Basics of Secure Shell Protocol (SSH)

HPCC Presentation 09-25-23

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Overview

- What SSH is
- What SSH does
- How we use SSH, and a how-to

Ask any questions as you have them!

SSH - Basics

- **Secure Shell (SSH) is a protocol to operate over an unsecured network in a secure manner**
  - For our purposes, we use it for remote login to our systems
- **Uses RSA keys for authentication**
  - More secure than just a password, but you can use passwords if needed

SSH - Usage

- **Provides a command-line interface from which we can interface with a *different* computer without being next to it**
  - There are also graphical options that leverage SSH like VS Code's remote editing plugins
  - For certain applications (Paraview, Blender) it can allow you to run operations on a different system than your own

SSH - Usage

- **ssh USER@IP-ADDRESS**
  - Accessed primarily through the command-line
  - The above command will connect your computer to the server located at IP-ADDRESS
  - USER is the name of a user that exists on the server, not your own local device
  - When successful, a password for USER will be required to log in

SSH - Usage

- **ssh-keygen**
  - The above command generates an RSA key pair
    - The public key is given to the server
    - The private key exists on your system, not shared with anyone
  - You can copy these keys to any system that you want to be able to authenticate with your login credentials

SSH - Usage

- **ssh-copy-id -i id_rsa.pub USER@IP-ADDRESS**
  - This copies your public key to the server
  - A password for USER will be required to copy the key
  - If successful, you shouldn’t need a password to authenticate anymore

SSH – Club Systems

- **Laputa**
  - Uses the blade servers or “pizza boxes” as nodes in the cluster
  - Older hardware but performs well within a cluster
- **Naushikaa**
  - Formerly “Big Boy”, uses NVIDIA TITAN Xs
- **Totoro**
  - Newest system, uses NVIDIA RTX 3090s

SSH - Demonstration

- **Quick Demonstration with one of our club systems**
  - Naushikaa (10.92.50.232)