

LESSON NOTES

Intro to Linux

System Management

1.5.4 Remote Networking Tools

Lesson Overview:

Students will:

- Understand what tools are available for remote server file management

Guiding Question: What are the tools used for remote networking in Linux?

Suggested Grade Levels: 9 - 12

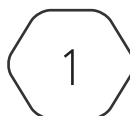
Technology Needed: None

CompTIA Linux+ XK0-005 Objective:

1.5 - Given a scenario, use the appropriate networking tools or configuration files

- Remote Networking tools
 - Secure Shell (SSH)
 - wget
 - cURL
 - nc
 - rsync
 - Secure Copy Protocol (SCP)
 - SSH File Transfer Protocol (SFTP)

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Remote Networking Tools

When you connect over a network to a remote server via an unencrypted method, network sniffers can view the data being sent and received. *Secure Shell (SSH)* has resolved this problem by providing an encrypted means for communication. It is the de facto software used by those wishing to send data to and get data from remote systems securely.

The **wget** application is a command-line tool from the GNU Project that allows you to retrieve files from remote servers using FTP, FTPS, HTTP, or HTTPS protocols. You specify the protocol, server name, and file to download using the standard URL format. The **remotehost** is the full hostname for the location hosting the files, and **filename** is the name of the source code files you wish to retrieve, including the folder path required: **wget http://remotehost/filename**

cURL is another command-line tool that supports many more protocols (HTTP, FTP, IMAP, POP3, SCP, SFTP, SMTP, TFTP, TELNET, LDAP, or FILE) that is used to transfer data to or from a server. **cURL** is powered by libcurl. This tool is preferred for automation since it is designed to work without user interaction. **cURL** can transfer multiple files at once. It also uses the standard URL format for you to specify the protocol, server name, and file to download. It should be noted that one nice feature of **cURL** is its ability to work with the HTTPS protocol. It will warn you if the remote website is using a self-signed certificate or if the certificate is signed by an untrusted certificate authority (CA).

Netcat, or **nc**, is a utility tool that uses TCP or UDP connections to read and write in a network. It can be used for both attacking and security. In the case of attacking, it helps users to debug the network along with investigating it. It runs on all operating systems.

rsync, or remote synchronization, is a software utility for Unix-like systems that efficiently syncs files and directories between two hosts or machines. One is the source, or the localhost, from which the files will be synced, the other is the remotehost on which synchronization will take place. There are basically two ways in which **rsync** can copy/sync data:

- Copying/syncing to/from another host over any remote shell like ssh, rsh.
- Copying/syncing through **rsync** daemon using TCP.

rsync is famous for its delta-transfer algorithm, in which it copies only the differences between the source files present in the localhost and the existing files in the destination or remote host.

The **scp** (Secure Copy Protocol) command in Linux systems is used to copy files between servers in a secure way. **scp** allows the secure transferring of files between the localhost and the remote host or between two remote hosts. It uses the same authentication and security as the Secure Shell (SSH) protocol. **scp** is known for its simplicity, security, and pre-installed availability.

SFTP (Secure File Transfer Protocol) is the advanced version of FTP(File Transfer Protocol) which ensures security while transferring files between the organizations/computer. It is also known as SSH(Secure Shell). It works on port 22 and uses the client-server model.

Features of SFTP:

- It encrypts the data
- It executes the command
- It secures and compresses the data for transmission
- It provides authentication to username and password
- It improves uploading and downloading functionality
- It also provides authentication to the public key