SHARK APPLIANCE

User Manual

THE SHARK DISTRIBUTED MONITORING SYSTEM

CACE
TECHNOLOGIES

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Shark Appliance
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Overview

The purpose of this manual is to describe the Shark Appliance Management Interface. This interface can be accessed either from a Pilot Console or a Web Browser. The Management Interface provides access to the following:

- Shark Appliance Status
- Capture Job Setup
- User Management
- Capture Board Setup
- Port/Protocol Definition Files
- Logs
- Shark Probe Configuration

In the next section we introduce the Shark Distributed Monitoring System.

The Shark Distributed Monitoring System (SDMS)

The SDMS has been designed to provide a complete enterprise-wide solution for increased network visibility through live traffic monitoring, line-rate packet capture, real-time and historical traffic analysis, monitoring, and reporting from multiple locations.

In this section we introduce the Shark Appliance and the Pilot Console. Together, the Pilot Console and Shark Appliance provide a seamless distributed network analysis, visualization, monitoring, recording, and reporting solution.

Figure 1: SDMS Shark Appliances

The Shark Appliance, which houses the traffic analysis engine along with a custom packet recording utility, extends the reach of our CACE Pilot analyzer to geographically-dispersed network locations. Shark Appliances are designed for placement at strategic points throughout your network, thereby providing the visibility necessary for global monitoring and troubleshooting. The Shark Appliance comes as a fully configured rack mount PC including one or more TurboCap™ boards for network traffic capture.

The Shark Appliance software includes the Shark Packet Recorder, a customized packet capture application for high fidelity, multi-gigabit per second network traffic recording.

Shark Appliance Kit

CACE Technologies also offers the Shark Appliance Kit which includes the complete Shark Appliance software and high-performance 1 GigE or 10 GigE TurboCap cards and the user provides the appliance hardware platform.

Figure 2: Pilot Console

The Pilot Console is an expanded version of CACE Pilot that seamlessly and securely interfaces with one or more Shark Appliances to display, drill down into, rewind, alert, and report on, network traffic captured and/or analyzed by Shark Appliances. All the features of the CACE Pilot analysis tool have been migrated to the distributed environment, including large packet trace file access and manipulation, an extensive collection of network traffic analysis metrics (Views), drag and drop drill-down, visualization and analysis of long-duration capture statistics, flexible trigger-alert mechanism, and simplified, professional report generation. Once connected to a Shark Appliance, interaction through the Pilot Console with a remote Shark Appliance appears as if it were local. Remote traffic sources appear as local sources to which Views can be applied. Views computed by Shark Appliances (live or off-line) are sent to the Pilot Console for rendering. The Pilot Console also can access and analyze live traffic on the Console's local interfaces and trace files.

Together, the Pilot Console and Shark Appliance provide a seamless distributed network analysis, visualization, monitoring, recording, and reporting solution.

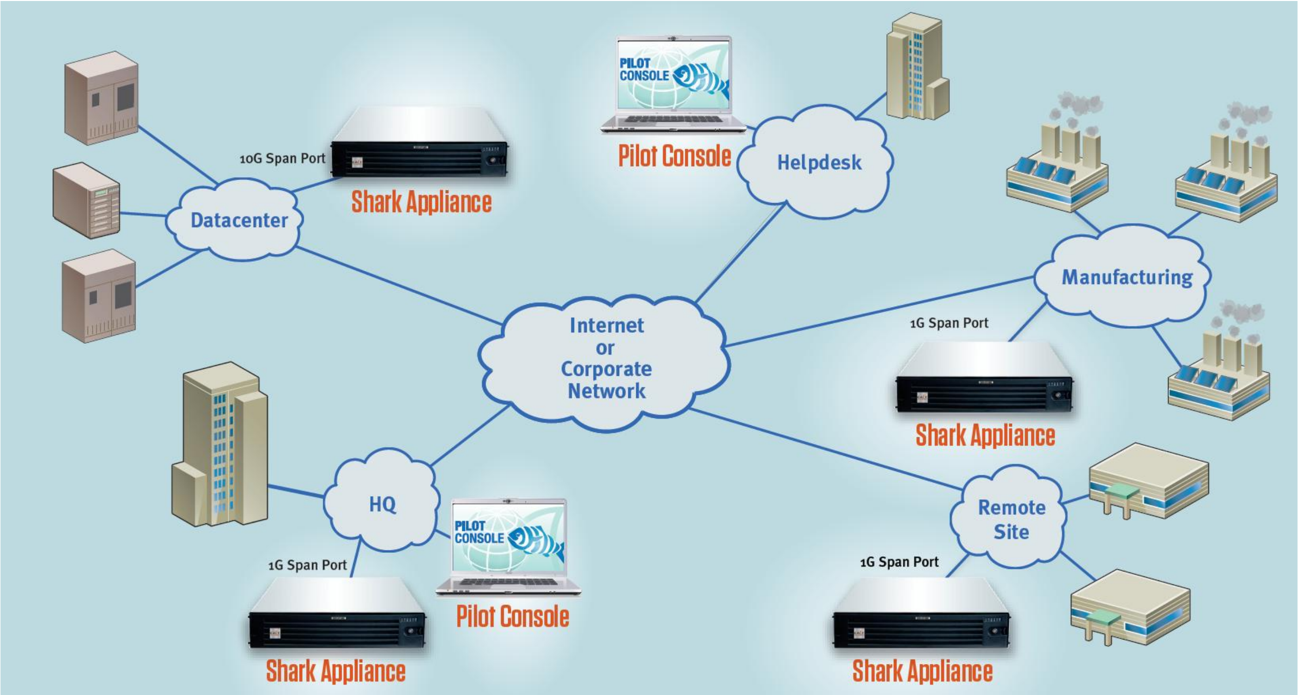


Figure 3: An Example Shark Distributed Monitoring System Deployment

The Shark Appliance

The Shark Appliance includes a rack-mount PC which provides the host system for the Shark Appliance Software. The Shark Appliance runs a version of the Linux operating system which has been optimized to obtain the maximum performance from the Shark Appliance hardware platform. Shark Appliances come in a variety of configurations designed to meet our customer's needs.

The Shark Appliance includes:

- Hardware platform designed to support zero-loss multi-gigabit per second packet capture and high-performance live and off-line network traffic analysis and visualization
- High-performance TurboCap network board(s) with multiple 1 or 10 GigE capture ports
- Customized Linux operating system
- The Shark Appliance network analysis, monitoring, and reporting software engine
- The Shark Packet Recorder optimized dump-to-disk application
- The Shark Appliance Management Server

In the remainder of this manual, we describe the Shark Appliance Management Interface.

Shark Appliance Management Interface

There are two methods to access the Shark Appliance Management Interface:

- Pilot Console
- Web Browser

Pilot Console

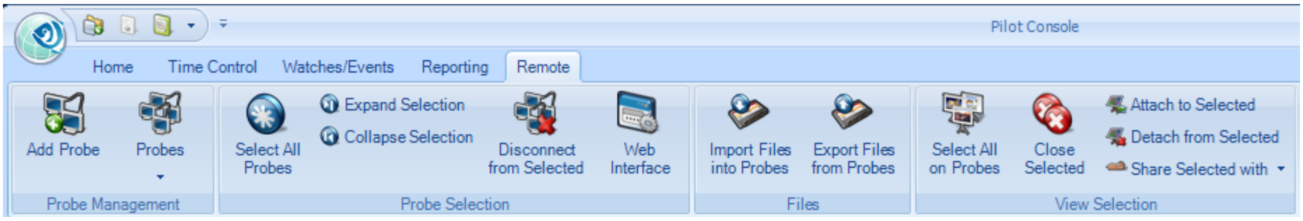
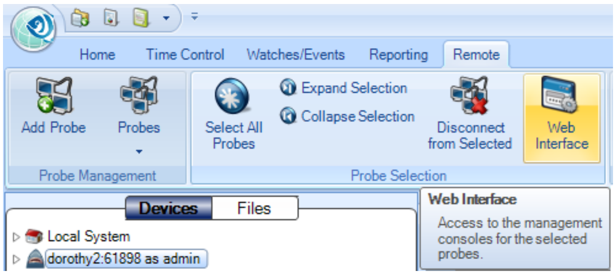


Figure 4: Pilot Console Remote Ribbon

The Pilot Console remote ribbon contains the Web Interface button for gaining access to the Shark Appliance Management Interface.

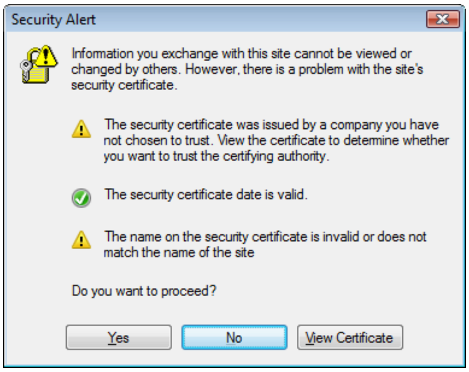
Icon 1: Web Interface



Web Interface

Access to the management consoles for the selected probes.

Figure 5: Web Interface Selection



Security Alert

Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.

The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.

The security certificate date is valid.

The name on the security certificate is invalid or does not match the name of the site

Do you want to proceed?

Figure 6: Security Alert

The *Web Interface* button connects the Pilot Console to the Shark Appliance's Management Interface Web server.

The Web Interface button is used in conjunction with the selection of an already "attached" Shark Appliance. As shown in Figure 5, the "dorothy2" Shark Appliance has been selected. With this selection, clicking on the Web Interface button will bring up the Shark Appliance Login panel.

The initial access to the Shark Appliance will result in a Security Alert. Just click on "Yes" to get to the Login panel

Web Browser

The Shark Appliance Management Interface can also be accessed from a Web Browser using the https://<domain name or IP address of Shark Appliance>:8080 URL.

In both cases (from the Pilot Console or a Web Browser), a login page appears.

Shark Appliance Login Page

In Figure 7 we show the Management Interface login page in the Pilot Console. In this case there is a tab (like any other View) which shows the domain name of the Shark Appliance and the port (dorothy3:61898). This is useful when more than one management console is open.

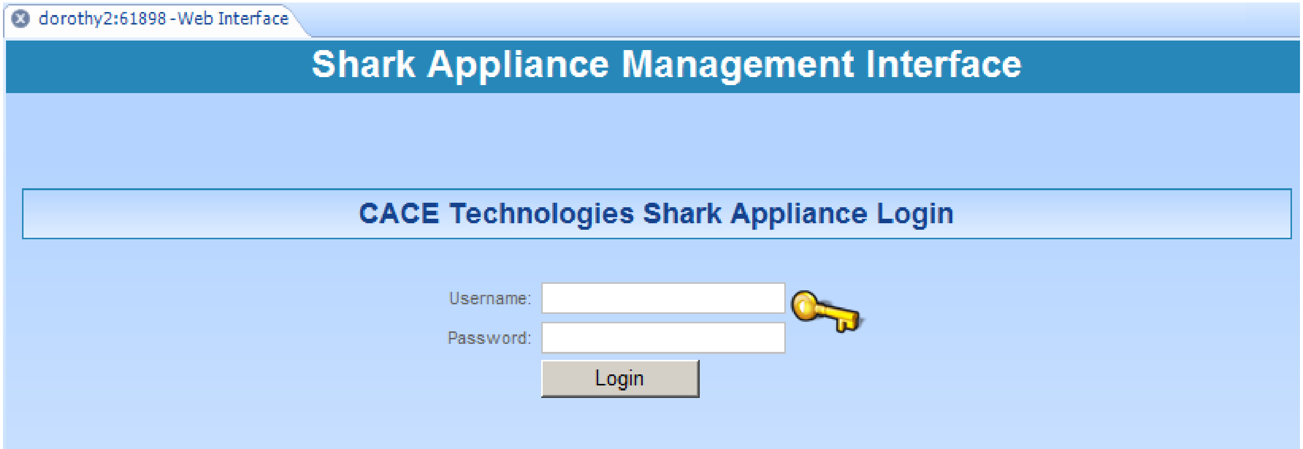
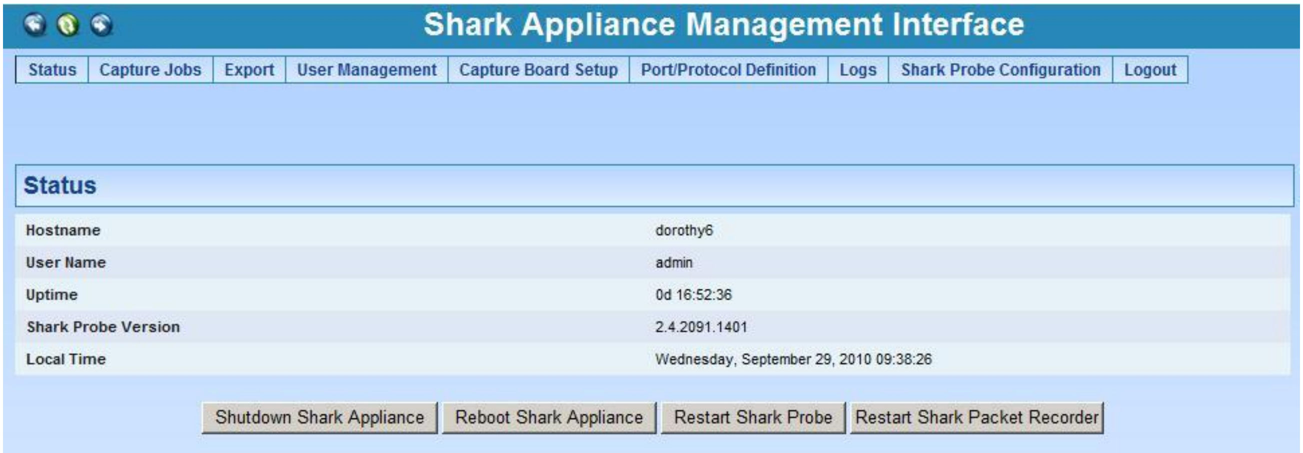

dorothy2:61898 -Web Interface
Shark Appliance Management Interface
CACE Technologies Shark Appliance Login
Username:
Password:
Login

Figure 7: Management Interface Login

The appearance of the login page is similar in a Web browser, with the exception that no tab is shown.

In both cases, the user must provide a Username and Password to access the Management Interface. In the next section we show the initial page following login.

Shark Appliance Status



Hostname	dorothy6
User Name	admin
Uptime	0d 16:52:36
Shark Probe Version	2.4.2091.1401
Local Time	Wednesday, September 29, 2010 09:38:26

Figure 8: Shark Appliance Status Page

The status page contains the Shark Appliance Management Interface menu items along the top edge of the Status page.

The Shark Appliance status information includes: the Shark Appliance PC hostname (dorothy6), User Name (admin), Uptime, the Pilot Probe Version, and Local Time. From this page you can shutdown or reboot the Shark Appliance, Restart the Shark Probe (network analysis, monitoring, and reporting software server), and Restart the Shark Packet Recorder.

- Shutdown Shark Appliance: this will shut down the operating system and power-down the appliance
- Reboot Shark Appliance: this will shut down and subsequently reboot the appliance
- Restart Shark Probe: this restarts the shark appliance network analysis, monitoring, and reporting software server
- Restart Shark Packet Recorder: this shuts down and restarts the Shark Packet Recorder. The system will retain all of the information regarding the current Capture Jobs (whether the jobs are running or not)

Navigation Buttons

Buttons 1: Web Navigation Buttons

Icon 2: Back Button

Icon 3: Refresh Button

Icon 4: Forward Button

The upper left-hand corner of the Management Interface contains three buttons shown to the left. The left and right arrows are for standard Web “back” and “forward” navigation. The middle button is the “refresh” button.

The Shark Packet Recorder

The usual approach to capturing high-speed and/or long duration traffic is to create a file rotation scheme whereby the capture is broken down into a large collection of small trace files with names indicating the time intervals covered by the individual files. It is not difficult to see that this approach can lead to thousands of small files making analysis and troubleshooting extremely tedious, especially when the traffic of interest spans multiple trace files.

The Shark Appliance includes a “dump-to-disk” facility called the *Shark Packet Recorder* which uses a new approach for dealing with high-speed and/or long-duration traffic capture scenarios. CACE Technologies’ Packet Recorder is based on an optimized *packet data store* and a novel approach which makes use of *time filters* which together eliminate the need for a file rotation scheme for capturing, analyzing, and viewing massive amounts of network traffic. The Packet Recorder saves network traffic in the packet data store as objects called *Job Traces*. CACE Technologies has created a new and intuitive approach for creating *Trace Clips*, which correspond to arbitrary time intervals within a Job Trace. An important feature of a Trace Clip is that it does not require any additional storage beyond the underlying Job Trace. A Trace Clip essentially acts as a time filter on the underlying Job Trace. One of the ways a Trace Clip can be created is by dragging a time selection from a chart on to the underlying Job Trace object – the Trace Clip will be created automatically! Trace Clips are used to isolate specific and manageable portions of a Job Trace for analysis and visualization and behave just like ordinary trace files.

Using *Send To File*, Trace Clips can be converted to ordinary pcap files on the Shark Appliance (no packets leave the appliance).

Some terminology:

- Capture Job: A *Capture Job* refers to the specific parameters associated with at “packet recording session.” These parameters include a *name*, the live network traffic *interface* to be used, a BPF filter, *starting* and *stopping* criteria, and an upper bound on the amount of storage to be used by the Capture Job.

- Job Trace: Each Capture Job is associated with exactly one *Job Trace* which has the same name as the Capture Job. The Job Trace represents the network traffic saved in the packet data store.

- Trace Clips: CACE Technologies has created a new approach which enables quick and easy access to arbitrary time intervals in a Job Trace. Time intervals within a Job Trace are called *Trace Clips* and there are a number of simple and visually oriented ways in which Trace Clips can be created using the Pilot Console. Trace Clips do not require any additional storage and behave exactly like ordinary trace files.

- Jobs Repository: The Files Panel for a Shark Appliance contains a folder called the *Jobs Repository*. This folder has a representation of each Job Trace in the Appliance. This representation consists of an icon and the name of the corresponding Capture Job.

- Capture Job Interface: The Devices Panel for a Shark Appliance contains an icon and a name for each of the live capture interfaces associated with Capture Jobs on the Shark Appliance. Views can be applied to the Job Interface creating a visual analysis and representation of the corresponding Job Trace. *Trace clips can be automatically created by dragging a time interval selection from a View on the Job Interface to the corresponding Job Trace!*

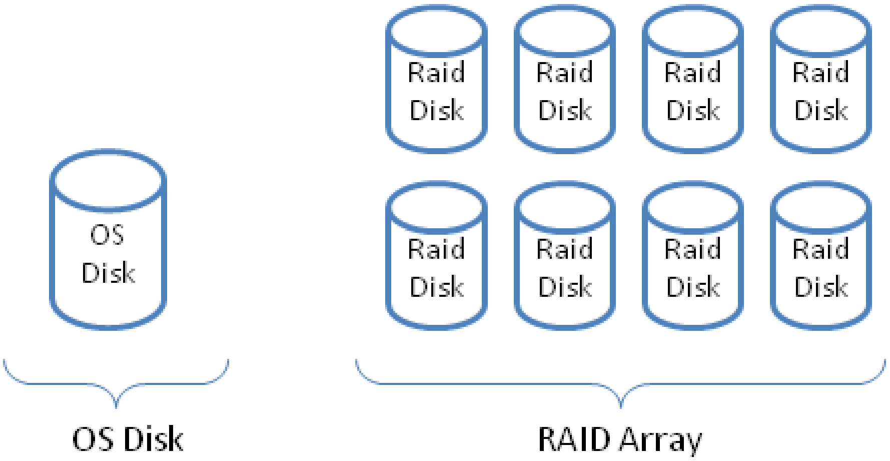
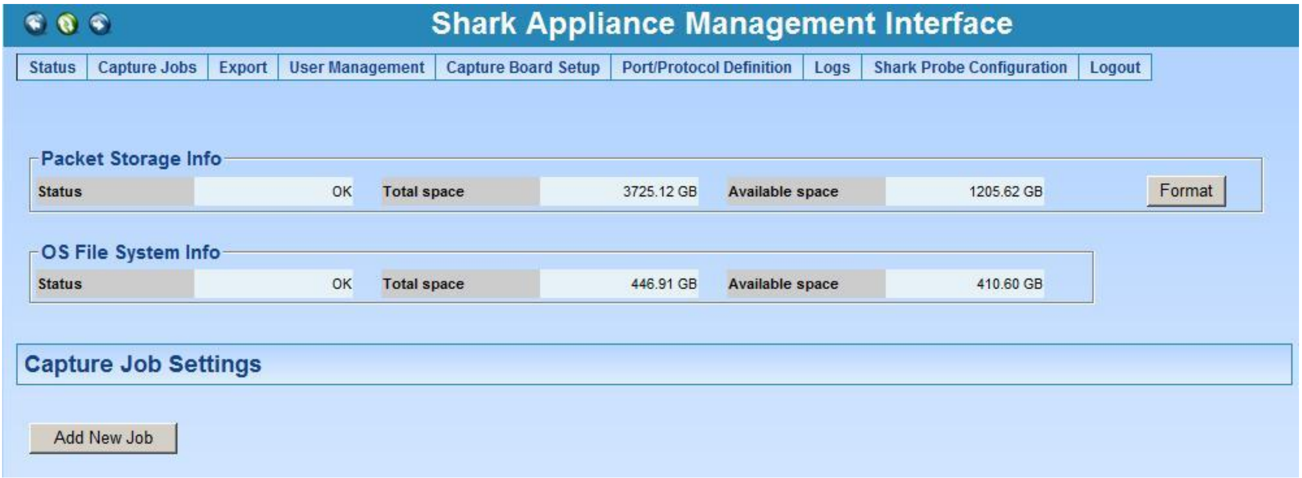


Figure 9: Shark Appliance Storage Systems

The Shark Appliance includes two separate disk configurations:

- The OS Disk contains the Shark Appliance file system, Shark Appliance software, pcap trace files, View metrics, and Trending/Indexing data for Job Traces and pcap files.
- The RAID Array contains the Shark Packet Recorder storage system for saving Job Traces. This storage system is optimized to provide high-speed writing to disk and fast read access to arbitrary time intervals within a Job Trace.

Capture Jobs (Shark Appliance Packet Recorder)



Packet Storage Info

Status	OK	Total space	3725.12 GB	Available space	1205.62 GB

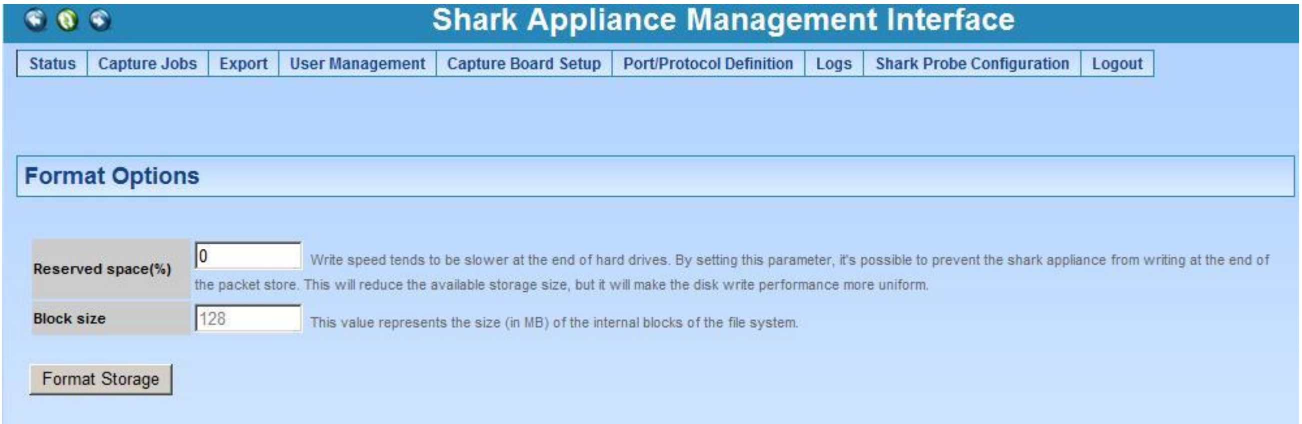
OS File System Info

Status	OK	Total space	446.91 GB	Available space	410.60 GB

Capture Job Settings

Figure 10: Shark Appliance Packet Recorder – No Capture Jobs

The Capture Jobs menu item takes you to the screen shown above. The sections on Packet Storage Info and OS File System Info are displayed before the section of this page that describes the currently running capture jobs. The Packet Storage Info section provides total space and available space on the Packet Storage system used by the Shark Packet Recorder. Clicking on the Format button brings up the page shown in Figure 11. This panel shows the block size used by the Shark Packet Recorder and offers the Format Storage button which can be used to reformat the Packet Storage System. Needless to say, you should be very careful if you choose to exercise this option.



Format Options

Reserved space(%)	0	Write speed tends to be slower at the end of hard drives. By setting this parameter, it's possible to prevent the shark appliance from writing at the end of the packet store. This will reduce the available storage size, but it will make the disk write performance more uniform.
Block size	128	This value represents the size (in MB) of the internal blocks of the file system.

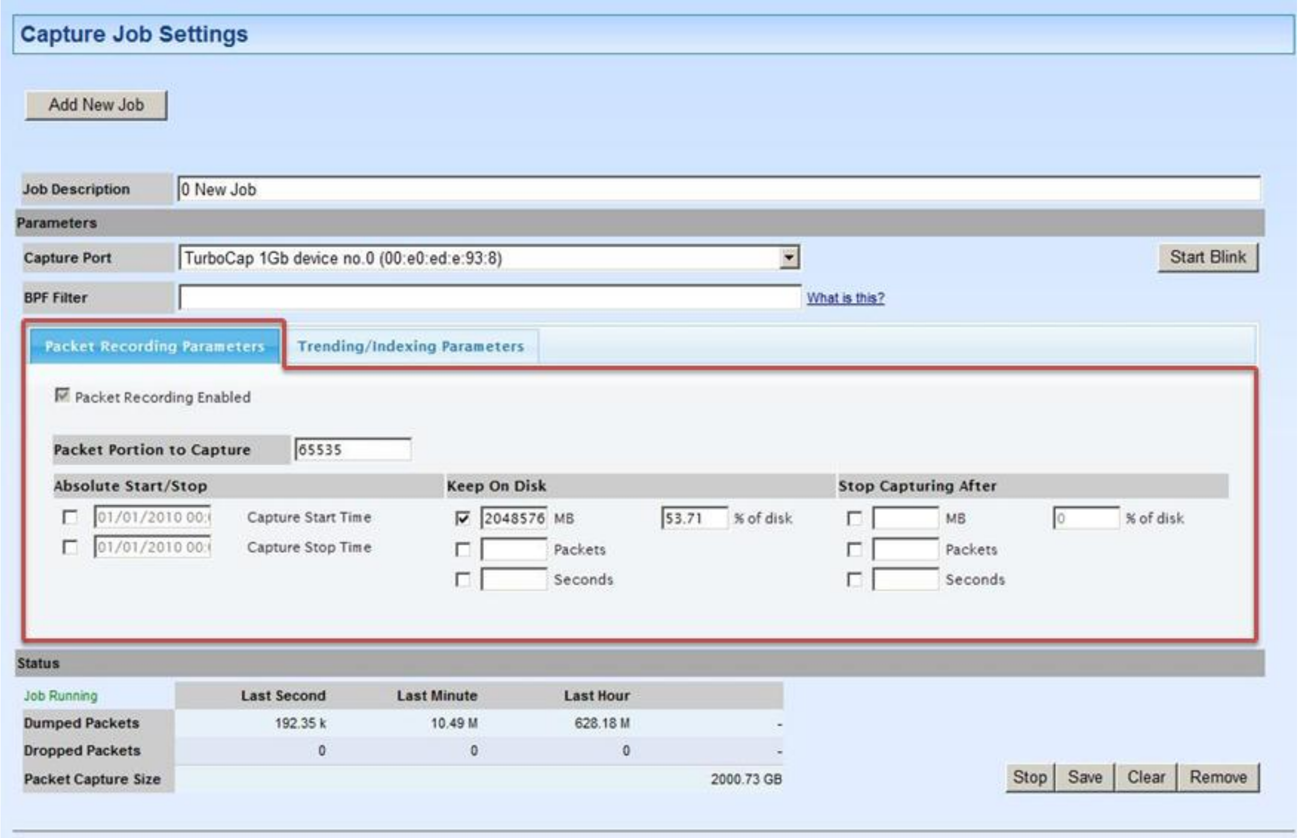
Figure 11: Storage Format Options

The Reserved space field makes it possible to prevent access to the sectors at the very end of each of the disk drives in the packet storage system. The inner tracks of hard drives (at the “end” of the hard drive) have slower data transfer rates than the outermost tracks. This field can be used to get a more uniform write-to-disk speed by restricting access to some percentage of the disk drives.

Add/Edit Capture Jobs

In this section we show how to create a Capture Job and subsequently manage it. Multiple Capture Jobs can exist simultaneously.

Clicking on “Add New Job” brings up a new Capture Job form on the Capture Job page. This form is shown in Figure 12. The form has two tabs: Packet Recording Parameters and Trending/Indexing Parameters. We will consider the Packet Recording Parameters in this section and the Trending/Indexing Parameters in the following section.



Job Description: 0 New Job

Parameters

Capture Port: TurboCap 1Gb device no.0 (00:e0:ed:e:93:8)

BPF Filter:

☑ Packet Recording Enabled

Packet Portion to Capture: 65535

Absolute Start/Stop		Keep On Disk		Stop Capturing After	
□ 01/01/2010 00:(	Capture Start Time	☑ 2048576 MB	53.71 % of disk	□ MB	0 % of disk
□ 01/01/2010 00:(	Capture Stop Time	□ Packets		□ Packets	
		□ Seconds		□ Seconds	

Status

Job Running	Last Second	Last Minute	Last Hour	
Dumped Packets	192.35 k	10.49 M	628.18 M	-
Dropped Packets	0	0	0	-
Packet Capture Size				2000.73 GB

Figure 12: Adding a Capture Job

There are a number of configuration parameters that need to be set when creating a Capture Job:

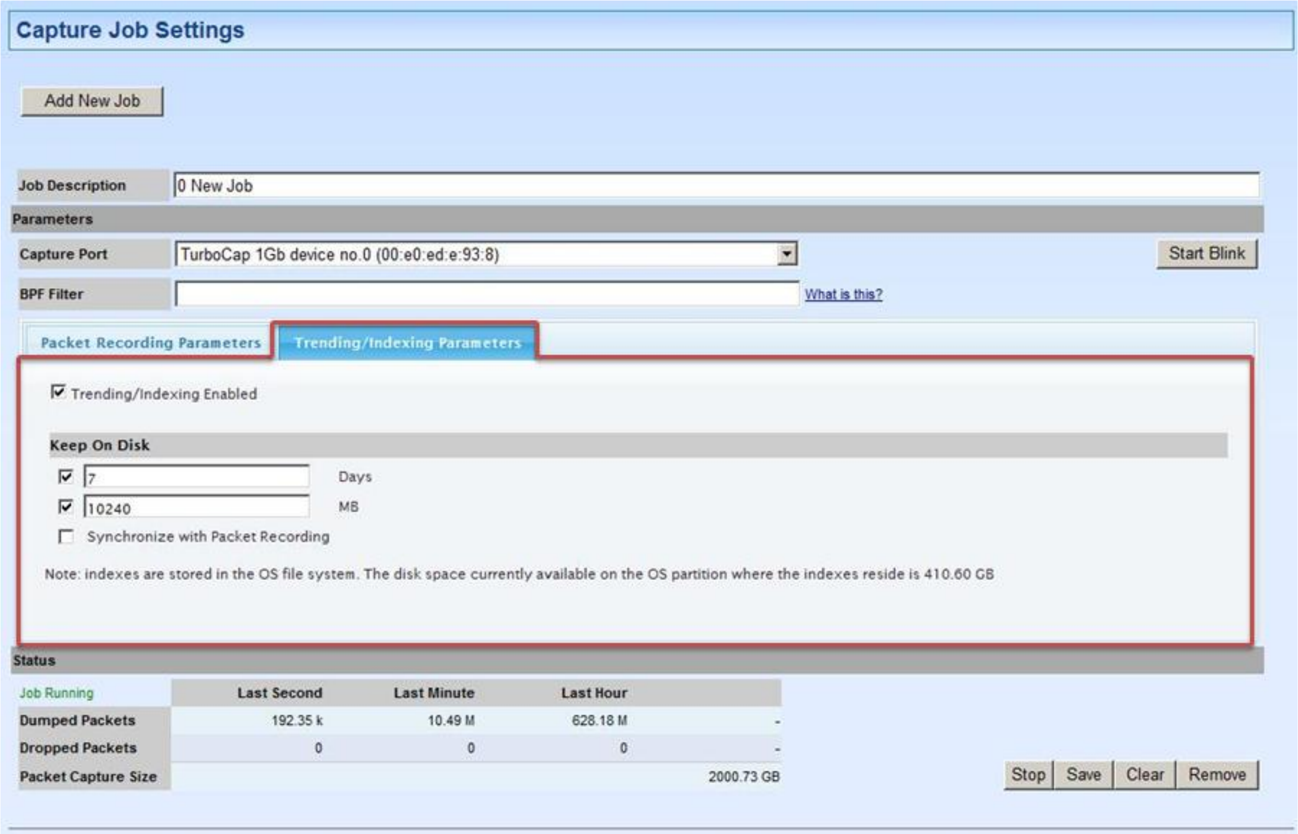
- Job Description. Provide a descriptive name for the Capture Job. This will help in identifying the Capture Job since this name will appear in both the Pilot Console’s Devices and Files source panels.
- Capture Port. The Capture Job takes traffic from a live interface and records it to disk. The available live interfaces appear in the drop-down list.
- Start Blink is used to quickly identify the hardware capture port on the Shark Appliance
- BPF Filter. A BPF filter can be provided to select a subset of the traffic for capturing. For example, the BPF filter “`src host 172.18.5.4`” will only capture the packets with source IP address `172.18.5.4`
- Packet Portion to Capture (snaplen) is used to put an upper bound on the amount of bytes saved for each packet – at most the first (snaplen) bytes from each packet are saved.
- Start/Stop criteria for a Capture Job
    - Absolute Start/Stop. The first check box can be used to specify absolute start time for the Capture Job and the second check box can be used to specify an absolute stopping time for the Capture Job

    - Stop Capturing after. These check boxes can be used to specify stopping conditions based on size of the Capture Job in terms of megabytes or number of packets. Capture duration can also be used as a stopping condition.
- Keep on disk. These parameters are used to limit the maximum amount of storage used by the Capture Job. Once a limit is reached, then the oldest packets are discarded so as to not exceed the limit. If more than one condition is chosen, then the most stringent condition is applied.

> *Note:* When multiple conditions have been selected the most stringent condition is the controlling condition. For example, if an absolute time stopping condition and a stopping condition based on the number of captured packets are selected, then the first condition to be satisfied will stop the capture job.

Trending/Indexing Parameters

In this section we describe the use of Trending/Indexing Parameters.



Job Description: 0 New Job

Parameters

Capture Port: TurboCap 1Gb device no.0 (00:e0:ed:e:93:8)

BPF Filter:

☑ Trending/Indexing Enabled

Keep On Disk

☑ 7 Days
☑ 10240 MB
☐ Synchronize with Packet Recording

Note: indexes are stored in the OS file system. The disk space currently available on the OS partition where the indexes reside is 410.60 GB

Status

Job Running	Last Second	Last Minute	Last Hour	
Dumped Packets	192.35 k	10.49 M	628.18 M	-
Dropped Packets	0	0	0	-
Packet Capture Size				2000.73 GB

Figure 13: Trending/Indexing Parameters

Before we describe the Trending/Indexing Parameters, we present a *simplified* version of the underlying computation performed by the Pilot Probe when the Trending/Indexing is enabled.

For each packet, the *Conversation Identifier* consists of the 5-tuple:

1. Source IP address

2. Source Port
3. Destination IP address
4. Destination Port
5. IP Protocol

When the Trending/Indexing is enabled, the Pilot Probe computes the sum of the total bytes and packets for each unique conversation identifier in the traffic stream for each second. This information is stored in a file and is referred to as *Trending/Indexing Data*.

Example

Suppose that the incoming traffic stream consists of the following packets over the first three seconds:

Second 1: packet 1, packet2, packet3
Second 2: packet4, packet5
Second 3: packet6, packet7, packet8, packet9

Traffic Recording

Pkt. No.	Src IP	Src Port	Dst IP	Dst Port	IP Proto	Size (bytes)
1	1.2.3.4	10	4.3.2.1	15	UDP	250
2	1.2.3.4	10	4.3.2.1	15	UDP	300
3	5.6.7.8	20	8.7.6.5	30	TCP	1000
4	1.2.3.4	10	4.3.2.1	15	UDP	75
5	1.2.3.4	10	4.3.2.1	15	UDP	80
6	5.6.7.8	20	8.7.6.5	30	TCP	1100
7	8.7.6.5	30	5.6.7.8	20	TCP	68
8	5.6.7.8	20	8.7.6.5	30	TCP	950
9	5.6.7.8	20	8.7.6.5	30	TCP	1000

The above table represents the first 3 seconds of a Traffic Recording where the Conversation Identifier and corresponding size for each packet is shown. There are two *distinct* conversation identifiers during the 1st second, one conversation identifier during the 2nd second, and two distinct conversation identifiers during the 3rd second.

Trending/Indexing Data computed by the Pilot Probe

Second	Conversation Identifier	Bytes	Packets	Reference
1	(1.2.3.4, 10, 4.3.2.1, 15, UDP)	550	2	Pointer to Packet 1
1	(5.6.7.8, 20, 8.7.6.5, 30, TCP)	1000	1	
2	(1.2.3.4, 10, 4.3.2.1, 15, UDP)	155	2	Pointer to Packet 4
3	(5.6.7.8, 20, 8.7.6.5, 30, TCP)	3050	3	Pointer to Packet 6
3	(8.7.6.5, 30, 5.6.7.8, 30, TCP)	68	1	

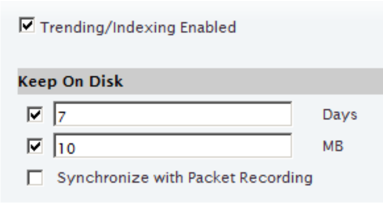
When the Trending/Indexing is Enabled, the Pilot Probe computes the corresponding Trending/Indexing data from the captured traffic. As seen in the above example, the Trending/Indexing data computed by the Pilot Probe contains aggregated "conversation" information for each second, namely, total bytes and total packets per unique conversation identifier. In addition, for each second the Trending/Indexing data contains a pointer into the Traffic Recording to the location of the first packet in the corresponding second. The benefit of this pointer into the Traffic Recording will be explained below.

Note: This example is presented to give the reader a simplified view into how the Trending/Indexing data is computed. The actual implementation includes important additional fields and indices.

End Example

The Trending/Indexing data is all that is needed to compute many of the View metrics associated with the traffic stream. For example, Bandwidth Over Time, Network Usage By Traffic Type, IP Conversations, and Protocol Distribution are just a few of the Views that can take advantage of the existence of Trending/Indexing data.

The Parameters



☑ Trending/Indexing Enabled

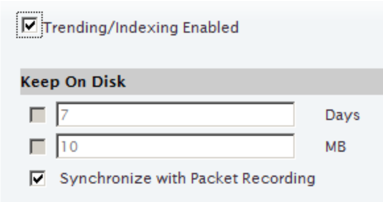
Keep On Disk

☑ 7 Days

☑ 10 MB

☐ Synchronize with Packet Recording

Figure 14: Trending/Indexing Enabled



☑ Trending/Indexing Enabled

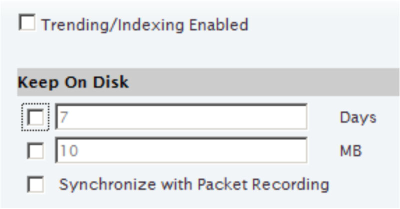
Keep On Disk

☐ 7 Days

☐ 10 MB

☑ Synchronize with Packet Recording

Figure 15: Synchronized Trending



☐ Trending/Indexing Enabled

Keep On Disk

☐ 7 Days

☐ 10 MB

☐ Synchronize with Packet Recording

Figure 16: Trending/Indexing Disabled

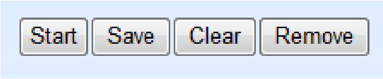
- Trending/Indexing Enabled
  With the Trending/Indexing Enabled checkbox selected and the "Synchronize" checkbox not selected, the Keep on Disk parameters control the size and duration of the Conversation Index.
  - If the Days checkbox is selected, then the duration of the Trending/Indexing data is limited in duration by the number of days entered in the field
  - If the MB checkbox is selected, then the size in Mega Bytes of the Trending/Indexing data is bounded by the value in the MB field.

  NOTE. In this case, the duration of the Trending/Indexing data is set independently from the Packet Recording and is typically set to be much longer than the duration of the Packet Recording, especially since the Trending/Indexing data, in general, requires much less storage than the Packet Recording for the same duration.
- Synchronized Trending/Indexing
  When both Trending and Synchronize with Packet Recording are selected, then the duration of the Trending/Indexing data is kept synchronized with the duration of the corresponding Capture Job.
- No Trending/Indexing
  If the Trending/Indexing Enabled checkbox is not selected, then the Trending/Indexing data are not created for this Capture Job

Note: The Capture Job Recording is stored on the Shark Packet Recorder storage and the Trending/Indexing data are stored on the OS File System storage.

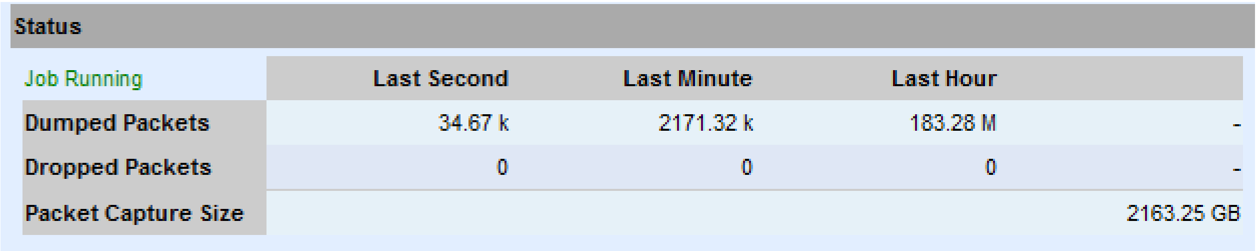
Capture Job Control Buttons

There are four buttons that are used to control a Capture Job.



Buttons 2: Capture Job Control Buttons

- Start/Stop. If the Capture Job is running then the Stop can be used to stop the Capture Job. If the Capture Job is stopped, then the Start button can be used to start the Capture Job. When a Capture Job is stopped both the packet recording and the calculation of the Trending/Indexing data are stopped.
- Save. Once the parameters of a Capture Job have been edited, they need to be saved. Assuming the Capture Job is stopped, there are two ways to do this: (1) click on the Save button or (2) click on the Start button. In the first case, the Capture Job parameters are saved and the Capture Job remains stopped. In the latter case, the Capture Job parameters are saved and the Capture Job starts running.
- Clear. The Clear button removes all of the storage associated with the Capture Job. This includes the Packet Recording and the Trending/Indexing data storage. The Clear button should only be used when the Capture Job is in the Stopped state.
- Remove. The Remove button deletes the Capture Job from the Shark Appliance (this clears all of the Packet Recording and Trending/Indexing data storage) along with the corresponding Job Trace and Job Interface. The Remove button should only be used when the Capture Job is in the Stopped state.



Status

Job Running	Last Second	Last Minute	Last Hour	
Dumped Packets	34.67 k	2171.32 k	183.28 M	-
Dropped Packets	0	0	0	-
Packet Capture Size				2163.25 GB

Figure 17: Managing a Capture Job

In Figure 17 we show a configured Capture Job that is Capturing (it say “Job Running” in green). The Status fields indicate whether the Job is Capturing or Not. There are statistics regarding: Dumped (Captured) Packets, and Dropped Packets. These parameters are shown for the Last Second, Last Minute, and Last Hour. The Packet Capture Size gives the amount of storage currently used by the Capture Job.

If the Job is Running and Trending/Indexing is Enabled, then so also is the computation of the Trending/Indexing data, otherwise the Trending/Indexing data calculation is also stopped.

Capture Jobs in the Pilot Console Devices Panel

Each Capture Job appears as a *Job Interface* in the Devices panel.

Each Capture Job has an associate live interface which corresponds to the Capture Port of the Job. When a Capture Job is created, an icon (Icon 5) appears in the Devices panel representing the Job

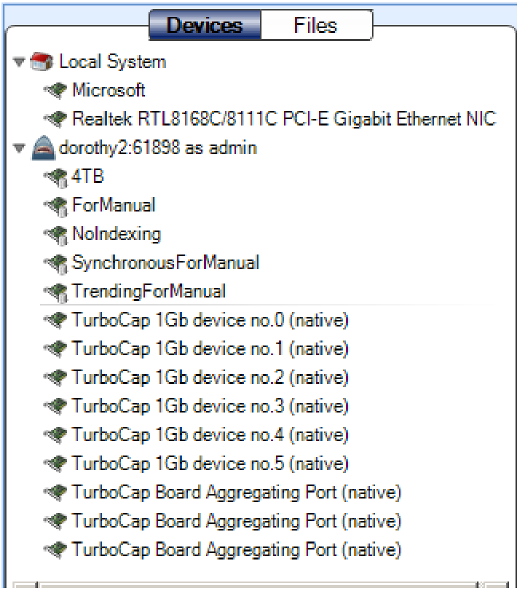
Interface. The name of the interface is the same as the name of the Capture Job.

Figure 18 shows five Job Interfaces, namely,

- 4TB
- ForManual
- NoIndexing
- SynchronousForManual
- TrendingForManual

These interfaces behave as ordinary live traffic sources. The actual physical interface corresponds to the Capture Port setting in the corresponding Capture Job.

Icon 5: Job Interface



- Local System
  - Microsoft
  - Realtek RTL8168C/8111C PCI-E Gigabit Ethernet NIC
- dorothy2:61898 as admin
  - 4TB
  - ForManual
  - NoIndexing
  - SynchronousForManual
  - TrendingForManual
  - TurboCap 1Gb device no.0 (native)
  - TurboCap 1Gb device no.1 (native)
  - TurboCap 1Gb device no.2 (native)
  - TurboCap 1Gb device no.3 (native)
  - TurboCap 1Gb device no.4 (native)
  - TurboCap 1Gb device no.5 (native)
  - TurboCap Board Aggregating Port (native)
  - TurboCap Board Aggregating Port (native)
  - TurboCap Board Aggregating Port (native)

Figure 18: Job Interface in Devices Panel

Pilot Console Operations on Job Interfaces

All of the operations that are available for live interfaces can be applied to a Capture Job Interface.

> *Note:* When drill down is applied to a “live view,” the new view shows results from the time the view was applied. Also, drill down cannot be applied to time selections in a live view. These limitations apply to the “live” Interfaces only.

Capture Jobs in the Pilot Console Files Panel

Icon 6: Jobs Repository Folder

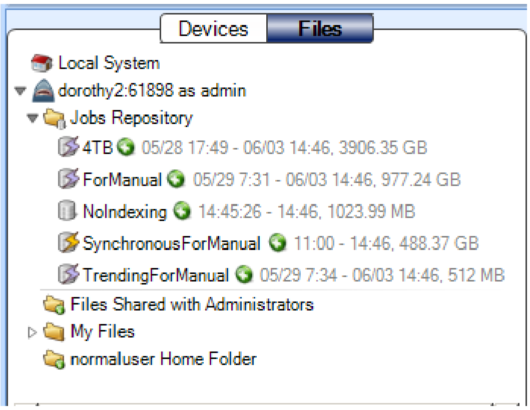
Icon 7: Job Trace w/o Trending/Indexing

The Files Panel for a Shark Appliance contains a *Jobs Repository Folder* (Icon 6). The Jobs Repository folder contains a *Job Trace* for each Capture Job. The Job Trace has the same name as the Capture Job and represents the network traffic “recording.” Each Job Trace has an associated icon which represents the extent to which the Trending/Indexing data is available.

- Icon 7 denotes a Capture Job without Trending/Indexing data.
- Icon 8 denotes a Capture Job with Trending/Indexing

Icon 8: Job Trace with Trending/Indexing

Icon 9: Job Trace with Mixed Trending/Indexing



Local System
dorothy2:61898 as admin
Jobs Repository
4TB 05/28 17:49 - 06/03 14:46, 3906.35 GB
ForManual 05/29 7:31 - 06/03 14:46, 977.24 GB
NoIndexing 14:45:26 - 14:46, 1023.99 MB
SynchronousForManual 11:00 - 14:46, 488.37 GB
TrendingForManual 05/29 7:34 - 06/03 14:46, 512 MB
Files Shared with Administrators
My Files
normaluser Home Folder

Figure 19: Jobs Repository Folder in the Files Panel

enabled in which the Trending/Indexing data and the Job Trace packet recording durations are the same.

- Icon 9 denotes a Capture Job with Trending/Indexing enabled, but for which the duration of Trending/Indexing data duration is longer than the duration of the Job Trace recording.

In Figure 19 we show the contents of the Jobs Repository folder in the Devices Panel. It contains five Job Traces. Capture Job “NoIndexing” has Trending/Indexing Disabled and the rest of the Capture Jobs have Trending/Indexing Enabled. The “SynchronousForManual” Capture Job has identical durations for the Job Trace and the Trending/Indexing data. Finally, the remaining 3 Capture Jobs have Trending/Indexing data durations which are longer than their corresponding Job Traces.

Pilot Console Operations on Job Traces – Trace Clips

It is not unusual for a Job Trace to be multiple terabytes in size making direct operations impossible. In this section we show how we can easily manage and analyze these potentially massive network traffic recordings. Time intervals within a Job Trace are called *Trace Clips* and there are a number of simple and visually oriented ways in which Trace Clips can be created using the Pilot Console. Trace Clips do not require any additional storage and behave exactly like ordinary trace files.

Icon 10: Trace Clip

Icon 11: Trace Clip with Index

Icon 12: Trace Clip with Trending

A Trace Clip identifies a time interval within a Job Trace. Trace Clips are found in the Files Panel and located under the corresponding Job Trace and are identified by the icon shown to the left

- Icon 10 shows the Trace Clip icon for a packets-only trace clip.

- Icon 11 denotes a trace clip where both the Trending/Indexing data and the Packets are available.

- Icon 12 denotes a trace clip where the Trending/Indexing data are available but the packets are not necessarily available.

In Figure 20 we show a Trace Clip named JLB_TraceClip for which there is no Trending/Indexing data available.

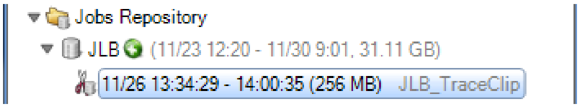

Jobs Repository
JLB (11/23 12:20 - 11/30 9:01, 31.11 GB)
11/26 13:34:29 - 14:00:35 (256 MB) JLB_TraceClip

Figure 20: Trace Clip for JLB

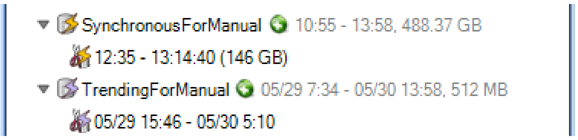

SynchronousForManual 10:55 - 13:58, 488.37 GB
12:35 - 13:14:40 (146 GB)
TrendingForManual 05/29 7:34 - 05/30 13:58, 512 MB
05/29 15:46 - 05/30 5:10

Figure 21: Trace Clips with Trending and Indexes

And in Figure 21 we show two trace clips that have associated Trending/Indexing data.

In the next sections we will show how to create trace clips.

Creating Trace Clips

There are two ways to bring up the Time Control panel for creating a Trace Clip.

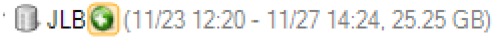


Figure 22: Creating a Trace Clip

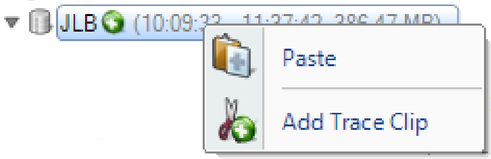


Figure 23: Add a Trace Clip

In Figure 22 we show the Job Trace named JLB. Clicking on the "plus" icon to the right of the name will bring up the Time Control panel shown in

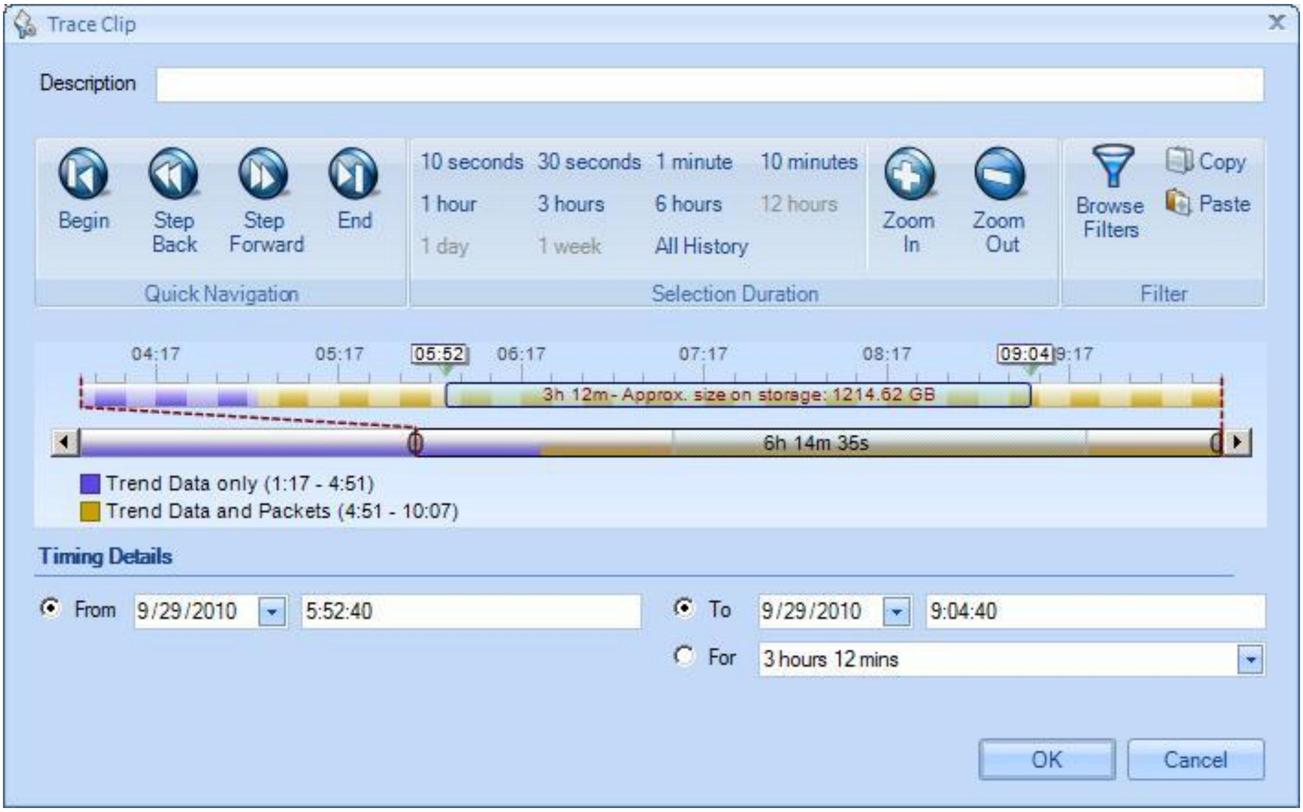
Right clicking on the Job Trace will brings up a context menu (Figure 23) with the Menu Item "Add Trace Clip." Selecting this menu item will bring up the Time Control Panel.

Recall that a Trace Clip identifies a time interval within a Job Trace. If the clipboard contains a time interval, then the "Paste" menu item can be used to create a Trace Clip corresponding to the time interval on the clipboard.

Time Control Panel for Creating Trace Clips

In this section we show how to create trace clips. As we saw above, there are three possibilities:

1. Trace Clip with just packets and no Trending/Indexing data available throughout the time interval
2. Trace Clip with Trending/Indexing data and packets available throughout the time interval
3. Trace Clip during which Trending/Indexing data are available throughout the interval, but either some or no packets available in the interval



🟪 Trend Data only (1:17 - 4:51)
🟨 Trend Data and Packets (4:51 - 10:07)

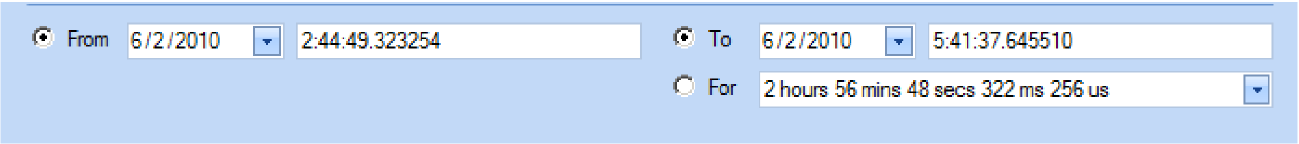
Timing Details

● From 9/29/2010 5:52:40 ● To 9/29/2010 9:04:40
○ For 3 hours 12 mins

Figure 24: Time Control Panel for Creating Trace Clips

Figure 24 shows the Time Control panel for creating a Trace Clip which is essentially the process of selecting a time interval (time filter) and an optional filter (see the Browse Filters button in the upper-right side of the panel). The Trace Clip can be named using the Description text field. The rest of the options in the Time Control panel provide alternative ways of selecting a time interval and optional filter. Once the selections are made, clicking on "OK" will create a Trace Clip corresponding to the selections.

There are multiple ways to create a Trace Clip using the Time Control Panel.



● From 6/2/2010 2:44:49.323254 ● To 6/2/2010 5:41:37.645510
○ For 2 hours 56 mins 48 secs 322 ms 256 us

Figure 25: Trace Clip Time Selection

Selecting the Start Time for the trace clip (From) and either the absolute end time (To) or the duration of the Trace Clip from the Start Time is probably the most common way to create a Trace Clip (time interval) using the Time Control panel. The reason for this is that networking issues are most often identified by a particular onset time and duration.

Another set of options use the multi-level zoom "scroll" bars to select a time interval. This has the advantage of making it clear whether the selected time interval contains "Packets only" or "Trending/Indexing data and Packets" or just "Trending/Indexing Data and no Packets."

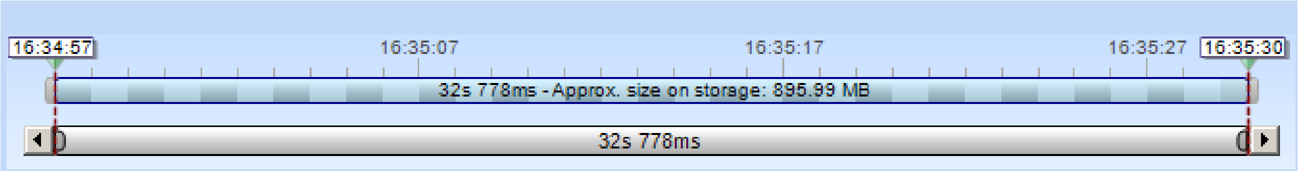


Figure 26: Packets Only

In all cases, the lower bar is a graphical representation of the duration of the Job Trace. In the case of packets plus Trending/Indexing data, the duration of the lower scroll bar is the *maximum* of the packet capture duration and the duration of the Trending/Indexing data. Below we show a series of images representing the various configurations of Packets and Trending/Indexing data.

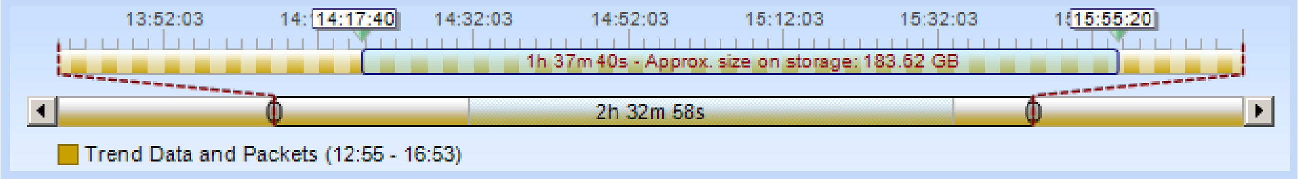

13:52:03
14:
14:17:40
14:32:03
14:52:03
15:12:03
15:32:03
1
15:55:20
1h 37m 40s - Approx. size on storage: 183.62 GB
2h 32m 58s
🟨 Trend Data and Packets (12:55 - 16:53)

Figure 27: Packets Plus Trending/Indexing Data

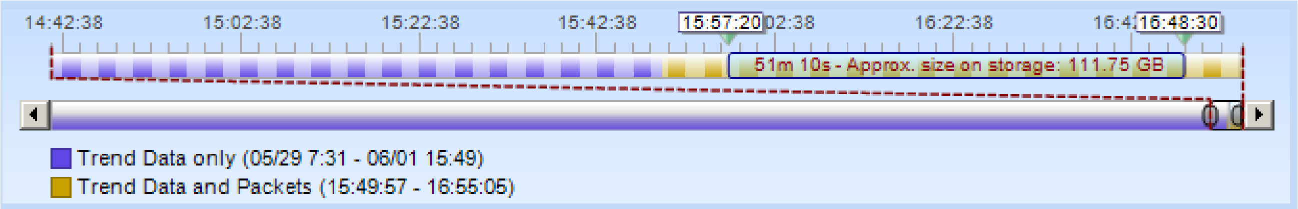

14:42:38
15:02:38
15:22:38
15:42:38
15:57:20
02:38
16:22:38
16:4
16:48:30
51m 10s - Approx. size on storage: 111.75 GB
🟪 Trend Data only (05/29 7:31 - 06/01 15:49)
🟨 Trend Data and Packets (15:49:57 - 16:55:05)

Figure 28: Packets Plus Trending/Indexing Data

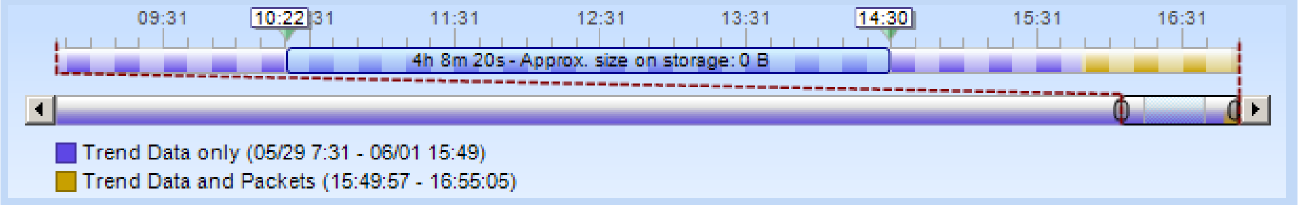

09:31
10:22
31
11:31
12:31
13:31
14:30
15:31
16:31
4h 8m 20s - Approx. size on storage: 0 B
🟪 Trend Data only (05/29 7:31 - 06/01 15:49)
🟨 Trend Data and Packets (15:49:57 - 16:55:05)

Figure 29: Trending/Indexing Data Only

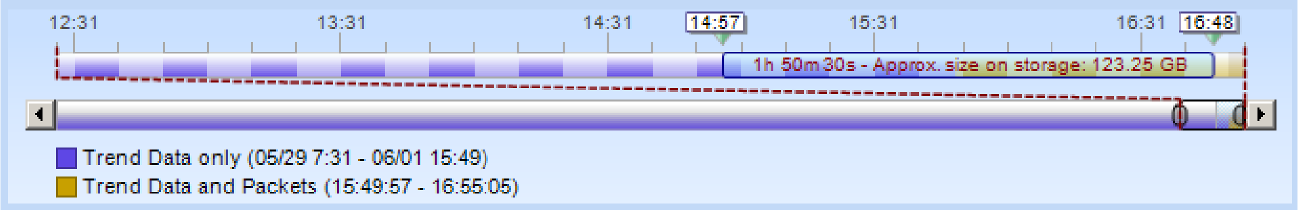

12:31
13:31
14:31
14:57
15:31
16:31
16:48
1h 50m 30s - Approx. size on storage: 123.25 GB
🟪 Trend Data only (05/29 7:31 - 06/01 15:49)
🟨 Trend Data and Packets (15:49:57 - 16:55:05)

Figure 30: Combination of Trending/Indexing Data Only and Packets Plus Trending/Indexing Data

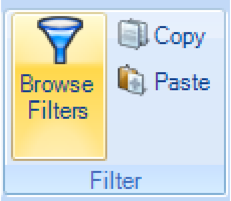
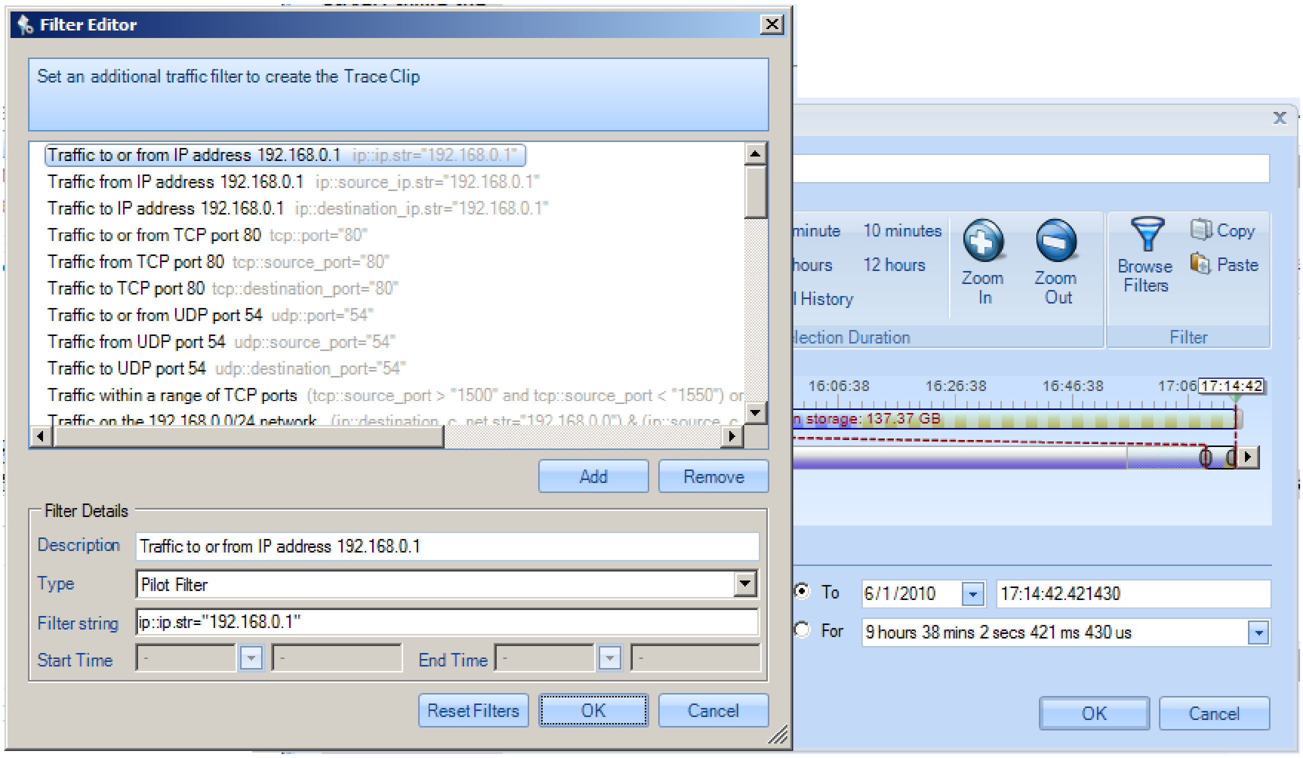


Figure 31: Bring Up Filter Editor

Lastly, In Figure 31 we show the “Browse Filters” button which brings up the Filter Editor for selecting a filter in addition to the time interval. In this way, the Trace Clip not only represents a time interval, but also contains a packet filter. It is important to select a filter that is compatible with the Trend Data.


Filter Editor

Set an additional traffic filter to create the Trace Clip

Traffic to or from IP address 192.168.0.1 ip::ip.str="192.168.0.1"
Traffic from IP address 192.168.0.1 ip::source_ip.str="192.168.0.1"
Traffic to IP address 192.168.0.1 ip::destination_ip.str="192.168.0.1"
Traffic to or from TCP port 80 tcp::port="80"
Traffic from TCP port 80 tcp::source_port="80"
Traffic to TCP port 80 tcp::destination_port="80"
Traffic to or from UDP port 54 udp::port="54"
Traffic from UDP port 54 udp::source_port="54"
Traffic to UDP port 54 udp::destination_port="54"
Traffic within a range of TCP ports (tcp::source_port > "1500" and tcp::source_port < "1550") or
Traffic on the 192.168.0.0/24 network (ip::destination_c_net.str="192.168.0.0") & (ip::source_c

Filter Details

Description: Traffic to or from IP address 192.168.0.1
Type: Pilot Filter
Filter string: ip::ip.str="192.168.0.1"
Start Time: - - End Time: - -

○ To 6/1/2010 17:14:42.421430
○ For 9 hours 38 mins 2 secs 421 ms 430 us

Figure 32: Filter Editor

In Figure 32 we show the Filter Editor. Note that nearly all of the filters in the “factory” set are Trending/Indexing-compatible Pilot Filters.

Using Time Selection to Create a Trace Clip

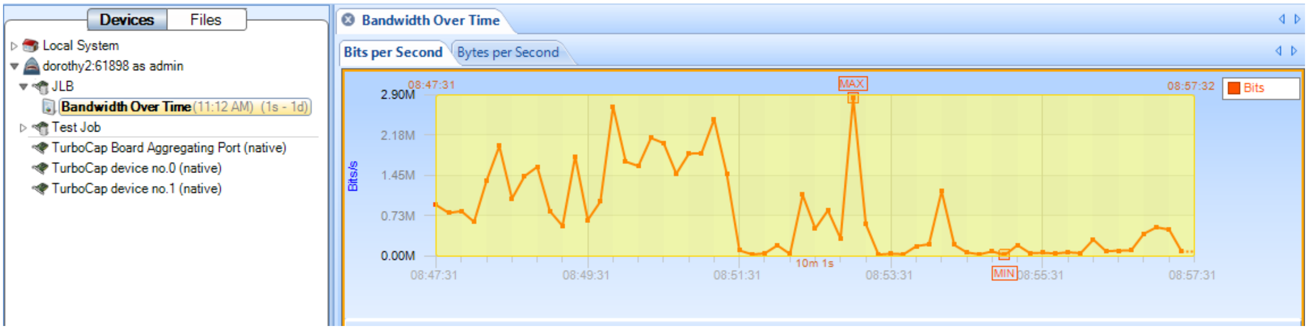


Figure 33: Time Selection in a Strip Chart

In Figure 33 we show a time selection in a strip chart. The strip char was obtained by applying the Bandwidth Over Time view to the JLB Job Interface. In Figure 34 we switch from the Devices Panel to the Files Panel where we see the corresponding JLB Job Trace. The trace clip was created by clicking and dragging the selected time interval (in the strip chart) over the Job Trace. This automatically created the Trace Clip shown below the JLB Job Trace. Notice that the Job Trace is over 30GB, but the Trace Clip is only 256MB.

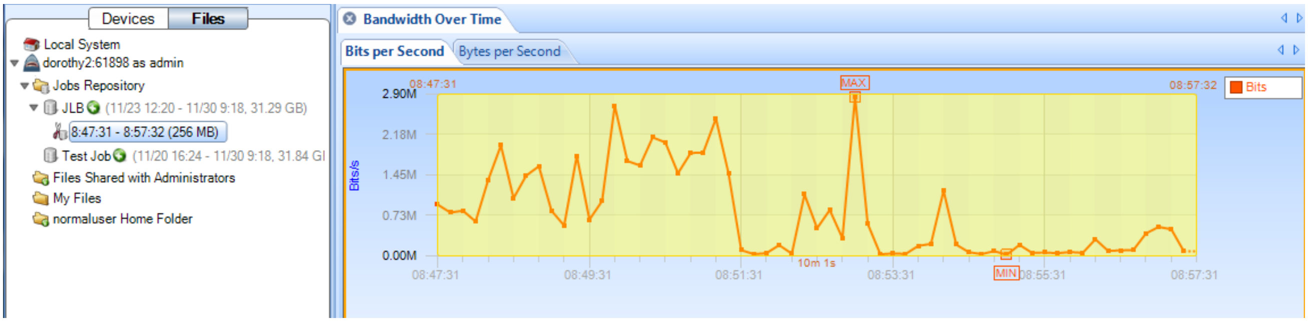


Figure 34: Time Selection Dragged Over Job Trace to Create a Trace Clip

In Figure 35 we have applied the Bandwidth Over Time view to the Trace Clip below JLB. Notice the similarity to the view in Figure 34.

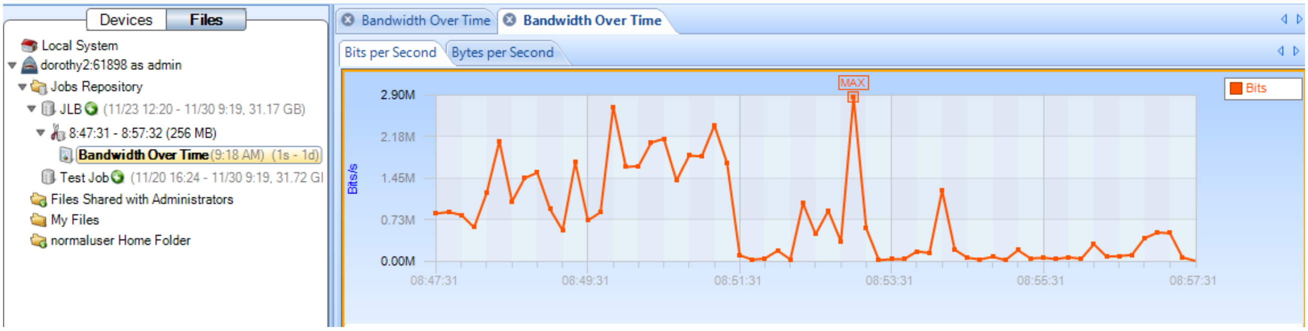


Figure 35: View Applied to a Trace Clip

Note: It is important to note that the view in Figure 34 has been obtained through the analysis of a live source while the view and Figure 35 was obtained by applying the same analysis to the packets saved in the Trace Clip. Trace Clips have all of the properties of ordinary trace files and can be analyzed using all of the capabilities of CACE Pilot.

Using Views as Job Trace Indices

The examples in the previous section show how to use a strip chart to locate time intervals of interest within a Job Trace and to easily create a Trace Clip for further analysis. This is a general technique whereby Views can be used as visual “indices” into a Job Trace.

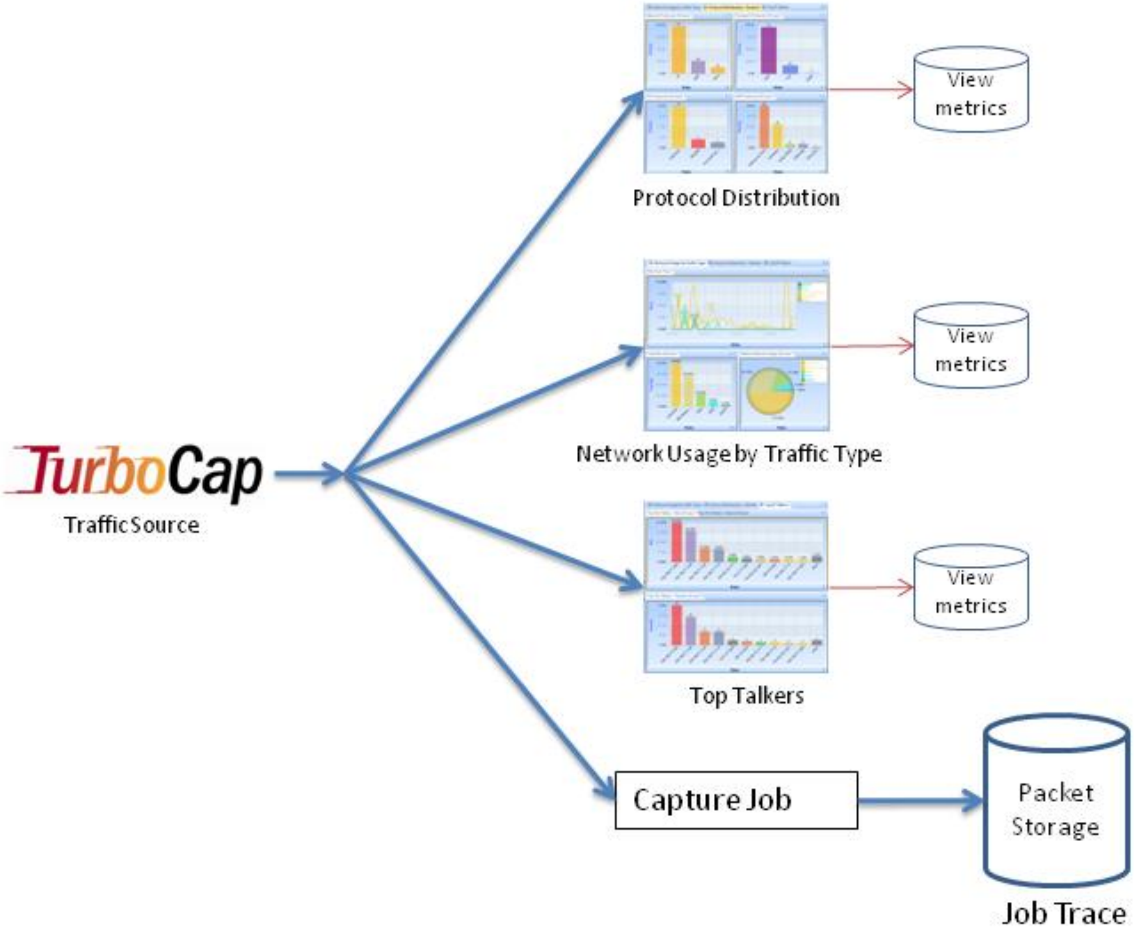
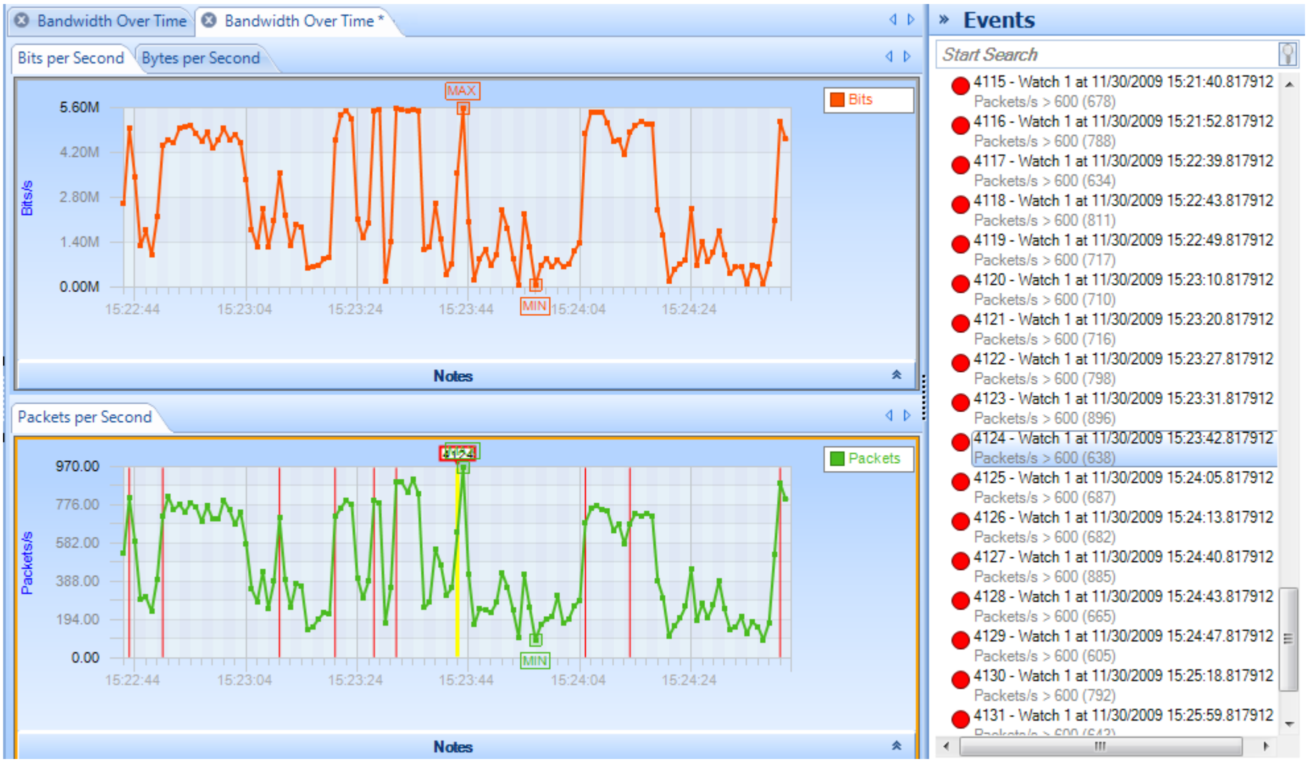


Figure 36: Visual Indices for a Job Trace

Using Events to Create Trace Clips

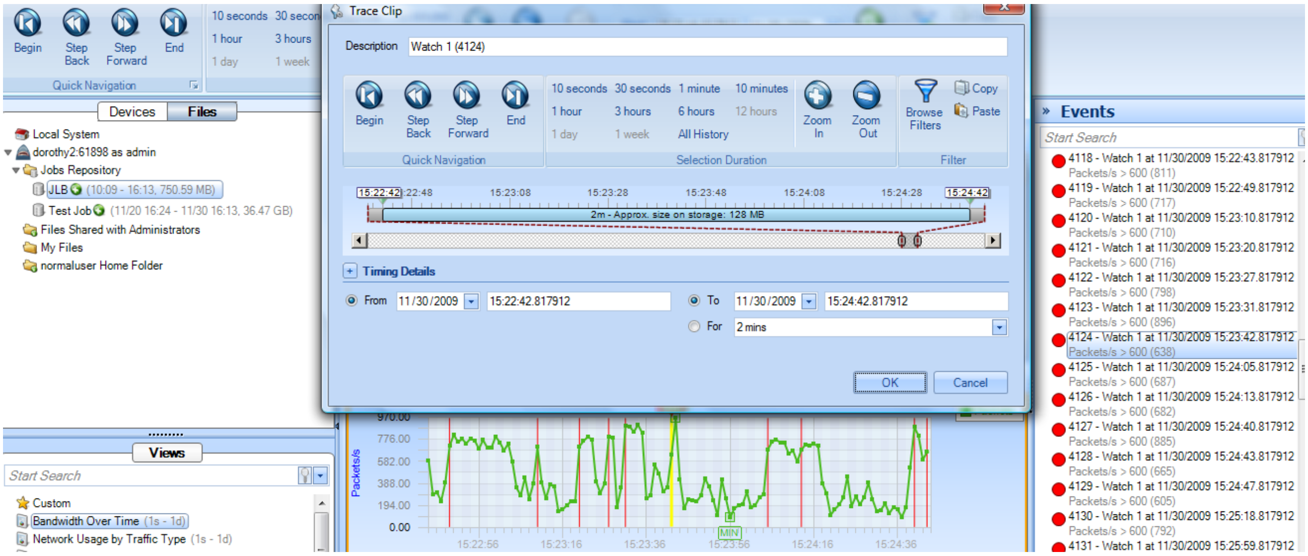
It is important to be able to easily locate an event in a Job Trace. This is easily accomplished by dragging the event in question over the Job Trace – a Trace Clip will be automatically containing traffic occurring before and after the event. This is illustrated below.



4115 - Watch 1 at 11/30/2009 15:21:40.817912
Packets/s > 600 (678)
4116 - Watch 1 at 11/30/2009 15:21:52.817912
Packets/s > 600 (788)
4117 - Watch 1 at 11/30/2009 15:22:39.817912
Packets/s > 600 (634)
4118 - Watch 1 at 11/30/2009 15:22:43.817912
Packets/s > 600 (811)
4119 - Watch 1 at 11/30/2009 15:22:49.817912
Packets/s > 600 (717)
4120 - Watch 1 at 11/30/2009 15:23:10.817912
Packets/s > 600 (710)
4121 - Watch 1 at 11/30/2009 15:23:20.817912
Packets/s > 600 (716)
4122 - Watch 1 at 11/30/2009 15:23:27.817912
Packets/s > 600 (798)
4123 - Watch 1 at 11/30/2009 15:23:31.817912
Packets/s > 600 (896)
4124 - Watch 1 at 11/30/2009 15:23:42.817912
Packets/s > 600 (638)
4125 - Watch 1 at 11/30/2009 15:24:05.817912
Packets/s > 600 (687)
4126 - Watch 1 at 11/30/2009 15:24:13.817912
Packets/s > 600 (682)
4127 - Watch 1 at 11/30/2009 15:24:40.817912
Packets/s > 600 (885)
4128 - Watch 1 at 11/30/2009 15:24:43.817912
Packets/s > 600 (665)
4129 - Watch 1 at 11/30/2009 15:24:47.817912
Packets/s > 600 (605)
4130 - Watch 1 at 11/30/2009 15:25:18.817912
Packets/s > 600 (792)
4131 - Watch 1 at 11/30/2009 15:25:59.817912
Packets/s > 600 (643)

Figure 37: Event List

In Figure 37 we show the Event List and a particular event (4124) that has been highlighted both in the Event List and on the Strip Chart. The events were created using a Watch on the live traffic corresponding to the JLB Capture Job. Creating a Trace Clip around the (temporal) location of the event is as easy as dragging the event from the Event List to the JLB Job Trace. Dragging Event 4124 from the Event List and dropping it on the JLB Job Trace brings up the Time Control panel for creating the Trace Clip. See Figure 38.



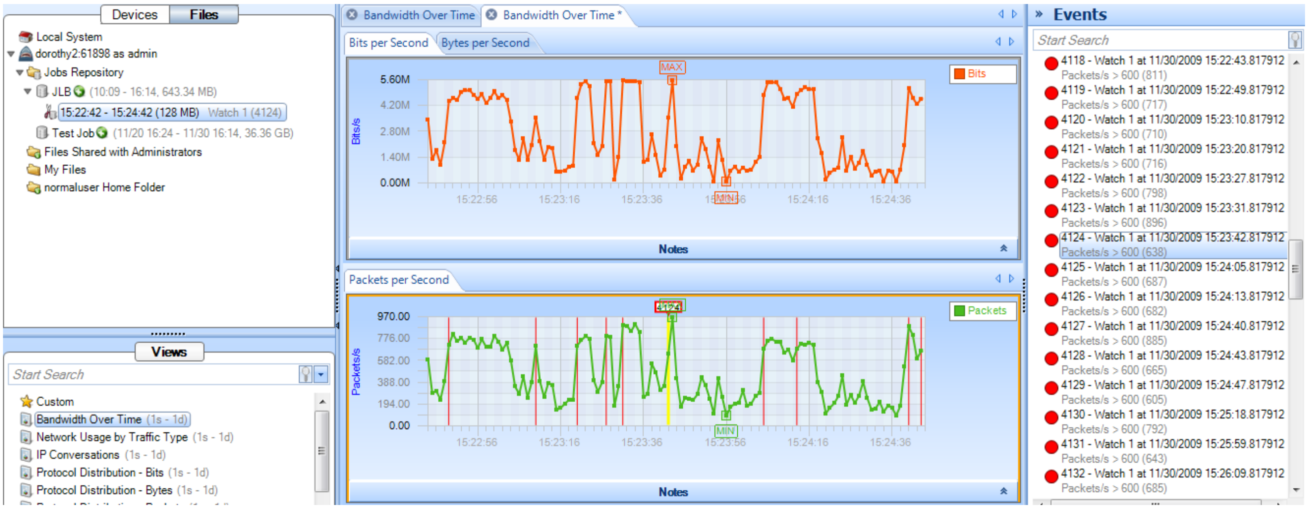
Description: Watch 1 (4124)

● From 11/30/2009 15:22:42.817912
● To 11/30/2009 15:24:42.817912
○ For 2 mins

4118 - Watch 1 at 11/30/2009 15:22:43.817912
Packets/s > 600 (811)
4119 - Watch 1 at 11/30/2009 15:22:49.817912
Packets/s > 600 (717)
4120 - Watch 1 at 11/30/2009 15:23:10.817912
Packets/s > 600 (710)
4121 - Watch 1 at 11/30/2009 15:23:20.817912
Packets/s > 600 (716)
4122 - Watch 1 at 11/30/2009 15:23:27.817912
Packets/s > 600 (798)
4123 - Watch 1 at 11/30/2009 15:23:31.817912
Packets/s > 600 (896)
4124 - Watch 1 at 11/30/2009 15:23:42.817912
Packets/s > 600 (638)
4125 - Watch 1 at 11/30/2009 15:24:05.817912
Packets/s > 600 (687)
4126 - Watch 1 at 11/30/2009 15:24:13.817912
Packets/s > 600 (682)
4127 - Watch 1 at 11/30/2009 15:24:40.817912
Packets/s > 600 (885)
4128 - Watch 1 at 11/30/2009 15:24:43.817912
Packets/s > 600 (665)
4129 - Watch 1 at 11/30/2009 15:24:47.817912
Packets/s > 600 (605)
4130 - Watch 1 at 11/30/2009 15:25:18.817912
Packets/s > 600 (792)
4131 - Watch 1 at 11/30/2009 15:25:59.817912

Figure 38: Creating a Trace Clip from an Event

The Time Control panel can be used to enlarge or shrink the time interval of the Trace Clip around the event. The Trace Clip is shown in Figure 39.

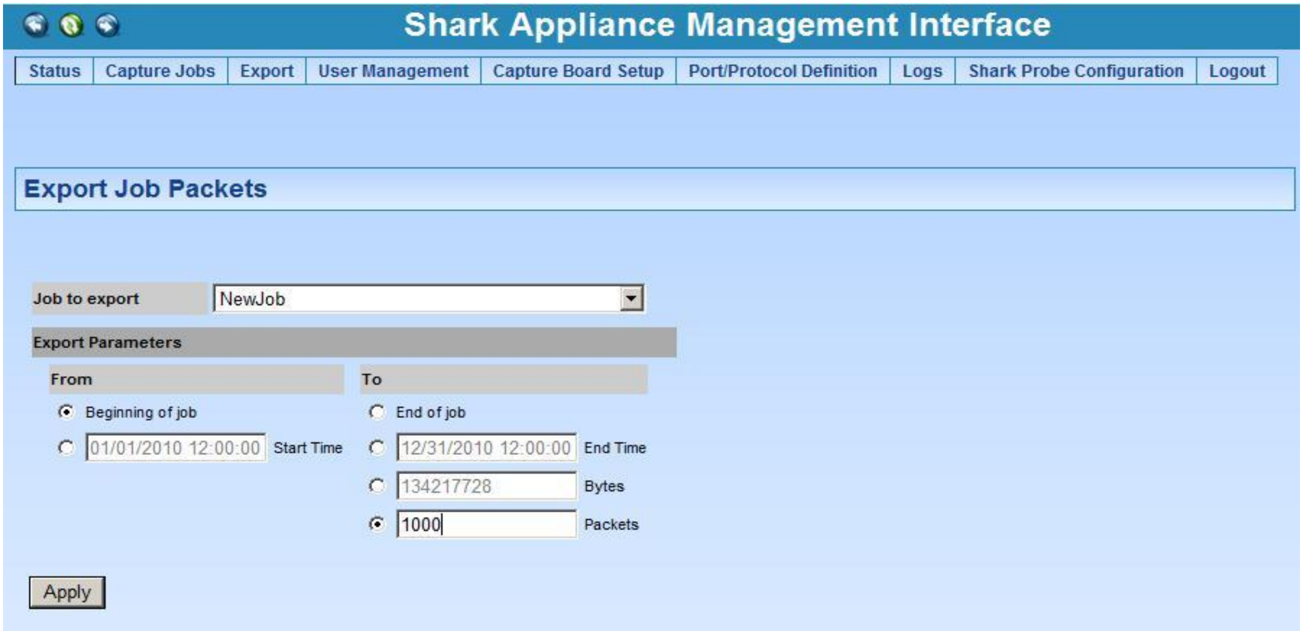


```
4118 - Watch 1 at 11/30/2009 15:22:43.817912
Packets/s > 600 (811)
4119 - Watch 1 at 11/30/2009 15:22:49.817912
Packets/s > 600 (717)
4120 - Watch 1 at 11/30/2009 15:23:10.817912
Packets/s > 600 (710)
4121 - Watch 1 at 11/30/2009 15:23:20.817912
Packets/s > 600 (716)
4122 - Watch 1 at 11/30/2009 15:23:27.817912
Packets/s > 600 (798)
4123 - Watch 1 at 11/30/2009 15:23:31.817912
Packets/s > 600 (896)
4124 - Watch 1 at 11/30/2009 15:23:42.817912
Packets/s > 600 (638)
4125 - Watch 1 at 11/30/2009 15:24:05.817912
Packets/s > 600 (687)
4126 - Watch 1 at 11/30/2009 15:24:13.817912
Packets/s > 600 (682)
4127 - Watch 1 at 11/30/2009 15:24:40.817912
Packets/s > 600 (885)
4128 - Watch 1 at 11/30/2009 15:24:43.817912
Packets/s > 600 (665)
4129 - Watch 1 at 11/30/2009 15:24:47.817912
Packets/s > 600 (605)
4130 - Watch 1 at 11/30/2009 15:25:18.817912
Packets/s > 600 (792)
4131 - Watch 1 at 11/30/2009 15:25:59.817912
Packets/s > 600 (643)
4132 - Watch 1 at 11/30/2009 15:26:09.817912
Packets/s > 600 (685)
```

Figure 39: Trace Clip Corresponding to an Event

Export Job Packets

The Export tab takes us to the page shown in Figure 40. This page can be used to export packets from a Capture Job. The *Job to Report* field is a drop-down list with an entry for each Capture Job. The *Export Parameters* fields are used to select a time interval within the Capture Job, similar to creating a Trace Clip.



Export Job Packets

Job to export: NewJob

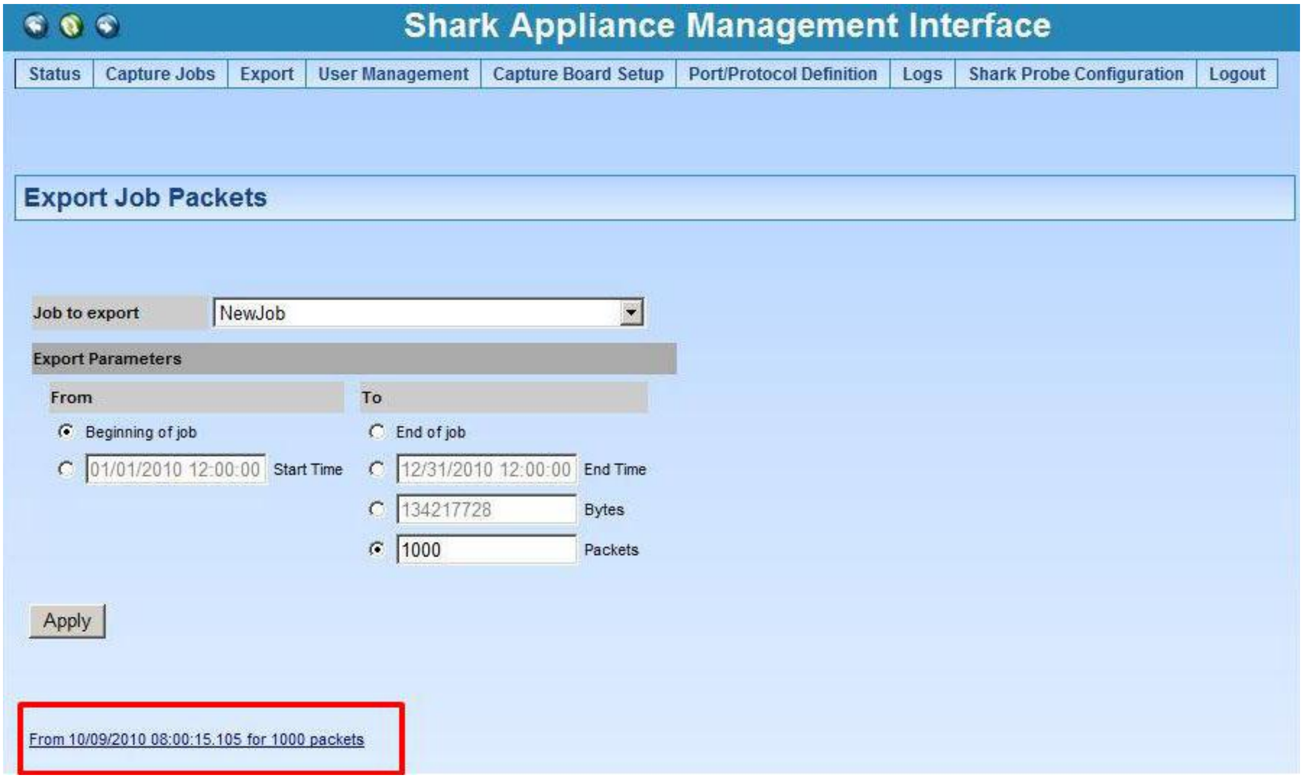
Export Parameters

From		To	
● Beginning of job		○ End of job	
○ 01/01/2010 12:00:00	Start Time	○ 12/31/2010 12:00:00	End Time
		○ 134217728	Bytes
		● 1000	Packets

Figure 40: Export Job Packets

Once the parameters are chosen, clicking on the Apply button creates a link that can be used to export the packets.

Clicking on the Apply Button does not start the download, but rather creates a link that can be used to start the download. An example link is shown outlined in red in Figure 41.



Export Job Packets

Job to export: NewJob

Export Parameters

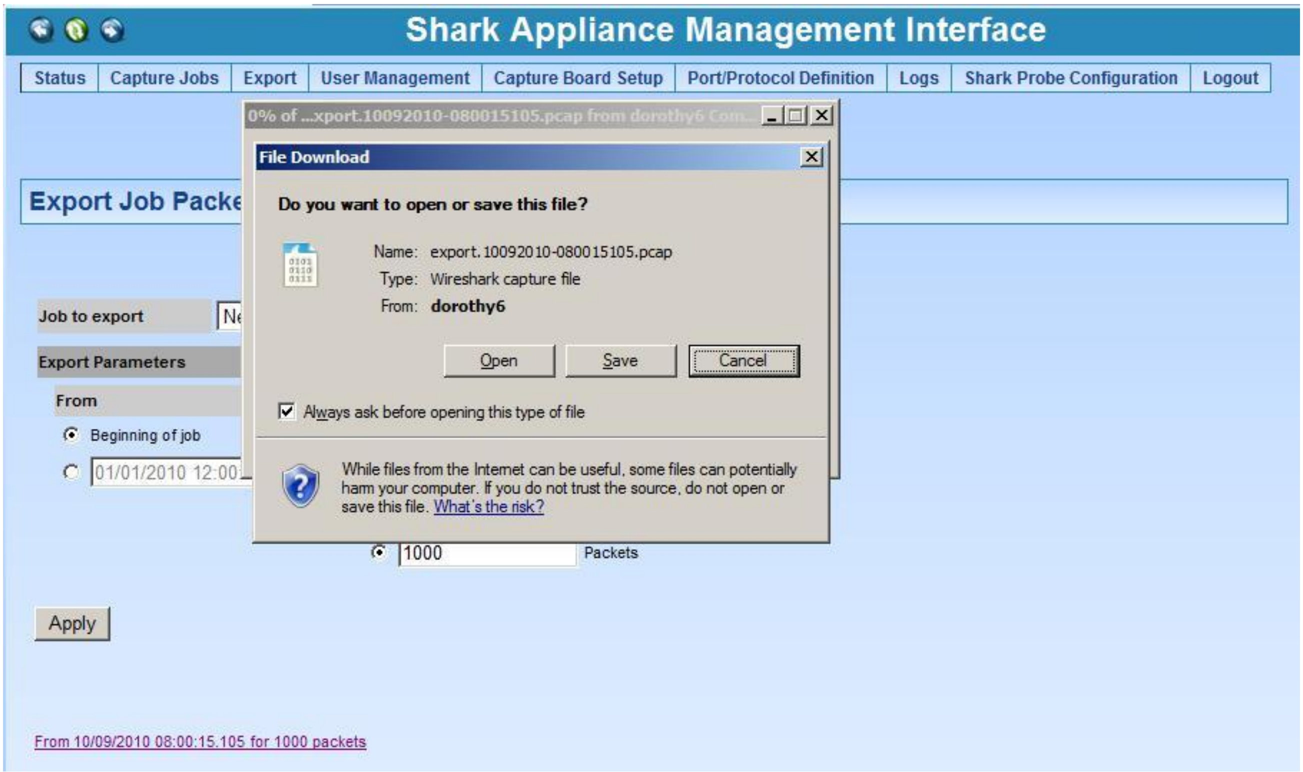
From:
- ● Beginning of job
- ○ 01/01/2010 12:00:00 Start Time

To:
- ○ End of job
- ○ 12/31/2010 12:00:00 End Time
- ○ 134217728 Bytes
- ● 1000 Packets

From 10/09/2010 08:00:15.105 for 1000 packets

Figure 41: Link To Export Packets

Clicking on the Export link brings up the Open/Save panel (See Figure 42). Selecting "Save" will bring up a file browser on the local machine (where the Pilot Console is running) to select the location of the exported packets. If "Open" is selected, Wireshark will open on the local machine and the exported packets will be opened with Wireshark.



0% of ...xport.10092010-080015105.pcap from dorothy6 Com...

File Download

Do you want to open or save this file?

Name: export.10092010-080015105.pcap
Type: Wireshark capture file
From: dorothy6

☑ Always ask before opening this type of file

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

Export Job Packe

Job to export: Ne

Export Parameters

From:
- ● Beginning of job
- ○ 01/01/2010 12:00

● 1000 Packets

From 10/09/2010 08:00:15.105 for 1000 packets

Figure 42: Open or Save Packets to be Exported

User Management

Shark Appliance Credential Manager

User and Group Access Control

All communications between the Shark Appliances and the Pilot Console use SSL-encrypted Web communications and require that each request from a Pilot Console contains HTTP basic access authentication credentials (HTTP Authentication). The Shark Appliance passes the authentication credentials to the Shark Appliance's Credential Manager. The Credential Manager determines if the user has a "privilege" that permits the execution of the requested operation. If the Credential Manager rejects the operation, the Shark Appliance returns the "not enough privileges" error to the Pilot Console making the request. Otherwise the Shark Appliance executes the operation.

Credential Manager

The Credential Manager associated with a Shark Appliance is governed by the User configuration file co-located with the Shark Appliance. A user can be part of one or more groups. Each user can "own" a set of resources: for example, the files or the folders that he has created, or the views that he has applied. Unless he is an administrator, a user has **visibility** and **control** only on his resources:

- A user cannot see a file or a view created by another user.
- A user cannot close a view or to delete a file that have been created by somebody else.

Resources, however, can be *shared*. Members of a group normally share a common folder that has the same name of the group. This folder can be use for trace file sharing, and all the users in the group have read and write access to the folder. When you drag a file into this folder, all the other member of the group will immediately see it and will be able to manipulate it.

Views can be shared with single users or groups by right-clicking on them and selecting "share with". As soon as a view is shared, the selected user or group will immediately see it in their sources panel.

User and groups are configured by editing the User configuration file in the Pilot Console folder.

Privileges

The User Configuration file is used to configure the **privileges** for users and groups. A privilege is a capability that can be granted or revoked, and is specified as an attribute of the User or Group tag in the users file. The privileges that the Shark Appliance currently implements are:

- IsAdministrator: if set to true, gives a user or a group full access Shark Appliance. Administrators see all the resources in the system, including views, files and folders that have been created by other users. Administrators have full control on all these resources.
- CanApplyViewsOnFiles: if set to true, allows the user or the group to apply views to files residing on the Shark Appliance.
- CanApplyViewsOnInterfaces: if set to true, allows the user or the group to apply views to the network interfaces on the Shark Appliance.
- CanCreateFiles: if set to true, the user or the group can create files on the Shark Appliance, by selecting the "send to file" buttons in the Pilot Console.
- CanImportFiles: if set to true, the user can import files into the Shark Appliance, through drag and drop or by clicking on the "Import Files Into Shark Appliance" button in the Remote ribbon.

- CanExportFiles: if set to true, allows the user to export files from the Shark Appliance, and move them to the Pilot Console or to another Shark Appliance (assuming the user has sufficient privilege on the target Shark Appliance to create a trace file). When this privilege is not granted, the user is not able to export a trace file to Wireshark, because that involves exporting packets out of the Shark Appliance to the Pilot Console.
- CanShareViews: if set to true, the user can share the views that he created on the Shark Appliance with other users or groups connected to the Shark Appliance from other Consoles.
- CanAccessProbeFiles: if set to true, the user will be able to "see" the trace files located on the Shark Appliance.
- HasFolder: if set, Shark Appliance creates a shared folder for the group with the name of the group (only applies to groups). All the users in the group will have access to this folder. Otherwise, the folder will not be visible to the members of the group.

Privilege Policy

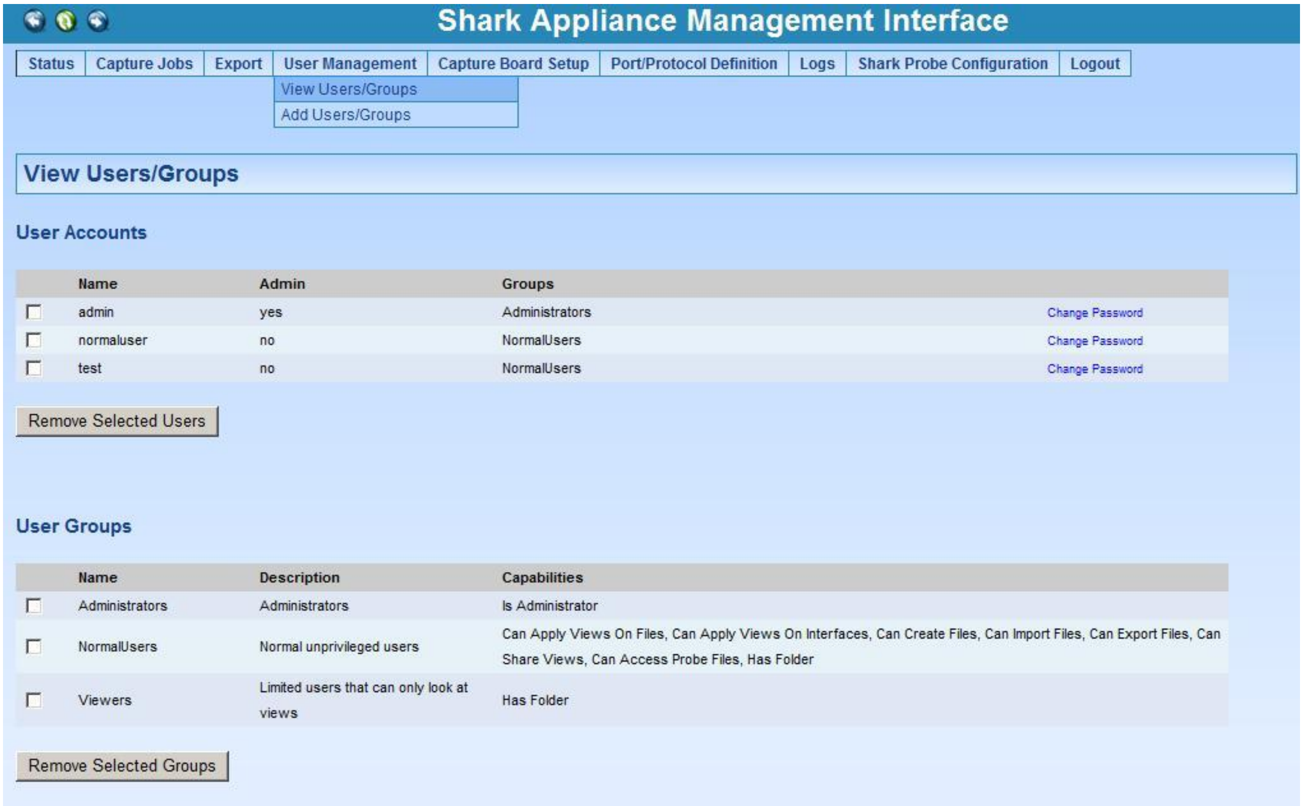
Since both users and groups can be granted or revoked roles, and since a user can be part of one or more groups, conflicts can arise between the user roles and the groups roles. The Shark Appliance solves conflicts through the following rules:

- Granting or revoking a role to the user has precedence over granting or revoking it to the groups the user is part of. In other words, if a role is present (both as true or false) under the user tag in the users file, the fact that the same role is present for any of the groups the user is part of is ignored.
- If a role is not set for a user, it is inherited from the groups it is part of.
- If different groups have conflicting roles, the highest privilege is assigned to the user.

Shark Appliance Web Management Interface User Management

The Shark Appliance Management Interface’s User Management menu item has two submenus: View User/Group Accounts and Add Users/Groups.

View Users/Groups



View Users/Groups

User Accounts

	Name	Admin	Groups	
□	admin	yes	Administrators	Change Password
□	normaluser	no	NormalUsers	Change Password
□	test	no	NormalUsers	Change Password

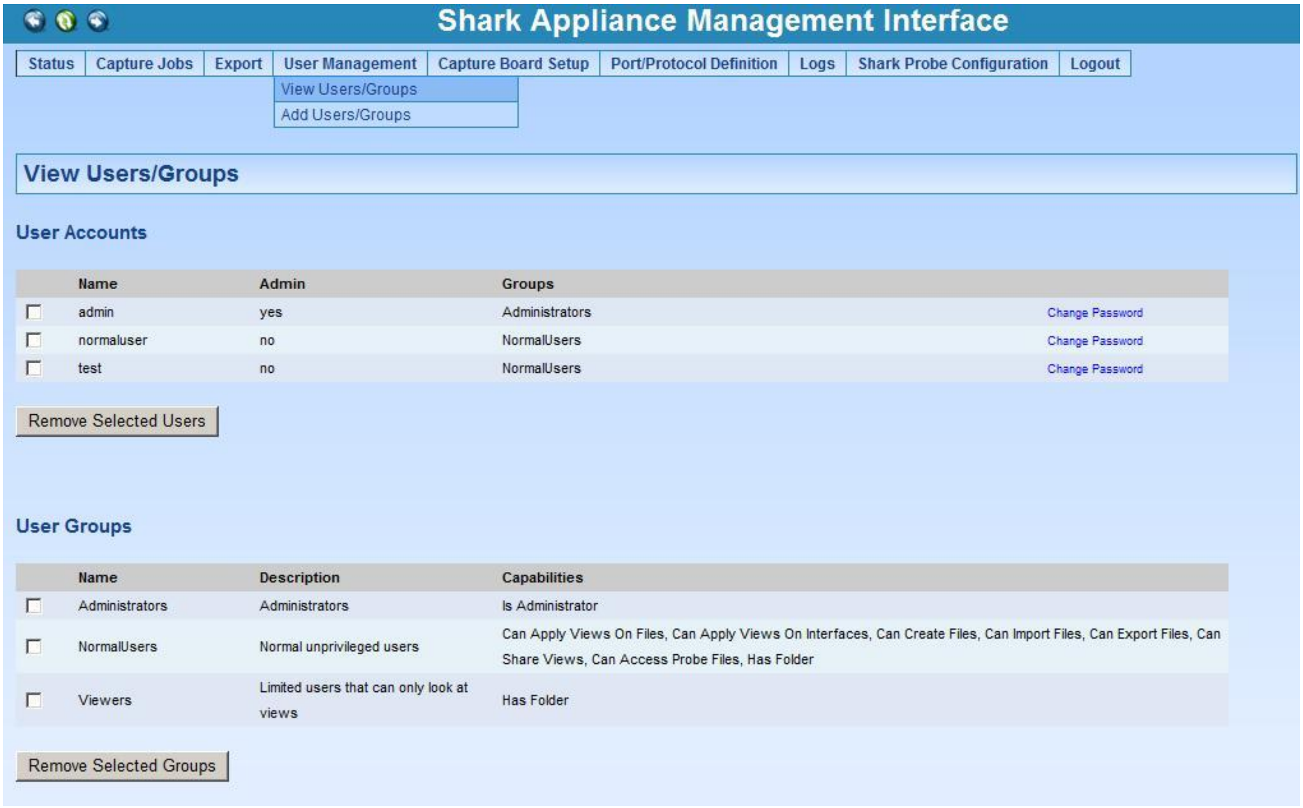
User Groups

	Name	Description	Capabilities
□	Administrators	Administrators	Is Administrator
□	NormalUsers	Normal unprivileged users	Can Apply Views On Files, Can Apply Views On Interfaces, Can Create Files, Can Import Files, Can Export Files, Can Share Views, Can Access Probe Files, Has Folder
□	Viewers	Limited users that can only look at views	Has Folder

Figure 43: View Shark Appliance Usesr/Groups

The View Users /Groups page lists all of the user accounts and all of the User Groups. For each user there is an indication of whether the user has the Admin privilege level and the group to which the user belongs.
Each Group has a description and a list of privileges associated with the group. Users belonging to a Group assume the Group privileges.
Users and Groups can be removed by putting a check in the check box and clicking on Remove Selected Users (Groups).

Add Users/Groups



View Users/Groups

User Accounts

	Name	Admin	Groups	
□	admin	yes	Administrators	Change Password
□	normaluser	no	NormalUsers	Change Password
□	test	no	NormalUsers	Change Password

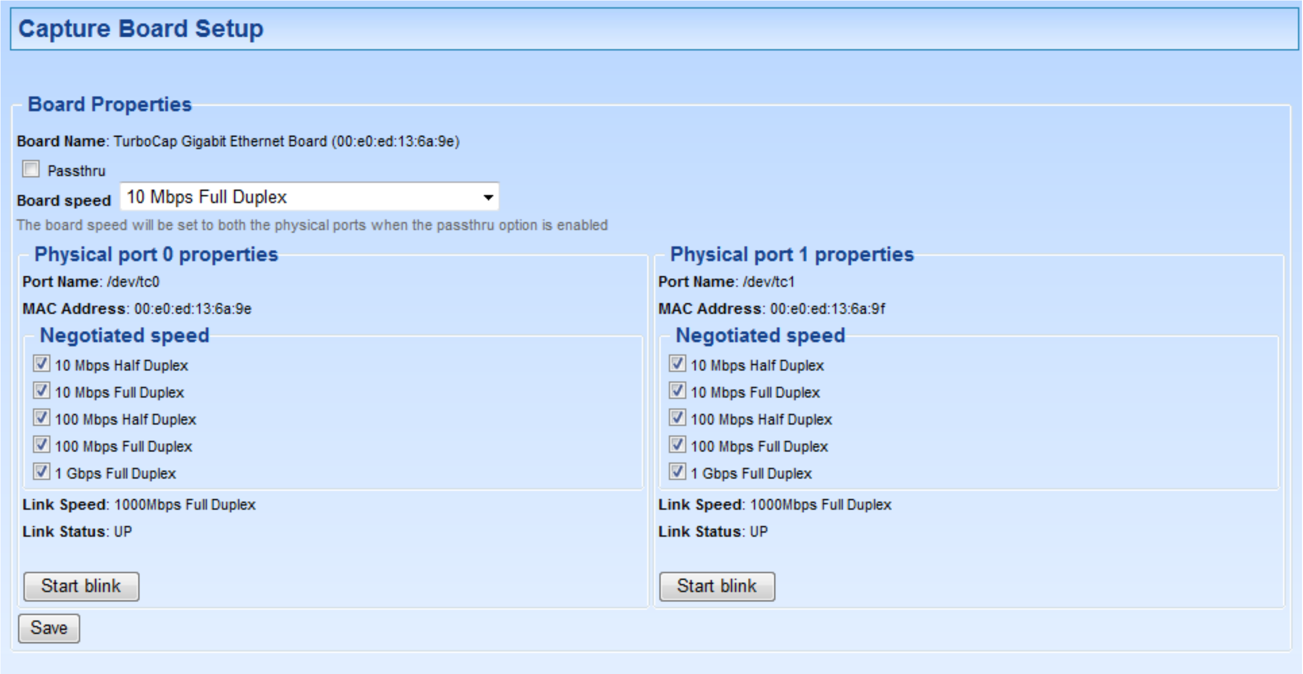
User Groups

	Name	Description	Capabilities
□	Administrators	Administrators	Is Administrator
□	NormalUsers	Normal unprivileged users	Can Apply Views On Files, Can Apply Views On Interfaces, Can Create Files, Can Import Files, Can Export Files, Can Share Views, Can Access Probe Files, Has Folder
□	Viewers	Limited users that can only look at views	Has Folder

Figure 44: Add Users/Groups

Adding a User is accomplished by providing the User Name and Password and then clicking on Add User. Similarly, a Group can be added by providing a Group Name, Group Description, clicking on the privileges to be associated with the Group, and then clicking on Add Group.

Capture Board Setup



Capture Board Setup

Board Properties

Board Name: TurboCap Gigabit Ethernet Board (00:e0:ed:13:6a:9e)

□ Passthru

Board speed 10 Mbps Full Duplex

The board speed will be set to both the physical ports when the passthru option is enabled

Physical port 0 properties

Port Name: /dev/tc0

MAC Address: 00:e0:ed:13:6a:9e

Negotiated speed

☑ 10 Mbps Half Duplex
☑ 10 Mbps Full Duplex
☑ 100 Mbps Half Duplex
☑ 100 Mbps Full Duplex
☑ 1 Gbps Full Duplex

Link Speed: 1000Mbps Full Duplex

Link Status: UP

Physical port 1 properties

Port Name: /dev/tc1

MAC Address: 00:e0:ed:13:6a:9f

Negotiated speed

☑ 10 Mbps Half Duplex
☑ 10 Mbps Full Duplex
☑ 100 Mbps Half Duplex
☑ 100 Mbps Full Duplex
☑ 1 Gbps Full Duplex

Link Speed: 1000Mbps Full Duplex

Link Status: UP

Figure 45: TurboCap Board Setup

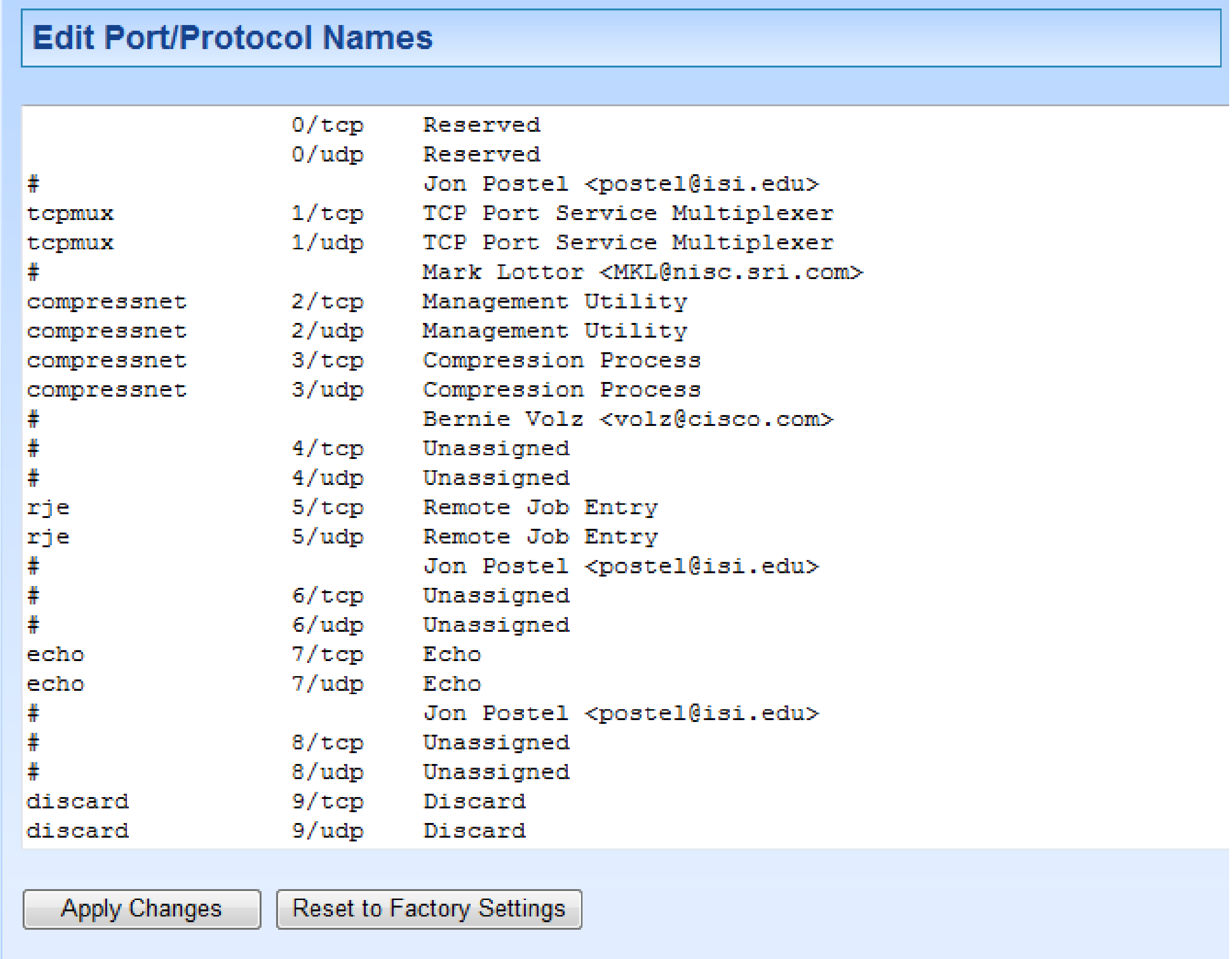
The Capture Board Setup menu item takes you to the page(s) for setting up the TurboCap Board(s).

Port/Protocol Definition

Port/Protocol Names

The Port/Protocol Definitions section can be used to have the Shark Probe identify user or application protocols when parsing packets. Non-standard port/protocols appear as "other" in many Views. This provides the user the opportunity to introduce new meanings for port/protocol pairs.

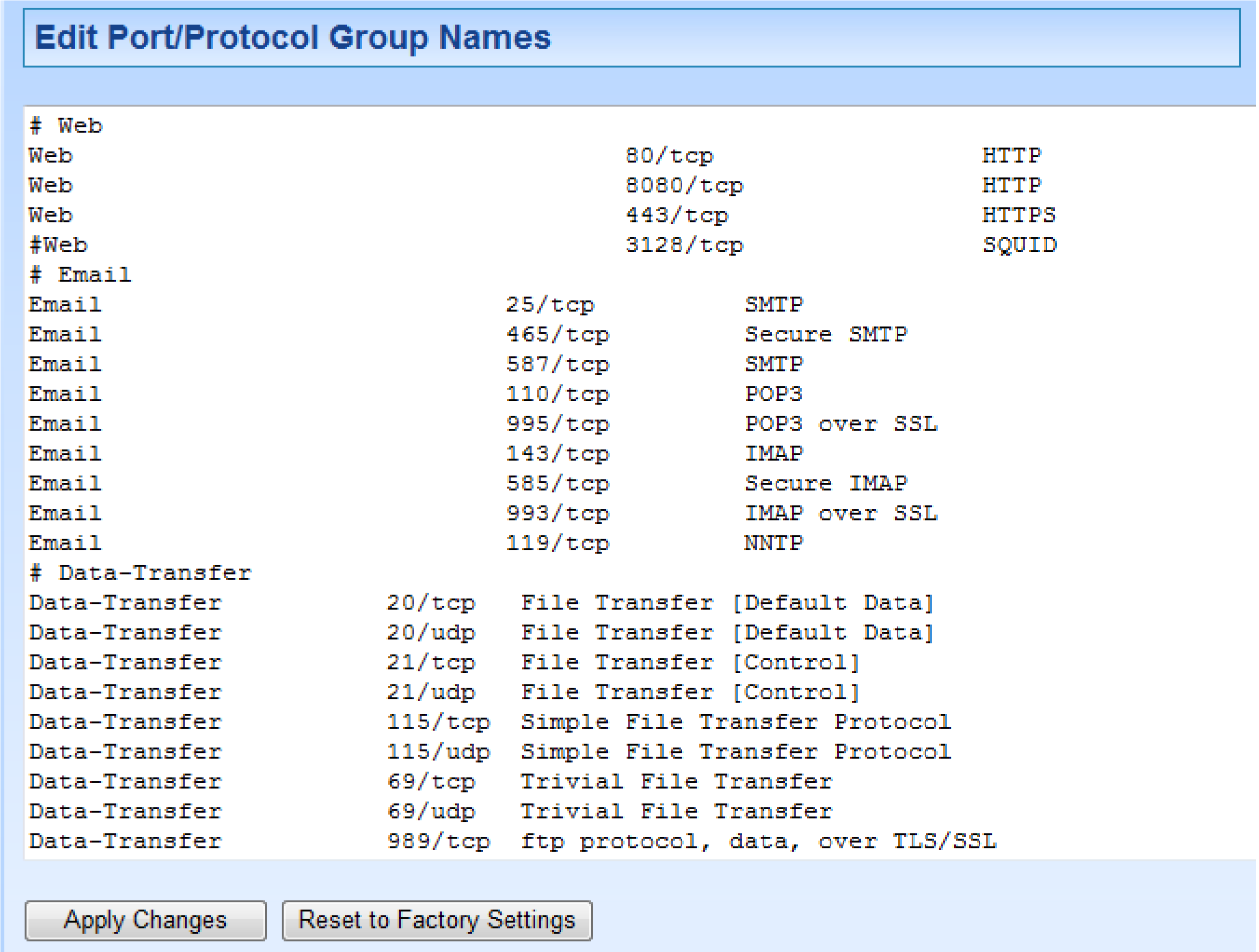
> *Note:* Be very careful to add port/protocol definitions sorted by port number and to adhere to the file's format.



```
                    0/tcp     Reserved
                    0/udp     Reserved
#                             Jon Postel <postel@isi.edu>
tcpmux              1/tcp     TCP Port Service Multiplexer
tcpmux              1/udp     TCP Port Service Multiplexer
#                             Mark Lottor <MKL@nisc.sri.com>
compressnet         2/tcp     Management Utility
compressnet         2/udp     Management Utility
compressnet         3/tcp     Compression Process
compressnet         3/udp     Compression Process
#                             Bernie Volz <volz@cisco.com>
#                   4/tcp     Unassigned
#                   4/udp     Unassigned
rje                 5/tcp     Remote Job Entry
rje                 5/udp     Remote Job Entry
#                             Jon Postel <postel@isi.edu>
#                   6/tcp     Unassigned
#                   6/udp     Unassigned
echo                7/tcp     Echo
echo                7/udp     Echo
#                             Jon Postel <postel@isi.edu>
#                   8/tcp     Unassigned
#                   8/udp     Unassigned
discard             9/tcp     Discard
discard             9/udp     Discard
```

Figure 46: Edit Port/Protocol Names

Port/Protocol Groups



Edit Port/Protocol Group Names

```
# Web
Web                                     80/tcp                  HTTP
Web                                     8080/tcp                HTTP
Web                                     443/tcp                 HTTPS
#Web                                    3128/tcp                SQUID
# Email
Email                           25/tcp          SMTP
Email                           465/tcp         Secure SMTP
Email                           587/tcp         SMTP
Email                           110/tcp         POP3
Email                           995/tcp         POP3 over SSL
Email                           143/tcp         IMAP
Email                           585/tcp         Secure IMAP
Email                           993/tcp         IMAP over SSL
Email                           119/tcp         NNTP
# Data-Transfer
Data-Transfer           20/tcp   File Transfer [Default Data]
Data-Transfer           20/udp   File Transfer [Default Data]
Data-Transfer           21/tcp   File Transfer [Control]
Data-Transfer           21/udp   File Transfer [Control]
Data-Transfer           115/tcp  Simple File Transfer Protocol
Data-Transfer           115/udp  Simple File Transfer Protocol
Data-Transfer           69/tcp   Trivial File Transfer
Data-Transfer           69/udp   Trivial File Transfer
Data-Transfer           989/tcp  ftp protocol, data, over TLS/SSL
```

Figure 47: Edit Port/Protocol Group Names

The file shown in Figure 47 assigns names to certain groups or port/protocols. These definitions are useful in grouping port/protocols into categories such as Email, Web, etc. The user can either add a private port/protocol to an existing group or add his own port/protocol group.

Logs

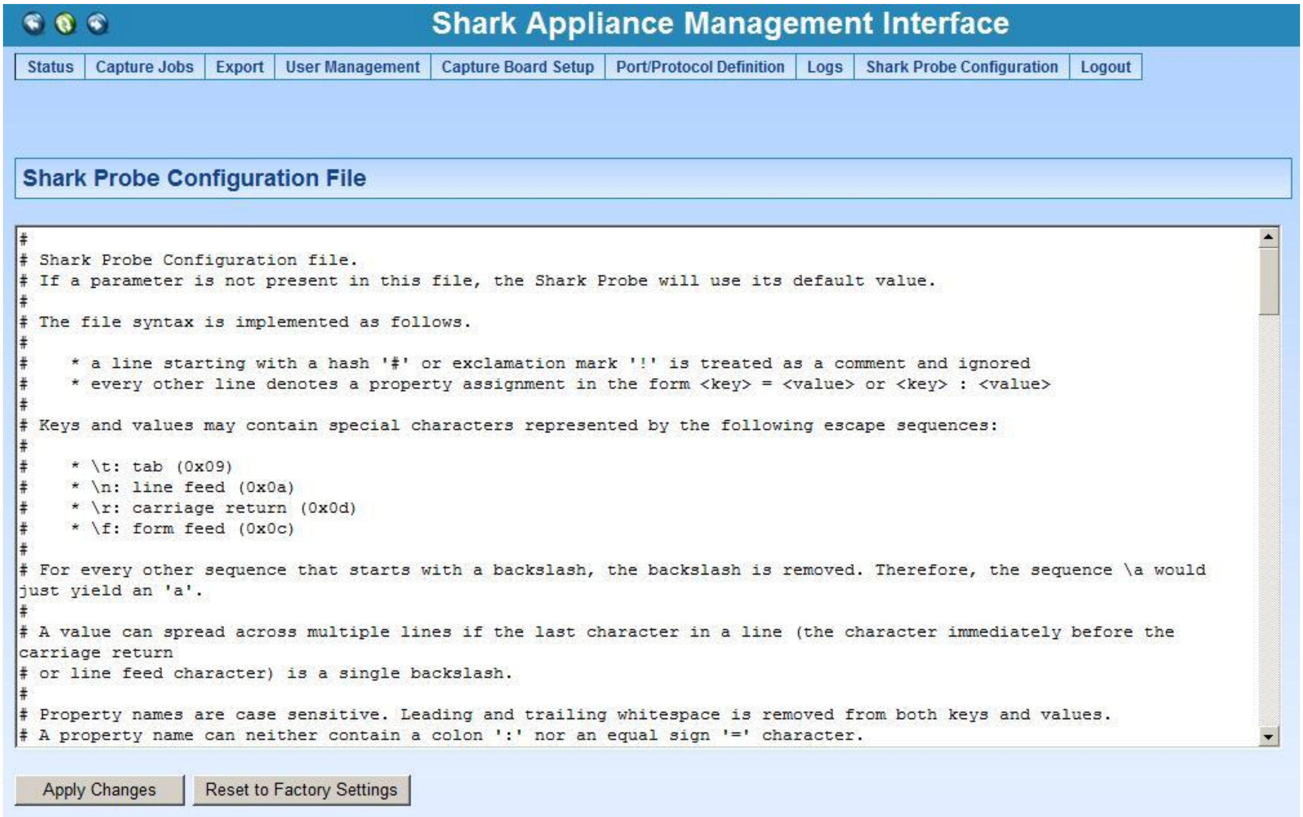
Shark Probe Logs

The Shark Probe log is used by CACE Technologies customer support to diagnose Shark Appliance issues.

Shark Packet Recorder Logs

The Shark Packet Recorder log is used by CACE Technologies customer support to diagnose problems with the Shark Packet Recorder.

Shark Probe Configuration File


Shark Appliance Management Interface
Status
Capture Jobs
Export
User Management
Capture Board Setup
Port/Protocol Definition
Logs
Shark Probe Configuration
Logout
Shark Probe Configuration File
Apply Changes
Reset to Factory Settings

```
#
# Shark Probe Configuration file.
# If a parameter is not present in this file, the Shark Probe will use its default value.
#
# The file syntax is implemented as follows.
#
#    * a line starting with a hash '#' or exclamation mark '!' is treated as a comment and ignored
#    * every other line denotes a property assignment in the form <key> = <value> or <key> : <value>
#
# Keys and values may contain special characters represented by the following escape sequences:
#
#    * \t: tab (0x09)
#    * \n: line feed (0x0a)
#    * \r: carriage return (0x0d)
#    * \f: form feed (0x0c)
#
# For every other sequence that starts with a backslash, the backslash is removed. Therefore, the sequence \a would
just yield an 'a'.
#
# A value can spread across multiple lines if the last character in a line (the character immediately before the
carriage return
# or line feed character) is a single backslash.
#
# Property names are case sensitive. Leading and trailing whitespace is removed from both keys and values.
# A property name can neither contain a colon ':' nor an equal sign '=' character.
```

Figure 48: Shark Probe Configuration File

The Shark Probe Configuration file is best used by CACE Technologies support personnel.

Logout

Logs off the Web Management interface of the Shark Appliance.