



Dell PowerEdge FX2 Network Architecture

Network Flexibility versus Cisco UCS

Executive Summary

While the introduction of rack server architecture has led to a revolution in the way that data centers are built, not all rack server solutions are the same. Differences in density, footprint, price and network architecture/performance can have a significant impact on the value proposition of a given solution. In particular, the goal of this project was to illustrate the practical and performance benefits of Dell's flexible networking architecture.

Flexible Network Architecture

The key to Dell's flexible network architecture is its FN410S/T and FN2210S series of network interconnect modules. These modules provide eight 10GbE internal facing ports and multiple 10GbE and/or Fibre Channel external ports. The internal facing ports provide built-in connectivity among all of the eight servers that can reside in a single chassis.

Cisco's network architecture is inflexible. Cisco forces network communications between servers residing in the same chassis to leave the chassis, transit the top-of-rack (ToR) switch, re-enter the chassis and, finally, reach the target server. Not only does this waste bandwidth and increase latency (out and back in) but it increases complexity.

Network Performance

Dell's network architecture provides for "east/west" traffic between servers to flow directly without needing to go through a ToR switch as Cisco's architecture demands. In VM migration tests within the same chassis this architectural difference resulted in Dell's performance being 19% faster (with 25% fewer cables) than the Cisco solution without background traffic and 28% better in the presence of even modest (10% load) background traffic.

Price

Even though the network performance of the Cisco UCS solution could not match Dell in either of the "east/west" traffic test configurations or in tests with background traffic present, the cost was significantly greater. The Cisco solution selling price of \$123,000 was more than 2X the cost of Dell at \$58,000. Cisco's list price exceeded \$215,000.

Footprint & Density

The Dell system footprint was significantly smaller given that Dell implements quarter-size servers vs. half-size for Cisco. Thus, the Dell solution tested required only 4U where the Cisco solution required 14U (2x6U enclosures + 2x1U fabric interconnects). Ultimately, this results in Dell being able to provision 168 servers in a single rack compared to 48 for Cisco.

THE BOTTOM LINE

Dell's PowerEdge FX2 Architecture delivers:

- 1 Comparable or better networking performance at less than half the price of the Cisco Systems solution
- 2 Non-blocking Stacking FX2 modules, providing managed networking to all nodes in an enclosure
- 3 Intelligent, integrated networking architecture optimized for both "east/west" and "north/south" traffic
- 4 Smaller footprint that translates to greater density along with fewer cables
- 5 Completed VM migration tasks up to 28% faster than Cisco UCS with background traffic

Read the full Tolly report #216101 to find out how best to leverage Dell FX2 networking in your environment:

<http://www.tolly.com/DocDetail.aspx?DocNumber=216101>