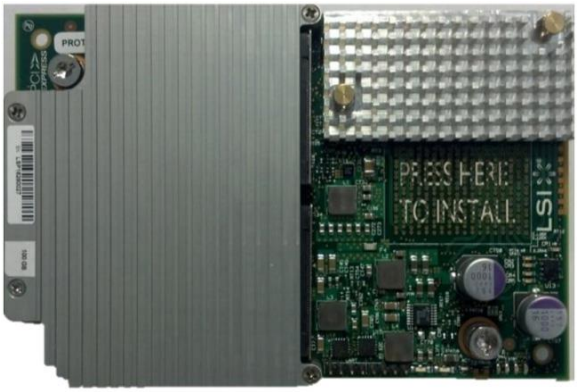
LSI 400GB SLC WarpDrive Adapter

Product Overview

With cost efficiency and a small footprint in mind, LSI 400GB SLC WarpDrive adapter (Figure 1), an LSI-powered PCI Express (PCIe) storage accelerator card, is fully supported on Cisco UCS® B-Series Blade Servers for a simple, ready-to-use solution. Using a high-speed PCIe bus, the LSI storage accelerator card stores performance-sensitive data directly on the server blade so that it is as close as possible to the application. This placement can dramatically improve application performance because the “hot data” is read directly from PCIe flash-memory storage residing on the server, bypassing the need to go to the storage network to access that data. This approach increases throughput and reduces latency while simultaneously lightening the workload on the rest of the infrastructure.

Figure 1. LSI 400GB SLC WarpDrive Adapter



In addition, on the new LSI storage accelerator card, flash-memory management processing is run directly on the card, offloading server CPU processing and preserving valuable system memory, using up to 75 percent fewer CPU and memory resources than many other solutions on the market. This savings allows the server's valuable processing resources to be used more effectively for database processing.

The LSI 400GB SLC WarpDrive adapter is built on the latest enterprise-class solid-state technologies and includes sophisticated advanced features to help deliver consistently high levels of performance, endurance, and reliability under some of the most demanding conditions. The LSI DuraWrite technology helps optimize the number of program cycles to the flash storage, effectively extending the rated write endurance of the flash storage by 20 times or more compared to standard controllers. Other sophisticated algorithms and dedicated onboard hardware resources handle complex flash-memory management tasks such as garbage collection and wear leveling. These advanced features make the LSI adapter an excellent choice for accelerating your business applications.

The LSI 400GB SLC WarpDrive adapter has been integrated, tested, and certified with EMC XtremSW Cache and NetApp FlashAccel caching software. Cisco Unified Computing System™ (Cisco UCS) customers can confidently deploy an end-to-end solution with the LSI 400GB SLC WarpDrive adapter knowing that it works transparently with existing EMC and NetApp storage arrays deployed in the data center.

Performace and Reliability Features

- DuraWrite performance acceleration and endurance extension technology
- Response times as fast as 50 microseconds
- Dynamic overprovisioning
- Offloading of flash-memory management processing from the server

Integration Features

- PCIe board-level solid-state storage
- 400-GB storage capacity
- PCIe 2.0 host interface
- Power consumption of less than 25 watts (W) through PCIe slot
- Use of standard drivers that are included in most OS distributions

Main End-User Benefits

- Low host burden, with no static CPU and memory overhead
- Lower space, power, cooling, and management costs than traditional solutions that use all hard-disk drives (HDDs)
- Enterprise-class reliability
- Integrated, tested, and certified with EMC XtremSW Cache and NetApp FlashAccel caching software

Product Specifications

Table 1 lists LSI 400GB SLC WarpDrive adapter performance results, and Table 2 lists product specifications.

Table 1. LSI 400GB SLC WarpDrive Adapter Performance

Item	Result
Read-access latency	67 microseconds
Write-access latency	43 microseconds
Read bandwidth (1 MB)	1071 MBps
Write bandwidth (1 MB)	938 MBps
Ran. Read IOPS (512 bytes)	107,000
Ran. Write IOPS (512 bytes)	118,000
Ran. Read IOPS (8 KB)	77,000
Ran. Write IOPS (8 KB)	83,000

Note: Results obtained using fio

Table 2. LSI 400GB SLC WarpDrive Adapter Specifications

Item	Specification
Usable capacity	400-GB single-level cell (SLC)
Average latency	Less than 50 microseconds
End-of-life data retention	More than 6 months
Interface	PCIe 2.0 x8
Form factor	W x L: 5.3 x 3.5 in.

Item	Specification
Environmental compliance	RoHS and WEEE Halogen and Lead Free compliance
Product health monitoring	Self-Monitoring, Analysis and Reporting Technology (SMART) technology commands, plus additional solid-state drive (SSD) monitoring
Management	Cisco UCS Manager v 2.1 or later
Operating system	Linux: Red Hat Enterprise Linux (RHEL) Releases 5.7, 5.8, 6.2, and 6.3 (64-bit); SUSE Linux Enterprise Server 11.2 64bit VMware: ESX 4.1U3 and ESXi 4.1U3, ESXi 5.0U1, ESXi 5.0U2, ESXi 5.1, and ESXi 5.1 U1 Microsoft Windows Microsoft Windows 2008 R2 SP1 and Microsoft Windows Server 2012 (64-bit)
Typical power	18W
Operating temperature range	50 to 95°F (10 to 35°C)

Cisco UCS Integration

The LSI 400GB SLC WarpDrive adapter is designed to be used only on Cisco UCS B-Series Blade Servers. A single LSI WarpDrive adapter is supported on Cisco UCS B200 M3 and B22 M3 Blade Servers. Up to two LSI WarpDrive adapters are supported on the Cisco UCS B420 M3 Blade Server. Cisco UCS Manager will discover the card, and details can be viewed by choosing Server > Inventory > Storage.

Warranty Information

Find warranty information at Cisco.com on the Product Warranties page.

Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a unified computing architecture. Cisco Unified Computing Services helps you quickly deploy your data center resources, simplify ongoing operations, and optimize your infrastructure to better meet your business needs. For more information about these and other Cisco Data Center Services, visit http://www.cisco.com/go/unifiedcomputingservices.

Why Cisco?

Cisco UCS continues Cisco's long history of innovation in delivering integrated systems for improved business results based on industry standards and using the network as the platform. Recent examples include IP telephony, LAN switching, unified communications, and unified I/O. Cisco began the unified computing phase of our Data Center 3.0 strategy several years ago by assembling an experienced team from the computing and virtualization industries to augment our own networking and storage access expertise. As a result, Cisco delivered foundational technologies, including the Cisco Nexus® Family, supporting unified fabric and server virtualization. Cisco UCS completes this phase, delivering innovation in architecture, technology, partnerships, and services. Cisco is well positioned to deliver this innovation by taking a systems approach to computing that unifies network intelligence and scalability with innovative application-specific integrated circuits (ASICs), integrated management, and standard computing components.

For More Information

For more information about the LSI 400GB SLC WarpDrive storage acceleration card for Cisco UCS products contact your local Cisco representative.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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Printed in USA C78-727854-01 08/13