Progress®
Kemp® LoadMaster®

Technical Note Packet Trace Guide

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Table of Contents

Chapter 1: Introduction 4

Chapter 2: Perform a TCP Dump. 5

Perform a TCP Dump using the WUI 5

Perform a TCP Dump using the Console 7

Chapter 3: References 10

1

Introduction

One of the easiest ways to view the traffic traversing the LoadMaster is to perform a TCP dump. This simple command will capture all of the traffic (or just a specified subset) that is being transmitted and received by the LoadMaster. The results can be examined by analysing the .pcap file with Wireshark or another packet analyzer.

Note: When using the console to perform the TCP dump, an FTP server that can be reached by the LoadMaster is required in order to retrieve the packet capture files.

2

Perform a TCP Dump

There are two ways to perform a TCP dump in the LoadMaster – via the Web User Interface (WUI), or via the console. Refer to the relevant section below for steps.

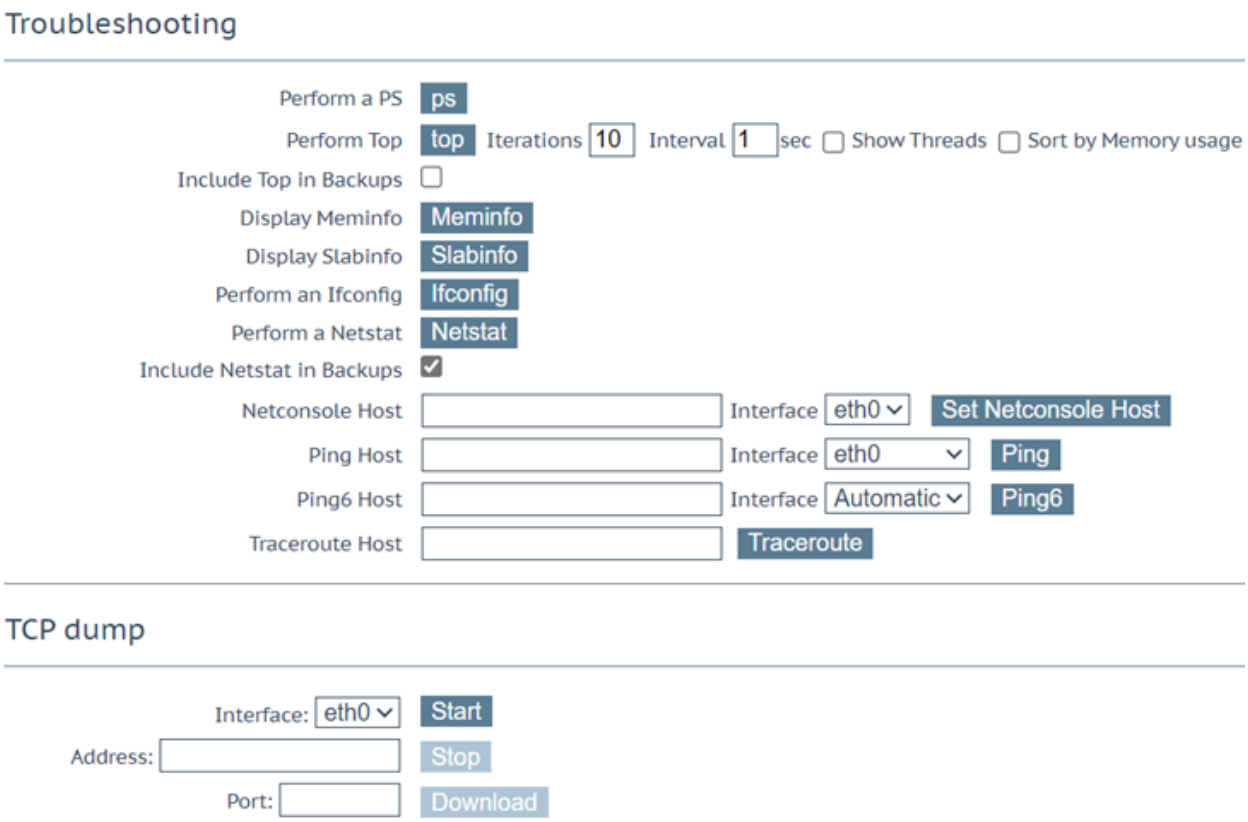
Contents

- Perform a TCP Dump using the WUI
- Perform a TCP Dump using the Console

Perform a TCP Dump using the WUI

To perform a TCP dump using the WUI, follow the steps below:

1. In the main menu, select **System Configuration > Troubleshooting**.



2. A TCP dump can be captured either by one or all Ethernet ports. In the **TCP dump** section at the bottom of the screen, select the relevant **Interface** to run the TCP dump on, or select **All**.
3. Optionally enter the IP **Address** and the **Port** to be monitored.

Note: To specify additional, optional parameters - use the Application Programming Interface (API) to perform a TCP dump. For further details, refer to the RESTful API documentation.

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4. Click **Start**.
5. Make access from the client to the Virtual Server.
6. When appropriate, click **Stop**.
7. Click **Download**.
8. This downloads the results of the TCP dump in a .pcap file. This file can be analysed using a packet trace tool such as Wireshark.

The TCP dump feature includes a few common filters, such as **Interface**, IP **Address**, and **Port**. By specifying an appropriate filter, the **pcap** can include the client to LoadMaster connectivity as well as the LoadMaster to server connection. Enter the Virtual Service's IP address as a filter for non-transparent Virtual Services. The client's IP address is a useful filter for transparent services. A port-based filter can also be used to narrow down the traffic that is recorded.

By default, the TCP dump captures the first 10,000 packets or 30MB of data. Depending on which value hit first, the capture will stop. The memory dedicated to save a **pcap** file is 30MB. When listening on two interfaces, each interface will be able to record up to 15MB of traffic.

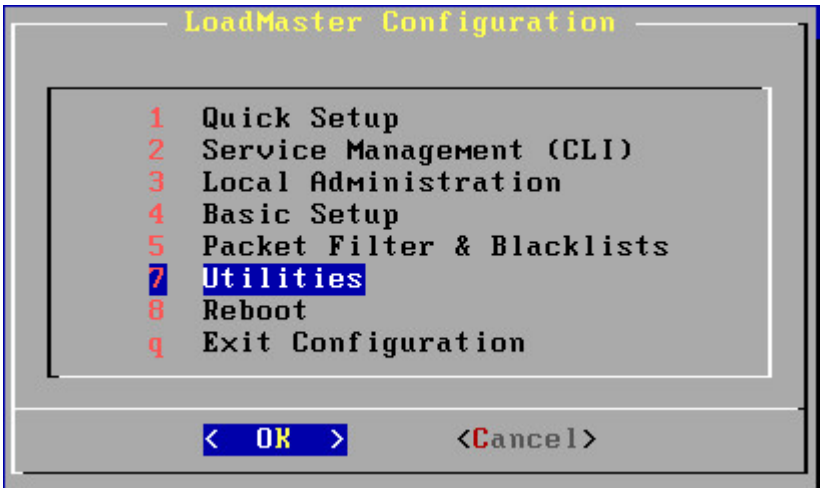
If the logging of packets beyond 10,000 is required - it is possible to specify to record only the first *n* number of bytes of each packet. Therefore, the maximum packet count (**-c**) can also be increased.

Note: If you use the **-c** filter to capture more packets, the LoadMaster saves the **pcap** file to the **/TMP** folder. This folder size is very small and if you fill it up, you will lose access to the User Interface.

Perform a TCP Dump using the Console

To perform a TCP dump via the console, follow the steps below:

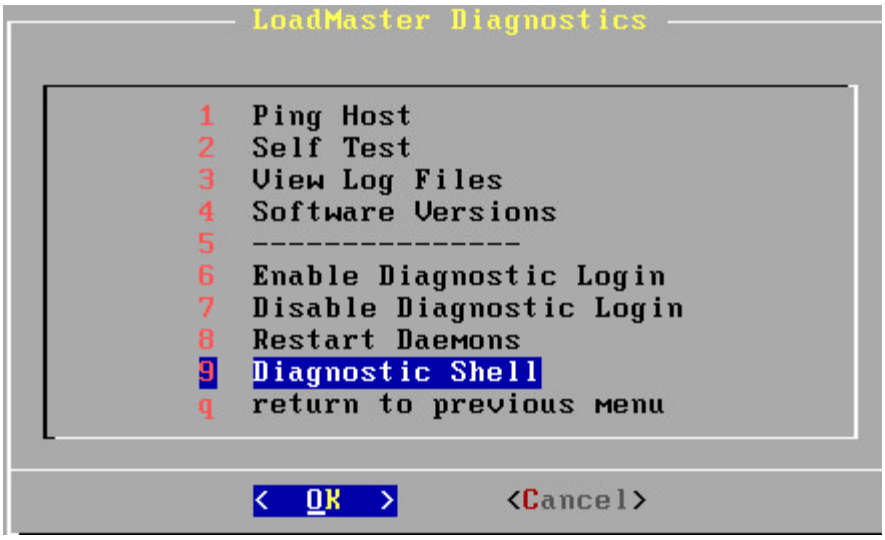
1. Log in to the console.



2. Select **Utilities**.



3. Select **Diagnostics**.



4. Select **Diagnostic Shell**.
5. Enter the relevant commands at the **%** prompt, for example:

   tcpdump –s 1500 –c 10000 –i eth0 –w eth0.pcap FILTER0 &

   Note: If performing a TCP dump on a two-armed device, ensure to enter the ampersand (**&**) at the end of the command and also use the command below.

   tcpdump –s 1500 –c 10000 –i eth1 –w eth1.pcap FILTER1

6. Please select the appropriate filter for **FILTER0** and **FILTER1**:
   1. Host 1.2.3.4
   2. Port 1234
   3. Host 1.2.3.4 and port 1234
7. For example, a complete TCP dump command might look like this:

   tcpdump –s 1500 –c 10000 –i eth0 –w eth0.pcap host 1.2.3.4 and port 80

8. This will capture all traffic to or from IP 1.2.3.4 with a source or destination port of 80.

   Note: As the example command above is set to quit after 10,000 packets, the capture may need to be restarted if the situation in question does not occur within the first 10,000 packets captured, i.e. in the case of heavy load.

9. Make access from the client to the Virtual Server to produce the error.
10. Return to the diagnostic shell.
11. Stop the packet capture by holding **Ctrl** on the keyboard and pressing **C**.
12. If running a TCP dump on a two-armed setup, enter the command **fg**. The second trace will appear. Stop the second packet capture by holding **Ctrl** on the keyboard and pressing **C**.
13. Connect to the FTP server and send the file by entering the command:

    ftp <FTP IP address>

14. Enter credentials (this depends on the FTP server).
15. Then, enter the following commands:

    binary

    put eth0.pcap

    put eth1.pcap (if running a packet trace on a two-armed configuration)

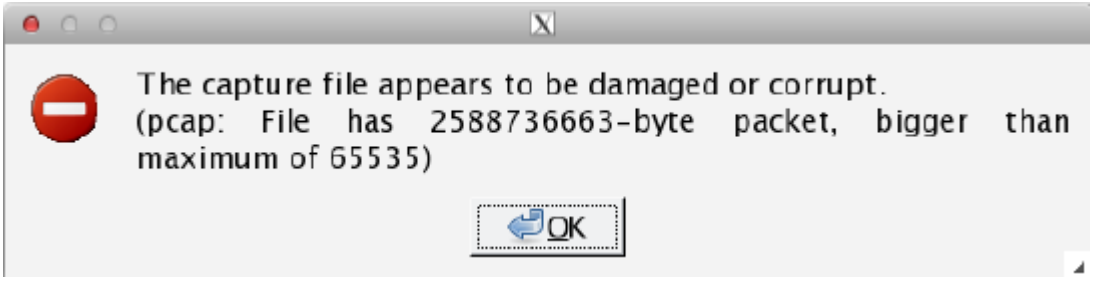
    bye

16. It is now possible to retrieve the packet capture files from the FTP server and analyse them in the application of choice, for example Wireshark.
17. Use the **exit** command to exit the Diagnostic Shell.

If instructed by a Progress Kemp Support Engineer, you can send them the packet trace file for analysis. Before sending the packet capture, please open it using a relevant tool, for example Wireshark, to ensure both the quality of the data and the integrity of the file.

Note: Please keep in mind any security implications of sending the packet capture.

Error during FTP Transfer



If an error occurs which notifies of a damaged or corrupt file, it is likely that the file was not transferred in binary mode. Repeat **Step 13** in the Perform a TCP Dump via the Console section and ensure to issue the **binary** command before transferring.

3

References

For further details on the WUI fields, refer to the following document:

Web User Interface (WUI) Configuration Guide