Dell EMC Blade Server Delivers Energy Cost Savings:

The Dell EMC PowerEdge™ M630 blade server as an example

Tech Note by:
  Alex Huang
  Paul Waters
  Tad Walsh

SUMMARY

The thermal design of the PowerEdge M630 blade server delivers reduced OPEX compared to the HPE ProLiant BL460 Gen9, based on a competitive analysis study conducted by Dell EMC with the same CPU, memory, and storage configuration.

The test results show that users can save up to $27 per blade (or $432 per chassis or $1,726 per rack) on their annually electricity bill when Dell M630 blade is configured with Enhanced Cooling Mode (ECM) disabled.

The actual cost saving may vary with changes in configuration, system inlet temperature, or electricity cost. For potential cost-savings based on your specific configuration and location, contact your Dell EMC sales representative or Channel Partner.

Enabling operational cost savings

Along with user demands for platform size reduction and greater platform density come equally strident demands for operational cost reductions. Based on the tests conducted, this tech note describes how PowerEdge Engineering delivers more efficient cooling and lower energy costs than a competing system from HPE.

The hardware configuration for both the Dell and HPE systems consisted of two E5-2690 v4 processors, 64GB memory (8x 8GB DIMMs), and two 500GB 2.5" SAS HDDs. In this configuration, the Dell EMC PowerEdge M630 blade server allows users to save up to $27 per blade (or ~$432 per chassis or ~$1,726 per rack) on their annual electricity bill compared to the corresponding HPE ProLiant BL460 Gen9 blade server. For a small and midsize business customer with 2-3 blade chassis, these savings are sizable. Extrapolate to a data center user with rack after rack of blade servers and the potential savings are huge.

Efficient Design & User Benefits

Both the Dell EMC PowerEdge M630 and the HPE BL460 Gen9 are dual-socket blade servers in half-height form factor. The Dell EMC M630 has 24 DIMM slots while the HPE BL460 has only 16 due to its larger CPU heatsink width. Both systems have two bays for 2.5" disk drives.

As CPU cooling is a driving factor in blade server design, the more efficient layout of the 2.5" drives in the Dell M630 can be viewed as a design advantage that leads to measurable power savings. The hard drives are spread across the face of the server allow a more direct path for fresh air to CPUs. The HPE system layout positions the hard drives in the center of the blade, directly upstream of the CPU heat sinks thus blocking CPU airflow.

The advantages of Dell EMC's design were demonstrated in a head-to-head comparison conducted internally at Dell EMC. Testing was performed to evaluate the cooling capability and fan power consumption of the respective blade servers and chassis enclosures using a Thermal Design Power (TDP) workload. All comparison tests were conducted at 25°C (77°F).

Test results showed that both systems provide sufficient cooling for the installed hardware configuration. However, the HPE ProLiant Blade System c7000 chassis consumes an additional 352W of fan power (22W per blade or 1400W per rack) than the Dell M1000e chassis. Over a year, fan power cost delta for operating the HPE c7000 chassis adds up to $432 per chassis or $1726 per rack of blade servers and chassis (assuming $0.14/kWh).
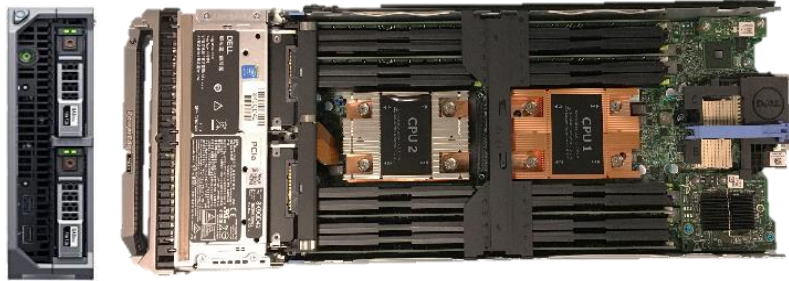

Figure 1: *The Dell M630 blade layout optimizes the amount of airflow through the CPUs vs. DIMMs to maximize the cooling efficiency and TDP support.*

Figure 2: *HPE's BL460 blade HDD and CPU layout limits airflow to the CPU due to the location of the hard drives directly in front of CPUs.*

Conclusion

The tested Dell EMC PowerEdge M630 blade server showed lower cooling power consumption for the studied configuration. Such cooling efficiency translates into operation cost savings that sizeable and significant for SMB users and data center users alike. For users demanding blade servers that deliver performance, flexibility and also power efficiency and cost savings, the PowerEdge M1000e chassis and M630 blade servers meet the full set of requirements.

To learn more about the PowerEdge M630 blade server, visit dell.com at:
http://www.dell.com/us/business/p/poweredge-m630/pd?ref=PD_OC

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