Monitoring TFTP Server

eG Innovations Product Documentation

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Total Performance Visibility

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Chapter 1: Introduction

Trivial File Transfer Protocol (TFTP) is a simple high-level protocol for transferring files between the network devices. TFTP uses client and server software to make connections between two devices. From a TFTP client, individual files can be copied (uploaded) to or downloaded from the server. In other words, the server is the one serving files while the client is the one requesting or sending the files. TFTP can also be used to remotely start a computer, back up network or router configuration files, diskless workstations and X-terminals by using User Data Protocol (UDP).

If the TFTP servers in an environment play repository to critical information, then users are bound to be intolerant towards brief or prolonged delays in uploading data to or downloading data from the server. To ensure that users are always assured of swift TFTP access, the TFTP server's performance should be periodically monitored. This is where eG Enterprise helps administrators.

Chapter 2: How to Monitor TFTP Server Using eG Enterprise?

eG Enterprise monitors the TFTP server in an agentless manner. In order to monitor the TFTP server, deploy a single eG agent on any remote Windows host. This eG agent continuously monitors the TFTP server and determines the critical measures pertaining to its performance. To start monitoring the TFTP server, first manage the TFTP server using eG administrative interface. The procedure for achieving this has been detailed in the following section.

2.1 Managing the TFTP Server

The TFTP server cannot be automatically discovered by eG Enterprise. This implies that you will have to manually add the server into the eG Enterprise system to manage it. Follow the steps below to achieve the same:

1. Follow the *Components - > Add/Modify* menu sequence in the *Infrastructure* tile menu of the eG admin interface.
2. Next, select *TFTP* from the **Component type** drop-down and then click the **Add New Component** button.
3. When Figure 2.1 appears, provide the **Host IP/Name** of the TFTP server that you want to manage.

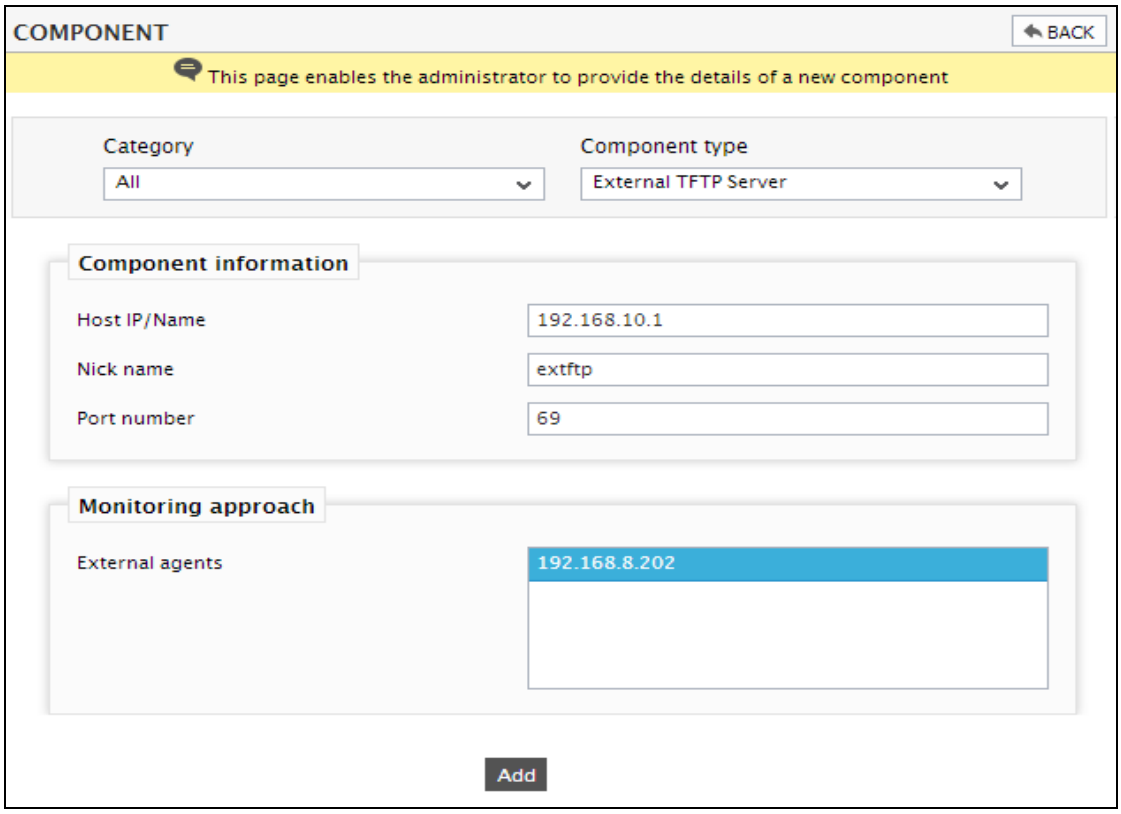

Figure 2.1: Adding a TFTP server

4. Then, provide a **Nick name** for the server.
5. The **Port** number will be set as *69* by default. If the TFTP server is listening on a different port in your environment, then override this default setting.
6. When you try to sign out of the eG admin interface, a **LIST OF UNCONFIGURED TESTS** page will appear, revealing the list of tests mapped to the TFTP server that require manual configuration:

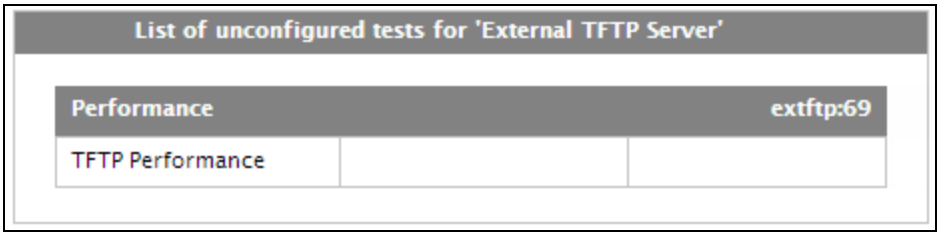

Figure 2.2: The list of tests that are required to be configured manually

7. Click on the *TFTP Performance* test in Figure 2.2 to configure it. Figure 2.3 listing the number of parameters then appears.

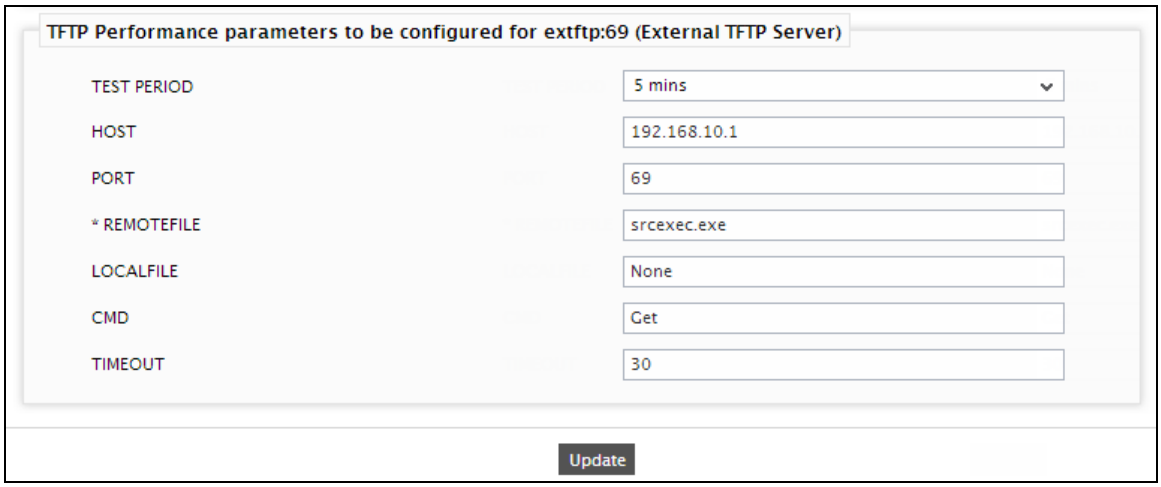

Figure 2.3: Configuring the TFTP Performance test

8. To know how to specify the parameters for the test, refer to *Monitoring TFTP Server* chapter.

After configuring the **TFTP Performance** test, sign out of the eG administrative interface. Then, login to the eG monitoring console to view the state of and metrics reported by the specialized monitoring model that eG Enterprise offers for the TFTP server.

Chapter 3: Monitoring TFTP Servers

eG Enterprise prescribes a TFTP monitoring model (see Figure 3.1), that verifies the availability and response time of the TFTP service at frequent intervals.

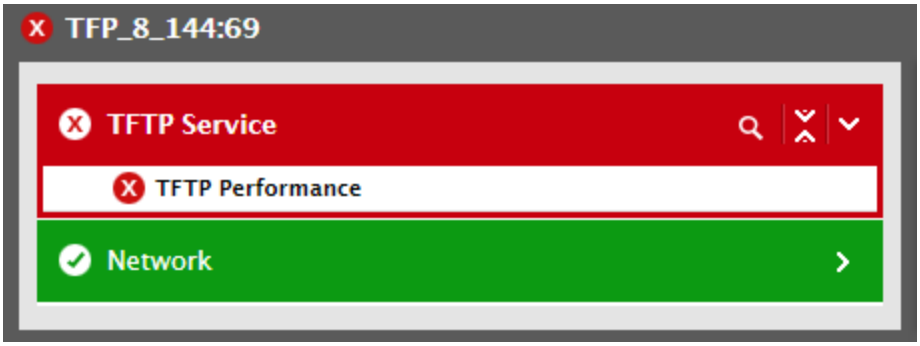

Figure 3.1: Layer model for a FTP server

The sections to come discuss the **TFTP Service** layer only, as the remaining layers have already been discussed elaborately.

3.1 The TFTP Service Layer

In the above figure, the **TFTP Service** layer tracks the health of the FTP server. The status of the layer is determined by the results of an TFTP Performance test that is shown in Figure 3.2. The details of this test are provided below:

Figure 3.2: The TFTP Performance test tracks the health of the TFTP Service layer

3.1.1 TFTP Performance Test

TFTP, or Trivial File Transfer Protocol, is a simple high-level protocol for transferring data servers use to boot diskless workstations, X-terminals, and routers by using User Data Protocol (UDP).

TFTP plays a crucial role in the Citrix Provisioning Services boot process, where a target device logs into a Citrix PVS server and boots into a vDisk. The typical process is as follows:

- When a target device boots from the network, DHCP sends a request to the Provisioning Server for an IP address and Scope Option settings. The Provisioning Server returns the information as requested. Additionally, DHCP also sends the TFTP server name and boot file name - ARDBP32.BIN - to the target device.
- Using TFTP (that listens on UDP port 69), a request for the bootstrap file (ARDBP32.BIN) is sent from the target device to the Provisioning Server. The Provisioning Server downloads the boot file on the target device.
- The target device boots the assigned vDisk image.

If the UDP port 69 is unavailable, then the target device will not be able to connect to the TFTP server; as a result, it will be unable to boot the vDisk image. Similarly, if the target device experiences any delays when downloading the bootstrap file from the Provisioning server, it is bound to adversely impact the booting process. This is why, it is important to periodically check whether/not the TFTP port is accessible from the target device and also measure how quickly the target device is able to get/download the bootstrap file from the Provisioning server. This is where the **TFTP Performance** Test helps!

At configured intervals, this test emulates a target device connecting to the TFTP port and downloading the bootstrap file (ARDBP32.BIN) from the Provisioning server. In the process, the test reports the following:

- Is the TFTP server (on UDP port 69) accessible over the network?
- How much time does it take to download/get the bootstrap file?

This way, the test promptly alerts administrators to the unavailability and poor responsiveness of TFTP, and thus helps them troubleshoot a target device not booting into a vDisk.

Target of the test : A TFTP server

Agent deploying the test : An internal agent

Outputs of the test : One set of results for the TFTP server being monitored.

Configurable parameters for the test

Parameter	Description
Test Period	How often should the test be executed
Host	The host for which the test is to be configured

Parameter	Description
Port	The port number at which the specified host listens
Infolders	Provide the full path to each of the IN folders in a comma-separated list. in folders are folders to which a job is submitted.
Detailed Diagnosis	To make diagnosis more efficient and accurate, the eG system embeds an optional detailed diagnostic capability. With this capability, the eG agents can be configured to run detailed, more elaborate tests as and when specific problems are detected. To enable the detailed diagnosis capability of this test for a particular server, choose the **On** option against Detailed Diagnosis. To disable the capability, click on the **Off** option. The option to selectively enable/disable the detailed diagnosis capability will be available only if the following conditions are fulfilled: • The eG manager license should allow the detailed diagnosis capability • Both the normal and abnormal frequencies configured for the detailed diagnosis measures should not be 0.

Measurements made by the test

Measurement	Description	Measurement Unit	Interpretation
Availability	Indicates whether/not the TFTP server is accessible over the network	Percent	If the value of this measure is 100%, it indicates that the TFTP server is available. The value 0 on the other hand indicates that the server is unavailable. Typically, if the UDP port 69 is unavailable or not accessible over the network, then this measure will report the value 0.
Response time	Indicates the time taken to download the bootstrap file (ARDBP32.BIN) from the Provisioning server to a configured location on the external agent host.	Seconds	Ideally, the value of this measure should be low. An increase in the value can occur because there are too many simultaneous requests or because of a network bottleneck.

About eG Innovations

eG Innovations provides intelligent performance management solutions that automate and dramatically accelerate the discovery, diagnosis, and resolution of IT performance issues in on-premises, cloud and hybrid environments. Where traditional monitoring tools often fail to provide insight into the performance drivers of business services and user experience, eG Innovations provides total performance visibility across every layer and every tier of the IT infrastructure that supports the business service chain. From desktops to applications, from servers to network and storage, from virtualization to cloud, eG Innovations helps companies proactively discover, instantly diagnose, and rapidly resolve even the most challenging performance and user experience issues.

eG Innovations is dedicated to helping businesses across the globe transform IT service delivery into a competitive advantage and a center for productivity, growth and profit. Many of the world's largest businesses use eG Enterprise to enhance IT service performance, increase operational efficiency, ensure IT effectiveness and deliver on the ROI promise of transformational IT investments across physical, virtual and cloud environments.

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