Packet Capture

Avi Technical Reference (v17.2)

Packet Capture

view online

Overview

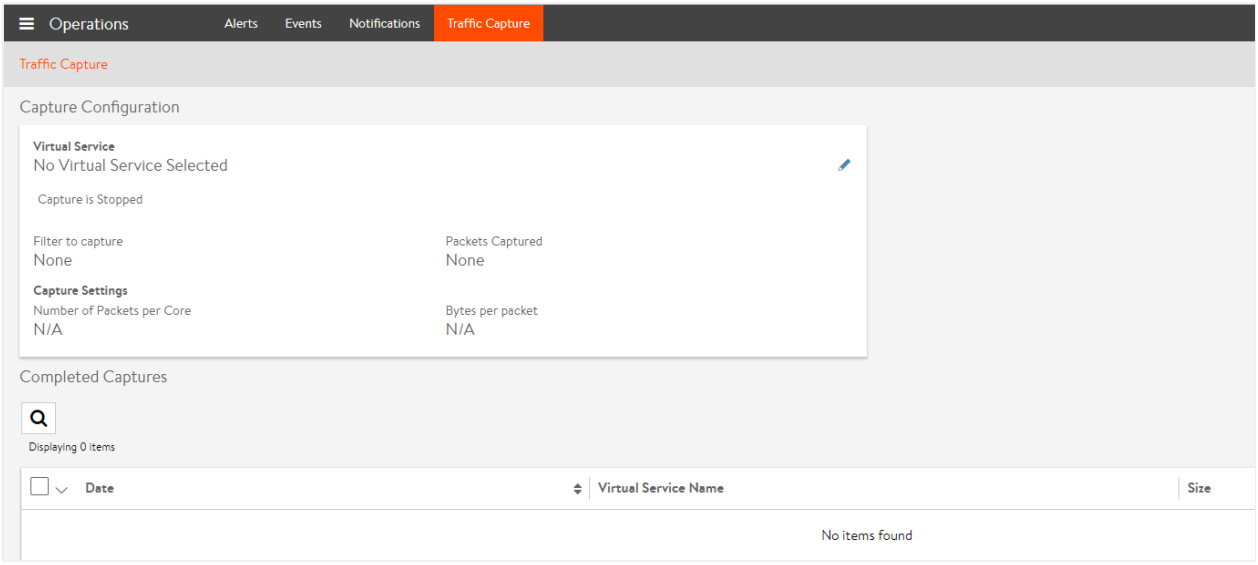
Packet capture in Avi Vantage runs a TCPdump for the designated virtual service or Service Engine and provides complete visibility into the packet transmission.

Virtual services may be on a single Service Engine (SE) or scaled out across multiple active SEs. The traffic captures will be automatically run on all SEs actively handling traffic for a virtual service. After the capture is completed, the SE will forward the *pcap* file to the Controller, which aggregates and sorts the client and server data into a single file.

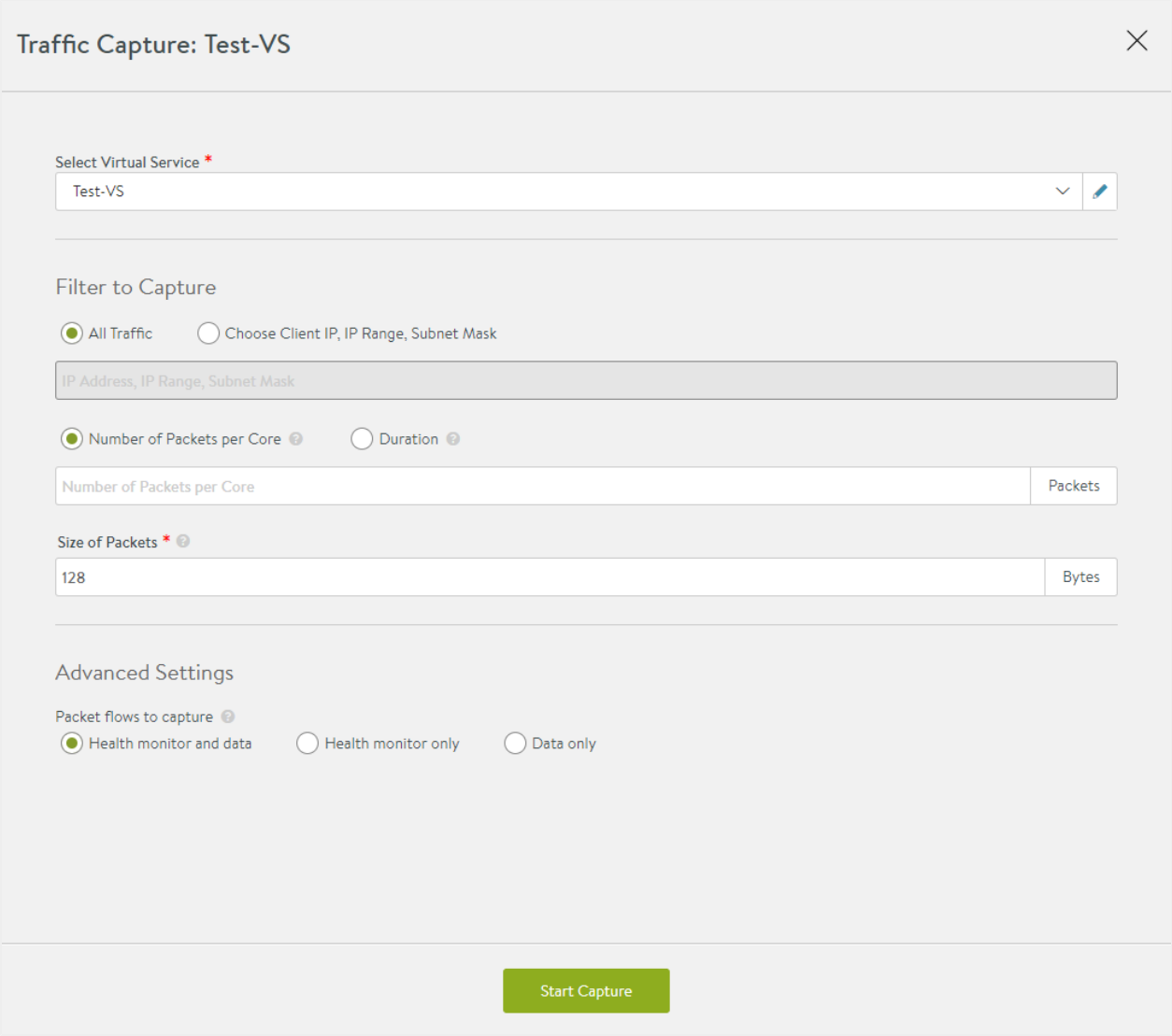
Note: It is highly recommended to set a limit for the capture. This limit may either be the maximum number of packets to receive or the duration of the capture, in minutes. After reaching the limit, the capture will be terminated and sent to the Controller.

Capturing Virtual Service Traffic using UI

Navigate to **Operations** > **Traffic Capture**. The **Capture Configuration** section displays the parameters defined for captures currently in progress.



Click on the edit icon to start a new capture.



- **Select Virtual Service** ? From the dropdown list, select the virtual service you want to capture the traffic for. This capture includes both the client-to-SE and SE-to-server side of the connection. The traffic will be captured on all SEs handling traffic for that virtual service.

Filter to Capture

- **All Traffic** ? Select this option to capture all traffic.
- **Choose Client IP, IP Range, Subnet Mask** ? Select this option to capture traffic only for the specified IP address, list or range of IP addresses, or subnet. The IP addresses can be client or server addresses. * To specify a list, use a space between each address. For example: 10.1.1.1 10.1.1.99 192.168.8.200 * To specify a range, use the following format: 10.1.1.1-10.1.1.255 * To specify a subnet, use the following format: 10.1.1.1/24
- **Number of Packets per Core** ? Select this option and specify the maximum number of packets to capture in the core.
- **Duration** ? Select this option and specify the time in minutes to run the capture.
- **Size of Packets** ? Specify the size of the packet, in bytes, to be captured. This is similar to the `snaplen` option in TCPdump. To capture the entire packet, enter 0.

Advanced Settings

Select one of the following options to control the captures for health monitor flows:

- **Health monitor and data**
- **Health monitor only**
- **Data only**

Note: Enabling session key capture is documented in this article

When a capture is started, the **Capture Configuration** page displays the progress of the capture.

Completed Captures

After a capture is completed, the Controller collates data from multiple SEs and formats the data into a *pcap* file. These captures are then displayed in the **Completed Captures** section of the UI. The table displays the Date, Virtual Service Name, and Size of Packets captured. You can export the captures by downloading them in the *pcap* format, using the icon available at the far right column of the table. The capture file can be viewed using any common traffic capture utilities, such as, Wireshark.

Capturing Virtual Service Traffic using CLI

To capture packets using the Avi CLI, log into the `shell` prompt and enter the packet capture sub-mode for the desired virtual service:

```
debug virtualservice Test-virtual service
Updating an existing object. Currently, the object is:
+-------+--------------------+
| Field | Value |
+-------+--------------------+
| uuid | virtualservice-0-1 |
| name | Test-virtual service |
+-------+--------------------+
```

Parameters may be defined for the packet capture. By default, the capture is performed within the context of the selected virtual service. It is also performed on all Avi SEs that are handling the virtual service traffic and includes the packets from the client and server side of the SE.

Parameter	Definition
`capture_params duration`	Time, in minutes. Default is unlimited.
`capture_params num_pkts`	Maximum number of packets to collect. Default is unlimited.
`capture_params pkt_size`	Packet size, or snap length, to capture. Default is unlimited.
`debug_ip addrs`	IPv4 address format
`debug_ip prefixes`	IPv4 prefix format <x.x.x.x/x>
`debug_virtual service_hm_include`	Include health monitor packets in the capture
`debug_virtual service_hm_none`	Omit health monitor packets from the capture (the default)
`debug_virtual service_hm_only`	Capture only health monitor packets

The *debug_ip* command enters a sub-mode. This allows multiple IP addresses or IP subnets to be entered. Omit the *debug_ip* option for subsequent entries. Save to commit the desired IPs and return to the previous menu.

Note: By default, no maximum packets or duration of time to be captured are defined. It is recommended to include a maximum packet capture as shown in the following example. Without a limit, the capture will run until the Avi SE drive is full, potentially disrupting service.

Specify parameters, including the maximum number of packets to capture:

```
debugvirtualservice> capture_params num_pkts 1000
debugvirtualservice> debug_ip addrs 10.10.10.10
debugvirtualservice:debug_ip> save
```

Begin capturing based on the previously configured parameters:

```
debugvirtualservice> capture
debugvirtualservice> save
+---------------+--------------------+
| Field | Value |
+---------------+--------------------+
| uuid | virtualservice-0-1 |
| name | Test-VS |
| debug_ip | |
| addrs[1] | 10.10.10.10 |
| capture | True |
| capture_params | |
| duration | 0 mins |
| num_pkts | 1000 |
+---------------+--------------------+
```

Re-enter the packet capture sub-mode and stop an ongoing packet capture:

```
debug virtualservice Test-virtual service
debugvirtualservice> no capture
debugvirtualservice> save
```

Exporting Packet Capture

Export the packet capture to a remote system that can view it via a tool such as TCPdump or Wireshark:

```
show debug virtualservice Test-virtual service capture
Please specify the destination directory: /tmp
Downloaded the attachment to /tmp/virtual service_virtualservice.20141205_192033.pcap
bash
```

```
scp /tmp/virtual service_virtualservice.192033.pcap user@10.1.1.1:/tmp
```

Capturing Service Engine Traffic using CLI

Starting with Avi Vantage release 17.2.14, packet capture is available for Avi Service Engines as well.

Login to the `shell` using Avi CLI and then enter into the packet capture sub-mode for the Avi Service Engine:

To start packet capture for an Avi SE, use the `debug serviceengine <SE IP address>` command.

```
[admin:cntrl1]: > debug serviceengine 10.10.22.107
Updating an existing object. Currently, the object is:
+------------+-------------------------+
| Field      | Value                   |
+------------+-------------------------+
| uuid       | se-10.10.22.107-avitag-1 |
| name       | 10.10.22.107            |
| tenant_ref | admin                   |
+------------+-------------------------+
```

Filtering based on IP Address

Run the `debug_ip addrs <IP address for filter>` command from the `debugserviceengine` mode to filter the SE packet capture for the specific IP address.

```
[admin:cntrl1]: debugserviceengine> debug_ip addrs 10.10.10.10
 [admin:cntrl1]: debugserviceengine:debug_ip>
 [admin:cntrl1]: debugserviceengine:debug_ip> save
 [admin:cntrl1]: debugserviceengine> where
 Tenant: admin
 +---------------+-------------------------+
 | Field         | Value                   |
```

```
+----------------+-------------------------+
| uuid           | se-10.10.22.107-avitag-1 |
| name           | 10.10.22.107             |
| debug_ip       |                          |
|   addrs[1]     | 10.10.10.10              |
| tenant_ref     | admin                    |
+----------------+-------------------------+
```

Filtering based on Capture Duration

Run the `capture_params duration <duration in minutes>` command from the `debugserviceengine` mode to capture packets for the specified duration.

```
[admin:cntrl1]: debugserviceengine> capture_params duration 10
 [admin:cntrl1]: debugserviceengine> where
 Tenant: admin
 +----------------+-------------------------+
 | Field          | Value                   |
 +----------------+-------------------------+
 | uuid           | se-10.10.22.107-avitag-1 |
 | name           | 10.10.22.107             |
 | debug_ip       |                          |
 |   addrs[1]     | 10.10.10.10              |
 | capture_params |                          |
 |   duration     | 10 min                   |
 | tenant_ref     | admin                    |
 +----------------+-------------------------+
```

Filtering based on Capture Packet Size

Run the `capture_params pkt_size <packet size in bytes>` command from the `debugserviceengine` mode to capture traffic of the desired packet size.

```
[admin:cntrl1]: debugserviceengine> capture_params pkt_size 0
[admin:cntrl1]: debugserviceengine> where
Tenant: admin
+----------------+-------------------------+
| Field          | Value                   |
+----------------+-------------------------+
| uuid           | se-10.10.22.107-avitag-1 |
| name           | 10.10.22.107             |
| debug_ip       |                          |
|   addrs[1]     | 10.10.10.10              |
| capture_params |                          |
|   pkt_size     | 0 bytes                  |
|   duration     | 10 min                   |
| tenant_ref     | admin                    |
```

```
+---------------+-------------------------+
[admin:cntrl1]: debugserviceengine> save
[admin:cntrl1]:
```

The above packet filter captures traffic for the Service Engine *10.10.22.107* with the IP address *10.10.10.10* for a duration of 10 minutes with packet size *0*.

To stop the ongoing packet capture, re-enter the packet capture sub-mode and run `no capture` command.

```
[admin:cntrl1]: debug service engine 10.10.22.107
[admin:cntrl1]: debugserviceengine> no capture
[admin:cntrl1]: debugserviceengine> save
```

For analysis, export the packet capture to a remote system and use tools such as *TCPdump* or *Wireshark* for further analysis. For more information on exporting packet capture, refer to Exporting Packet Capture for Analysis section of this article.