

# System Specification

---

Below is the specification for the High Performance/High Availability Clustered File Server for Code 5750. This new server will upgrade the current Branch Development network file server and will provide necessary improvements in: storage capacity, performance, and availability, that is required for the current and projected projects and workload for the Branch EW Modeling and Simulation Scientists and Engineers.

The High Performance/High Availability Clustered File Server shall consist of two identical clustered Linux systems which working together in a tightly coupled manner, which constitutes a single server that achieves the required performance and availability goals to meet Branch requirements for I/O performance, storage capacity, and reliability/availability.

(1) Each system must meet the following minimum specification:

- a. Each system must be no larger than a 4U, standard rack width and depth, to allow integration with our current classified network server infrastructure.
- b. Each system must have identical hard disk configurations and must support at least 144 Terabytes (TB) of storage for data storage. For performance and availability reasons, the disk drives must be hot-swappable – which allows bad drives to be replaced while the system is operational. The disk drives must be at least 7200 rpm Serial Attached SCSI (SAS) HDDs.
- c. To achieve high I/O performance, each system must have at least 2 -- Intel Sandy Bridge-EP Xeon E5-2600 processors with:
  - i. At least 6 fully functional Intel Xeon cores per processor (12 per system)
  - ii. At least 2.1 GHz clock rate
  - iii. At least one QuickPath I/O Interconnect capable of at least 7.2 Giga-Transactions per second (GT/s)
  - iv. At least 15 Megabyte of L2 cache per processor
  - v. No more than 80 watts heat dissipation per processor
- d. For memory performance and reliability, each system must come with at least 32 Gigabyte (GB) of 1600 MHz DDR3, ECC, Registered Random-Access Memory (RAM) with thermal overload sensor, and system memory must be expandable to at least 512 GB of RAM.
- e. For performance and reliability, each system must have at least 6 – PCI-E V3.0 x8 peripheral expansion slots
- f. For performance reasons, each system must have an LSI-AS2108 6 Gigabit per second (Gb/s) RAID controller
- g. Each system must use the Linux Operating System (OS): CentOS 6. And the OS must be stored on a flash memory disk module, to improve OS performance without using a HDD slot.

- h. For performance and reliability purposes, each system must have at least one Intel X540-T2 dual-port (RJ-45), 10 GbE Server NIC
  - i. Each system must have redundant power for reliability
  - j. Each system must have at least a 5-year warranty period to protect NRL's investment in this equipment
- (2) The high performance/high availability server must be fully compatible and must completely integrate with the other three Aberdeen servers currently owned by this Branch.
- (3) The high performance/high availability file server must be capable of on-demand or automatic replication and automatic failover if one of the two file servers goes offline for any reason. This results in complete 24x7x365 availability for the clustered file server with 0% downtime due to hardware failure.