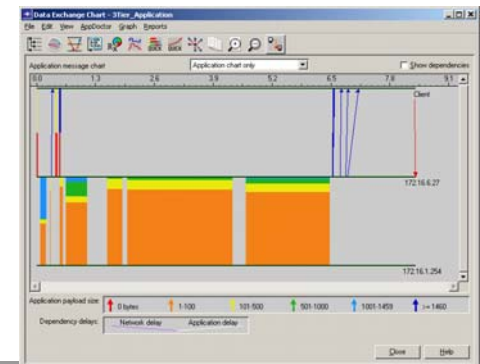
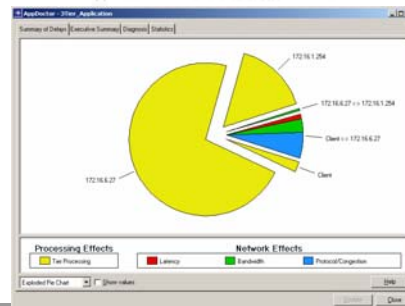
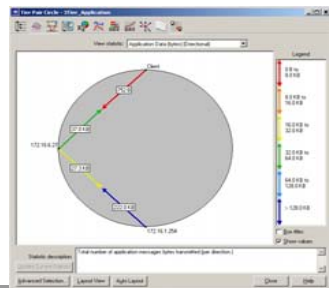
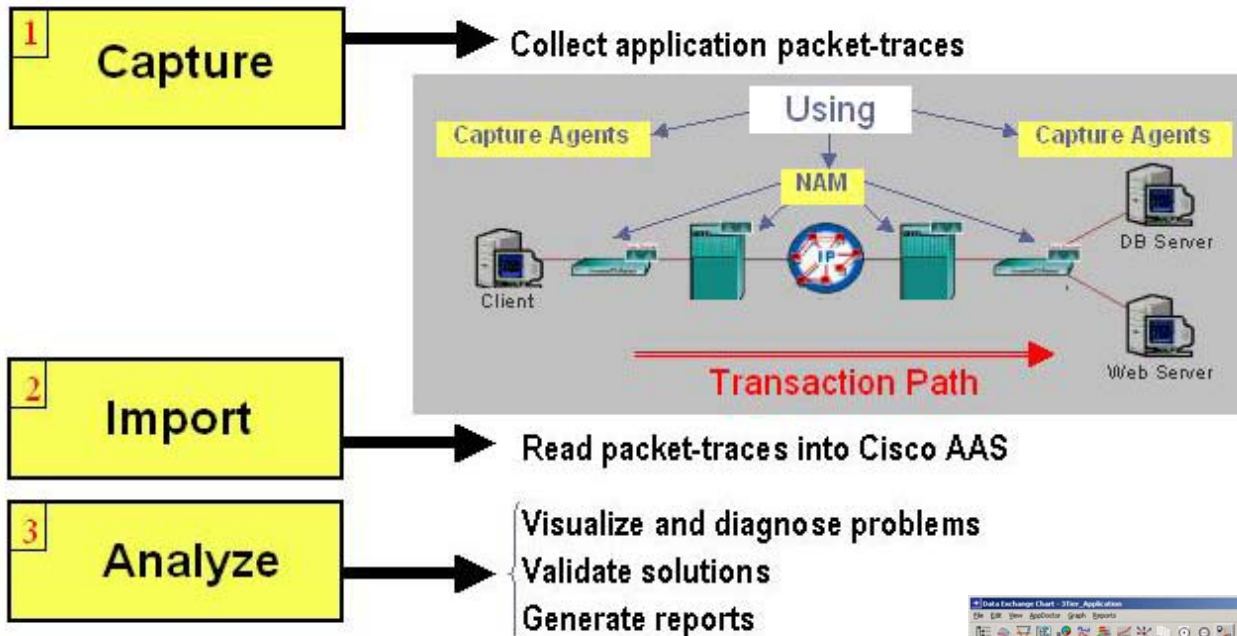


Overview: Cisco Application Analysis Solution



Cisco Application Analysis Solution

- Rapidly isolate the causes of e2e problems, and determine if they are network or application related.



Cisco AAS 1.1 Features & Functions



Cisco AAS Features/Benefits

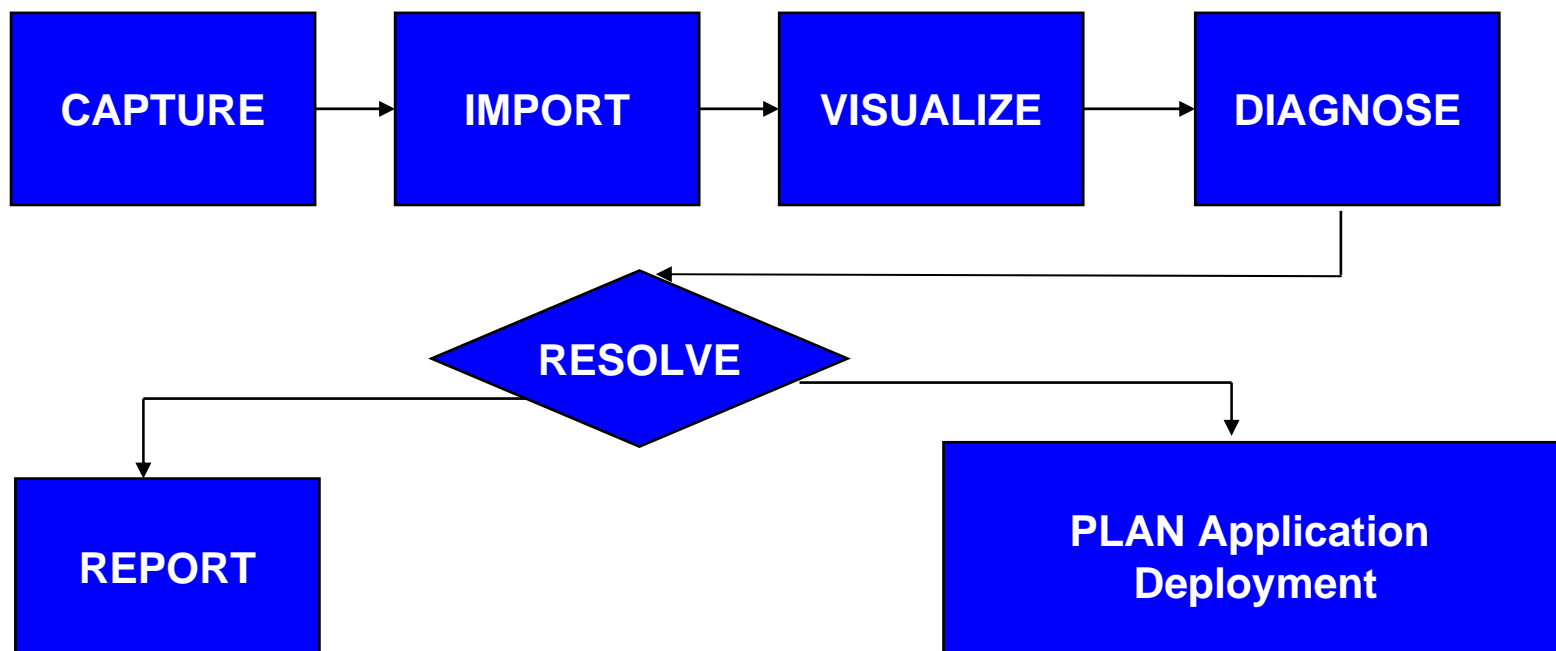
Features	Benefits
Cisco AAS integrates with the Cisco Network Analysis Module (NAM)	Greater ROI by allowing Cisco AAS users to do troubleshooting by obtaining trace data from NAM data files
Deploy Capture Agents and manage centrally	No IT staff is required at the site of a remote application client, server, or database.
Optional CAAS-Advanced Capture Module (ACM) enables users to perform “continuous captures” of application traffic.	Use with Cisco AAS Capture Agents to resolve intermittent application problems.
Automatically merge multiple application traces	Complex multi-tier transactions can be profiled, including the characteristics of each component flow, (e.g., client-to-application server, to-database).
Graphically present relative contribution of application and network to overall response	Understand quickly if end-to-end delays are due to the application or the network.
A poorly designed application can be “virtually” recoded to simulate the effects of application changes.	Quickly predict the impact of changes to system and network parameters, including latency, bandwidth, packet loss, congestion, and TCP window sizing.
A simple baseline model of the network infrastructure can be derived from application traces, capturing key performance characteristics.	“What if” analyses can be performed to support application expansion or deployment.
Output application trace data to Cisco NPS for detailed network capacity and QoS planning.	Leverage network management investment to accelerate and improve network planning.
Application decodes provide a detailed diagnosis for many protocols and applications.	Problems can be isolated to a specific, actionable source, for example, specific SQL calls.

Cisco AAS 1.1 Workflow

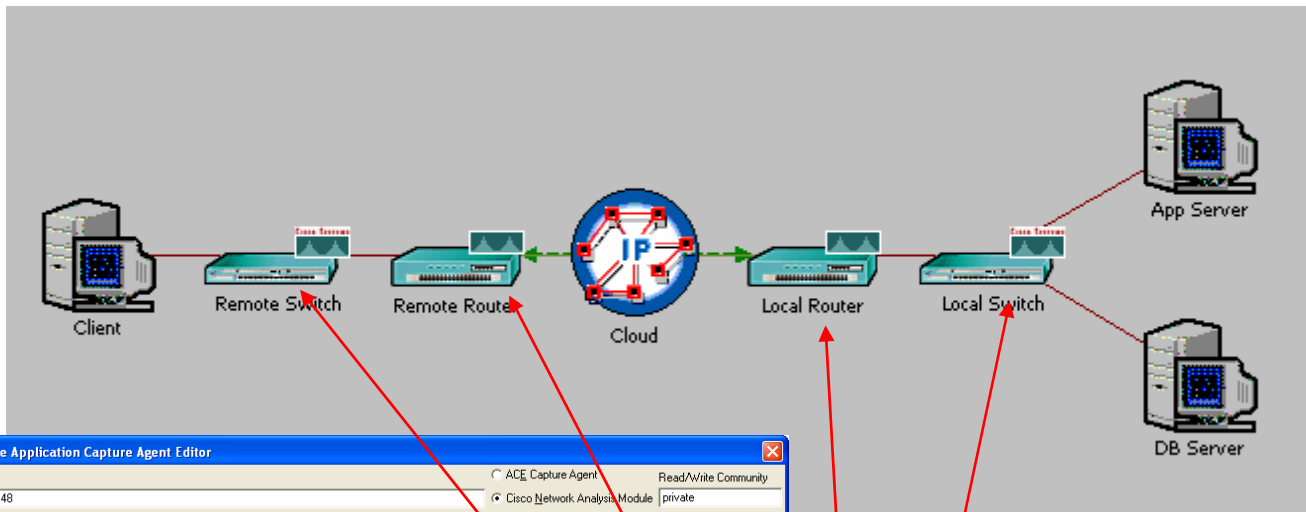


Cisco AAS Workflow: Application Performance Troubleshooting

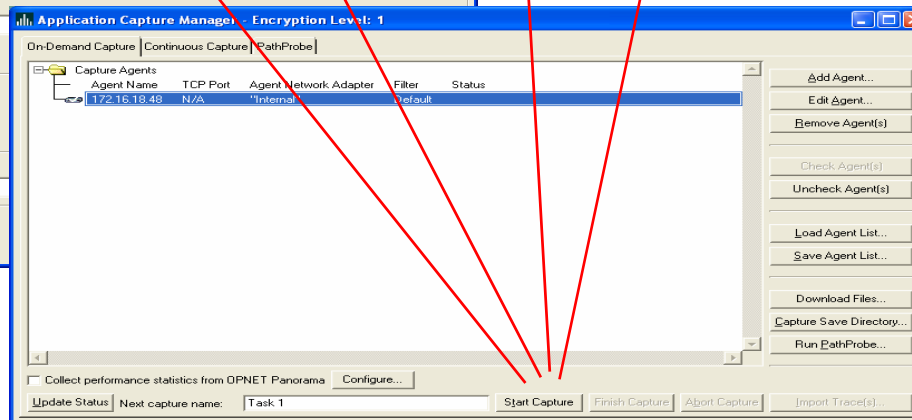
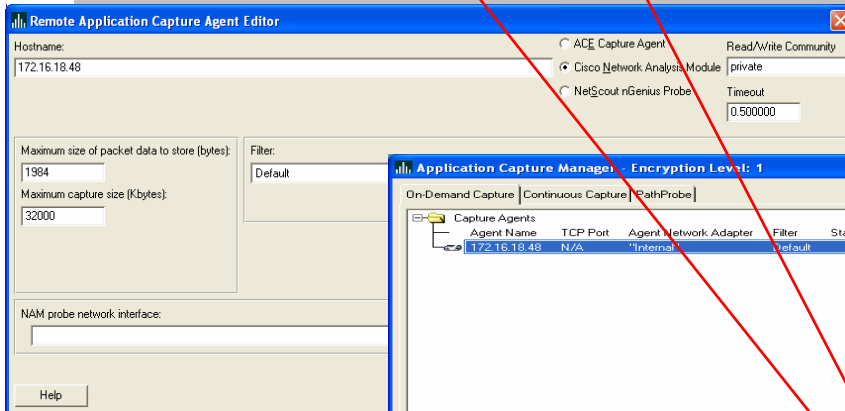
- **Problem:** “The network is slow. This app takes over a minute to load after I log in.”
- **Solution:** Troubleshoot bad behavior, find root-cause.



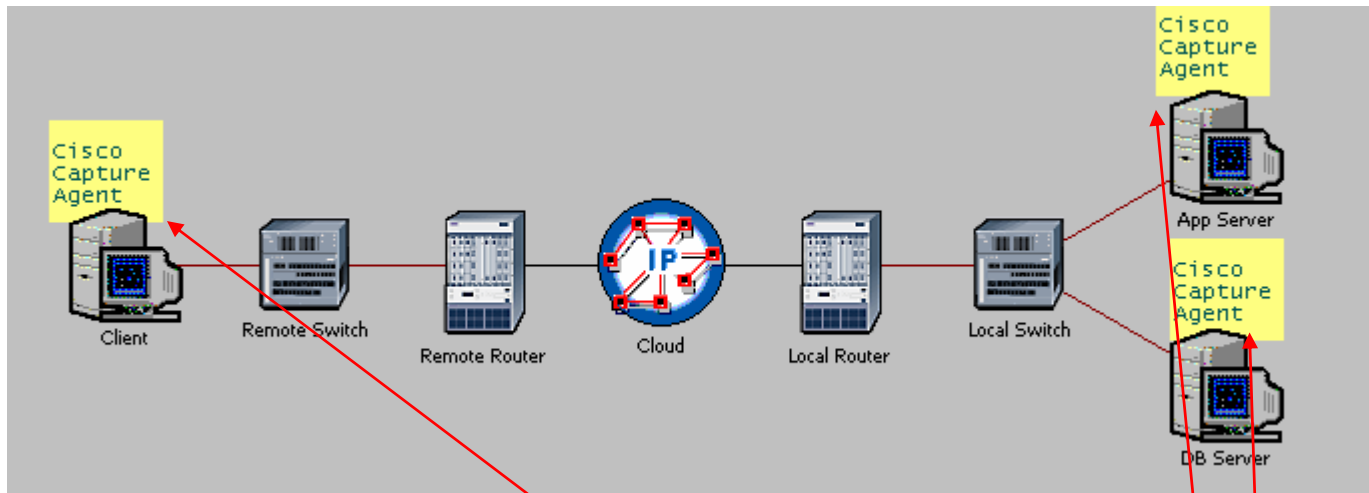
Cisco AAS Workflow: Capture



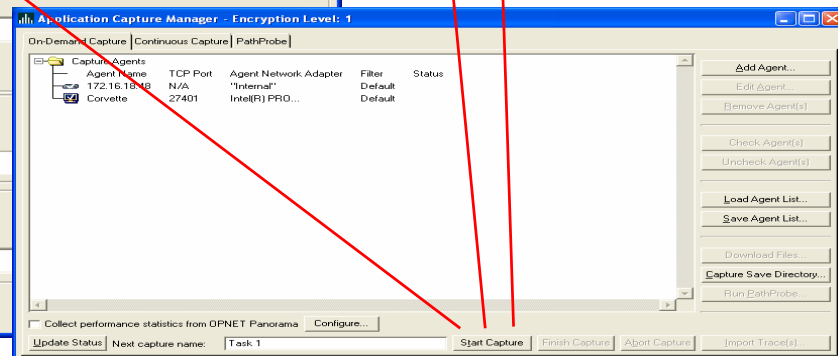
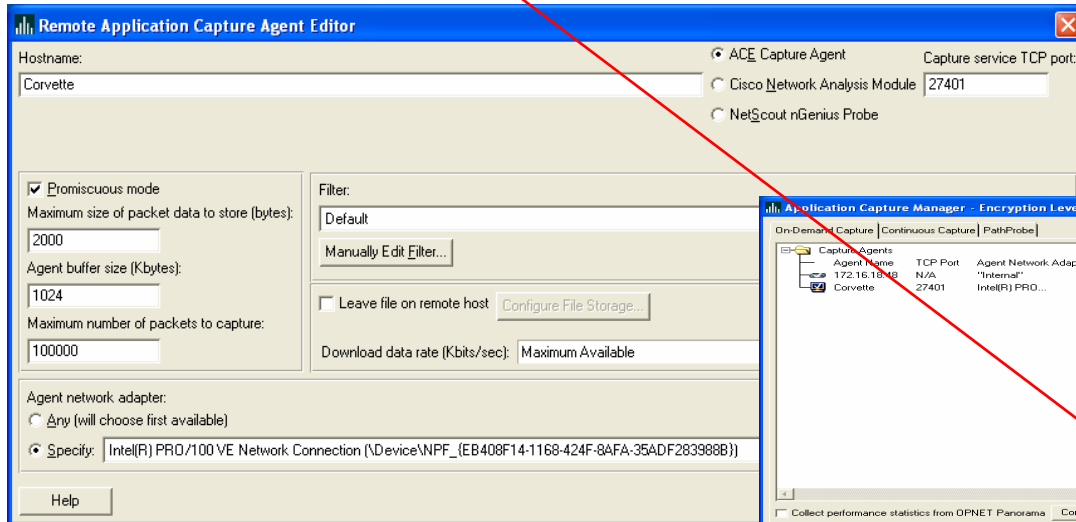
- Cisco AAS integrates with the Cisco Analysis Module (NAM) to obtain trace data for application analysis
- Fully Integrated Solution with Cisco AAS allows users to run captures and download NAM data files directly from the Capture Manager



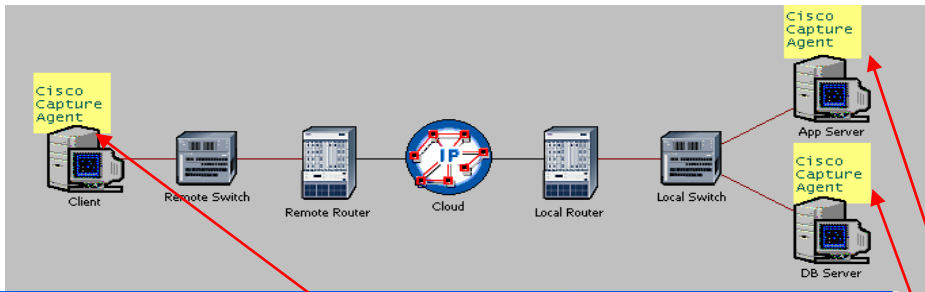
Cisco AAS Workflow: Capture



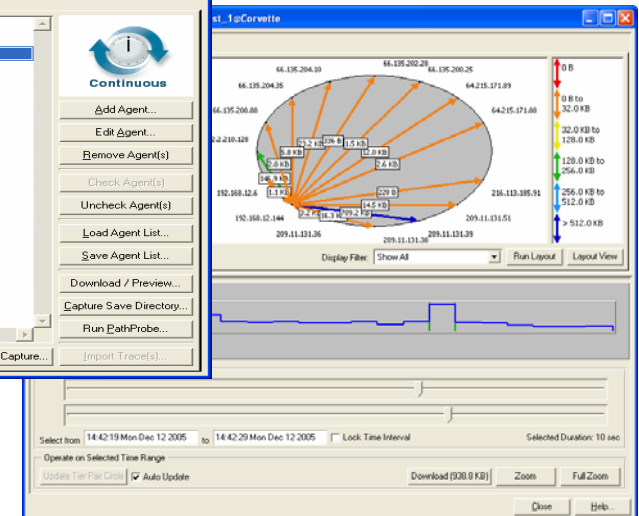
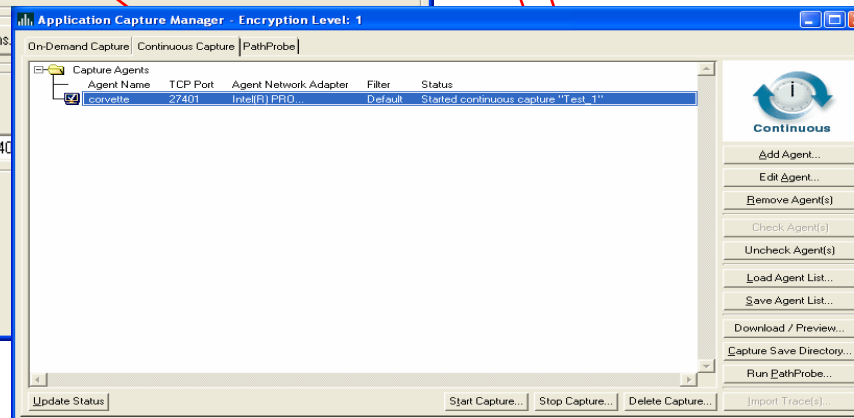
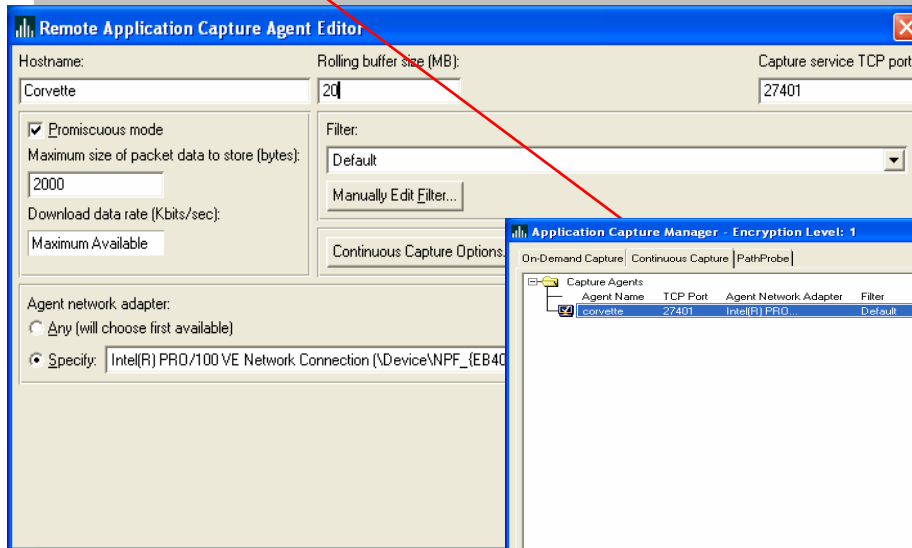
- Capture agents can be deployed and managed from a central location.
- No IT staff is required at the site of a remote application client, server, or database.



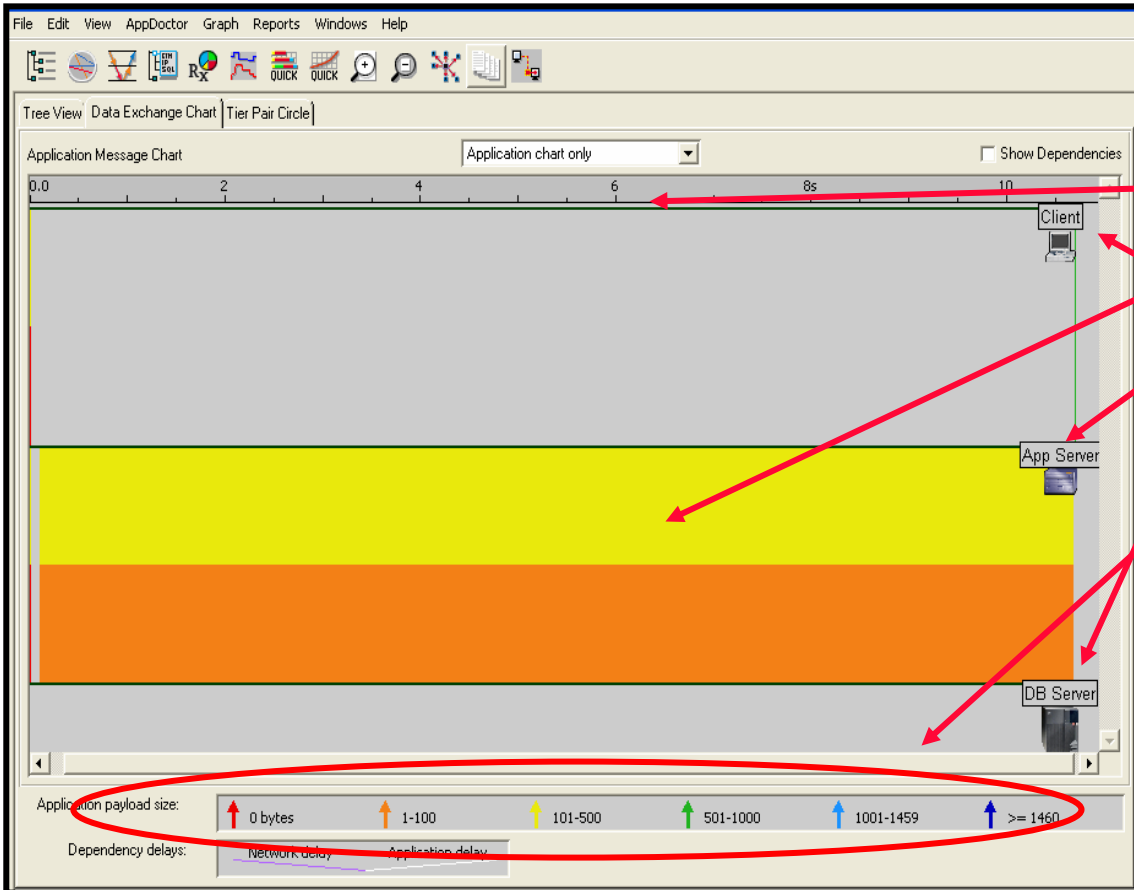
Cisco AAS Workflow: Capture



- Optional ACE Advanced Console enables users to perform “continuous captures” of application traffic.
- Continuous captures enables users to capture intermittent application problems. When the problem occurs, users can download a capture file for the interval when the problem occurred.



Cisco AAS Workflow: Visualize



Multi-Tier Database Application Data Exchange Chart

Graphs displays and highlights:

Time line of transaction

Application messages

Application tiers

Message dependencies

Application payload

Merge n-tier traces for complete end-to-end analysis

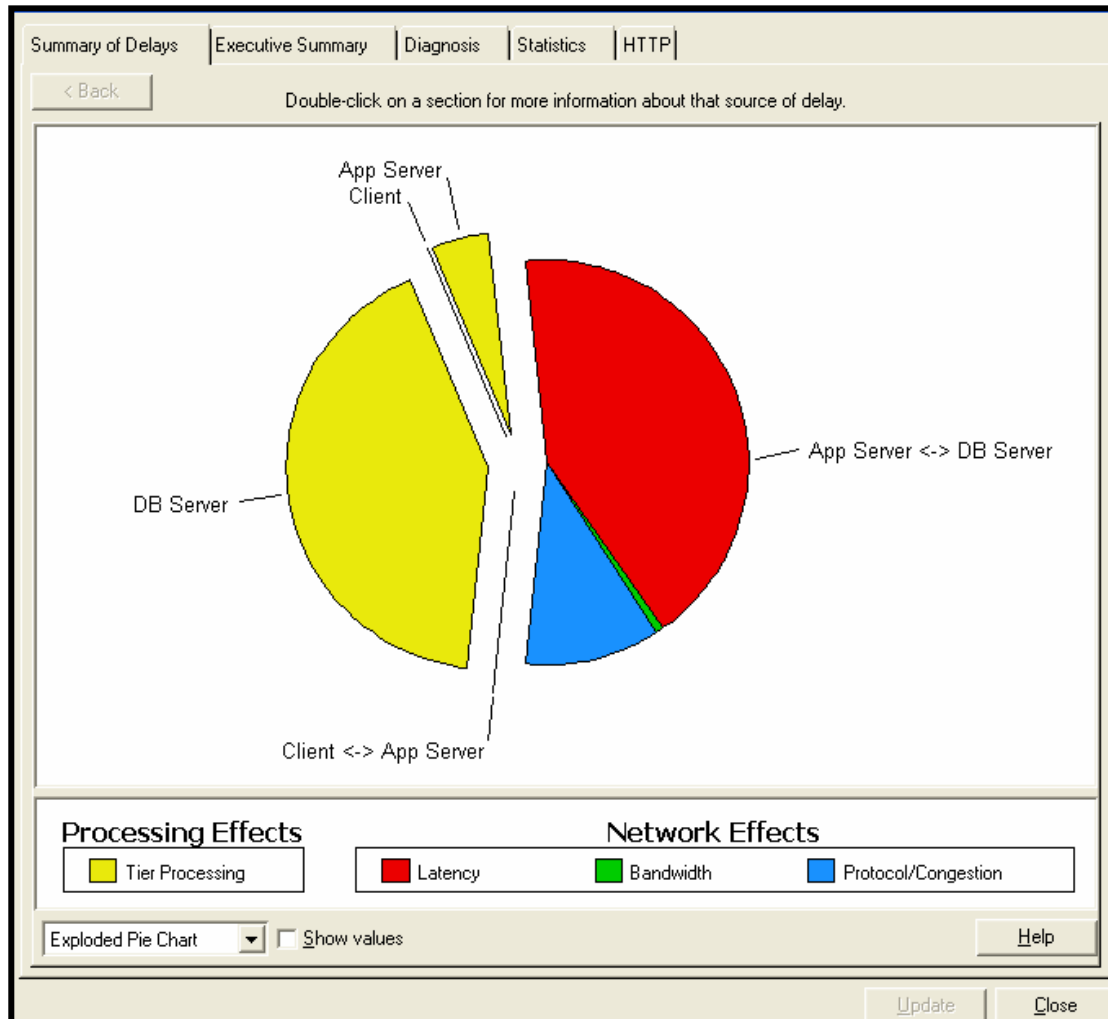
Results:

Most activity is between the two servers

Most of the traffic consists of very small messages

Very little of the end-to-end response time is due to the WAN

Cisco AAS Workflow: Diagnose



Summary of Delays:

Breaks down transactions into Processing and Network effects

Processing Effects:

Identifies Application Tiers

Shows % of Processing effect in each tier

Network Effects:

Effect in each tier

Breakdown into three components

Latency

Bandwidth

Protocol/Congestion

Cisco AAS Workflow: Resolve

Cisco AAS highlights bottlenecks and provides recommendations

For network and application issues

Identified by machine/ network segment

Summary of Delays | Executive Summary | Diagnosis | Statistics | HTTP

	Total	DB Server	Client	App Server
Processing	Bottleneck	Bottleneck	No Bottleneck	No Bottleneck

	Total	Client <-> App Server	App Server <-> DB Server
Protocol Overhead	Potential Bottleneck	Bottleneck	Potential Bottleneck
Chattiness	Bottleneck	No Bottleneck	Bottleneck
Network Effects of Chattiness	Bottleneck	No Bottleneck	Bottleneck
Effect of Latency	Bottleneck	No Bottleneck	Bottleneck
Effect of Bandwidth	No Bottleneck	No Bottleneck	No Bottleneck
Effect of Protocol/Congestion	No Bottleneck	No Bottleneck	No Bottleneck
Connection Resets	No Bottleneck	No Bottleneck	No Bottleneck
Retransmissions	No Bottleneck	No Bottleneck	No Bottleneck
Out of Sequence Packets	No Bottleneck	No Bottleneck	No Bottleneck
TCP Windowing (A -> B)	Not Applicable	No Bottleneck	No Bottleneck
TCP Windowing (A <- B)	Not Applicable	No Bottleneck	No Bottleneck
TCP Frozen Window	No Bottleneck	No Bottleneck	No Bottleneck
TCP Nagle's Algorithm	No Bottleneck	No Bottleneck	No Bottleneck

The application is sending many small requests and responses, which inefficiently utilizes tier and network resources. Consider sending more application data per request/response cycle.

Threshold: 400, Value: 128 - higher values are better.

Click on "Help" for detailed explanations and recommendations.

Export to Spreadsheet | Help

Update | Close

Cisco AAS Workflow: Report

	Total	DB Server	Client	App Server
Effect of Processing (sec)	4.992358	4.493749	0.001992	0.496617
Effect of Network (sec)	5.706365	Not Applicable	Not Applicable	Not Applicable

	Total	Client <-> App Server	App Server <-> DB Server
Response Time (sec)	10.698723	10.698723	10.690272
Application Turns	5,044	1	5,043
Application Messages	5,051	3	5,048
Application Data (bytes)	644,107	891	643,216
Average Application Message (bytes)	127.52	297.00	127.42
Network Packets	5,062	7	5,055
Network Data (bytes)	917,555	1,299	916,256
Average Network Packet (bytes)	181.26	185.57	181.26
Latency (ms)	Not Applicable	0.90	0.90
Effect of Latency (sec)	4.485034	0.001800	4.483234
Bandwidth (Kbps)	Not Applicable	100,000,000	100,000,000
Effect of Bandwidth (sec)	0.073342	0.000085	0.073257
Effect of Protocol/Congestion (sec)	1.157717	0.000784	1.156933
Max Application Bytes Per Turn (A -> B)	Not Applicable	360	733
Max Application Bytes Per Turn (A <- B)	Not Applicable	531	774
Max Unacknowledged Data (A -> B) (bytes)	Not Applicable	360	733
Max Unacknowledged Data (A <- B) (bytes)	Not Applicable	531	774
Retransmissions	0	0	0
Out of Sequence Packets	0	0	0
Connection Resets	0	0	0
TCP Frozen Window (sec)	0.000000	0.000000	0.000000
TCP Nagle's Algorithm (sec)	0.000000	0.000000	0.000000
TCP Triple-Duplicate ACK loss indications	0	0	0

Detailed reports describe application profile and behavior

Processing time at each Tier

Application Turns

Application Messages

Average Application Message

Effects of:

- Latency

- Protocol/Congestion

Cisco AAS Workflow: Report

Standard reports provide a broad range of key application statistics

Export reports/ statistics

The screenshot shows the Cisco AppDoctor interface. The 'Reports' menu is open, listing options such as 'Generate ACE Multiple Transaction MS Word Report (.rtf)', 'Generate ACE MS Word Report (.rtf)', 'Generate ACE Web Report', 'Generate ACE Comparison Report', 'Export Treeview Statistics', and 'Export AppDoctor Statistics'. A red arrow points from the text 'Export reports/ statistics' to the 'Export AppDoctor Statistics' option.

The 'Statistics' window is also visible, displaying a table of performance metrics. The table is divided into two sections: 'Summary of Delays' and 'Statistics'.

	Total	DB Server	Client	App Server
Effect of Processing (sec)	4.992358	4.493749	0.001932	0.496617
Effect of Network (sec)	5.706365	Not Applicable	Not Applicable	Not Applicable

	Total	Client <-> App Server	App Server <-> DB Server
Response Time (sec)	10.698723	10.698723	10.690272
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Bandwidth (Kbps)	Not Applicable	100,000,000	100,000,000
Effect of Bandwidth (sec)	0.073342	0.000085	0.073257
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Max Application Bytes Per Turn (A <- B)	Not Applicable	531	774
Max Unacknowledged Data (A -> B) (bytes)	Not Applicable	360	733
Max Unacknowledged Data (A <- B) (bytes)	Not Applicable	531	774
Retransmissions	0	0	0
Out of Sequence Packets	0	0	0
Connection Resets	0	0	0
TCP Frozen Window (sec)	0.000000	0.000000	0.000000
TCP Nagle's Algorithm (sec)	0.000000	0.000000	0.000000
TCP Triple-Duplicate ACK loss indications	0	0	0

At the bottom of the Statistics window, there is an 'Export to Spreadsheet' button and a 'Help' button.

Cisco AAS System Admin



Cisco AAS Hardware/Software Platform

Cisco AAS Platform

Intel Pentium 3, 4, or equivalent 1.5+ GHz

1 GB memory (min.)

20 GB disk

OS*:

Windows XP Pro

Windows 2000 Pro

* Only English language versions are supported

Application Capture Agents

Hardware platform

Intel Pentium 3, 4, or equivalent (Windows, Linux)

Sun SPARC Family, e.g. UltraSPARC (Solaris)

HP PA7000 v1.1c or higher (HP UX)

IBM RS/6000 (AIX)

Memory:

2 MB when idle; 5 MB during capture (Windows)

4.5 MB when idle; 9.0 MB during capture (Solaris; Linux; HP UX; AIX)

Disk:

4 MB (Windows)

8.5MB (Solaris; Linux; HP UX; AIX)

OS*:

Windows 95, Windows 98/ME, Windows NT 4.0, Windows 2000 (32 bit), Windows Server 2003 (32-bit), Windows XP (32 bit)

Solaris 9 (32-bit and 64-bit systems supported)

Linux Kernel 2.2, Linux Kernel 2.4 (32-bit)

Red Hat Linux 6.0, 6.1, 6.2, 7.0, 7.1, 7.2, 7.3, 8.0, 9.0 (32-bit)

HP UX 11.0 (32-bit)

AIX 4.3.3 (32-bit), AIX 5.x (32-bit)

Cisco AAS Packaging and Licensing

- **Cisco AAS is typically installed on the user's workstation**
 - Installables include core software, ACE Decode Module, optional Advanced capture Module, integrated product documentation, and Models library**
- **Optional Advanced Capture Module activated through licensing**
- **A single license can be shared among multiple users, but not concurrently – a license is required for each concurrent user**
- **“Restricted” and “Unrestricted” License**
 - Restricted Cisco AAS is intended for use within a single enterprise, to support a single network**
 - Restricted License can be shared by users within a single IP network (by default subnet class)**
 - Unrestricted License can be shared by users across the entire enterprise**

Cisco AAS Packaging and Licensing (2)

- **Licensing is enforced in the product**

User receives licensing credentials via email through Cisco product registration

License is activated by user through simple dialogs the first time the software is started

Transparent “handshaking” occurs over the internet from the user software to a central licensing system

CISCO SYSTEMS

