

## Configuring Serial Connection to LANforge

Goal: Using a serial cable and terminal emulator on Windows to connect to LANforge.

If you experience crashes or system misconfiguration, a network link to LANforge can become unavailable. LANforge machines are shipped with a serial cable for just this possibility. Most LANforge servers come with standard RS232 DB9 pin serial ports, other models have a special RJ45 style connector. You might need a USB to Serial adapter to connect your laptop to the serial cable.



- 1. Connect Serial Cable to LANforge
  - A. We will use a CT525 for our example There are two different types of CT525, some have a I/O shield with colors, others do not. Both have DB9 serial ports:
  - B. Picture of an unmarked I/O plate:



C. Picture of a colorized I/O plate:



D. Picture of a colorized I/O plate plugged in:



- E. Other LANforge chassis models can have either RJ45 or DB9 serial ports.
- 2. Connect Serial Cable to Windows
  - A. Chances are you will be connecting a USB to Serial adapter to your laptop.
  - B. Typically, right after you connect the cable to your USB port, you will see a message from Windows letting you know a new drive has been installed.
  - C. Windows will map this USB adapter to a COM port. Use Device Manager to discover the new COM port:

A. Press the Windows key and type device manager



- B. Hit Enter to open the Device Manager
- C. In Device Manager, select Ports

D. In this example, we see that our new USB device was assigned COM3.

A. Press the Windows key and search for putty



B. When you double click on the PuTTY icon and it launches, you can start customizing your session preferences

| 🕵 PuTTY Configuration                            | Ν   | ?              | ×   |  |  |
|--|---|----------------|-----|--|--|
| Category:  | 14  |                |     |  |  |
| ⊡ Session  | Basic options for your PuTTY session  |                |     |  |  |
|  | Specify the destination you want to connect to                                |                |     |  |  |
| Keyboard   | Host <u>N</u> ame (or IP address)   | <u>P</u> ort   | _   |  |  |
| Bell   |   | 22             |     |  |  |
| Features<br>⊡ Window                             | Connection type:<br>○ Ra <u>w</u> ○ <u>T</u> elnet ○ Rlogin ● <u>S</u> SH     | ⊖ Se <u>r</u>  | ial |  |  |
| - Appearance<br>Rebaulour                        | Load, save or delete a stored session   |                |     |  |  |
| Benaviour<br>Translation<br>Selection<br>Colours | Sav <u>e</u> d Sessions   |                |     |  |  |
|  |   |                |     |  |  |
|  | Default Settings  | <u>L</u> oad   |     |  |  |
| Data   | atias<br>fs1  | Save           |     |  |  |
| Proxy  | jed-ming  | 00 <u>v</u> c  |     |  |  |
| Telnet   | sg-sg-proxy   | <u>D</u> elete | •   |  |  |
| ™ Riogin<br>⊕- SSH<br>Serial                     | sg-vpn  |                |     |  |  |
|  | Close window on e <u>xi</u> t:<br>Always Never Only on clear<br>Only on clear | an exit        |     |  |  |
| <u>A</u> bout <u>H</u> elp                       | <u>O</u> pen  | <u>C</u> ance  |     |  |  |

C. Start by setting your connection type (serial), serial device (com3) and speed (115200). Name your session 'com3'



D. Select category *Serial*, specify the *Serial Line* COM3, *speed* (115200) and set both *Parity* and *Flow Control* to None.

| 🕵 PuTTY Configuration   |   |  | ?    | ×  |
|---|---|--|------|----|
| Category:   |   |  |      |    |
| Session Incorrection Session Incorrection Session Incorrection Selection Selection Connection Data Proxy Tehet Rlogin SSH SSH SSH Senal | Options controlling for<br>Select a serial line<br>Serial line to connect to<br>Configure the serial line<br>Speed (baud)<br>Data bits<br>Stop bits<br>Parity<br>Flow control | COM3<br>COM3<br>115200<br>8<br>1<br>None<br>None |      |    |
| About Help  | Оре   | n  | Cano | el |

E. Select the **Session→Logging** category, select *Printable Output* and name set the *Log file name* as you prefer. This allows you to collect your commands as notes for later.

| 🕵 PuTTY Reconfiguration                | ? ×   |
|--|---|
| PuTTY Reconfiguration<br>Category:<br> | ? ×<br>Options controlling session logging<br>Session logging:<br>○ None<br>○ All session output<br>Log file name:<br>putty log<br>(Log file name can contain &Y, &M, &D for date, &T for time, and &H for host name)<br>What to do if the log file already exists:<br>○ Always overwrite it<br>○ Always append to the end of it<br>④ Always append to the end of it<br>④ Always log file frequently<br>✓ Flush log file frequently |
|  | $\searrow$  |
|  | Apply Cancel  |

F. Select the Session category, save the com3 profile and click Save

| 🕵 PuTTY Configuration  | Ν   | ?  | $\times$ |
|--|---|--|----------|
| Category:<br>Session<br>Coggin<br>Coggin<br>Coggin<br>Coggin<br>Consection<br>Colours<br>Colours<br>Colours<br>Colours<br>Connection<br>Proxy<br>Telhet<br>Rlogin<br>Cost<br>Selation<br>Consection<br>Colours<br>Consection<br>Colours<br>Consection<br>Consection<br>Colours<br>Consection<br>Consection<br>Colours<br>Consection<br>Consection<br>Colours<br>Consection<br>Colours<br>Consection<br>Colours<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consection<br>Consecti | Basic options for your PuTTY ses<br>Specify the destination you want to connect<br>Serial line<br>COM3<br>Connection type:<br>O Raw O Telnet O Rlogin O SSH<br>Load, save or delete a stored session<br>Saved Sessions<br>com3<br>Default Settings<br>atlas<br>com1<br>com3<br>fs1<br>jed-ming<br>sg<br>Close window on exit:<br>O Always O Never O Only on close | ssion<br>t to<br>Speed<br>115200<br>Segi<br>Load<br>Saye<br>pelete<br>ean exit | al       |
| <u>A</u> bout <u>H</u> elp   |   | <u>C</u> ancel   |          |

G. Click the **Open** button. You will see a terminal window appear.

## 4. Use PuTTY to Log In over COM3

A. If the screen is blank, hit **Enter** to see a login prompt.

B. Enter username lanforge Enter , password lanforge Enter



5. Collect console output to a logfile

A. step 1





- 6. Common Commands Cheat Sheet: Hit Enter after all commands
  - A. pwd Enter : print current directory
  - B. 1s Enter : list items in directory
  - C. cd Enter : change to your Home Directory
  - D. cd /home/lanforge [Enter] : go to LANforge home directory
  - E. cd /root Enter : go to root user's home directory
  - F. sudo ./serverct1.bash restart Enter : Restart LANforge service
  - G. sudo reboot Enter : reboot machine
  - H. ip a show Enter : show interface addresses
  - I. df -h Enter : show disk usage
  - J. mv script.sh.txt /home/lanforge/scripts/script.sh [Enter] : move file to new name
  - K. dos2unix script.sh Enter : Remove DOS/Windows CRLF style line endings
  - L. chmod +x script.sh Enter : Turn script executable
  - M. ./script.sh [Enter] : Run script in current directory
- 7. Example of clearing disk space on a LANforge machine
  - A. One common problem with any LANforge machine is cleaning out old kernels. This is an example that shows you how to check disk space and how to remove unused kernels.

B. Check disk space with the df -h command



C. Use the dmesg command to see if there are system warning.



D. go to the /boot directory. The uname -r command tells you which kernel you are currently running. You may remove old **ct** kernels.



E. In addition to removing old kernels, you can remove modules that correspond to those kernels



F. After old kernels and modules have been removed, we re-run grub2-mkconfig to regenerate the boot menu:



G. the results will look like this:

| PuTTY  |  |        |        |              |                    | _       |        | Х      |
|--|--|--------|--------|--------------|--------------------|---------|--------|--------|
| [root@jedway2 ~] <b>‡</b> grub2-mkconfig -o /boot/grub2/grub.cfg |  |        |        |              |                    | ~       |        |        |
| Generating grub configur   | ation  | file   |        |              |                    |         |        |        |
| Found linux image: /boot   | /vmlin   | uz-4.  | 11.12- | 100.f        | 24.x86_64          |         |        |        |
| Found initrd image: /boot/initramfs-4.11.12-100.fc24.x86 64.img  |  |        |        |              |                    |         |        |        |
| Found linux image: /boot   | Found linux image: /boot/vmlinuz-4.10.17-100.fc24.x86 64 |        |        |              |                    |         |        |        |
| Found initrd image: /boot/initramfs-4.10.17-100.fc24.x86 64.img  |  |        |        |              |                    |         |        |        |
| Found linux image: /boot   | /vmlin   | uz-4.  | 5.5-30 | 0.fc2        | 4.x86_64           |         |        |        |
| Found initrd image: /boo   | t/init   | ramfs- | -4.5.5 | -300.        | Ec24.x86_64.img    |         |        |        |
| Found linux image: /boot   | /vmlin   | uz-0-  | rescue | -529fl       | 0397cc06430abda0d2 | fc2f1f6 | 9ee    |        |
| Found initrd image: /boo   | t/init   | ramfs. | -0-res | cue-52       | 29fb397cc06430abda | 0d2fc2f | lf69ee | .im    |
| a  |  |        |        |              |                    |         |        |        |
| done   |  |        |        |              |                    |         | Υ      |        |
| [root@jedway2 ~]# df -h  |  |        |        |              |                    |         | Ţ      |        |
| Filesystem   | Size   | Used   | Avail  | <b>Use</b> % | Mounted on         |         |        |        |
| devtmpfs   | 1.9G   |        | 1.9G   | 0%           | /dev               |         |        |        |
| tmpfs  | 2.0G   |        | 2.0G   | 0%           | /dev/shm           |         |        |        |
| tmpfs  | 2.0G   | 992K   | 2.0G   | 1%           | /run               |         |        |        |
| tmpfs  | 2.0G   |        | 2.0G   | 0%           | /sys/fs/cgroup     |         |        |        |
| /dev/mapper/fedora-root  | 25G  | 14G    | 9.1G   | 61%          | /                  |         |        |        |
| tmpfs  | 2.0G   | 316K   | 2.0G   | 1%           | /tmp               |         |        |        |
| /dev/sdal  | 477M   | 244M   | 204M   | 55%          | /boot              |         |        |        |
| tmpfs  | 393M   |        | 393M   | 0%           | /run/user/1000     |         |        |        |
| [root@jedway2 ~]#  |  |        |        |              |                    |         |        |        |
|  |  |        |        |              |                    |         |        | $\sim$ |

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