

NetAlly[®] VoIP Readiness Tutorial

NetAlly Version 7



Tutorial Overview

The purpose of this tutorial is to introduce the concept of Distributed Active Network Testing using NetAlly VoIP Assessment and Troubleshooting. After completion of this tutorial, you will be able to install and operate NetAlly, launch VoIP Evaluation Sessions, generate reports based on collected data, examine Web-based analysis reports and peek into setting-up and running troubleshooting tests.

How to Use this Tutorial

Each chapter in the tutorial deals with a specific subject. It introduces you to key concepts of NetAlly and familiarizes you with its various capabilities, features and advantages. The tutorial walks you through the various available VoIP evaluation procedures as well as the required steps for performing the procedure.

To get the maximum out of this tutorial, it is recommended to read the chapters in the order in which they are listed:

- Chapter 1 describes the operation of NetAlly, its use and users.
- Chapter 2 describes NetAlly installation.
- Chapter 3 walks you through the setup required for a VoIP Evaluation Session.
- Chapter 4 describes the Network Configuration and its report.
- Chapter 5 describes the Readiness Assessment and its report.
- Chapter 6 describes the Performance Certification and its report.
- Chapter 7 describes the Web-based Analysis Reports and workflow.

Chapter 8 – provides a review of setting up and running network analysis and troubleshooting tests.

Tutorial Aids

Detailed descriptions of installation, setup and operation of NetAlly are available in the following guides provided in PDF

- NetAlly Getting Started Guide
- NetAlly User Guide



Introduction

Objectives

The objectives of this chapter are as follows:

- Provide a concise description of NetAlly VoIP Readiness and its operation.
- Describe when to use NetAlly
- Describe the advantages of NetAlly
- Describe the typical users of NetAlly

NetAlly Capabilities

NetAlly is a software-based distributed active system that is capable of the following:

Network Configuration - checks aspects of the network's configuration such as network connectivity and the quality of service settings for VoIP traffic.

Readiness evaluation – NetAlly determines quickly and automatically the network readiness for VoIP. It is capable of reaching remote locations and performing end-to-end testing in a short time and without the need for dispatching technicians or test tools to remote locations.

Troubleshooting – NetAlly identifies application and service related readiness issues across the entire IP network. The problem identification and analysis are accomplished from a single location.

Application effects – NetAlly generates application traffic to test how applications affect voice traffic and vice versa.

Note

This tutorial focuses on readiness evaluation. It will guide you on how to assess the readiness of your network for VoIP.



How Does NetAlly Operate?

NetAlly communicates through its Test Center with any number of software-based Traffic Agents. The Traffic Agents are located throughout the Local Area Network (LAN) or Wide Area Network (WAN). A three-phase evaluation procedure allows you to assess and confirm the network's readiness for the added VoIP traffic, prior to actual deployment by simulating emulating VoIP and application traffic.

The evaluation procedure includes the following phases:

Network Configuration - checks aspects of the network's configuration and consists of three different tests – Connectivity, VoIP traffic precedence (QoS policy) and Route quality and utilization measurements.

Readiness Assessment – uses tests that simulate a varying range of calls. The tests identify the maximal number of calls that test point pairs can handle.

Performance Certification – uses a fixed number of calls to run an intensive evaluation on the network over a longer period of time.

Exhaustive and customizable reports documenting each phase of the evaluation are available.

NetAlly VoIP Components

The NetAlly system comprises the following components:

- Test Center (TC) the NetAlly control center that runs on a dedicated workstation. Among other functions, the Test Center schedules VoIP tests for execution, operates Traffic Agents, stores data within an internal database, and manages topology data.
- Traffic Agents (TA) software agents installed on dedicated or on end user machines. The Traffic Agents send each other a wide variety of network traffic packets. The packets are analyzed and used for generating network performance reports. These packets simulate the output of different VoIP codecs. Packet parameters (for example, QoS level) may be customized to the needs of particular tests. The primary measurements used in the analysis of VoIP traffic are MOS (Mean Opinion Score), delay, loss and jitter. When testing VoIP readiness, Traffic Agents are attached to the network at locations that represent user location. VoIP tests carried out by these Traffic Agents provide performance measurements from the end user perspective.



- NetAlly User Interface (GUI) client software designed for testing the readiness
 of a network prior to deploying VoIP traffic, monitoring your network and
 performing network analysis and troubleshooting. At the beginning of the VoIP
 readiness evaluation process, the user sets the participating test point pairs and
 determines the call parameters.
- NetRegard Agents unique Web browser-based Traffic Agents. The agents can be used for VoIP testing and troubleshooting on end-user machines.

What Are the Advantages of Using NetAlly?

NetAlly distributed traffic generation has the following advantages:

- **Capacity estimation** Generating tests with variable number of calls allows you to estimate the maximal number of calls the network can carry.
- VoIP readiness using software agents, you can evaluate the network readiness for VoIP before deployment of any VoIP equipment.
- **Ease of use** VoIP readiness evaluation is easy and quick. A few mouse clicks are all you need for running an evaluation phase and for obtaining reliable results.
- Drill-down troubleshooting capabilities On-demand generation of actual traffic allows you to rapidly identify network performance degradation between two end-points.
- Test control and repetition The flexibility in setting VoIP test parameters provides you with complete control over what is being tested and how.
 Furthermore, the accuracy and applicability of test results can be verified by repeating identical tests at different times.
- True objectivity Since identical VoIP tests can be applied to different portions of the network, valid comparisons can be made between them. This results in objective determination of capacity and when troubleshooting, of the sources or potential sources of degraded network performance.

Who Should Use NetAlly?

- VoIP equipment resellers who are responsible for deploying and verifying VoIP readiness of networks.
- Network managers or integrators who are responsible for evaluating whether the network is ready for the VoIP application.
- Network engineers who are responsible for network troubleshooting or VoIP deployment projects.



When to Use NetAlly?

Use NetAlly in the following cases:

- Pre- and post-deployment testing for VoIP applications.
- Troubleshooting performance anomalies in networks and networked applications.
- Problem solving of network performance anomalies as they affect the end user and the user's voice quality experience.

Summary

NetAlly can measure the network's VoIP performance and pinpoint where improvements are required. The assessment can be tailored to each network through an easy to use and friendly interface. The results of the evaluation are presented in detailed reports that provide comprehensive information regarding the readiness of the network for VoIP traffic.

Proceed to the following chapter to learn how to set up the network for the session described in this tutorial.



NetAlly Installation

Objectives

The objectives of this chapter are as follows:

- Install NetAlly Test Center.
- Install NetAlly Traffic Agents.
- Install the User Interface.

Setting up the Network for the Tutorial Session

This tutorial requires a simple setup, as shown below. The setup includes three Windows-based machines connected to a network. One machine is a Test Center and the other two are Traffic Agents.

The User Interface, which can be installed remotely on the NetAlly operator's desktop, will be installed on the same machine as the Test Center for this tutorial.

For the tutorial session, the Traffic Agent will be installed on the same machine as the Test Center. The Traffic Agent can also be installed as a remote client on other Windows 2003 Server or XP and Vista machines.



Traffic Agent



System Requirements

The following table lists the system requirements for the Test Center, Traffic Agent and User Interface:

Operating System		RAM	Disk Space
Test Center	Windows XP, SP 1 and later; Server 2003; Windows Vista. Intel Pentium IV, 1.4GHz processor and greater or Pentium M processor. Intel Xeon, 1GHz processor and greater.	512 MB	2 GB
Traffic Agent	Windows XP, SP 1 and later; Server 2003; Windows Vista. Intel Pentium III 800 MHz processor and greater or Pentium M processor.	256 MB	200 MB
User Interface	Windows XP, SP 1 and greater; Windows Server 2003; Windows Vista. Intel Pentium IV, 1.4GHz processor and greater or Pentium M processor. Display: color palette of at least 16-bit colors. Resolution: 1024 x 768.	256 MB	200 MB
NetAlly Proxy	Windows XP, SP 1 and greater; Windows Vista. Intel Pentium IV 1.4GHz processor and greater. Intel Xeon, 1 GHz processor and greater	512 MB	300 MB
NetRegard Agent	Microsoft Internet Explorer, version 6.0 and later. Mozilla, version 1.4 and later.		



Pre-Installation

Prior to installing, verify the following:

- That you have the NetAlly version 7 software or CD, the NetAlly product keys and the NetAlly license file.
- That you have administrator privileges on the Test Center and Traffic Agent machines.
- That you have the IP address or Host Name of the Test Center. It is required during Traffic Agent installation.
- That there is no firewall between the NetAlly components (applies only to this setup).
- That each machine has only one network interface card (NIC) (applies only to this setup).

Installing NetAlly Software

- Do either of the following: On the Test Center machine, insert the NetAlly CD to automatically run Setup, Or Run the Setup.exe file located in the root folder to start Setup.
- 2. Select Install NetAlly Version 7.
- 3. Select Test Center Installation.
- 4. Click Begin Installation to run the Installation wizard.
- Follow the instructions on the screen and do not close any of the windows that appear during the installation.
 Enter the product key number when asked.

When the Test Center is ready, its icon appears in the system tray. Since after installation it takes a few minutes for the initial setup to be completed, it may take a few minutes before the Test Center icon appears.

Installing the License File(s)

After the Test Center is installed, all functionality is disabled until the license file is installed.

To install the license file:

- 1. Make sure that the Test Center is running.
- 2. To activate the License Installer, select Start>Programs>Fluke Networks>NetAlly>Tools>License Installer
- 3. Browse to the location where you saved the license file (extension *.txt) and click OK to start its installation.



Once the license is installed successfully, the Test Center functionality is updated according to your license configuration. There is no need to restart the Test Center.

Installing the User Interface

 Do either of the following: On the Test Center machine, insert the NetAlly CD to automatically run Setup, Or

Run the Setup.exe file located in the root folder of the CD to start Setup.

- 2. Select Install NetAlly Version 7.
- 3. Select User Interface Installation.
- Click Begin Installation to run the installation wizard.
 Follow the onscreen instructions and do not close any of the windows that appear during the installation.

Installing Traffic Agents

The following instructions walk you through the installation of the Traffic Agent software.

Install it on each Traffic Agent machine.

 Do either of the following: On the Traffic Agent machine, insert the NetAlly CD to automatically run Setup, Or

Run the Setup.exe file located in the root folder to start Setup.

- 2. Select Install NetAlly Version 7.
- 3. Select Traffic Agent Installation.
- 4. Click Begin Installation to run the Installation wizard.
- 5. Follow the onscreen instructions and leave default settings as they are unless indicated otherwise below. Do not close any of the windows that appear during the installation.
- 6. In the listed screens, note the following:
 - IP Address/Host Name Enter the Test Center IP address or Host Name.

When the installation is completed, the Traffic Agent icon appears in the system tray.

Invoking the User Interface

- 1. Select Start>Programs>Fluke Networks> NetAlly>User Interface.
- In the Login dialog box, enter the following default values in lowercase letters: Username – admin Password – admin Test Center – 127.0.0.1 (Localhost)



3. Click **OK**.

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4. Verify that both installed Traffic Agents appear in the Traffic Agents area on the lower part of the NetAlly window, and their status is "Ready".

Select for VoIP Assessment

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C	Troubleshooting	Inventory				
R	eadiness Assessment	and Performance Certification				
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Create a new session

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File	Edit. View Readiness Assessment and Performance Certification Inventory Tools Help					
٩.	Session Setup - [Sessions/Test]					
	Sessions	🖪 🖏 🔳 🐁	Pairs: 🚚 🦫 🐂			
1	- S Test	Traffic Agent	Traffic Agent	Codec Assessment Calls	Certification Calls	
				G.711 Fixed (1)	1	
3	Inventory					
10	Traffic Agents Category: Directed to this Tes	C 💌 Subnet: All Su	bnets 💌		ା 🕼 🔯 🖓	
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For H	elp, press F1		2 nc	ode(s)		
r					,	

Traffic Agents listed



Summary

You have successfully completed the installation of the Test Center, Traffic Agents and User Interface. The system is ready for VoIP readiness evaluation. Proceed to the next chapter to set up the parameters for the VoIP evaluation.



Setting up the Evaluation Session

Objectives

In this chapter you will set up a VoIP Evaluation Session by following these steps:

- Define the Session type.
- Define a Traffic Agent Pair.
- Define a Codec and Codec-specific parameters.
- Define call parameters.
- Define number of calls.
- Define general parameters.

Defining the Session Type

- 1. Select File>Add>New Session.
- 2. Enter the name of the new session and select VoIP Traffic in the New Session dialog box.

Add New Sessio	n 🔀
Session Name:	
Session Type:	VolP Traffic
	C VoIP Traffic with H.323
	C VoIP Traffic with SIP
ок	Cancel Help

Defining a Traffic Agent Pair

The Traffic Agent pair represents the test points between which the evaluation tests are run. During both the Preliminary and Performance Certification phases, full duplex VoIP calls are emulated between the delineated pairs (as indicated by the icon between the left and right Traffic Agent columns).

To define a Traffic Agent Pair:

- 1. From the listed Traffic Agents, drag a Traffic Agent and drop it into either the left or right column.
- 2. Drag another Traffic Agent and drop it into the other column.





The codec, codec-specific parameters, call parameters and number of calls are specific to each Traffic Agent Pair. The General parameters are common to all Traffic Agent pairs.

Defining the Codec and Codec-Specific Parameters

The tests carried out for each evaluation phase are based on the type of codec selected for the Traffic Agent pair. The G.711, G.729, G. 729b, G.726 and G.723 codecs are currently supported. Table 2 lists the specific parameters of the default codec - G.711. For this tutorial, use the default codec and its default parameter values.

To define a codec for the tutorial:

- 1. Select the Traffic Agent pair.
- 2. Verify that the G.711 codec appears in the Codec column. If not, click on the codec name and select the G.711 codec.
- 3. In the Traffic Agent Pair Parameters pane, select the Codec Specific Parameters tab and using Table 2, check that the default Codec Specific Parameters appear.



Select traffic agent p	bair S	Set traffic agent pair par	ameters	
Beadiness Assessment and Performance Cortifi	eation			
File Edit View Readiness Assessment and Performance Ce	rtfication Inventory	Tools Help		
V Sessions	ni 🔁 🗆 🖘 🛛	Pairs: 🞝 🤚 📡		
Test T	refic Agent	Traffic Agent Codec A	ssessment Calls	Certification Calls
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S Inventory				
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<u>19.</u> Studio Demo 1A#1	12.144.232.(3 ,	(resary		
For Help, press F1		2 node(s)		

Table 2: G.711 Codec-Specific Parameters

Parameter	Description	Default
		Value
Frame Packing	Time interval at which the digitized VoIP packets are	20 msec
	transmitted (in msec) and the resulting payload size	
	(sampled frames) of the packets.	
G.711 Payload	Determines the type of analog to digital converter	PCMU
Туре	emulated by the test. To emulate VoIP sessions	(64000
	according to the method used in the USA, select PCMU;	bps)
	to emulate VoIP sessions according to the method used	
	in Europe, select PCMA	



Parameter	Description	Default
		Value
Use PLC	When selected, activates the Packet Loss Concealment	Not
	(PLC) algorithm which favorably affects the voice quality	selected
	and resulting MOS calculations.	
Silence	When selected, activates the silence suppression VAD	Not
Suppression	(Voice Activity Detection) algorithm for the G.711 codec.	selected

Defining Call Parameters

To define call parameters:

Select the Traffic Agent Pair Parameters

Using Table 3, verify that the default parameters appear.

Traffic Agent Pair Parameters	X				
Call Parameters Num of Calls Codec	-specific Parameters				
Base RTP Port	0				
Jitter Buffer	Do not use				
Quality of Service	DiffServ(46)				
Path Speed	1M				
Num of Measurements	1				
ОК Са	ncel Help				



Table 3: Call Parameters

Parameter	Description	Default
		Value
Number of Measurements	Number of points where intermediate measurements are to be taken during the call. The default value indicates that no intermediate measurements are taken.	1
Base RTP Port	The port to be used in the test. According to the base port specified, consecutive even numbered ports will be used. If the default port setting is retained, the system allocates the port automatically.	0
Jitter Buffer	When selected, activates jitter buffer management, which is used by the VoIP receiver to transform the variable delay to a fixed delay by holding the first packet received for a period of time before playing it out. Two related parameters, Jitter Buffer Maximum Depth and the Initial Playout Delay, must also be specified. Jitter Buffer Maximum Depth: Maximum amount of voice samples that can be stored in the jitter buffer. Should be 1.5 or 2 times the value of the Initial Playout Delay in order to reduce the chances of losing packets (default = 80 msec). Initial Playout Delay: The holding time of the first voice sample received when the jitter buffer is empty, before starting the transmission of the buffered samples to the receiving codec. Too small a value will not eliminate the delay variability (jitter), while large values will increase the delay (default = 40 msec).	Not selected
Quality of	The DiffServ or IP TOS-based QoS setting that	DiffServ(46)
Service	determines the transmission priority of the packets.	

Defining Number of Calls

The number of calls indicates the full duplex calls that are emulated between the Traffic Agent pair during Readiness Assessment and Performance Certification.

Readiness Assessment – assesses the maximum number of calls that can be handled between the various Traffic Agent pairs with acceptable MOS results. To obtain accurate and reliable results this evaluation phase is repetitive. Prior to running Readiness Assessment, provide a range of calls and the application dynamically changes the number of calls during test execution to arrive at the optimal number.



Table 4 describes the number of calls parameters.

Table 4: Number of Calls Parameters

Parameter	Description	Default
		Value
Min Num of	Minimum number of simultaneous voice calls to	1
Calls	generate on the same connection.	
Max Number	Maximum number of simultaneous voice calls to	1
of Calls	generate on the same connection	
Step	Number of calls by which to increment the voice calls	1
	per period.	

Performance Certification - validates the results of Readiness Assessment and, therefore, emulates a fixed number of calls over a period of time. If the results of the Readiness Assessment are satisfactory, you can use the recommended number of calls. Otherwise, you can manually specify the desired number.

To define the number of calls:

Select a pair of Traffic Agents and select the Traffic Agent Pair Parameters

- 1. Select the Number of Calls tab.
- 2. For Readiness Assessment, define the range of calls as follows:
 - Min Number of Calls 3
 - Max Number of Calls 5
 - Step 1

Traffic Agent Pair Parameters	×				
Call Parameters Num of Calls Codec-specific Parameters Readiness Assessment Performance Certification Minimum: 1 + Maximum: 1 + Step: 1 +					
OK Cancel Help					



Save and launch session

L

Neadiness Assessment and Performance Certifi	cation	Table IIIde		
File Edit View Readiness Assessment and Performance Ce	rtification Inventory	Tools Help		
Session Setup - [Sessions/Test]				
	1			
V Sessions	ē 🕹 🗉 🗞	Pairs: 🚚 🌗 🧏		
Time Test	raffic Agent	Traffic Agent	Codec Assessment Cal	s Certification Calls
Studio	p Demo TA#1	Studio Demo TA#1	G.711 Fixed (1)	1
Category: Directed to this Test C	3 <u>▼</u> Subnet: All Su	ibnets 🗾		ି 🐔 😥 🖽 C
10 Name	IP Address	Status	Nickname	<u> </u>
Studio Demo TA#2	12.144.232.74	Ready	Studio TA#2	
		1.000)	GoodU TAIRT	
For Help, press F1		2 nc	ode(s)	

Defining General Parameters

General parameters are common to all Traffic Agent pairs and include thresholds for MOS (Mean Opinion Score), delay, loss and jitter. Table 5 describes the general parameters.

Call performance is assessed in terms of the low and high MOS threshold values that are defined. In addition, the thresholds for delay, loss and jitter are used to ascertain the effect of the values measured for these parameters on the MOS results.



General Parameters	X
Conversation Duration (sec)	e Quality General 60
MOS Threshold	3.6
CPU Threshold (percent)	80.0
Single Receiving Port	
Measure CPU	N
	Restore Defaults
ОК Са	ncel Help

To define values of the general parameters:

- 1. Click 🔳
- 2. Set Conversation Duration to 20 sec, for this tutorial.
- 3. Using Table 5, verify that the default values appear for the other parameters.
- 4. In order to perform utilization measurements, the SNMP community strings must be configured in the Community List in the Route Quality tab.
- 5. Click 🖳 to save the session you have defined.

Table 5: General Parameters

Parameter	Description	Default
		Value
Conversation	The length in time of the VoIP call generated by the	60 sec
Duration	test.	
MOS Threshold	An alert is provided when the measured average MOS	3.6
	is <i>below</i> the threshold value.	
Loss Threshold	An alert is provided when the measured loss is above	1.0%
	the threshold value.	
Jitter Threshold	An alert is provided when the measured absolute	30 msec
	average jitter is <i>above</i> the threshold value.	
Delay Threshold	An alert is provided when the measured average delay	150 msec
	is <i>above</i> the threshold value.	



CPU Threshold	Applicable only when CPU measurement is activated.	80.0%
	Defines the acceptable level of CPU usage.	
Packet Latency	Maximum estimated network delay used for internal	3000 msec
Tolerance	test parameters such as calculating the length of the	
	test, and the timeout parameter.	
Single Receiving	When selected, the receiving TA receives all calls on the	Not
Port	same port.	selected
	The default port that is used can be changed through	
	the port allocation mechanism.	
Measure CPU	When selected, measures the CPU and correlates it	Not
	with the CPU threshold defined.	selected

Note

MOS is defined between 5 (good) and 1 (bad). Measured MOS above 3.6 is considered acceptable for VoIP traffic.

Launching Evaluation Overview

Launching evaluation consists of running either the Readiness Assessment or Performance Certification.

Usually and for this tutorial, run the Readiness Assessment first and then when it ends the Performance Certification.

However, in the future, you may wish to run only one of the phases, for example, only the Performance Certification. You can stop either evaluation phase at any stage of its operation.

Notes

- Session definitions cannot be modified once an evaluation phase is launched.
 However, you may use the Save As option to prepare an additional session.
- To achieve the most accurate results for your VoIP evaluation, it is recommended not to use both the Test Center and the Traffic Agents specified to run other tests while the NetAlly VoIP Evaluation session is running.

Summary

In this chapter, you familiarized yourself with all of the required parameters for launching an evaluation phase. The following chapter will walk you through running the Readiness Assessment, generating and understanding the available report.



Network Configuration Detection

Objectives

The objectives of this chapter are as follows:

- Run the Network Configuration Detection phase.
- Generate Network Configuration Detection report.
- Understand the report.

Network Configuration Detection checks aspects of the network's configuration such as network connectivity and the quality of service settings for VoIP traffic, and presents the results in Network Configuration report.

This can be considered as preparatory to the more lengthy Readiness Assessment and Performance Certification phases in the overall scheme of evaluating the network's readiness for VoIP applications.

You can use the information from the tests carried out in this phase to proactively correct general and VoIP-specific network anomalies before initiating the evaluation phases.

Running Network Configuration Detection

This phase consists of different tests which check the following for each pair of Traffic Agents:

- Connectivity
- VoIP traffic precedence (QoS policy)
- Route quality and utilization measurements

To run Network Configuration Detection:

- 1. Verify that all session definitions are specified.
- 2. Click 🗟 and the Launch Evaluation dialog box opens.



Launch Session	
Launch Schedule	
Launch	_ [
Network Configuration Detection	
C Readiness Assessment 3	
C Performance Certification	
Check for each pair	
Connectivity	
VoIP traffic precedence (QoS)	
Route quality	
OK Cancel Help	

- 3. In the Launch tab, select Network Configuration Detection and check the tests to be performed.
- 4. In the Schedule tab, set the start time of the session to Now.
- 5. Click OK.

Session Test Views

The session tests are displayed by either selecting Readiness and Performance Certification and then selecting Open session tests or by right-clicking on the session then selecting Open session tests.

In the Detail view, the result icon is a green checkmark if the results are satisfactory; otherwise, it is a red cross.



Se	Session Tests						×	
	Category: All Phases		Ŧ					G
Γ	Name	2	Result	Left Traffic Agent	Right Traffic Agent	Phase	Start	
	Connectivity	9	~	Studio Demo TA#1	Studio Demo TA#2	Network Configura	ation 4/22/09 10:53 AM	
	Connectivity	9	~	Studio Demo TA#2	Studio Demo TA#1	Network Configura	ation 4/22/09 10:53 AM	
	+ VolP Traffic Precedence (QoS	9	Х	Studio Demo TA#1	Studio Demo TA#2	Network Configura	ation 4/22/09 10:54 AM	
	 VolP Traffic Precedence (QoS) 	9	Х	Studio Demo TA#2	Studio Demo TA#1	Network Configura	ation 4/22/09 10:57 AM	
	Route Quality with Utilization	9	Х	Studio Demo TA#1	Studio Demo TA#2	Network Configure	ation 4/22/09 11:00 AM	
-	Name Value Units							
	Path 192.168.41.50 -> 192.168.41.2 -> 1 -> 192.168.42.50		¥1.50 -> ¥1.2 -> 10.0.23.3 8.42.50					
	Avg Inbound Utilization	-1	p	ercent				
	Avg Outbound Utilization		-1	3	percent			<u>-</u>
			Trouble	eshoot Session-test	Clos	e		

Generating the Network Configuration Detection Report

The Network Configuration Detection report can be generated only after the evaluation phase is completed. The report is based on a predefined template and can be exported to MS Word or Adobe Acrobat files.

To generate the Network Configuration Detection report:

 Select Readiness Assessment and Performance Certification>Generate Reports>Network Configuration or click the Icon. The Generate Network Configuration Report dialog box opens.



Generate Report	
Inventory Report The Assessment r Performance Certi	Readiness Assessment and Performance Certification Report eports include the Network Configuration, Readiness Assessment and Network fication reports.
Select Session:	Sessions/Test
Network Co	nfiguration
C Readiness /	Assessment
C Performanc	e Certification
Report Type:	Network Configuration
Export To File:	D: WetAllyWetwork Configuration.pdf

- 2. Enter the filename.
- 3. Select Export Now.

Understanding the Network Configuration Report

In section 2 of the report, the Connectivity Tests verifies the status of the Traffic Agent Pairs.

Section 3 of the report contains information on the QoS Policy.

Section 4 contains the results of the Route Quality Test and provides information on:

- The route between the Traffic Agents.
- The Memory, CPU and Interface Utilization of the routers.

Summary

Once you have learned how to run a Network Configuration test, proceed to the following chapter and learn how to run the Readiness Assessment, generate a report and understand it.



Readiness Assessment

Objectives

The objectives of this chapter are as follows:

- Run the Readiness Assessment phase.
- Generate Readiness Assessment report.
- Understand the report.

As explained earlier, Readiness Assessment assesses the maximum number of calls that can be handled between the various Traffic Agent pairs with acceptable MOS results.

Running Readiness Assessment

Readiness Assessment runs tests according to the codec defined for the test point pair. These tests emulate an increasing number of concurrent VoIP calls during each test period, using the range of calls provided, until the maximum number is reached or exceeded. To obtain accurate and reliable results, the evaluation is repetitive. The results are correlated with the predefined MOS thresholds.

An algorithm then computes the maximal number of calls that can be handled per Traffic Agent pair with acceptable MOS results, and presents these on demand. The tests are relatively short and are automatically scheduled and executed.

To run Readiness Assessment:

- 1. Verify that all session definitions are specified.
- 2. Click 🗳 and the Launch Evaluation dialog box opens.



L	aunch Session	×		
	Launch Schedule			
	Launch	1		
	Network Configuration Detection			
	C Readiness Assessment 3 - iterations			
	Check for each pair			
	Connectivity			
	VoIP traffic precedence (QoS)			
	I Route quality			
	OK Cancel Help			

- 3. In the Launch tab, select Readiness Assessment and verify that the number of iterations is 3 and set Recurrence to Every 30 seconds. To obtain accurate and reliable results this evaluation phase is repetitive. The more iterations you run, the more reliable the results are going to be. On the other hand, if you increase the number of iterations, the duration of the preliminary phase will also increase.
- 4. In the Schedule tab, set the start time of the session to Now. There are situations where you would prefer to schedule your VoIP Evaluation to run during the night in order to prevent overloading the network during office hours.
- 5. Click OK.

Session Test Views

The session tests are displayed by either selecting Readiness and Performance Certification and then selecting Open session tests or by right-clicking on the session then selecting Open session tests.

In the Detail view, the result icon is a green checkmark if the results are satisfactory; otherwise, it is a red cross.



Se	essi	on Tests										
	Ш	Category	r: Al	l Phases		-						9
	_	Name			22	Resu	ult Left Traffic	: Agent	Right Traffic Agent	Phase	Start	
	-	VolP Traffi	c		9	 	Studio Demo T/	4#1	Studio Demo TA#2	Readiness Assessment	4/21/09 3:01 PM	
		∇ Period	2	Result	Start		Duration(sec)					
		3	9	✓	4/21/09 3:	04 PM	78					
		2	9	~	4/21/09 3	02 PM	78					
		1	9	 ✓ 	4/21/09 3	01 PM	80					
	. (1
		,										
	Na	ime				Value		1	Jnits			
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	0.	erall Loss	s			0		Ŗ	ercent			
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	A	ig Delay				4.39		r	nsec			
	A	g Out of C)rde	r		0		ĸ	ercent			
l												
					Tro	ubleshoot Session-	test	Clos	e			
						1.0						

Generating the Readiness Assessment Report

The Readiness Assessment report can be generated only after the evaluation phase is completed. The report is based on a predefined template and can be exported to MS Word or Adobe Acrobat files.

To generate the Readiness Assessment report:

4. Select Readiness Assessment and Performance Certification>Generate Reports>Readiness Assessment or click the 🛄 Icon.

The Generate Readiness Assessment Report dialog box opens.



Generate Report	
Inventory Report The Assessment re Performance Certifi	Readiness Assessment and Performance Certification Report ports include the Network Configuration, Readiness Assessment and Network cation reports.
Select Session:	Sessions/Test
C Network Con	figuration
Readiness A	ssessment
C Performance	Certification
Report Type:	VoIP Readiness Assessment
Export To File:	C:\Program Files\Fluke Networks\NetAlly\GUI\lib\
	Export Now Close

- 5. Enter the filename.
- 6. Select Export Now.

Understanding the Readiness Assessment Report

In section 2 of the report, the Summary of Results table provides the recommended number of calls with the corresponding MOS value.

When using the recommended settings for this tutorial and running the test over a LAN, the test should yield a MOS value of 4.4. If the test yields another result, it most probably indicates that the connection between your agents is not ready for VoIP. You can review the next sections in the report to understand what affected the MOS score.

Section 3 of the report contains procedural details.

Section 4 contains the detailed results of the test point pair for the number of calls you tested:

- The first graph shows the MOS value.
- The second graph describes the delay, loss and jitter effects on the call quality (MOS). Each bar represents the relative impact that each measurement had on the overall MOS value.



 The next three graphs provide the average values of the delay, jitter and loss during the tests.

Summary

Once you have learned how to run a Readiness Assessment, proceed to the following chapter and learn how to run the Performance Certification, generate a report and understand it.



Performance Certification

Objectives

The objectives of this chapter are as follows:

- Specify the number of calls.
- Run the Performance Certification phase.
- Generate the Performance Certification report.
- Understand the report.

As explained earlier, the Performance Certification validates the results of Readiness Assessment and, therefore, emulates a fixed number of calls over a period of time.

Running Performance Certification

Performance Certification corroborates the estimates generated during the Readiness Assessment phase by checking call performance over a long period of time. The time range makes it possible to assess VoIP performance according to time of day and day of week under varying network traffic conditions.

Unlike Readiness Assessment, this phase emulates an explicit number of full duplex calls between each Traffic Agent pair.

The actual number of calls to be emulated can be defined either automatically or manually. The automatic option uses the number of calls derived from running the Readiness Assessment and assigns it to the corresponding Traffic Agent pairs. Alternatively, calls can be assigned manually for each Traffic Agent pair or several Traffic Agent pairs.

If the results of the Readiness Assessment are satisfactory, use the recommended number of calls. The Auto Assign Number of Calls option automatically propagates the number of calls to the corresponding Traffic Agent pairs. Selecting a Traffic Agent pair and then clicking the Number of Calls tab shows the assigned number under Performance Certification.

To activate the Auto Assign option click 눱

To run Performance Certification:

- 1. Verify that the number of VoIP calls to be emulated is defined.
- 2. Click 🕓 .

The Launch Evaluation dialog box opens.



Launch Session	
Launch Schedule	
Launch	[]
C Network Configuration Detection	
C Readiness Assessment 3 iterations	s
Performance Certification	-
_ Options	
Recurrence: Every 30 🛉 minute(s) 💌	
Stagger test launch to avoid resource overload	
Monitor route quality and utilization during Session	
OK Cancel Help	

- 3. In the **Launch** tab, select **Performance Certification** and specify 2 hours as the duration. Set **Recurrence** to Every 15 minutes.
- 4. In the **Schedule** tab, set the start time of the session to Now.
- 5. Click OK.

Generating Performance Certification Reports

🔮 тір

You can generate a Performance Certification report during the ongoing phase. In this case, the report will include data collected up to that point.

To generate the Performance Certification reports:

- Select Readiness Assessment and Performance Certification>Generate Reports>Performance Assessment or click the Con.
 The Generate Performance Certification Report dialog box opens.
- 2. Enter the filename.
- 3. Select Export Now.



Understanding the Performance Certification Report

In section 2 of the report, the Summary of Results includes a table with the average MOS value per test point pair, as well as pie charts depicting the voice quality distribution per codec over all test point pairs.

Section 3 of the report contains procedural details.

Section 4 of the report contains the aggregated results per tested codec:

- The first sub-section shows the average per test point pair of the MOS value, delay, jitter and loss and their relative effect on the call quality (MOS).
- The second sub-section displays the daily average of these measurements and their relative effect on the call quality (MOS). The average consists of all test point pairs using this codec.
- The third sub-section displays the hourly average for each hour of the day of these measurements and their relative effect on the call quality (MOS). The average consists of all test point pairs using this codec.

Section 5 presents detailed results for each of the test point pairs participating in the Performance Certification phase:

- The first sub-section displays the daily average of these measurements and their relative effect on the call quality (MOS).
- The second sub-section displays the hourly average for each hour of the day of these measurements and their relative effect on the call quality (MOS).

Section 6 documents the setup used for Performance Certification.

Summary

You have completed your first NetAlly VoIP readiness session. You can set up additional sessions using other available codecs with additional Traffic Agents as your test point pairs. To further familiarize yourself with NetAlly VoIP, run several evaluation sessions using various parameters available per codec, call and session as briefly explained in this tutorial.



Web-based Analysis Reports

Objectives

The objectives of this chapter are as follows:

- Open an Analysis Report
- Understand the Analysis Report
- Navigate and drill down to pinpoint possible causes of trouble

The Analysis Report helps the user obtain more information on the executed test.

Opening an Analysis Report

To open an Analysis Report:

- 1. Select a session and right click.
- 2. Select Open session tests to see the detail view
- 3. Click 🔟 in the Session Tests window
- 4. The Analysis Report opens.

Several different Analysis Reports can be displayed; by default, the Time Report opens for multiple period tests.

Analysis Report Structure

The Analysis Report window contains the following areas:

- Toolbar (top)
- Drop-down list box for selecting a report type (top left)
- Display of measurements in graphic format
- Data Controls (bottom)





The Analysis Report toolbar includes the following buttons:

Button	Name
	Home
Ð	Back
	Refresh
	Show parameters
	Export as HTML or Excel file
	Print
	Auto-refresh



The drop-down list box offers a selection of the following reports:

Report Type	Description
Time Report	Shows the graph of measurements for the selected value on the Y-
	axis and the specified time range on the X-axis.
Number of Calls	Shows the graph of measurements for the selected value on the Y-
Report	axis and the varying number of calls on the X-axis.
Performance	Shows graphs with the measurements for all the values within the
Report	same view.
Slice Report	Allows inspecting the details of the intermediate measurements
	taken for each call.
Comparison	Shows correlation of two values in the same test.
Report	
Availability	Shows pie chart with the percentage of pass or fail results for the
Report	selected value.
	Select All Items in the Value control to see a single pie chart for all
	measured values. Drill down (by clicking on the pie chart) to open
	an Exceptions Report.
Summary Report	Shows the summary of the values measured for the entire test in a
	table.

The default value displayed for all VoIP analysis report types is the MOS value.

The Analysis Report window contains the following action buttons at the bottom:

Data Controls	Description
Series	Select an entity or entities from the test participants to display in
	the report. In the VoIP tests, select the desired pairs of Traffic
	Agents.
Value	Select a specific measurement to view from the list.
	For VoIP tests the default view shows the MOS.
Threshold	When selected, shows which measurements crossed the selected
	threshold.
Show Aggregation	For lengthy test durations, the measurements of several points on
	the time line are aggregated into a single point to provide a view of
	the entire time range.
	Clear the check box to show all measurement points.

Analysis Report Navigation and Drill-Down

In the Time Report, click any data point on the time line to drill down and obtain the detailed report on the selected test period.



🗿 http://12.144.232.109:8181 - NetAlly Report - Test (Ap	r 21, 200	9 3:02 PM	4 - 3:03 PM) - Micr	osoft Inte	rnet Explorer prov	rided by F			
FLLKE Web Server: 12.144.232.109 , Test Index: 105 . networks. Apr 21, 2009 3:53:22 PM PDT								105 PDT	
Time Report 💌 🖨 🖨 🖓 😭 🖓									
Test (Apr 21, 2009 3:02 PM - 3:03 PM) Call View - Single Period (2)									
	MOS	Delay	Overall Loss	Jitter	Throughput	R Value	Sending CPU	Receiving CPU	
		msec	percent	msec	kilobits/sec		percent	percent	
Studio Demo TA#1-Studio Demo TA#2-1	4.4	1.33	0.0	0.5	64.0	93.9	4.7	1.6	
Studio Demo TA#2-Studio Demo TA#1-1	4.4	7.45	0.0	0.45	64.0	93.73	1.6	4.7	
									-

Summary

You have reviewed your first NetAlly VoIP Web-based Analysis Report. You may interactively review the other types of reports available and drill down within them to familiarize yourself with additional views and data available. Export and print the analysis report for further reference.



Further Analysis and Troubleshooting

Objectives

The objectives of this chapter are as follows:

- Set up a Network Troubleshooting Test
- Run the Network Troubleshooting Test
- Open and understand the Network Troubleshooting Report

Running additional network troubleshooting tests helps the user obtain more information on the network. There are a large variety of network troubleshooting tests, in addition to the VoIP specific tests, which will help you troubleshoot the problem you are trying to locate. Network Troubleshooting tests also allow you full control and flexibility over the testing traffic parameters, thus allowing you to focus on your specific needs.

Setting up a Network Analysis Test

To setup a network troubleshooting test:

- 1. Select the Troubleshooting tab.
- 2. This switches from the VoIP Readiness Assessment and Performance Certification window to the Network Troubleshooting window.
- 3. Click 🔯 to select a new test.
- 4. The New test dialog box appears





- 5. Select the Round Trip ICMP Performance test under the End-to-End tree and then drag traffic agents into the left and right columns.
- 6. Set the parameters as required.

Click the information (¹) tab to view a detailed description of the test and its associated parameters



🔀 NetAlly - Troubleshooting								
Eile Edit View Troubleshooting Inventory Tools Hei	p							
💮 Troubleshooting - [Tests/Round Trip ICMP Perfor	mance1]							
₫ ٩ → Å ħ ħ								
Tests	Monitor 🕜 Setup	iÞ						
Round Trip ICMP Performance1	Dinging Traffic Agente Eshaing Carriero							
Na	ne IP	ing frame Agen	Port	Name	ECI	ID ID		
nda Sh	nie ir Idio Demo TA#1 192	168.41.50	FOR	Studio Demo T	FA#2	192 168 42 50		
SIL	uio Demo TA#1 192.	.100.41.30		Studio Demo 1	IM#2	132.100.42.30		
Ro Lo: Thi Jult Gu Nu Sp Trat	P and Trip Delay Threshold ss Threshold (percent) oughput Low Threshold (er Threshold (msec) aility of Service n of Packets (packets) acing (msec) fic i	Yarameters (msec) (kilobits/sec)	200 ▲ 1.0 ▲ 24.0 ↓ 10 ↓ DiffServ(46) ↓ 100 ↓ 20 ★ ↓					
S Inventory								
Category: Directed to this Test	C 💌 Subnet: All Su	ibnets 💌				o* 41 (9 🗉 🧕	
10 Name	IP Address	Status			Nickname		N	
10, Studio Demo TA#2	12.144.232.74	Ready		st	Studio TA#2			
10, Studio Demo TA#1	12.144.232.73 ,	Ready		St	Studio TA#1			
For Help, press F1			2 node(s)					

Running a Network Troubleshooting Test

To start a network troubleshooting test:

1. Do either of the following:

In the test tree, select the test and right-click to select Launch, Or

Click 🗳 to save and launch the test.

The Launching window opens.



Launching Round Trip ICMP Performance1					
Launch Schedule Advanced Recurrence C Once C Every 10 seconds v					
C for 2 times € for 2 minute(s) ▼					
Launch test 1 times (at scheduled time)					
OK Cancel Help					

- 2. In the Launch tab, set Recurrence to Every 10 seconds for 2 minutes.
- 3. Select the Schedule tab and set the start time of the test to Now.

Launching Advanced Ping1	×
Launch Schedule Schedule Now C After delay of 1 minute(s) Start on 04/21/09 04:17:40 PM	
Run-Time Exclusions OK Cancel Help	



- 4. You can also use the Run-Time Exclusion option to exclude critical working hours from your testing schedule. For example, suspend execution on Monday mornings between 8:00-10:00 AM, to avoid overloading your network.
- Click OK to launch the test.
 This action switches you to the Network Troubleshooting Monitor where you can view and track the progress of the test you just launched.

Opening and Understanding an Analysis Report

To open the analysis report for the network analysis test:

- 1. Right-click the test to be analyzed.
- 2. Select Open Analysis Report in the pop-up menu.

The Analysis Report opens.

Select the Main Report and click on one Traffic Agent names. This drills down into a graph. Click on any of the graph's points to get to the detailed information for the selected point and to see the intermediate results of the network troubleshooting test.





Summary

You have set up and launched your first NetAlly Network Analysis test. You may define additional types of network analysis tests, as well as use other test parameters with additional Traffic Agents to further understand the features available for troubleshooting.

Additional information is available in either of the following:

- The product online help (F1 key)
- The product online test descriptions (F9 key)
- The manuals listed under *Tutorial Aids*