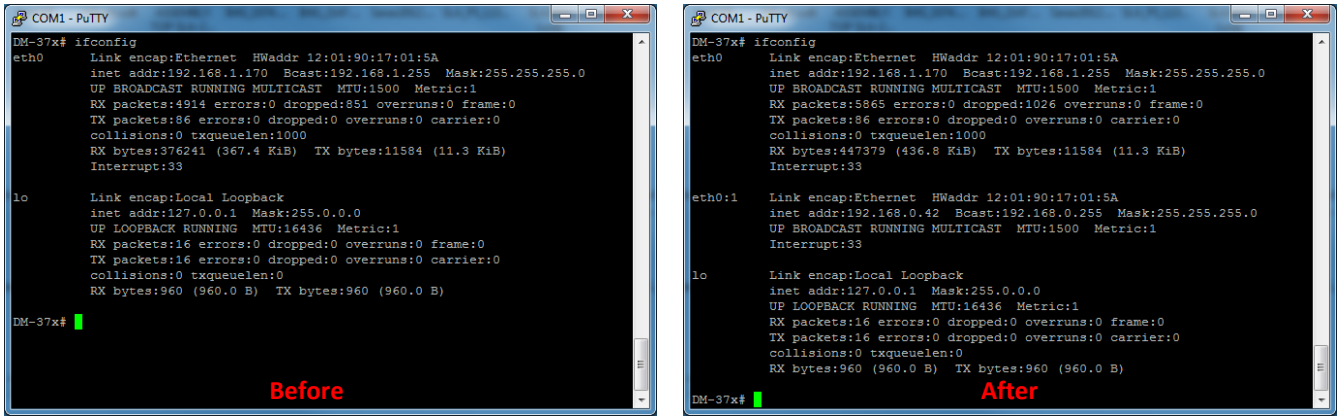


Figure 2: Routing Specific Traffic to Different Networks

7.9 Configure a VLAN

Establish an SSH session to the target.

7.9.1 Add a VLAN

Type in:	Reason:
• `vconfig add eth0 5`	Add VLAN ID 5
• `ifconfig eth0.5`	To see the VLAN
• `ifconfig eth0.5 192.168.42.100 netmask 255.255.255.0 broadcast 192.168.42.255 up`	To add an IP address for the VLAN
• `cat /proc/net/vlan/eth0.5`	To check the status

This can be added to the /etc/rc.d/rc.local or /etc/network/interfaces so that this configuration is created on startup.

7.9.2 Remove a VLAN

Type in:

- `ifconfig eth0.5 down`
- `vconfig rem eth0.5`

7.10 Traffic Control (tc)

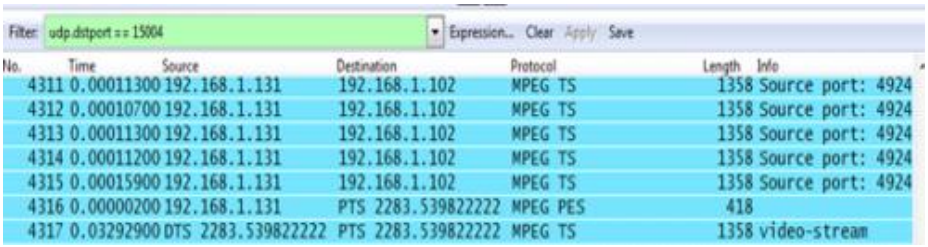
Traffic control (tc) can be used to normalize the rate at which packets are transmitted preventing massive peaks when using IP radios or similar.

In this example, the target will be configured to transmit video, and then the packet formation will be adjusted.

The following steps reference the Panel Plus software.

1. Connect to target using Panel Plus.
2. Set up for Network Output.
3. Configure MPEG2-TS + H.264 video streaming.

4. Click *Send*. The target should now be streaming video.
5. Start Wireshark.
6. From the main menu go to *Capture* » *Interfaces.*
7. Filter the H.264 packets that are going to port 15004.



8. Configure the scale to view the base line data and periodic large data peaks.
   a. *Menu* » *Statistics* » *IO Graph*
   b. *X Axis* » *Tick Interval = 0.1 sec*
   c. *Y Axis* » *Unit: Bytes/Tick*
9. Establish an SSH session to the target.
10. To configure and run the traffic control (tc) binary, type:

```
tc qdisc replace dev eth0 handle 1:0 root tbf burst 3000 limit 300k rate
2000000 peakrate 3000000 mtu 3000
```

    a. Edit parameters as necessary.

In Wireshark there should be less peaks and more consistent output packet rate.

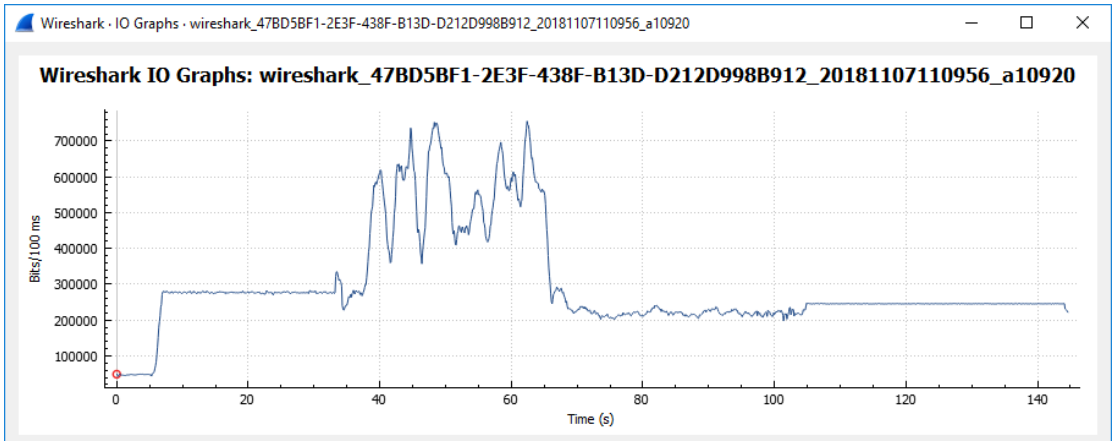


Figure 3: Wireshark IO Graphs

Alternate:

```
tc qdisc del dev eth0 root &> /dev/null
tc qdisc add dev eth0 root handle 1: htb default 1
tc class add dev eth0 parent 1: classid 1:1 htb rate 3mbit
```

7.11 FTP

There are many FTP client applications available for this process. In this example the Windows command line is used. The default user name and password are *root*.

When connecting to the board, the SLA-hardware will access the */mnt/mmcblk0p1* directory. This is the directory of the MicroSD card (if installed).

Use the following commands to manage the files:

List files: `ls`

```
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
slaimage0.jpg
slaimage_0000.jpg
slaimage_0001.jpg
slavideo_0000.ts
226 Directory send OK.
ftp: 71 bytes received in 0.00Seconds 71000.00Kbytes/sec.
```

Get a file: `get sla_image_0001.jpg`

```
ftp> get slaimage_0001.jpg
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for slaimage_0001.jpg (34788 bytes).
226 File send OK.
ftp: 34788 bytes received in 0.00Seconds 34788000.00Kbytes/sec.
ftp>
```

Change directory: `cd /root`

```
ftp> cd /root
250 Directory successfully changed.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
1400e013015a86d1.license
VideoTrack1500
captureSample
cmemk.ko
dsplinkk.ko
```

Get param file: `get param51ac9a4a.txt`

```
ftp> get param51ac9a4a.txt
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for param51ac9a4a.txt (11088 bytes).
226 File send OK.
ftp: 11088 bytes received in 0.00Seconds 11088000.00Kbytes/sec.
ftp>
```

Remove param file: `del param51aca4a.txt`

```
ftp> del param51ac9a4a.txt
250 Delete operation successful.
ftp>
```

Upload a new param file: `put param51ac9a4a.txt`

```
ftp> put param51ac9a4a.txt
200 PORT command successful. Consider using PASV.
150 Ok to send data.
226 File receive OK.
ftp: 11088 bytes sent in 0.00Seconds 5544.00Kbytes/sec.
ftp>
```

7.12 Change the MTU

Based on radio capability or other network issues it may be necessary to reduce the Maximum Transmission Unit (MTU) or packet size. The default MTU is 1500 as shown in Tera Term.

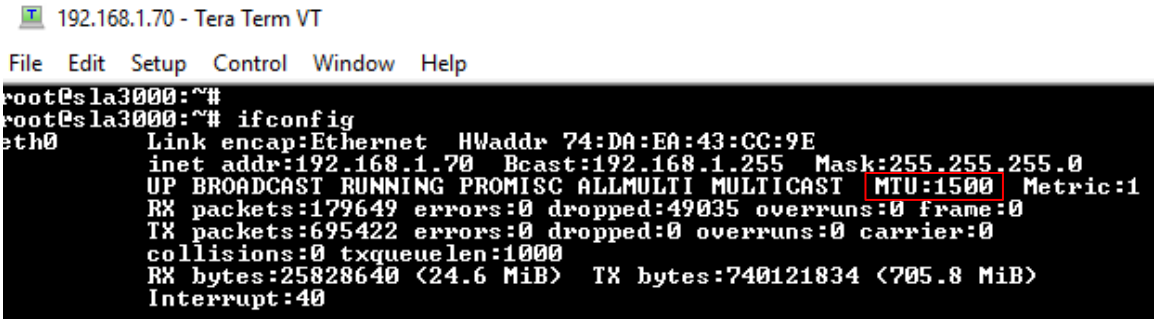


Figure 4: Default MTU in Tera Term

Use Wireshark to view packets. Note that most packets are 1442 bytes.

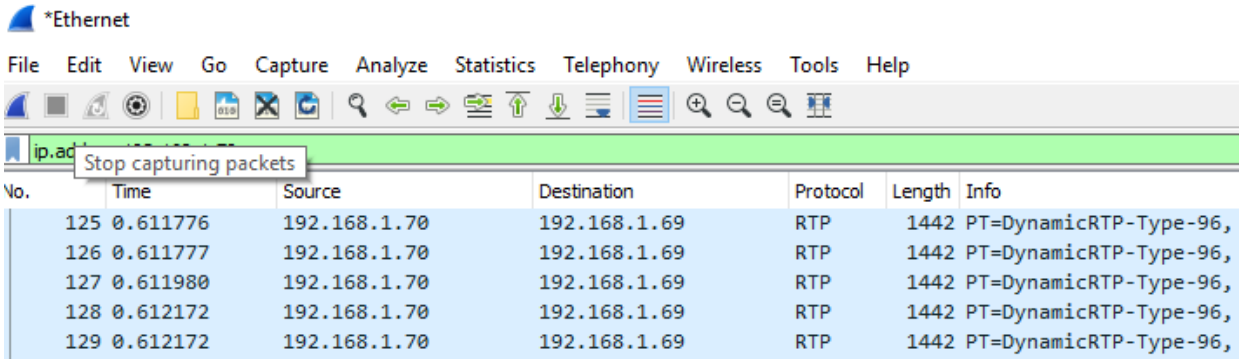


Figure 5: Packet Sizes in Wireshark

In the example below, the MTU has been changed to 900 [bytes] by using the command:

```
ifconfig eth0 mtu 900
```

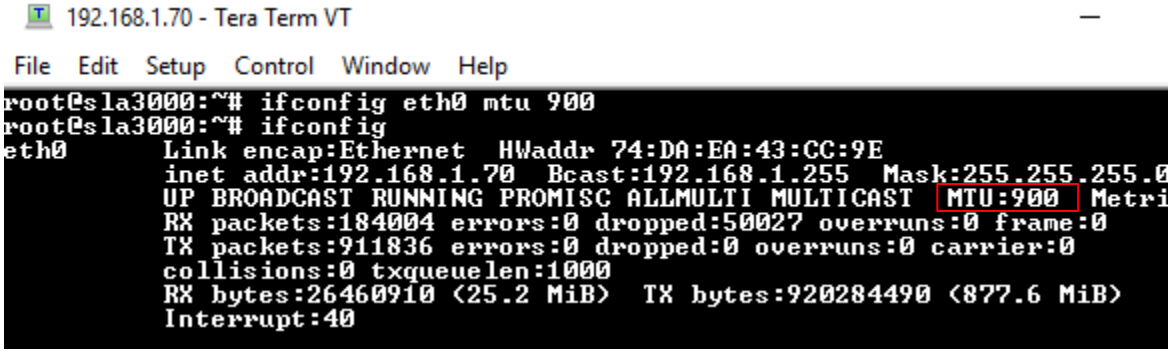


Figure 6: MTU Reduced in Tera Term

In Wireshark note the smaller packets and fragmentation after the MTU change.

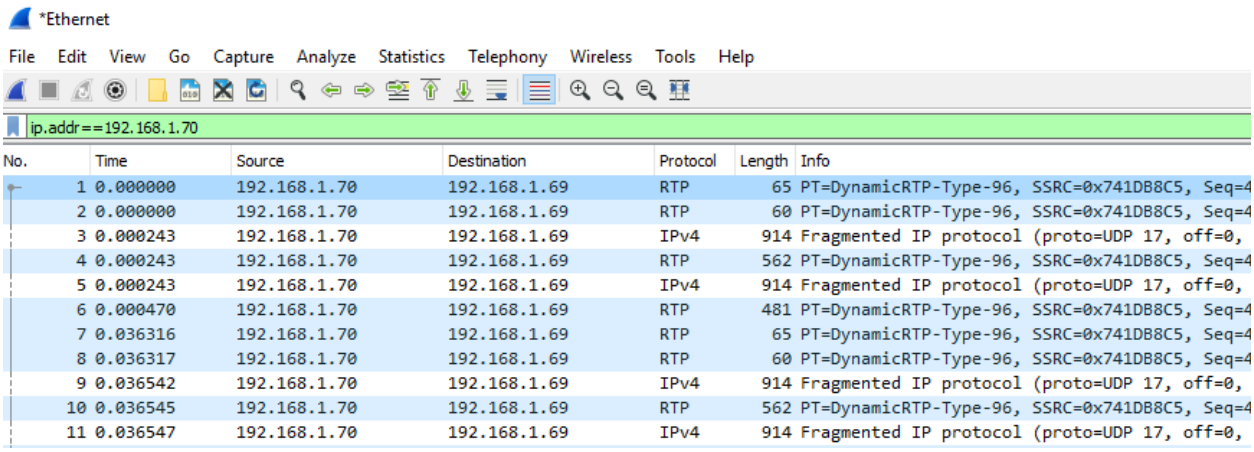


Figure 7: Smaller Packet Sizes in Wireshark

7.13 Iperf (3000-OEM only)

Iperf is an industry standard cross-platform tool for measuring network performance that is available on the 3000-OEM. Iperf uses a client-server model and creates data streams to measure throughput.

The following example demonstrates configuring an iperf server on a Windows PC using UDP port 11000, connecting an iperf client on a 3000-OEM, and measuring throughout over a switched Ethernet network. The Windows PC uses a precompiled iperf 2.05 32-bit Windows binary from iperf.fr. This version is compatible with Windows XP-10 x86/x64 and is interoperable with the 3000-OEM version.

1. Open a command prompt (cmd.exe) on the PC and `cd` to the path of the iperf binary.
2. Start the iperf server – enter: `iperf -s -u -p 11000`
3. Open a terminal emulator and establish an SSH session to the 3000-OEM.
4. Start the iperf client. From the *root@sla3000~#* prompt enter:

```
iperf -c pc_ip_address -p 11000 -i 1 -b 95m
```

The -b parameter specifies target bandwidth in Mb/s and implies UDP transmission. During testing, values above 95 dramatically reduced performance with the 3000-OEM configured as the client. The maximum real-world throughput of the 3000-OEM 10/100 Ethernet adapter is ≈95 Mb/s under ideal conditions. The -b parameter should not exceed 95m when the 3000-OEM is configured as the client

If successful, the client and server will note the connection established on port 11000. The client reports the data transferred and measured bandwidth in one second intervals.

Once the test is the complete, the client and server display the average bandwidth, lost/total packets, jitter, and amount of data transferred during the test period (Figure 8 and Figure 9).

To configure the 3000-OEM as the server and the PC as the client, swap the example commands.

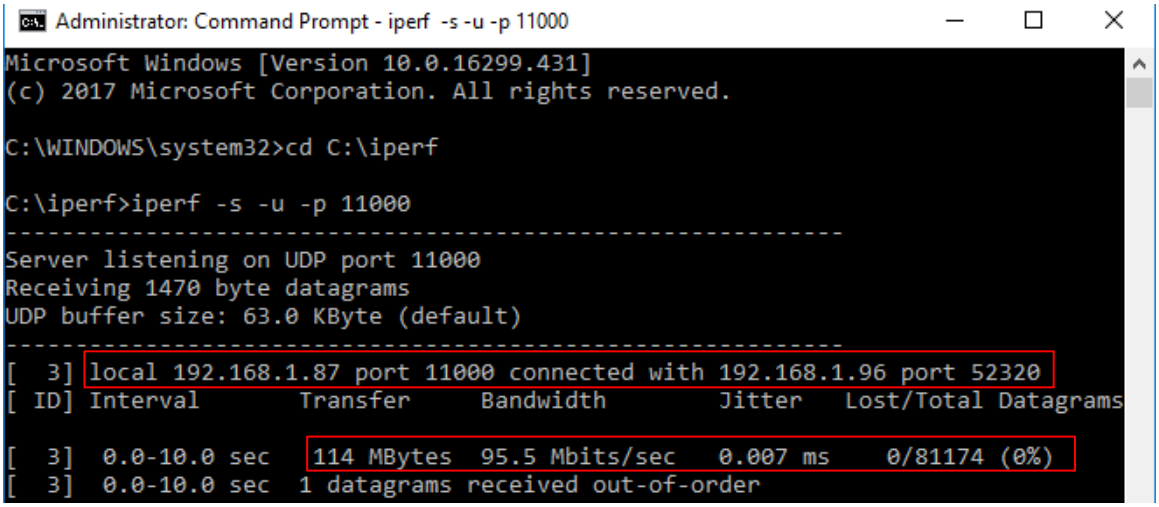


Figure 8: Inbound Connection and Average Bandwidth During Test Period

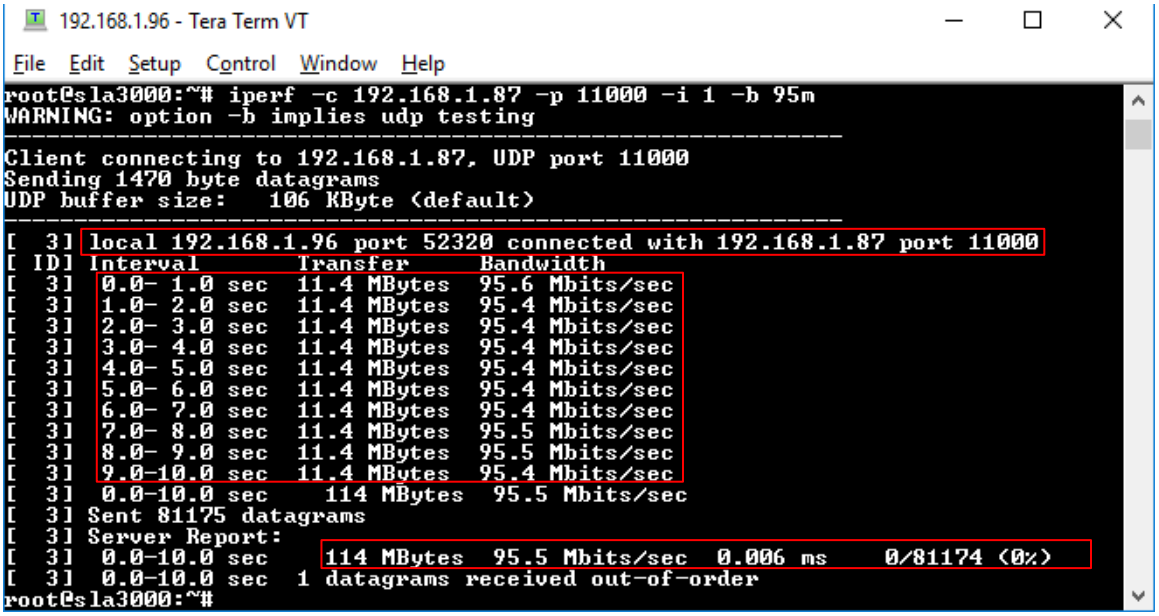


Figure 9: Outbound Connection and Bandwidth in 1s Intervals

7.14 Change Interface Speed / Duplex / Auto-Negotiation Configuration

The speed, duplex, and auto-negotiation configuration of the SLA-hardware Ethernet interface can be adjusted using the *ethtool* binary on the embedded Linux system. This may be useful when integrating older devices or specialized network hardware such as satellite radios.

Open a terminal emulator and establish an SSH session to the target. Type `ethtool eth0` to check the current Ethernet interface configuration as shown in Figure 10.

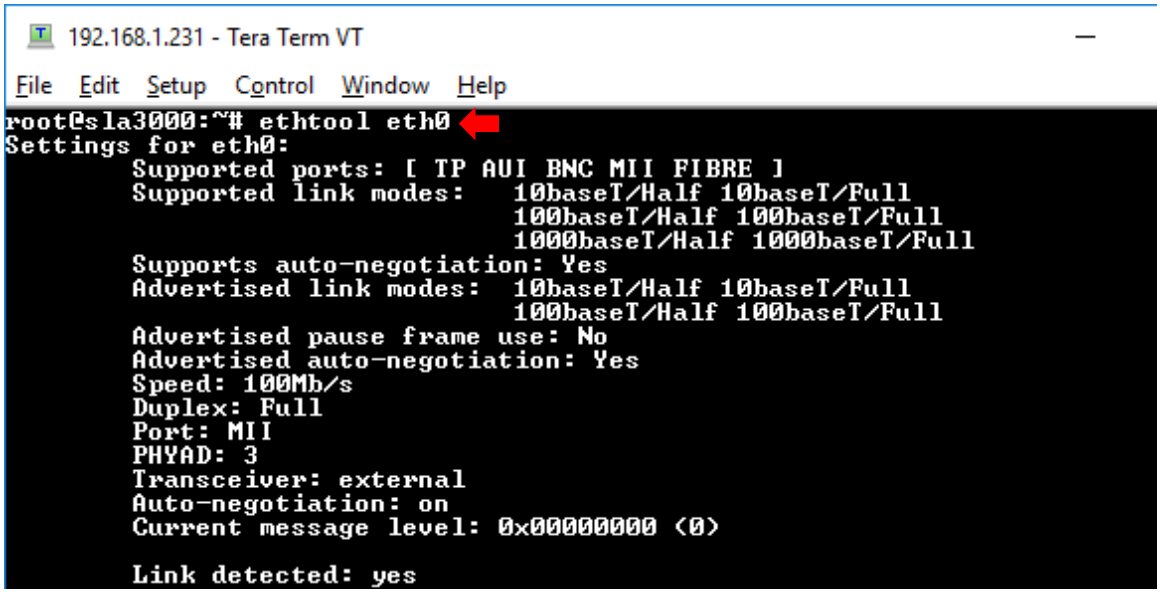


Figure 10: Check Ethernet Interface Configuration

In Figure 11 the interface configuration has been changed to 10 Mbps full duplex with auto-negotiation disabled by using the command: `ethtool -s eth0 speed 10 duplex full autoneg off`

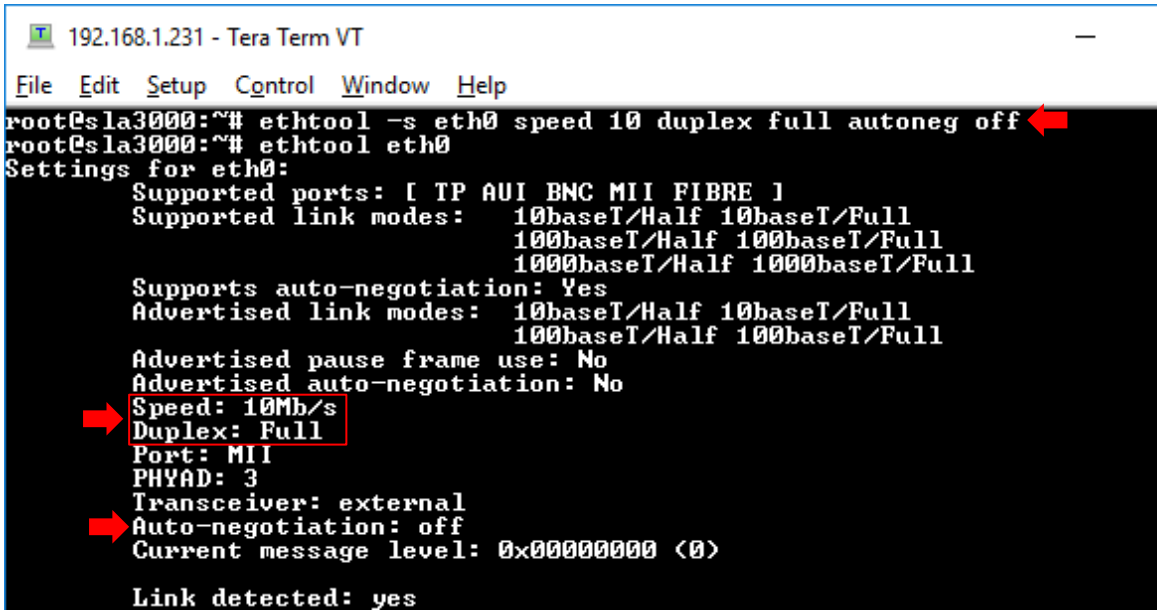


Figure 11: Interface Speed / Duplex / Auto-Negotiation Configuration Changed

7.14.1 1500-OEM Ethernet Interface Configuration Startup

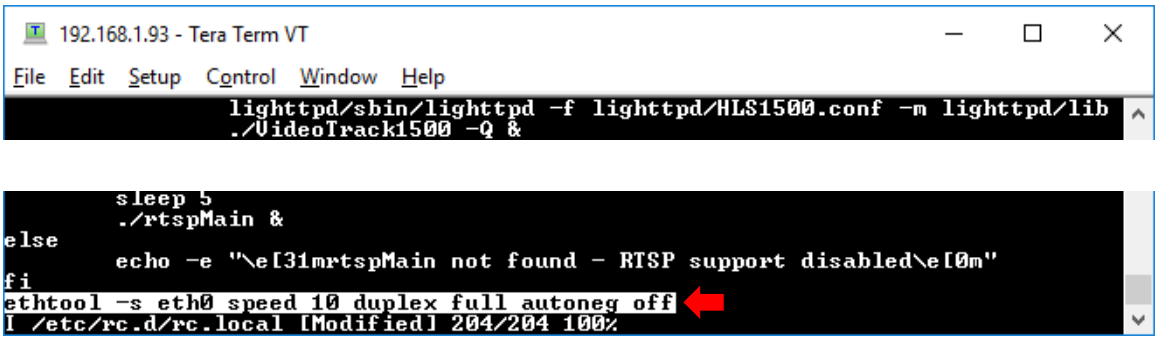
To set the interface configuration at startup, add an *ethtool* command to the *rc.local* script.

1. Open a terminal emulator and establish an SSH session to the target.
2. Open *rc.local* in the vi editor. From the command line type: `vi /etc/rc.d/rc.local`
3. Navigate to the end of the file using Page Down or the down ↓ arrow key.

4. Press the (I) key to enter insert mode.
5. If an empty line is not present at the end of the file, press the *Enter* key to insert a new line.

ⓘ **IMPORTANT:** Add the *ethtool* command to the end of the file. The intend interface configuration may be overridden if *ethtool* is called prior to `x_Discover_Release` and/or `VideoTrack1500`.

6. Enter the *ethtool* command.



7. Press the *Escape* key, and then type: `wq`
8. Press the *Enter* key to save the file and exit the vi editor.
9. At the command line, type: `reboot`

Auto-negotiation will be enabled during the initial boot process, and the interface will briefly initialize with auto-negotiated parameters once the Linux kernel has loaded. Modifying the interface parameters with ethtool may add up to 10 seconds to the startup process.

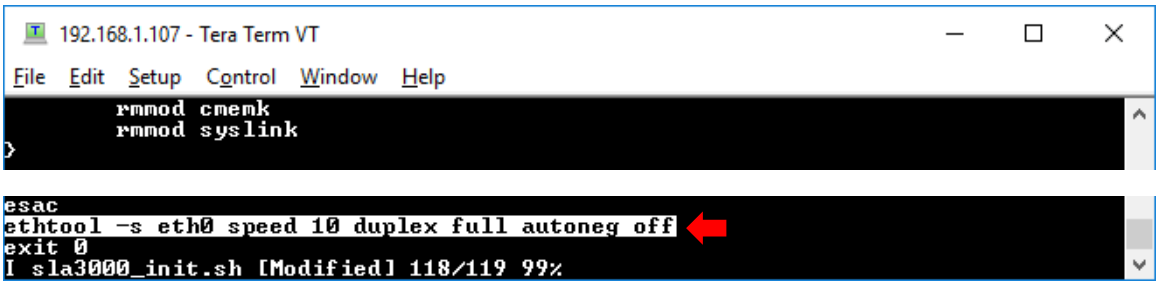
7.14.2 3000-OEM Ethernet Interface Configuration Startup

To set the interface configuration at startup, add an *ethtool* command to the sla3000_init.sh script.

1. Open a terminal emulator and establish an SSH session to the target.
2. Open *sla3000_init.sh* in the vi editor. From the command line, type: `vi sla3000_init.sh`
3. Navigate to the end of the file using *Page Down* or the down arrow ↓ key.
4. Press the (I) key to enter insert mode.
5. Position the cursor in the empty line between `esac` and `exit 0`.

ⓘ **IMPORTANT:** Add the *ethtool* command to the end of the file. The intend interface configuration may be overridden if *ethtool* is called prior to `x_Discover_Release` and/or `VideoTrack3000`.

6. Enter the *ethtool* command.



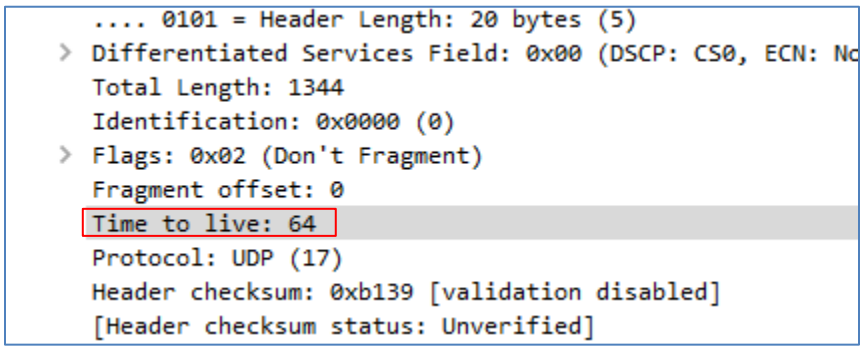
7. Press the *Escape* key, then type: `wq`. Press the *Enter* key to save the file and exit the vi editor.
8. At the command line, type: `reboot`

Auto-negotiation will be enabled during the initial boot process. The interface will briefly initialize with auto-negotiated parameters once the Linux kernel has loaded. Modifying the interface parameters with ethtool can add up to 10 seconds to the startup process.

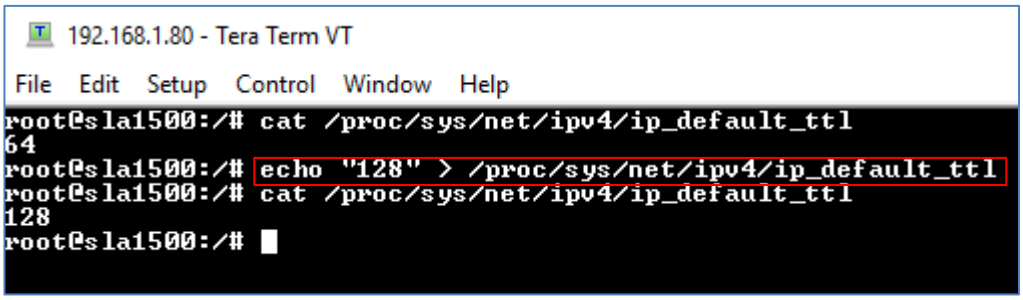
7.15 Change Time-To-Live (TTL)

1. Open a terminal emulator and establish an SSH session to the target.
2. Type: `cat /proc/sys/net/ipv4/ip_default_ttl`
3. Confirm value is *64*.

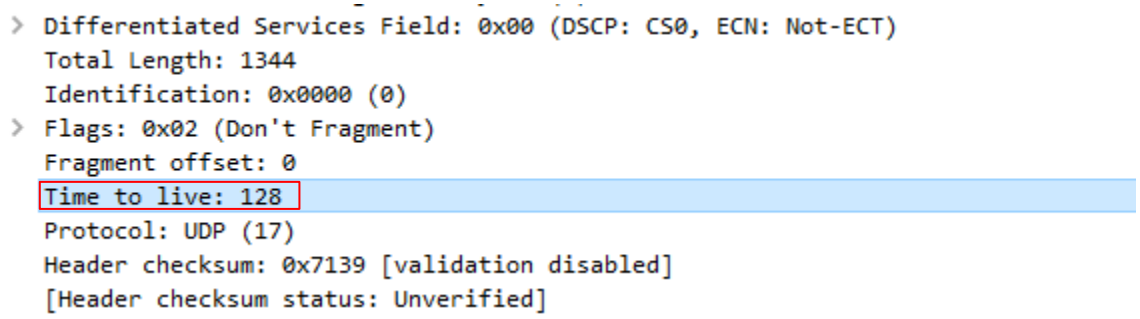
Wireshark can also be used to confirm the value.



4. Set TTL to new value. Type: `echo "128" > /proc/sys/net/ipv4/ip_default_ttl`



5. Confirm new TTL with Wire Shark.



6. The rc.local (1500-OEM) or sla3000_init.sh (3000-OEM) can be modified. This allows the TTL to be set every time the system reboots.

7.16 Improve UDP Performance

One of the most common causes of lost UDP datagrams is an undersized receive buffer on the socket. Use these commands to query the current UDP/IP receive buffer default and max value:

```
$ sysctl net.core.rmem_max
net.core.rmem_max = 212992
$ sysctl net.core.rmem_default
net.core.rmem_default = 212992
```

Video hesitation and packet drops are common if the UPD receive buffer size is too small. More so if the video is streamed through RTSP.

The RTSP server recommended UDP receive buffer size should be at least 868352 bytes.

Use the following commands to change the UPP receive buffer size (both commands are required):

```
$ sysctl -w net.core.rmem_max=868352
net.core.rmem_max = 868352
$ sysctl -w net.core.rmem_default=868352
net.core.rmem_default = 868352
```

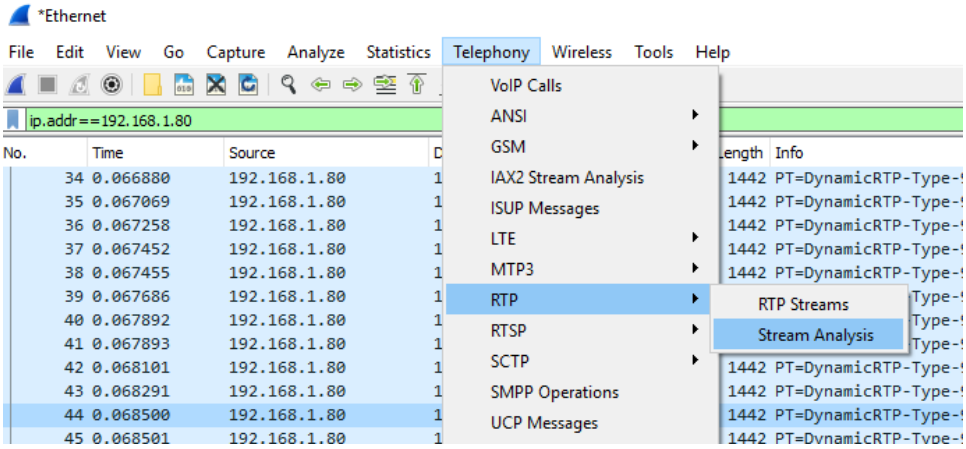
Adding the two lines of commands to the beginning of init scripts (/etc/rc.d/rc.local for SLA-1500 and /home/root/sla3000_init.sh for SLA-3000) will make the changes effective at bootup.

7.17 Analyze RTP with Wireshark

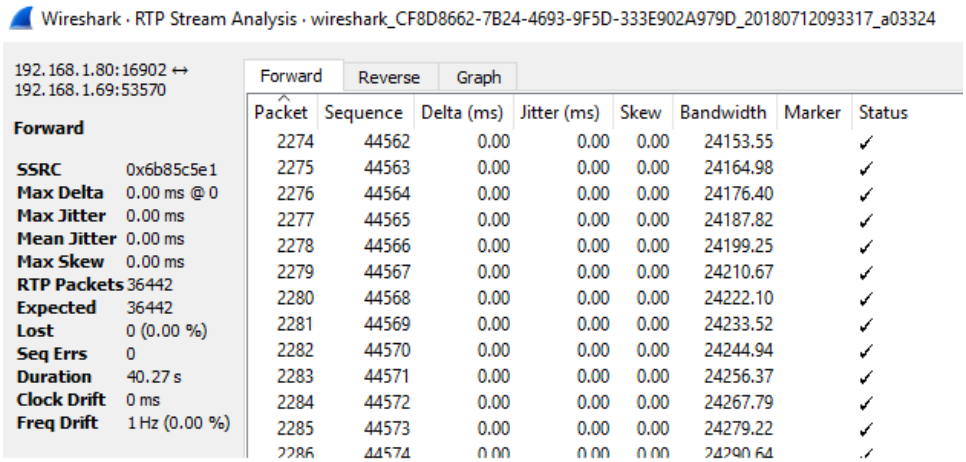
Wireshark can analyze the integrity of an RTP stream by detecting missed RTP packets and packets received out of order. This can be useful when there are any quality issues when streaming with RTP or RTSP.

To analyze a stream:

1. Capture an RTP stream and select an RTP packet.
2. From the main menu » *Telephony* » *RTP* » *Stream Analysis*.



3. Review the summary window. It will show details of each RTP packet captured including any lost packets.



7.18 Disable Network Services

Use the table to disable the following network features in the SightLine Hardware. Reboot the target for the settings to take effect.

Starting with 2.23, these files can be edited in the Upgrade Utility subfolder on the host PC. The modified files will be copied to the target during the firmware upgrade process.

Table 3: Disable Network Services

Network Feature	Hardware	File to be edited (use vi):	Changes to file:
SSH	1500-OEM	/etc/rc.d/init.d/dropbear	As the second line add: `exit 0`
	3000-OEM	/etc/init.d/dropbear	`Change NO_START=0 to NO_START=1`
FTP	1500-OEM	/etc/inetd.conf	Insert # in front of: `ftp stream tcp nowait root /usr/sbin/vsftpd vsftpd`
	3000-OEM	/etc/rc5.d/S80slaVsFtpd.sh	As the second line add: `exit 0`
HLS (HTTP Live Streaming)	1500-OEM	/etc/rc.d/rc.local	Comment out (#) the following line: `lighttpd/sbin/lighttpd -f lighttpd/HLS1500.conf -m lighttpd/lib`

	3000-OEM	/home/root/sla3000_init.sh	Comment out (#) the following lines:
			`mkdir /var/cache/lighttpd`
			`lighttpd/sbin/lighttpd -D -f lighttpd/HLS.conf -m lighttpd/lib &`

RTSP	1500-OEM	/etc/rc.d/rc.local	Comment out (#) the following lines:
			`if [ -f rtspMain ]; then`
			`  sleep 5`
			`  ./rtspMain &`
			`else`
			`  echo -e "\e[31mrtspMain not found - RTSP support disabled\e[0m"`
			`fi`

	3000-OEM	/home/root/sla3000_init.sh	Comment out (#) the following lines:
			`if [ -f rtspMain ]; then`
			`  sleep 5`
			`  ./rtspMain &`
			`else`
			`  echo -e "\e[31mrtspMain not found - RTSP support disabled\e[0m"`
			`fi`

8 Questions and Additional Support

If you are still having issues and require additional support, please contact Technical Support. Additional support, documentation and Engineering Application Notes (EANs) can be found on the Support pages of the SightLine Applications website.

Appendix - SightLine Ports Commonly Used

Table A1: SightLine Ports Commonly Used

Port	Description
14001	Inbound commands on SLA-Hardware
14002	Input reply port on PC
51000	SLDISCOVER listen port
5004	Default port for RTP-MJPEG
15004	Default port for MPEG2-TS H.264
52000	Watchdog timer port for diagnostics information
21	FTP port
23	SSH port
14003	Inbound commands on SLA-Hardware from internal ARM programs
45001	TCP port number for upgrade