

Hardware & OS

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Terra is the primary compute node for the Flora Family homelab, designed for high-concurrency tasks like AI processing, media transcoding, and ZFS storage management.

☐ Physical Specs

- **Motherboard:** Asus Prime X570-Pro
- **CPU:** AMD Ryzen 9 5950X (16 Cores, 32 Threads)
 - **Scaling Driver:** `amd_pstate=active` (EPP)
 - **Frequency Range:** 550MHz - 5000MHz
- **RAM:** 128GB (4x32GB) Corsair Vengeance LPX DDR4 3200MHz CL16 (Non-ECC)
 - *Note: Currently running at 2133MHz; XMP/DOCP troubleshooting in progress.*
- **GPU:** Nvidia Quadro P2200 (5GB VRAM)
- **Chassis:** iStar D-400 with Red Drive Doors (4U Rackmount)
- **Power Supply:** be quiet! Dark Power Pro 11 650W (80 Plus Platinum)
- ****Expansion & Storage Connectivity:**
 - **LSI 9207-8i HBA:** Driving the 4x 12TB HDD stack.
 - **Motherboard SATA:** Driving the 6x 2TB SSD stack.
 - **4-port Gigabit NIC:** Realtek chipset; currently unused.

☐ Cooling (Noctua Standards)

- **CPU Cooler:** Noctua NH-C14S (with dual 140mm fans).
- **NVMe Cooling:** Both drives equipped with heatsinks including integrated active fans.
 - *Note: Active cooling reduced temperatures significantly. Current stats (composite): drive 0400 @ 42C, 0100 @ 37C.*
- **Case Fans:** All stock fans replaced with Noctua units.
- **Additional Airflow:** Added 40mm fan on the HBA and 2x 80mm fans at the chassis front.

Fan Connectivity Map

Sensor	Description	Connection
fan1	CHA_FAN1	back exhaust fans (2x80mm)
fan2	CPU_FAN	bottom CPU fan (1x120mm)
fan3	CHA_FAN2	SDD drive cage fan (1x40mm)
fan4	CHA_FAN3	front intake fans (2x80mm)
fan5	?	Shows 0 rpm
fan6	W_PUMP	HBA & NVMe fans (1x40mm + 2x20mm)
fan7	?	Shows 0 rpm
?	CPU_OPT	top CPU fan (1x120mm)
?	AIO_PUMP	empty
-	-	HDD drive cage fan (1x80mm)

Storage Media

- **NVMe:** 2x 500GB WD Black SN7100 (Used for OS mirrors and ZFS Special VDEVs/L2ARC).
- **SDD:** 6x 2TB Samsung 870 EVO (Main pool).
- **HDD:** 4x 12TB Seagate Exos X16 (Bulk pool).

OS & Software

- **OS:** Ubuntu 24.04 LTS
- **Kernel:** ZFS-on-Linux (OpenZFS)
- **Management:** Sanoid/Syncoid for snapshots and replication.