12 Importing WAN-Accelerated Capture Data

If your capture data contains WAN-accelerated traffic, you might need to specify additional information about the accelerators, capture locations, and traffic. This section describes how to specify these settings correctly and how to verify and troubleshoot WAN-accelerated imports.

Note—Although many of these settings are auto-detected, in some cases these represent *best guesses* based on the available information. Therefore, it is good practice to verify the following settings.

Note—Before importing WAN-accelerated traffic, you should print a copy of the WAN Acceleration Worksheet, fill it out, and keep it as a reference.

This section discusses the following topics:

- Importing WAN-Accelerated Packet Traces
- Verifying a WAN Acceleration Import
- Filtering Irrelevant Traffic from WAN-Accelerated Transaction Analyzer Models
- Troubleshooting WAN Acceleration Imports

Related Topics

- *WAN Acceleration Preferences*

Importing WAN-Accelerated Packet Traces

The following procedure describes the process for importing WAN-accelerated packet traces into Transaction Analyzer.

Procedure 12-1 Importing WAN-Accelerated Packet Traces

1 Choose File > Open Packet Trace(s) > In Transaction Analyzer (WAN-accelerated Environment)…

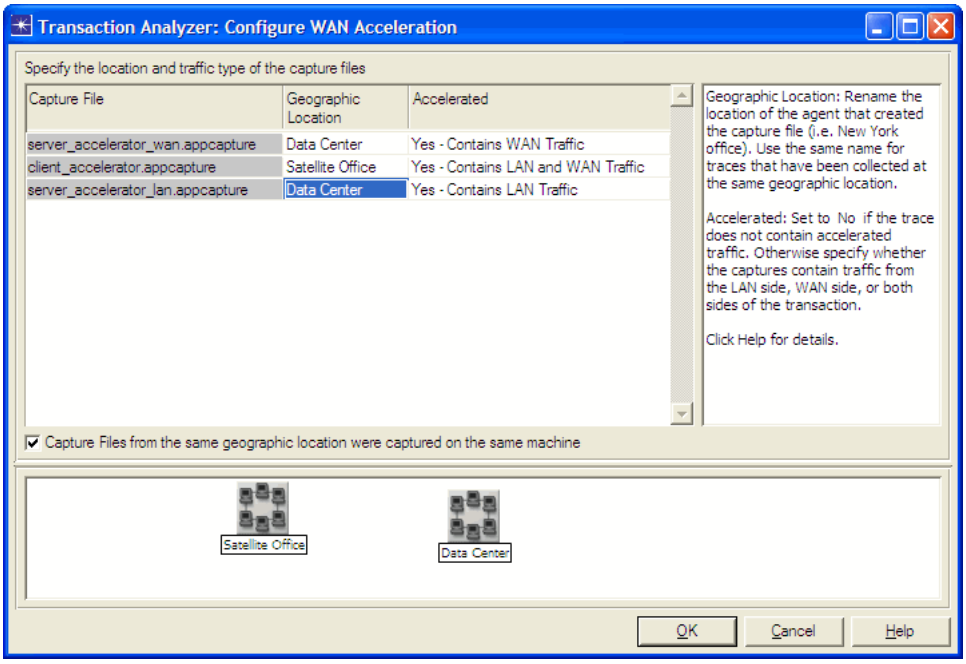
2 In the “Merge Capture Files from WAN Accelerated Environment” dialog box, click Add, select the WAN-accelerated packet traces, and click OK.

3 In the Configure WAN Acceleration dialog box, configure the following information:

- Geographic Location—Renames the location of the agent that captured the data.

  Note—It is good practice to check the topology pane (bottom) and verify that the defined sites accurately reflect the tier locations in the network.

- Accelerated—Specifies whether the packet trace includes LAN and/or WAN traffic. To analyze an application in a WAN-accelerated environment, you must capture both LAN and WAN traffic at every geographic location.



Click OK to continue.

4 In the “Rename Tiers” dialog box, rename the tiers.

For more information, see Rename Tiers.

Click OK to continue.

➥ The WAN-accelerated packet traces are imported in Transaction Analyzer.

End of Procedure 12-1

Related Topics

- *Importing WAN-Accelerated Capture Data*
- *Defining the Network Effects*

Verifying a WAN Acceleration Import

After importing capture data into Transaction Analyzer, it is good practice to verify that the resulting Transaction Analyzer model is accurate. Specifically, verify the following:

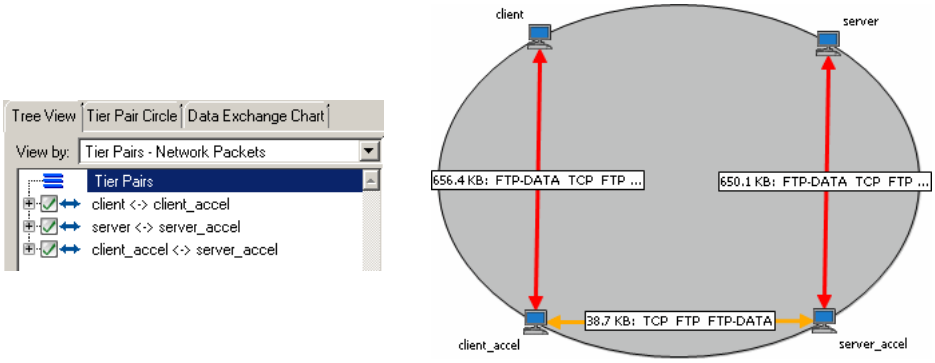
1) There is no direct communication between end tiers across the WAN; all traffic is exchanged through the accelerators.

2) The end-points of each connection are meaningful and expected. For example, there are no connections with the same tier at both ends.

3) The Tree View and Tier Pair Circle pages do not show any unexpected tier pairs (that is, tier pairs that did not actually exchange traffic in the operational network).

The following figure shows a WAN-accelerated application after a successful import. Note that the client and server do not exchange traffic directly, the connections are expected, and there are no unexpected tier pairs exchanging traffic (for example, between the client and the server-side accelerator).

Figure 12-1 WAN-Accelerated Application in Transaction Analyzer



If you do not see expected results after an import, see Troubleshooting WAN Acceleration Imports.

Filtering Irrelevant Traffic from WAN-Accelerated Transaction Analyzer Models

After importing traffic captured in a WAN-accelerated environment, it is good practice to filter out irrelevant traffic from the resulting Transaction Analyzer model. This section describes two general workflows for filtering out WAN-accelerated traffic.

Note—These workflows are recommended for applications captured in Cisco or Riverbed environments only.

This section describes the following workflows:

- **Incremental workflow—**This is a multi-step process, as follows:
  - — Select a LAN and a WAN (accelerator<-->accelerator) tier pair. Filter out WAN traffic based on the LAN tier pair (all WAN connections that have no corresponding connections in the LAN tier pair are excluded).
  - — Repeat this step for every other LAN tier pair that is involved in the transaction of interest.

  This workflow is useful when you know the relevant tier pairs for the transaction of interest, but you cannot positively determine the relevant connections within these tier pairs. Using this incremental workflow, you can filter out WAN traffic that is definitely irrelevant and then perform more targeted filtering.

  This workflow is described in Filtering Irrelevant WAN-Accelerated Traffic: Incremental Workflow.

- **End-to-end workflow—**This is a single-step process, in which you select the relevant LAN connections and then filter out all uncorrelated connections on all tier pairs. This workflow is useful when you can positively identify and select all of the relevant LAN connections for the transaction of interest.

  This workflow is described in Filtering Irrelevant WAN-Accelerated Traffic: End-to-End Workflow.

Remember that these two workflows are not mutually exclusive. You might want to perform the incremental workflow, identify the relevant connections in the remaining traffic, and then perform the end-to-end workflow.

Filtering Irrelevant WAN-Accelerated Traffic: Incremental Workflow

This workflow uses the connections in one or more LAN segments to identify, and exclude, uncorrelated traffic in the WAN segment.

Procedure 12-2 Filtering Irrelevant WAN-Accelerated Traffic: Incremental Workflow

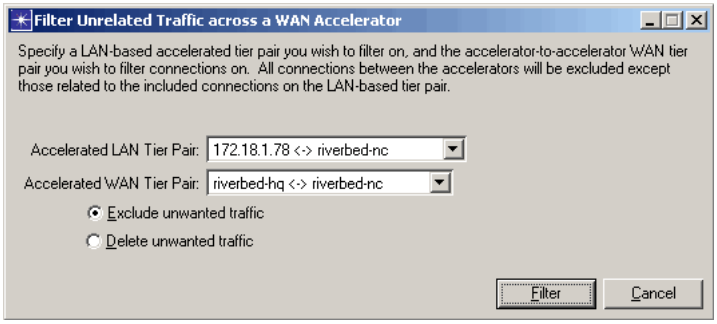
1 Create (or open) the Transaction Analyzer model.

2 Iterate through each LAN tier pair and filter out all traffic that you know is irrelevant to the transaction of interest.

3 Filter irrelevant WAN traffic by performing these steps:

3.1 Choose Edit > Filter Unrelated Traffic (WAN Acceleration).

➥ The Filter Unrelated Traffic Across a WAN Accelerator dialog box appears.



3.2 In the Accelerated LAN Tier Pair pull-down menu, select the client-side LAN tier pair that contains the traffic of interest.

3.3 In the Accelerated WAN Tier Pair pull-down menu, select the WAN (accelerator<—>accelerator) tier pair with the traffic you want to filter.

3.4 Click Filter.

➥ AppTransaction Xpert excludes all WAN-side connections that have no corresponding connections in the selected LAN tier pair.

3.5 Repeat step 3.1 through step 3.1 for every other LAN tier pair that is relevant to the transaction of interest.

4 Optionally, if you are sure that all irrelevant—and *only* irrelevant—traffic has been excluded, choose Edit > Permanently Delete Excluded Items.

Note—Because you cannot undo this operation, it is good practice to create a back-up copy of the Transaction Analyzer model (both before and after you delete the excluded traffic).

End of Procedure 12-2

Filtering Irrelevant WAN-Accelerated Traffic: End-to-End Workflow

This workflow uses one or more selected LAN connections to identify, and exclude, uncorrelated traffic in all segments (not just the WAN segment, as in the previous workflow).

Procedure 12-3 Filtering Irrelevant WAN-Accelerated Traffic: End-to-End Workflow

1 Create (or open) the Transaction Analyzer model.

2 In the Tree View page, do the following:

2.1 Drill down to the client-side tier pair that initiated the transaction of interest.

2.2 Select all connections within this tier pair that are relevant to the transaction of interest, so that all relevant connections are highlighted.

Use Ctrl-click to select multiple connections. If all connections are relevant, you can select the tier pair itself.

2.3 Right-click on the selection and choose Exclude Others (Across Accelerators). This excludes all traffic in the Transaction Analyzer model that is not correlated to the selected connections.

➥ AppTransaction Xpert uses the traffic in the selected connection(s) to identify relevant traffic in the client-side LAN segment, the WAN segment, and the LAN segment on the other side.

➥ Having identified the traffic relevant to the initial client request, AppTransaction Xpert then excludes all other traffic from the WAN segment and the connected LAN segments.

Notes about Extraneous WAN Traffic After Filtering

The Transaction Analyzer model might still include irrelevant traffic, even after the Exclude Others (Across Accelerators) operation. In some cases, the accelerators might exchange other traffic over a WAN connection that is also used for the application transaction of interest. Therefore, you might see the following:

- WAN traffic before the first client request message.

  WAN accelerators often create several connections for anticipated future transactions (connection pooling), including the connection used for the application transaction of interest. This connection opening will appear before the first client request, and should be excluded for application analysis purposes.

- Intervals of low- or no-payload WAN traffic for which there is no corresponding LAN traffic. These messages are expected “chatter”—specifically, the accelerators exchanging state information.

Both of these types of traffic are shown in the following figure.

Figure 12-2 Extraneous WAN Traffic After Exclude Operation: Example

3 WAN traffic exchanged before the initial client request.

4 Switch over to the Data Exchange Chart and do the following:

4.1 If necessary, arrange the order of the tiers in the order in which they exchange traffic for the application transaction of interest:

- Client-side LAN tier on top (**Note—**This is the tier that sends the initial client request message. This tier might not be the “first talker” in the Transaction Analyzer model, as described in Notes about Extraneous WAN Traffic After Filtering.)
- Client-side WAN accelerator
- Server-side WAN accelerator
- Server-side LAN tier

4.2 Identify the first client request message, then exclude all traffic before this message.

As noted in step 4.1, you might still see traffic before the initial client request.

4.3 Examine the entire Data Exchange Chart, from left to right, and verify that WAN traffic is visible during the intervals when LAN traffic is visible.

Note—If you see significant intervals of LAN traffic for which there is no corresponding WAN traffic, this might indicate that some relevant WAN traffic was either filtered out of the Transaction Analyzer model or was not captured.

4.4 Right-click on the first client request message and choose Set as Time Zero.

4.5 Examine the traffic between the accelerators. If you find intervals of low- or no-payload WAN traffic for which there is no corresponding LAN traffic, exclude these messages.

The messages are expected “chatter” and are irrelevant to the response time of your application (as discussed in Notes about Extraneous WAN Traffic After Filtering).

5 Optionally, examine the entire Transaction Analyzer model again to verify that all irrelevant—and only irrelevant traffic—has been excluded. If the server-side LAN includes back-end traffic across multiple tiers, for example, you might want to examine this traffic and include/exclude specific packets based on their relevance to the transaction of interest.

6 Optionally, if you are sure that all irrelevant—and *only* irrelevant—traffic has been excluded, permanently remove this excluded traffic from the Transaction Analyzer model:

6.1 Create a back-up copy of the Transaction Analyzer model. (This step is recommended because you cannot undo a Delete operation.)

6.2 Choose Edit > Permanently Delete Excluded Items.

➥ All excluded traffic is removed from the Transaction Analyzer model.

End of Procedure 12-3

Troubleshooting WAN Acceleration Imports

This section describes import-related situations that indicate problems and how to troubleshoot these problems.

Note—If you import a set of packet traces and get incorrect results, even if you believe that the relevant import settings are correct, this could indicate that you need to edit the WAN Acceleration Preferences.

This section describes the following problems:

- "Define Sites" Window: Accelerated Traffic is not Auto-Detected
- "Define Sites" Window: Accelerated Field is not Auto-Set Accurately
- "Define Sites" Window: Mis-Identified Traffic (Unaccelerated Traffic Identified as Accelerated, or LAN Traffic is Identified as WAN)
- "Define Sites" Window: "Additional Information Needed to Synchronize Traces" Dialog Box Appears After Clicking Next
- "Rename Hosts" Window: Accelerator is not Auto-Detected
- Transaction Analyzer Model (Post-Import): Traffic is Auto-Assigned to Wrong Tier Pairs

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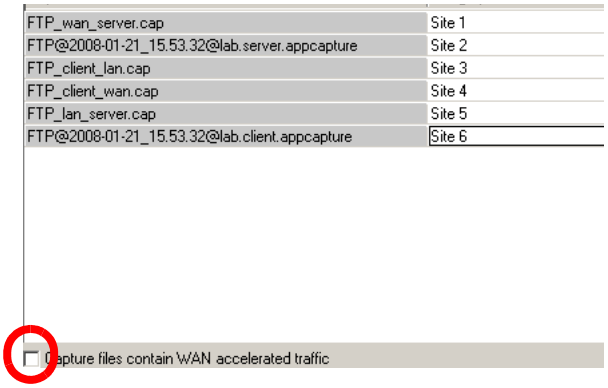
"Define Sites" Window: *Accelerated Traffic is not Auto-Detected*

Problem—The "Capture files contain WAN accelerated traffic" checkbox is not auto-set, even when one or more packet traces contain accelerated traffic.



Discussion—The import engine uses the protocols and port numbers specified in the WAN Acceleration Preferences to identify WAN-accelerated traffic. Make sure that these preferences include the TCP/UDP ports and IP protocol IDs used by the accelerators to exchange WAN traffic in your network.

"Define Sites" Window: *Accelerated Field is not Auto-Set Accurately*

Problem—The Accelerated field is not auto-set correctly for one or more packet traces.

Capture File	Geographic Location	Accelerated
client.lan.appcapture	Site 1	<Specify>
client.wan.appcapture	Site 2	<Specify>
server.lan.appcapture	Site 3	<Specify>
server.wan.appcapture	Site 4	<Specify>

Discussion—The import engine uses the protocols and port numbers specified in the WAN Acceleration Preferences to identify WAN-accelerated traffic. Make sure that

- These preferences include the TCP/UDP ports and IP protocol IDs used to exchange WAN traffic in your network.
- These preferences *do not* include ports and protocol IDs that are used to exchange other traffic.

Note—In some cases, the import engine will be unable to auto-detect whether a specific file contains accelerated traffic, even if the preferences are set correctly.

"Define Sites" Window: *Mis-Identified Traffic (Unaccelerated Traffic Identified as Accelerated, or LAN Traffic is Identified as WAN)*

Problem—The "Capture files contain WAN accelerated traffic" checkbox or Accelerated field incorrectly indicate the presence of accelerated or WAN-side traffic.

Capture File	Geographic Location	Accelerated
FTP@2008-01-22_12.03.38@lab.client.appcapture	Site of lab.client	Yes - Contains LAN and WAN Traffic
FTP@2008-01-22_12.03.38@lab.server.appcapture	Site of lab.server	Yes - Contains LAN and WAN Traffic
FTP_client_wan_only.cap	Site 3	Yes - Contains WAN Traffic

Discussion—This can happen if LAN-side packet traces contain IP protocol IDs that are included in the relevant WAN Accelerator IP Protocol IDs preference. By default, this preference includes IPSec and IPComp protocol IDs because Juniper Steelhead and Juniper WX appliances sometimes use these protocols to send encrypted data.

To fix this problem, unselect the "Capture files contain accelerated traffic" checkbox. You might also want to remove these protocols from the WAN Accelerator IP Protocol IDs preference.

"Define Sites" Window: *Packet Trace Contains LAN and WAN Traffic, but AppTransaction Xpert Cannot Identify WAN-Side Connections*

Problem—You specified "Accelerated - contains LAN and WAN traffic", in the Accelerated field for a packet trace, and the "Unable to Identify WAN-Side Connections on Accelerators" warning appears.

Discussion—This dialog box appeared because the import engine could not distinguish between LAN and WAN connections in the capture data for this file.

To fix this problem, try the following:

- Re-import the traffic using the IP packet filter.

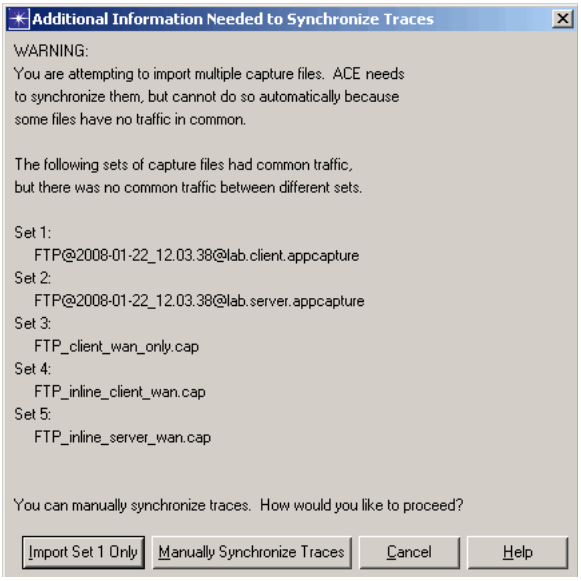
  If you specified the Default filter, the WAN traffic might be have been filtered out (this filter excludes IP-encrypted traffic, which is used by some accelerators to exchange WAN traffic).

- Edit the WAN Acceleration Preferences.

  The import engine identifies WAN connections based on specific protocols, ports, and vendor-specific behavior typically used in WAN segments. You can edit these preferences to customize the criteria used by AppTransaction Xpert to detect and identify accelerated traffic. To edit these preferences, choose Edit > Preferences and search on "WAN Accelerator".

"Define Sites" Window: *"Additional Information Needed to Synchronize Traces" Dialog Box Appears After Clicking Next*

Problem—You click Next in the Define Sites window, and the "Additional Information Needed to Synchronize Traces" window appears.



Discussion—The import engine tries to correlate traffic that (as specified by your import settings) has come from the same location or the same machine. If you see this window, it usually indicates that you specified the capture locations and/or hosts incorrectly. To fix this, restart the import and review the settings in the Define Sites dialog box. Pay special attention to the following settings:

- Geographic Location—Make sure that these settings accurately reflect the capture locations in your production network.
- Packet Traces from the same geographic location were captured on the same machine—This field should be set to "Yes" for all packet traces from the same machine.

"Rename Hosts" Window: Accelerator is not Auto-Detected

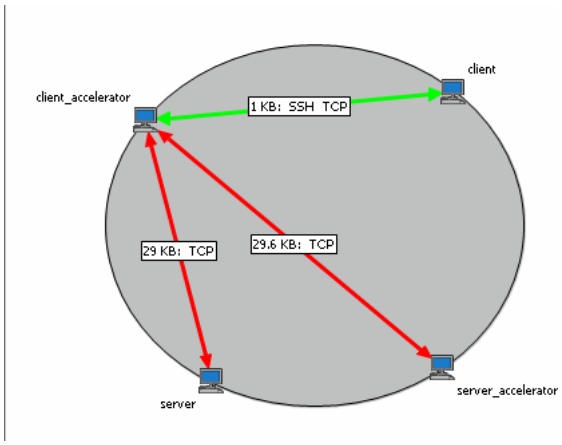
Problem—AppTransaction Xpert does not auto-detect an accelerator and set the Tier Name field accordingly ("Accelerator at <*location*>").

Original Hostname		Tier Name
192.168.70.100	Rename to	192.168.70.100
192.168.71.200	Rename to	192.168.71.200
192.168.73.3	Rename to	Accelerator at site of client
192.168.74.3	Rename to	192.168.74.3

Discussion—In some cases, the import engine might not have enough data to auto-detect the accelerator. If you see this happen, it is good practice to double-check the WAN Acceleration Preferences. If the relevant preferences are set correctly, simply set the Tier Name field to the correct name.

Transaction Analyzer Model (Post-Import): Traffic is Auto-Assigned to Wrong Tier Pairs

Problem—The resulting Transaction Analyzer model shows end tiers sending/receiving traffic that was actually sent/received by accelerators (or accelerators sending/receiving traffic that was sent/received by end tiers).



Discussion—In some cases, the capture data might not have enough information for AppTransaction Xpert to auto-assign traffic to the correct tiers. This is especially true when accelerators use Accelerators Reuse LAN-Side Addresses, because these devices do not use their own distinct addresses. If you telnet to a Cisco device to capture traffic, for example, you might see this traffic mapped to a separate “ghost” tier and not the accelerator.

If you find incorrect traffic patterns in the resulting Transaction Analyzer model, the most likely reason is that one or more Tier Name fields are set incorrectly.

Note—Do not assume that all traffic sent across the WAN is sent via the accelerators. Network policies and the specific accelerator configuration determine how and when traffic is rerouted through the accelerators. To verify whether the traffic patterns in the Transaction Analyzer model are correct, you need to know the routing/WAN acceleration policies used in your organization.
