Servers: ZFS Tuning for HPC, Rancher 2.4, QEMU, LXD and Kubernetes

By Roy Schestowitz
Created 01/04/2020 - 11:19pm
Submitted by Roy Schestowitz on Wednesday 1st of April 2020 11:19:25 PM Filed under Server [1]

If you manage storage servers, chances are you are already aware of ZFS and some of the features and functions it boasts. In short, ZFS is a combined all-purpose filesystem and volume manager that simplifies data storage management while offering some advanced features, including drive pooling with software RAID support, file snapshots, in-line data compression, data deduplication, built-in data integrity, advanced caching (to DRAM and SSD), and more.

ZFS is licensed under the Common Development and Distribution License (CDDL), a weak copyleft license based on the Mozilla Public License (MPL). Although open source, ZFS and anything else under the CDDL was, and supposedly still is, incompatible with the GNU General Public License (GPL). This hasn't stopped ZFS enthusiasts from porting it over to the Linux kernel, where it remains a side project under the dominion of the ZFS on Linux (ZoL) project.

Rancher 2.4 is here? with new under-the-hood changes that pave the way to supporting up to 1 million clusters. That's probably the most exciting capability in the new version. But you might ask: why would anyone want to run thousands of Kubernetes clusters? let alone tens of thousands, hundreds of thousands or more? At Rancher Labs, we believe the future of Kubernetes is multi-cluster and fully heterogeneous. This means?breaking the monolith? into many clusters and running the best Kubernetes distribution for each environment and use case.
**QEMU 5.0-rc1 Released For Linux Virtualization With The Stable Update Coming This Month**

QEMU 5.0-rc1 was released on Tuesday as the latest development release in the path to QEMU 5.0.0 expected to be achieved later this month.

**New 4.0 LTS releases for LXD, LXC and LXCFS**

Hello,

The LXD, LXC and LXCFS teams are very proud to announce their 4.0 LTS releases! LTS versions of all 3 projects are released every 2 years, starting 6 years ago. Those LTS versions benefit from 5 years of security and bugfix support from upstream and are ideal for production environments.

# LXD
LXD is our system container and virtual machine manager. It's a Go application based on LXC and QEMU. It can run several thousand containers on a single machine, mix in some virtual machines, offers a simple REST API and can be easily clustered to handle large scale deployments.

It takes seconds to setup on a laptop or a cloud instance, can run just about any Linux distribution and supports a variety of resource limits and device passthrough. It's used as the basis for Linux applications on Chromebooks and is behind Travis-CI's recent Arm, IBM Power and IBM Z testing capability.

**Building a Three-Node Kubernetes Cluster | Quick Guide**

There are many ways to build a Kubernetes cluster. One of them is using a tool called kubeadm. Kubeadm is the official tool for ?first-paths? when creating your first Kubernetes cluster. With the ease of getting up and running, I thought I would put together this quick guide to installing a Kubernetes cluster using kubeadm.

**Kubernetes Topology Manager Moves to Beta - Align Up!**

This blog post describes the TopologyManager, a beta feature of Kubernetes in release 1.18. The TopologyManager feature enables NUMA alignment of CPUs and peripheral devices (such as SR-IOV VFs and GPUs), allowing your workload to run in an environment optimized for low-latency.

Prior to the introduction of the TopologyManager, the CPU and Device Manager would make
resource allocation decisions independent of each other. This could result in undesirable allocations on multi-socket systems, causing degraded performance on latency critical applications. With the introduction of the TopologyManager, we now have a way to avoid this.

Source URL:  http://www.tuxmachines.org/node/135884

Links:
[2] https://www.admin-magazine.com/HPC/Articles/Tuning-ZFS-for-Speed-on-Linux
[5] https://lwn.net/Articles/816535/