Measuring CPU Activity

LPIC-2: Linux Engineer (201-450)

Objectives:

At the end of this episode, I will be able to:

1. Identify tools used to monitor CPU performance in Linux.
2. Utilize ps, pstree, pmap, and mpstat to view CPU metrics.

> Additional resources used during the episode can be obtained using the download link on the overview episode.

- *top* and *htop*
  - Displays real-time data
  - *htop* is prettier, but brings more dependencies
  - **Shift-F** for sort options
- Filtering *top*
  - `top -Hp <pid>`
  - `-H` - Display individual threads
  - `-p` - Monitor only specified PID
- Frozen processes
  - Typically at 0 or less CPU utilization
    - Typically still consuming RAM
  - Easier to find them with *ps*
  - List processes for one user
    - `ps --user <id>`
  - List processes sorted by memory consumption
    - `ps --sort size`
  - List all processess for all users
    - `ps aux`
    - **a** - Include all users
    - **u** - Display process owner's username
    - **x** - Include processes without a TTY
- Process relationships
  - Processes can be linked
    - Subprocesses
    - Parent processes
  - List a process's relationship to other processes
    - `pstree`
    - `pstree <pid>`
    - `pstree <username>`
- Process Memory Map
  - Processes also hook into libraries

    - Can be viewed as a memory map using `pmap`
    - `sudo pmap <pid>`
- Process Open Files
    - List of files a process may be accessing
    - `lsof -p <PID>`
- *mpstat*
    - Displays CPU statistics
    - Similar to `sar -u` but in real-time
    - `mpstat 5`
        - Display CPU stats every 5 seconds