Kubernetes Cluster

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1 Background

The basis of this project is a Ceph FS (filesystem) and a reasonable high speed network.

The actual project is a master server with a dual port 100 GbE network card, and two worker nodes that are also capable of 100 GbE network connectivity.

A 10 GbE network card servers as an uplink to the rest of the network.

2 Cluster specs

	Cores	Memory (Gi)
Master	24	64
Worker #1	24	64
Worker #2	24	64
Totals	72	192

3 Master computer

Item	Model	Notes or Comments
Chassis	Fractal Design **Define 7** Mini	NewEggBusiness - 15.98" x 8.07" x 15.71"
Motherboard	Asus TUF GAMING B760M-PLUS II	NewEggBusiness
CPU	Intel Core **i9-14900KF**	NewEggBusiness
Memory	Corsair DDR5 6600	NewEggBusiness
M.2 Storage	Team Group MP44 M.2 2280 1TB PCIe	NewEggBusiness
Boot Storage #1	Crucial MX500 (500 GB)	NewEggBusiness
Boot Storage #2	Crucial MX500 (500 GB)	NewEggBusiness
10 GbE NIC	TP-Link TX401	NewEggBusiness
PSU	Corsair RM650	Amazon
CPU Cooler	Noctua NH-U12a chromax.black	Amazon
10ft Red CAT6 cable		Amazon - used for uplink from cluster
100 GbE NIC	Intel E810-CQDA2	ServerOrbit
Fiber Optic cables (Quantity 2)		FS

An uninterruptable power supply by CyberPower, model **CP1500PFCLCD** was also added to the list. It will power all three servers.

Also required was a 5-tier shelf from Temu, to hold everything. A Wi-Fi printer was optional.

4 Worker computers

Similar to the above list, however the only storage drive is **M.2 which can be 2 TB**.

There are no dedicated boot drives because the M.2 will have a partition for that.

It has a **single port Intel 100 GbE** network card.

There is no TP-Link TX401 in this one, since the only uplink needed is the 100 GbE link.

For the chassis I went with more of a cube shape, with the **Node 804** model.

5 Misc. items

6 Network wiring

Fiber optic interconnects connect between the master server, and each worker node. Thus no intermediary switch is actually needed, for this very tiny or minimal cluster configuration.

7 Software configuration

8 Active pods

9 Future directions