Experimental Computing Laboratory Meeting August 22, 2024, 12:30 PM

Advanced Computing Systems Research Section

Jeffrey Vetter, Section Head

Steve Moulton, Systems Engineer

Aaron Young, Software Engineer

Infrastructure/System Status

- Ubuntu 24.04 announced, but not approved for ORNL use. Will not start installations or upgrades until this happens.
  - Not considered stable; rolling upgrades generally broken.
  - Will be installed on request if needed

- login-new.ornl.gov in the testing phase to replace login.ornl.gov on Tuesday.

- Remaining Centos 7 systems awaiting migration:
  - Slurm – awaiting current workload completion
    - Will involve full ExCL reboot, as more recent versions use cgroups2
  - Checkmk – in progress; new agent deployments, odd problems

Plans for next three months

- Continuing documentation improvements
  - https://docs.excl.ornl.gov

- Stabilize non-ORNL-managed UID & GID assignments ExCL-wide to simplify service deployment
  - Also has implications for docker groups

- Fully deprecate /noback directories
  - Removed from all backups, snaps, and mirrors
  - Contact excl-help@ornl.gov if you need assistance moving files (we know tricks).
  - Mount points will be removed October 1, 2024 (no deletions until November).

- Partial day outage – discussed later

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Systems in the pipeline

Order still pending shipping; vendor changed some part specifications. Integrator has been made aware of 9/24 EOFY deadline.

- *4 * Mi300A system*
  - *APUs (Integrated CPUs and GPUs)*
  - *128 GB HBM3 memory on each*
  - *Infinity Fabric Links (8)*
  - *PCIe 5.0x16 for peripherals (and who knows what else).*
  - *https://www.amd.com/en/products/accelerators/instinct/mi300/mi300a.html*
  - *"in the next few months"*

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Reminder: SSH Keys for Authentication

- Using SSH keys is the preferred way to authenticate your user and to authenticate with private Git repositories.
  - For security, it is recommended to use an SSH keys encrypted with a passphrase.

- Why not passwords?
  - ExCL will block your account after 3 failed attempts. Automatic login tools, e.g. VS Code, can easily exceed this limit using a cached password and auto-reconnect.
  - For git repos with two-factor authentication, an application token/password must be created, and this password must be stored externally and is more cumbersome to use.

- How to get started?
  - Set up a key pair:
    - Visual Studio Code Remote Development Troubleshooting Tips and Tricks
    - Generating a new SSH key and adding it to the ssh-agent - GitHub Docs
  - Add key to Git Hosting Websites.
  - Setup ExCL worker node proxy via login node.

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Proposed Host layout Change: Milan0

- Currently has two Nvidia A100 GPUs

- Proposal
  - Move 2 AMD M100 GPUs from Cousteau to Milan0
    - Cousteau would then become general compute server
  - Deploy Xilinx U280 in Milan0
  - Requested Intel ARC GPU

- This would provide a nice heterogeneous environment, as well as moving M100s to Pcie5 (which they may or may not be able to take full advantage of).

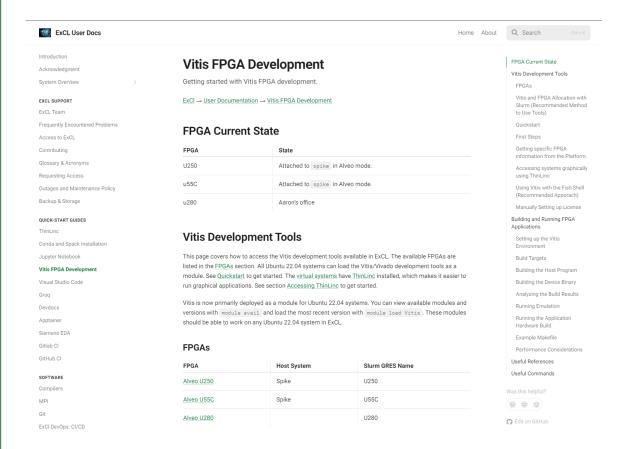- Comments?

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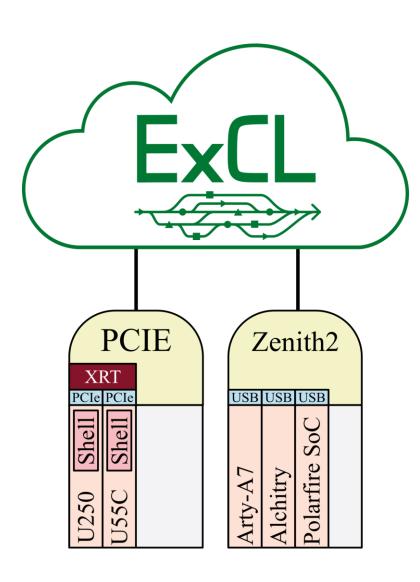# Proposed Outage Tuesday August 27 2024 9 AM to 1 PM

- Reconfigure all kernels to do cgroup v2 only

- Deploy updated Slurm configurations, move Slurm controller to Rocky9

- Deploy new login server with new slurm client
  - There will be things missing that you expect; let us know

- Update and reboot file servers and hypervisors
  - Nvhpc, nvidia drivers and rocm updates

- Outage planned for four hours starting at 9 AM; may take longer if problems or shorter if things are easier than expected.

- *Speak now …*

Updated Vitis Deployment and Documentation

[Vitis FPGA Development | ExCL User Docs (ornl.gov)](#)

IRIS Setup scripts

- Setup scripts for ExCL systems that setup the environment and tools for IRIS accelerator use are available at /auto/software/iris and used via:

    source /auto/software/iris/setup_system.source

- To request changes to these scripts, fork the repo Brisbane / ExCL IRIS Setup Scripts, make the modifications, and open a merge request. Once we review the merge request, we will merge the changes and deploy the scripts to ExCL.

Questions/Discussions/Comments?

- Aaron has methodology to pass SSH credentials into Apptainer containers without copying private keys.   Let excl-help@ornl.gov know if you have needs or questions.

- Discussion of github-runner linger; Brett W has solution documented. Aaron and Steve to look at deployment in specific ExCL systems.