

Course Exercises Guide

IBM Aspera High-Speed Transfer Server Administration

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Exercises description

Introduction

The exercises for this course are designed to give you experience applying the concepts and procedures that are presented in the lecture component of the course.

It is assumed that you have a basic understanding of navigating in the Windows and Linux environments and performing basic Windows and Linux administrative functions.

Each exercise builds on the tasks that are completed in the previous exercise, so it is important to do the exercises in the proper order.



Information

Online course material updates might exist for this course. To check for updates, see the Instructor wiki at <http://ibm.biz/CloudEduCourses>.

List of exercises

This course includes the following exercises:

Exercise 1: Installing IBM Aspera High-Speed Transfer (HST) Server software

Exercise 2: HST Server configuration

Exercise 3: Managing Aspera users and groups

Exercise 4: Command line operations

Exercise 5: Advanced features



Important

Before working on lab exercises, it is important to read the information below which explains how to access and manage the servers in the lab environment.

Each exercise is divided into sections with a series of numbered steps and lettered substeps:

- The numbered steps (1, 2, 3) represent primary actions to be performed.
- The lettered substeps (a, b, c) provide details for completing the tasks that make up the action.

Login credentials

The following table lists the various login accounts and passwords that are used throughout the exercises. The password that is used for each account is the same, making it easier to remember the required login credentials as you work through the exercises. However, credentials are also listed in the guide when needed.

Server	User ID	Password
Singapore	Administrator	passw0rd
Singapore	svcAspera	passw0rd
Singapore	xfer	passw0rd
Singapore	user1	passw0rd
Singapore	user2	passw0rd
Denver	root	passw0rd
Denver	xfer	passw0rd
Denver	user1	passw0rd
Denver	user2	passw0rd
Denver	user3	passw0rd
London	root	passw0rd
London	xfer	passw0rd
London	user1	passw0rd
London	user2	passw0rd
London	user3	passw0rd
London	sweet	passw0rd
London	alpine	passw0rd



Note

You are not required to perform any of the following tasks currently! However, it is important to read this introduction to understand the Soleil environment as you work on the exercises.

The lab environment

Both the Windows and Linux servers in the lab environment are configured to provide all required services and features to support the IBM Aspera High-Speed Transfer Server software. Additionally the firewall is disabled on all servers.

The provided lab environment provides an integrated interface to the servers provided to complete the laboratory exercises of this course. When you first connect to the environment, a page is presented that provides an interface to manage the servers included in the lab environment. The lab environment consists of three servers that are named: *Singapore*, *Denver*, and *London*.

Server states

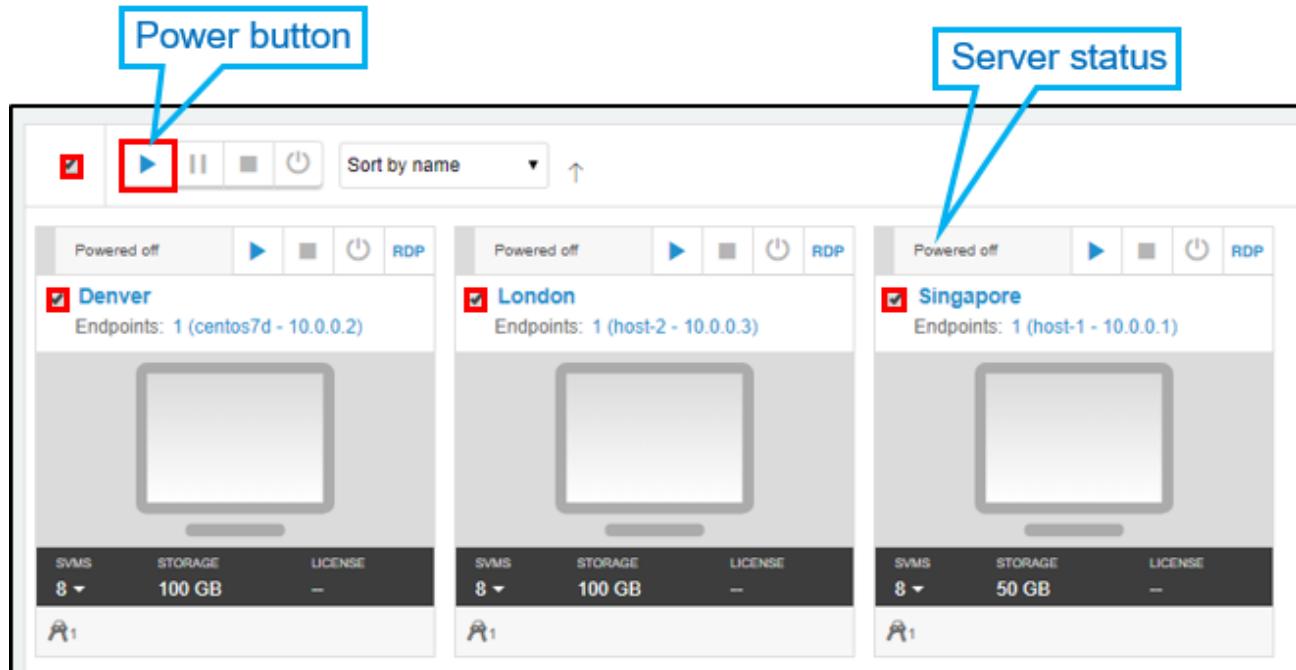
The state of each server is displayed when you access the lab environment. Server states are *Powered off*, *Running*, *Suspended*, or *Busy*.

Servers can be managed as a group or individually. Normally you manage power on servers as a group, but each server provides the same options as the options provided for the group of servers.

The *Power button* is used to change the servers from a *Powered off* or *Suspended* state to a *Running* state.

Power on servers

Servers in the lab environment must be powered on and running before beginning any exercise.



- __ 1. Power on all server simultaneously.
 - __ a. Make sure that the check boxes are marked for each server.
 - __ b. Click the Power, as shown in the previous figure.

Each server status changes to **Busy** while transitioning from one state to another. Server status changes to **Running** when the servers become active.



Information

If a server appears Busy for an inordinately long period (3 minutes or more), close the web page and reconnect to the lab environment.

After the systems are successfully powered on, the status of each system changes to Running.



Accessing servers

After the servers appear as Running, you have two ways to access the individual servers, either with Remote Desktop (RDP) or with the browser.

Connect with an RDP connection

If your computer system supports RDP, the next few steps describe the process to access a server with RDP.



Important

If your system does NOT support RDP, skip to the *Connect by using a browser* section located later in this introduction.

Each server provides an RDP link to open an RDP connection to that server.

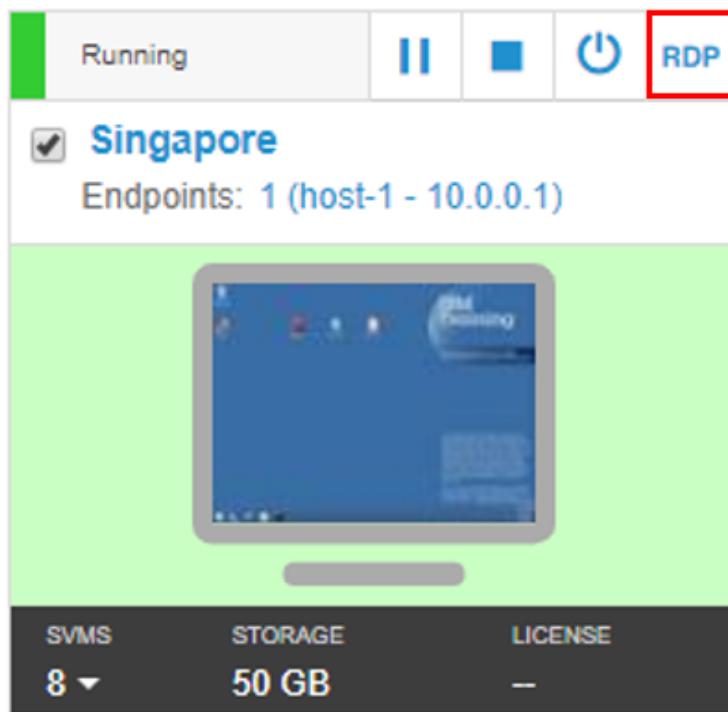


**Note**

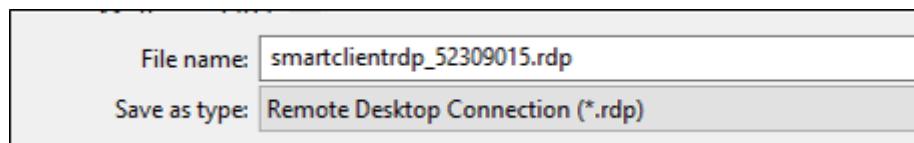
The value of using RDP connections is that you might open RDP sessions for all three servers simultaneously in separate windows. When you need to perform tasks on a different system, the associated RDP session is immediately available in another window.

Another advantage of using RDP is that it has less lag time than through the browser.

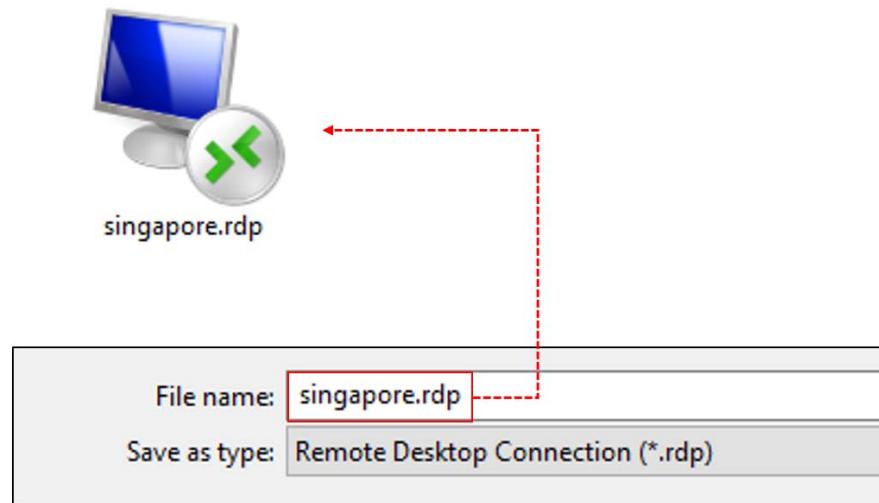
- ___ 1. Open an RDP session for the Singapore server.
- ___ a. Click RDP on the Singapore server to start the process of accessing the server environment.



The first time that you click the RDP link, the system asks to save an RDP configuration file. When the system attempts to save the RDP configuration file, it asks to save the file with a name like smartclientRDP_4995563.rdp. It might be preferable to use the same name as the server it accesses rather than trying to remember which number is associated with which system.



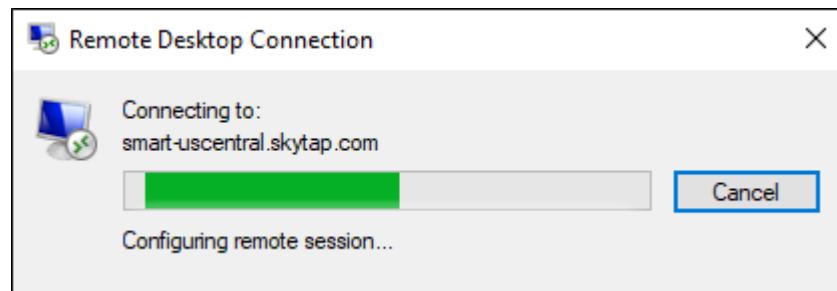
- ___ b. Save the RDP configuration file with the same name as the server it is associated with, in this case singapore.rdp.

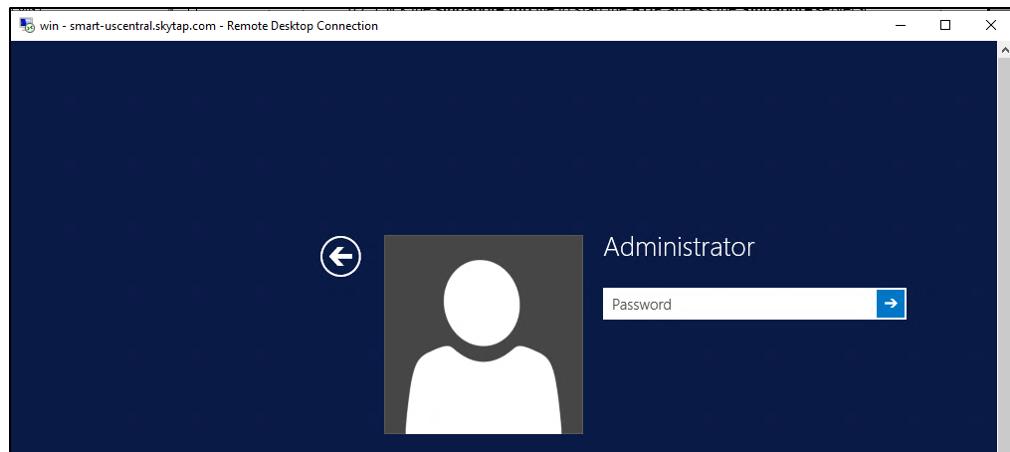


- ___ c. Create a .rdp file for the other two servers (Denver and London) by clicking the RDP link of each server. Save the configuration file with the same name as the server, for example, denver.rdp and london.rdp.



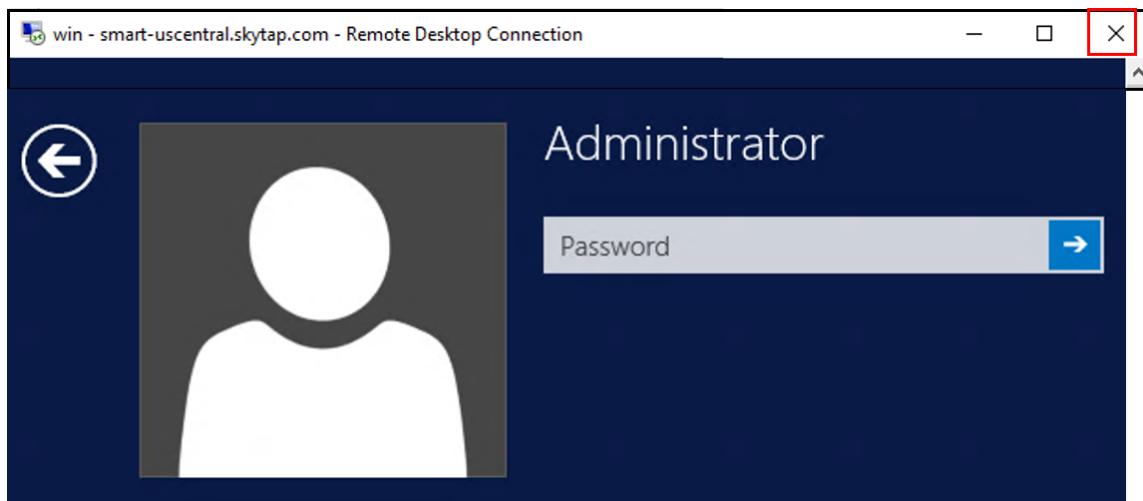
- ___ d. Double-click the singapore.rdp file to start the RDP access to the Singapore server login page.





The previous steps explained the process of accessing a server with an RDP connection. Next, you close the RDP connection and start a connection by using the browser.

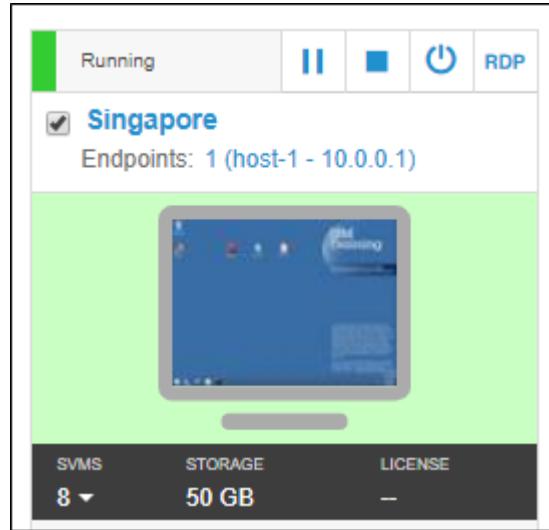
- ___ 2. Close the RDP connection to the Singapore server by clicking X at the upper right side of the window.



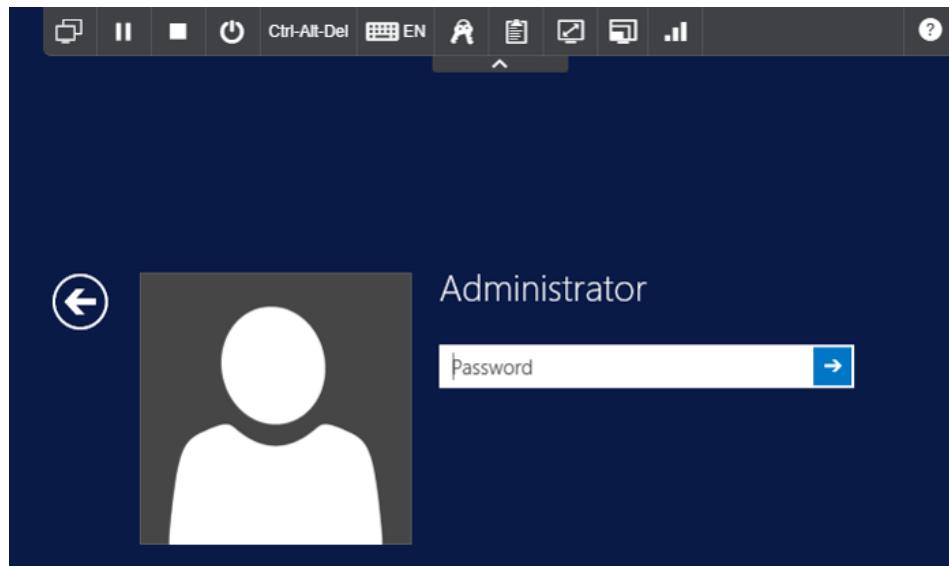
Connect that use a browser

If your computer system does not support RDP, you can access a server by using a browser connection to that server.

- ___ 1. Open a connection to the Singapore server by using the browser.
 - ___ a. Click the Singapore server image to open a connection to the Singapore login page.

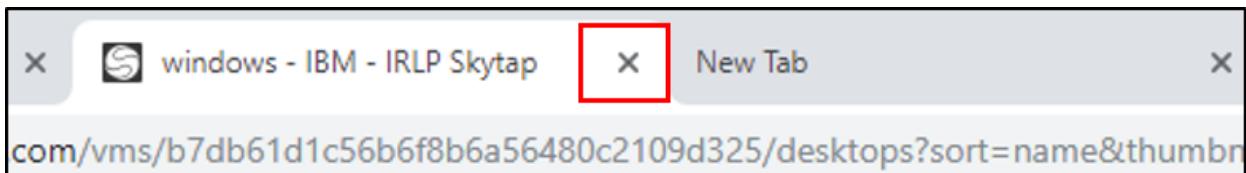


The login page is displayed.



The lab environment presents a single window that requires you to switch from one server to another within the same screen. So, the environment provides several features for managing the environment. Details about using these features are presented in the Managing the lab environment section towards the end of this introductory module.

- 2. Close the browser connection to the Singapore server by closing the browser window.



**Note**

Closing a connection to a server is not the same as logging out of a server. If you are logged in to a server when you close the connection, you remain logged in when you reopen the connection.

Logging in and logging off servers

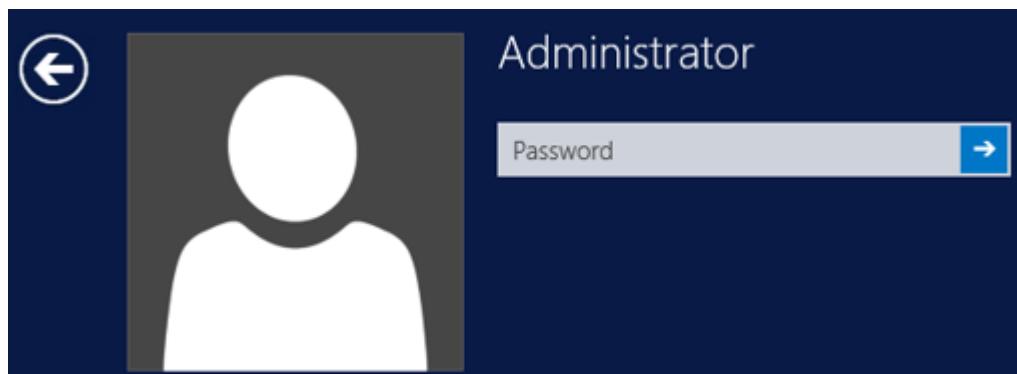
After you access the server environment with either RDP or the browser, you need to log in to the selected server. The following steps take you through the process of logging in to and logging off servers in the lab environment. No actual tasks are required on the servers other than to learn the login and logout process.

The login and logout processes differ slightly between the Singapore server, which is running Windows Server 2012, and the Denver and London servers, which are running CentOS Linux.

The following tasks are designed to acquaint you with the login and logout procedures on the different types of servers. First, you log in to the Singapore server as an example of logging in to a Windows server, then log out. Next, you log in to the Denver server as an example of logging in to a Linux system, and then log out of it as well.

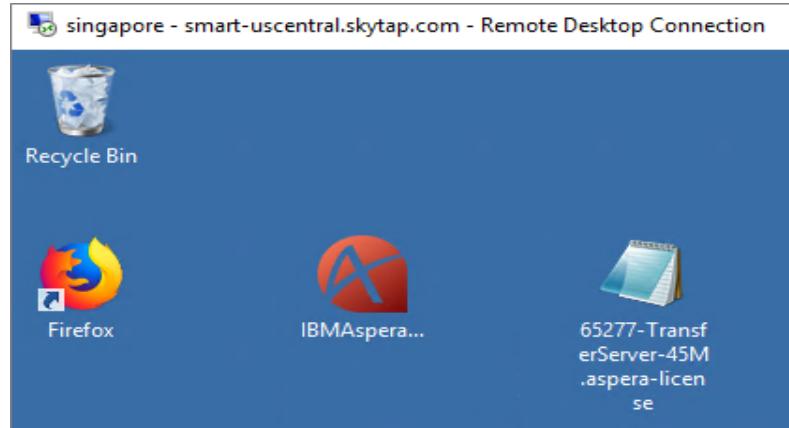
- ___ 1. Log in to the Singapore server.
 - ___ a. Open a connection to the Singapore server with RDP or the browser, depending upon what your computer supports.

The Administrator login page is presented.



- ___ b. Enter the Administrator password (*passw0rd*).

The Administrator desktop is displayed.



- ___ 2. Log off from the Singapore server.
 - ___ a. Click Start at the lower left side of the screen.



- ___ b. Click Administrator at the upper right side of the screen and select Sign out.



The login screen shows all available user accounts for login.



- ___ 3. Log in to the Denver server.
 - ___ a. Open a connection to the Denver server with RDP or the browser, depending upon what your computer supports.

The first time that you access a Linux server, a blue page is displayed, regardless of which access method you are using.

- ___ b. Click the mouse in the page and press <Enter> to access the login screen.

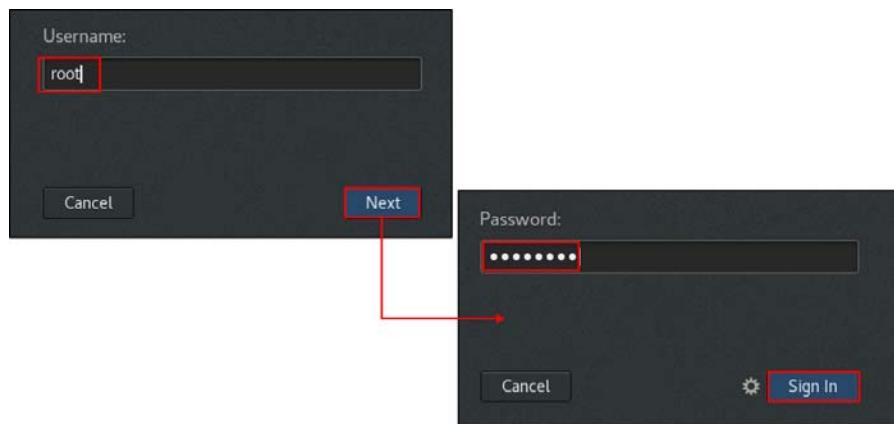


Note

You might encounter a blue screen at other times when working with the lab systems. If so, click the mouse in the screen and press <Enter>.



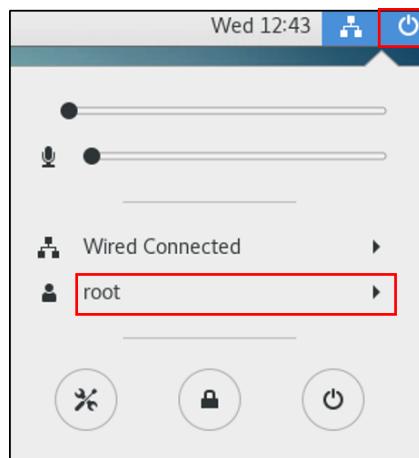
- ___ c. Click *Not listed?* at the bottom of the page and enter root in the Username field.
___ d. Press Enter or click Next, type passw0rd in the Password field and press Enter or click Sign In.



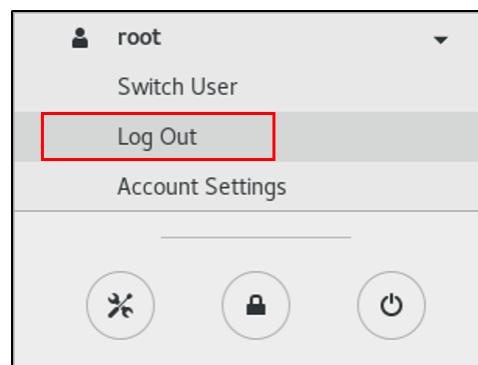
The root Desktop opens.



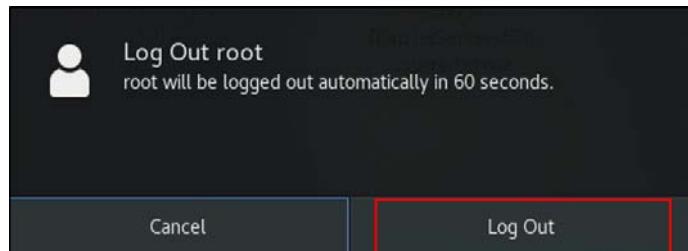
- ___ 4. Log off from the Denver server.
 - ___ a. Click the Power icon at the upper right side of the screen.



- ___ b. Click **root** and select Log Out.



- ___ c. Click Log Out to confirm.



The login page is shown again.

Managing the lab environment



Important

The information in the following section applies only if you are using a browser connection. If you use RDP to access the servers, skip to the *General exercise information* section.

If you are using RDP to access the servers, each screen is separate and no special tools are needed to switch between servers.

However, if you connect to the servers with a browser, the lab environment provides features that make it more efficient to use. The following pages discuss some of the features you might need when working in the lab environment.

The lab environment menu

After logging in to a server, a menu is displayed at the top of the screen. The features of the lab environment are accessed through this menu.



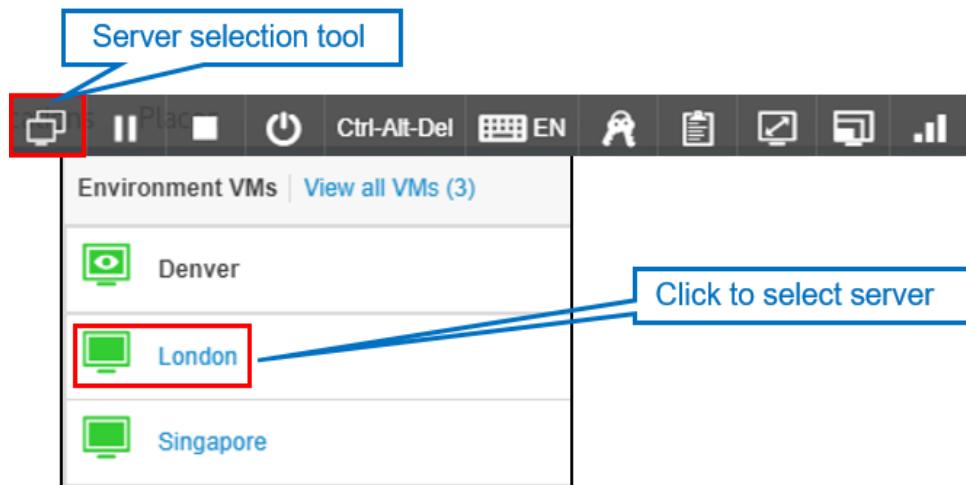
If the menu obscures your view, move the screen out of the way by clicking the up mark at the bottom of the menu. When you need to use it again, click the down mark.



Switching between servers

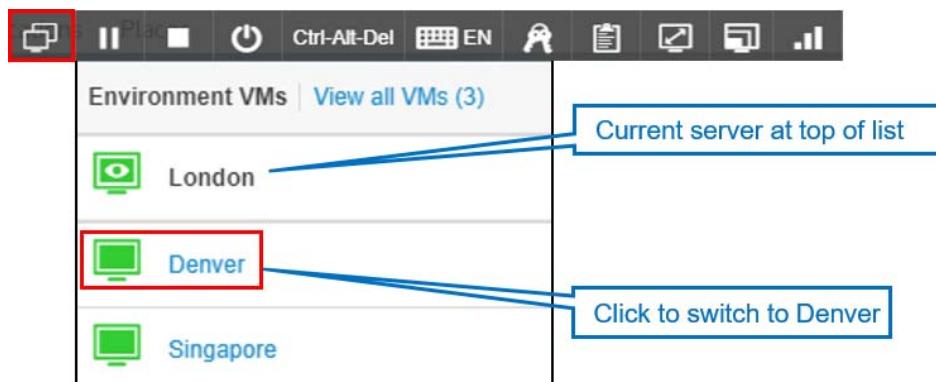
You can switch to a different server by using the Server selection tool at the left side of the lab environment menu. The goal of the next few steps is to use the Server selection tool to switch the screen between servers. No tasks are performed on either server, and you switch between them only to see how the Server selection tool is used.

- 1. Switch from the Denver server to the London server.
 - a. Access the Denver server by using a browser connection.
 - b. Log on to the Denver server by using the root user with a password of *passw0rd*.
 - c. Click the Server selection icon at the top of the screen to view the three servers.
 - d. Click the London server to switch the screen to the London server.



Notice that the server you are currently connected to is shown at the top of the menu.

-
- 2. Switch to the Denver server.
 - a. Click the Server selection icon and select Denver to switch back to the Denver server.

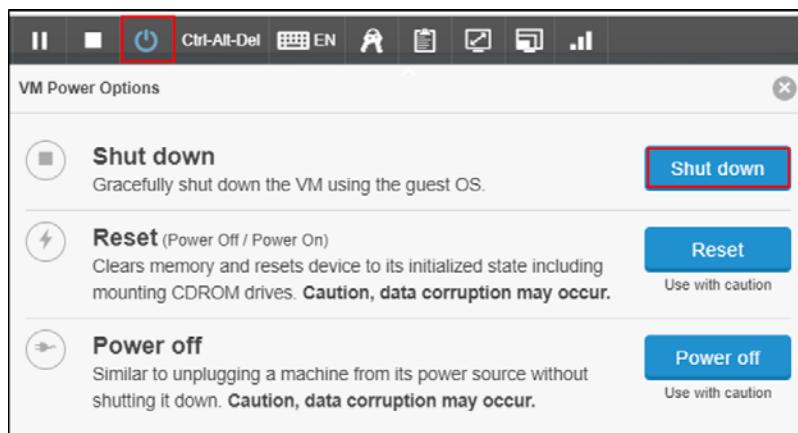


Other lab environment features

In addition to switching between servers, the lab environment links at the top of the screen also facilitate several other useful features. These features include shutting down or rebooting the server operating system, copying text between your local system and the lab environment, and resetting the screen resolution.

Shutting down and rebooting servers

- ___ 1. Shut down the **Denver** server.
 - ___ a. If necessary, log on to the Denver server.
 - ___ b. Click the Power management icon (NOT the Power on icon) in the lab environment menu.



- ___ c. Click **Shutdown** to gracefully shut down the system.



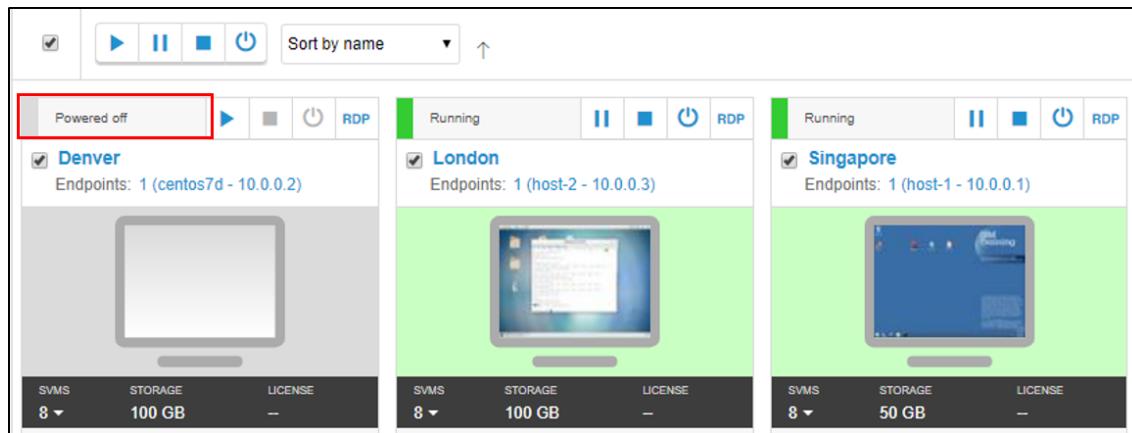
Important

Do NOT use the Reset or Power off options in this menu. Only the Shutdown option should be used.

As the server is shut down, the screen changes to black with a spinning circle inside a terminal window. After the server is shut down, the spinning circle changes to a terminal with a power on symbol inside it.

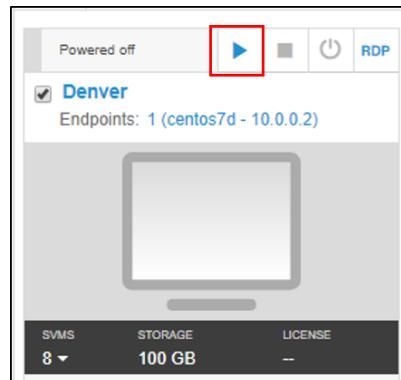


- ___ d. Click the Server selection icon and select View all VMs (3).



The status of the Denver system is Powered off, while the state of the other servers is Running.

- e. Click the Power on icon next to the status field of the Denver server to power it back on.



The status of the Denver server changes to Busy, and eventually to Running.



Note

Occasionally the server status remains Busy for a longer than normal amount of time. If that happens, close the browser window to the entire URL and reconnect. The status should then be Running.

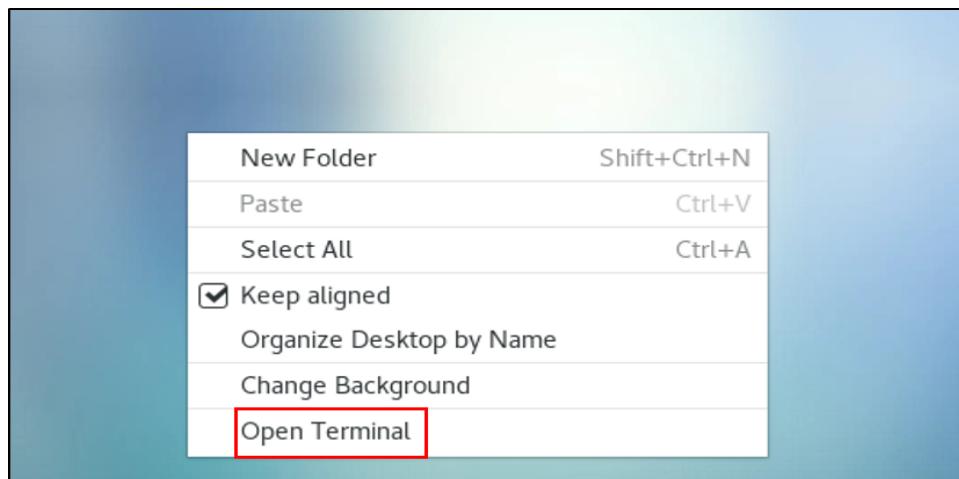
Copying text between your PC and a server

The lab environment menu also provides a feature to copy text between the server you are working on and your local PC. The VM Clipboard link is used to copy text entries from this guide to the system where commands are run.

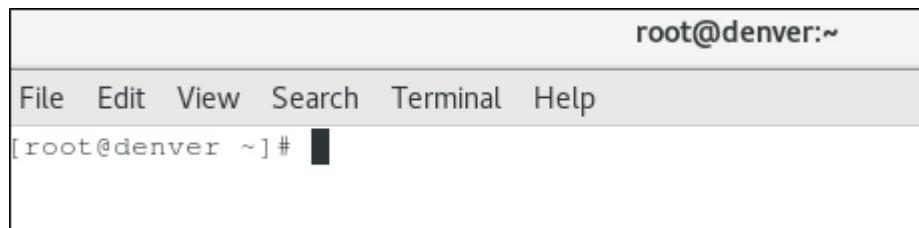
Keep in mind that only text can be copied between your local system and the lab server.

- 1. Copy text from your local system to the Denver server.
 - a. Click the Denver image to open the login screen.

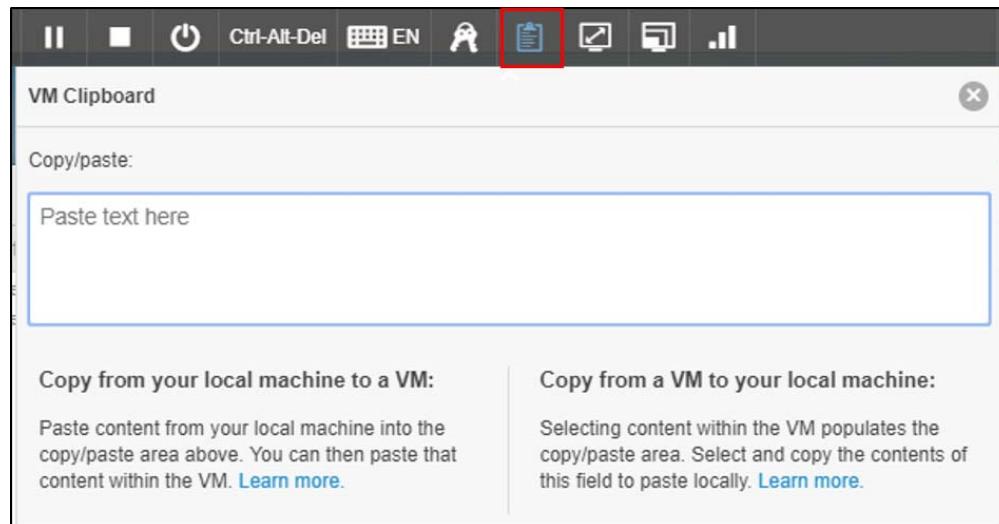
- ___ b. Place the mouse in the Desktop and use the right mouse button and select the Open Terminal option.



A terminal window opens.



- ___ c. Click the Clipboard icon in the lab environment menu to open the VM Clipboard.



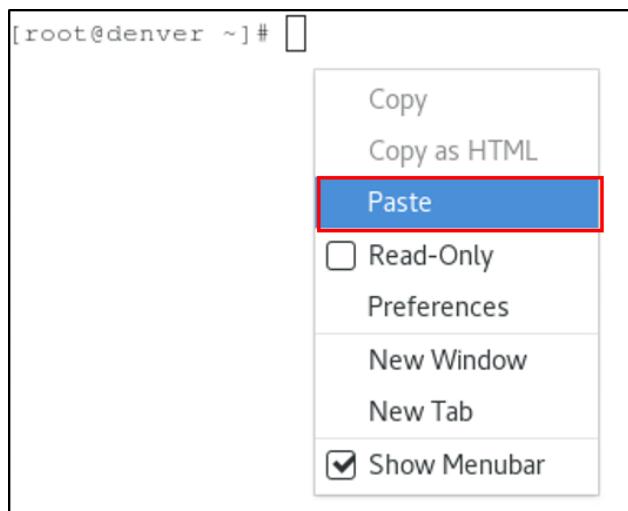
- ___ d. Copy the following line from this guide by highlighting it and entering CTRL C (or CMD C if using a Mac).

`ls /root`

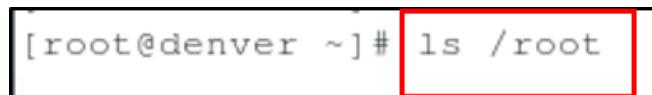
- ___ e. Use the CTRL V keys (CMD V on a Mac) to paste the copied text into the *Paste text here* section of the VM Clipboard.

The VM Clipboard screen disappears.

- ___ f. Move the cursor into the terminal window and use the right mouse button to open the file management menu - select Paste.



The text is copied into the command line of the server.



- ___ g. Press Enter to run the command you pasted into the server.



General exercise information

Lab exercises should be performed on the pre-configured Windows (Singapore) and CentOS Linux server systems (Denver & London) provided in the lab environment.

Most administrative tasks for IBM Aspera High-Speed Transfer Server systems require administrative rights on the systems. You use the root user account to log in to the two Linux systems and the Administrator user account to log in to the Windows server.

When working on deployment systems, remember to consider file and directory permissions for non-administrative users.



Important

The exercises call for numerous changes between servers for configuration and testing transfers. When a change in server is required, the step starts with the underlined phrase Switch to Singapore, or Switch to Denver, or Switch to London. It is important to execute the identified tasks on the correct server to experience the expected results.

Questions asked in exercises

Numerous exercises present questions that you are expected to answer. While much of the IBM Aspera HST Server software is obvious, many details and nuances are not so obvious. Some of the questions require you to examine the output of commands and processes that are run within the Aspera GUI. Other questions require you to use the *IBM Aspera High-Speed Transfer Server Administration Guide* (Admin Guide) to answer. The questions asked draw your attention to specific information provided by the GUI or command-line operations. These questions also encourage you to use the documentation.

Answers to the questions in each exercise are provided immediately following the question and are highlighted with italic formatting. However, you are encouraged to try to answer the questions on your own before reading the answer.

The online *IBM Aspera High-Speed Transfer Server Administration Guide*

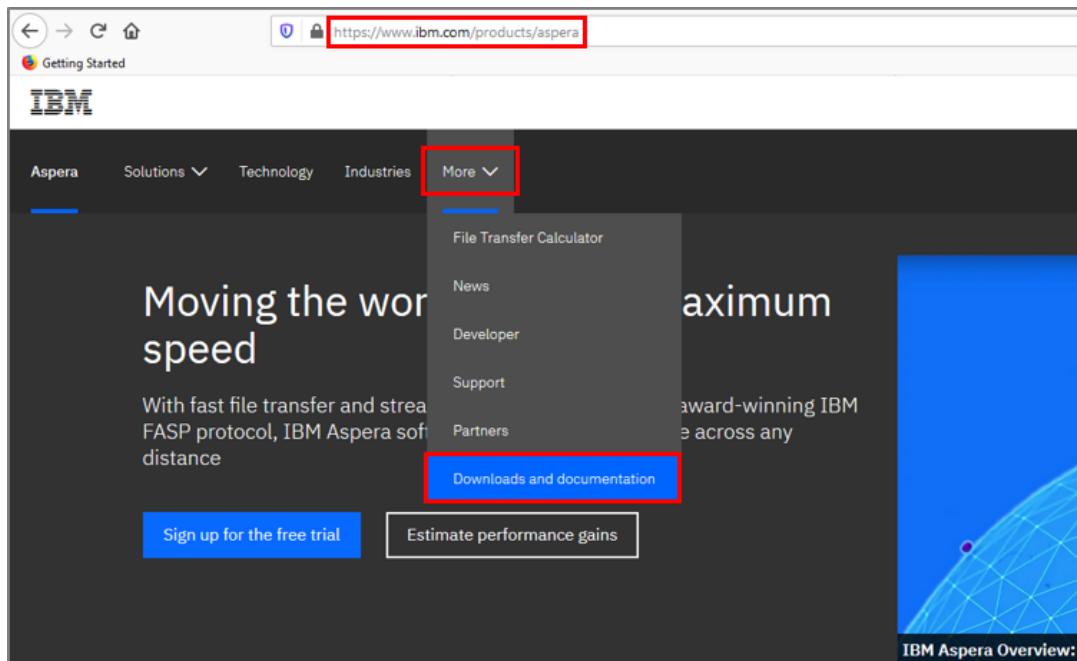
The *IBM Aspera High-Speed Transfer Server Administration Guide* (Admin Guide) provides details about almost every aspect of configuring the system and transferring files. Use it during these exercises as preparation for future operations. Learning to use the documentation is an essential skill when working with the IBM Aspera HST Server.

Accessing the online product documentation

A PDF version of the Admin Guide is installed as part of the software installation. This PDF version can be accessed locally from within the Aspera GUI or directly from the command line (or File Manager in a Windows environment). The first exercise discusses the procedure for accessing the Admin Guide from the local system.

You can also access the documentation for the IBM HST Server as a web page by going to the www.ibm.com/products/aspera website.

- ___ 1. Open the HTML version of the *IBM Aspera HST Administration Guide*.
 - ___ a. Connect to the www.ibm.com/products/aspera website.



- ___ b. Move the cursor over the More link at the top of the page and click Downloads and documentation to open the IBM Aspera downloads page.

A screenshot of the 'IBM Aspera downloads' page. The title 'IBM Aspera downloads' is at the top in large white font. Below it is the subtext 'Explore available downloads for IBM Aspera software'. A blue button labeled 'Access Passport Advantage' is visible. At the bottom, there are two download links: 'Transfer server software' with a downward arrow icon and 'Client software' with a downward arrow icon. The 'Transfer server software' link is highlighted with a red box.

- ___ c. Click *Transfer server software* to display the available downloads.

The screenshot shows the 'Transfer server software' section of the IBM Aspera website. It lists two products: 'IBM Aspera High-Speed Transfer Server' and 'IBM Aspera Streaming'. Each product has a 'Download now' button and a 'View documentation' button. The 'View documentation' button for the High-Speed Transfer Server is highlighted with a red box.

Product	Action
IBM Aspera High-Speed Transfer Server	Download now
IBM Aspera High-Speed Transfer Server	View documentation
IBM Aspera Streaming	Download now
IBM Aspera Streaming	View documentation

- ___ d. Click *View documentation* to open the IBM Aspera Documentation page.
- ___ e. Use the menu to select *v3.9.1-Linux RPM x86_64*.

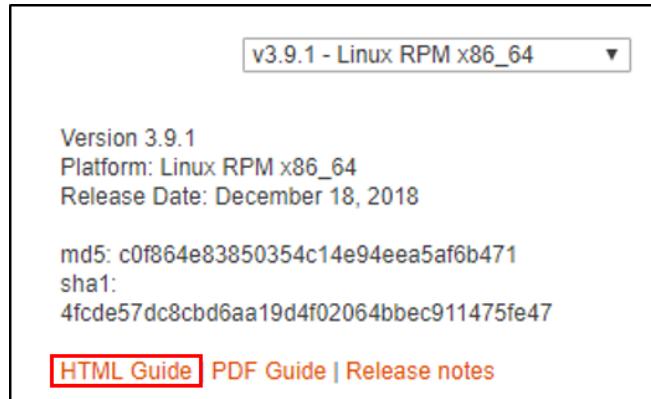
The screenshot shows the 'DOCUMENTATION' page for the Aspera High-Speed Transfer Server. At the top, there's a logo and a brief description of the product. Below that, a 'CHOOSE YOUR OPERATING SYSTEM' section displays icons for various platforms: MAC, Windows, Linux, Linux Deb, FreeBSD, Solaris, and AIX. There's also a 'Show All' option. To the right, a dropdown menu titled 'Select Version' is open, showing a list of available versions. The 'v3.9.1 - Linux RPM x86_64' option is highlighted with a red box.

Platform
MAC
Windows
Linux
Linux Deb
FreeBSD
Solaris
Show All
AIX
Isilon

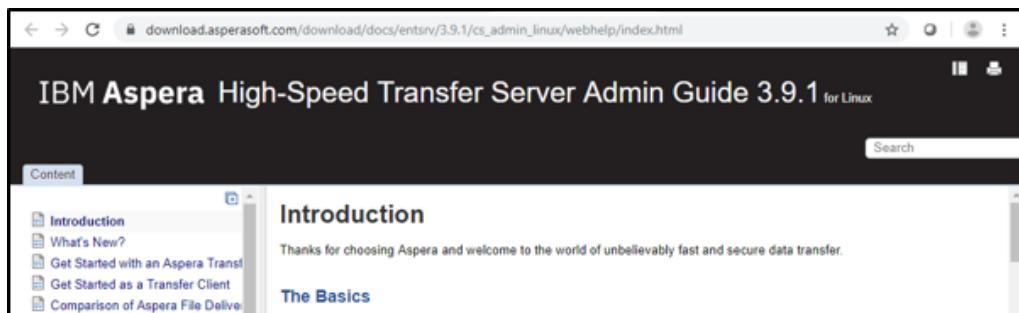
Select Version

- v3.9.3 - Linux Deb x86_64
- v3.9.3 - Linux RPM x86_64
- v3.9.3 - Windows
- v3.9.1 - Linux Deb x86_64
- v3.9.1 - Linux RPM x86_64**
- v3.9.1 - Windows
- v3.9.1 - Mac OS X Intel
- v3.9.1 - PPC Deb
- v3.9.1 - PPC RPM
- v3.9.0 - Linux RPM x86_64
- v3.9.0 - Linux Deb x86_64
- v3.9.0 - AIX

- ___ f. Click the V3.9.1-Linux RPM x86_64 option to open another pane where you can select how you want to view the Admin Guide.



- g. Click **HTML Guide** to open web version of the Admin Guide.



Information

The Introduction section of the Admin Guide provides a good overview of some basic Aspera concepts. It is suggested you take a few minutes to read through the Introduction section to refresh your memory about several important terms and concepts.

Business scenario

The servers that are used in the lab exercises are named Singapore, Denver, and London. These names represent the locations of IBM Aspera servers by a fictitious company called LoneStar Media Corporation (Lonestar). LoneStar creates and distributes video presentations for their global customers.

The Singapore office is small and only occasionally transfers files to or from the other locations. However, transfers between the Denver and London office occur daily.

Most of the transfers are initiated from the London server, and the files that are transferred include both large single files and multiple small files. Most of the transfers require normal security considerations, but not all.

The Aspera administrator is based in the Denver office, but has administrative access to all of the Aspera servers.

The lab exercises emphasize many (but not all) of the IBM Aspera HST features presented in the lecture component of this course.

Exercise 1 focuses on basic installation and testing of the servers, so the business scenario is not addressed in that exercise. However, starting in Exercise 2 the various tasks are associated with LoneStar's business needs.

Exercise 1. Installing IBM Aspera High-Speed Transfer Server

Estimated time

02:00

Overview

This exercise covers the basic steps of installing IBM Aspera High-Speed Transfer Server.



Note

Read "[The lab environment](#)" in the "[Exercises description](#)" to ensure you understand the lab environment.

Objectives

After completing this exercise, you should be able to:

- Install the IBM Aspera HST Server software on both Windows and Linux operating systems
- Test the system's ability to transfer files by using the IBM Aspera HST Server application
- Access and use the IBM Aspera HST Server documentation
- Use the Aspera GUI to manipulate local and remote files and directories

Introduction

The exercise includes these sections:

- [Section 1, "Installing IBM Aspera HST Server on Windows operating system"](#)
- [Section 2, "Install IBM Aspera HST Server on Linux"](#)



Note

While Linux systems provide a graphical user interface (GUI) for most tasks, this exercise uses a combination of the command line and the GUI. The IBM Aspera HST Server application GUI is the same on Linux and Windows.

Requirements

For this exercise, you work on the Windows Server image and Linux image that are provided in your lab environment.

Section 1. Installing IBM Aspera HST Server on Windows operating system

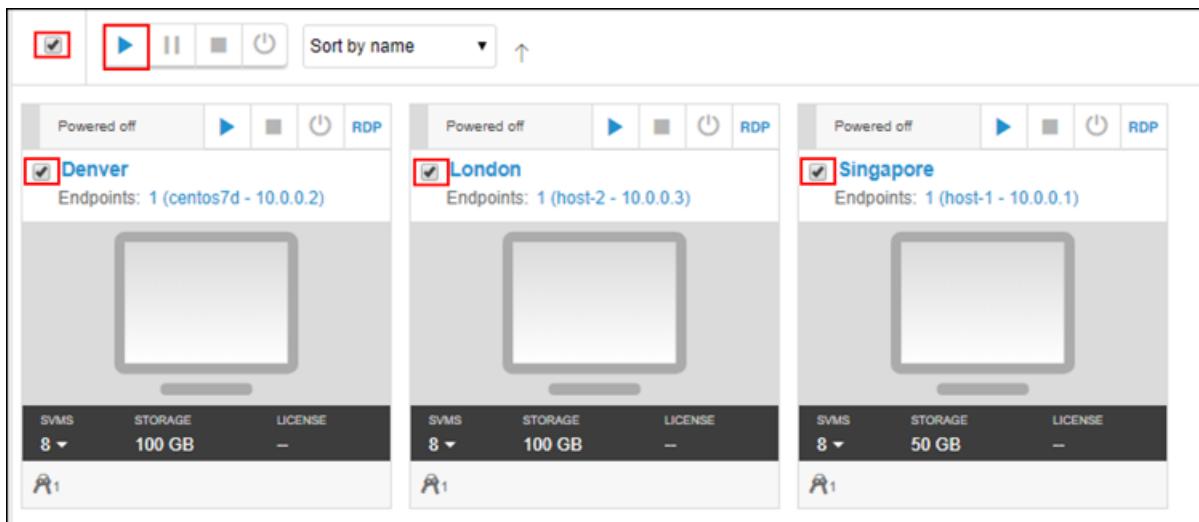
The Windows server that is provided in the lab exercises is configured to provide all required services and features to support the IBM Aspera HST Server software. Additionally, the firewall on this server is disabled. For normal deployments, you need to confirm that the systems meet the prerequisite configuration that is specified in the *IBM Aspera High-Speed Transfer Server Administration Guide*.



Reminder

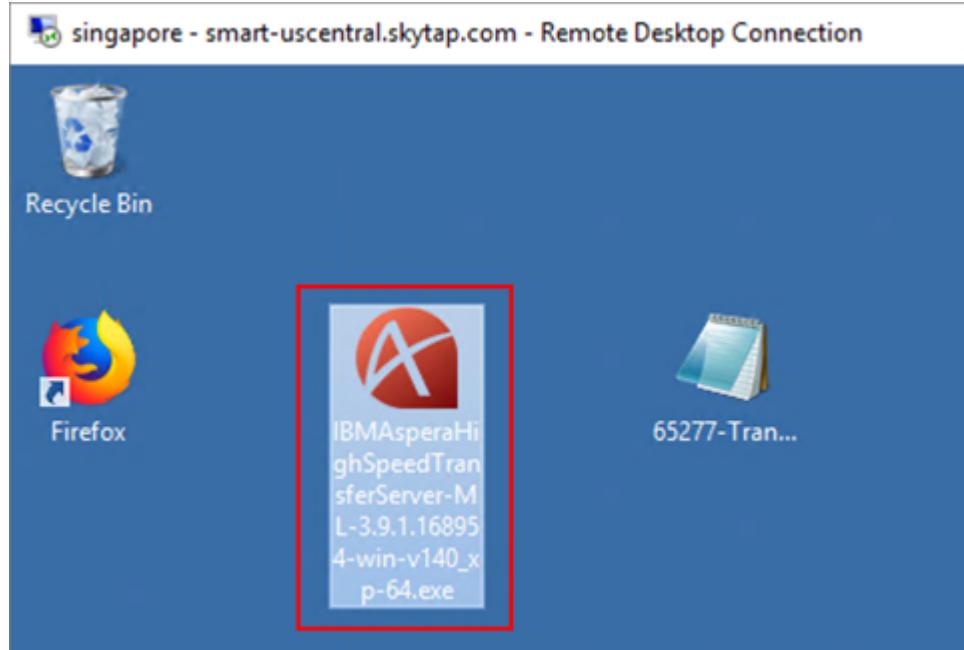
Confirm that the lab servers are active.

- 1. Power on all servers in the lab environment by clicking the Power button at the top of the opening page to start all three servers.

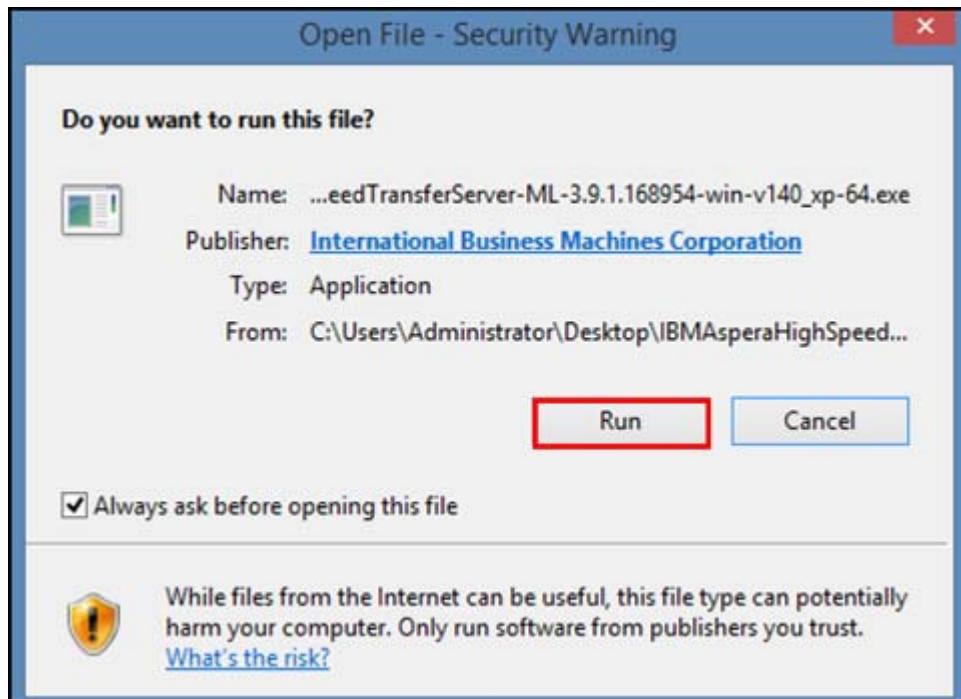


1.1. Installation on a Windows server

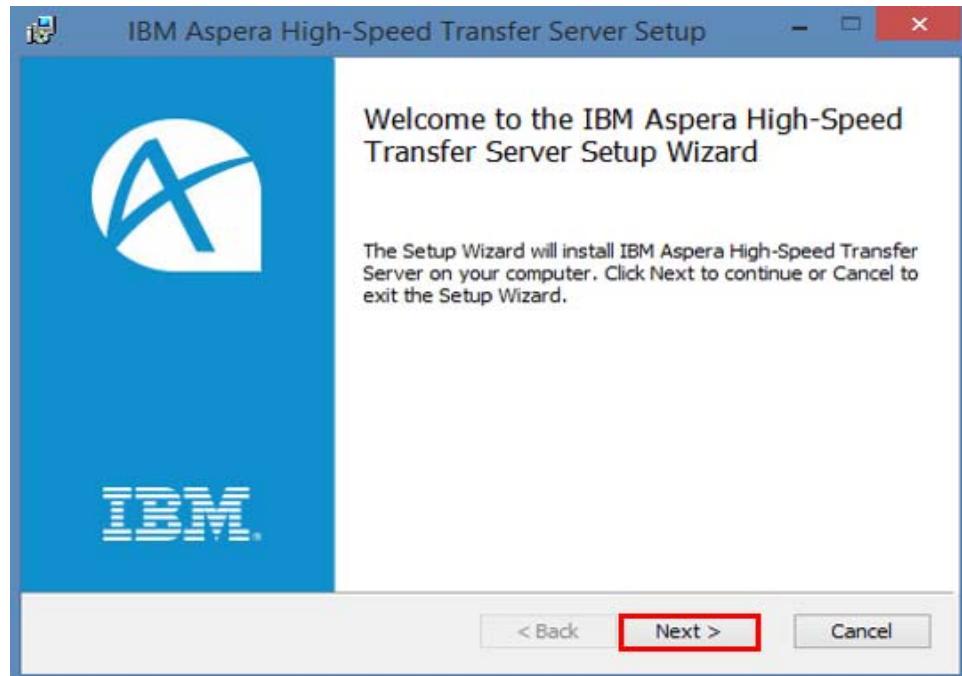
- 1. Install the Aspera software on the Singapore system.
 - a. After the status of the Singapore server changes to Running, open the RDP connection to the Singapore system.
Or, open a browser connection by clicking the Singapore server in the lab environment.
 - b. Log in to the server by using the *Administrator/passw0rd* credentials.
 - c. Locate the Aspera installer software on the Desktop and double-click it to start the IBM Aspera Transfer Server Setup Wizard.



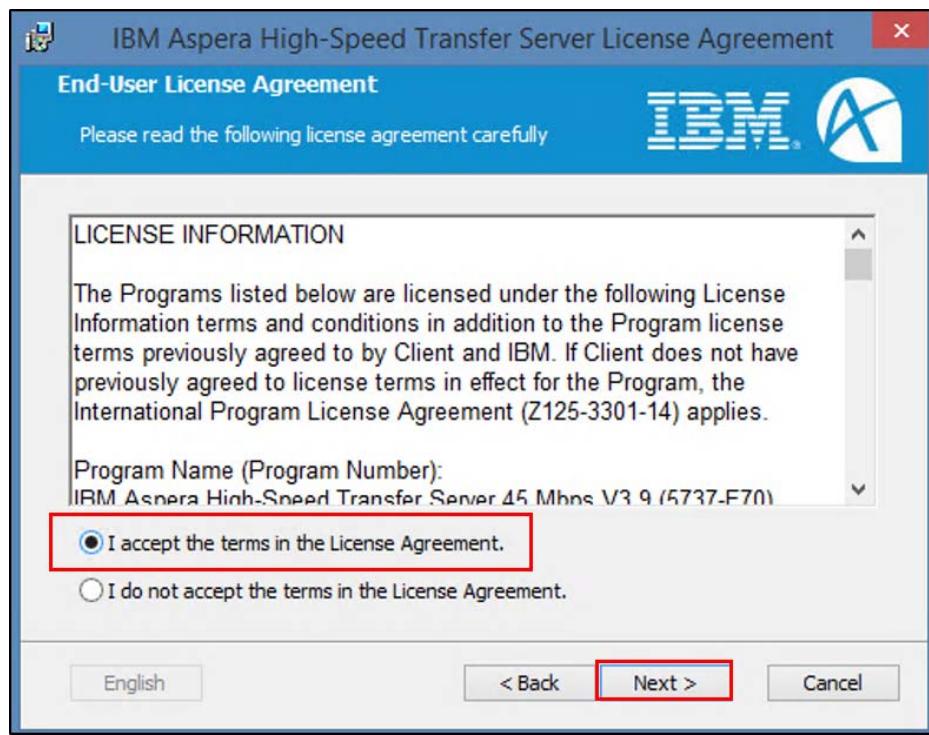
- ___ d. When the Open File - Security Warning page opens, click Run.



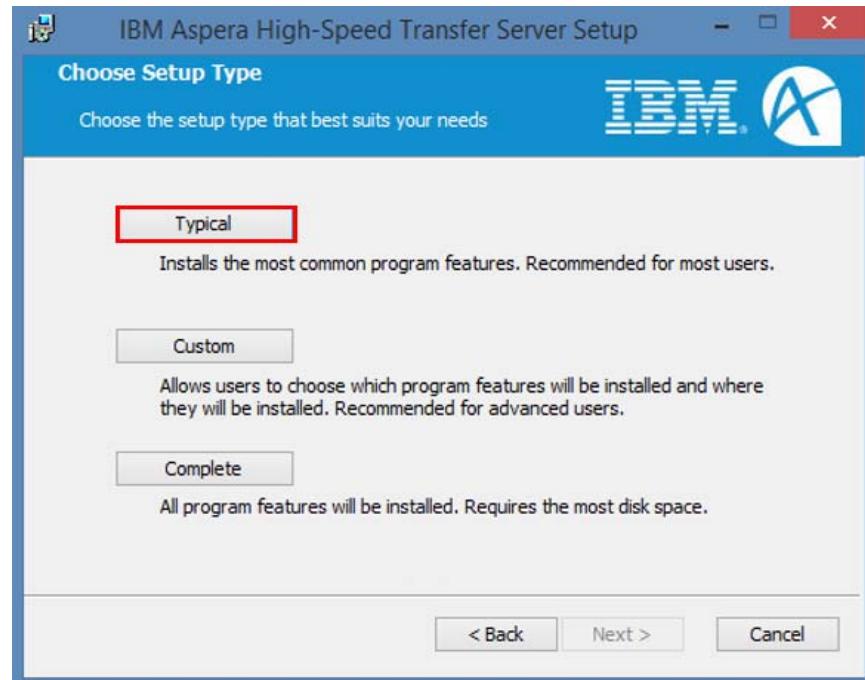
- ___ e. When the installer finishes extracting the installation files and the IBM Aspera HST Server Setup window is displayed, click Next.



- __ f. Select *I accept the terms of the License Agreement* and click Next.

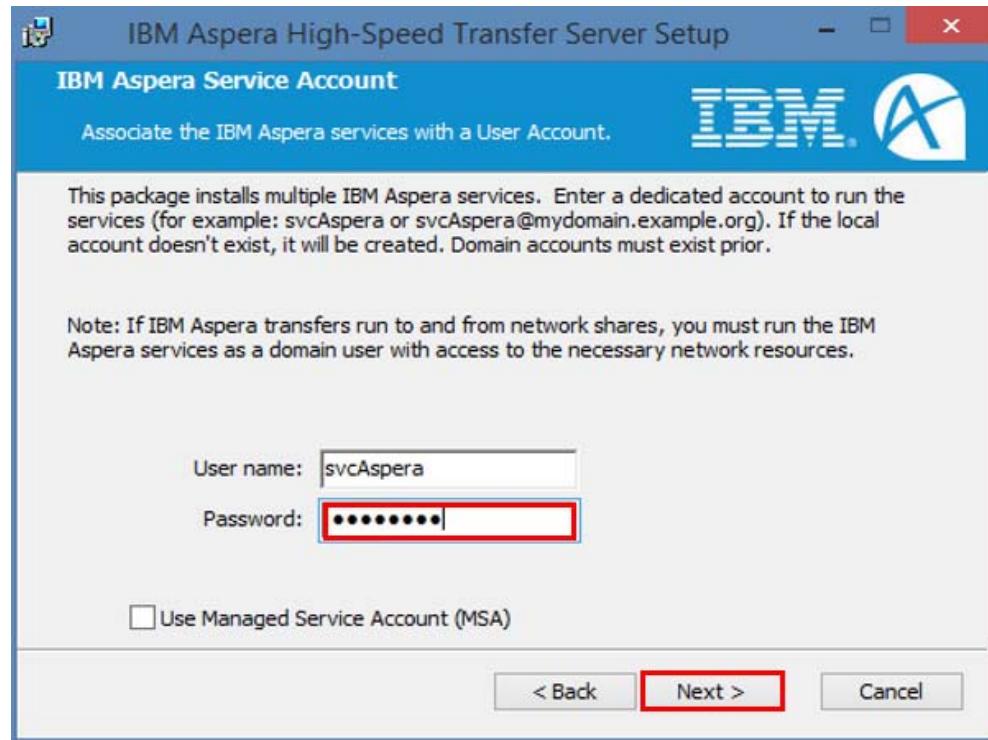


- __ g. When the Choose Setup Type screen opens, click Typical.

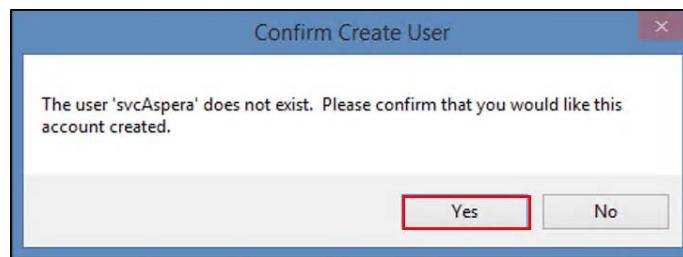
**Note**

Selecting the Complete option results in an error. A message indicates that the installation cannot continue because the server does not have the IIS role and Active Server Pages features enabled.

-
- ___ h. When prompted to create an account for managing the Aspera services, use `svcAspera` and set the password as `passw0rd` for this service account.



- ___ i. Click Next.
- ___ j. When prompted, click Yes to create the svcAspera account.

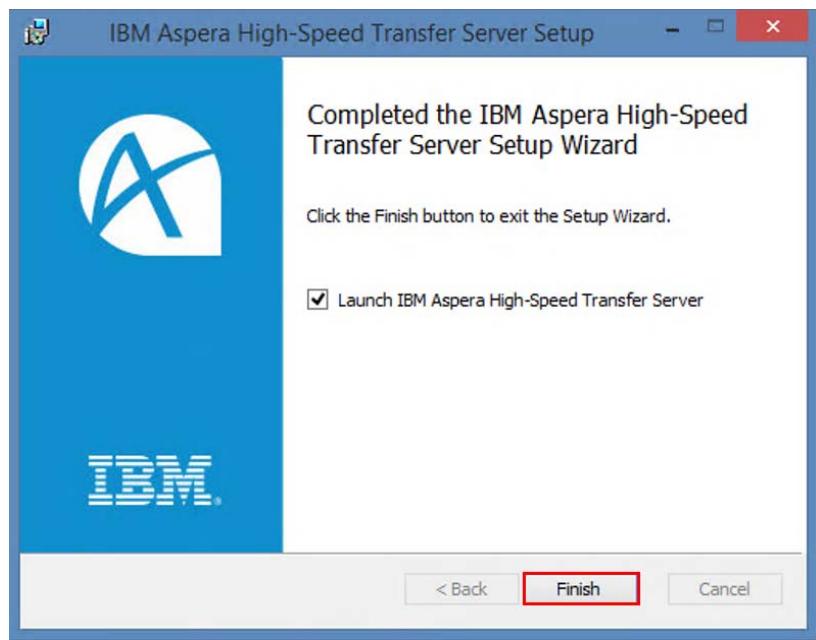


A screen opens that prompts you to confirm that you want to begin the installation.

- ___ k. Click Install.



- __ l. Keep the *Launch IBM Aspera Singapore Server* checkbox selected.
- __ m. After the installation is complete, click Finish and the Aspera GUI application is started.

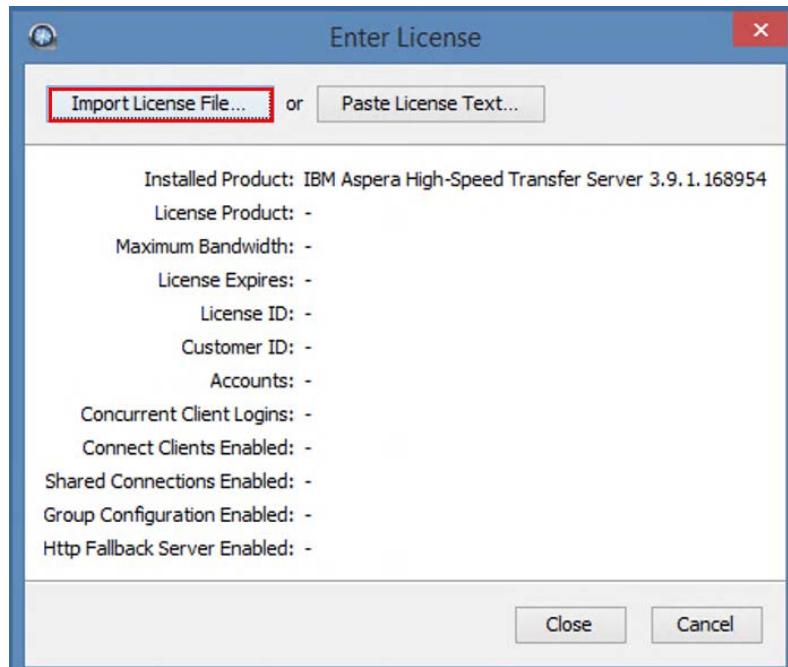


1.2. Adding the course license key

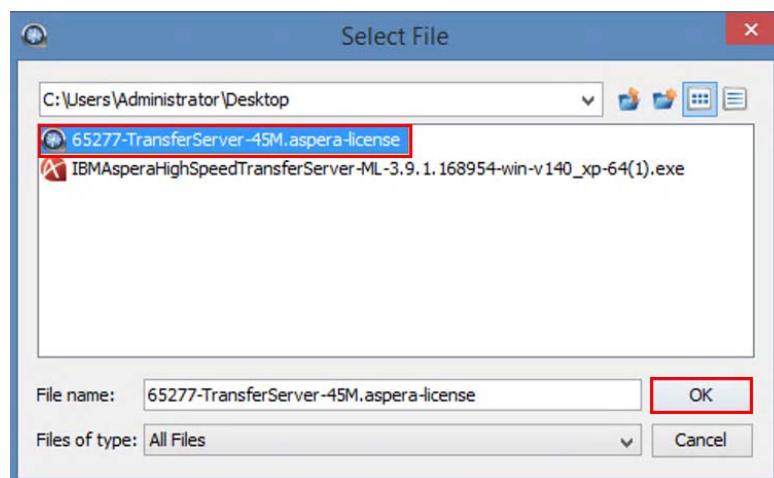
You must provide a valid license key before the software can be used. The first time the application is started, the Enter License window is opened prompting you to import or paste the license key

information.

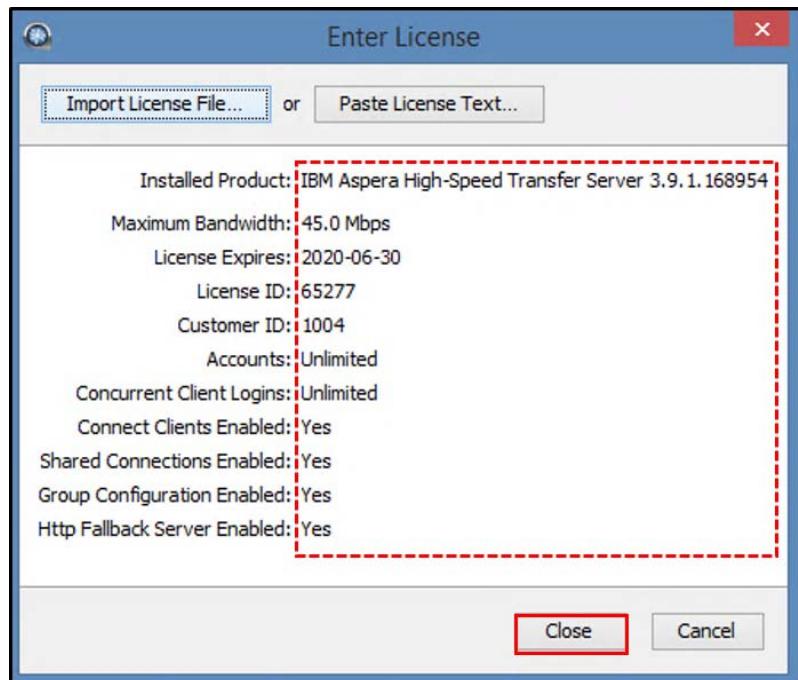
- ___ 1. Import the license key.
 - ___ a. Click Import License File, which opens a new window to enter the license file.



- ___ b. Highlight the 65277-TransferServer-45M.aspera-license file and click OK to return to the Enter License window.



After a valid license key is entered, the Enter License window displays values for the parameters that were previously blank. The license identifies the version of Aspera software, the maximum bandwidth allowed by the license, and other capabilities enabled with this particular license key.



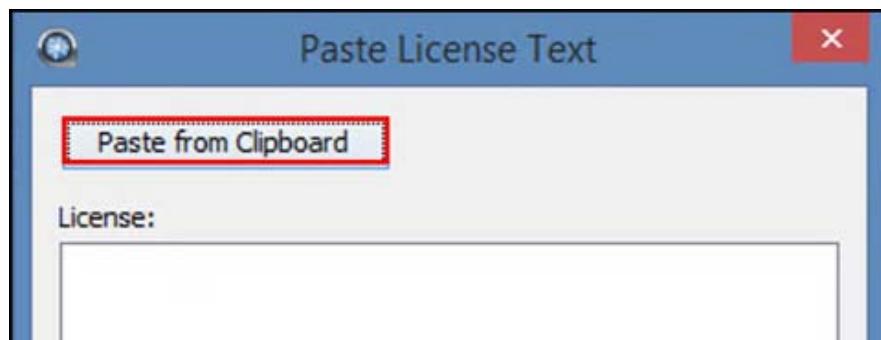
- ___ c. Click **Close**.



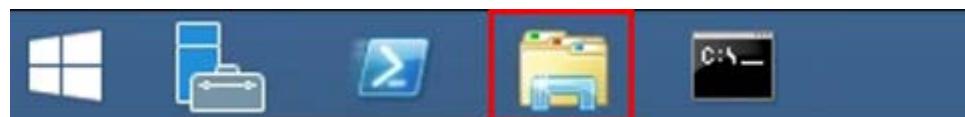
Optional

Another way to update the license is to open the license file with Notepad, copy the contents, and paste the contents into the IBM Aspera application. It is not necessary to perform this task now, as the license is configured. However, the following procedures can also be used instead of the Import License File option.

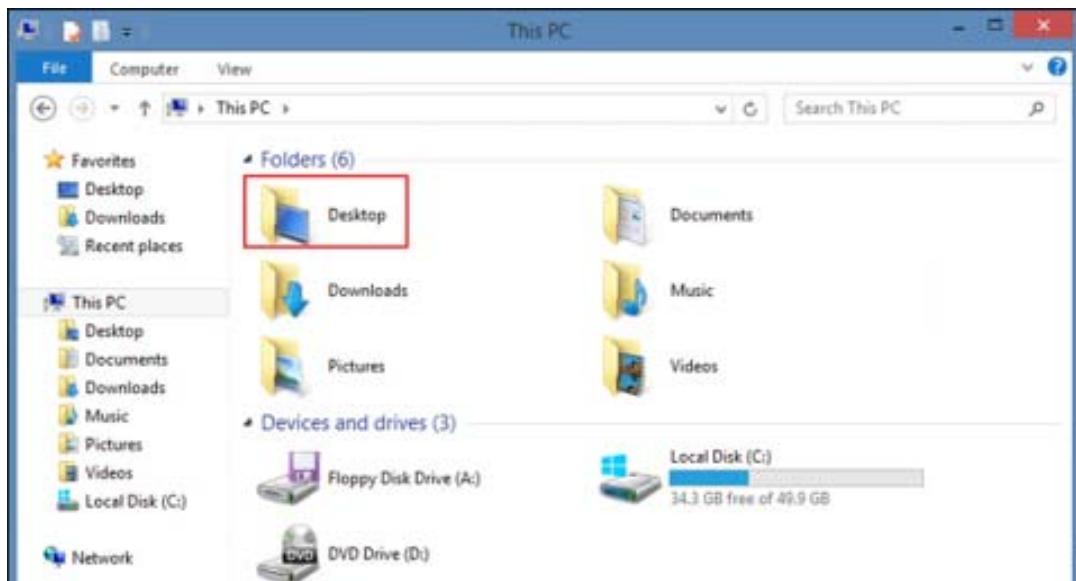
- ___ 1. Copy and paste license key content into the Enter License window.
 ___ a. When the Enter License window opens, click Paste License Text.



- ___ b. Open the Windows File Explorer.



- ___ c. Double-click Desktop.

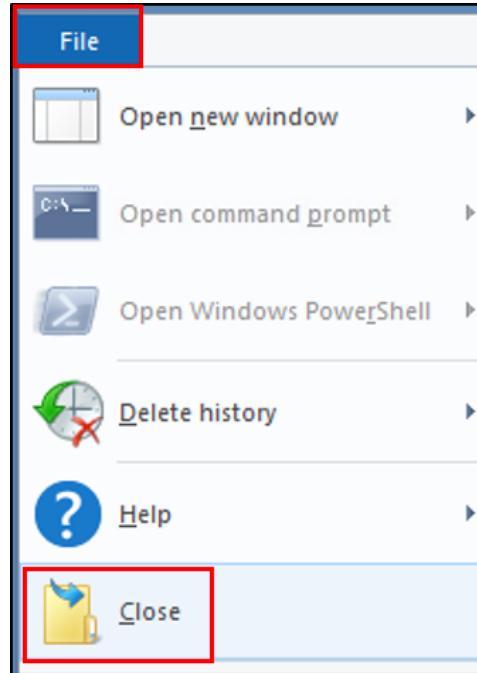


- ___ d. Double-click the *65277-TransferServer-45M.aspera-license* file to view the contents of the license key file.

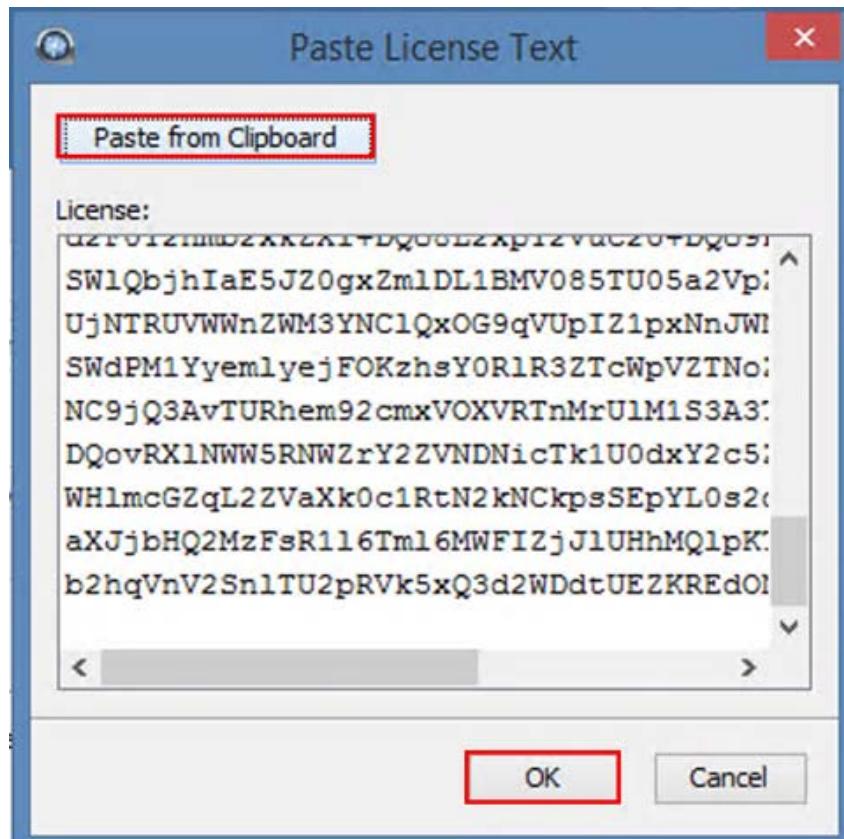
Name	Date modified	Type
<i>65277-TransferServer-45M.aspera-license</i>	8/19/2019 7:52 PM	ASPERA-LICENSE ...
<i>IBMAasperaHighSpeedTransferServer-ML...</i>	8/19/2019 7:48 PM	Application

```
PD94bWwgdmVyc2lvbj0iMS4wIiB1bmNvZGluZz0iVVRGLTgiPz4NCjx X2VuZHBvaW50c191bmFibGVkPg0KICA8ZGVza3RvcF9ndW1fZW5hYmx
```

- ___ e. Copy the contents of the file by pressing **Ctrl+A** and then **Ctrl+C**.
 ___ f. Close Notepad by clicking **File > Close** from the options presented.

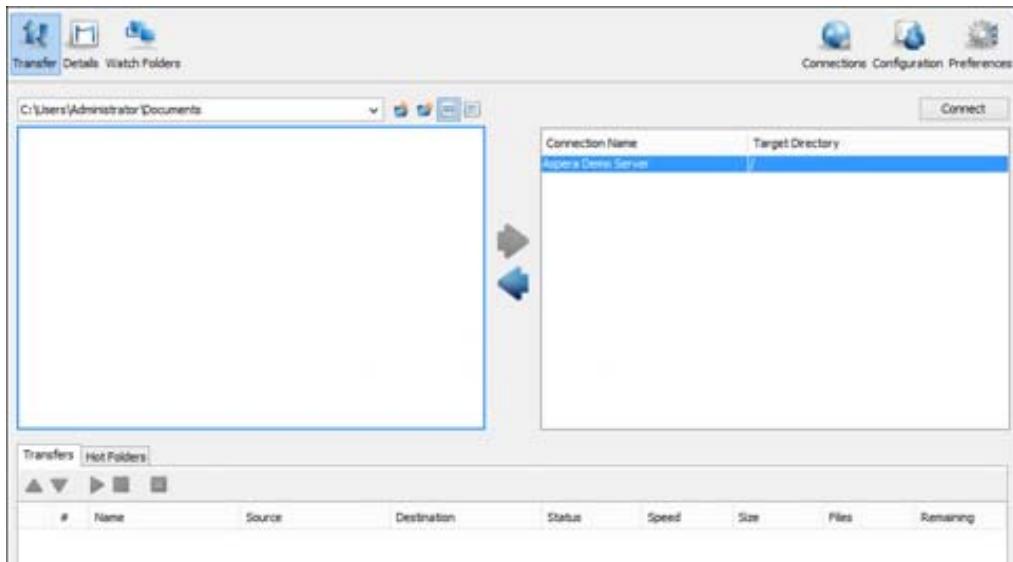
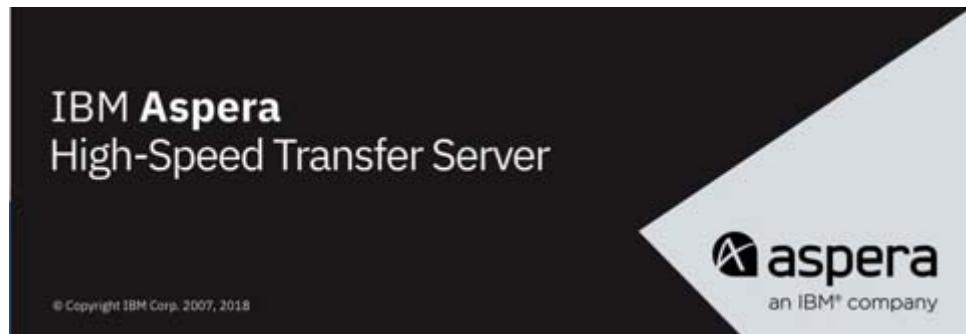


- g. In the Paste License Text window, click Paste from Clipboard to enter the license data.



- h. Click OK to save the license information and return to the Enter License window.

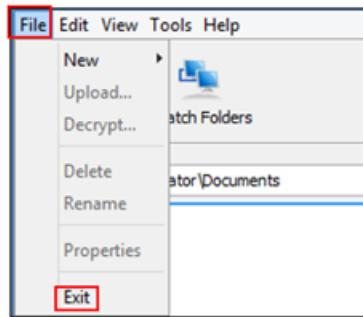
- __ i. Click Close. The Aspera application (GUI) is started.



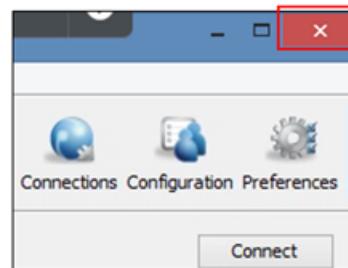
-
- __ 2. Close the GUI.

- __ a. Click File in the upper left side and select Exit.

Or, click the exit button () on the upper right corner of the GUI.



OR



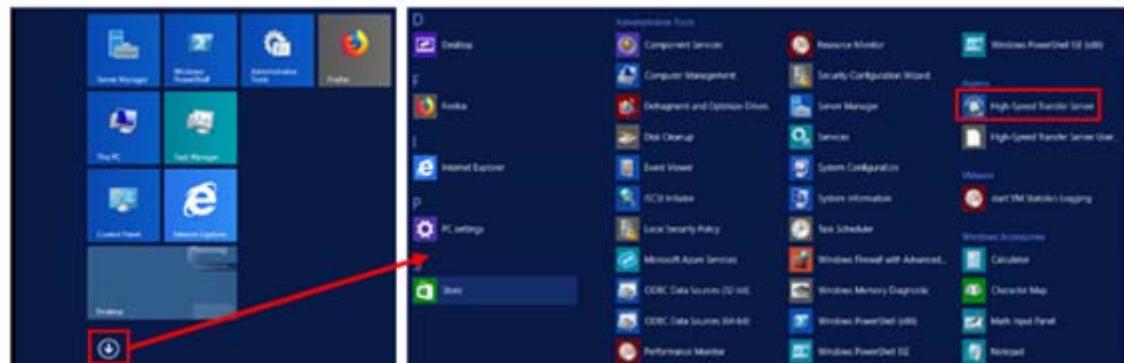
It is important to know how to start the Aspera GUI when needed. You just closed the GUI, and the next steps present how to start the GUI at any time.

1.3. Starting the Aspera GUI

The GUI can be started on a Windows server by using the Windows menu or from a command prompt.

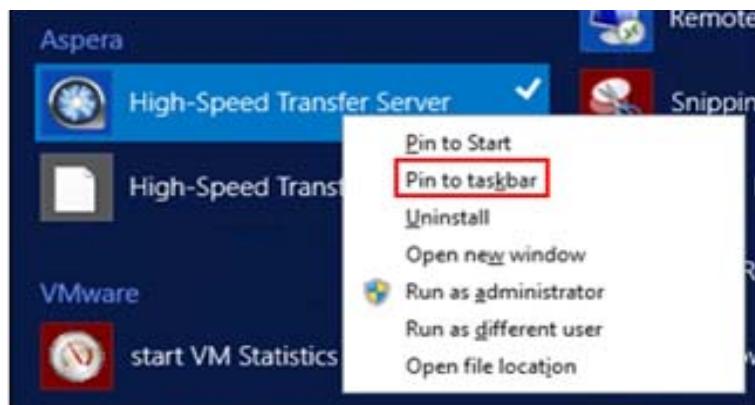
Open the GUI from the Windows menu

- 1. On the Windows Start menu, locate the icon to expand the application listing.
- 2. Click *High-Speed Transfer Server* to start the GUI.



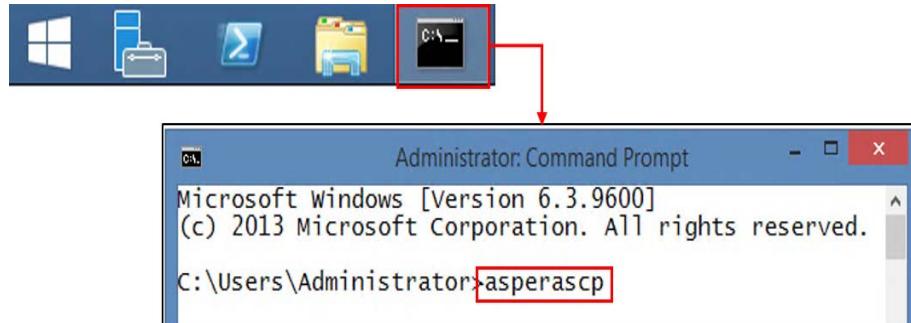
Note

You can pin the Aspera GUI application to the taskbar. Right-click *High-Speed Transfer Server* and select *Pin to taskbar*.



**Optional**

Another option for starting the Aspera GUI is to open a command prompt and running the `asperascp` command.



1.4. Accessing *IBM Aspera HST Administration Guide*

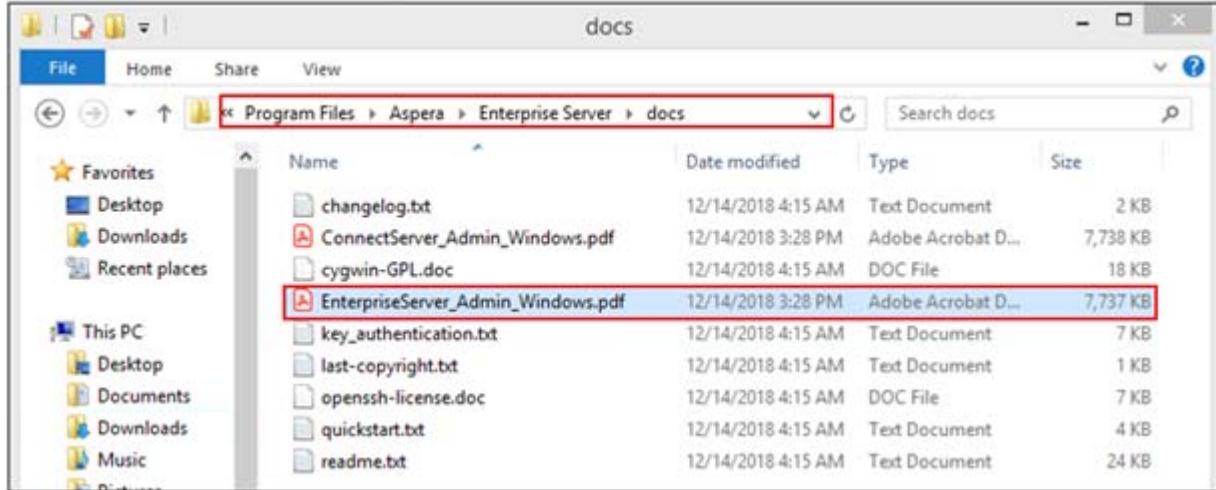
It is important to learn to use the *IBM Aspera High-Speed Transfer Server Administration Guide*. The purpose of this section is to address ways to access the *Admin Guide*, and to introduce locating information within the *Admin Guide*.

- ___ 1. Access the *Admin Guide* within the GUI.
 - ___ a. If necessary, start the Aspera GUI.
 - ___ b. Click *Help* at the top of the GUI and select the *Manual* link.



The *IBM Aspera High-Speed Transfer Server Administration Guide* opens from outside the GUI in the next steps, so it isn't necessary to do anything with the Guide now.

- ___ c. Click *File* and *Exit* to close the *Admin Guide*.
- ___ 2. Access the *Admin Guide* from File Explorer.
 - ___ a. Open the Windows File Explorer utility.
 - ___ b. Navigate to the `C:\Program_Files\Aspera\Enterprise Server\docs` directory.
 - ___ c. Double-click `EnterpriseServer_Admin_Windows.pdf`.



- ___ 3. Use the Installation and Upgrades section of the *IBM Aspera Transfer Server Administration Guide* to answer the following questions:



Questions

- ___ a. **What are the minimum requirements for installing the IBM Aspera Transfer Server?**

From Transfer Server Admin Guide – page 14

“System requirements for HST Server.

- Product-specific Aspera license file or entitlement.
- Windows 64-bit: Windows 7 with service pack 1, 8.1, 10, or Windows Server 2008 R2 with service pack 2, 2012 R2, 2016
- For usage in an Active Directory environment, you need access to a domain administrator account to install the product.
- Access to run WMI.
- For Pre- and Post-Processing (Prepost), you must install Active Perl to enable Perl scripts.
- Screen resolution 1024 x 768 or higher.”

- ___ b. **What is the purpose of the Aspera service account you created during the installation process?**

From Transfer Server Admin Guide – page 29

“The Aspera service account runs services for Aspera products, including:

- IBM Aspera Central
- OpenSSH Service (optional)
- The Aspera Node Service
- The IBM Aspera HTTPD Service
- Aspera Sync

By default, the username is svcAspera. Usernames for HST Server version 3.1.0 and later are case-sensitive. If your server is not joined to a Windows domain, a local account is all that is required to run Aspera services.”

___ c. If the Transfer Server is used with Aspera Console, what is important to remember about the Aspera service account?

From Transfer Server Admin Guide – page 31

“If you intend to use the HST Server node with Console, the svcAspera service account must be configured as a transfer user. If these products were installed by upgrading from a previous installation, a transfer user corresponding to the service account is created automatically. However, if you are performing a ‘new installation (not an upgrade from a previous installation), only the service account is created, not the corresponding transfer user. In this case, create the transfer user manually by using the HST Server GUI.”

___ d. What is the recommended configuration of the standard TCP port for SSH?

From Transfer Server Admin Guide – page 34

“Important: Aspera recommends running the SSH server on a non-default port to ensure that your server remains secure from SSH port scan attacks. Allow inbound SSH connections on TCP/33001, and disallow inbound connections on TCP/22) to ensure that your server remains secure from SSH port scan attacks.”

“If you have a customer base that uses TCP/22 then you can allow inbound connections on both ports.”

___ e. Why would you need to have a range of ports open in the server firewall?

From Transfer Server Admin Guide – page 34

“The Windows operating system does not allow the Aspera FASP protocol to reuse the same UDP port for multiple connections. Thus, if you have multiple concurrent clients and your Aspera server runs on Windows, then you must allow inbound connections on a range of UDP ports. The range of ports is equal to the maximum number of concurrent FASP transfers expected. Open these UDP ports incrementally from the base port, which is UDP/33001, by default. For example, to allow 10 concurrent FASP transfers, allow inbound traffic from UDP/33001 to UDP/33010.”

___ f. Where is the sshd_config file located when installed as part of the Aspera software installation?

From Transfer Server Admin Guide – page 35

“Open the SSH configuration file.

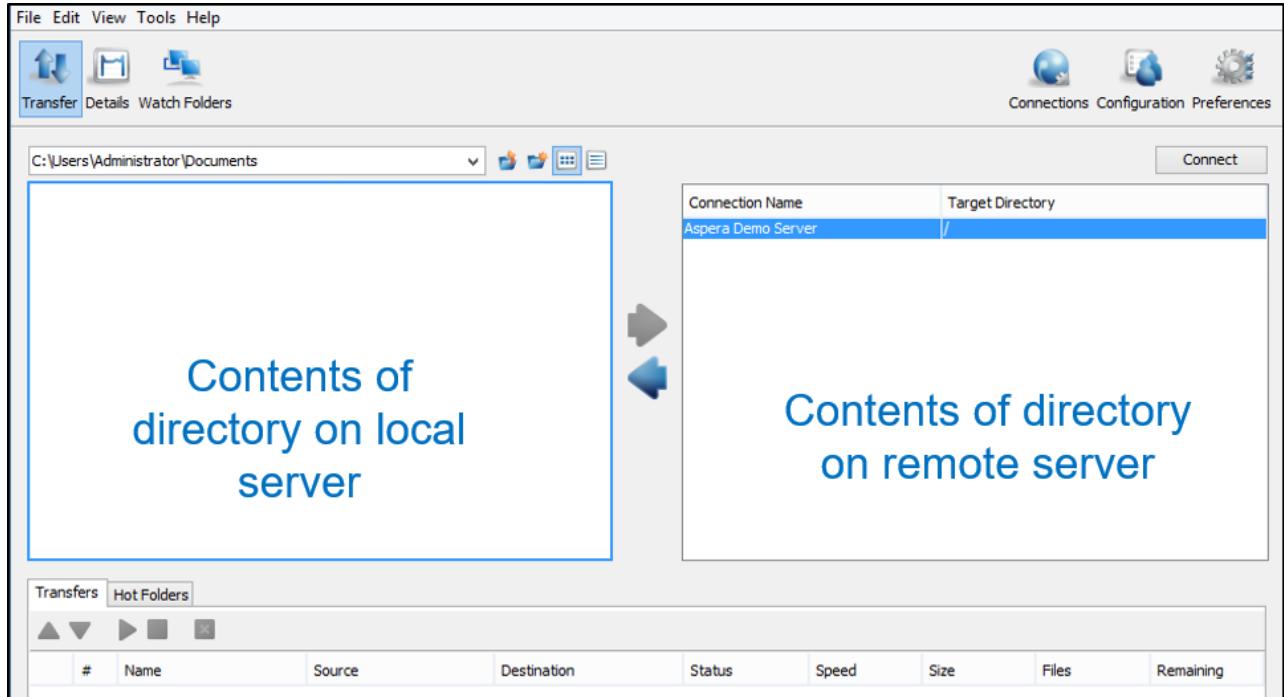
Windows Server - C:\Program Files\Aspera\Enterprise Server\etc\sshd_config”

- ___ 4. Close the IBM Aspera Transfer Server Administration Guide and return to the main page of the Aspera GUI.
 - ___ a. Click File at the upper left side of the Admin Guide window and select Exit Application.
 - ___ b. If still open, close the Files Explorer window.

1.5. Managing files within the Aspera GUI

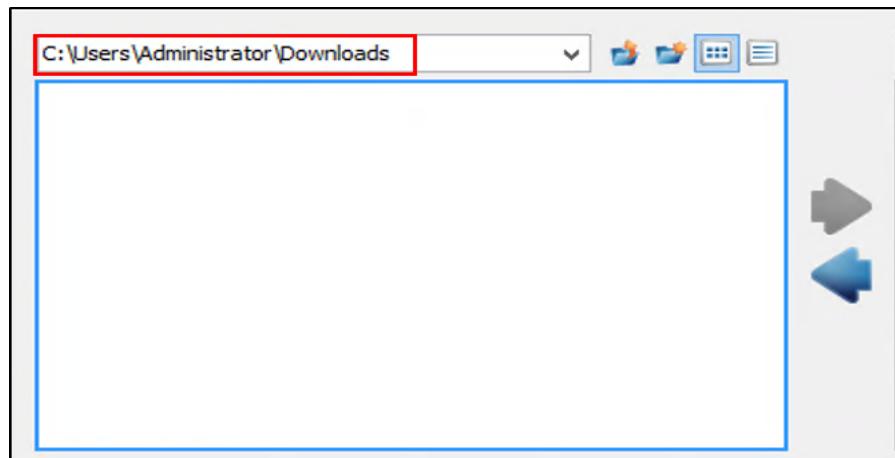
The Aspera GUI enables high-speed file transfer, but also the ability to manipulate files on both the

local system and on a remote IBM Aspera Transfer Server. The following tasks demonstrate how to use the Aspera GUI when working with both local and remote files. Each side of the GUI shows the contents of a directory. The screen on the left side of the page shows the local directory. The screen on the right side of the page shows the contents of the remote directory.

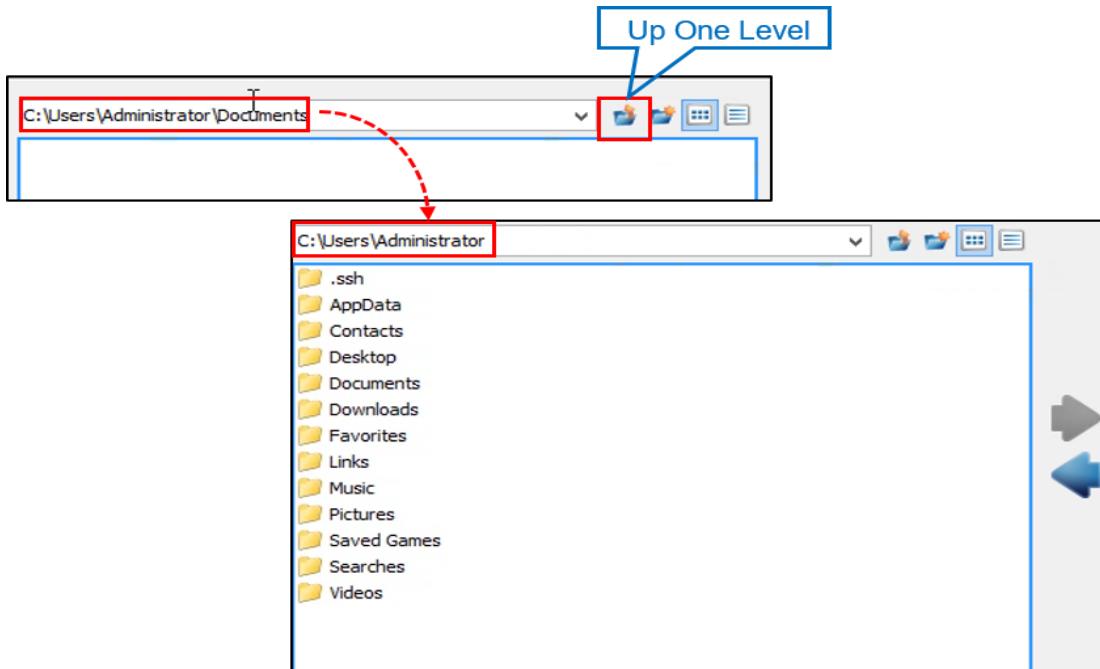


Setting the local directory

The GUI shows the contents of the local directory (the directory you are currently using on the local system) on the left side of the screen. On the main page (Transfer page) of the Aspera GUI, notice the field below the Transfer button on the left side of the screen. This pane displays the local directory that is used when files are transferred to or from the remote server.



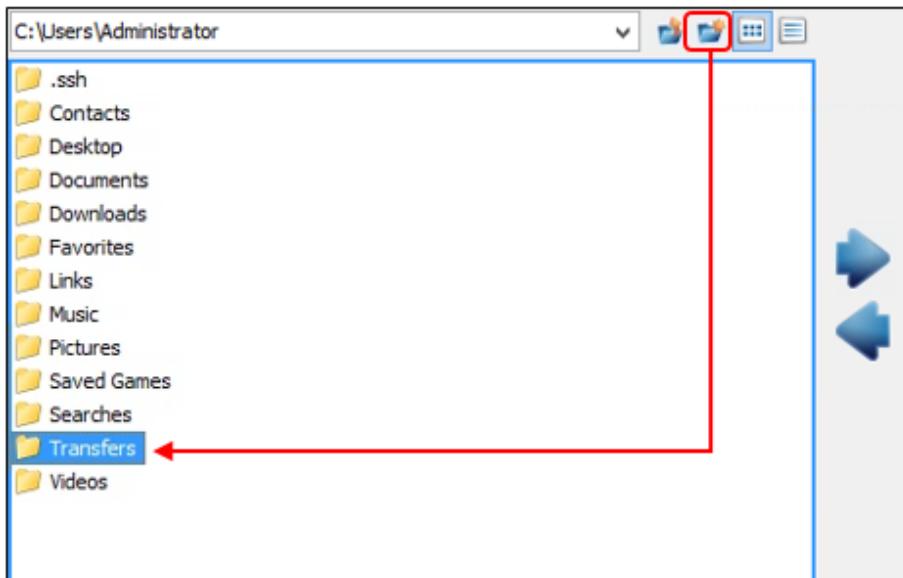
- __ 1. Change the local directory to C:\Users\Administrator.
 - __ a. Click the *Up One Level* icon to move up one level.



Create a directory within the GUI

The Aspera GUI allows new directories to be created on both the local and remote systems. Creating directories requires the user to have proper permissions, which is not an issue on the local system, but can be a factor on remote systems.

- ___ 2. Create a directory called Transfers inside the C:\Users\Administrator directory on the local system.
- ___ a. Click Create New Folder, which is next to the Up One Level icon.



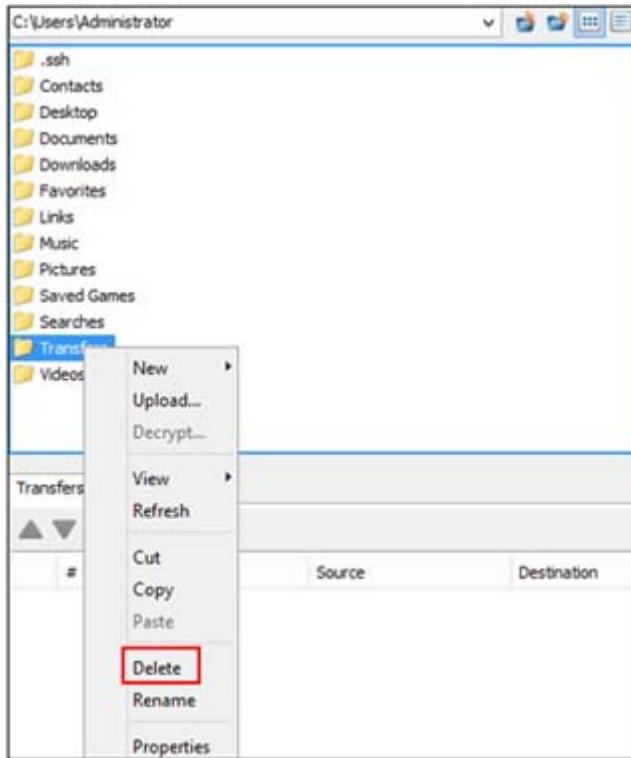
- ___ b. Set the new folder name to Transfers.

Deleting files and directories within the GUI

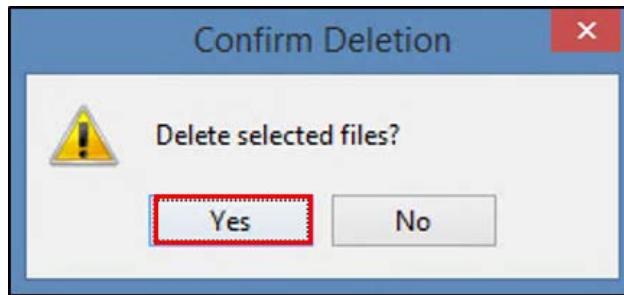
The Aspera GUI also supports file and directory management on both local and remote systems,

including deletion. The following tasks demonstrate the process of deleting a directory, but file deletion is handled the same.

- ___ 1. Delete the Transfers directory on the local system.
 - ___ a. Highlight the Transfers directory.
 - ___ b. Use the right mouse button to open the File Management menu.
 - ___ c. Select Delete to remove the directory.



- ___ d. Click Yes to confirm.



Optional

You can also use the <Delete> key on the keyboard instead of using the File Management menu to delete files in the Aspera GUI.

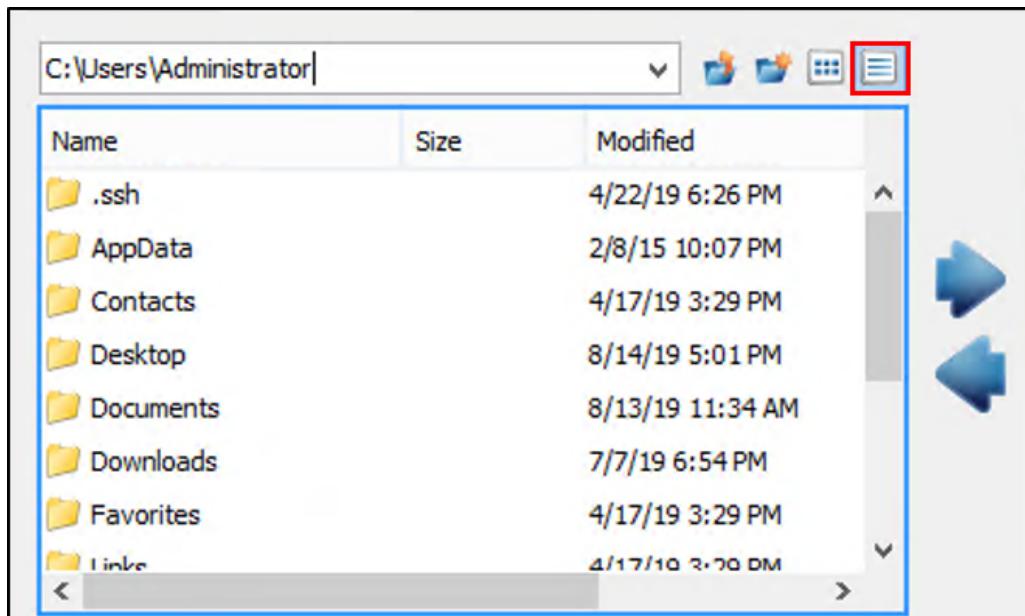
- ___ 1. Highlight the selected file or directory and press the <Delete> key.

- ___ 2. Click Yes to confirm.

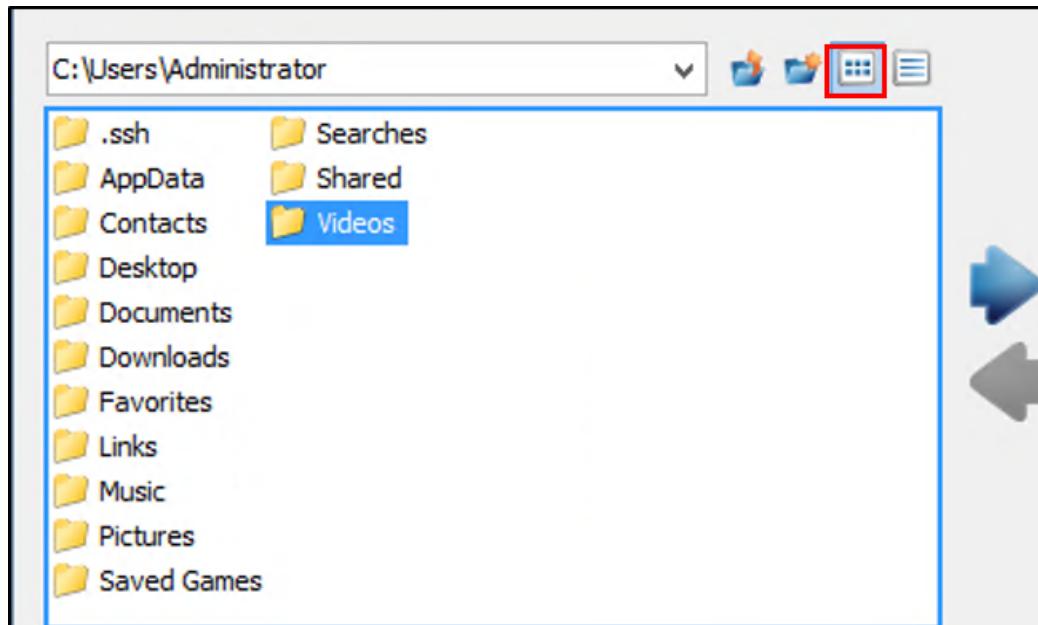
Listing file details within the GUI

If you need more details about the files themselves, you can change the way files are listed. The default view shows simple file names. You can change to a long listing that includes file size, when the file was modified, and the file's attributes.

- ___ 1. Click Details found to the right of the local directory name to change the file information displayed.



- ___ 2. Click List (located to the left of the Details icon) to return to a simple view of files.



1.6. Testing the ability to transfer files

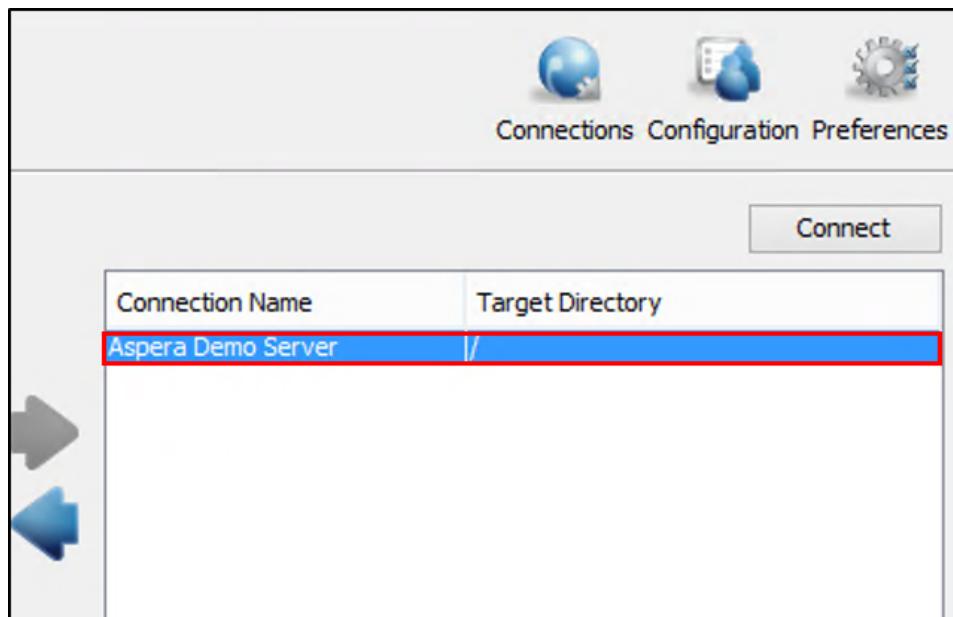
IBM Aspera provides a system that can be used to verify the ability to transfer files of a known size called the Aspera Demo Server. The following tasks use the Aspera Demo Server to verify that your Aspera Installation is functional. Additionally, some tasks demonstrate how to transfer and manage files in the local and remote directories.



Attention

The goal for these tasks is to learn to use the GUI. It is not a normal practice to use the Administrator login and directories for production transfers. However, for this lab exercise, the Administrator account is used to avoid constant user login and logout.

- 1. Double-click **Aspera Demo Server** that is shown in the **Connection** window to connect to Aspera Demo Server.

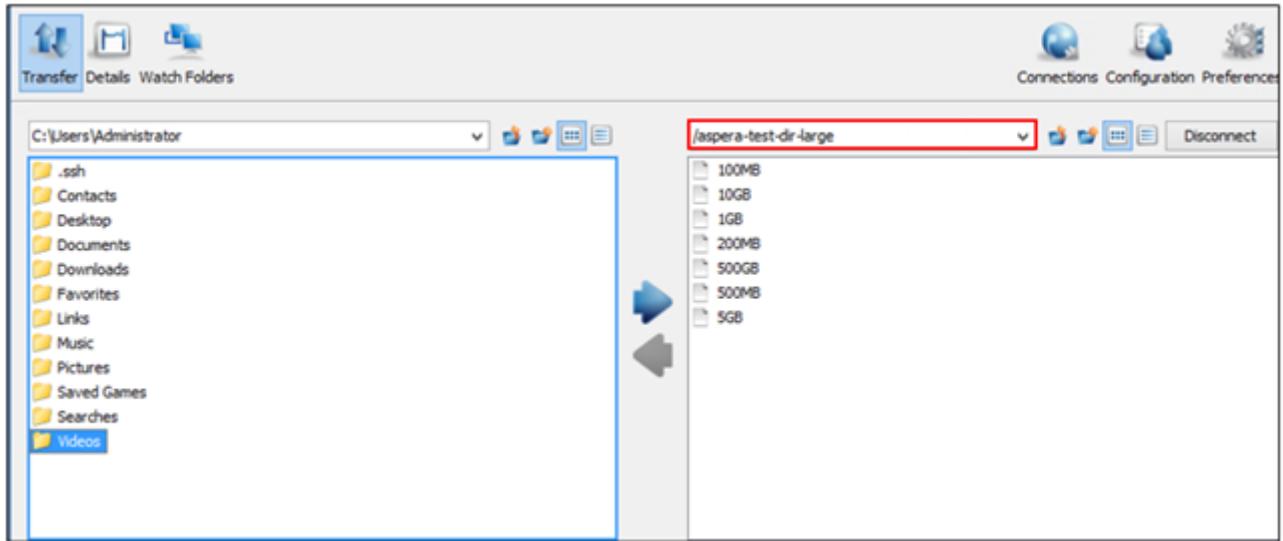


After the connection is established, the directory that is displayed on right side of the page lists the contents of the directory on the remote server. The example that is shown in the preceding graphic shows the contents of the / directory of the Aspera Demo Server (remote server).



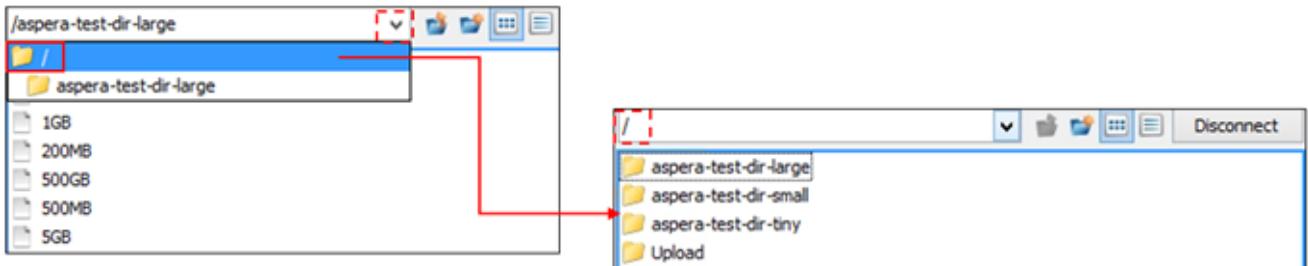
Note

The Aspera Demo Server is used by many people, and the last accessed directory is displayed when you connect. The specific directory that is displayed depends upon the last directory that was accessed on that server. So the actual directory you first see might vary from the directory that is shown in the following figure.



Set the remote and local directories

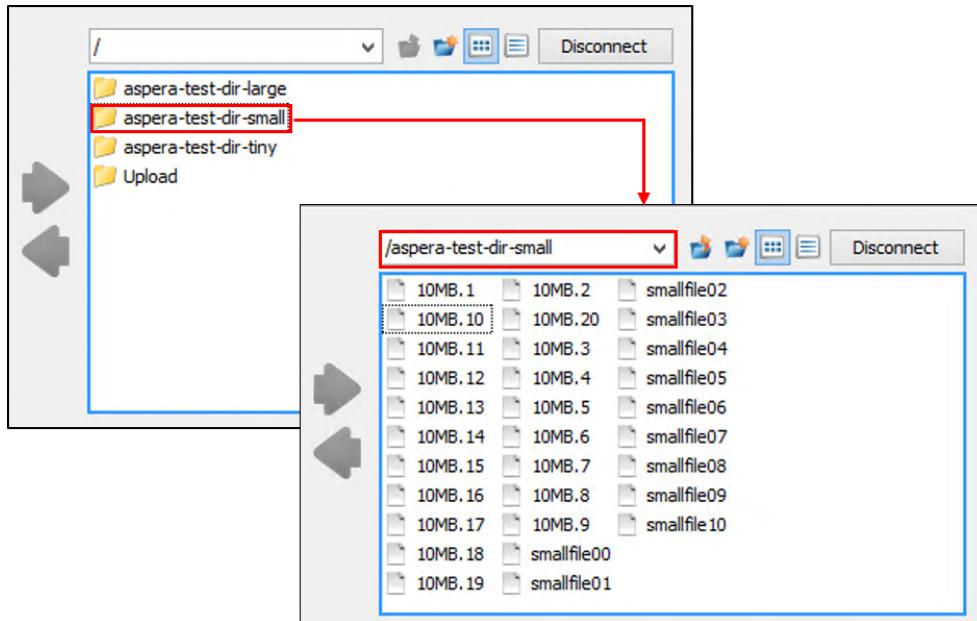
- ___ 1. Change the remote_directory (the remote directory is the one associated with the Aspera Demo Server on the right side of the screen) to /aspera-test-dir-small.
- ___ a. Click Up One Level icon () located immediately to the right of the remote directory name to change the remote directory to /.



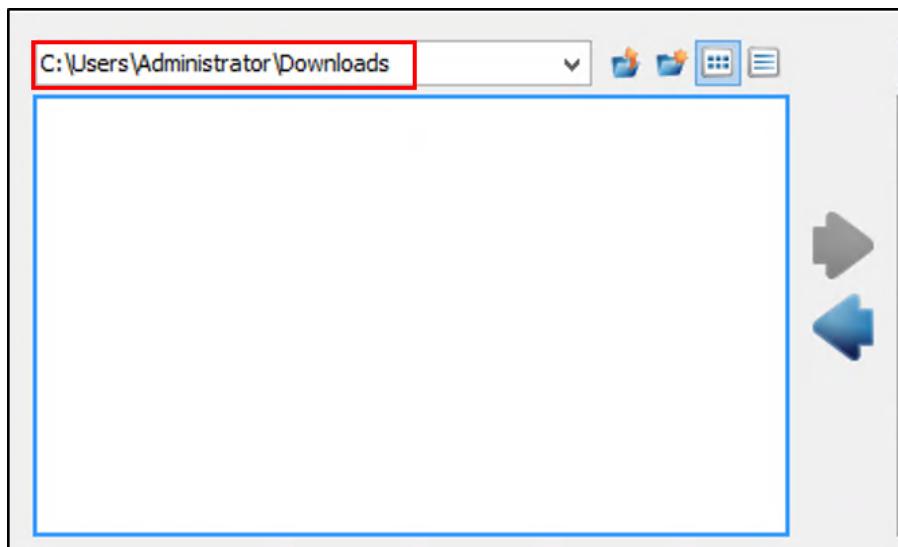
Reminder

When you first connect to the Aspera Demo Server, it displays the contents of the last directory that was used by any number of people. So, remember that you can go to the / directory (as shown in the preceding graphic) where you can select the directory that you want to use.

-
- ___ b. Double-click the /aspera-test-dir-small directory on the remote server (Aspera Demo Server) to set the remote directory. The files in that directory are displayed.

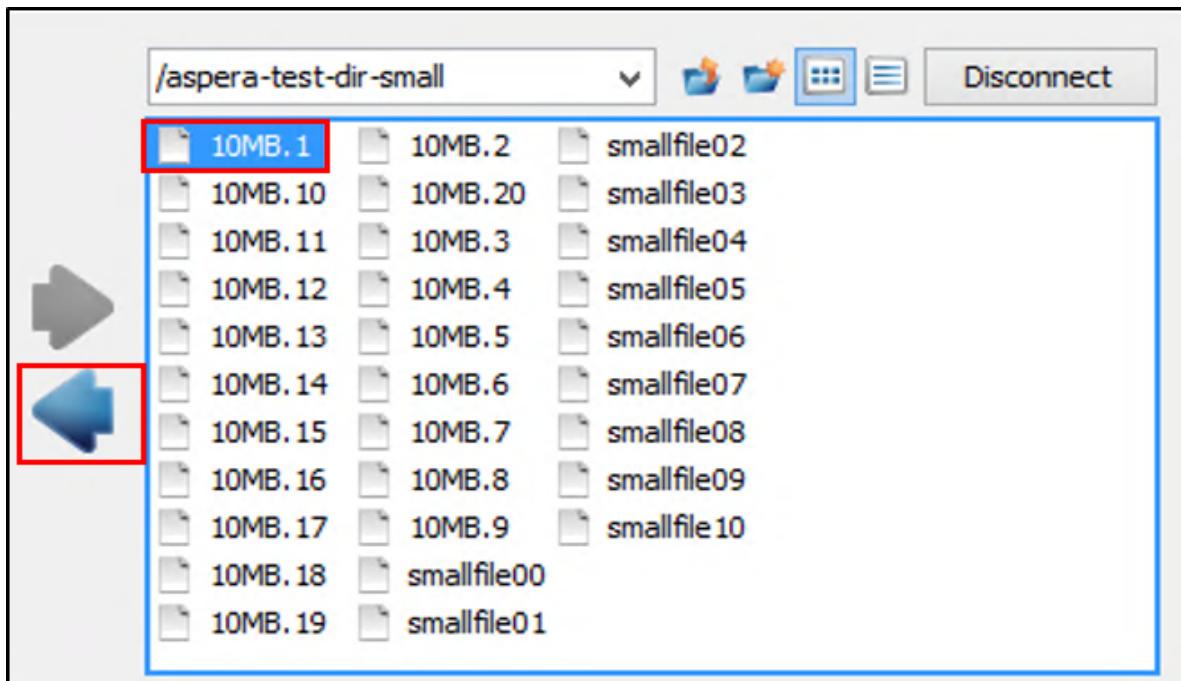


- ___ 2. Set the local directory (the one on the local server system on the left side of the screen) to C:\Users\Administrator\Downloads.



Transferring files

- ___ 1. Download the 10MB.1 file.
 - ___ a. Highlight the 10MB.1 file on the Aspera Demo Server
 - ___ b. Click the download arrow icon in the middle of the window to transfer the file from the Aspera demo server to your local system.



- ___ 2. Answer the following questions by using the information shown in Transfers report at the bottom of the GUI. These questions are designed to acquaint you with the information provided as part of FASP transfers.

	#	Name	Source	Destination	Status	Speed	Size	Files
1	10MB.1	Aspera Demo Server - 10...	This Computer - Documents	Complete	41.9 Mbps	10 MB	1 / 1	



Questions

Look at the bottom section of the GUI, which indicates the status and history of transfers. Confirm that the Transfers tab is selected and notice the statistical information that is provided about the file transfer. The information that is provided in this Transfer report provides details about what is happening or already happened when the transfer was run. Answer the following questions by using the data in information fields of the Transfer report for the transfer you initiated.

- ___ a. What is the name of the downloaded file?

Look in the Name field of the transfer in the Transfer report:

Name
10MB.1

- ___ b. **What was the average transfer rate for this download?**

Look in the Speed field of the transfer in the Transfer report:

Speed
41.9 Mbps

c. What time did the transfer complete?

Unable to tell from the information in the Transfer report.

d. What was the average packet loss during the transfer?

Unable to tell from the information in the Transfer report.

e. How long did the transfer take to complete?

Unable to tell from the information in the Transfer report.

f. Was encryption used?

Unable to tell from the information in the Transfer report.

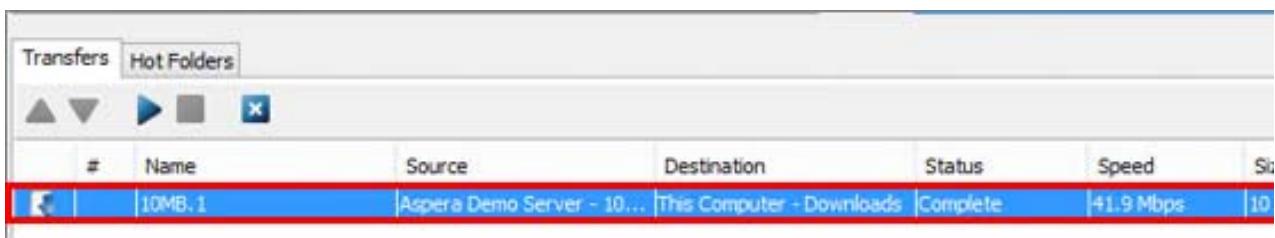
g. If so, what was the AES encryption value?

Unable to tell from the information in the Transfer report.

Were you able to answer all the questions by using the data provided on the bottom of the screen?

Not all the information is shown on the Transfer report. However, the information is available by using the Details link at the top of the GUI towards the left side of the screen.

3. Highlight the 10MB.1 Transfer report for the file you transferred.



#	Name	Source	Destination	Status	Speed	Size
1	10MB.1	Aspera Demo Server - 10...	This Computer - Downloads	Complete	41.9 Mbps	10

4. Click Details near the upper left corner of the GUI.

Transfer **Details** **Watch Folders**

10MB.1

Details **Files**

Status
Complete
Finished at 10:33 AM

Statistics
Size: 10 MB
Files: 1 / 1
Average Speed: 41.9 Mbps
Elapsed: 3s (started at 10:33 AM)
RTT Delay: 38 ms
Average Loss: 0 %

Transfer Information
Source: Aspera Demo Server

- ___ a. Use the information in the Details page to answer the questions you were not able to answer before.

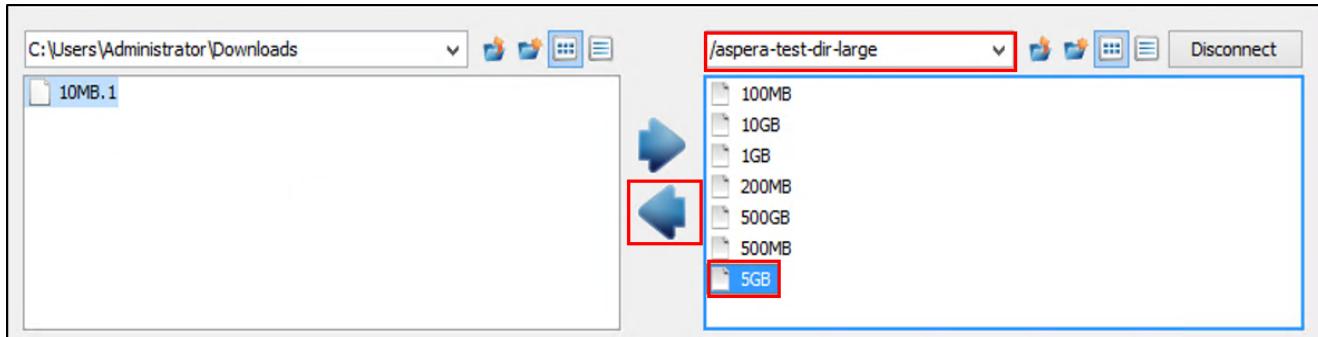
The scroll bar at the right side of the Details window can be used to view the rest of the information about the transfer.

- ___ b. Click the Files tab in the Details page to see name of all files in the transfer session.
- ___ 5. Click Transfer (located next to the Details icon) to return to the main Transfer page.

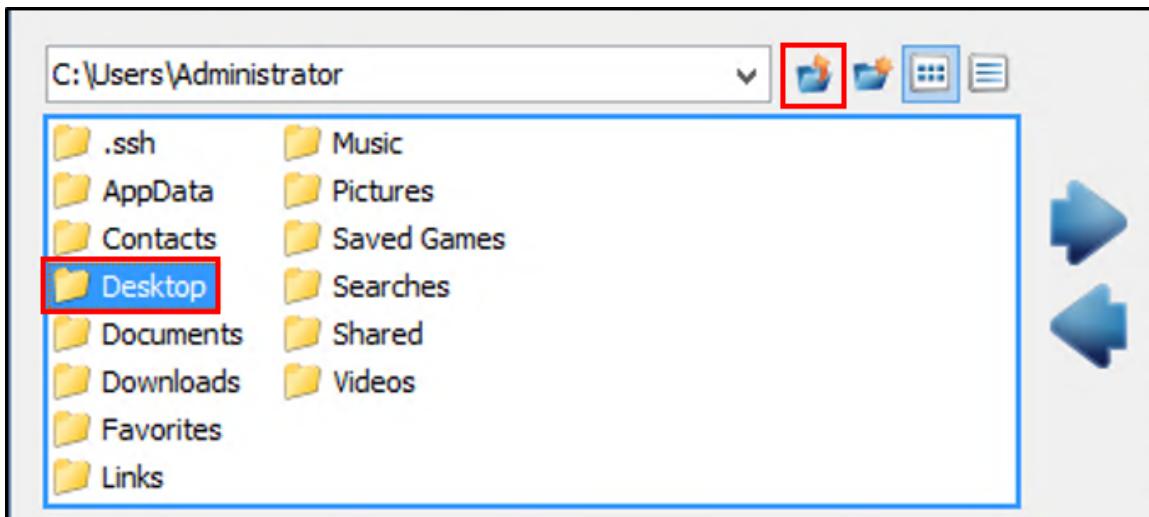
Resuming an interrupted transfer

The next task is designed to demonstrate how the .aspx file is used to resume transfers from the point where they were disrupted.

- ___ 1. Start a download of the 5GB file from the Aspera Demo Server, then pause and restart it to see the effect of the .aspx file.
 - ___ a. Change the remote directory on the Aspera demo server to /aspera-test-dir-large.
 - ___ b. Highlight the 5GB file and click the arrow in the middle of the page to download it to your local system.



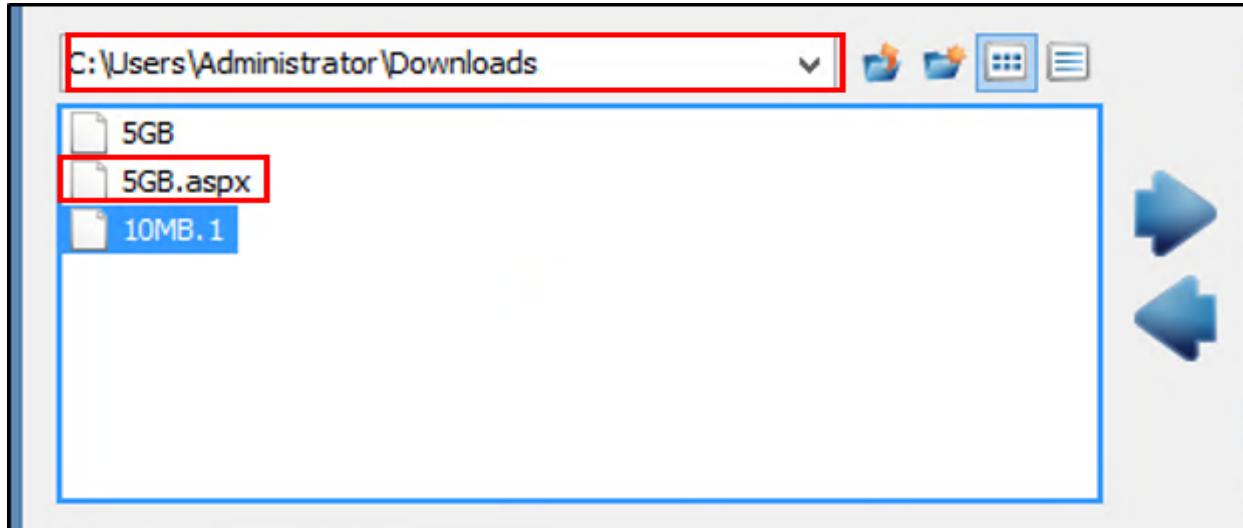
- ___ c. While the transfer is in progress, click the Up One Level icon of the local directory and select Desktop.



- ___ d. Use the Up One Level icon to change the local directory again to go back to the C:\Users\Administrator\Downloads directory.

This action updates the display to include the current file transfer of the 5GB file.

- ___ e. Notice the listing of the C:\Users\Administrator\Documents directory now shows the original 10MB.1 file, the 5GB file, and a 5GB.apx file.



Questions

What is the purpose of the 5GB.aspx file that appears in the directory?

The .aspx file stores the last successfully transferred bytes of a transfer session. If the transfer is interrupted and restarted later, the .aspx file is used to determine where Aspera should start the retransmission.

- ___ f. While the transfer is in process, highlight the **5GB** transfer in the Transfer report section of the GUI.

Transfers						
#	Name	Source	Destination	Status	Speed	Size
1	10MB.1	Aspera Demo Server - 10...	This Computer - Downloads	Complete	41.9 Mbps	10 M
1	5GB	Aspera Demo Server - 5GB	This Computer - Downloads	Green	43.8 Mbps	1024 M

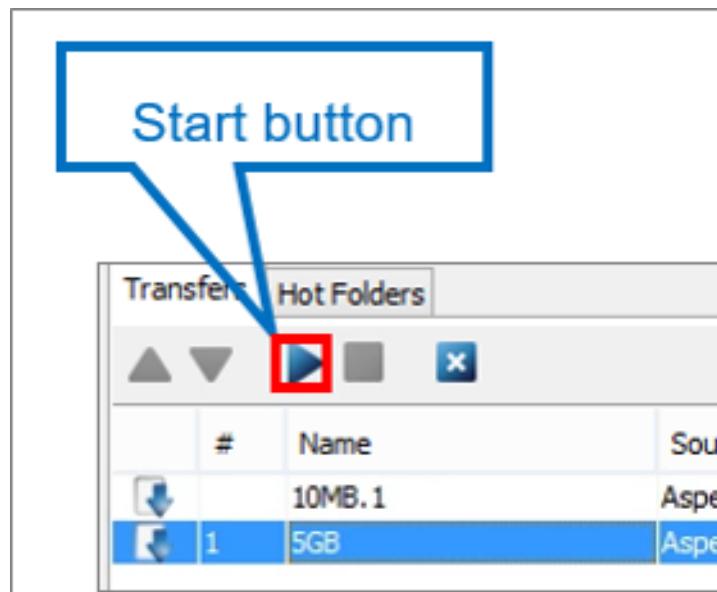
- ___ g. Click **Stop** to pause the transfer of the **5GB** file.

Transfers						
#	Name	Source	Destination	Status	Speed	Size
1	10MB.1	Aspera Demo Server - 10...	This Computer - Downloads	Complete	41.9 M	10 M
1	5GB	Aspera Demo Server - 5GB	This Computer - Downloads	Stopped	43.6 M	1024 M

Notice that the Status of the transfer now indicates that it is Stopped. Also, take note of the Size field. The following example indicates that 857 MB of the total 5120 MB were successfully transferred when the process was stopped.

	Status	Speed	Size	Files
wnloads	Complete	41.9 Mbps	10 MB	1 / 1
wnloads	Stopped	43.6 Mbps	857 / 5120 MB	0 / 1

- ___ h. Click **Start** to resume the transfer.



The transfer is resumed, as indicated in the Status field, which now shows as active.

Source	Destination	Status	Speed	Size	Files	Remaining
Aspera Demo Server - 10...	This Computer - Downloads	Complete	41.9 Mbps	10 MB	1 / 1	-
Aspera Demo Server - 5GB	This Computer - Downloads	Active	43.7 Mbps	948 / 5120 MB	0 / 1	13m 21s

- ___ i. Look at the Size field and compare the value that is shown with the value shown when you stopped the transfer.

In the following example, the number of successfully transferred megabytes shows a value of 948 MB, which is near the 857 MB shown when the transfer was stopped. The slight difference is due to the time it took to capture the screen when the transfer was resumed.

	Status	Speed	Size	File
ads	Complete	41.9 Mbps	10 MB	1 /
ads	[redacted]	43.7 Mbps	948 / 5120 MB	0 /

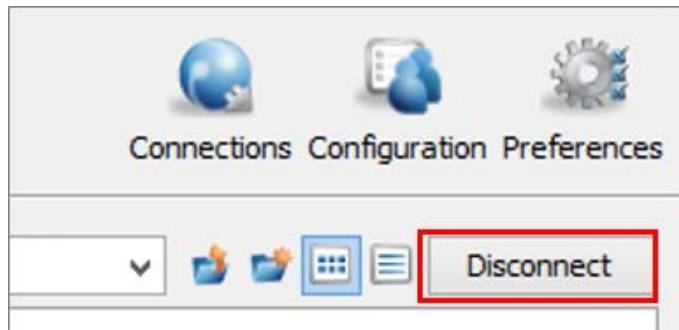
FASP used the .aspx file on the receiving server to identify the starting point in the byte flow for the resume.

- ___ 2. Stop the transfer of the 5GB file, then restart it to simulate how the .aspx file is used when a network connection fails during a transfer.
 - ___ a. Click Remove to end the 5GB transfer.

	#	Name	Source
		10MB.1	Aspera Demo Serv
	1	5GB	Aspera Demo Serv

- ___ b. A message window opens with a prompt of *The selected transfer is not complete. Delete it anyway?* Click Yes.
- ___ c. Confirm that the Aspera Demo Server connection is still active, as indicated by the Disconnect button shown at the right side of the page.

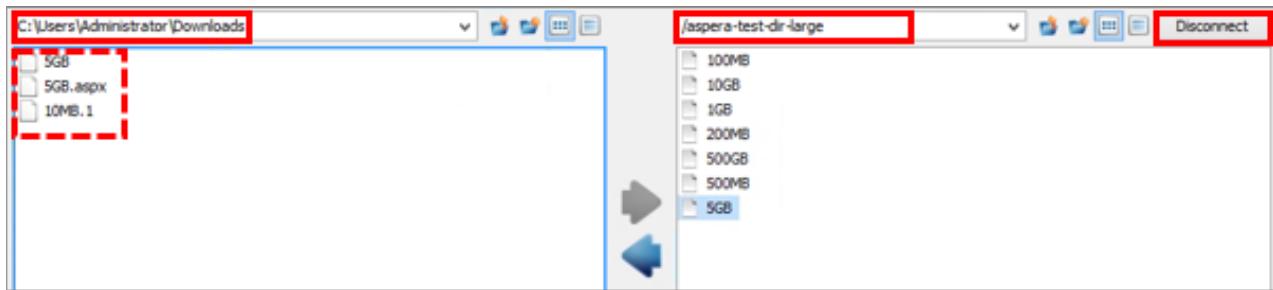
If a connection is active, Disconnect is shown. When a connection is not active, Connect is shown in the same position on the page. So, in this case, the fact that Disconnect is displayed indicates that the connection to the Aspera Demo Server is still active.



- d. Confirm that the remote directory is still set to /aspera-test-dir-large (on the Aspera Demo Server) and the local directory is still C:\Users\Administrator\Downloads.

Notice that the 5GB and 5GB.aspx files are retained on the local server, even though you stopped the transfer.

- e. Highlight the 5GB on the Aspera Demo Server and download it again.



3. A new transfer session is reported in the Transfer report, but the Status of the new transfer is near the same point as the original transfer. Also, notice that the Size of both transfers progress at the same rate. In the example shown, the starting Size value of the transfer differs slightly from the value that is shown when the transfer was stopped. This difference is due to the time required to capture the screen image.

Destination	Status	Speed	Size	Files	Remaining
- 10... This Computer - Downloads	Complete	41.9 Mbps	10 MB	1 / 1	-
5GB This Computer - Downloads	[progress bar]	41.9 Mbps	1034 / 5120 MB	0 / 1	1m 1s

The .aspx file facilitates resuming a transfer from the last successfully transferred byte, even if the network connection is lost during the transfer.

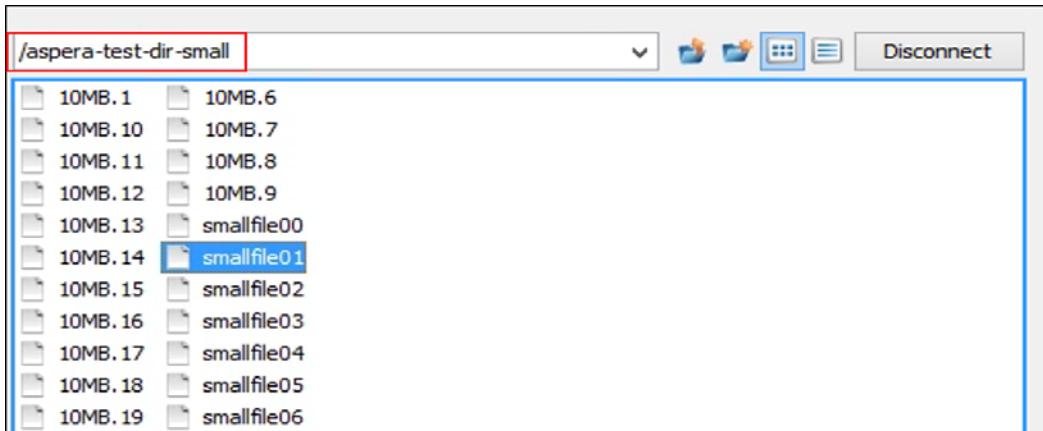
4. Allow the transfer of the 5GB file to continue.

Transferring multiple files in a single session

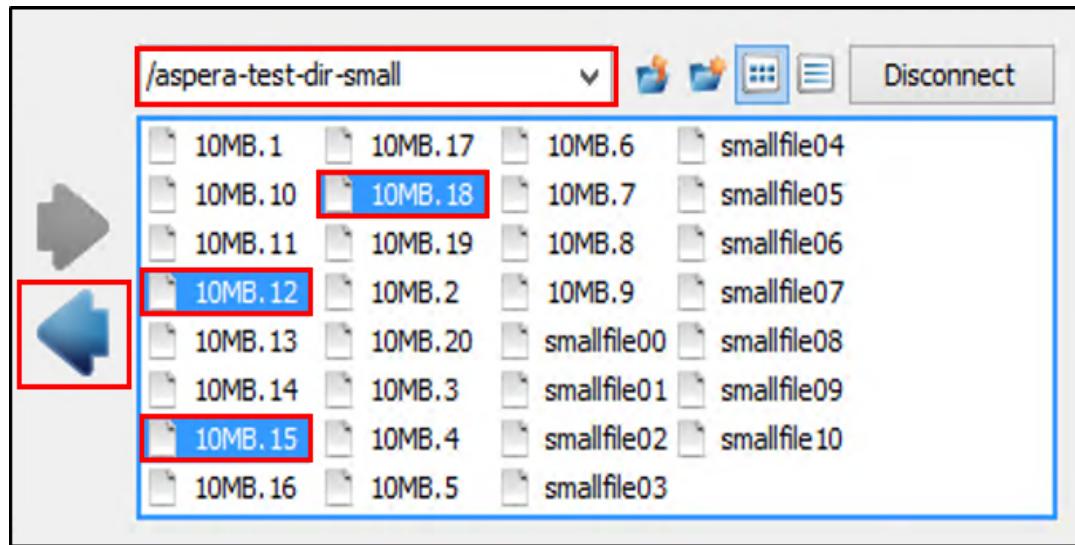
Aspera transfers are based on transfer sessions. The Transfer report in the GUI reports on the complete session for each transfer. The transfer previously performed had a single file in each session. However, Aspera can handle hundreds or even thousands of files within a single session. The

following task demonstrates how a transfer with multiple files is reported.

- 1. Transfer three files (10MB.12, 10MB.15, and 10MB.18) from the Aspera Demo Server to the local Singapore server in a single transfer session.
 - a. Change the remote directory on the Aspera Demo Server back to /aspera/test-dir-small.



- b. Select the 10MB.12, 10MB.15, and 10MB.18 files on the Aspera Demo Server.
- c. Download all three files simultaneously by using the CTRL key while clicking each file name, then clicking the download icon ().



- d. Look at the Transfer report.

The Name field indicates the number of files that are included in the transfer, and their names.

The Files field shows the current file and the total number of files in the session. The following example indicates that the current file is one 1 of 3.

Name	Source	Destination	Status	Speed	Size	Files	Remaining
3 items: 10MB.12, 10...	Aspera Demo Server ...	This Computer - Dow...	43.8 Mbps	15 / 30 MB	1 / 3	2s	
5GB	Aspera Demo Server ...	This Computer - Dow...	Complete	43.6 Mbps	5 GB	1 / 1	-
10MB.1	Aspera Demo Server ...	This Computer - Dow...	Complete	43.7 Mbps	5 GB	1 / 1	-

Downloading a directory from the Aspera Demo Server

The following tasks demonstrate how Aspera can transfer complete directories and individual files.

- 1. Copy the entire `aspera-test-dir-small` directory from the Aspera Demo Server to the local server.
 - a. Change the remote directory to be `/`.
 - b. Highlight the `aspera-test-dir-small` directory.
 - c. Click the download arrow.

#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
1	aspera-test-dir-small	Aspera Demo Server ...	This Computer - Dow...	42.8 Mbps	90 / 310 MB	9 / 31	43s	
	3 items: 10MB.12, 10...	Aspera Demo Server ...	This Computer - Dow...	Complete	41.9 Mbps	30 MB	3 / 3	-
	5GB	Aspera Demo Server ...	This Computer - Dow...	Complete	43.6 Mbps	5 GB	1 / 1	-
	5GB	Aspera Demo Server ...	This Computer - Dow...	Complete	43.7 Mbps	5 GB	1 / 1	-
	10MB.1	Aspera Demo Server ...	This Computer - Dow...	Complete	-	0 / 10 MB	1 / 1	-

Look at the Transfer report for this transfer. Notice that the Name field shows the `aspera-test-dir-small` directory, and the Files field shows that a total of 31 files are included in the transfer session.

- d. When the `aspera-test-small` directory transfer finishes, remove the `aspera-test-dir-small` directory from your local system.
 - 1) Highlight the `aspera-test-dir-small` directory on the local system.
 - 2) Use the right mouse button to open the File management menu.
 - 3) Select Delete and confirm your decision.

Uploading files

You can use the Aspera Demo Server to verify that your system can upload and download files.

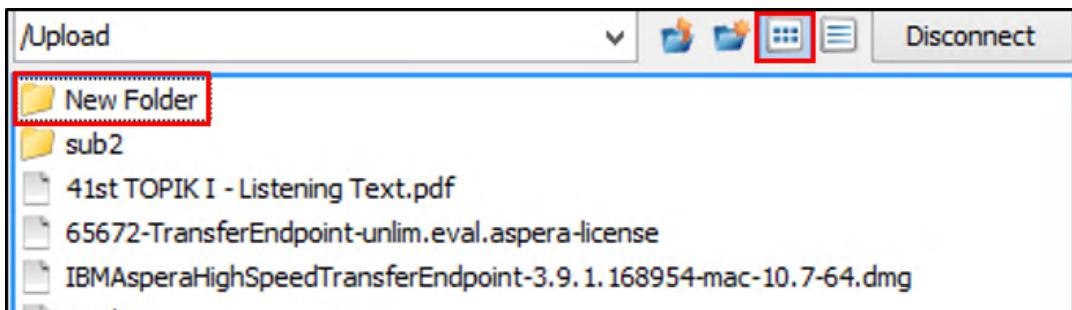
- ___ 1. Use the Aspera GUI to upload a file from the local Singapore server to the Aspera Demo Server.
 - ___ a. Change the remote directory to Upload.



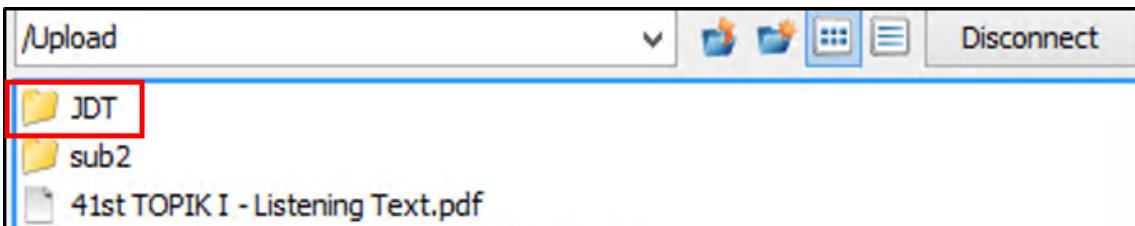
Reminder

Remember that many people use the Aspera Demo Server, so the Upload directory you see might differ from the following screen capture.

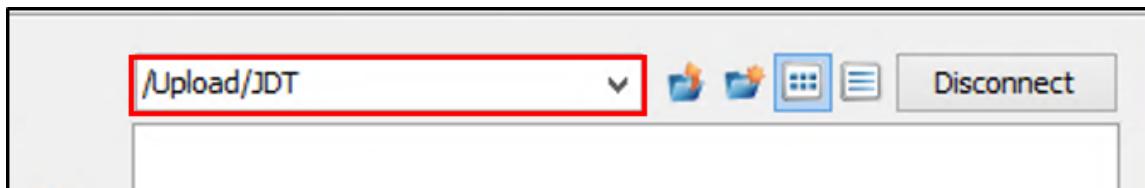
- ___ b. Move the cursor into the remote server listing and click **Create New Folder**.



- ___ c. Name the new folder with your name or initials (something unique to you).

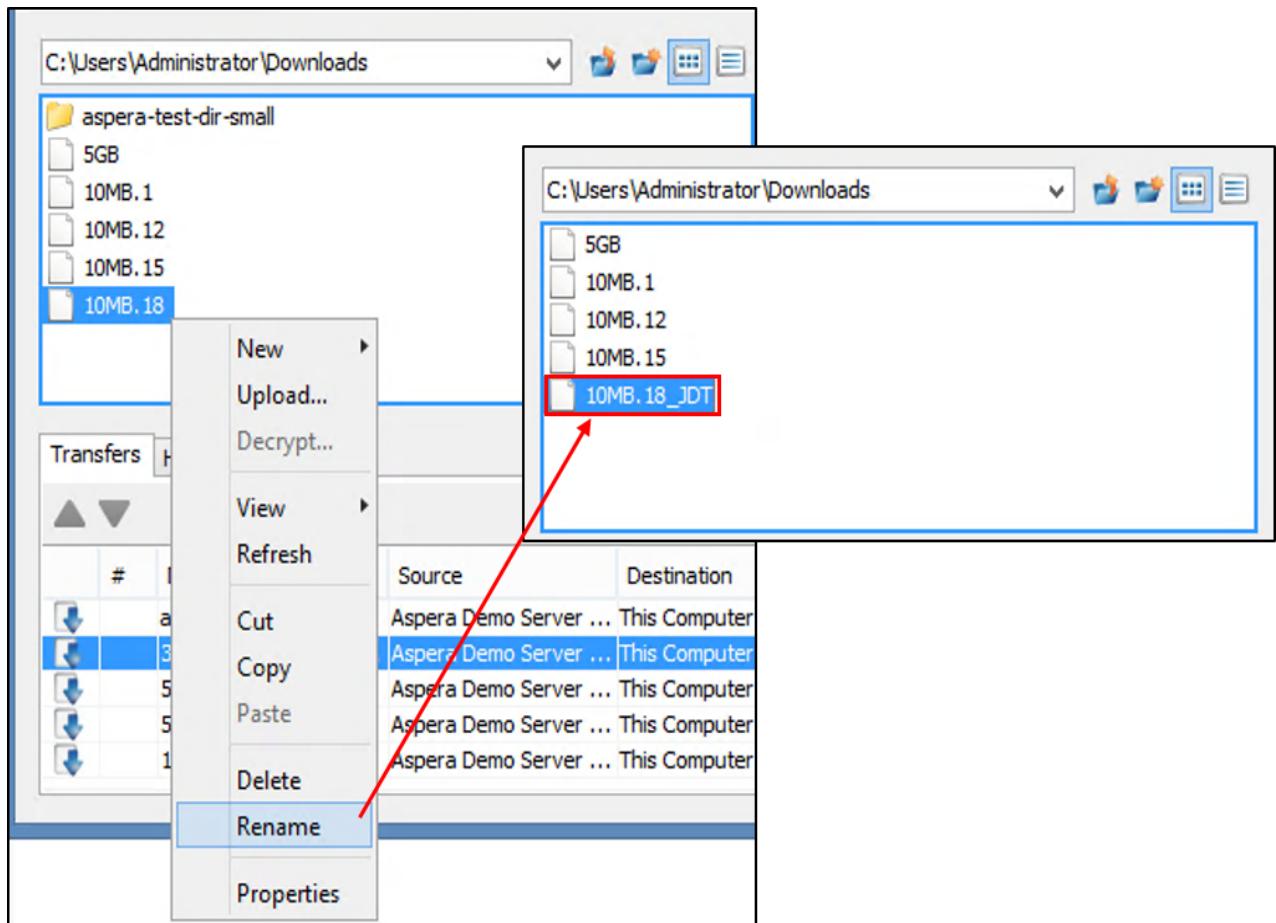


- ___ d. Double-click the directory that you just created to set the remote directory to the new directory. The example screen indicates a directory that is named JDT.

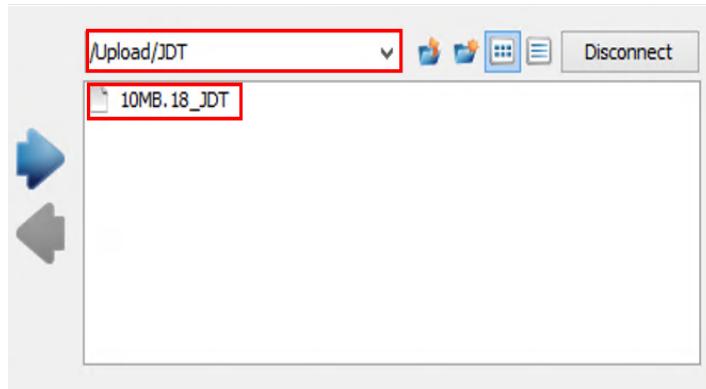


- ___ e. Highlight the 10MB.18 file in the local directory.
- ___ f. Use the right mouse button to open the File management menu in the local directory and select Rename.
- ___ g. Append your initials to the file name, creating a unique value, which can identify the file as your own file, for example 10MB.18_JDT.

- __ h. Press Return to save the file name.

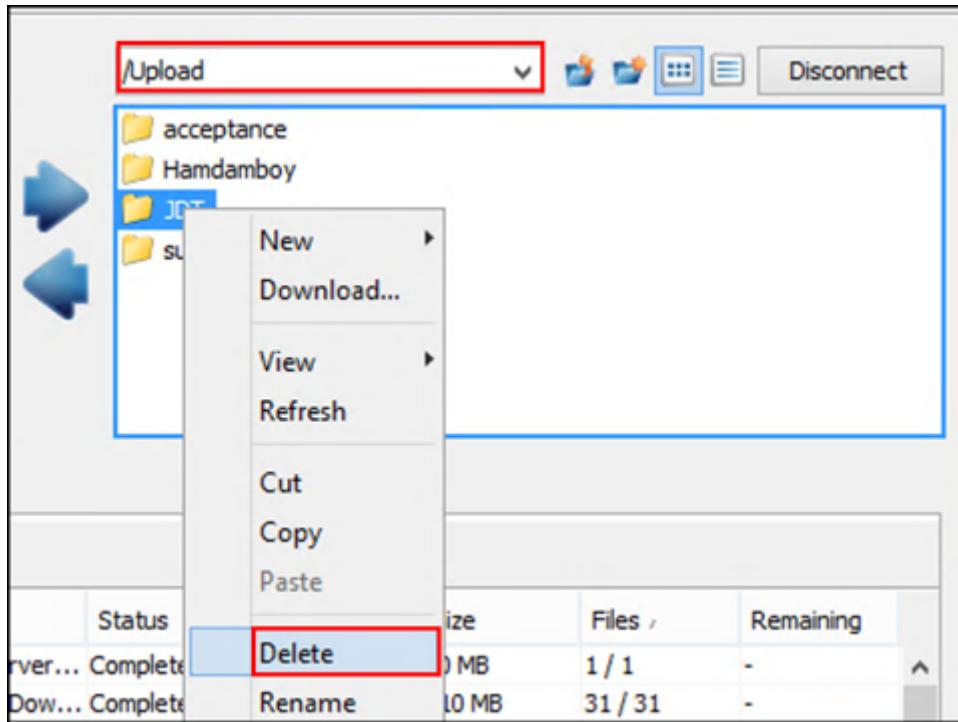


- __ i. Transfer the renamed file to the unique directory you created on the Aspera Demo Server.
 __ j. Verify that the file was successfully uploaded by viewing the contents of the directory that you created on the Aspera Demo Server.



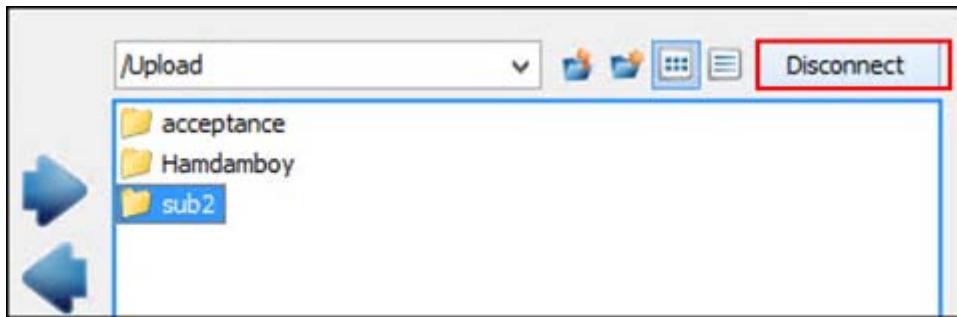
- __ k. Change the remote directory to /Upload.

- __ I. Delete the directory that you created.



The goal of the previous tasks is to introduce you to the installation process, and how to use the GUI to perform various transfers.

- __ 2. Disconnect the connection to the Aspera Demo Server by clicking Disconnect on the right side of the window.



- __ 3. Close the Aspera GUI, and click Yes in response to the *Are you sure?* message.

Section 2. Install IBM Aspera HST Server on Linux

The Linux servers that are used for this exercise are running CentOS 7.5. Therefore, the commands and utilities that are called out are for the CentOS environment. The IBM Aspera HST Server software is also available for other Linux operating system versions, such as Red Hat, Debian, Linux on System z, and Ubuntu. Other operating systems, including MacOS, AIX, and Solaris are also supported. See the appropriate IBM Aspera High-Speed Transfer Server Admin Guide for procedures associated with these other environments.

The Linux servers in the lab environment are configured to provide all required services and features to support the IBM Aspera High-Speed Transfer Server software. The firewall on all the servers is disabled. For normal deployments, confirm that the systems you implement meet the requirements specified in the IBM Aspera HST Server Administration Guide.



Note

Installing and configuring the IBM Aspera High-Speed Transfer Server software requires root privileges on the Linux system. These exercises have you log in as root, but in deployment systems you want to use the `sudo` option when running the various commands. However, the account you are using when you open the Aspera GUI must be an administrative account to have access to the administrative tasks.

2.1. Initial installation

The following steps present the procedure for installing the IBM Aspera HST Server software on Linux servers.

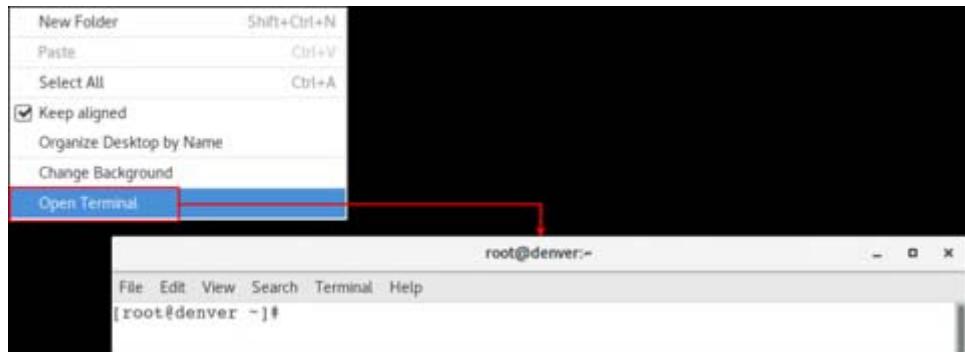
You need to run the same installation procedure on both Linux systems.

- ___ 1. Ensure that the servers are powered on.
- ___ 2. Open the RDP to the Denver server (or select the Denver server from the lab environment).
- ___ 3. Log in by using the following credentials: Login: `root/passw0rd`.

The Desktop screen contains the IBM Aspera HST Server installation software and an IBM Aspera HST Server license file.



- ___ 4. Place the cursor anywhere on the background. Use the right mouse button and select Open Terminal.



- ___ 5. Go to the /root/Desktop directory by running the following command:

```
cd /root/Desktop
```

- ___ 6. List the files in that directory and confirm that the `ibm-aspera-hst-3.9.1.168302-linux-64.rpm` file is located there:

```
ls /root/Desktop
```

```
[root@denver Desktop]# ls
65278-TransferServer-45M.aspera-license
ibm-aspera-hsts-3.9.1.168302-linux-64.rpm
```

- ___ 7. Use the following `rpm` command to begin the installation:

```
rpm -Uvh ibm-aspera-hsts-3.9.1.168302-linux-64.rpm
```

Information about the installation is provided as it proceeds:

```
[root@denver Desktop]# rpm -Uvh ibm-aspera-hsts-3.9.1.168302-linux-64.rpm
Preparing... ################################################ [100%]
Updating / installing...
 1:aspera-entsrv-3.9.1.168302-1 ################################################ [100%]
Creating haproxy service account
systemd enabled
Generate new SSL certificates
To complete the Connect Server installation:
- Install the Data::Dumper Perl module
- Install the Digest::MD5 Perl module
```

- 8. Use the following command to verify that the software was installed by listing the contents of the /opt directory and confirming that the /opt/aspera directory exists:

```
ls /opt
```

```
[root@denver Desktop]# ls /opt
aspera rh
```

2.2. Add course license key

You must install the Aspera license key before you can use the IBM Aspera High-Speed Transfer Server services. The course license key is located in the /root/Desktop directory of the Linux system. The license key can be installed by using the Aspera Transfer Server application GUI (the same as you did on the Windows server) or from the command line.

- 1. Locate the license key file on the Desktop of the root user account (/root/Desktop) and copy its contents into the /opt/aspera/etc/aspera-license file:

```
cp 65278-TransferServer-45M.aspera-license /opt/aspera/etc/aspera-license
```

- 2. Use the following ascp -A command to verify the contents of the /opt/aspera/etc/aspera-license:

```
ascp -A
```

```
[root@denver Desktop]# ascp -A
IBM Aspera High-Speed Transfer Server version 3.9.1.168302
ascp version 3.9.1.168302
Operating System: Linux
FIPS 140-2-validated crypto ready to configure
AES-NI Supported
Connect Server License max rate=45 Mbps, account no.=1004, license no.=65278.
Expiration date: Wed Jul 1 02:59:59 2020
Enabled settings: connect, mobile, cargo, node, drive, http_fallback_server,
group configuration, shared endpoints, desktop gui and sync2
```

**Note**

The output of the `ascp -A` command provides details about what the license allows. The output shows the maximum transfer rate that is allowed, the account and license numbers, and other capabilities allowed by the license. This output is one of the first things that is asked for when a problem is reported to IBM Aspera support team.

2.3. Verify SSH configuration

The IBM Aspera HST Server installation software for the Windows operating system includes the SSH service that is already configured to meet the requirements for an Aspera environment. However, SSH is a normal component of the Linux system and therefore isn't added during the IBM Aspera HST Server installation on Linux systems. It is not located under the `/opt/aspera` directory. The `/etc/ssh/sshd_config` file requires some additional configuration to support the IBM Aspera High-Speed Transfer Server operation.

- 1. Verify that the Port 33001 entry exists in `/etc/ssh/sshd_config` file by using the following command:

```
grep 33001 /etc/ssh/sshd_config
```

```
[root@denver Desktop]# grep 33001 /etc/ssh/sshd_config
Port 33001
```

**Reminder**

The `/etc/ssh/sshd_config` file on the lab systems is configured to include the appropriate Port 33001 entry. However, in deployment environments, the default `/etc/ssh/sshd_config` file does not include an entry for port 33001 and an entry must be added to the file. You need to add the proper line above or below the default Port 22 entry. You might also want to delete the Port 22 entry entirely to provide an extra level of security.

2.4. Secure user accounts

For security reasons, Linux user accounts configured for FASP-based transfers should be limited to specific abilities. Aspera installations include a user shell (`/bin/aspshell`) that provides this type of restriction.

- 1. Change the login shell to `aspshell` for the `xfer` user.
- a. Confirm the system user `xfer` account exists by running the following command:

```
grep xfer /etc/passwd
```

```
[root@denver ~]# grep xfer /etc/passwd
xfer:x:1001:1001:::/home/xfer:/opt/bin/bash
```

- ___ b. Change the default login shell (/bin/bash) for this account to be /bin/aspshell by using the usermod command:

```
usermod -s /bin/aspshell xfer
```

- ___ c. Verify that the file was updated by running the following grep command in a terminal window:

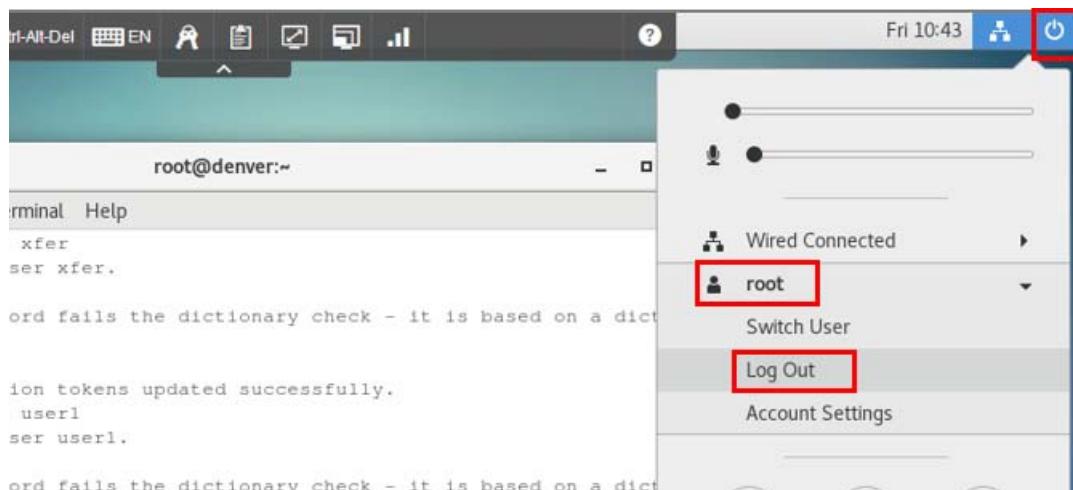
```
grep xfer /etc/passwd
```

```
[root@denver ~]# grep xfer /etc/passwd
xfer:x:1001:1001::/home/xfer:/bin/aspshell
```

- ___ 2. Log out of the root account.

- ___ a. Click the Power button in the upper right corner of the lab environment screen.

- ___ b. Click root and select Log Out.



Notice that the xfer account is no longer displayed on the login screen.



- ___ 3. Log back in using the xfer credentials (*xfer/passw0rd*).

- ___ a. Click the *Not listed?* link at the bottom of the page, then enter the xfer account credentials.



The login is not successful but an error message is not provided!



Questions

Explain why the login failed when you logged in using the xfer account?

From Transfer Server Admin Guide – page 48

“By default, all system users can establish a FASP connection and are restricted only by file permissions. Restrict the user’s file operations by assigning them to use aspshell, which allows only the following operations:

- Running Aspera uploads and downloads to or from this computer.
- Establishing connections in the application
- Browsing, listing, creating, renaming, or deleting contents”

-
- ___ 4. Log back into the server as the root user by using the credentials provided previously (*root/passw0rd*).
 - ___ 5. Reset the xfer user account shell by using the following command:

```
usermod -s /bin/aspshell xfer
```

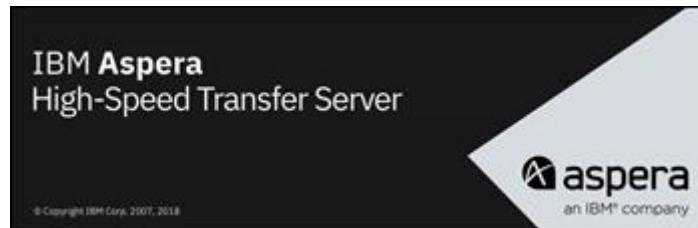
Aspera transfer user accounts on Linux servers should normally have their login shell set to aspshell. The Aspera GUI indicates when a transfer user account is not configured to use aspshell. The next lab exercise demonstrates how the GUI indicates the issue, which is why you changed the xfer user account back to the default bash shell.

2.5. Test connectivity to the Aspera Demo Server with the Aspera GUI

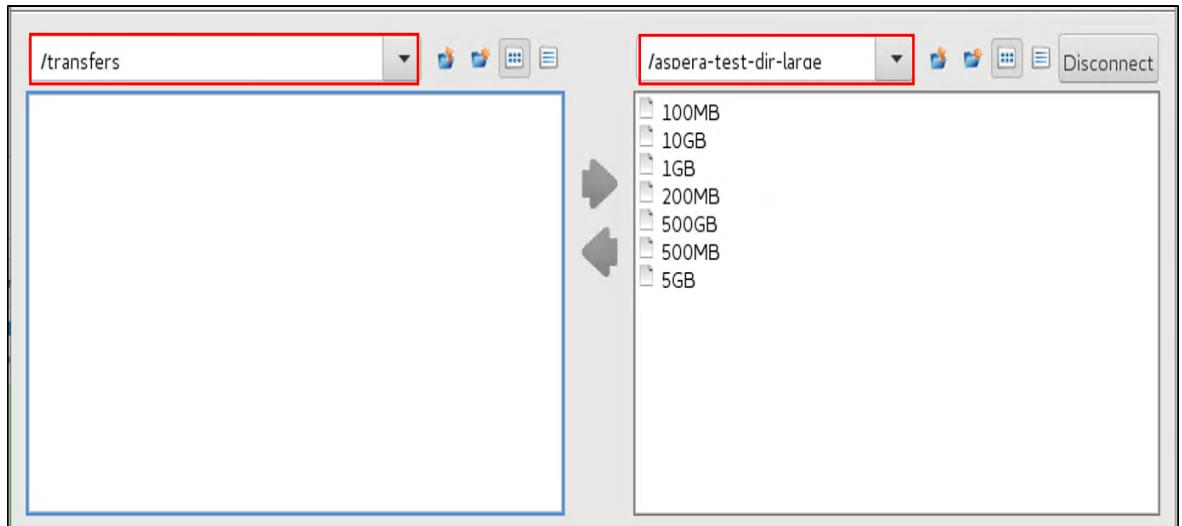
After the installation finishes, the next step is to verify that you can transfer files between the Aspera Demo Server and your system. Use the Aspera GUI to download and upload files to test your installation, by using the same procedure that you used on the Windows.

- ___ 1. Start the Aspera GUI by running the following command (including the ampersand (&) character at the end) to run the process separately from the current terminal window:

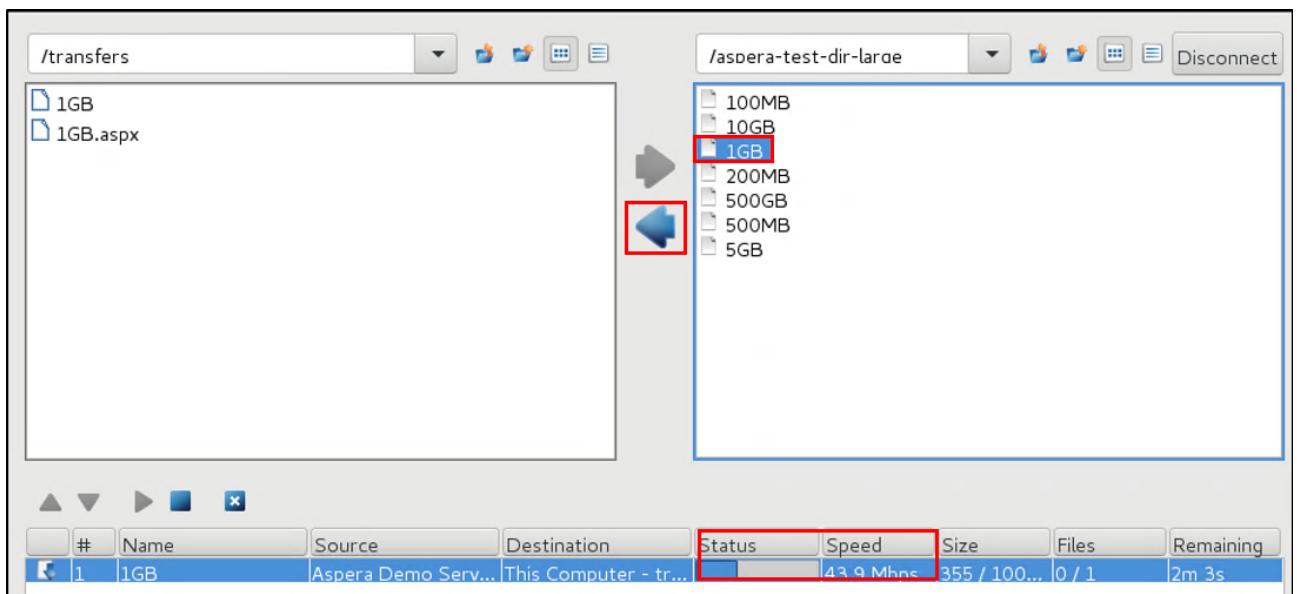
```
asperascp &
```



- 2. Open a connection to the Aspera Demo Server by clicking the *Aspera Demo Server* name on the right side of the page.
- 3. In the GUI, change the local directory to `/transfers` and the remote directory on the remote Aspera Demo Server to `/aspera-test-dir-large`.

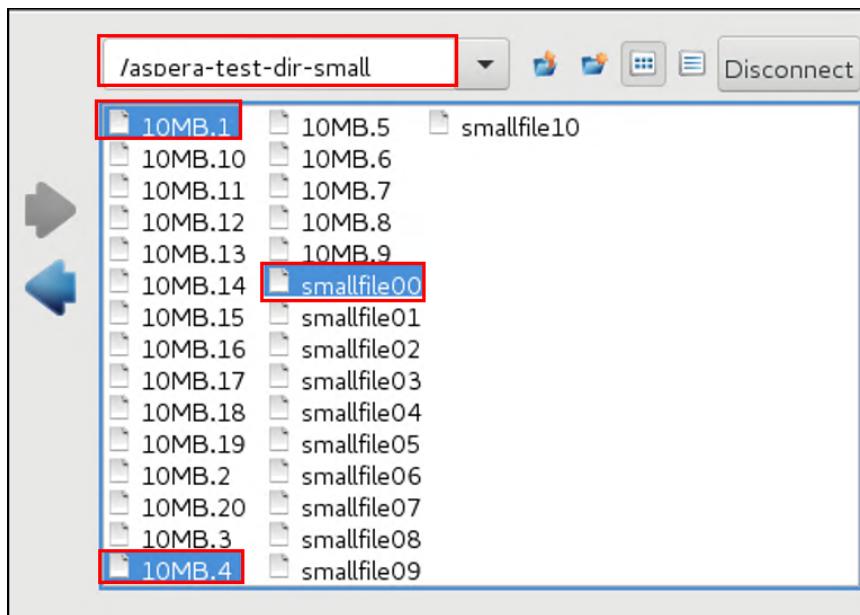


- 4. Highlight the 1GB file and click the download arrow.



The status of the transfer is shown in the Transfer report of the GUI.

- ___ 5. After the file is downloaded, change the remote directory to /aspera-test-dir-small. A successful download indicates that your local system is functional and able to download files by using the FASP protocol.
- ___ 6. Download three more files (10MB.1, 10MB.4 and smallfile00) to the /transfers directory on the local system. These files are used in later exercises. Leave the Aspera GUI open and connected to the Aspera Demo Server.



2.6. Transfer files from the command line

You can also transfer files by using the `ascp` command from the command line. Details about the `ascp` command are addressed later in this course. But you can use the following command to test the system's ability to transfer files from the command line.



Important

While the lab environment provides a feature to copy text from your local system to lab environment server. However, this feature does not always operate as planned. If you copy text from this document and paste it into the command line on the lab server, you might encounter errors. If you do encounter an error upon execution of a pasted command, try typing the command directly at the command prompt to resolve the problem.

-
- ___ 1. Use the command line to download the 10MB.20 file from the Aspera Demo Server's /aspera-test-dir-small directory to the /transfers directory on your local system.
 - ___ a. Open a terminal window (leaving the Aspera GUI running separately).
 - ___ b. Download the 10MB.20 file by running the following command:

```
ascp -P 33001 aspera@demo.asperasoft.com:/aspera-test-dir-small/10MB.20 /transfers/
[root@denver ~]# ascp -P33001 aspera@demo.asperasoft.com:/aspera-test-dir-small/
10MB.20 /transfers/
Password:
10MB.20
Completed: 10240K bytes transferred in 2 seconds
(28204K bits/sec), in 1 file.
```

**Note**

You are prompted for a password when you connect with the Aspera Demo Server. Enter *demoaspera*.

Notice the transfer rate for this transfer (the example that is shown indicates a rate of 43.7 Mbps).

- ___ c. Leave the terminal window open and switch to the open Aspera GUI window (you might need to click the Transfer report pane to refresh the GUI).
- ___ 2. Examine the Transfer report.

#	Name	Source	Destination	Status	Speed	Size
1	10MB.20	aspera@198.23.8...	This Computer - tr...	Complete	41.9 Mbps	10 MB

Notice that the transfer you made from the command line is also reported in the Aspera GUI. The transfer rate that is reported in the GUI differs slightly from that reported on the command line. The rates differ due to minor differences in how the GUI calculates the rate, but the two rates are reasonably close.

However, if the Aspera GUI is closed when a transfer is initiated from the command line, it is not reported in the GUI started later.

- ___ 3. Return to the terminal window and run the following command.

```
ascp -T -P 33001 -l 10M
aspera@demo.asperasoft.com:/aspera-test-dir-small/10MB.3 /transfers/
```

```
[root@denver ~]# ascp -T -P 33001 aspera@demo.asperasoft.com:/aspera-test-dir-small/10MB.20 /transfers/
Password:
10MB.20
Completed: 10240K bytes transferred in 2 seconds
(27964K bits/sec), in 1 file.
```

**Attention**

If you copy and paste this command rather than entering it directly on the command line, you might get an error message.

Notice that the transfer rate for this download is much lower than the previous download. The options provided to `ascp` modify how FASP manages the transfer.

The options and arguments that are used with this ascp command-line entry are defined as follows:

-T	Disables encryption
-P 33001	Use TCP port 33001 for the SSH connection (The Aspera Demo Server SSHD service is configured to listen on port 33001, not 22. The ascp command defaults to TCP port 22 unless the -P option is provided).
-l 10M	Specifies maximum transfer rate is 10 Mbps
aspera@demo.asperasoft.com	Specifies login username (aspera) and server
aspera-test-dir/10MB.3	Identifies file name to be transferred (10MB.3)
/transfers	Specifies local directory where file is placed (in this case, the /transfers directory)



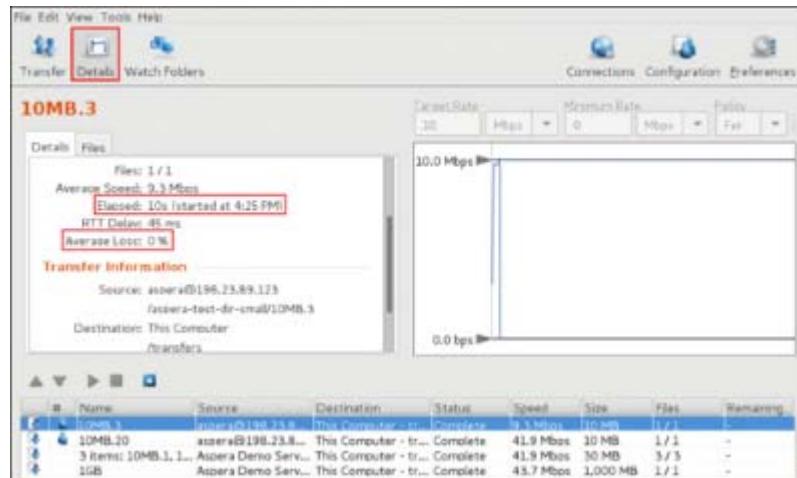
Questions

- a. How long did it take for this transfer to complete?

Unable to tell from the information in the Transfer report. Use the Details window to answer.

- b. What was the average packet loss during the transfer?

Unable to tell from the information in the Transfer report. Use the Details window to answer.



List the /transfers directory to verify that the files were successfully transferred to the local system.

```
ls /transfers
```

```
[root@denver ~]# ls /transfers
10MB.1 10MB.20 10MB.3 10MB.4 1GB  smallfile00
```

2.7. Upload files with the ascp command

- 1. Rename the 10MB.3 file you downloaded to add your initials at the end of the file name, for example 10MB.3_JDT. Use the following command (make sure you use your own initials at the end of the command):

```
mv /transfers/10MB.3 /transfers/10MB.3_JDT
```

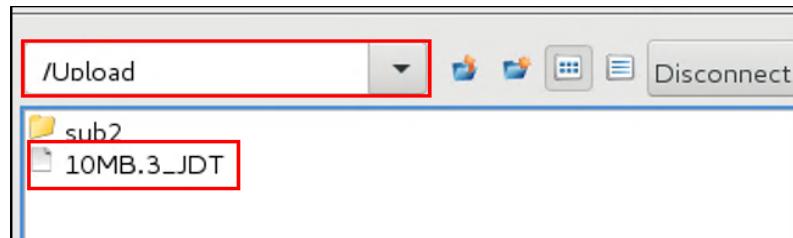
- 2. Verify that you can upload files with ascp by running the following command to transfer the renamed file (when prompted for a password, use *demoaspera*):

```
ascp -P 33001 /transfers/10MB.3_JDT aspera@demo.asperasoft.com:/Upload/
```

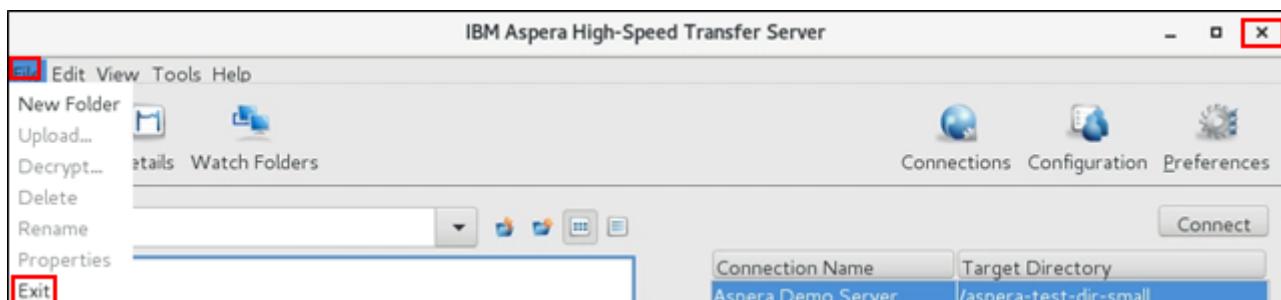
```
[root@denver ~]# ascp -P 33001 /transfers/10MB.3_JDT aspera@demo.asperasoft.com:/Upload
Password:
10MB.3_JDT
Completed: 10240K bytes transferred in 2 seconds
(29251K bits/sec), in 1 file.
```

The value `/Upload/` used at the end of the command line references the name of the directory on the Aspera Demo Server. That directory is configured to allow uploads from external users. If you create a file with a different name within the Upload directory, the end of the entry would be `/Upload/file_name`.

- 3. Using the Aspera GUI, make sure that the connection to the Aspera Demo Server is open and change the remote server's directory to be Upload.
- 4. Confirm that the file you uploaded by using the command line was successfully uploaded and appears on the remote server.



- 5. Delete your uploaded file (highlight the file and press Delete or use the File Management menu of the GUI).
 - 6. Exit the Aspera GUI by click File at the upper left side of the GUI and select Exit.
- Or, exit by clicking X at the upper right side of the GUI.



2.8. Configure separate Aspera log file on Linux systems

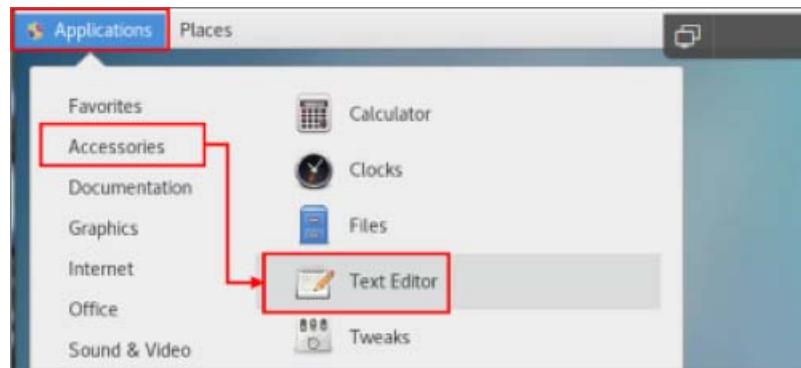
By default, Aspera daemons will log all entries into the system default log file /var/log/messages. While that works fine for logging, it might be more convenient to work with all Aspera entries in a separate file. You can modify the operating system configuration to place all Aspera log entries into a unique file by modifying the /etc/rsyslog.conf file.



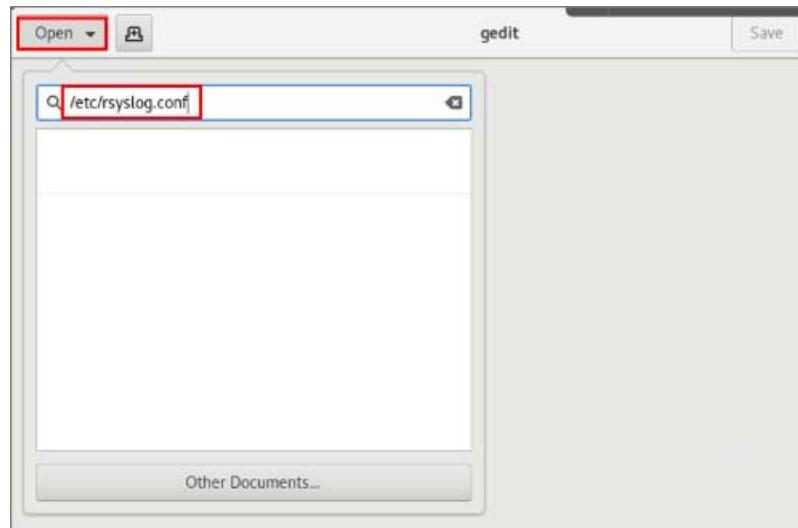
Attention

Optionally, you can use the text editor that is part of the Gnome user interface that is installed on the lab Linux servers.

- ___ 1. Open the Gnome text editor
 - ___ a. Click the Applications link at the left side of the screen.
 - ___ b. Select Accessories, then Text Editor.



- ___ 2. Click Open and enter the full path name to the file to open the file with the editor.



Editing function is the same as Windows editors.

- ___ 3. Use Save to save changes that are made to the document.

- ___ 4. Modify the `/etc/rsyslog.conf` file by using your favorite Linux editor (or the text editor that is provided in the Gnome environment) as follows:
- ___ a. Locate the RULES section and the line
`*.info;mail.none;authpriv.none;cron.none.`

```
##### RULES #####
# Log all kernel messages to the console.
# Logging much else clutters up the screen.
#kern.*                                     /dev/console

# Log anything (except mail) of level info or higher.
# Don't log private authentication messages!
*.info;mail.none;authpriv.none;cron.none    /var/log/messages

# The authpriv file has restricted access.
authpriv.*                                    /var/log/secure
```

- ___ b. Replace the line with the following entry:

`*.info;mail.none;authpriv.none;cron.none;local2.none` `/var/log/messages`

- ___ c. Open a new line below the one you modified and add the entry:

`local2.info` `-/var/log/aspera.log.`

Remember to use a <TAB>, not spaces between the entries and add the dash (-) character before the path to the `aspera.log` file. Your modification should now look like this:

```
##### RULES #####
# Log all kernel messages to the console.
# Logging much else clutters up the screen.
#kern.*                                     /dev/console

# Log anything (except mail) of level info or higher.
# Don't log private authentication messages!
*.info;mail.none;authpriv.none;cron.none;local2.none    /var/log/messages
local2.info      -/var/log/aspera.log

# The authpriv file has restricted access.
authpriv.*                                    /var/log/secure
```

TAB

Dash symbol

- ___ d. Save the changes.
 ___ e. Restart the `rsyslog` service to activate the changes you made:
`systemctl restart rsyslog`
- ___ 5. Run the following transfer to start entries in the `/var/log/aspera.log` file.

```
ascp -P 33001 /transfers/10MB.4 aspera@demo.asperasoft.com:/Upload/
```

```
[root@denver ~]# ascp -P 33001 /transfers/10MB.4 aspera@demo.asperasoft.com:/Upload/
Password:
10MB.4
Completed: 10240K bytes transferred in 2 seconds
(28062K bits/sec), in 1 file.
```

Verify that the `/var/log/aspera.log` file now exists by running the following command:

```
ls /var/log/aspera.log
```

```
[root@denver ~]# ls /var/log/aspera.log
/var/log/aspera.log
```

Examining the contents of the log file is discussed in a different module of this course.



Note

On production systems, you need to configure log rotation to prevent Aspera from overwriting log entries on a busy system. You do not perform that task in this exercise, but you can review the *IBM Aspera High-Speed Transfer Server Administration Guide* for details about how to do so.

Install software on London server

From this point on, the IBM Aspera HST Server software must be installed and configured on all lab servers. You successfully installed and configured the Windows system (Singapore) and one of the Linux systems (Denver). You still need to install and configure the IBM Aspera HST software on the London server.

The installation software and the course license files are located in the `/root/Desktop` directory on the London server. Login accounts and passwords are the same on the London server as they are on the Denver server.

The following tasks need to be completed on the London server:

- ___ 1. Install the IBM Aspera HST Server software.
- ___ 2. Add the course license key.
- ___ 3. Verify the ability to transfer files from the Aspera Demo Server.

End of Exercise

Exercise review and wrap-up

The tasks that you performed in this exercise included installing the IBM Aspera HST Server software on both Windows and Linux operating systems.

You accessed the IBM Aspera HST Server Admin Guide from within the GUI and from the command line.

You installed IBM Aspera High-Speed Transfer Server on a Windows system and two Linux systems.

You used the Aspera GUI and the command line to transfer files to and from the Aspera Demo Server.

You manipulated files on both the local and remote system by using the File management function of the Aspera GUI.

You configured the Denver Linux system to use a separate log file for Aspera logging.

Exercise 2. Configuring IBM Aspera High-Speed Transfer Server

Estimated time

02:00

Overview

Configuration of the IBM Aspera High-Speed Transfer Server involves defining the parameters that specify and control how transfers to and from the server are handled. Numerous parameters can be configured for global settings and individual settings. Remember that Aspera global parameters are only used when a parameter is NOT explicitly set for an individual user or group account. This feature facilitates the use of global values that can act as a “last line of sanity” value. This “last line of sanity” feature applies to accounts that you might not have a value that is explicitly configured. Global parameter values also provide a means of reducing the administrative effort required to configure each user or even group accounts.

Objectives

The tasks in this exercise take you through the steps to:

- Use the IBM Aspera GUI to configure Aspera parameters
- Configure various configuration parameters, for example, docroot, Target Rate Cap, transfer authorizations, and others
- Create pre-defined connections and share them with other users
- Implement the File Manifest function

Introduction

This module addresses the configuration of several parameters. Some of these parameters are Global parameters, and others are associated with specific connections. However, what you learn about these parameters applies to parameters that affect user and group accounts.

The Aspera GUI simplifies the configuration of these parameters, and automatically modifies the aspera.conf file to include the properly formatted entries for parameter values. While it is possible to manually configure all parameter values in the aspera.conf file, this module does not address those procedures. Rather, the following tasks use the Aspera Transfer Server application GUI to help you understand what the configuration parameters do. You can use the Aspera command-line utility asconfigurator to create executable batch files or scripts that modify Aspera parameters.

The difference between the Aspera GUI on Windows and Linux operating systems is minimal. Tasks are performed the same way, regardless of the operating system. Therefore, the tasks in this exercise can be performed on either the Windows or Linux servers. In some tasks, you are directed to configure a parameter with the same or different values on different servers. The tasks highlight

the effect that those parameters can have on transfer operations (depending upon which system is acting as the server for a specific transfer).

Requirements

This exercise requires the use of the two Linux server systems that are provided for you in the lab environment.

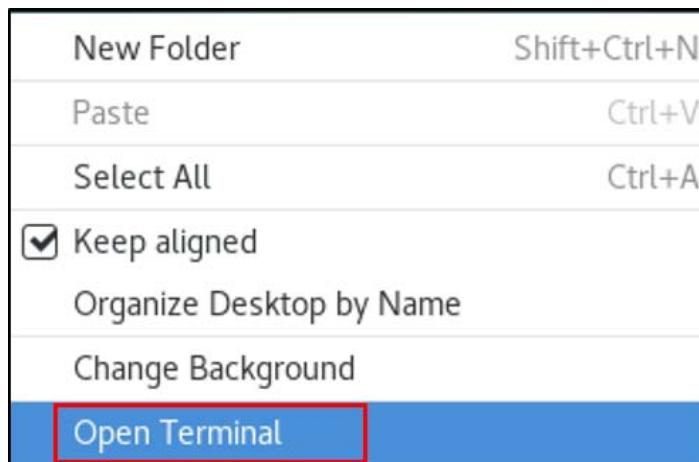
Section 1. Configure global values

Business requirement

The Denver office is where most of the media files are stored for Lonestar. Therefore, many transfers are performed to and from the Denver server. The other system administrator at the Denver office wants to ensure that a fail-safe configuration for transfers is configured. If they forget to set a docroot value for every individual user or group, all transfers must still have a specified docroot. The following steps configure a global docroot value that acts as that fail-safe.

Configure global docroot value

- ___ 1. Confirm that the servers (Singapore, Denver, and London) are powered on.
- ___ 2. Set the Global docroot value to /failsafe on the Denver server.
 - ___ a. Confirm you are working on the Denver server.
 - ___ b. Log in using the *root/passw0rd* credentials.
 - ___ c. Open a terminal window (right mouse click the desktop and select the Open Terminal option).



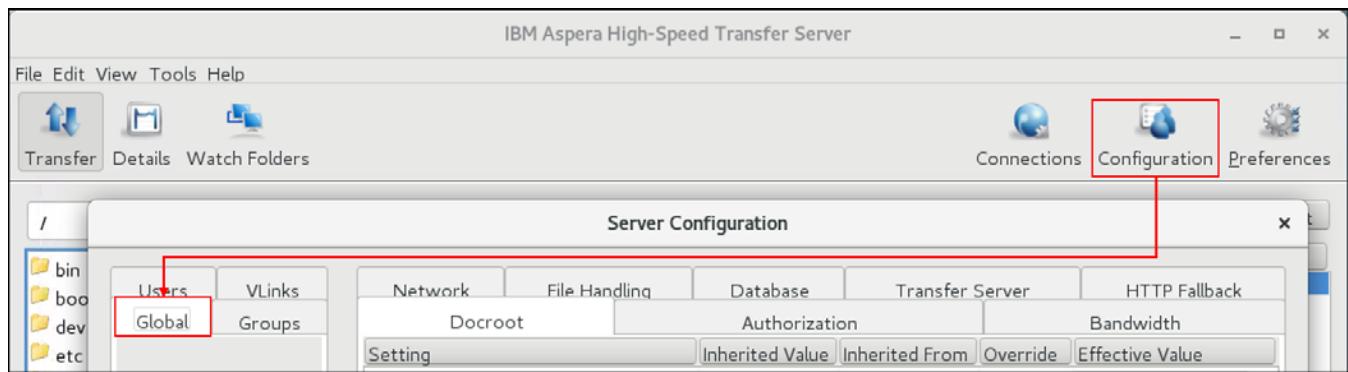
- ___ d. Start the Aspera GUI by running the following command (the & symbol allows the GUI to run separately from the terminal window).

```
asperascp &
```

```
root@denver ~]# asperascp &
1] 16213
```

- ___ e. Click Configuration to open the Server Configuration window.

The Global managed object should be presented when you enter the Server Configuration page.



The opening tab of the Server Configuration page is titled Docroot.

The first thing that you notice on the page is that the Effective Value for the Absolute Path (docroot) is blank. You also notice that the Inherited Value is indicated as Root. This value means that if you forget to specifically set a user account's docroot value, their docroot defaults to Root. A docroot value of root means they enter the file system at the root (/) level and do not have permission to access directories. Allowing users access to the root (/) directory also compromises the security of the server. So, changing the Global docroot value ensures that if a value is not defined when users are configured, they still use a failsafe directory.

File Handling		Database		Transfer Server		HTTP Fallback	
Docroot		Authorization		Bandwidth		Network	
Setting		Inherited ...	Inherited ...	Ove...	Effective Value		
Absolute Path:	<Root>	default	<input type="checkbox"/>	<input checked="" type="checkbox"/>	/failsafe	<input type="button" value="..."/>	
Read Allowed:	true	default	<input type="checkbox"/>	<input checked="" type="radio"/>	true	<input type="radio"/>	false
Write Allowed:	true	default	<input type="checkbox"/>	<input checked="" type="radio"/>	true	<input type="radio"/>	false
Browse Allowed:	true	default	<input type="checkbox"/>	<input checked="" type="radio"/>	true	<input type="radio"/>	false

- ___ f. Put a check mark in the Override checkbox for the Absolute Path parameter and set the Effective Value to be /failsafe.

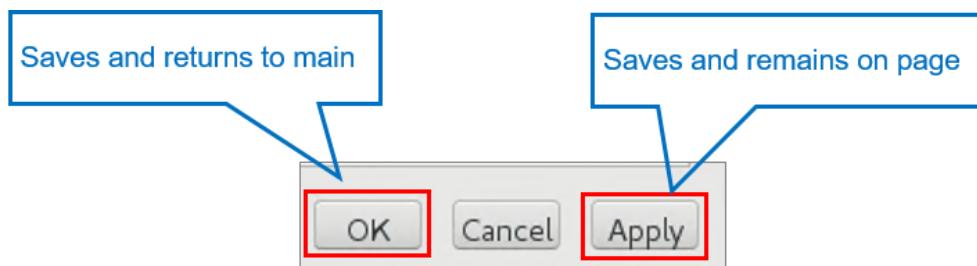
File Handling		Database		Transfer Server		HTTP Fallback	
Docroot		Authorization		Bandwidth		Network	
Setting		Inherited ...	Inherited ...	Ove...	Effective Value		
Absolute Path:	<Root>	default	<input checked="" type="checkbox"/>	<input type="checkbox"/>	/failsafe	<input type="button" value="..."/>	
Read Allowed:	true	default	<input checked="" type="checkbox"/>	<input type="radio"/>	true	<input type="radio"/>	false
Write Allowed:	true	default	<input checked="" type="checkbox"/>	<input type="radio"/>	true	<input type="radio"/>	false
Browse Allowed:	true	default	<input checked="" type="checkbox"/>	<input type="radio"/>	true	<input type="radio"/>	false



Information

The check boxes for the Read Allowed, Write Allowed, and Browse Allowed parameters are automatically checked. Their Effective Values are all set to true when you set the Absolute Path value. Automatically setting all these parameters to true makes sense for most implementations. However, the ability to modify each of these values significantly enhances an organization's ability to configure Aspera to meet their specific needs.

- ___ g. Click the Apply at the bottom of the screen to save the changes but remain on the Server Configuration page.



Configure global bandwidth

- ___ 1. Configure global **Incoming** Target Rate Default (Kbps) and Outgoing Target Rate Default (Kbps) values to 45000 on the London server.
 - ___ a. Select the Bandwidth tab.
 - ___ b. Locate the Incoming Target Rate Default (Kbps) field.
 - ___ c. Place a mark in the Override checkbox and set the Effective Value to 45000.
 - ___ d. Scroll down the page to the Outgoing Target Rate Default (Kbps) field.
 - ___ e. Mark the Override checkbox and set the **Effective Value to 45000**.
 - ___ f. Click OK to save your changes.

Users	VLinks	Network		File Handling		Database		Transfer Server		HTTP Fallback	
		Global	Groups	Docroot	Authorization	Setting	Inherited Value	Inherited From	Override	Effective Value	Bandwidth
						Incoming Target Rate Cap (Kbps):	Unlimited	default	<input type="checkbox"/>	Unlimited	
						Incoming Target Rate Default (Kbps):	10000	default	<input checked="" type="checkbox"/>	45000	
						Outgoing Target Rate Default (Kbps):	10000	default	<input checked="" type="checkbox"/>	45000	

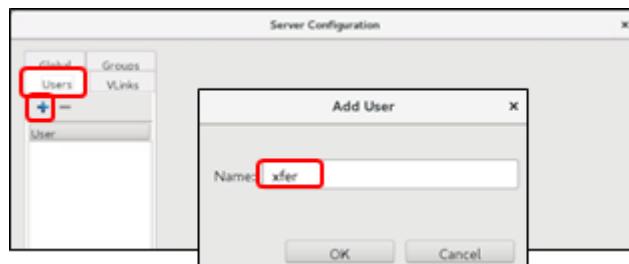
Section 2. Create a transfer user account

Business requirement

The Denver system is where most of LoneStar's media files are stored. Numerous transfers between the London server and the Denver server are planned. In order for the London system to connect to the Denver system, it must be able to authenticate with the Denver system. Therefore, the Denver system must have a system user account that the London system can use for authentication. The Denver system must also have an associated transfer user account that is configured to manage how the transfers between the two servers are handled.

LoneStar's Aspera administrator also wants to keep all the transfers between the London and Denver system in a specific directory (/london_xfers) on the Denver server. They also want sub directories that contain files received FROM London and files sent TO London.

- ___ 1. Create a transfer user called xfer on the Denver server.
 - ___ a. Continue on the Denver server.
 - ___ b. Click the Users managed object (on the Server Configuration page).
 - ___ c. Click the icon to open the Create a new user window.
 - ___ d. Enter xfer in the Name field.



Note

If a username does not exist as a system user, you cannot add it as a transfer user. The xfer account exists as a system user on the lab systems.

- ___ e. Click OK at the bottom of the window to save the user account

- ___ f. Click the Docroot tab.

Setting	Inherited Value	Inherited From	Override	Effective Value
Absolute Path:	/failsafe	node	<input type="checkbox"/>	/failsafe
Read Allowed:	true	node	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Write Allowed:	true	node	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Browse Allowed:	true	node	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

The xfer user's Docroot page shows that the docroot parameter value for this user is /failsafe, even though the Override checkbox is not marked. You notice that the Inherited Value is /failsafe, which is inherited from the node. All of these values are consistent with what you configured in the previous step.

- ___ 2. Set the xfer user's docroot to /london_xfers.

- ___ a. Click the Override checkbox of the Absolute Path setting.
- ___ b. Change the Effective Value to be /london_xfers.

Keep in mind that you can also use the menu to browse the local file system to find the directory you want.

Setting	Inherited Value	Inherited From	Override	Effective Value
Absolute Path:	/failsafe	node	<input checked="" type="checkbox"/>	/london_xfers
Read Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Write Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Browse Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

- ___ c. Click OK to save the changes and return to the Transfer page.

Connection Name	Target Directory
Aspera Demo Server	/aspera-test-dir-small

Section 3. Define connections

Business requirement

The London office transfers files with the Denver office regularly. Additionally, London has several lower-level users who do not have accounts on the Denver system. However, they are tasked with managing the transfers to and from the Denver system. Creating a pre-defined connection to the Denver server is an important capability. By configuring a connection on the London server, these lower-level employees can initiate transfers without needing the details about accessing the Denver server. Defining a connection on the London server that is configured to connect with the Denver server is exactly what is needed.

The following tasks define a connection on the London server that specifies details about how to connect to the Denver server. This connection is configured with the transfer user account credentials that you just added to the Denver server.

The connection requires information about the server to contact and the user credentials that are required to log in to the Denver server. Other parameters are configured that apply only to transfers that use the connection that you define.

Create a connection called Denver_xfer

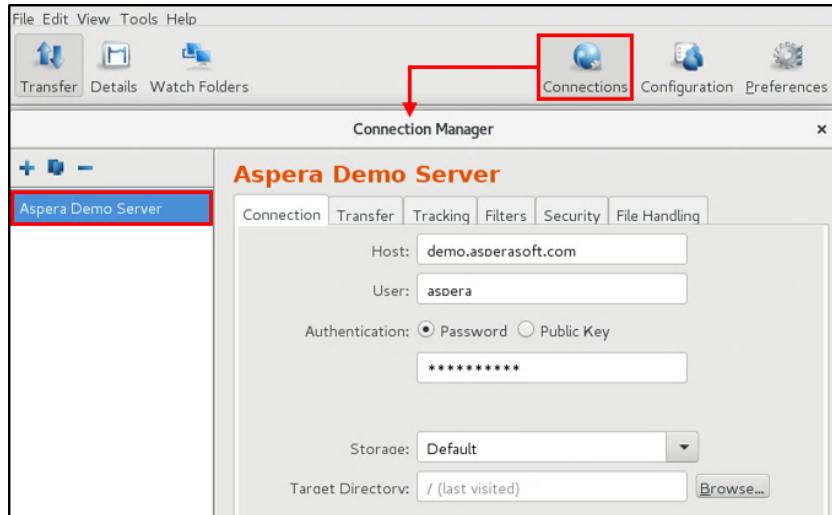
- ___ 1. Switch to the London server.
- ___ 2. Log in using the root account with a password of *passw0rd*
- ___ 3. Open a terminal window (right mouse click the desktop to select Open Terminal) and start the Aspera GUI by using the following command:

`asperascp &`

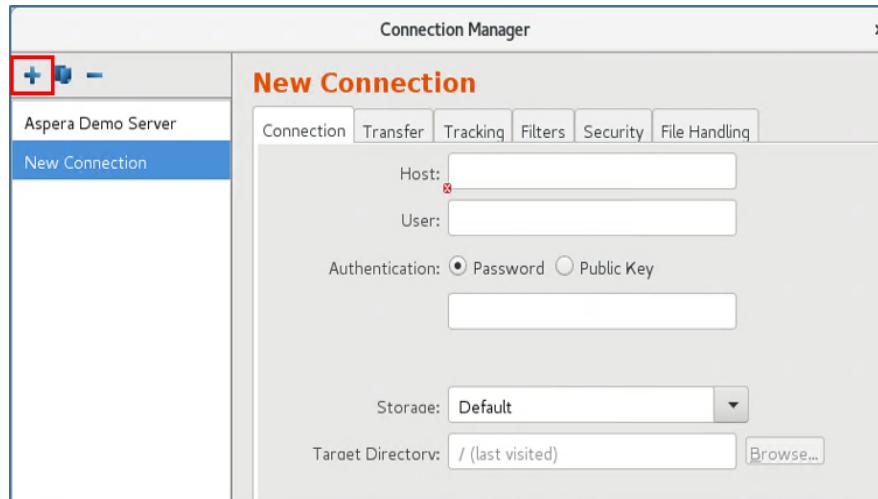
```
[root@denver ~]# asperascp &
[1] 16213
```

- ___ 4. Click Connections at the top of the page to open the Connection Manager page.

The Aspera Demo Server connection is highlighted and its connection parameter values are displayed by default.

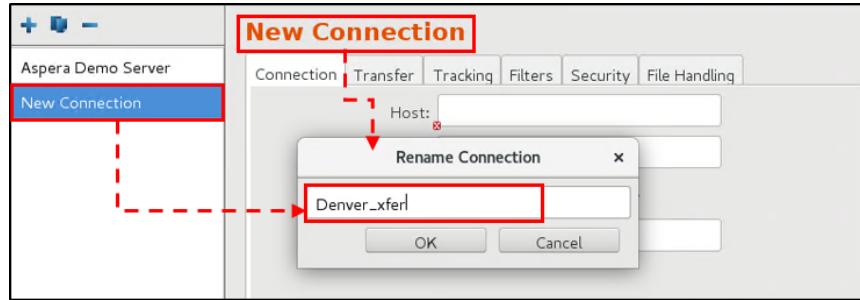


- 5. Click Create a new connection () to configure a new connection. The New Connection page opens:



- 6. Name the connection Denver_xfer.
- Click the New Connection name at the top of the window OR the New Connection name at the left of the Connection Manager window.
 - Set the connection's name to Denver_xfer.
 - Click OK.

Notice that the connection's name is updated in both locations. You can rename a connection at any time by following this procedure.



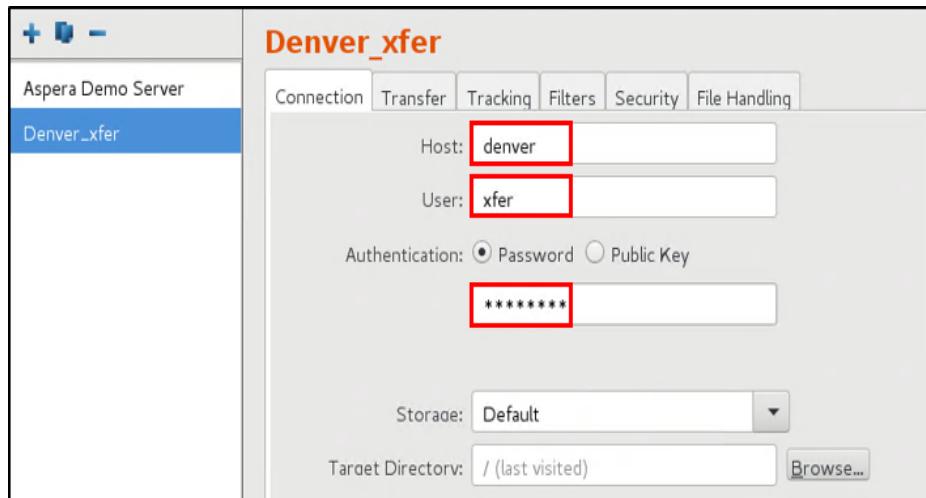
- ___ 7. Configure initial connection parameters.
- ___ a. Modify the parameter values presented in the **Connection** page to reflect the following settings:

Host: Name or IP address of the remote server where you created the transfer user: Denver.

User: The transfer user account that you created on the remote system: xfer.

Leave the default Authentication as Password and enter the password for the xfer transfer user account on the remote server: *passw0rd*.

Storage: Leave as Default.



- ___ 8. Test the basic Denver_xfer connection.
- ___ a. Click Test Connection to verify that your server can connect with the SSH service on the remote Denver server. The Connection window opens and at first indicates that the system is attempting to connect, then changes to indicate either a successful connection or a failure.

If the connection is configured correctly on both the local and remote systems, the message changes to **The server was accessed successfully**. This window disappears within a few seconds.



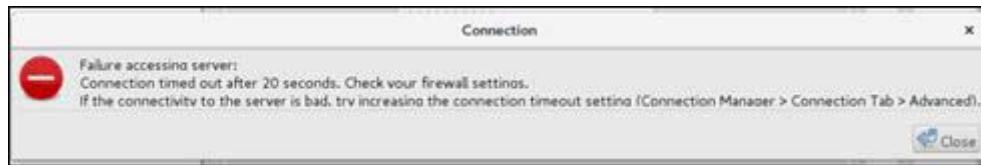
- ___ b. After verifying that the connection to the remote server is successful, save your configuration by clicking OK at the bottom of the Connection Manager page.



Information

Troubleshooting connection issues

If the message *Failure accessing server* appears, the configuration parameter values that you entered are incorrect, or the remote server configuration is incorrect.



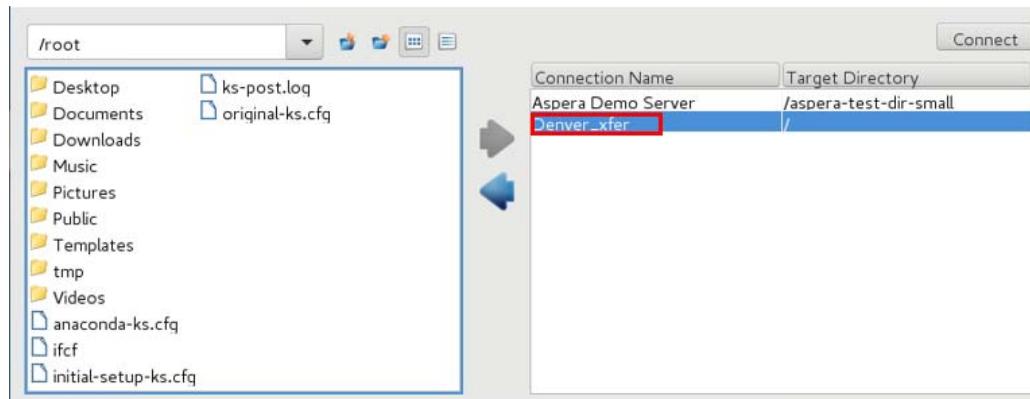
When the connection is tested, the Aspera GUI verifies:

- 1) the ability to successfully log in to the remote system via SSH with the user credentials you entered

and

- 2) the ability to communicate with the `ascp` process on the remote server via the FASP protocol.

If you encounter this problem, see the Troubleshooting section of the *IBM Aspera HST Server Administration Guide* for assistance in resolving the problem.



The main Transfer page now shows the Denver_xfer connection along with the Aspera Demo Server.

Section 4. Transfer files with a defined connection

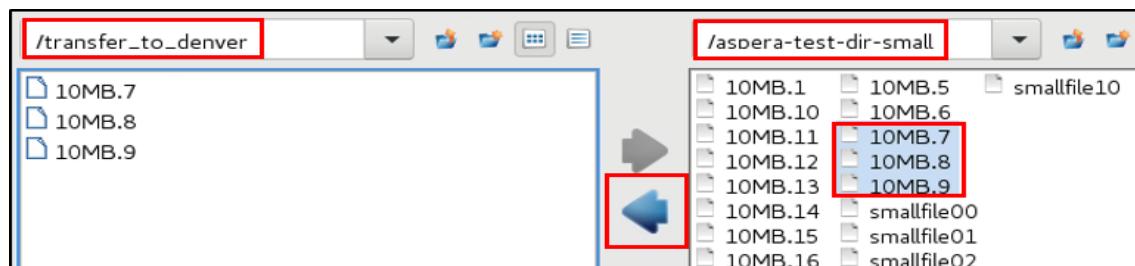
Business requirements

The next step is to confirm that transfers between the London and Denver servers function properly. LoneStar's administrator wants to confirm that files transferred that use the Denver_xfer connection are placed in the proper directory on the Denver server. They also want to know what speed the transfers.

The following tasks are designed to provide the information that the administrator needs about the connection.

To test file transfers by using the Denver_xfer connection, it is necessary to have some files of a known size to use. So, the following steps have you get some files from the Aspera Demo Server for that purpose.

- ___ 1. Generate some sample files by downloading three files from the Aspera Demo Server to the /transfer_to_denver directory on the London server.
 - ___ a. Continue working on the London server.
 - ___ b. Click Aspera Demo Server.
 - ___ c. Set the local directory (on the London server) to /transfer_to_denver.
 - ___ d. Set the remote directory (on the Aspera Demo Server) to /aspera-test-dir-small.



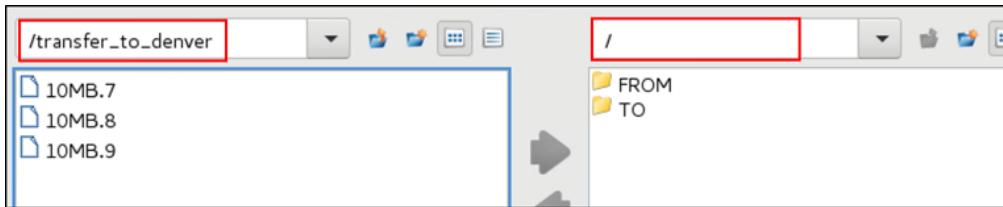
- ___ e. Click the 10MB.7, 10MB.8, and 10MB.9 files while holding the <CTRL> key.
- ___ f. Click the download arrow in the center of the page to download the files to the local system.
- ___ g. Disconnect the connection to the Aspera Demo Server by clicking Disconnect.



- ___ 2. Use the Denver_xfer connection to upload a file and verify that the connection is using the expected directory on the Denver server.
 - ___ a. Open the Denver_xfer connection by double-clicking its name in the main Transfer window.

The right side of the screen displays the docroot_directory on the remote server (Denver) and the left side displays the local directory, /transfer_to_denver.

- ___ 3. Confirm that the local directory is still /transfer_to_denver.
- ___ 4. Confirm that the remote directory is /.



Important

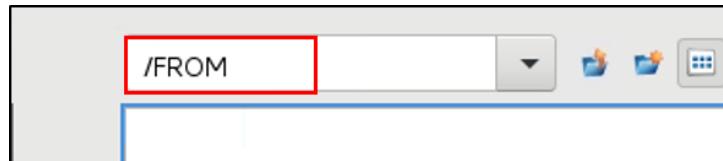
The docroot value for the xfer user is defined on the Denver server as /london_transfers, but the directory that is shown for the Denver server is /.

Why doesn't the remote directory show the /london_xfers value as it was defined on the Denver server?

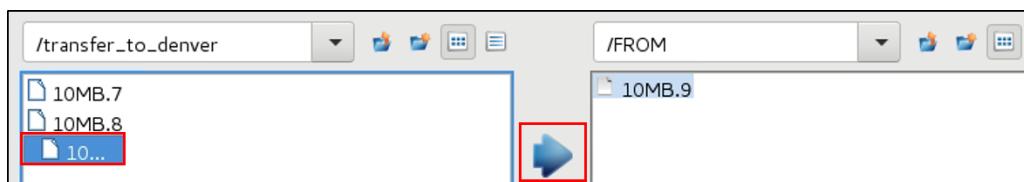
Remember, the docroot value you configured in the Aspera GUI for the xfer account is the full path name /london_xfers. However, that location becomes the insertion point when *ascp* uses the xfer account to connect to the Denver server. The function of docroot is to represent the highest level in the file system that a user can access. So, the /london_xfers directory effectively becomes root (/) for the xfer user account. All transfers that use the xfer account can access files or directories only within the /london_xfers.

This behavior can be demonstrated by trying to change the remote directory (on the Denver server) to /tmp. When you try to change the remote directory to /tmp, the system gives you an error message that the directory is invalid.

- ___ 5. Change the remote directory to FROM.



- ___ 6. Upload the 10MB.9 file to the Denver server by using the Denver_xfer connection.
 - ___ a. Highlight the 10MB.9 file in the local directory.
 - ___ b. Click the upload arrow in the middle of the screen to initiate the transfer.



- ___ 7. A while after you tested the system, the other Aspera administrator called and wanted some information about the test transfer you did earlier. They need you to provide answers to the following questions.

___ a. **Was the transfer an upload or a download?**

Look at the arrow on the left side of the report. An upward pointing arrow indicates an upload, and a downward pointing arrow indicates a download.

___ b. **What was the name of the file that was transferred?**

Look at the Name field.

___ c. **Was the transfer successfully completed?**

Look at the Status field.

___ a. **What was the average transfer speed for the transfer?**

Look at the Speed field.

___ b. **How many files were transferred in the transfer session?**

Look at the Files field.



Hint

Examine the Transfer report for this transfer to get answers to the questions.

#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
1	10MB.9	This Computer - ...	Denver_xfer - FR...	Complete	41.9 Mbps	10 MB	1 / 1	-
2	3 items: 10MB.7...	Aspera Demo Se...	This Computer - ...	Complete	41.9 Mbps	30 MB	3 / 3	-

- ___ 8. Download a file from the **Denver** server to confirm that downloads function properly.



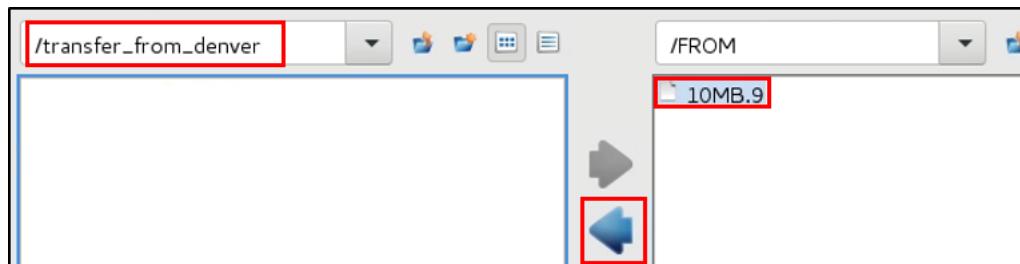
Attention

Remember that all Aspera servers can initiate uploads and downloads, and they are always in relation to who is initiating the transfer. So, in this case, the upload you initiated previously was sent from your local system to the remote system. If the Denver system initiated a transfer to the London system, it would also be an upload.

___ a. Change the local directory to `/transfer_from_denver`.

___ b. Highlight the 10MB.9 file you previously uploaded to the Denver server.

- c. Click the download arrow in the middle of the page to initiate the download.



- d. Look at the Transfer report for this transfer and note the Speed of the transfer.

#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
1	10MB.9	Denver_xfer - 10...	This Computer - ...	Complete	41.9 Mbps	10 MB	1 / 1	-
2	10MB.9	This Computer - ...	Denver_xfer - FR...	Complete	41.9 Mbps	10 MB	1 / 1	-
3	10MB.9	Aspera Demo Se...	This Computer - ...	Complete	41.9 Mbps	30 MB	3 / 3	-

You decide that you want to confirm that the transfer speed is consistent, so you perform the same download from the Denver server again.

- e. Download the same 10MB.9 file you transferred in the previous step.
 f. Look at the Speed field in the Transfer report for this transfer to verify that the system is operating consistently.

#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
1	10MB.9	Denver_xfer - 10...	This Computer - ...	Complete	-	0 / 10 MB	1 / 1	-
2	10MB.9	Denver_xfer - 10...	This Computer - ...	Complete	41.9 Mbps	10 MB	1 / 1	-



Questions

Why is the transfer indicated as Complete, even though no value is shown for the Speed and the Size is reported as zero?

The receiving system checks with the sending system to determine whether a file with the same name exists. The size of the existing file is also checked, and compared with the size of the file to transfer. If the name and size are the same, Aspera reports all the transfer information, but doesn't perform a transfer.

You decide to try the download again, but this time you make a small change by deleting the file on the receiving server.

- g. Highlight the 10MB.9 file on the local server (London).
 h. Right mouse click to open the File management menu and select Delete. Confirm the delete when prompted.
 i. Download the file again.
 j. Look at the Transfer report and check the Speed value for this download.

#	Name	Source	Destination	Status	Speed	Size
1	10MB.9	Denver_xfer - 10...	This Computer - ...	Complete	41.9 Mbps	10 MB
2	10MB.9	Denver_xfer - 10...	This Computer - ...	Complete	-	0 / 10 MB
3	10MB.9	Denver_xfer - 10...	This Computer - ...	Complete	-	0 / 10 MB

Notice that this time the download speed is consistent with most of the other transfers, indicating the file was physically transferred. So your exploring demonstrated one of the efficiency features of Aspera transfers.

- __ k. Close the Denver_xfer connection by clicking Disconnect.

Section 5. Configure Connection Manager parameters

Business requirements

You decide to ensure that transfers always occur, even if the file exists on the receiving server. You decide to modify the Denver_xfer connection to ensure that files are always overwritten. You consider the parameters that can be configured connections, and learn about other parameters that can affect transfers when using this defined connection. You access these parameters by selecting the various tabs across the top of the Connection Manager window. Details of these parameters were discussed during the presentation component of the class, and only a couple of them are addressed in this exercise.

Any values that you configure for this specific connection apply only for transfers that use this connection. If you initiate transfers that use a specific user (not the define connection), the parameters you configure for this connection do not apply. If you want to manage specific user transfers, you need to modify the parameters associated with that user account, not in a pre-defined connection. The parameters that are discussed in this section can be applied to users or groups as needed.

- 1. Modify the File handling parameters of the Denver_xfer connection to cause Aspera to always overwrite files, even if they exist on the receiving system.

It is possible to configure several aspects of how Aspera deals with files when conducting transfers. The File Handling tab defines parameters that modify transfer behaviors to meet specific preferences.

- a. Continue working on the London server.
- b. Click Connections.



- c. If necessary, select the Denver_xfer connection.
- d. Click the File Handling tab.

The screenshot shows the 'Denver_xfer' configuration interface. The 'File Handling' tab is active and highlighted with a red box. Key settings include:

- Resume:** Resume incomplete files
- When checking files for differences:**
- When a complete file already exists at the destination:**
- File Attributes:**
 - Preserve access time
 - Preserve modification time
 - Preserve source access time
 - Preserve owner and group
- Source Handling:**
 - Automatically delete source files after transfer
 - Automatically move uploaded source files to a directory
 - Delete empty source subdirectories

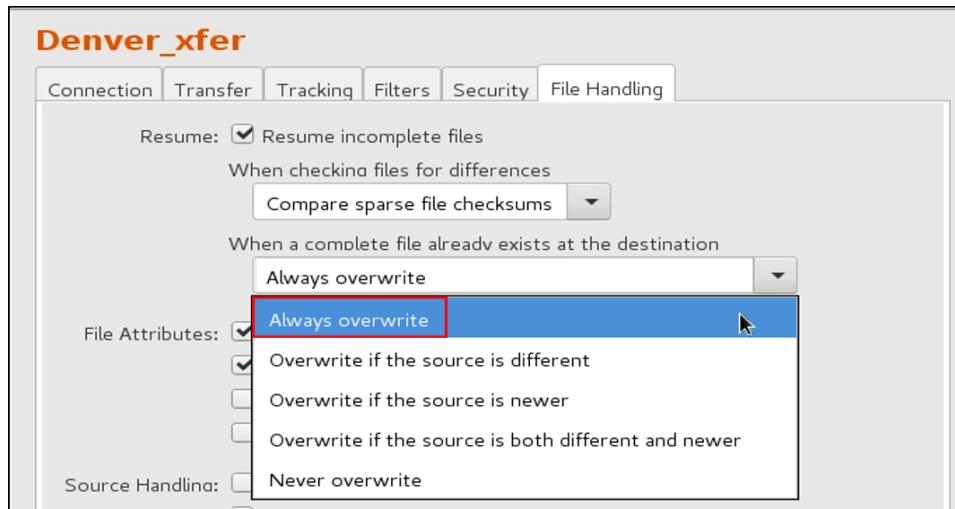
This page defines parameters that modify transfer behaviors like:

- 1) Whether file transfers can resume if the transfer is interrupted or not
- 2) How Aspera deals with files that exist in the target directory
- 3) How file attributes are preserved (only on Linux systems)
- 4) How to deal with files after they are transferred

___ 2. Configure file overwrite permissions to *Always overwrite* destination files during transfers.

The default behavior for Aspera transfers is to NOT transfer a file when the target directory already contains the exact same file. You can modify this default behavior by modifying parameters on the File Handling page as follows:

- ___ a. Click the menu for the *When a complete file already exists at the destination* parameter.
- ___ b. Select *Always overwrite*.



Notice that other overwrite options can be configured to meet specific preferences.

- ___ c. Save your changes and return to the Transfer window by clicking OK at the bottom of the page.
- ___ d. Click the Denver_xfer connection and start another download of the 10MB.9 file from the Denver server.

The Aspera GUI remembers the last settings that are used, so the local directory should still be /transfer_from_denver and the remote directory should be /FROM.

Source	Destination	Status	Speed	Size	Files	Remaining
Denver_xfer - 10... This Computer - ... Complete			41.9 Mbps	10 MB	1/1	-
Denver_xfer - 10... This Computer - ... Complete			41.9 Mbps	10 MB	1/1	-
Denver_xfer - 10... This Computer - ... Complete			-	0 / 10 MB	1/1	-
Denver_xfer - 10... This Computer - ... Complete			41.9 Mbps	10 MB	1/1	-

This time the file was transferred even though the same exact file existed on the remote system.

- ___ e. Close the Denver_xfer connection by clicking Disconnect.

This configuration might not be ideal for production systems. However, it does make the tasks in the rest of the lab exercises less confusing to complete.

Section 6. Configure transfer parameters

Business requirements

While configuring the file overwrite setting, you realize that several other options are available for managing and controlling transfers with the Denver_xfer connection. You want to play with some of these parameters to see their impact. The following tasks help you learn about how these parameters might be used.

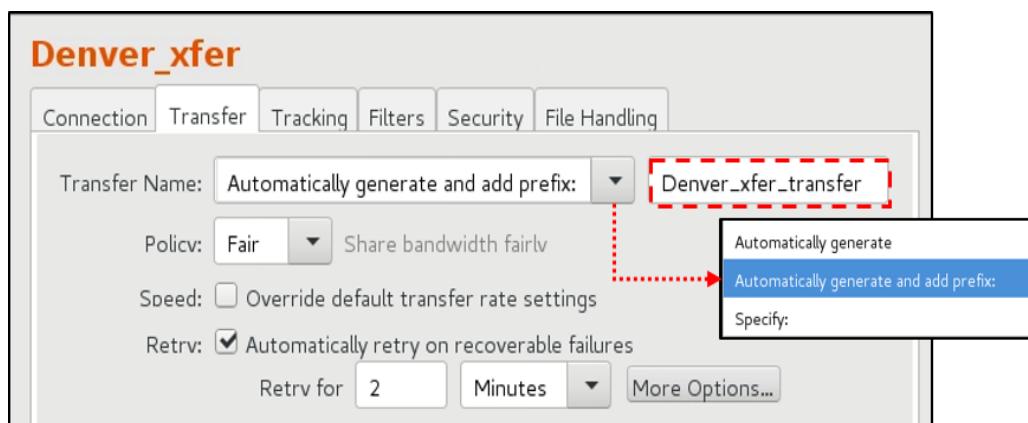
Add a prefix to transfer name

By default, transfers that use the configured connection show the transferred file name the same as the source file's name. When looking at reports that include transfers across different connections, it might be useful to identify files that are transferred from each defined connection. You can add an identifying prefix to transfers by changing the Transfer Name value on the Transfer tab.

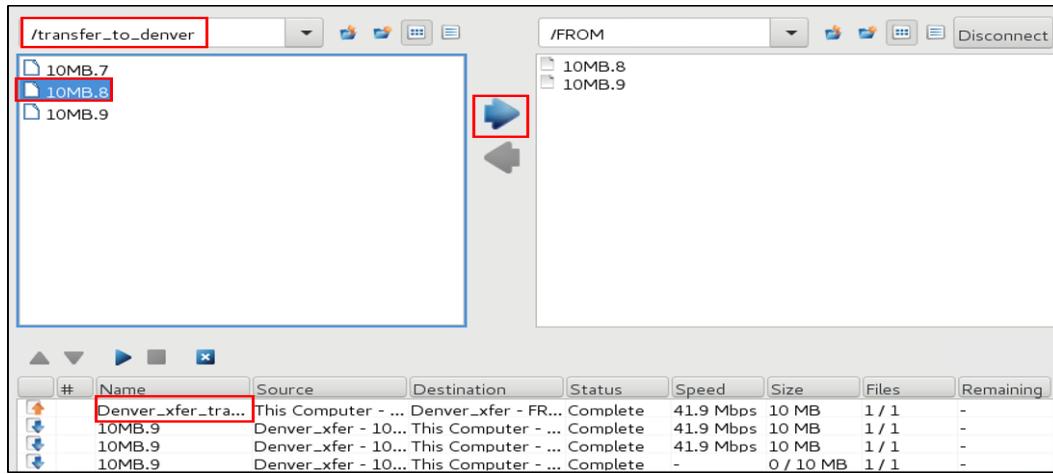
- ___ 1. Continue on the London server (where you configured the Denver_xfer connection).
- ___ 2. Open the Connections page.
- ___ 3. The Denver_xfer connection should be highlighted. If not, click the Denver_xfer name.
- ___ 4. Click the Transfer tab.
- ___ 5. Use the menu in the Transfer Name field and click the *Automatically generate and add prefix* option.

Another box opens where you can enter a text string that is added to the file name transferred

- ___ 6. Change the prefix value by entering the following text in the box, Denver_xfer_transfer

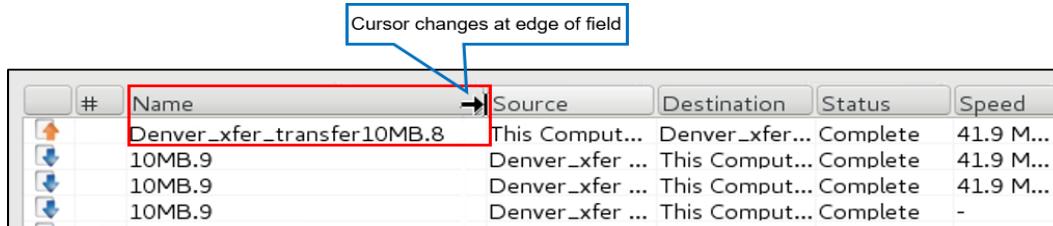


- ___ 7. Save your changes by clicking OK.
- ___ 8. Open the Denver_xfer connection.
- ___ 9. Change the local directory to /transfer_to_denver.
- ___ 10. Upload the 10MB.8 file from the local London server to the remote Denver system.
- ___ 11. Look carefully at the Transfer report.



- ___ 12. Expand the Name field shown in the Transfer report section of the GUI.
- ___ a. Place the mouse to the right of the Name listing at the top of the Transfer report and slide it to the right to adjust the size of the field displayed.

Notice that the name of the transfer that is shown in the transfer statistics now includes the prefix that you configured.



Note

If you used the Specify option for the Transfer Name prefix instead of the *Automatically generate and add prefix* option, the transfer name would appear as the value you entered for the Specify parameter. The original file name would not be included.

	Transfer from NY:	Aspera Demo Se... This Computer -... Complete	83.9 Mbps	10 MB	1 / 1	-
Replaces source file name						

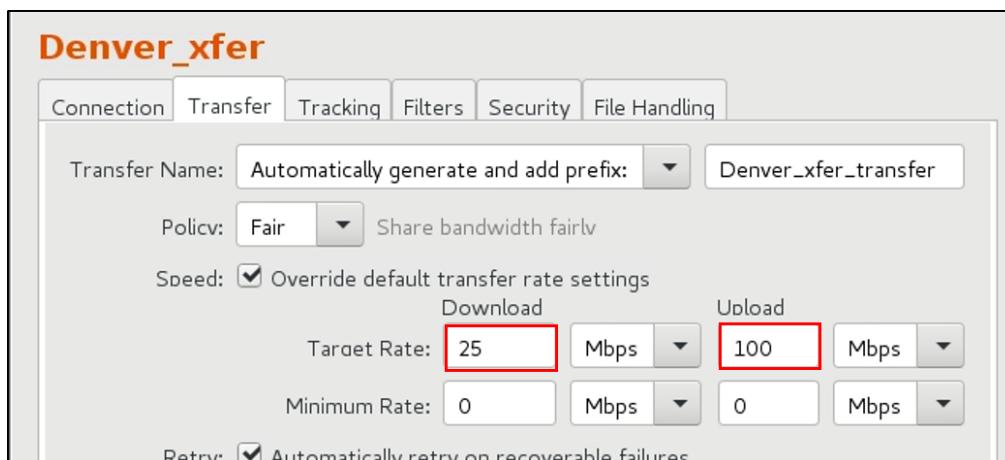
- ___ 13. Close the Denver_xfer connection by clicking Disconnect.

Configure bandwidth parameters.

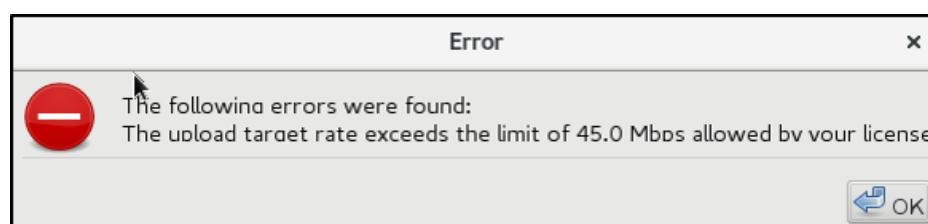
LoneStar is concerned that some transfers use too much available network bandwidth and ask how to configure Aspera to minimize the impact of these transfers. You explore the behavior of the Bandwidth settings for the connection to see what might be done.

You can set many other Bandwidth parameters values that might be useful for transfers over this connection. However, if the server at either end of the connection does not support these requests, they are not allowed. If the configured value exceeds the corresponding value on the remote server, no error is displayed. But, the limiting value of the remote server applies to the transfer. If the value you enter exceeds the Aspera license limit of the local server, you receive an error message when you attempt to save your changes.

- 1. Modify the transfer rate settings for transfers by using the Denver_xfer connection.
 - a. Remain on the London server.
 - b. Click the Connections tab.
 - c. The Denver_xfer connection should be highlighted. If not, click the Denver_xfer name.
 - d. Click the Transfer tab.
 - e. Place a mark in the Override default transfer rate settings checkbox to present the configuration Target Rate and Minimum Rate parameters.
 - f. Change the Download Target Rate value to 25 Mbps.
 - g. Change the Upload Target Rate to 100 Mbps.
 - h. Click OK.

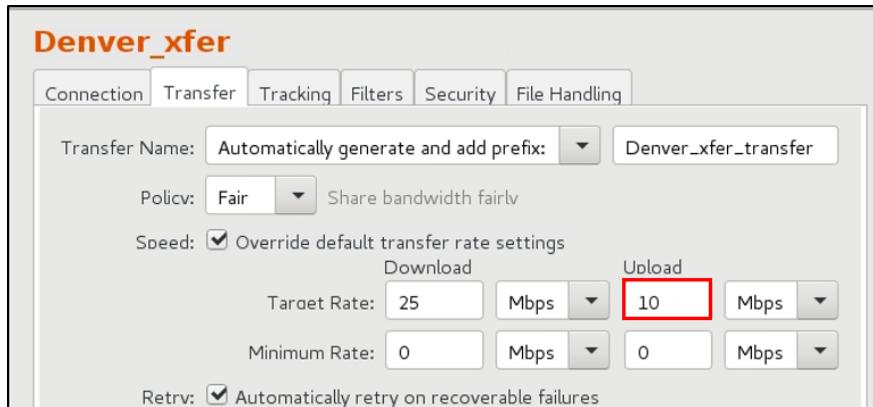


The Aspera software compares the upload and download Target Rate values that you entered with the transfer speed limit that is contained in the Aspera license. In this case, the 100 Mbps entered in the Upload Target Rate field exceeds the 45 Mbps limit of the license. An error message is presented indicating the problem.

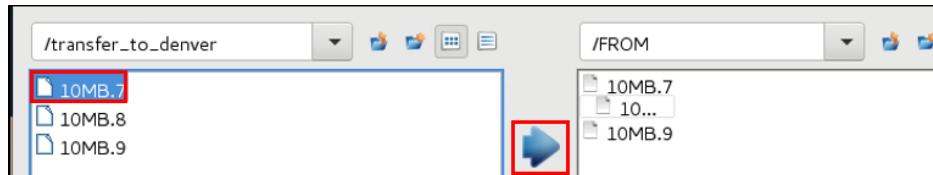


- i. Click OK to close it.
- j. Change the Upload Target Rate value to 10 Mbps.

- ___ k. Click OK to save the changes and return to the main Transfer page.



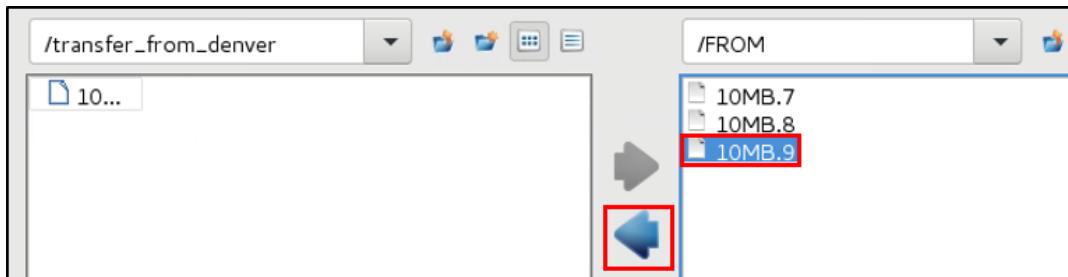
- ___ 2. Use the Denver_xfer connection to test the changes that are made to the bandwidth settings.
- Click the Denver_xfer connection to open a connection to the Denver server.
 - Confirm that the local directory is /transfer_to_denver and the remote directory is /FROM.
 - Upload the 10MB.7 file from the local London server to the remote Denver server by highlighting the file and clicking the upload arrow.



Look at the Transfer report and note the speed of the transfer.

Name	Source	Destination	Status	Speed	Size	Files	Remain...
Denver_xfer_transfer10MB.7	This Comput...	Denver_xfer...	Complete	9.3 Mbps	10 MB	1 / 1	-
Denver_xfer_transfer10MB.8	This Comput...	Denver_xfer...	Complete	41.9 M...	10 MB	1 / 1	-
10MB.9	Denver_xfer ...	This Comput...	Complete	41.9 M...	10 MB	1 / 1	-
10MB.9	Denver_xfer	This Comput...	Complete	41.9 M...	10 MB	1 / 1	-

- ___ d. Now download the 10MB.9 file from the remote Denver server to the local London server.



- ___ e. Look at the Transfer report for this download and note its transfer speed.

Name	Source	Destination	Status	Speed	Size	Files
wer_xfer_transfer10MB.9	Denver_xfer ...	This Comput...	Complete	28.0 M...	10 MB	1 / 1
wer_xfer_transfer10MB.7	This Comput...	Denver_xfer...	Complete	9.3 Mbps	10 MB	1 / 1
wer_xfer_transfer10MB.8	This Comput...	Denver_xfer...	Complete	41.9 M...	10 MB	1 / 1

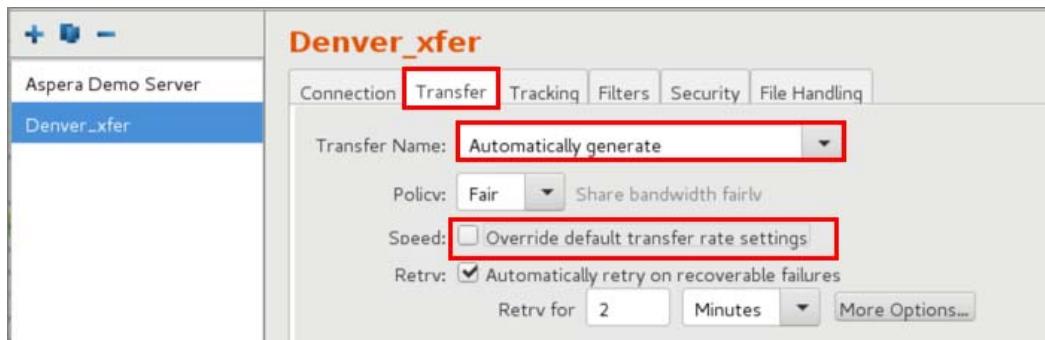
The Transfer report for the upload you performed indicates a transfer speed of 9.3 Mbps. This rate is consistent with the Upload Target Rate that is specified in the Transfer settings for the Denver_xfer connection.

The Transfer report indicates a transfer speed of approximately 25 Mbps (28.0 Mbps in the example). This rate is consistent with the Download Target Rate that is specified in the Transfer settings.

What you discovered is that you can manage the speed of transfers by setting the Bandwidth parameters for connections. You learned the effect of setting bandwidth limits and realize that this knowledge is useful when dealing with outside transfers.

You decide to reset the Denver_xfer connection to use higher transfer rates for both uploads and downloads in to further explore Aspera parameters.

- ___ 3. Reset the Transfer settings to default values.
 - ___ a. Close the Denver_xfer connection by clicking Disconnect.
 - ___ b. Click the Connections tab.
 - ___ c. The Denver_xfer connection should be highlighted. If not, click the Denver_xfer name.
 - ___ d. Click the Transfer tab.
 - ___ e. Change the Transfer Name field back to Automatically generate.
 - ___ f. Reset the Upload Target Rate and the Download Target Rate values to default by removing the mark in the Override default transfer rate settings checkbox.
 - ___ g. Click OK.



You wonder how the system deals with bandwidth settings that differ between servers, so you try some additional configurations.

Transfer files between servers with different bandwidth settings.



Important

The parameter settings on the Denver server are not limited to connections defined on other servers. To test how bandwidth configurations of different servers impact transfers, you change the bandwidth settings for the xfer account that is used by the Denver_xfer connection.

- __ 1. Switch to the Denver server.
 - __ a. If necessary, open the Aspera GUI
 - __ b. Click the Configuration icon.
 - __ c. Select the Users tab (the xfer user account should be the default).
 - __ d. Click the Bandwidth tab.
 - __ e. Scroll down the page to locate the Outgoing Target Rate Cap (Kbps) entry and check the Override checkbox.
 - __ f. Set the Effective Value to 20000.
 - __ g. Set the Outgoing Target Rate Default (Kbps) field to 20000 as well.

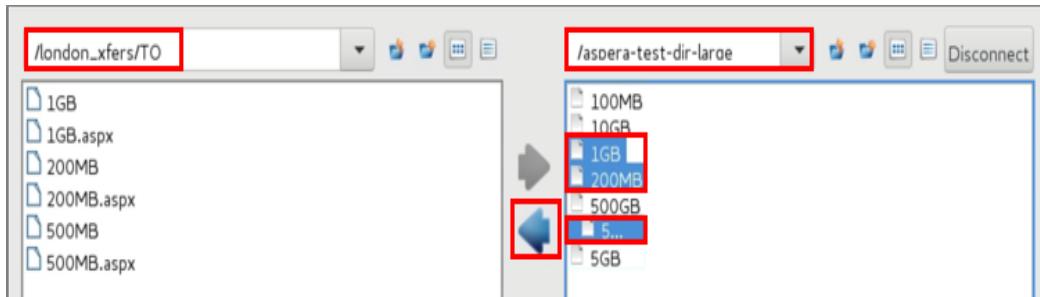
Setting	Inherited Value	Inherited From	Override	Effective Value
Incoming Rate Control Predictor Range: 2	default		<input type="checkbox"/>	2
Incoming Rate Control Predictor Limit: 3	default		<input type="checkbox"/>	3
Incoming Rate Control Target Queue: unset	default		<input type="checkbox"/>	unset
Outgoing Vlink ID: 101	node		<input type="checkbox"/>	101
Outgoing Target Rate Cap (Kbps): Unlimited	default		<input checked="" type="checkbox"/>	20000
Outgoing Target Rate Default (Kbps): 45000	node		<input checked="" type="checkbox"/>	20000

- __ h. Click OK.

The Denver_xfer connection that is defined on the **London** server is configured with 45 Mbps as a Target Rate Cap for both uploads and downloads. However, the xfer account at the other end of the connection is configured with an Outbound Target Rate Cap value of only 20 Mbps.

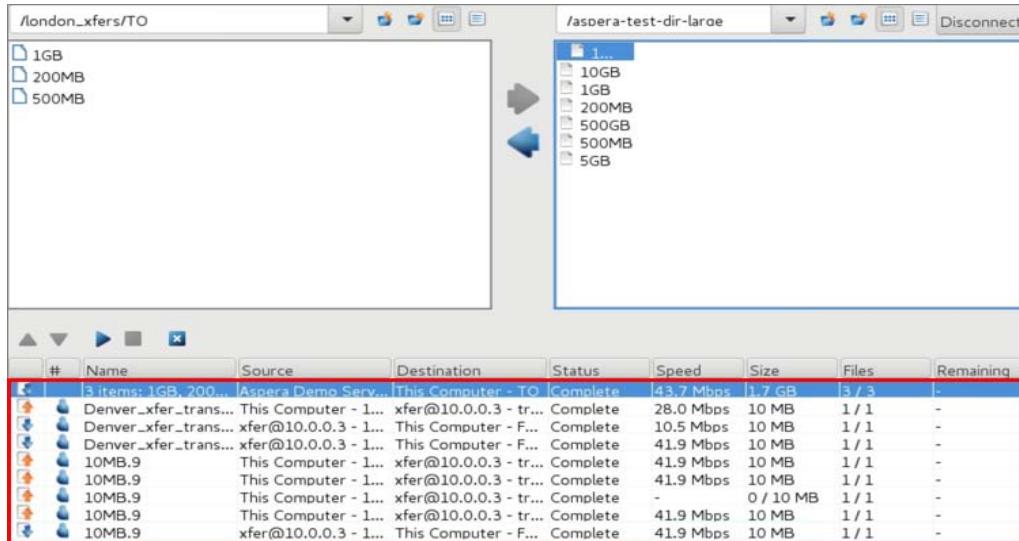
You realize that you need some additional sample files in the directory that is used to send files to the London server to do your testing. So, you download some from the Aspera Demo Server.

- __ i. Continue on the Denver server.
- __ j. Double-click the Aspera Demo Server connection.
- __ k. Set the local directory to /london_xfers/TO.
- __ l. Set the remote directory to /aspera-test-dir-large.
- __ m. Download the 200MB, the 1GB, and the 500MB files.



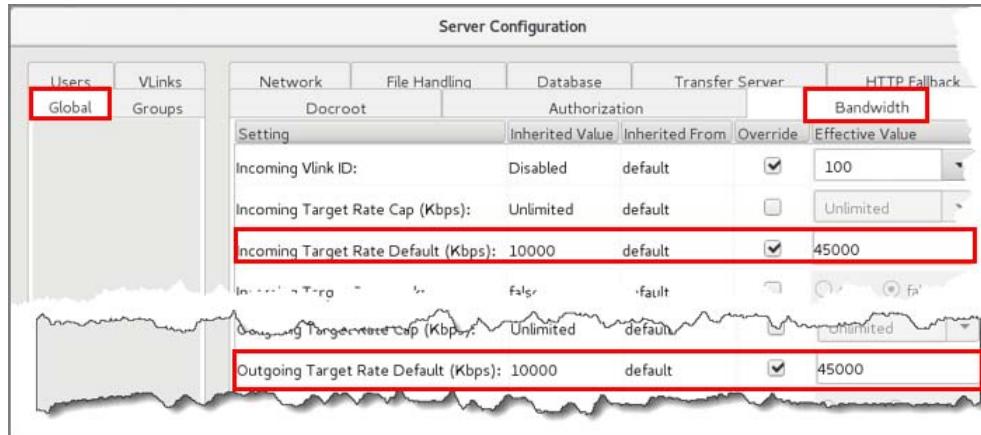
- ___ n. Close the connection to the Aspera Demo Server by clicking Disconnect.

You notice several Transfer reports on the Denver server that correspond to the transfers you performed from the London server. You realize that ALL of the transfers that are initiated on the London server also appear in the Transfer reports on the Denver server. So you realize an interesting fact: the GUI on both servers that are involved in a transfer reports it as part of their normal operation.

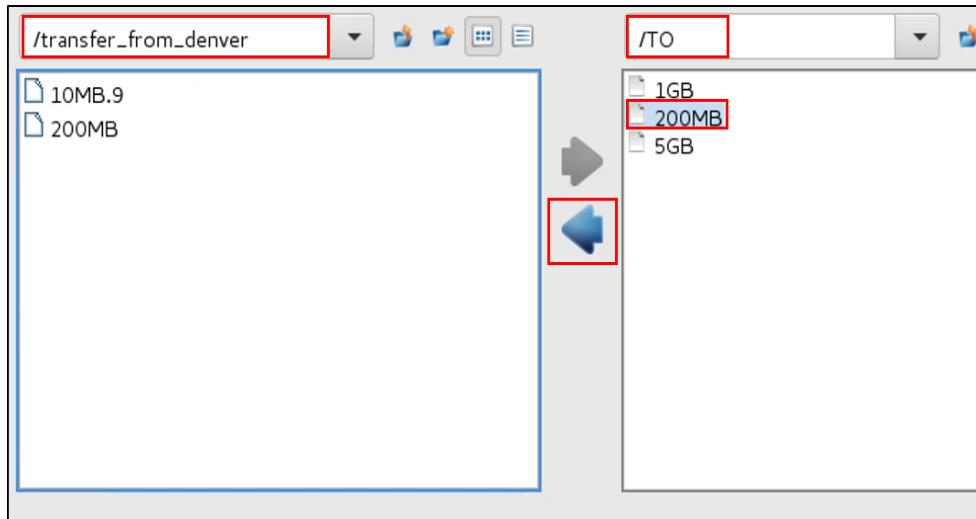


You initiate a transfer with the Denver_xfer connection to see what happens when the Aspera servers that are involved have conflicting bandwidth settings. Knowing that download requests from the London server are viewed as outbound transfers by the Denver server, you test a download by using the Denver_xfer connection.

- ___ 2. Configure the Bandwidth settings on the London server.
 - ___ a. Switch to the London server.
 - ___ b. Click the Configuration icon to open the Server Configuration page.
 - ___ c. Select the Global managed object.
 - ___ d. Modify the Incoming Target Rate Default (Kbps) and Outgoing Target Rate Default (Kbps) fields to be 45000.



- ___ e. Click OK.
- ___ 3. Test the way Aspera deals with conflicting parameters by downloading a file from the Denver server.
 - ___ a. Double-click the Denver_xfer connection to open the connection.
 - ___ b. Confirm that the local directory is set as /transfer_from_denver .
 - ___ c. Set the remote directory as /TO.
 - ___ d. Download the 200MB file from the remote Denver server to the local London system.



Even though the download bandwidth setting for the Denver_xfer connection is 45 Mbps, the actual download has a transfer speed around 20 Mbps. This rate is the same rate as the Outbound Transfer Rate configured for the xfer transfer user on the Denver server.

#	Name	Source	Destination	Status	Speed	Size
2	200MB	Denver_xfer ...	This Compu...	Complete	19.5 M...	200 MB
1	Denver_xfer_transfer10MB.9	Denver_xfer ...	This Compu...	Complete	28.0 M...	10 MB

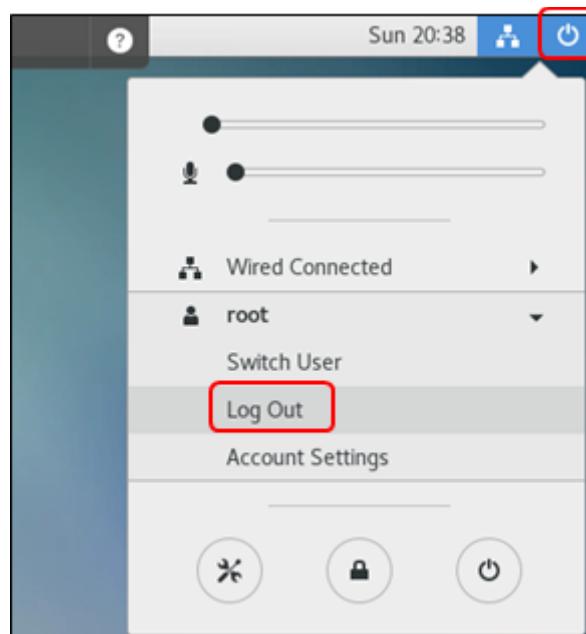
You learned from this test that the IBM Aspera transfer server with the lowest bandwidth setting limits the transfer rate. But that is normal behavior and does not constitute an error condition (does not generate an error message).

Share a defined connection

LoneStar wants some employees in the **London** office to be able to initiate transfers to and from the Denver office without needing the login credentials. The **Denver_xfer** connection that you created fulfills that function, but you need to make sure the **Denver_xfer** connection is available to those users.

Defined connections can be useful when some users need the ability to transfer files, but do not have the details about the remote server. Defined connections are not automatically available to other users who log in to the Aspera GUI. The creator of the connection must explicitly allow access by enabling the **Share this connection with all users on this computer** checkbox. This feature allows administrators to define connections and share them with other users.

- 1. Determine whether the **Denver_xfer** connection is available to other users of the **London** server.
 - a. Continue working on the London server.
 - b. Exit from the Aspera GUI by clicking the X at the upper right side of the GUI window.
 - c. Logout of the London server as follows:
 - d. Click the Power button at the upper right side of the screen and click root to open a menu with a Log Out option.
 - e. Click Log Out or the Switch User option - both have the same results (click Log Out when prompted).



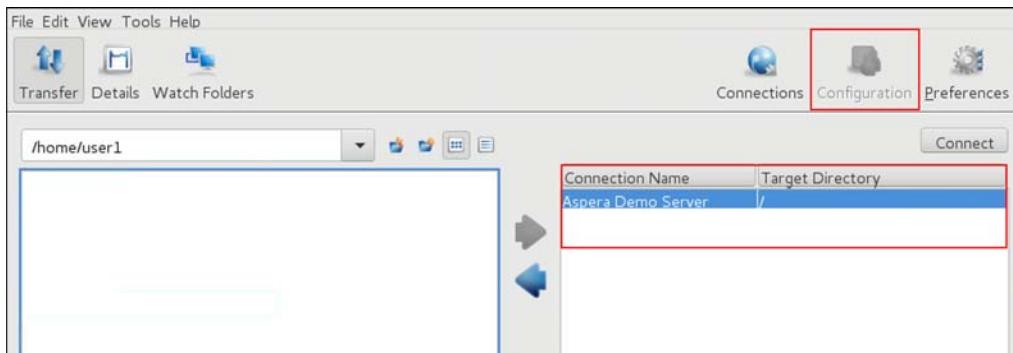
- ___ f. Log back into the **London** server by using a different account without administrative permissions (**user1** with a password of *passw0rd*).



- ___ g. Open a terminal window and start the Aspera GUI by running `asperascp` at the command line:

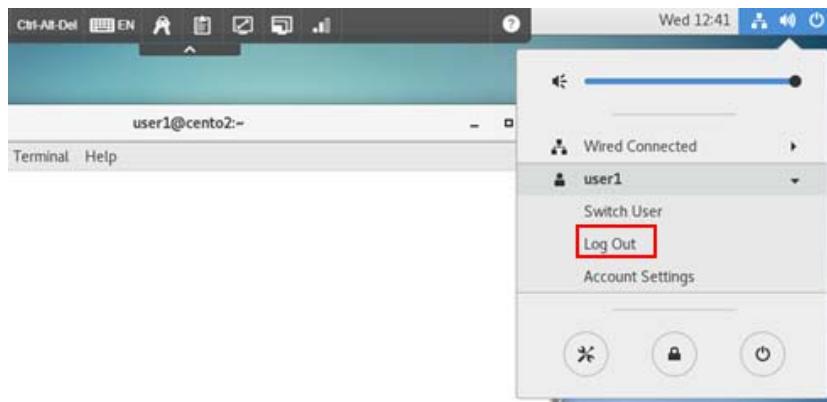
```
asperascp
```

The Aspera GUI opens.

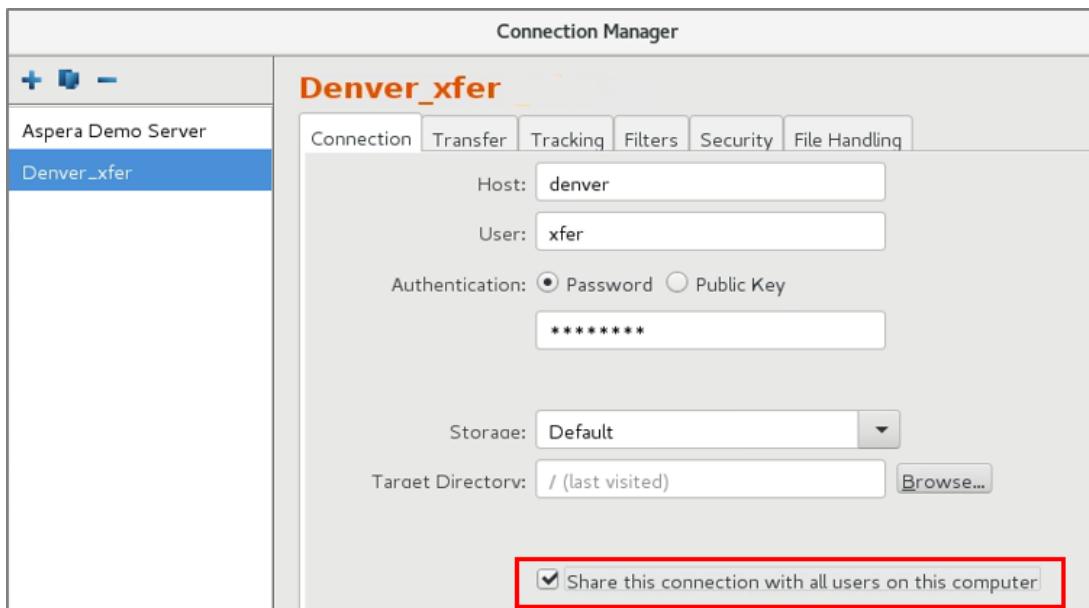


Notice that the Denver_xfer connection does not appear as an option (and the Configuration button at the top of the page is disabled). So even though the root account creates a connection on the London server, that connection is not automatically available to other users. And, because the user1 account does not have administrative privileges, the ability to change the system configuration is prohibited.

- ___ h. Close the Aspera GUI by clicking X in the upper right corner.
 ___ i. Log out of the user1 account by following the same procedure as you used previously.



- ___ 2. Share the Denver_xfer connection with non-administrative users of the server.
 - ___ a. Log back into the London server by using the *root/passw0rd* credentials.
 - ___ b. Open a terminal and start the Aspera GUI.
 - ___ c. Go to the Connections page and click the Denver_xfer connection.
 - ___ d. Click the *Share this connection with all users on this computer* checkbox.



- ___ e. Click OK.

The Aspera GUI now identifies the connection as a shared connection on the main Transfer page.



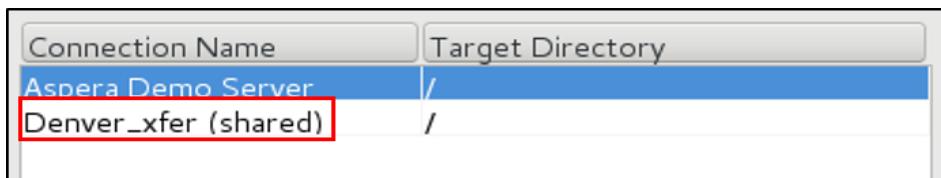
Note

When editing a connection's configuration, it is suggested that the connection is disconnected before making configuration changes. If the connection is active, the changes you make might not take effect until you close and then restart the connection.



- ___ f. Close the Aspera GUI and logout out of the **root** account on the **London** server.
- ___ 3. Log back in to the London server by using the user1 account (password = *passw0rd*).
- ___ a. Open a terminal window and start the Aspera GUI with the `asperascp` command.

You confirm that the configured Denver_xfer connection now appears as an option for user1 to use for transfers.



Attention

Shared connections do not always appear for non-administrative users immediately after they are first created. If the Denver_xfer(shared) connection is not shown, complete the following steps:

- ___ 1. Log out and log back in as **root**.
- ___ 2. Start the Aspera GUI again and double-click the Denver_xfer connection to establish a connection to the Denver server.
- ___ 3. Click Disconnect to close the connection.
- ___ 4. Log out and log back in as user1.

- ___ b. Double-click the Denver_xfer connection to establish a connection with the Denver server.

You are NOT prompted for any of the normal data that is required to make a remote connection (server to connect to, login name, or password). Meaning that users on the London server can initiate transfers by using the Denver_xfer without needing to the login credentials.

- ___ c. Close the connection by clicking Disconnect.

For security purposes, you want to confirm that users cannot modify the Denver_xfer connection parameters, so you try to perform some tasks that only administrators can do.

- ___ 5. Verify behavior of shared connections
 - ___ a. Click the Connections icon.

- b. Confirm the Denver_xfer connection is highlighted. If not, click it to change the application's focus to the Denver_xfer connection.
- c. Change the user for the connection (currently xfer) to user1.

You confirm that you are not able to change the username, so you want to try one more thing to confirm the security of the connection.

- d. Go to the Transfer tab.

All parameters on this page are disabled, which satisfies your concerns about allowing non-administrative users access to the Denver_xfer connection.

- e. End the Aspera GUI by clicking X at the upper right of the GUI window.
- f. Log out of the user1 account.

So you demonstrated that defined connections can be made available to non-administrative users, but they cannot change any of the defined parameters.

You decide to explore some other parameters to become more comfortable with the Aspera environment.

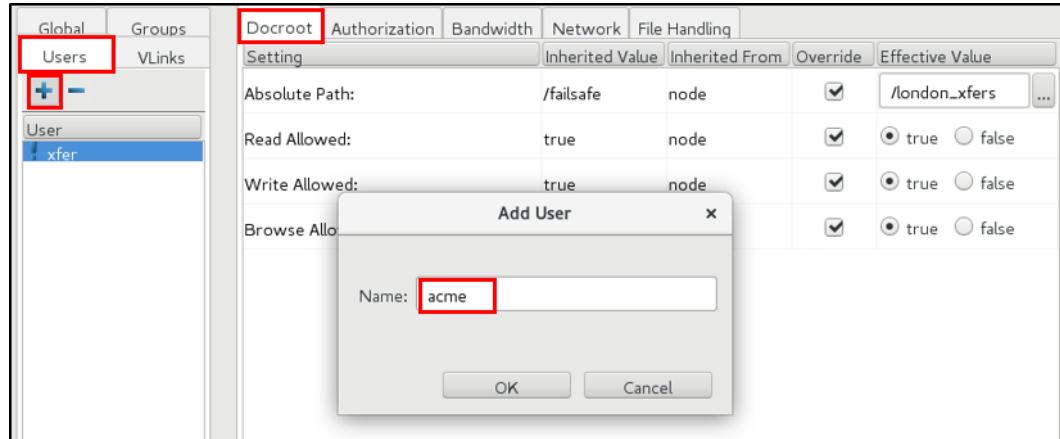
Configure authorization parameters to control access for inbound and outbound transfers

Thinking about how the Aspera servers might be used in the future, one consideration is to manage vendor transfers. You want them to upload files to your servers, but not download files from the same server. Reading through the IBM Aspera HST Server Administration Guide, you find a discussion about allowing or denying transfers for specific user accounts or globally. This discussion leads you to explore the use of authorizations.

You realize that you need to create another transfer user on the Denver server to use for Acme Media, who is frequently contracted to create new videos for LoneStar. So, you go through the process of adding and configuring an account on the Denver server. This new account is the account that you use to test the behavior by initiating transfers from the London server.

- 1. Create a transfer user called acme on the Denver server.
 - a. Switch to the Denver server.
 - b. If not already logged in to the Denver server, log in as **root** (use the *root/passw0rd* credentials).
 - c. If necessary, open a terminal window and start the Aspera GUI.
 - d. Click Configuration to open the Server Configuration page.
 - e. Select the Users managed object.
 - f. Create a transfer user by clicking the Create New User icon.
 - g. Enter acme for the username.

- __ h. Click OK to create the acme transfer user account.



- __ i. If necessary, click the Docroot tab.
 __ j. Mark the Override checkbox for the Absolute Path parameter and set the docroot for the **acme** account to /acme.

	Groups	Docroot	Authorization	Bandwidth	Network	File Handling	Setting	Inherited Value	Inherited From	Override	Effective Value
	VLinks						Absolute Path:	/failsafe	node	<input checked="" type="checkbox"/>	/acme
							Read Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
							Write Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
							Browse Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

- __ k. Click Apply to save your changes but remain on the Server Configuration page.
 __ l. Configure the Denver server to deny requests to download files when requested by the acme account, but allow the ability to upload files by using the same account.
- Click the Authorization tab.
 - Locate the Outgoing Transfers parameter.
 - Place a mark in the Override checkbox of the Outgoing Transfers field.
 - Use the menu to set the Effective Value to deny.

	Global	Groups	Docroot	Authorization	Bandwidth	Network	File Handling	Setting	Inherited Value	Inherited From	Override	Effective Value
	Users	VLinks						Incoming Transfers:	allow	default	<input type="checkbox"/>	allow
								Incoming External Provider URL:	<None>	default	<input type="checkbox"/>	
								Incoming External Provider SOAP Ac...	<None>	default	<input type="checkbox"/>	
								Outgoing Transfers:	allow	default	<input checked="" type="checkbox"/>	deny
								Outgoing External Provider URL:	<None>	default	<input type="checkbox"/>	allow
								Outgoing External Provider SOAP Ac...	<None>	default	<input type="checkbox"/>	deny
								Token Encryption Cipher:	aes-128	default	<input type="checkbox"/>	token

- ___ e. Click OK to save your changes and return to the main Transfer page.



Important

The terms Inbound and Outbound, as used by Aspera, are relative to the server where the parameter is configured not relative to the user account that makes the transfer request.

The acme account on the Denver server is now configured to deny outbound requests (downloads from the perspective of the initiator) when authenticated as the acme transfer user.

The next step is to verify that the configuration functions as expected.



Note

When the system goes into production, Acme Media needs an Aspera application (one of the following products: IBM Aspera HST Server, IBM Aspera HST Endpoint, IBM Aspera Client, or IBM Aspera Command-line Interface) to transfer files to the Denver server. For testing purposes, you decide to use the London server as the initiating system.

Before you can test the acme account, you remember that you need at least one file in the `/acme` directory to use for testing. So, you copy a file from the `/london_xfers/FROM` directory into the `/acme` directory.

- ___ 3. Copy the `/london_xfers/FROM/10MB.7` file into the `/acme` directory and change the files ownership.

- ___ a. Open a terminal window by using the right mouse button on the desktop screen and selecting the Open terminal option.

- ___ b. Run the following command:

```
cp /london_xfers/FROM/10MB.7 /acme; chown acme:acme /acme
```

```
[root@denver FROM]# cp /london_xfers/FROM/10MB.7 /acme; chown acme:acme /acme/*
cp: overwrite '/acme/10MB.7'? y
```

- ___ c. Confirm that the file was copied to the `/acme` directory and that the ownership was set to acme by running the following command:

```
ls -l /acme
```

```
[root@denver FROM]# ls -l /acme
total 10240
-rw-r--r-- 1 acme acme 10485760 Nov 25 16:16 10MB.7
```

- ___ 4. Verify that the acme account on the Denver server allows inbound transfers, but denies outbound transfers.

- ___ a. Switch to the London server.

- ___ b. Log in with the root credentials (`root/passw0rd`).

- ___ c. If necessary, open a terminal window and start the Aspera GUI by running the asperascp command:

```
asperascp &
```

- ___ d. Click the Connections link to open the Connection Manager page.
- ___ e. Click the Create a new connection icon.
- ___ f. Click OK to create a new connection.
- ___ g. Leave the connection name as New Connection, but enter the following parameter values:

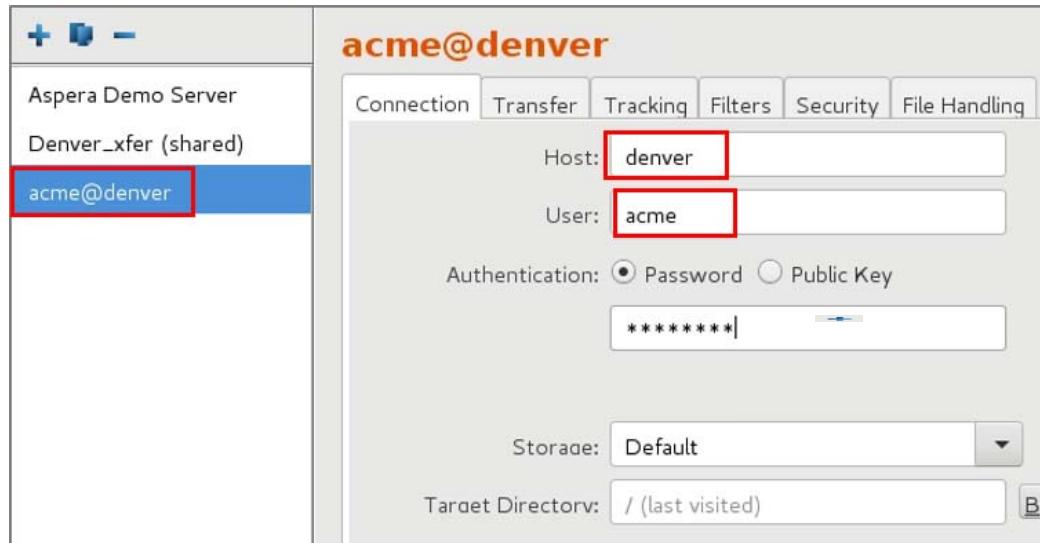
Host: denver

User: acme

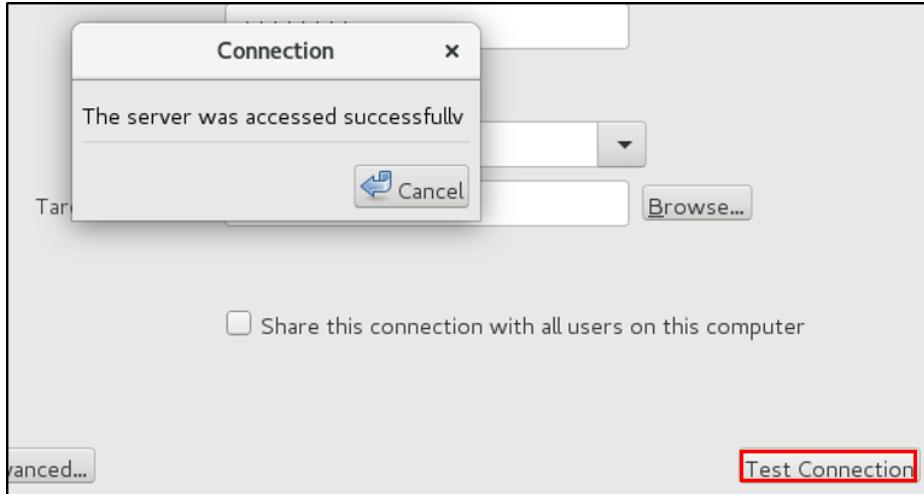
Authentication: Password

Password: passw0rd

Storage: Leave as Default



- ___ h. Test the connection by clicking Test Connection near the bottom of the page.



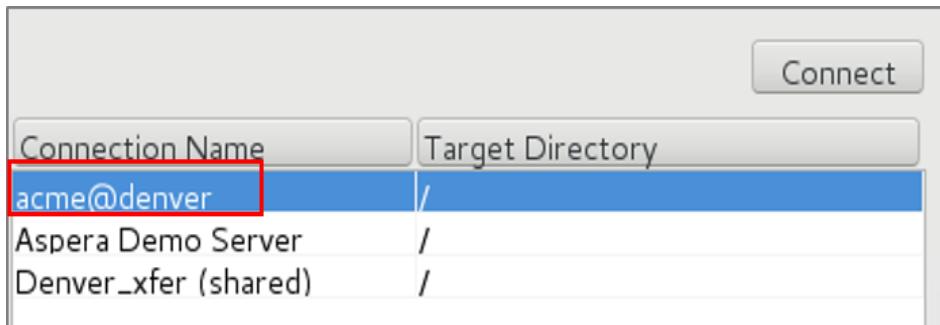
- ___ i. Click OK to save the connection and return to the main Transfer page.



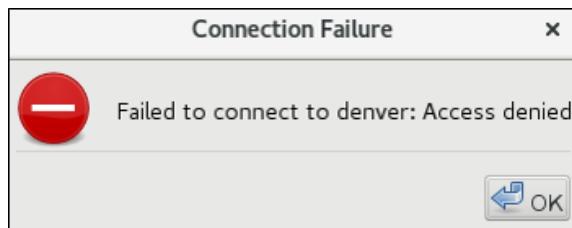
Note

You notice that the connection is named acme@denver, even though you did not assign that name. Unless you specifically name a connection, the Aspera GUI automatically names connections by combining the User and Host values you enter.

- ___ j. The main Transfer page now shows the acme@denver connection.



- ___ k. Double-click the acme@denver connection to open the connection to the Denver server. You are confused when an error message is presented.



When you tested the connection on the Configuration Manager page, it was successful in accessing the Denver server, but now, you get an *Access denied* message. You remember you were told that some things can be done from the command line that cannot be done in the Aspera GUI. So, you try to transfer a file from the command line.

- ___ l. Click OK close the Connection Failure message window.
- ___ m. Continuing on the London server, open a terminal window.
- ___ n. Upload the `/transfer_to_denver/10MB.7` file from the London server to the Denver server with the **acme** account by entering the following command (use *passw0rd* when prompted for a password):

```
ascp /transfer_to_denver/10MB.7 acme@denver:/
```

```
[root@london ~]# ascp /transfer_to_denver/10MB.7 acme@denver:/
Password:
10MB.7                                         100%   10MB 43.8Mb/s    00:02
Completed: 10240K bytes transferred in 2 seconds
(36222K bits/sec), in 1 file.
```

You now know that if Acme attempts to connect to the Denver server when the Outgoing Transfers parameter is set to deny, they cannot connect to your Denver system. However, if they use the command-line `ascp` utility with the same account, they can successfully upload a file to the Denver server.

The next thing that you want to determine is whether the command line can also be used to download a file from the Denver server when the acme account is used.

- ___ o. In the terminal window, run the following command to test if the acme account can download a file (use *passw0rd* when prompted for a password):

```
ascp acme@denver:/TO/200MB /tmp/
```

```
[root@london ~]# ascp acme@denver:/TO/200MB /tmp
Password:

Session Stop  (Error: Server aborted session: Authorization refused: user/group
acme denied by server. Auth value is deny)
```



Note

Because these steps are testing the ability to transfer, and the files that are transferred are not important for future use, putting the downloaded file in the `/tmp` directory is not an unreasonable location.

As a result of your testing, you are convinced that Acme Media are able to upload the video files they need to submit, but they cannot download any files. This behavior is exactly what you wanted to configure.

The ability to set the Incoming Transfers and Outgoing Transfers parameters to allow or deny provides control when attempting to manage how data is distributed or collected.

Thinking about contract vendor uploads to LoneStar, you remember that other contractors (Sweet Media and Alpine Video Services) need to be able to transfer files with the London server. The problem is that the London server has a limited capacity on the dedicated network setup for outside connections. This external connection is used for both inbound and outbound traffic.

You decide to create the user accounts for Sweet Media and Alpine Video Services on the London server and set the bandwidth that you want them to have available for both uploads and downloads.

5. Create a transfer user account called sweet on the London server with a docroot of /contractors.
 - __ a. Continue working on the London server.
 - __ b. If necessary, start the Aspera GUI.
 - __ c. Click the Configuration icon to open the Server Configuration page.
 - __ d. Click the Users managed object and click the Create new user icon to open the Add User page.
 - __ e. Enter sweet and click OK to create the account.
 - __ f. Click the Docroot tab and set the docroot value for the sweet account to /contractors.
 - __ g. Click Apply to save your entry.
 - __ h. Click the Bandwidth tab.
 - __ i. Locate the Incoming Target Rate Cap (Kbps) field.
 - __ j. Put a mark in the Override checkbox for this parameter and set the value to 20000.
 - __ k. Locate the Incoming Target Rate Default (Kbps) field.
 - __ l. Put a mark in the Override checkbox and change the Effective Value to 10000.
 - __ m. Scroll down the page to the Outgoing Target Rate Cap (Kbps) field.
 - __ n. Put a mark in the Override checkbox for this parameter, and set the value to 10000.
 - __ o. Locate the Outgoing Target Rate Default (Kbps) field.
 - __ p. Put a mark in the Override checkbox for this parameter, and set the value to 5000.

Incoming Target Rate Cap (Kbps):	Unlimited	default	<input checked="" type="checkbox"/> 20000
Incoming Target Rate Default (Kbps):	45000	node	<input checked="" type="checkbox"/> 10000
Outgoing Target Rate Cap (Kbps):	Unlimited	default	<input checked="" type="checkbox"/> 10000
Outgoing Target Rate Default (Kbps):	45000	node	<input checked="" type="checkbox"/> 5000

- __ q. Click Apply to save your changes but remain on the Server Configuration page.

**Important**

What is the difference between the effect of the Incoming Target Rate Default (Kbps) parameter and the effect of the Incoming Target Rate Default Cap (Kbps)?

The *Incoming Target Rate Default Cap* value defines the maximum allowed rate for the transfer at any time during the transfer session. Other factors can limit the maximum transfer speed to a value even lower than the *Target Rate Default Cap*, but never higher.

The *Incoming Target Rate Default (Kbps)* value sets the initial Target Rate that applies when the transfer starts, but might be increased or decreased during the transfer, depending upon network and system conditions.

- ___ r. Select the File Handling tab.
- ___ s. Locate the File Create Mode field.
- ___ t. Click the Override checkbox and set the Effective Value to 664.

Setting	Inherited Value	Inherited From	Override	Effective Value
Run at Session Stop:	none	default	<input type="checkbox"/>	none
Run When Crossing File Threshold:	none	default	<input type="checkbox"/>	none
Base64-Encoded Lua Action Script:		default	<input type="checkbox"/>	
File Path to Lua Action Script:		default	<input type="checkbox"/>	
File Create Mode:	Undefined	default	<input checked="" type="checkbox"/>	664
File Create Grant Mask:	644	default	<input type="checkbox"/>	644

- ___ u. Click Apply to save the changes and stay on the Server Configuration page.
- ___ 6. Create another user account called alpine also with a docroot of /contractors and the same bandwidth settings as you did for the sweet account.
 - ___ a. Click the Create new user icon.
 - ___ b. Name the user alpine.
 - ___ c. Click File Handling, locate the File Create Mode field and set it to 664.
 - ___ d. Click Apply to save the change.
 - ___ e. Click the Bandwidth tab.
 - ___ f. Locate the Incoming Target Rate Cap (Kbps) field and set its Effective Value to 20000.
 - ___ g. Set the Incoming Target Rate Default (Kbps) to be 10000.
 - ___ h. Locate the Outgoing Target Rate Cap (Kbps) field.
 - ___ i. Put a mark in the Override checkbox for this parameter, and set the Effective Value to 10000.

- ___ j. Click Apply to save your settings.
- ___ k. Select the Docroot tab.
- ___ l. Click the Override checkbox for the Absolute Path field and set the docroot to /contractors.
- ___ m. Click OK to save your changes and return to the main Transfer page.

You configured two transfer user accounts, both using the same docroot, with the same bandwidth settings for Incoming Target Rate Cap, Incoming Target Rate Default, Outgoing Target Rate Cap and Outgoing Target Rate Default, values. These settings limit the bandwidth available to each contractor for uploads to be 20 Mbps and for downloads to be 10 Mbps. Because your total bandwidth available on the network that is used for outside connections is 45 Mbps, you know that some bandwidth should be available at any time.

Now that the accounts are configured, you want to test these settings to confirm they are applied as you expected.

You need a system with some Aspera software that is installed to perform FASP-based transfers to test the new accounts. So you decide to use the Denver server as the initiating system to see how these new settings function.

- ___ 7. Test transfers that use the sweet and alpine user accounts.
 - ___ a. Switch to the Denver server.
 - ___ b. Open a terminal window and run the following command (use **passw0rd** when prompted for a password):

```
ascp -l 45M /london_xfers/FROM/10MB.7 sweet@london:/
```

```
[root@denver ~]# ascp -l 40M /london_xfers/FROM/10MB.7 sweet@london:/
Password:
10MB.7                                         100%   10MB 18.3Mb/s    00:04
Completed: 10240K bytes transferred in 4 seconds
(17484K bits/sec), in 1 file.
```

You note that the transfer speed for this transfer is consistent with the Incoming Transfers value of 20 Mbps that you set for the sweet account on the London server.



Note

The `-l 45M` argument to the `ascp` command indicates a requested transfer speed of 45 Mbps. However, the Incoming Transfers bandwidth set for the sweet and alpine transfer users on the London server is set to 20 Mbps. The conflict between transfer rates values explains the observed transfer rate when the command was run.

- ___ c. Upload another file to the London server with the alpine account by running the following command (enter a password of **passw0rd** when prompted):

```
ascp -l 40M /london_xfers/FROM/10MB.9 alpine@london:/
```

```
[root@denver ~]# ascp -l 40M /london_xfers/FROM/10MB.9 alpine@london:/
Password:
10MB.9                                         100%   10MB 17.5Mb/s  00:05
Completed: 10240K bytes transferred in 5 seconds
(16457K bits/sec), in 1 file.
```

The transfer rate for this upload to the London server is also consistent with the 20 Mbps configured for the user alpine on the London server. You now know that the Incoming Target Rate Cap (Kbps) bandwidth parameter you configured for these two accounts is functioning as planned.

Now you want to confirm that when a download is requested, the transfer rate is close to the 10 Mbps you configured for the user accounts on the London server.

- ___ d. Run the following command to verify the download speed for the transfer user **sweet** (enter *passw0rd* when prompted for a password):

```
ascp -l 40M sweet@london:/10MB.7 /tmp/sweet_file
```

```
[root@denver ~]# ascp -l 40M sweet@london:/10MB.7 /tmp/sweet_file
Password:
sweet_file                                         100%   10MB 9.7Mb/s  00:09
Completed: 10240K bytes transferred in 9 seconds
(8929K bits/sec), in 1 file.
```

You notice that the transfer rate for the download is also consistent with the configured Outgoing Transfers setting of 10 Mbps that was configured for the sweet account on the London server.

This short test demonstrated a couple of things about Aspera transfers:

- 1) It is possible to manage transfer rates by setting limits for a user by setting bandwidth parameters in the user's setup
and
 - 2) When a request for a transfer rate is higher than the rate allowed by the server, the transfer rate does not exceed the value that is configured on the server. This behavior is not considered an error (no warning or error message is generated).
- ___ e. Close the Aspera GUI on the Denver server by clicking the X in the upper right corner of the page.

You now feel comfortable knowing that you can manage the transfer rates available to contractors on the London server by setting limits for both their upload and download transfer speeds as needed.

You aren't sure about the final settings for the contractor bandwidths, so you decide to reset the bandwidth settings to default values for both the alpine and sweet accounts.

- ___ 8. Reset bandwidth settings to default values for the alpine and sweet accounts on the London server.
 - ___ a. Switch to the London server.
 - ___ b. Using the Aspera GUI, select Configuration.

- ___ c. Click the Users managed object, then select the alpine account.
- ___ d. Select the Bandwidth tab.
- ___ e. Locate the Incoming Target Rate Cap (Kbps) field and set it to 45000.
- ___ f. Remove the mark from the Override checkbox to reset the parameter to its default value.
- ___ g. Locate the Outgoing Target Rate Cap (Kbps) field and set its value to 45000.
- ___ h. Click Apply to save your changes and remain on the Server Configuration page.
- ___ i. Click the sweet user account and select the Bandwidth tab.
- ___ j. Remove the mark from the Override checkbox of the Incoming Target Rate Cap (Kbps), the Incoming Target Rate Default (Kbps), and the Outgoing Target Rate Cap (Kbps) fields.
- ___ k. Click OK.

Section 7. Configure File Manifest

Business requirements

Some transfers include many individual files within a single transfer session, and you need to identify the file names included in those transfers. You remember reading about a feature in Aspera that can create a list of the names of the files that are included in a transfer session - exactly what you need to be able to do.

As you learned in the presentation of this module, many parameters can be set under the File Handling tab. The lab exercises in this section address some of these file handling parameters as examples of what can be configured: File Manifest and Resume Suffix.

Configure the London server to create a file manifest for all transfers

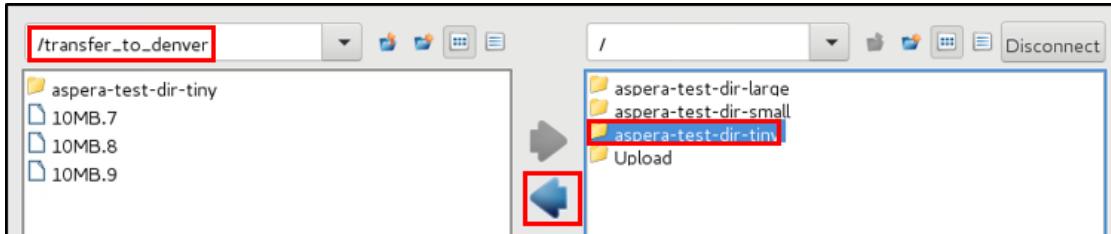
While the Aspera GUI provides some basic information about the transfer sessions, it does not automatically provide a detailed list of all files transferred (or not transferred) within a transfer session. Configuring the File Manifest parameter generates a detailed list of files successfully and unsuccessfully transferred within each transfer session.

- ___ 1. Continue working on the London server.
- ___ 2. Click the Configuration icon In the Aspera GUI.
- ___ 3. Select the Global managed object.
- ___ 4. Open the File Handling page.
- ___ 5. Scroll down the list of parameters to locate the File Manifest parameter.
- ___ 6. Put a mark in the associated check boxes for both the File Manifest and File Manifest Path parameters.
 - ___ a. Use the menu to set the File Manifest value to text (the only options are text, none, and disable).
 - ___ b. Change the value of the File Manifest Path parameter to the directory where you want the manifest file to be created (/root/Desktop in this case). You can also use the Browse function by clicking the button with “...” text on it, located to the right of the Effective Value field for the parameter.



- ___ c. Click OK to save your changes and return to the main Transfer page.

- ___ d. Open the connection to the Aspera Demo Server.
- ___ 7. Set the remote directory to / and the local directory to /transfer_to_denver.
- ___ 8. Highlight the /aspera-test-dir-tiny and click the download arrow to transfer all the files in the /aspera-test-dir-tiny directory to the local system in a single session:



The Transfer report not only shows the status of the transfer, but it also indicates an ongoing display of the number of bytes transferred and the number of files that are included in this session. This information is not the same as the information provided in the Manifest File, but it does provide real-time information about how a specific transfer session is progressing.

- ___ 9. After the transfer session is complete, open a terminal and use the following command to go to the directory you specified as the File Manifest Path value (/root/Desktop).

```
cd /root/Desktop
```

- ___ a. List the contents of the /root/Desktop directory to locate the file named something similar to aspera-transfer-xxxxxxxxxxxx.manifest.txt (every file is saved with a unique file name, so the one on your system differs slightly):

```
ls /root/Desktop
```

- ___ b. Run the following command to see the details about the transfer session that were recorded (use the actual file name from your system):

```
less /root/Desktop/aspera-transfer-xxxxxx.manifest.txt
```

Press the space bar to move through the file one page at a time.



Attention

The file manifest file not only identifies the name of each file that is transferred during the session, but it also provides much more information.

The opening section of the file provides identifying information about the session itself. This information includes the identification of the client and server systems, unique identifying numbers for the session (useful when tracking down complicated transfer problems), and when the transfer started.

The central section of the file provides a list of the files that were transferred (identified by their full path name on the local server). It also includes the size of the file and other pertinent information about the transferred files.

The last section of the file provides summary information about various scans of files on the remote system. This section identifies issues with files that were not transferred due to configuration or problems, the total amount of time the transfer session took to complete, and the total number of bytes that were transferred.



```

Open ▾  aspera-transfer-4df4f97d-454a-42bf-af27-7bb1d970e3a0.manifest.txt  ~Desktop  Save  ⌂  -  □  ×
## Transfer manifest (FASP ver 3.9.1.168302)
## Name: aspera-test-dir-tiny(+0)
## UUID: 4df4f97d-454a-42bf-af27-7bb1d970e3a0
## Client: 184.170.232.53:50301
## Server: 198.23.89.123:33001
## ServerUser: aspera
## ServerHostname: demo.asperasoft.com
## Recipient: 184.170.232.53
## Checksum: SPAR-NONE
## FileChecksumType: none
## Cookie: aspera.scp:4284536a-2a70-4ef6-9d1d-b38ed55e8da7:aspera-test-dir-tiny
## Xferid: 4284536a-2a70-4ef6-9d1d-b38ed55e8da7
## XferRetry: 0
## Tags: {"aspera": {"xfer_id": "4284536a-2a70-4ef6-9d1d-b38ed55e8da7", "xfer_retry": "120"}}
## Start: 2019-08-27 17:09:11

"/transfer_to_denver/aspera-test-dir-tiny/200KB.46" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.1" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.61" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.69" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.54" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.55" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.58" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.81" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.48" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.8" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.12" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.51" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.64" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.87" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.82" 204800B 204800B completed
"/transfer_to_denver/aspera-test-dir-tiny/200KB.29" 204800B 204800B completed

=====
Total number of sources: 1
--Total sources scanned: 1
Total paths scan attempted: 101
--Total paths scan failed: 0
--Total paths scan skipped: 0
--Total paths scan excluded: 0
--Total paths scan completed: 101
Total dir transfer attempted: 1
--Total dir transfer failed: 0
--Total dir transfer passed: 1
Total file transfer attempted: 100
--Total file transfer failed: 0
--Total file transfer passed: 100
--Total file transfer skipped: 0
=====

Transfer success
Total elapsed: 4.7s
Total transferred bytes: 20480000

```

Information about the transfer session

List of transferred files

Summary information

- c. Close the editor.
- d. Using the Aspera GUI, remove the entries that you changed for the File Manifest and File Manifest Path parameters (on the global File Handling page) by removing the mark from the checkbox of each parameter.

Users	VLinks	Docroot		Authorization			Bandwidth	
		Network	File Handling	Database	Transfer Server	HTTP Fallback		
		Setting	Inherited Value	Inherited From	Override	Effective Value		
	Global	File Manifest:	none	default	<input type="checkbox"/>	none		
	Groups	File Manifest Path:	<None>	default	<input type="checkbox"/>			...

- __ e. Use the OK.
- __ f. Close the Aspera GUI by clicking X at the upper right side of the pages

End of exercise

Exercise review and wrap-up

The tasks that you performed in this exercise provided you with experience with several examples of IBM Aspera parameters and the effect they have on transfers.

You created a connection within the Aspera GUI and shared that connection with users who do not have administrative rights on the IBM Aspera Transfer Server.

You also experienced a simple use of the IBM Aspera High-Speed Transfer Server's file handling feature.

Exercise 3. Managing Aspera users and groups

Estimated time

01:30

Overview

The Aspera application GUI is a convenient tool for configuring and transferring files on the IBM Aspera High-Speed Transfer Server. You can also manage the Aspera Transfer Server from the command line, either by directly editing the `aspera.conf` file or by running the `asconfigurator` command. In this exercise module, you edit the `aspera.conf` file with your editor of choice (for example, `vim`, `vi`, or the graphic editor provided in the lab server environment).

Objectives

The tasks in this exercise take you through the steps to:

- Add transfer group to the Aspera configuration
- Add users to the Aspera configuration
- Configure bandwidth parameters
- Implement **Vlinks** and verify operation

Introduction

The IBM Aspera software does not create system level users or groups, but does add them to the Aspera environment as transfer users and transfer groups. The function of transfer groups is basically the same as that of system groups - to provide alternative permissions to user accounts as needed.

You use the Aspera GUI to perform the configuration tasks in this exercise, but Exercise 5 addresses similar configuration tasks with the `asconfigurator` command.

The tasks in this exercise take you through the basic configuration to

- 1) create new transfer groups
and
- 2) add new transfer users, along with some parameters that limit the transfer rate for users, and testing along the way.

Requirements

You use the two Linux servers for this exercise. However, for extra practice, you might want to try some of the tasks on the Windows server as well.

Section 1. Configure transfer groups

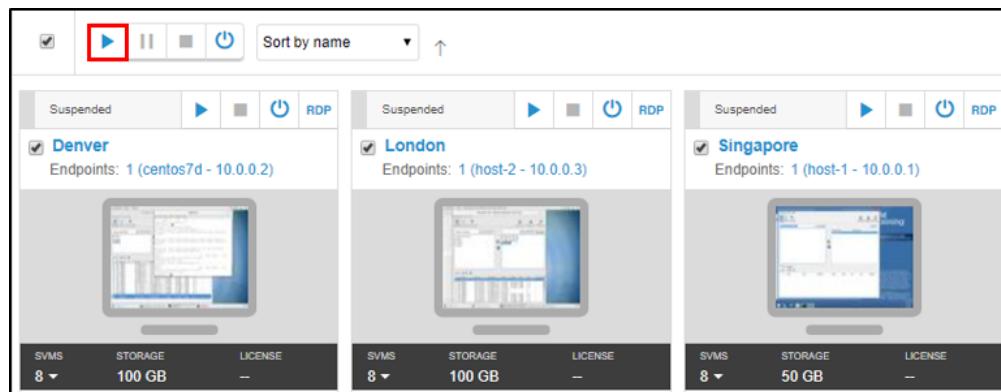
Business requirements

LoneStar anticipates a future need for several transfer user accounts to accommodate their internal users after the Aspera systems are deployed. You and the other Aspera administrator want to control transfers made by these internal users individually. The current plan calls for these users to be organized according to their departments, and for them to share the directory for storing files. So, you feel you now need to learn what features Aspera offers for dealing with these users.

Create transfer group

Aspera does not create groups, but does take advantage of groups that exist in the operating system. If users are assigned membership in a group at the operating system level, then Aspera recognizes that group and member relationship and uses it to implement many features and capabilities for the user.

- ___ 1. Power on the servers.
 - ___ a. If necessary, power on the servers in the lab environment by clicking the Power button as described previously.



- ___ 2. Create a transfer group that is named **internals** with a docroot value set to `/internal`.
 - ___ a. Switch to the Denver server.
 - ___ b. Open a terminal window.
 - ___ c. Confirm that the operating system group called **internals** exists by running the following command.

```
cat /etc/group | grep internal
```

```
[root@denver /]# cat /etc/group |grep internal
internals:x:1007:user1,user2,user3
```

Notice the group ID associated with the transfers group is 1007 and has three members: user1, user2, and user3.

- ___ d. Run the following command to confirm that the /internal directory exists and has permissions set that allows full access to members of the internals group

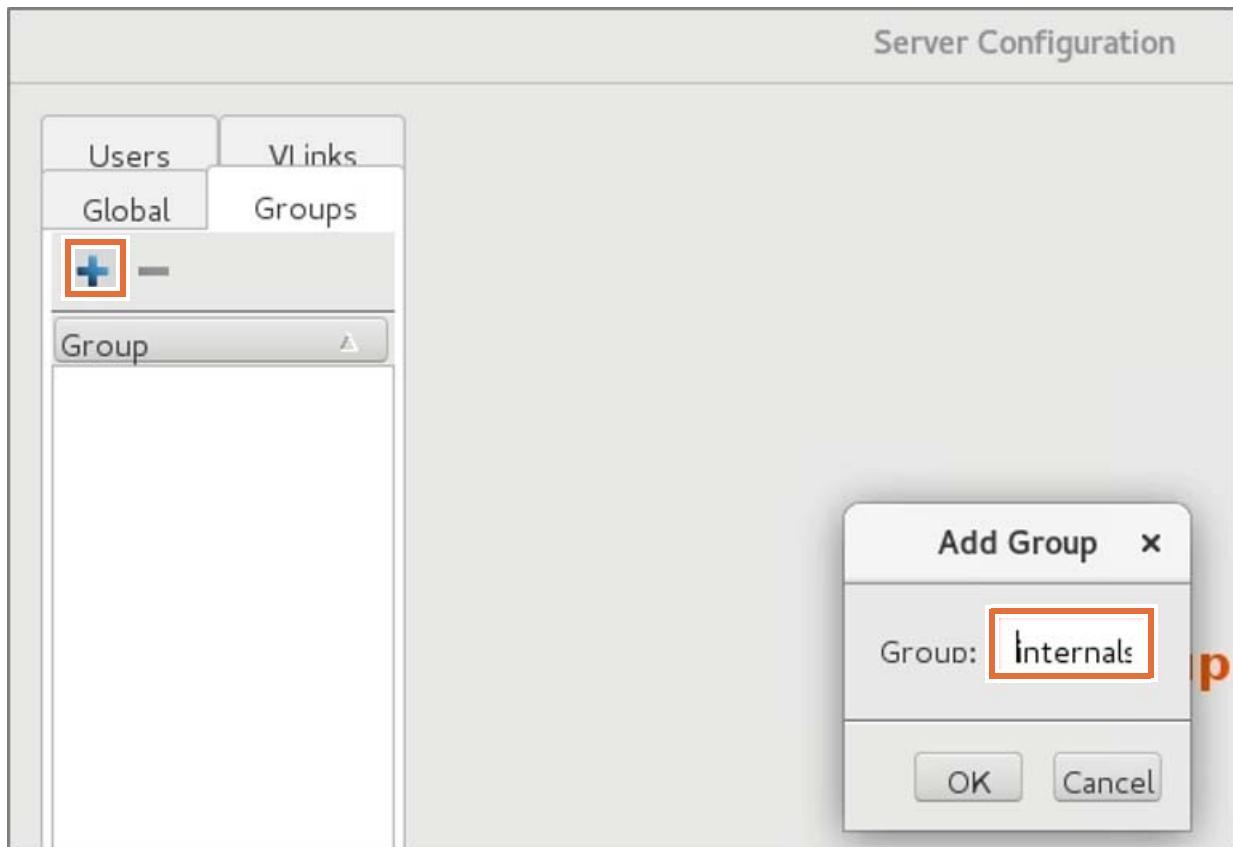
```
ls -l / | grep internal
```

```
[root@denver /]# ls -l / |grep internal
drwxrwx---    5 root transfers        47 Aug 28 18:44 internal
```

- ___ e. Start the Aspera GUI with the following command:

```
asperascp &
```

- ___ f. Select the Configuration tab to open the Server Configuration page.
___ g. Select the Groups managed object.
___ h. Click the Create new group icon and enter internals as the name of the group.
___ i. Click OK to save the internals group.

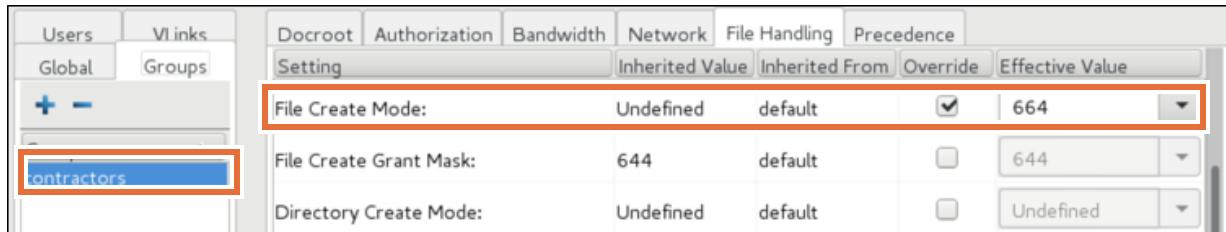


- ___ j. Mark the Override checkbox and set the docroot to /internal.



Setting	Inherited Value	Inherited From	Override	Effective Value
Absolute Path:	/failsafe	node	<input checked="" type="checkbox"/>	/internal
Read Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Write Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Browse Allowed:	true	node	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

- ___ k. Click Apply to save your changes and remain on the Server Configuration page.
- ___ 3. Create a transfer group called contractors on the London server.
 - ___ a. Switch to the London server.
 - ___ b. Verify that the Server Configuration page is still open. If it is not open, click Configuration.
 - ___ c. If necessary, select the Groups managed object.
 - ___ d. Click the Create new group icon.
 - ___ e. Enter contractors for the name of the group then OK to create the group.
 - ___ f. Select the File Handling tab and locate the File Create Mode: field.
 - ___ g. Place a mark in the Override checkbox and set the value to 664.
 - ___ h. Click OK.



Setting	Inherited Value	Inherited From	Override	Effective Value
File Create Mode:	Undefined	default	<input checked="" type="checkbox"/>	664
File Create Grant Mask:	644	default	<input type="checkbox"/>	644
Directory Create Mode:	Undefined	default	<input type="checkbox"/>	Undefined

This setting allows users in the contractors group to read and write newly created files. This capability is important when different users access the same files.

Section 2. Add transfer user accounts

You want to see how the group membership interacts with new transfer users, so you add a temporary transfer user account called user2.

- ___ 1. Add a transfer user called user2 who is a member of the internals system group.
 - ___ a. Switch to the Denver server.
 - ___ b. Select the Users managed object.
 - ___ c. Click the Create new user icon and enter user2 as the username.

Setting	Inherited Value	Inherited From	Override	Effective Value
Absolute Path:	/internal	group (internals...)	<input type="checkbox"/>	/internal
Read Allowed:	true	group (internals...)	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Write Allowed:	true	group (internals...)	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Browse Allowed:	true	group (internals...)	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

- ___ d. Click OK to create the account.

Notice that the docroot value for user2 is already set to /internal and that the value is inherited from the internals group.



Note

Do not click OK now. You save your changes after configuring all the users. and you want to leave the Users managed object.

While creating these new accounts, you remember that user1 is also a member of the internals group. So you look at what changed for the user1 account now that you added the internals group to the Aspera environment.

- ___ e. Click user1 and look at the Effective Value for the Absolute Path field (docroot).

Setting	Inherited Value	Inherited From	Override	Effective Value
Absolute Path:	/internal	group (internals...)	<input checked="" type="checkbox"/>	/home/user1
Read Allowed:	true	group (internals...)	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Write Allowed:	true	group (internals...)	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Browse Allowed:	true	group (internals...)	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

You notice that the docroot setting for user1 retains the value you explicitly set as /home/user1. You now understand that the docroot setting for a group applies to any NEW transfer users who are members of that system group. The docroot setting for the user is inherited from the docroot value

that is assigned to the group. However, existing users with a docroot explicitly assigned use their assigned docroot, not the docroot from their group setting. This behavior is true for all configuration parameters that are assigned to transfer groups and transfer users.



Attention

Remember that the exclamation mark (!) next to the user1, user2, and user3 names on the left of the screen indicates that these user accounts have a standard /bin/bash shell, not the recommended /bin/aspshell. This condition does not affect the account's operation within Aspera, so it isn't necessary to change them currently, but you do change them later in this exercise.

- ___ f. Click OK to save your changes, as you are finished working with the transfer users on the Denver server for now.

Section 3. Configure Vlinks

Business requirements

You previously configured user accounts (alpine and sweet) for the two vendors on the London server, and set specific bandwidth Target Rate Cap values for both accounts. However, you look through the Administration Guide and read about Vlinks and how they can manage bandwidth for users, without having to explicitly set bandwidth values in the user configuration. So, you decide to try configuring Vlinks to limit the aggregate bandwidth available to the alpine and sweet accounts.

Vlink review

FASP transfers attempt to transfer at the maximum transfer rate available. However, too many simultaneous transfers can overwhelm your storage or leave little bandwidth available for other network users. Vlinks limit the aggregate bandwidth that is used by incoming or outgoing transfer sessions for all users, groups, or sets of specific users.

Before a user can be configured to use a Vlink, the Vlink must be created, enabled, and its capacity defined.

Even if a Vlink is created and has an assigned capacity, it is not available to manage bandwidth unless it is turned on or enabled. Enabling a Vlink is a single entry in the aspera.conf file, but it is essential for successful deployment.



Note

The IBM Aspera installation software automatically configured 2 Vlink IDs, 100 and 101, with an aggregate bandwidth of 45 Mbps. These Vlink IDs are associated with the 45 Mbps limit embedded in the Aspera license key. This exercise steps you through the creation and implementation of two extra Vlink IDs.

Create Vlink IDs

- ___ 1. Create a Vlink ID named 200 and set its capacity to 25 Mbps on the London server.
 - ___ a. Switch to the London server.
 - ___ b. If it is not already running, open the Aspera GUI.
 - ___ c. Select the Configuration tab to open the Server Configuration page.
 - ___ d. Click the Vlink managed object.
 - ___ e. Click the icon to create a new Vlink ID.
 - ___ f. Enter a Vlink ID of 200 when prompted and click OK to create the Vlink ID.

**Note**

Vlink IDs must be a numeric value.

- ___ g. Mark the Override checkbox for the Capacity (Kbps) field.
- ___ h. Set the Effective Value to 25000.

Setting	Inherited Value	Inherited From	Override	Effective Value
Vlink Name:	<Nameless>	default	<input type="checkbox"/>	
On:	false	default	<input type="checkbox"/>	<input type="radio"/> true <input checked="" type="radio"/> false
Capacity (kbps):	50000	default	<input checked="" type="checkbox"/>	25000

Notice that the Override checkbox of the On field is not marked, and the Inherited Value is false – the results of this setting are demonstrated later in this exercise.

- ___ i. Click Apply to save the settings and remain on the Vlink General page.
- ___ 2. Configure another Vlink ID of 201 with a capacity setting of 10000.
 - ___ a. Click the **+** icon to open a window to create a Vlink I.
 - ___ b. Enter a Vlink ID of 201.
 - ___ c. Press OK to open the Vlink General page.
 - ___ d. Mark the Override checkbox of the On parameter and set the Effective Value to true.
 - ___ e. Put a mark in the Override checkbox for the Capacity parameter and set the value to be 10000.

Setting	Inherited Value	Inherited From	Override	Effective Value
Vlink Name:	<Nameless>	default	<input type="checkbox"/>	
On:	false	default	<input checked="" type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Capacity (kbps):	50000	default	<input checked="" type="checkbox"/>	10000

- ___ f. Click Apply to save your changes.

You configured two new Vlink IDs - one with a Vlink ID of 200 and a capacity of 25 Mbps, and another with a Vlink ID of 201 and a capacity of 10 Mbps. The Override checkbox for On parameter

of Vlink ID 200 is NOT checked, but the Override checkbox for the On parameter of Vlink ID 201 is marked and set to true. You see the impact of this configuration later in this exercise.

Assign Vlink IDs to users

The previous steps create new Vlink IDs, but they must be assigned to users to identify which users are limited by their defined capacity.

- ___ 1. Assign Vlink ID 200 for incoming transfers and Vlink ID 201 for outgoing transfers to the alpine and sweet accounts.
 - ___ a. Click the Users managed object on the Server Configuration page.
 - ___ b. Highlight the alpine account.
 - ___ c. Select the Bandwidth tab and locate the Incoming Vlink ID field.
 - ___ d. Mark the Override checkbox and use the menu to select 200.

Setting	Inherited Value	Inherited From	Override	Effective Value
Incoming Vlink ID:	100	node	<input checked="" type="checkbox"/>	100
Incoming Target Rate Cap (Kbps):	Unlimited	default	<input type="checkbox"/>	Disabled
Incoming Target Rate Default (Kbps):	45000	node	<input type="checkbox"/>	100
Incoming Target Rate Lock:	false	default	<input type="checkbox"/>	101
Incoming Minimum Rate Cap (Kbps):	Unlimited	default	<input type="checkbox"/>	200
				201

- ___ e. Scroll further down the list of parameters to the Outgoing Vlink ID field.
- ___ f. Mark the Override checkbox and select 201.

Setting	Inherited Value	Inherited From	Override	Effective Value
Incoming Rate Control Predictor Range:	2	default	<input type="checkbox"/>	2
Incoming Rate Control Predictor Limit:	3	default	<input type="checkbox"/>	3
Incoming Rate Control Target Queue:	unset	default	<input type="checkbox"/>	unset
Outgoing Vlink ID:	101	node	<input checked="" type="checkbox"/>	201

- ___ g. Click Apply to save your changes but remain on the Bandwidth page.
- ___ h. Click the sweet account name.
- ___ i. Set the Incoming Vlink ID to 200.
- ___ j. Set the Outgoing Vlink ID to 201.
- ___ k. Click OK to save your changes.

Verify Vlink operation

You realize you need some larger files, which take more time to transfer, to validate how Vlinks function. You previously downloaded some larger files from the Aspera Demo Server to the Denver server (stored in `/london_xfers/TO`) which you can use for further testing.

- ___ 1. Verify the operation of the **Vlink** assignment by transferring files in the `/london_xfers/TO/` directory from the Denver server to the London server by using the alpine and sweet transfer accounts.
 - ___ a. Switch to the Denver server.
 - ___ b. Open a terminal window.
 - ___ c. Use the following command to upload the `/london_xfers/TO/200MB` to the London server by using the alpine user account (enter `passw0rd` when prompted for a password):

```
ascp /london_xfers/TO/200MB alpine@london:/
```

```
[root@denver ~]# ascp /london_xfers/TO/200MB alpine@london:/200MB
Password:
200MB                                              100%  200MB 43.8Mb/s    00:38
Completed: 204800K bytes transferred in 38 seconds
(43335K bits/sec), in 1 file.
```

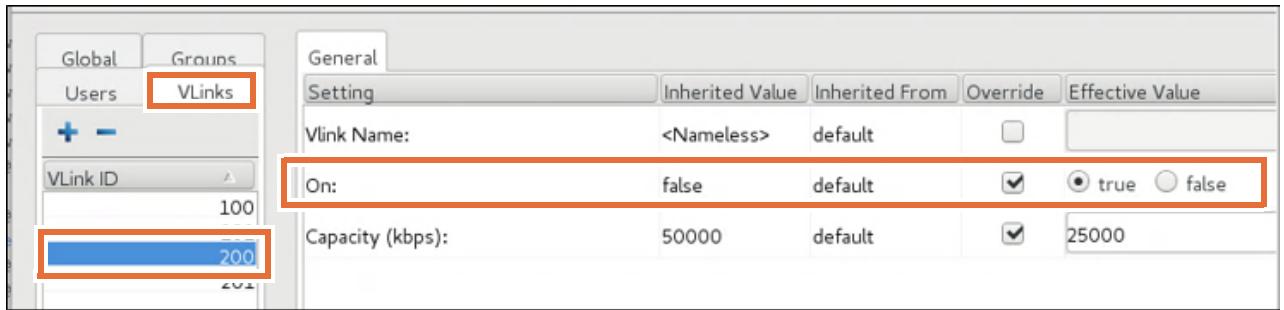


Questions

How does the transfer rate for this transfer compare with the value you configured for Vlink ID 200 configured for inbound transfers for the alpine transfer user account on the London server?

The transfer rate for this transfer was NOT limited by the setting of Vlink ID 200, which is the Vlink ID you assigned to the Incoming Vlink ID parameter for the alpine account. However, when you configured the Vlink ID itself, the On field was left blank, which means Aspera used the default setting of false. To enable the Vlink ID, you must change the setting of the On parameter to true for the user account.

- ___ 2. Change the On field for the Vlink ID 200 on the London server to enable the Vlink ID.
 - ___ a. Switch to the London server.
 - ___ b. Using the Aspera GUI, click the Configuration tab to open the Server Configuration page.
 - ___ c. Click the Vlinks managed object.
 - ___ d. Place a mark in the Override checkbox of the On field and set the value to true.



- ___ e. Click OK to save your changes.
- ___ 3. Test the function of the Vlink setting with Vlink ID 200 enabled.
 - ___ a. Switch back to the Denver server.
 - ___ b. Upload the /london_xfers/TO/200MB file to the London server by using the same command used previously:

```
ascp /london_xfers/TO/200MB alpine@london:/
```

```
[root@denver ~]# ascp /london_xfers/TO/200MB alpine@london:/200MB
Password:
200MB                                              100% 200ME 23.9Mb/s    01:10
Completed: 204800K bytes transferred in 70 seconds
(23806K bits/sec), in 1 file.
```



Questions

How does the transfer rate for this transfer compare with the rate of the previous transfer?

This transfer rate is consistent with the 25 Mbps rate that is configured for Vlink ID 200. By changing the On value to true, the limiting function of the Vlink ID becomes active

-
- ___ 4. Create a connection on the Denver server to initiate simultaneous transfer sessions to the London server to test the function of Vlink ID 200.
 - ___ a. Continue working on the Denver server.
 - ___ b. Confirm that the Aspera GUI is running - if not, start it by opening a terminal window and running the asperascp command.
 - ___ c. Click the Connections icon.
 - ___ d. Click the Create a new connection icon.
 - ___ e. Create a connection by using the following data:

Host:london

User:sweet

Password:passw0rd

___ f. Click OK.

Notice that the name of the new connection is sweet@london.

___ 5. Use the sweet@london connection to test the effect of the Vlink assignment.

- ___ a. Double-click the sweet@london connection name to open the connection.
- ___ b. Set the local directory to /london_xfers/TO and the remote directory to /.
- ___ c. Highlight the 1GB file on the local system and upload it to the London server.
- ___ d. Look at the Transfer report and note the transfer rate.

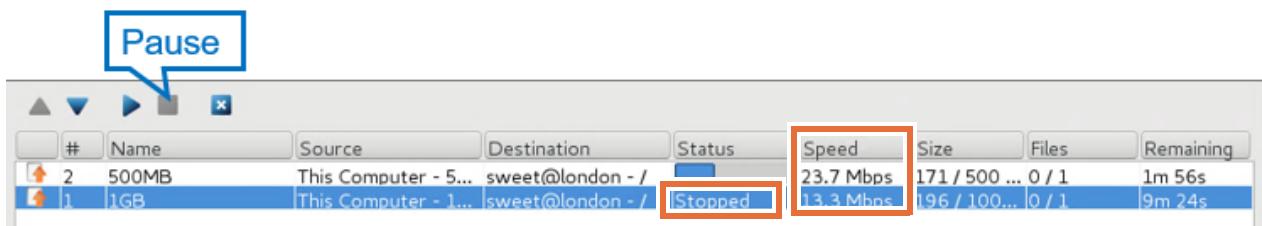
#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
1	1GB	This Computer - 1...	sweet@london - /		124.0 Mbps	2 / 1000 ...	0 / 1	5m 34s

- ___ e. While the previous transfer is in progress, upload the 500MB file by highlighting the 500MB file on the local (Denver) server and clicking the upload arrow.
- ___ f. Look at the Transfer report and note the transfer rate for the new transfer as and the previous transfer.

#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
2	500MB	This Computer - 5...	sweet@london - /		10.4 Mbps	0 / 500 ...	0 / 1	6m 10s
1	1GB	This Computer - 1...	sweet@london - /		13.1 Mbps	2 / 1000 ...	0 / 1	9m 41s

Notice that the original transfer session of the 1GB file slowed to a rate roughly the same as the rate of the new session. And the aggregate transfer rate of the two transfers that are combined is roughly equal to the 25 Mbps rate set for Vlink ID 200.

- ___ g. Click the Pause icon above the Transfer report to pause the highlighted transfer (in this case the session with the 1GB file).



The status of the 1GB file transfer now shows Stopped and the Speed of the 500MB file transfer at the limit that is defined for Vlink ID 200.

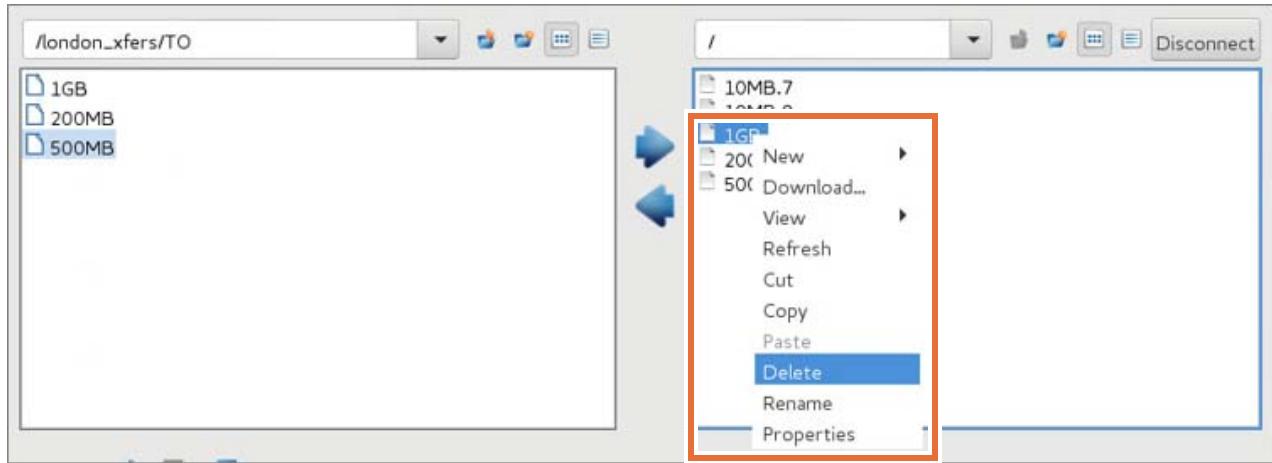
- ___ h. Click the Resume button to restart the 1GB file transfer.



Looking at the Transfer report, you note that the 1GB session resumed and the aggregate speed of the two sessions is again near the limit set by the Vlink ID 200.

You realize that the ability to assign Vlinks offers a simple solution for managing the contractor transfers. However, you also want to confirm that the Vlink assignment functions when different users are transferring files. So you decide to perform another test by using both the sweet and alpine user accounts.

- 6. Initiate simultaneous transfers with the sweet and alpine accounts on the London server.
 - a. Continue with the sweet@london connection and use the right mouse button to open the File management menu to delete the 1GB file in the remote directory of the London server.



- b. Delete the 500MB file in the remote directory as well.
- c. Use the GUI to start another upload of the 1GB file to the London server.
- d. While the upload is in progress, open a terminal window and run the following command:

```
ascp /london_xfers/T0/500MB alpine@london:/
```

```
[root@denver ~]# ascp /london_xfers/T0/500MB alpine@london:/
Password:
500MB                                         2% 9055KB 12.1Mb/s   07:24 ETA^
```

- e. Look at the Transfer report in the Aspera GUI. Note that the Destination fields indicate that the two transfers are different user accounts, but the Speed of the transfers is consistent with the 25 Mbps setting of the Vlink ID 200.

#	Name	Source	Destination	Status	Speed	Size	Files	Remaining
1	500MB	This Computer - 5...	alpine@10.0.0.3 - /	Transferrin.	13.2 Mbps	227. MB	0	-
1	1GB	This Computer - 1...	sweet@london - /	Transferrin.	100...	0 / 1	8m 52s	
1	500MB	This Computer - 5...	sweet@london - /	Complete	12.1 Mbps	500 MB	1 / 1	-
1	1GB	This Computer - 1...	sweet@london - /	Complete	16.0 Mbps	1,000 MB	1 / 1	-

So now you are confident that you can use Vlinks and the Authorization settings to manage and control users to meet corporate needs.

After testing the operation of Vlinks, you remove the test configurations.

- ___ 7. Reset the Vlink assignments for the sweet and alpine accounts on the London server.
 - ___ a. Switch to the London server.
 - ___ b. Using the Aspera GUI, open the Server Configuration page.
 - ___ c. If necessary, click the Users managed object.
 - ___ d. Remove the mark in the check boxes of the Incoming Vlink ID and Outgoing Vlink ID from the sweet and alpine accounts.
 - ___ e. Click OK to save your changes

As you work with the various features of the IBM Aspera HST Server, you become more confident in your ability to control FASP-based transfers.

End of exercise

Exercise review and wrap-up

In this exercise, you added both a transfer user and a transfer group to the Aspera configuration. You also configured bandwidth parameters for specific users, and configured and tested Vlinks.

Exercise 4. Command-line operations

Estimated time

02:00

Overview

While the Aspera GUI provides an easy-to-use method for configuring the Aspera server and even performing file transfers, some tasks cannot be performed in the GUI. The GUI does not offer a solution when a complex task needs to be initiated frequently and would greatly benefit from being implemented in script form. Aspera offers command-line tools that resolve these issues.

This exercise is designed to further your knowledge of IBM Aspera's command-line tool to configure the `aspera.conf` file with the `asconfigurator` utility and to initiate and manage file transfers with the `ascp` command.



Note

You might find it useful to open the Aspera GUI in one window and a terminal in another where you run the command-line entries. This approach facilitates running the `asconfigurator` command and see the results of the command in the GUI.

Objectives

The tasks in this exercise take you through the steps to:

- Locate and use the `asconfigurator` Reference section of the IBM Aspera High-Speed Transfer Server Administration Guide
- Use various `asconfigurator` options to update the `/opt/aspera/etc/aspera-conf` file
- Locate and use the `ascp`: Transferring from the command line with `Ascp` section of the IBM Aspera High-Speed Transfer Server Administration Guide
- Use the `ascp` command with various options to perform transfers between IBM Aspera HST Servers

Introduction

The administration guide includes sections (named *Asconfigurator Reference* and *ascp: Transferring from the command-line with Ascp Command*) that provide details about using the commands.

Requirements

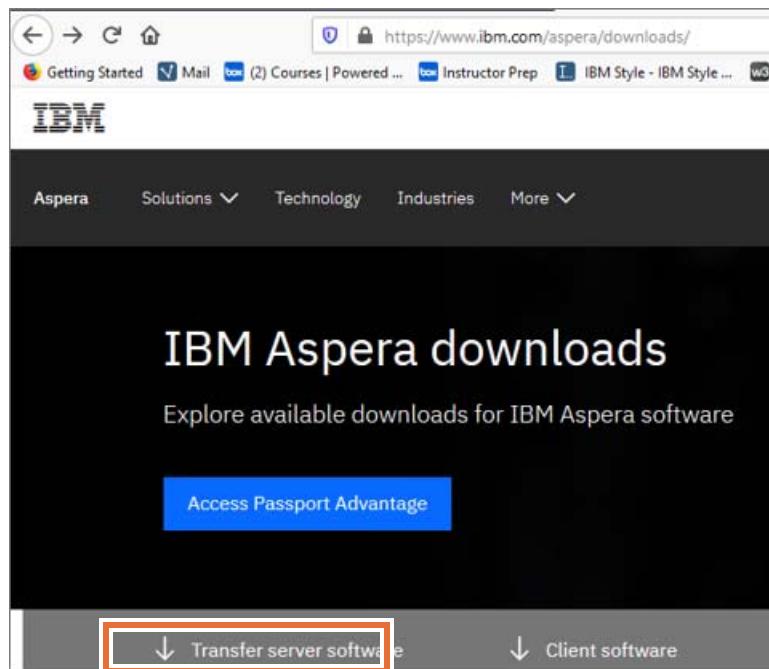
For this exercise, you use the two Linux servers that are provided in the lab environment and the *IBM Aspera High-Speed Transfer Server Administration Guide* (as needed).

Section 1. Configure Aspera parameters with asconfigurator

In this exercise, the asconfigurator utility is used to modify the aspera.conf file to perform some of the same tasks that you completed in the previous exercises with the Aspera GUI, and to configure some other parameters.

1.1. Open the asconfigurator Reference section of the *IBM Aspera HSTS Administration Guide*

- ___ 1. Open a web browser on your local system and connect to the Aspera Documentation page by using the following URL:
www.ibm.com/aspera/downloads
- ___ 2. Click Transfer server software.



- ___ 3. Select View documentation.

Transfer server software

IBM Aspera High-Speed Transfer Server

[Download now](#)

[View documentation](#)

Enable high-speed transfers of files, directories and large data sets using desktop, mobile and web applications.

- ___ 4. Use the menu to select the V3.9.1 - Linux RPM x86_64 version.

The screenshot shows the IBM Aspera Documentation page. At the top, there is a navigation bar with links for CLOUD, SOFTWARE, SOLUTIONS, TECHNOLOGY, CUSTOMERS, and PARTNERS. Below the navigation bar, there is a section titled "DOCUMENTATION" with a logo of a stylized 'C' inside a circle. To the right of this logo, there is a section titled "CHOOSE YOUR OPERATING SYSTEM" with icons for AIX, MAC, Windows, Linux, Linux Deb, FreeBSD, Solaris, and a "Show All" link. Below this, there is a dropdown menu with the option "v3.9.1 - Linux RPM x86_64" highlighted with a red box. Underneath the dropdown, there is some technical information: Version 3.9.1, Platform: Linux RPM x86_64, Release Date: December 18, 2018, md5: c0f864e83850354c14e94eea5af6b471, sha1: 4fcde57dc8cbd6aa19d4f02064bbec911475fe47. At the bottom of the page, there are links for "HTML Guide" (which is highlighted with a red box), "PDF Guide", and "Release notes".



Newer versions of the software are available, but the servers in the lab environment run V 3.9.1.

- ___ 5. Click the HTML Guide option at the bottom of the page to open the IBM Aspera HSTL Administration Guide.
___ 6. Click the asconfigurator Reference link in the Contents section.

The screenshot shows a software interface with a dark header bar containing the word 'Content'. Below this is a list of topics, each preceded by a small blue icon. The topics are:

- Introduction
- What's New?
- Get Started with an Aspera Transfer Server
- Get Started as a Transfer Client
- Comparison of Aspera File Delivery and Synchronization
- Installation and Upgrades
- Set up the HST Server Web UI
- Server Set up Methods
- Set up Users and Groups in the GUI
- Configure HST Server in the GUI
- Set up Users and Groups from the Command Line
- Configure the Server from the Command Line
- File Pre- and Post-Processing (Prepost)
- Email Notifications
- Transfer Files in the GUI
- ascp: Transferring from the Command Line with Ascp
- ascp4: Transferring from the Command Line with Ascp4
- Watch Folders and the Aspera Watch Service
- Aspera Sync
- Configuring for Other Aspera Products
- Configuring for Object Storage and HDFS
- Set up HST Server for Node API
- Authentication and Authorization
- Highly-Available Redis Backend for an HST Server Configuration
- Asconfigurator Reference** (This item is highlighted with a red rectangular box.)
- Troubleshooting
- Appendix

- 7. Click Syntax and Usage to review basic syntax for asconfigurator.



- ___ 8. Select other topics as needed to view various options for asconfigurator used in the tasks of this exercise.

1.2. Configure global docroot parameter with **asconfigurator**

- ___ 1. Switch to the London server and sign in using the *root/passw0rd* credentials.
- ___ 2. If necessary, start the Aspera GUI and select the Configuration icon.
- ___ 3. Click the Global managed object and verify that the docroot value is using the default value of Root.

Setting	Inherited Value	Inherited From	Override	Effective Value
Absolute Path:	<Root>	default	<input type="checkbox"/>	
Read Allowed:	true	default	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Write Allowed:	true	default	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false
Browse Allowed:	true	default	<input type="checkbox"/>	<input checked="" type="radio"/> true <input type="radio"/> false

- ___ 4. Click Cancel to exit the Server Configuration page and return to the main Transfer page.
- ___ 5. Leave the GUI running and open a terminal window by placing the cursor on the desktop and by using the right mouse button to select Open Terminal.

**Note**

The Aspera GUI reads the `aspera.conf` file when you open the Server Configuration page. Changes made to the `aspera.conf` file with `asconfigurator` or manually editing the `aspera.conf` file after the initial reading by the GUI, might not appear in the Aspera GUI. You must refresh the data by exiting the Server Configuration page and reopening it to view the updated data in the GUI.

- ___ 6. Use `asconfigurator` to set the global docroot value to `/ingest`.

- ___ a. Run the following `asconfigurator` command:

```
asconfigurator -x "set_node_data;absolute,/ingest"
```

```
[root@london ~]# asconfigurator -x "set_node_data;absolute,/ingest"
success
```

You should receive a success response, as shown in the output.

- ___ b. Verify the change by opening the Server Configuration page again in the Aspera GUI.

The Global Absolute Path (docroot) setting is now `/ingest`.

Users	VLinks	Network	File Handling	Database	Transfer Server	HTTP Fallback
Global	Groups	Docroot		Authorization		Bandwidth
		Setting	Inherited Value	Inherited From	Override	Effective Value
		Absolute Path:	<Root>	default	<input checked="" type="checkbox"/>	/ingest

1.3. Configure global bandwidth policy and default target rate with `asconfigurator`

Bandwidth policy settings influence how `ascp` manages the target rate, based on perceived network congestion and what changes users are allowed to request regarding the policy setting. The following commands change the policy values for inbound transfers to set the default bandwidth policy value to low and prevent users from changing the bandwidth policy setting.

- ___ 1. Set the Incoming Bandwidth Policy Allowed parameter to fair and the Incoming Bandwidth Policy Default parameter to low.
 - ___ a. Continue on the London server, and use the Aspera GUI to verify the current values for the global Bandwidth Policy parameters.
 - ___ b. The Global managed object tab should be selected - if the Global page is not displayed, select it.
 - ___ c. Click the Bandwidth tab.
 - ___ d. Locate the Incoming Bandwidth Policy Allowed parameter and confirm that it is set to any-one (the default value).
 - ___ e. Locate the Incoming Bandwidth Policy Default and confirm that it is set to fair (the default value).

Setting	Inherited Value	Inherited From	Override	Effective Value
Incoming Minimum Rate Lock:	false	default	<input type="checkbox"/>	<input checked="" type="radio"/> true <input checked="" type="radio"/> false
Incoming Bandwidth Policy Allowed:	any-one	default	<input type="checkbox"/>	any-one
Incoming Bandwidth Policy Default:	fair	default	<input type="checkbox"/>	fair
Incoming Bandwidth Policy Lock:	false	default	<input type="checkbox"/>	<input checked="" type="radio"/> true <input checked="" type="radio"/> false

- ___ f. Go back to the terminal window and run `asconfigurator` to modify the `Incoming Bandwidth Policy` parameters to change the global incoming bandwidth policy to:
- Only allow users the ability to request incoming bandwidth policy settings of low or fair
 - Set the Bandwidth Policy Default to be low
- ___ g. Use the following commands to modify the `transfer_in_bandwidth_flow_policy_allowed` and the `transfer_in_bandwidth_flow_policy_default` parameters:

```
asconfigurator -x
"set_node_data;transfer_in_bandwidth_flow_policy_allowed,fair"
```

```
[root@london ~]# asconfigurator -x "set_node_data;transfer_in_bandwidth_flow_policy_allowed,fair"
success
```



Note

A `transfer_in_bandwidth_flow_policy_allowed` setting of any allows clients to request a fixed bandwidth policy. If the client requests a minimum transfer rate that is under the rate that is configured on the server, the transfer rate can exceed the network or storage capacity. This behavior can decrease transfer performance and cause problems on the target storage.

To avoid these problems, set the allowed policy to fair. When the bandwidth policy is set to fair, transfers that use fair or low bandwidth policies are allowed. Transfers that request fixed or high bandwidth policies are rejected.

```
asconfigurator -x
"set_node_data;transfer_in_bandwidth_flow_policy_default,low"
```

```
[root@london ~]# asconfigurator -x "set_node_data;transfer_in_bandwidth_flow_policy_default,low"
success
```

- ___ 2. Set the Incoming Target Rate Default (Kbps) value to 45 Mbps.
- ___ a. Continue on the London server.
- ___ b. Run the following `asconfigurator` command to set the `transfer_in_bandwidth_flow_target_rate_default` parameter to 45 Mbps:

```
asconfigurator -x
"set_node_data;transfer_in_bandwidth_flow_target_rate_default,45000"
```

```
[root@london ~]# asconfigurator -x "set_node_data;transfer_in_bandwidth_flow_target_rate_default,45000"
success
```

- ___ c. Return to the Aspera GUI and click Cancel to return to the main Transfer page.
- ___ d. Click Configuration to open the Server Configuration page.



Reminder

The GUI reads the aspera.conf file when the Server Configuration page is accessed. So, the changes that are made with `asconfigurator` do not appear in the GUI until you exit and reenter the Server Configuration page.

- ___ e. Locate the Incoming Bandwidth Policy Allowed, the Incoming Bandwidth Policy Default, and the Incoming Bandwidth Target Rate Default (Kbps) parameters to verify the values that you entered with `asconfigurator` appear in the GUI.

Incoming Target Rate Cap (Kbps):	Unlimited	default	<input type="checkbox"/>	Unlimited
Incoming Target Rate Default (Kbps):	10000	default	<input checked="" type="checkbox"/>	45000
Incoming Target Rate Lock:	false	default	<input type="checkbox"/>	<input type="radio"/> true <input checked="" type="radio"/> false
Incoming Minimum Rate Cap (Kbps):	Unlimited	default	<input type="checkbox"/>	Unlimited
Incoming Minimum Rate Default (Kbps):	0	default	<input type="checkbox"/>	0
Incoming Minimum Rate Lock:	false	default	<input type="checkbox"/>	<input type="radio"/> true <input checked="" type="radio"/> false
Incoming Bandwidth Policy Allowed:	any-one	default	<input checked="" type="checkbox"/>	fair
Incoming Bandwidth Policy Default:	fair	default	<input checked="" type="checkbox"/>	low

- ___ f. Click Cancel to return to the main Transfer page.

1.4. Configure global file manifest with `asconfigurator`

You configured the File Manifest feature from the GUI in the previous exercise. You can also configure the File Manifest feature with the `asconfigurator` command.

- ___ 1. Continue on the London server.

- ___ 2. In the terminal window, use the following commands to set the Global File Manifest and File Manifest Path parameters:

```
asconfigurator -x "set_node_data;file_manifest,text"
```

```
[root@london ~]# asconfigurator -x "set_node_data;file_manifest,text"
success
```

```
asconfigurator -x "set_node_data;file_manifest_path,/root/transfers"
```

```
[root@london ~]# asconfigurator -x "set_node_data;file_manifest_path,/transfers"
success
```

- ___ 3. Set the Global Overwrite parameter, which controls whether existing files on the server can be overwritten when a transfer is attempted, by running the following command:

```
asconfigurator -x "set_node_data;overwrite,allow"
```

```
[root@london ~]# asconfigurator -x "set_node_data;overwrite,allow"
success
```



Note

This parameter is the same feature that you enabled for specific connections, but this parameter implements that feature for all transfers, not just transfers initiated with the defined connection.

- ___ 4. Verify that the entries were successfully changed by viewing the parameters in the Aspera GUI.

- ___ a. Select the Configuration icon to open the Server Configuration page.
- ___ b. Click the File Handling tab and verify that the Overwrite, File Manifest, and File Manifest Path parameters reflect the values that you entered.

Overwrite:	allow	default	<input checked="" type="checkbox"/> allow
File Manifest:	none	default	<input checked="" type="checkbox"/> text
File Manifest Path:	<None>	default	<input checked="" type="checkbox"/> /transfers

- ___ c. Click Cancel to return to the main Transfer page.

1.5. Create transfer user with asconfigurator

- ___ 1. [Continue on the London server](#).
- ___ 2. Add a transfer user account user2 by running the following command:

```
asconfigurator -x "set_user_data;user_name,user2"
```

```
[root@london ~]# asconfigurator -x "set_user_data;user_name,user2"
success
user_name: user2
```

1.6. Set user docroot with **asconfigurator**

- ___ 1. Continue on the London server.
- ___ 2. Change the docroot value for the user2 account with the following command:

```
asconfigurator -x "set_user_data;user_name,user2;absolute,/home/user2"
```

```
[root@london ~]# asconfigurator -x "set_user_data;user_name,user2;absolute,/home/user2"
success
user_name: user2
```

- ___ 3. Use the Aspera GUI to verify the change.
 - ___ a. Select the Configuration icon to open the Server Configuration page and click the Users managed object.
 - ___ b. Select the Docroot tab.
 - ___ c. Verify that the docroot for user2 is set to /home/user2.



- ___ d. Click Cancel to return to the main Transfer page.
- ___ 4. Add another transfer user account that is named user3 and a docroot of /home/user3 with a single asconfigurator command:

```
asconfigurator -x "set_user_data;user_name,user3;absolute,/home/user3"
```

```
[root@london ~]# asconfigurator -x "set_user_data;user_name,user3;absolute,/home/user3"
success
user_name: user3
```

**Note**

This command configured two settings with a single command-line entry. The command created the user3 transfer user account AND set the docroot for user3 as /home/user3. You can perform multiple actions with a single `asconfigurator` command when the secondary arguments reference the primary argument. In this case, the primary argument is `user_name,user3`. The secondary argument is `absolute;/home/user3`.

1.7. Create and assign Vlinks with `asconfigurator`.

- 1. Configure a new Vlink ID of 150 with a capacity of 40 Mbps and assign it to user2 outbound transfers by using the following commands:

```
asconfigurator -x "set_trunk_data;id,150;trunk_on,true;trunk_capacity,40000"
```

```
[root@london ~]# asconfigurator -x "set_trunk_data;id,150;trunk_on,true;trunk_capacity,40000"
success
trunk_id: 150
```

- 2. Use the Aspera GUI to verify that Vlink ID 150 was created with a capacity of 40 Mbps
 - a. Select the Configuration icon, then click the Vlinks managed object.

**Note**

Notice that the command not only created the new Vlink ID, it also enabled the Vlink and set its capacity to 40 Mbps. As stated previously, it is possible to configure multiple parameters in the same command, when the subsequent arguments or parameters in the command are associated with the primary argument. So, in this case, the primary argument, or parameter is `set_trunk_data;id,150`. The `trunk_on,true` and `trunk_capacity, 40000` are secondary arguments that apply to the primary argument, Vlink ID 150.

- 3. Use the following `asconfigurator` command to assign Vlink ID 150 to the user2 transfer user account.

```
asconfigurator -x
"set_user_data;user_name,user2;transfer_out_bandwidth_aggregate_trunk_id,150"
```

```
[root@london ~]# asconfigurator -x "set_user_data;user_name,user2;transfer_out_bandwidth_aggregate_trunk_id,150"
success
user_name: user2
```

- ___ 4. Use the Aspera GUI to verify the changes.
 - ___ a. Open the Server Configuration page and select the Users managed object.
 - ___ b. Select the user2 account and, if necessary, click the Bandwidth tVLink ID parameter.ab. Verify that the Vlink ID 150 is assigned to this account as the Outgoing

Setting	Inherited Value	Inherited From	Override	Effective Value
Incoming Rate Control Predictor Ran... 2	default		<input type="checkbox"/>	2
Incoming Rate Control Predictor Limi... 3	default		<input type="checkbox"/>	3
Incoming Rate Control Target Queue: unset	default		<input type="checkbox"/>	unset
Outgoing Vlink ID:	101	node	<input checked="" type="checkbox"/>	150

- ___ c. Click Cancel to return to the main Transfer page.

1.8. Deleting aspera.conf entries with asconfigurator

- ___ 1. Delete the user3 transfer user account with the following command:

```
asconfigurator -x "delete_user;user_name,user3"
```

```
[root@london ~]# asconfigurator -x "delete_user;user_name,user3"
success
user_name: user3
```

- ___ 2. Use the Aspera GUI to verify that the account and all its configuration data is removed.



Note

Removing a transfer user account from the Aspera environment does NOT remove the system user nor the system user's files.

1.9. Setting server name with asconfigurator

- ___ 1. Set the hostname of the Aspera Transfer Server by using the following command:

```
asconfigurator -x "set_server_data;server_name,london"
```

```
[root@london ~]# asconfigurator -x "set_server_data;server_name,london"
success
```

- ___ 2. Verify that the server name is set by using the following command:

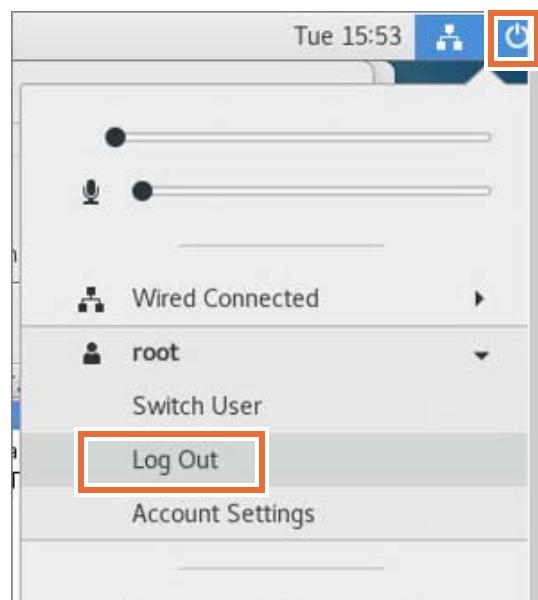
```
cat /opt/aspera/etc/aspera.conf | grep server
```

```
[root@london ~]# cat /opt/aspera/etc/aspera.conf | grep server
<central_server>
</central_server>
<server>
    <server_name>london</server_name>
</server>
```

**Note**

This command does NOT set the system server name, but the name that Aspera uses to identify the server, which is typically used with Aspera web-based applications. The server name is not configurable in the GUI. So, even though the command successfully sets the server name value in the aspera.conf file, you must look in the server section of the /opt/aspera/etc/aspera.conf file to verify the change.

- ___ 3. Close the Aspera GUI and logout of the root account.
 - ___ a. Click the Power button in the upper right corner of the window.
 - ___ b. Click the Log Out option.



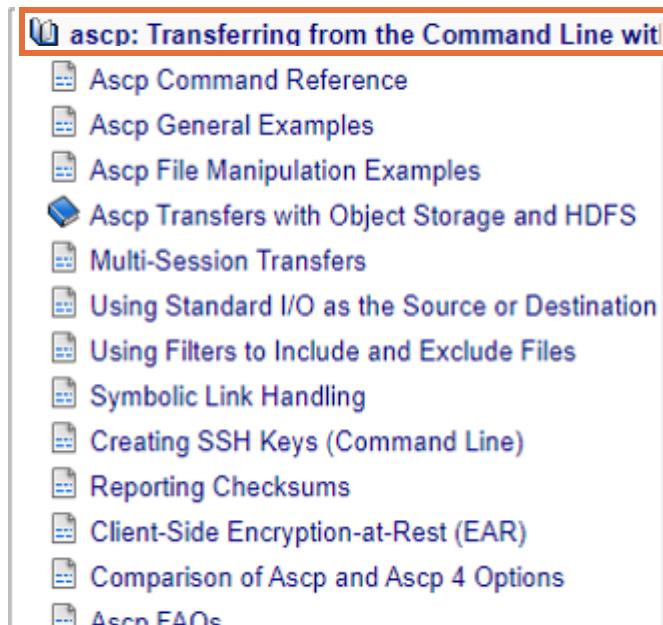
As you can see from the few examples that you went through, the `asconfigurator` utility is a powerful tool with numerous options that you can use to administer an Aspera server. In fact, most of Aspera administrators use the command line to configure their systems and to transfer files.

Section 2. Transfers with ascp

As you saw in previous exercises, `ascp` is a command-line FASP transfer program. Hundreds of options are available to meet complex transfer functions. You use only a few of those options in this exercise, but they should give you a general idea of how to use the `ascp` command.

The *ascp: Transferring from the command line with Ascp* section of the *IBM Aspera High-Speed Transfer Server Administration Guide* provides details about using `ascp`.

- ___ 1. Click the *ascp: Transferring from the Command Line with Ascp* link in the Content section of the Administration Guide.



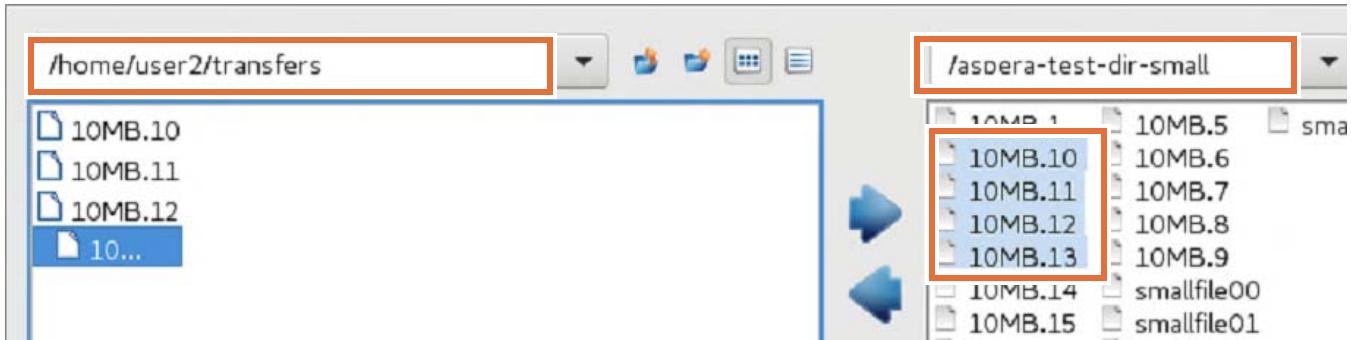
- ___ 2. Click the appropriate section titles to view options and syntax as you use `ascp` in the following exercises.

Feel free to try other options that are defined in the Administration Guide.

2.1. Prepare the system to perform transfers

You need some sample files in the `/home/user2` directory on the Denver server to perform the transfers in the following steps. The Aspera Demo Server is an excellent source of files for testing.

- ___ 1. Switch to the Denver server.
- ___ 2. Log in using the `user2` account (use `user2/pasw0rd` credentials).
- ___ 3. Open a terminal window.
- ___ 4. Start the Aspera GUI with the `asperascp` command and click Aspera Demo Connection.
- ___ 5. Set the remote directory to `/aspera-test-dir-small` and the local directory to `/home/user2/transfers`.
- ___ 6. Download four files (`10MB.10`, `10MB.11`, `10MB.12`, and `10MB.13`) from the Aspera Demo Server to the `/home/user2/transfers` directory and change their ownership to `user2` for use in the tasks to follow.



- ___ 7. Close the Aspera GUI and open a terminal window.

2.2. Transfer files between Aspera servers with the `ascp` command

Use the `ascp` command to transfer files between the Denver and London servers.

- ___ 1. Use the `ascp` command to upload files from the Denver to the London server. Use the user2 account on both servers.
 - ___ a. Continue on the Denver server.
 - ___ b. If necessary, log in as user2 with the user2/passw0rd credentials.
 - ___ c. Open a terminal window with the right mouse button on the desktop and select the Open Terminal option from the menu.
 - ___ d. Run the following command to move to the transfers directory:

```
cd transfers;pwd
```

```
[user2@denver ~]$ cd transfers;pwd
/home/user2/transfers
```

- ___ e. Run the following `ascp` command to upload the 10MB.10 file to the London server (use *passw0rd* when prompted for a password):

```
ascp 10MB.10 user2@london:/transfers/
```

```
[user2@denver transfers]$ ascp 10MB.10 user2@london:/transfers/
Password:
10MB.10                                         100%   10MB 43.9Mb/s    00:02
Completed: 10240K bytes transferred in 2 seconds
(37066K bits/sec), in 1 file.
```



Note

Double dashes before options are required in the next three commands. Also, all of the following commands require a password. Use *passw0rd* when prompted.

- ___ 2. Remove a source file after a transfer by running the following command:

```
ascp --remove-after-transfer 10MB.11 user1@london:/transfers
```

```
[user2@denver transfers]$ ascp --remove-after-transfer 10MB.11 user1@london:/transfers
Password:
10MB.11                                         100%   10MB 43.8Mb/s   00:02
Completed: 10240K bytes transferred in 2 seconds
(37709K bits/sec), in 1 file.
```

- ___ a. Confirm that the 10MB.11 file was removed from the /home/user2/transfers directory by using the following command:

```
ls /home/user2/transfers
```

```
[user2@denver transfers]$ ls /home/user2/transfers
10MB.10  10MB.12  10MB.13
```

The ascp command can also perform transfers with default configured values.

- ___ 3. Run the following command to transfer a file with default values:

```
ascp --host=london --mode=send 10MB.13 /
```

```
[user2@denver transfers]$ ascp --host=london --mode=send 10MB.13 /
Password:
10MB.13                                         100%   10MB 43.9Mb/s   00:02
Completed: 10240K bytes transferred in 2 seconds
(35980K bits/sec), in 1 file.
```



Note

This format of the ascp command can save typing when many parameters need to be included in the command and the default values of those parameters are the preferred values.

As with the Aspera GUI, the ascp command can also be used to create a new directory when needed. You use the -d option along with the file name to transfer and the target is the new directory that you want to create.

- ___ 4. Upload a file to a non-existent directory on the London server:

- ___ a. Run the following command to initiate a transfer:

```
ascp -d 10MB.12 user2@london:/From_Denver/
```

```
[user2@denver transfers]$ ascp -d 10MB.12 user2@london:/From_Denver
Password:
10MB.12                                         100%   10MB 44.0Mb/s   00:02
Completed: 10240K bytes transferred in 2 seconds
(35237K bits/sec), in 1 file.
```

- ___ b. Confirm that the command created the directory and transferred the file.

- ___ 5. Verify that the directory was created and the file was transferred.

- ___ c. Switch to the London server.

- ___ d. In a terminal window, run the following command to verify that the directory was created and the transferred file was placed into the new directory:

```
ls /home/user2/From_Denver
```

```
[root@london transfers]# ls /home/user2/From_Denver  
10MB.12
```

- ___ 6. Log off both the London and Denver servers.

End of exercise

Exercise review and wrap-up

In this exercise, you used the `asconfigurator` command to modify the contents of the `aspera.conf` file to configure various parameters.

You also used the `ascp` command to perform transfers with various options.

Exercise 5. Advanced features

Estimated time

02:00

Overview

While the IBM Aspera HST Server facilitates high speed and dependable file transfers, it also has many other features that go beyond basic file transfers. The steps in this module are designed to give you hands-on experience in configuring Node API and automating transfers with Hot Folders and Aspera Watch Folders.

Objectives

Upon completion of this exercise you should be able to:

- Modify the aspera.conf file to support Node API
- Create a Node API user
- Configure a Hot Folder on a Windows system
- Configure an Aspera Watch Folder on a Linux system

Introduction

This exercise presents the details of configuring some of the advanced capabilities of the IBM Aspera HST Server. Specifically, you configure the aspera.conf file to support Node API users, create a Node API user, then verify that the Node API user can access the server. The final tasks of this exercise address the configuration of Hot Folders and Aspera Watch Services.

Requirements

This exercise requires the use of the Linux and Windows servers that are provided in the lab environment.

Section 1. Configure Node API

The Aspera Node API facilitates connections to IBM Aspera HSTS systems from Aspera web applications, such as IBM Aspera Faspex, IBM Aspera Shares, and IBM Aspera on Cloud. Node API can also integrate Aspera functions with your own web applications. All Aspera server products across multi-cloud and hybrid storage systems support Node API.

Configuring an IBM Aspera server for Node API requires adding some information to the /opt/aspera/etc/aspera.conf file, and the creation of at least one Node API user account. The following steps take you through the process of modifying the aspera.conf file, creating a Node API user, and verifying that the Node API user account is functional. This course does not address the details of using a Node API account to perform configuration and transfer tasks. Those abilities are addressed in a separate training course, and also in the *IBM Aspera HSTS Administration Guide*.

1.1. Configure the system to support Node API

- ___ 1. Modify the /opt/aspera/etc/aspera.conf file on the Denver server to facilitate Node API operations.
 - ___ a. Log on to the Denver server by using the *root/passw0rd* credentials.
 - ___ b. Open a terminal window and run the following commands:


```
asconfigurator -x "set_server_data;http_port,9091"
asconfigurator -x "set_server_data;https_port,9092"
asconfigurator -x "set_server_data;enable_http,false"
asconfigurator -x "set_server_data;enable_https,true"
```
 - ___ c. Restart the asperanoded process to cause it to read the changes in the server section of the aspera.conf file by running the following command:


```
systemctl restart asperanoded
```
 - ___ d. Verify that the new entries now appear in the */opt/aspera/etc/aspera.conf* file by running the following command:


```
grep http /opt/aspera/etc/aspera.conf
```

```
[root@denver ~]# grep http /opt/aspera/etc/aspera.conf
<http_server>
  <enable_http>true</enable_http>
  <enable_https>true</enable_https>
</http_server>
```

1.2. Create a Node API user

- ___ 1. Configure a Node API user account with a name of node_user, associating the account with the xfer transfer user and assigning a password of *passw0rd*.
 - ___ a. Configure a Node API account by running the following command:


```
/opt/aspera/bin/asnodedadmin -a -u node_user -x xfer -p passw0rd
```

- b. Use the `asnodedadmin` command to confirm that the node user account was created:

```
/opt/aspera/bin/asnodedadmin -l
```

user	system/transfer user	acls
node_user	xfer	[]

The Node API user account credentials are typically used over an HTTP connection by a web application. The `curl` command is a command-line utility that transfers data to or from a server by using one of its supported protocols, in this case, HTTPS.



Note

The `curl` command sends an Aspera Node API request to the Denver server and receives a detailed JSON response. Only a part of the actual response is provided in the response that is shown after the `curl` command is run. A great deal of information about the server is provided in the response. But for now, it is enough to confirm that a response is received, which indicates that the Node API user account you created is functional.

2. Test the function of the Node API account by using the following tasks.

- a. Switch to the London server.
- b. Log in as root with the `root/passw0rd` credentials.
- c. Open a terminal window and run the following command to verify that the Node API account you created is functional:

```
curl -ki -u node_user:passw0rd https://denver:9092/info
```

```
[root@london transfers]# curl -ki -u node_user:passw0rd https://denver:9092/info
HTTP/1.1 200 OK
Cache: no-cache
Connection: close
Content-Type: application/json; charset=utf-8

{
  "application" : "node",
  "version" : "3.9.1.168302",
  "current_time" : "2019-09-10T23:17:41Z",
  "license_expiration_date" : "2020-06-30",
  "license_max_rate" : "45000",
  "os" : "Linux 3.10.0-957.27.2.el7.x86_64 #1 SMP Mon Jul 29 17:46:05 UTC 2019",
  "aej_status" : "disconnected",
  "async_reporting" : "no",
  "transfer_activity_reporting" : "yes",
  "transfer_user" : "xfer",
  "docroot" : "/london_xfers",
  "node_id" : "d5518a10-ab18-413e-8dc3-e3c4511c5fd5",
  "cluster_id" : "5462dc7a-41dd-40a8-a734-4f6efd1608af",
  "acls" : [
```

**Note**

If the Node API user account credentials are valid, you get a response as a JSON object that lists information about the node. As mentioned previously, the example that is shown after the command represents only a small portion of the JSON object response.

Numerous Node API requests can be transmitted to a server configured with an IBM Aspera Node API account. Aspera provides APIs for all of its products, and it is possible to embed the needed API commands within applications that can then connect with an Aspera server to perform any number of tasks. The curl command provides a way to directly send Aspera Node API requests on HTTP from the command line to an Aspera server, without embedding the requests in an application or by using a browser.

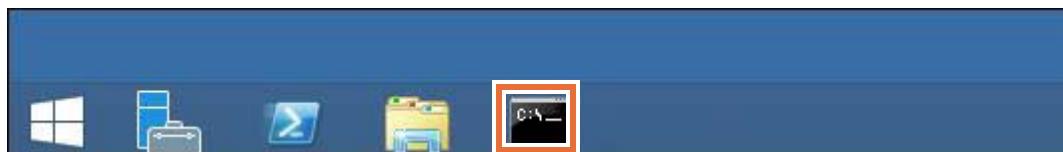
**Reminder**

It is outside the scope of this course to address the details of using the Node API, but more information is provided in the *IBM Aspera High-Speed Transfer Server Administration Guide*. And, a much more detailed discussion is available on the IBM Aspera Developer Network site:
<https://developer.asperasoft.com>.

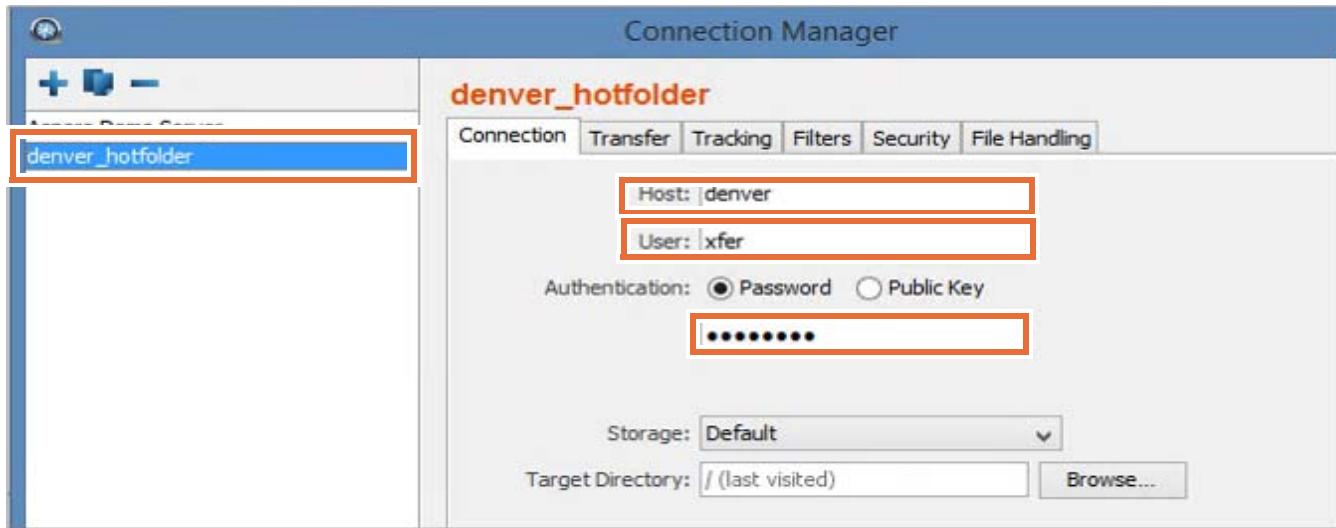
Section 2. Configure Hot Folders

The Hot Folders feature is only available on Windows system, so the following tasks are performed on the Singapore server. Hot Folders can be implemented to monitor specific directories for changes, and then automatically transfer new or modified files to a designated destination. This feature can be used for one-way replication between two systems, or as an automated function for forwarding files in a workflow. The following tasks configure a hot folder on the Singapore server, but transfers files with a directory on the Denver server.

- 1. Define a connection called Denver_hotfolder on the Singapore server that connects to the Denver server by using the xfer account.
 - a. Confirm that the Singapore server is powered on.
 - b. Switch to the Singapore server and log in using the *Administrator/passw0rd* credentials.
 - c. Click the Command prompt icon at the bottom of the screen to open a terminal window.

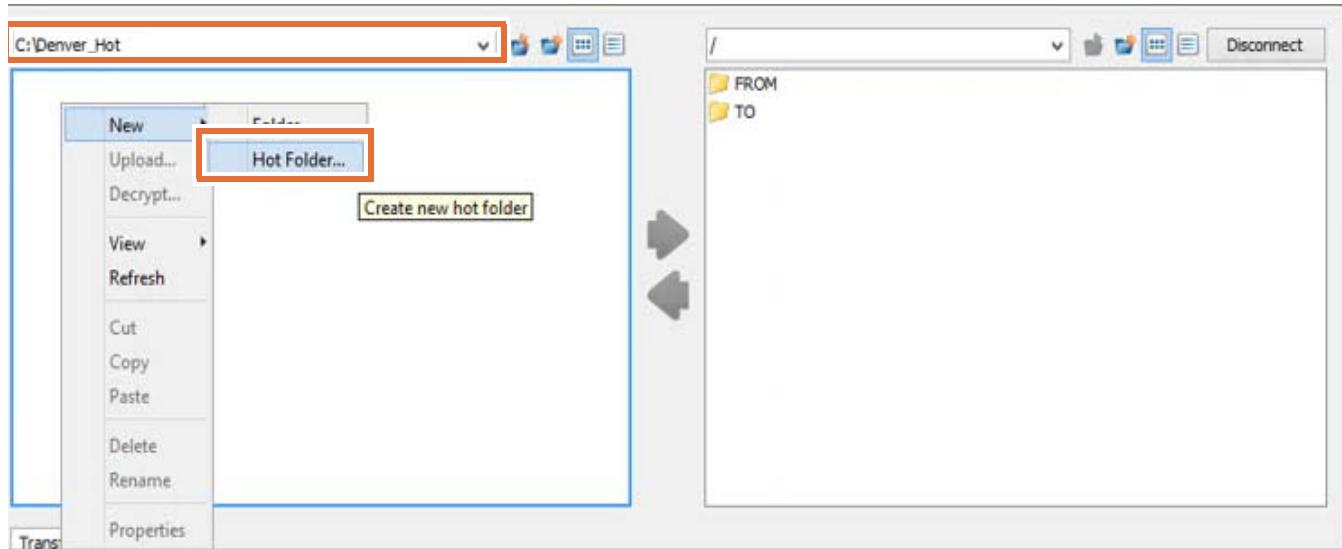


- d. Start the Aspera GUI by entering the same command as used in a Linux environment:
asperascp
- e. Click the Connections button to open the Connection Manager page.
- f. Create a connection to the Denver server named denver_hotfolder. Use the xfer account and a password of *password*.



- g. Click OK to save your configuration and return to the main Transfer page.
- 2. Create a hot folder on the Singapore server called Denver_Hot that pushes files from your local system to the Denver server by using the xfer account on the Denver server.
 - a. Open the connection that you created and set the local directory to be C:\Denver_Hot.

- ___ b. Move the cursor into the local directory section and use the right mouse button to open the File Management menu.



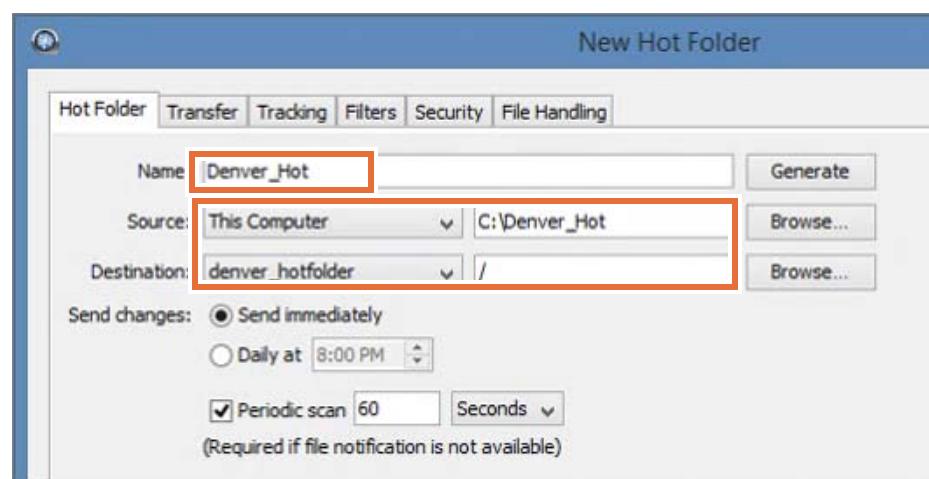
- ___ c. Select the New option and click Hot Folder to open the New Hot Folder configuration page.
 ___ d. Configure the Hot Folder parameters as follows (some of these parameters are automatically completed, based on the directory that is used when the page is opened):

Name: Denver_Hot

Source: This Computer and C:\Denver_Hot

Send changes: Send Immediately

Destination: denver_hotfolder (use the menu if needed to select the correct server) and the destination directory should be /.



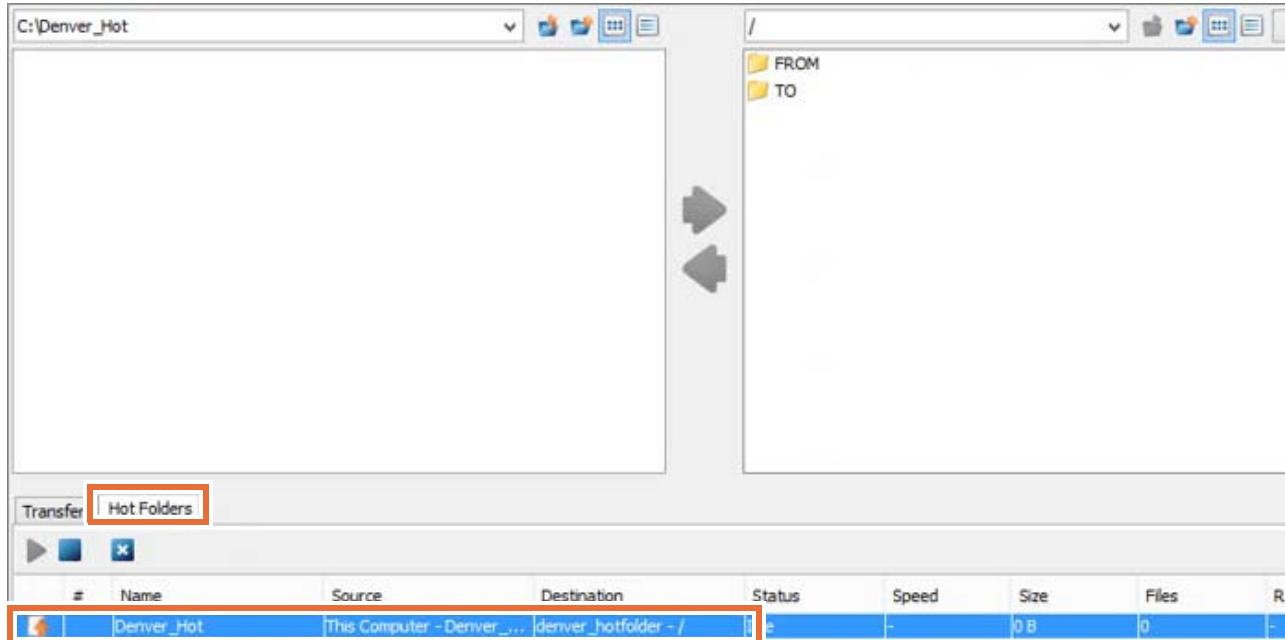
**Note**

You can configure more parameters that are associated with this hot folder, similar to those parameters configured in connections. Parameters that are defined for a hot folder apply only to the transfers associated with the configured hot folder.

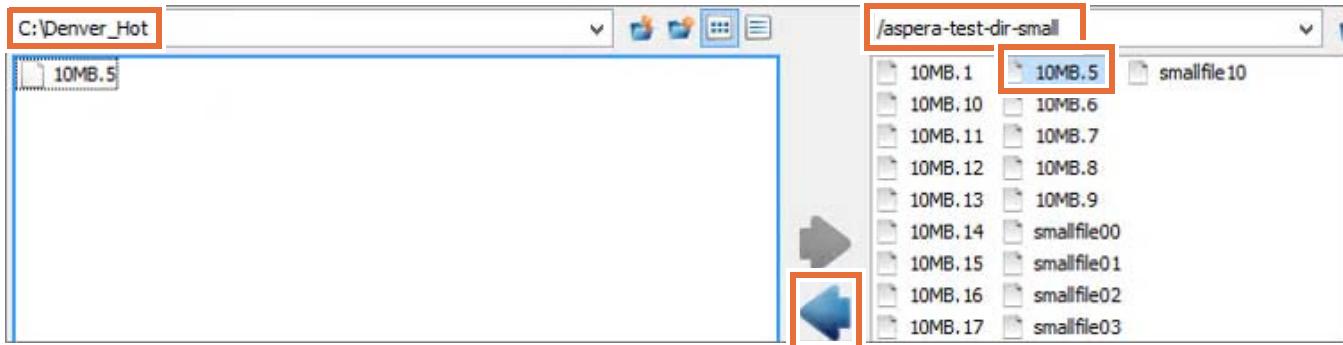
- ___ e. Save your changes with the OK button and return to the main Transfer page.

These actions configured a hot folder called Denver_Hot on the Singapore server that pushes files that are placed in the C:\Denver_Hot directory on the Singapore server to the remote Denver server. Any files that are placed into the C:\Denver_Hot directory are automatically sent to the Denver server by using the xfer account parameters.

- ___ f. Click the Hot Folders tab in the Transfer report and notice that an entry appears that includes the Source and Destination, which should be consistent with the values you configured for the new hot folder.



- ___ g. Close the denver_hotfolder connection by clicking Disconnect.
- ___ 3. Copy the 10MB.5 file from the Aspera Demo Server into the C:\Denver_Hot directory and verify that the files were transferred to the Denver server.
 - ___ a. On the main Transfer page, click Aspera Demo Server to open a connection.



- b. Set the remote directory to be `/aspera-test-dir-small` and download the `10MB.5` file to the local `C:\Denver_Hot` directory.
- c. Close the connection to the Aspera Demo Server.
- d. Switch to the Denver server.
- e. Log in using the `root/passw0rd` credentials.
- f. Open a terminal window and run the following command to list the contents of the `/london_xfers` directory. Remember, the `/london_xfers` directory is the docroot setting for the `xfer` user account that is used in the `denver_hotfolder` connection on the London server:

```
ls /london_xfers
```

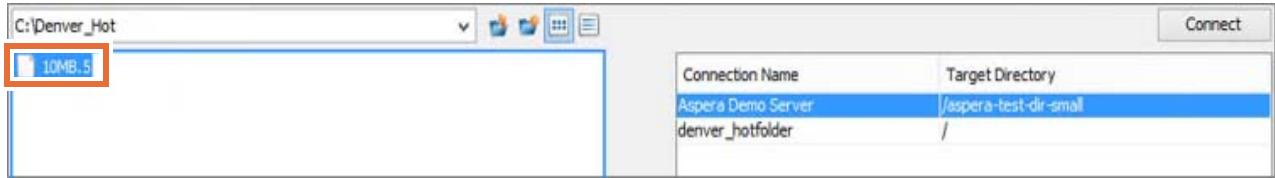
```
[root@denver ~]# ls /london_xfers
10MB.5  FROM  TO
[root@denver ~]#
```

The `10MB.5` file you downloaded to the `C:\Denver_Hot` directory on the Singapore server was automatically transferred to the `/london_xfers` directory on the Denver server.

As discussed in the lecture, Hot Folders can be configured only as a one-way transfer. In this case, you configured the hot folder to push files from the Singapore server to the Denver server. Adding or removing files in the `/london_xfers` directory on the Denver server does NOT affect files on the Singapore server.

- 4. Verify that removing or adding a file on the Denver server does not affect the Singapore server files.
 - a. Use the following commands to remove the `10MB.5` file from the `/london_xfers` directory on the Denver server and confirm it was removed:


```
rm -f /london_xfers/10MB.5
ls /london_xfers
[root@denver ~]# ls /london_xfers
FROM  TO
```
 - b. Switch to the Singapore server.
 - c. Look at the main Transfer page of the Aspera GUI and notice that the `10MB.5` file is still in the local directory.



The tasks that you completed show how a configured hot folder is a one-way operation. Files added to the directory configured as the Source are automatically copied to the remote directory on the Denver server. Removing the file from the destination directory on the Denver server did not result in the removal of the file in the source directory.

Alternatively, changing the Source and Destination values for the hot folder would configure a hot folder that pulls files from the remote system, rather than pushing them.

Section 3. Configure Aspera Watch Folder

Unlike Hot Folders, Aspera Watch Folders are designed to handle bidirectional transfers, and can handle thousands of files within the configured watch folder. And, you can configure as many watch folders as needed, either sharing user account, or configured with different user accounts.

Aspera Watch Folders use an Aspera Node API user account to function. You added the appropriate entries into the aspera.conf file on the Denver server, but you also need to do the same on the London server.

Prepare the Denver server for Watch Folders

The source folder for this exercise is on the Denver server under the user1 account. However, you must add the user1 account to the Aspera environment before proceeding.

- ___ 1. Configure the user1 account on the Denver server that you are using for the planned watch folder source.
 - ___ a. Switch to the Denver server.
 - ___ b. Open a terminal window.
 - ___ c. Add the user1 transfer user and set the docroot value to /transfers by running the following command:

```
asconfigurator -x "set_user_data;user_name,user1;absolute,/transfers"
```

```
[root@denver ~]# asconfigurator -x "set_user_data;user_name,user1;absolute,/transfers"
success
user_name: user1
```

The Denver server must also have a running watch service that is associated with the user1 account.

- ___ 1. Create a watch service for user1 by running the following command:

```
/opt/aspera/sbin/asperawatchd --user user1
```

```
[root@denver ~]# /opt/aspera/sbin/asperawatchd --user user1
[asperawatchd] {"id": "2d05eb40-880f-40c4-a0a7-2d995b51330f"}
[asperawatchd] Has to be run by asperarund as a service. Please uninstall any other services
```

Verify that the service is running by executing this command:

```
/opt/aspera/bin/aswatchadmin query-daemons
```

```
[root@denver transfers]# /opt/aspera/bin/aswatchadmin query-daemons
[aswatchadmin query-daemons] Found a single daemon:
user1
```

Configure the London server for Node API

- ___ 1. Switch to the London server, make sure you are logged on as root and have an open terminal window.

- ___ 2. In the terminal window, run the following `asconfigurator` commands to add and enable the HTTP ports:

```
asconfigurator -x "set_server_data;http_port,9091"
asconfigurator -x "set_server_data;https_port,9092"
asconfigurator -x "set_server_data;enable_http,false"
asconfigurator -x "set_server_data;enable_https,true"
```

- ___ 3. Restart the `asperanoded` daemon by running the following command:

```
systemctl restart asperanoded
```

- ___ 4. Add the `user1` transfer user with a docroot of `/transfers`. Use the same command that you used on the Denver server:

```
asconfigurator -x "set_user_data;user_name,user1;absolute,/transfers"
```

[root@london transfers]# asconfigurator -x "set_user_data;user_name,user1;absolute,/transfers" success user_name: user1

The Aspera GUI provides a convenient interface for configuring watch folders. However, accessing the Watch Folder configuration pages requires an administrative Node API user account be created on the server where the Watch Folder is created. This account is a different Node API user account than the one you created on the Denver server, as this one requires administrative capabilities that are configured by adding the `--acl-set` option.

- ___ 5. Configure a Node API user account by using the `user1` transfer user account, but with an `acl` value of `admin,impersonation` set:

```
/opt/aspera/bin/asnodeadmin -a -u node_admin -p passw0rd -x user1
--acl-set "admin,impersonation"
```



Note

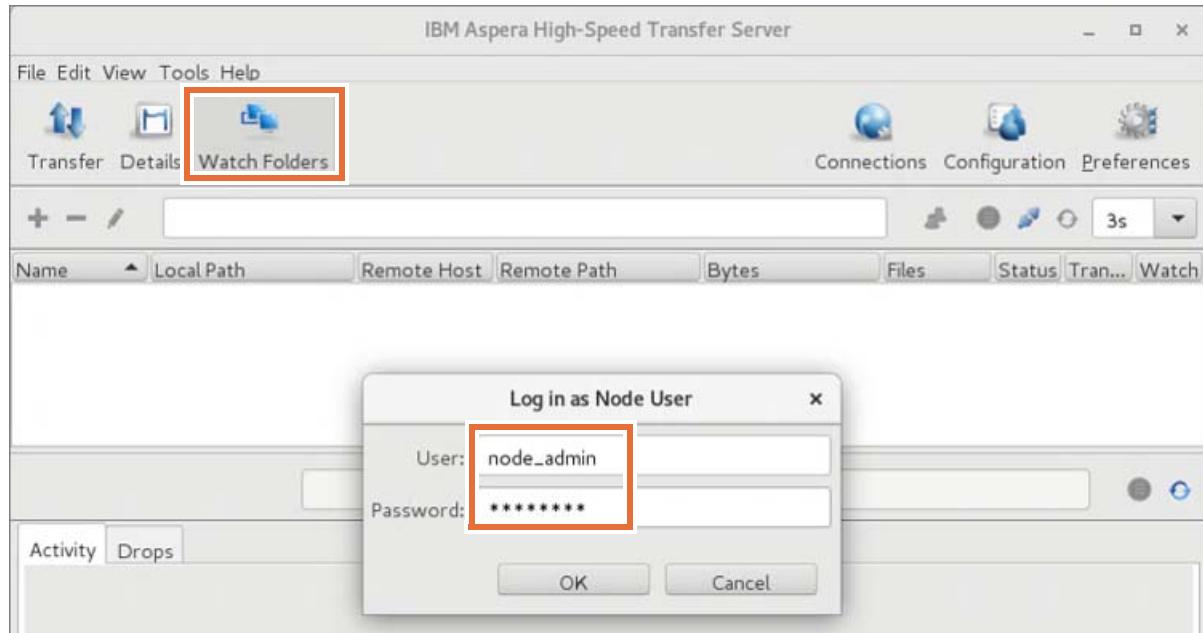
Double dashes are used before the `acl-set` option.

- ___ d. Confirm that the new Node API user was successfully configured by using the following command:

```
/opt/aspera/bin/asnodeadmin -l
```

[root@london transfers]# /opt/aspera/bin/asnodeadmin -l List of node user(s): user system/transfer user acls ===== node_admin user1 [admin, impersonation]

- ___ 6. Use the Aspera GUI to configure a watch folder that pushes files from a watch folder on the London server to the Denver server by using the user1 account.
 - ___ a. On the main Transfer page of the Aspera GUI, click the Watch folders button on the left side of the page.
 - ___ b. When prompted, log in by using the node_admin credentials (*node_admin/passw0rd*) you configured previously.



Troubleshooting

If the error message *You cannot create Watch Folders. Please contact your Administrator.* is displayed, the Node API user is not configured with the necessary permissions. Node API user permissions can be modified as described in Configuring Custom Watch Folder Permissions Policies in the GUI section of the *IBM Aspera HST Server Administration Guide*.

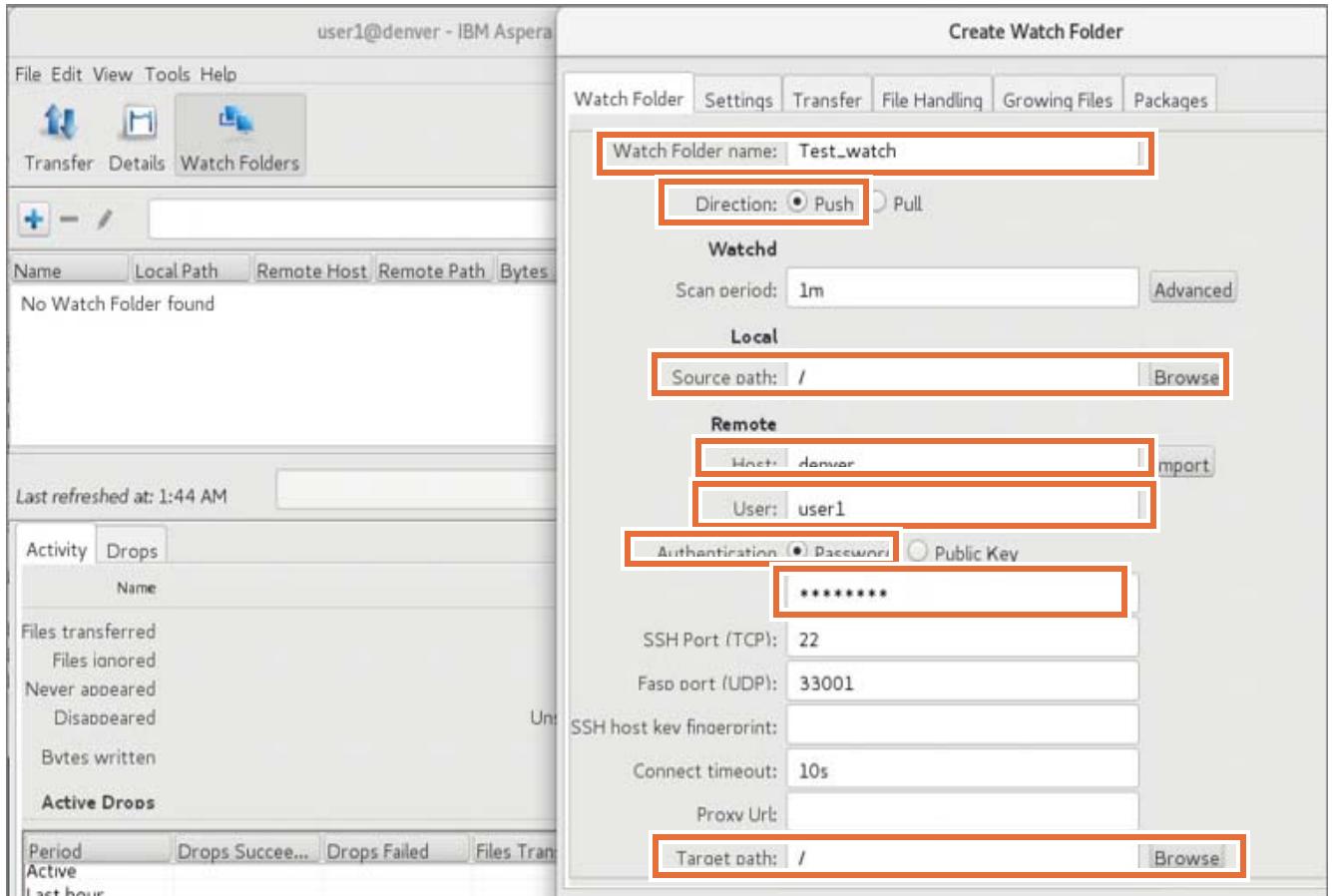
- ___ c. Click the Create a new Watch Folder icon at the left of the page to open the Create Watch Folder page.
- ___ d. Enter the following values into the fields on the Create Watch Folder page:
 - Watch Folder name: Test_watch
 - Direction: Push
 - Watchd Scan period: 1m
 - Local Target Path: Use the Browse button to select /
 - Remote Host: denver

User: user1

Authentication: Password

password

Source path: Use the Browse button to select /



_____ e. Click OK to save your changes and return to the Watch Folders page.

Look at the Transfer report section of the page.



Notice that the Test_watch watch folder is active and the Direction Indicator icon (on the left side of the watch folder listing) shows that it pushes (uploads) files from the local directory to the remote server.

The Status and Watch columns should be green. If they are red, it indicates a problem with the configuration.

If the source directory contains files, the Watch Folder collects them into a drop after the Watch service scan interval passes and then transfers them to the target.

No files are transferred until the first scan interval passes. If the Watch service scan interval is set to the default, files transfer after 30 minutes.

Verify the watch folder functions properly

- ___ 1. Copy a file from the /transfer_to_denver directory to /transfers and verify that the file is copied to the **Denver** server.

- ___ a. In a terminal window, run the following command to copy the /transfer_to_denver/10MB.7 file to the /transfers directory:

```
cp /transfer_to_denver/10MB.7 /transfers
```

- ___ 2. Go back to the Aspera GUI and click the **Test_watch** watch folder.

- ___ a. Watch the Activity section of the GUI for a little while until the data changes.

Name	Local Path	Remote Host	Remote Path	Bytes	Files	Status	Transport	Watch
Test_wa...	/	denver	/	Idle	Idle	●	●	●

Last refreshed at: 1:59 AM						
Activity	Drops					
Name: Test_watch Status: ●						
Files transferred: 1	Files succeeded: 1					
Files ignored: 0	Files skipped: 0					
Never appeared: 0	Files failed: 0					
Disappeared: 0	Unsatisfied dependency: 0					
Bytes written: 10485760 B (10.00 MB)	Bytes completed: 10485760 B (10.00 MB)					
Active Drops: 0 Total drops: 1						
Period	Drops Success...	Drops Failed	Files Transferred	Files Failed	Files Other Sta...	Bytes
Active	1	0	1	0	0	10.00 MB
Last hour	1	0	1	0	0	10.00 MB

The Activity section of the Watch Folder page provides information about transfers that are associated with the selected watch folder. Notice that information about files that were successfully transferred, about files that were not successfully transferred, and the number of bytes in the transfer is displayed.

- ___ b. Switch to the Denver server.

- ___ c. Use the following command to list the files in the /transfers directory to verify that the 10MB.7 file was transferred with the watch folder that is configured on the London server.

```
ls /transfers
```

```
[root@denver transfers]# ls /transfers
10MB.1  10MB.3_JDT  10MB.4  10MB.7  1GB  smallfile00
```

End of exercise

Exercise review and wrap-up

In this exercise, you configured Node API services and users on both Linux systems by using the `asconfigurator` and `asnodedadmin` commands.

You configured a hot folder on the Windows server.

You created an IBM Aspera Watch Folder on the London server that automatically pushes new files to the remote Denver server.



IBM Training



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