ISC F-Root Hardware Requirements

Since 2016, F-Root nodes have been built using a single 1U Dell Poweredge rackmount server that is outfitted with suitable accessories and software. That device performs all of the functions associated with a root server node: routing, logging, responding to queries, and remote maintenance. We call this device an "F-Single".

Summary

F-Single servers are typically purchased by a local sponsor from an authorized Dell dealer in the country where it will be deployed, which simplifies both warranty and issues with import and/or export controls and charges. Dell does not offer the exact same configurations in each country so this document outlines the minimum specifications rather than an exact configuration. Any deviation must be agreed with ISC in advance.

Platform

The F-Single uses Dell hardware because Dell's iDRAC (integrated Dell Remote Access Controller) is unmatched in the industry. We currently specify a Poweredge R350, or a dual socket Poweredge R450 if very high traffic volumes or TCP volumes are expected. Older models are acceptable so long as the core requirements are met.

Primary Options (R350)

Configure the server:
- With TPM (where available)
- With a chassis enabling four 3.5" hot-plug hard drives
- A PCIe riser offering 1 full-height slot and one low-profile slot
- No bezel
- ReadyRails static rails suitable for your facility
- No internal CD / DVD
- Power-saving BIOS setting
- Dual hot-plug redundant power supplies
- Power cords that will work in your facility
- No operating system and no OS media
- No client access licenses
- No OS partitions
- No VMware options or components (vSphere, ESXi, etc)
- No database options
- No auto discovery or DHCP

Processor

Select a processor with a [PassMark "CPU Mark"](#) score of more than 10,000. Defense against future DoS attacks on root servers might benefit from CPU headroom, so we specify fast but not overpriced best-in-category processors.

The optimal price / performance CPU in the R350 from Dell US is the Intel Xeon E-2336 2.9GHz, 12M Cache, 6C/12T and 65W TDP. This is more than adequate for most sites, but where higher traffic is expected, prioritize an increased core count over CPU clock frequency.

iDRAC Remote Access Controller

We require an iDRAC Enterprise version 7 or later with the option to store installation and recovery media on an SD or micro-SD card. No other iDRAC, IPMI, or ILOM meets our requirements.

For 14th generation Dell Servers or later (which use an iDRAC 9) this is done via a special PCI-E card called an Integrated Dual SD Module (IDSDM) which holds two SD cards for booting an OS and a third single SD card for booting virtual media, We only require one SD card for virtual media.

In older Dells, the SD card reader is a module that is part of the iDRAC's dedicated NIC board and the SD card media is known as "vFlash".

Memory

Configure for 2400MT/s UDIMMs or better. Specify 2x16GB DDR4 ECC memory.

Disk and RAID

Specify the PERC H3xx series Integrated SATA RAID Controller for Hot Plug Chassis.

Specify two identical 1TB 7.2K RPM SATA hot plug disks, with a transfer rate of at least 6 Gbps, configured for RAID-1 (mirroring).

There is no need for a DVD drive, but often it is not possible to buy a Dell server without one. If you can specify "no DVD drive", please do. All software installations are performed using the iDRAC.

Network

Make sure the on-board Ethernet controller has at least two 1GBE ports. If it does not, please add a suitable Broadcom PCIe card. Since the riser for this chassis has room for

one full-height card and one low-profile card, coordinate this Broadcom card with the Intel X710 (see below).

Specify an Intel X710 Dual Port 10Gb Direct Attach, SFP+, Converged Network Adapter. If offered, include the SFP+ modules (LR, SR, or SR Downclock) that will work in your environment. In our experience, Intel-coded SFP+ modules work fine with this controller even though the data sheet says they don't.

Service

Specify the Basic Service Plan, which in most countries is "3 Year Basic Hardware Warranty Repair, 5x10 HW-Only, 5x10 NBD On-site". Some countries offer only a 4-year basic warranty. If a longer warranty is available, select it if budget permits. Do not specify any other service, installation, or consulting options.