QuickSpecs

Overview

HP Smart Storage Administrator (HP SSA) offers a single interface that quickly sets up, configures and manages the HP Smart Array controllers and the HP SAS Host Bus Adapters (HBAs). . With HP SSA, you can also configure the cryptographic features of HP Secure Encryption, enable HP SSD Smart Path, and create different optimization and priorities associated with the drives and controllers.

HP SSA replaces the existing HP Array Configuration Utility (ACU) and has an updated design for HP ProLiant servers that enhances the storage experience. It will expose new features and functionalities for various Smart Storage initiatives as they become available. HP Smart Array Advanced Pack 2.0 features will also be part of the baseline features of HP SSA.

In addition to the enhanced GUI, HP SSA now includes additional features such as the Status Dashboard, additional device information, and ability to be run on your mobile device. Users can continue to use existing ACU script with minimal changes.

HP SSA has the ability to configure and manage both physical and logical drives, but also improves the experience for managing your direct attach storage, monitoring or diagnosing potential problems, and provides more features to improve your overall storage performance.

NOTE: For User Guide and marketing information please go to: www.hp.com/go/hpssa

What's New

- Support for HP Secure Encryption - A controller-based data encryption solution for HP ProLiant Gen8 servers that protects data at rest on any bulk storage attached to the HP Smart Array controller Px3x.
- SSD Over Provisioning Optimization - Is a new feature that optimizes Solid State Devices by deallocating all used blocks before any data is written to the drive. The optimization process is performed when the first logical drive in an array is created, and when a physical drive is used to replace a failed drive. Not all controllers support this option.
- Rapid Rebuild Priority - This setting determines the urgency with which the controller treats an internal command to rebuild a failed logical drive. HP SSA now offers 4 settings: low, medium, medium high and high.
- Auto RAID 0 - Creates a single RAID 0 volume on each physical drive specified, enabling the user to select multiple drives and configure as RAID 0 simultaneously.

Standard Features

Key Features

- Easy-to-use GUI To Configure HP Smart Storage (Direct Attached Storage - DAS)
  - Provides or supports SSD and logical drives on all current HP Smart Storage (G7 and Gen8 and later) for a consistent user experience across HP ProLiant Servers
  - Supports configuration for arrays utilizing RAID 1 ADM and RAID 0, 1, 10, 5, 50, 6, 60 and more
  - Delivers a consistent appearance that provides ease of use across all the HP ProLiant platforms that meet hardware specifications
- Improve Your Experience of Managing Your Storage
  - Reports and measures progress of rebuilds, surface scans, parity initialization, and other activities.
  - Enhanced user interface delivers simplified user experience.
  - Continuation of the features you enjoy from the HP Array Configuration Utility.
- Monitoring for and Diagnosing Potential Problems
  - Provides more visibility to more devices: Smart Array, HBAs, and integrated controllers
  - Reports and measures progress of rebuilds, surface scans, parity initialization, and other activities.
  - Supports HP SmartSSD Wear Gauge. This benefits users by monitoring their usage of Solid State Drives (SSD) and notifies them of the estimated life left of the drive, based on the current workload.
- Optimize Your Storage Performance
  - Creates and sets up the HP SmartCache licensable offering
  - Enable HP SSD Smart Path to improve Solid State Drive (SSD) read performance by bypassing the Smart Array firmware for the optimal performance path to the SSD.
- Manage Your Encryption
  - HP Smart Storage Administrator (HP SSA) v1.60.xx.0 and later provides the configuration and management of the Cryptographic features of HP Secure Encryption associated with the HP Smart Array Px3x controllers

Actions	In HP SSA, in the middle panel is an Action panel that provides the following information and functionality: Tasks that are available for the selected device based on its current status and configuration, Options and information pertinent to the task, after a task is selected
Auto RAID 0	Creates a single RAID 0 volume on each physical drive specified, enabling the user to select multiple drives and configure as RAID 0 simultaneously.
Drive Erase	Erase physical disk or logical volume. Useful for the decommissioning, redeployment, or returning of hard drives.
Heal Array	Heal Array operation enables you to enter a command to replace failed physical drives in the array with healthy physical drives. After replacement, the original array and logical drive numbering is unaffected

Standard Features

HP Smart Cache Support	HP SmartCache is a licensable offering that enables solid state drives to be used as caching devices for hard drive media. Data can be accessed from the solid state drive instead of hard drives. HP SmartCache provides the following features: Accelerates application performance Provides lower latency for transactions in applications Supports all operating systems, without the need for changes. HP SmartCache requires a license see website for complete details and technical requirements (http://www.hp.com/go/smartcache)
SSD Over Provisioning Optimization	Is a new feature that optimizes Solid State Devices by deallocating all used blocks before any data is written to the drive. The optimization process is performed when the first logical drive in an array is created, and when a physical drive is used to replace a failed drive. Not all controllers support this option.
HP SSD Smart Path Support	The HP SSD Smart Path feature included in the Smart Array software stack improves Solid State Disk (SSD) read performance. With up to 4x better SSD read performance, HP SSD Smart path chooses the optimum path to the SSD and accelerates reads for all RAID levels and RAID 0 writes. HP SSD Smart Path Requires updated firmware, drivers, and configuration utility available at www.hp.com/go/ssdsmartpath. HP SSD Smart Path is ideal for read intensive workloads and is included as a base feature on HP Smart Array P-series controllers. The following operating systems are supported by the HP SSD Smart Path feature: • Microsoft Windows Server 2008 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2012 R2 • Red Hat Enterprise Linux 6.1, 6.2, 6.3, 6.4, and 6.5 • SUSE Linux Enterprise Server 11 (SP1, SP2, SPA) • VMware ESXi 5.0 U3 • VMware vSphere 5.1 U2 and vSphere 5.5
HP SmartSSD Wear Gauge Report	This report contains information about the current usage level and remaining expected lifetime of solid state drives attached to the system. The utility collects all possible information about storage devices in the system, detects all problems, and provides a detailed configuration report in .zip format. The utility can be launched in CLI or a GUI mode.
Logical Drive Extension	This allows you to increase the size of an existing logical drive without disturbing the data on the logical drive. If an existing logical drive is full of data, you can extend the logical drive when there is free space on the array. If there is no free space on the array, you can add drives to the array and proceed to extend the logical drive. This feature is only available for certain Array Controllers and should only be used with certain operating systems.
Move or Delete Individual LUNs	This feature allows customers to delete or move any LUN no matter what position it occupies on the controller.

Standard Features

Online Advanced Capacity Expansion	Advanced Capacity Expansion complements the conventional capacity expansion feature of Smart Array controllers by allowing customers to perform two new operations to either shrink or move existing arrays. The Shrink Array operation allows customers to remove drives from an existing array. The Move Array operation allows customers to transfer the contents of a disk array from one set of physical drives to a second set of physical drives while online. This feature is also available offline.
Online array expansion	An online feature that allows an increase in storage capacity of a drive array with the addition of one or more physical drives to the array. With the added space on the array, one or more new logical drives can be created. This feature is available only on Array controllers that support expansion.
Online logical drive extension	The ability to increase the size of a logical drive to make use of available free space in the array.
Online Mirror Splitting and Recombining in Offline Mode	Split an array with one or more RAID 1 or RAID 1+0 logical drives into two identical, new arrays with RAID 0 logical drives while online.
Online RAID level Migration	The ability to change a logical drive's fault tolerance method (RAID level) while the drive remains accessible to the operating system.
Online strip size migration	The ability to transparently change the amount of data stored in each physical drive (the stripe size) to optimize for the expected workload. As examples: Larger stripe sizes improve throughput for VOD applications, and smaller stripe sizes improve response time for transaction-based applications.
HP SSA Scripting	Scripting can be performed in offline or online environments. The HP SSA Scripting application has 2 scripting modes - Capture and Input. Script file categories are as follows: Control, Controller, Array, Logical Drive and HBA. Details, examples and warning messages for scripting can be found in the User Guide.
RAID 5, 50	HPSSA allows RAID settings for RAID 5 and 50. In a RAID 5 configuration, data protection is provided by parity data. This parity data is calculated stripe by stripe from the user data that is written to all other blocks within that stripe. The blocks of parity data are distributed evenly over every physical drive within the logical drive. When a physical drive fails, data that was on the failed drive can be calculated from the remaining parity data and user data on the other drives in the array. This recovered data is usually written to an online spare in a process called a rebuild. RAID 5 configurations can tolerate one drive failure. RAID 50 configurations can tolerate one failed drive in each parity group.

Standard Features

RAID 6, 60	HPSSA allows RAID settings for RAID 6 and 60. RAID 6 (ADG), like RAID 5, generates and stores parity information to protect against data loss caused by drive failure. With RAID 6 (ADG), however, two different sets of parity data are used (denoted by Px,y and Qx,y in the figure), allowing data to still be preserved if two drives fail. Each set of parity data uses a capacity equivalent to that of one of the constituent drives. This method is most useful when data loss is unacceptable but cost is also an important factor. The probability that data loss will occur when an array is configured with RAID 6 (ADG) is less than it would be if it was configured with RAID 5. RAID 50 is a nested RAID method in which the constituent hard drives are organized into several identical RAID 5 logical drive sets (parity groups). The smallest possible RAID 50 configuration has six drives organized into two parity groups of three drives each. For any given number of hard drives, data loss is least likely to occur when the drives are arranged into the configuration that has the largest possible number of parity groups. For example, four parity groups of three drives are more secure than three parity groups of four drives. However, less data can be stored on the array with the larger number of parity groups. RAID 60 is a nested RAID method in which the constituent hard drives are organized into several identical RAID 6 logical drive sets (parity groups). The smallest possible RAID 60 configuration has eight drives organized into two parity groups of four drives each. For any given number of hard drives, data loss is least likely to occur when the drives are arranged into the configuration that has the largest possible number of parity groups. For example, five parity groups of four drives are more secure than four parity groups of five drives. However, less data can be stored on the array with the larger number of parity groups. RAID 60 is particularly useful for data archives and high-availability solutions. RAID 6 configurations can tolerate two failed drives at a given time. RAID 60 configurations can tolerate two failed drives in each parity group.
RAID1(ADM) and 10 (Advanced Data Mirroring, or ADM)	HPSSA allows RAID settings for RAID 1 ADM and 10 ADM. In RAID 1 (ADM) and RAID 10 (ADM) configurations, data is duplicated to two additional drives. When the array has more than three physical drives, drives are mirrored in trios, and the fault-tolerance method is known as RAID 10 (ADM). When the array contains only three physical drives, the fault-tolerance method is known as RAID 1 (ADM). RAID 1 (ADM) and RAID 10 (ADM) configurations can tolerate multiple drive failures if no more than two drives, mirrored to one another, fail.
RAIDs 1, 10, 1+0	HPSSA allows RAID settings for RAID 1, 10 and 1+0 . In RAID 1 and RAID 1+0 (RAID 10) configurations, data is duplicated to a second drive. When the array contains only two physical drives, the fault-tolerance method is known as RAID 1. When the array has more than two physical drives, drives are mirrored in pairs, and the fault-tolerance method is known as RAID 1+0 or RAID 10. RAID 0 configurations cannot tolerate drive failure. If any physical drive in the array fails, all RAID 0 logical drives in the same array also fail. RAID 1+0 configurations can tolerate multiple drive failures if no failed drives are mirrored to one another.

Standard Features

Rapid Parity Initialization	Overwrites both the data and parity blocks in the foreground. The logical drive remains invisible and unavailable to the operating system until the parity initialization process completes. All parity groups are initialized in parallel, but initialization is faster for single parity groups (RAID 5 and RAID 6). RAID level does not affect system performance during rapid initialization. The Rebuild Priority setting determines the urgency with which the controller treats an internal command to rebuild a failed logical drive. HP SSA provides fours settings; low, medium, medium high and high. If the logical drive is part of an array that has an online spare, rebuilding begins automatically when drive failure occurs. If the array does not have an online spare, rebuilding begins when the failed physical drive is replaced
HP Secure Encryption	HP Secure Encryption is a Smart Array controller-based data encryption solution for ProLiant Gen 8 servers that protects sensitive, mission critical data. This is an enterprise-class encryption solution for data at rest on any bulk storage attached (with the exception of tape) to the supported HP Smart Array Px3x family of controllers. The solution is available for both local and remote deployments. The remote deployment requires Integrated Lights Out 4 (iLO4) and HP Enterprise Secure Key Manager (ESKM) 3.1 or any later release.

Additional Features

Shrink Array, Move Array, and Replace Array.	You can shrink the size of an array by removing a drive from an existing array. . Move Array is completed by designating different physical drives for the array. And Replace Array is completed by designating different physical drives for the array Note that not all controllers support these options. Check the User Guide to confirm requirements, limitations and steps to perform these functions.
Spare Activation Mode	The Spare Management feature provides multiple methods for handling spare behavior. You can choose from the following options: Dedicated - The failed data drive, when replaced, must be rebuilt from the data on the spare drive. In Dedicated mode, one spare can be dedicated to multiple arrays. Auto-Replace Drives - The spare for the failed data drive automatically becomes the replacement data drive. When the spare is replaced, the data drive does not need to be rebuilt. In Auto-replace mode, spare drives cannot be shared between arrays. If assigning Auto-Replace Drives mode to an array with a RAID 0 drive, Spare Activation Mode must be set to Predictive Spare Activation mode.
Split Mirror Backup and Rollback	Among the advanced tasks possible with the HP SSA GUI, you can split a mirrored array and then recombine it. This process entails breaking a RAID 1 or RAID 1+0 mirror into two identical new arrays consisting of RAID 0 logical drives. This task splits an array that consists of one or more RAID 1, RAID 1+0, RAID 1 (ADM), or RAID 10 (ADM) logical drives, and then creates two arrays: a primary array and a backup array. Rollback sets back the Split.
Status Alerts	Pane of view when clicking on the controller allowing you to see status messages of the controller - warnings, critical errors and more. Each status message tells you what the alert is and provides a color coded icon - triangle, circle, and square. See help files or user guide for details.
Status Messages	This panel provides the following information and functionality: Status icons (critical, warning, and informational) with the number of individual alerts for each category and a view all status messages link that displays device-specific alerts in a pop-up window. See help files or user guide for details.
Replacing an Array	Some controllers may not support this option or might require a license key to enable the feature. HP SSA enables you to transfer the contents of an array to an existing empty array or a new array. During this operation, all logical drives transfer from the original array to the destination array. The original array is deleted, and the drives that were being used are freed and listed as unassigned drives. Replacing an array is a time-consuming process for two reasons: all data in each logical drive is copied to the destination array, and the controller performs all data transformations while servicing IO requests to other logical drives.
VOD performance optimization	Video on demand (VOD) focused enhancements that improve performance while video streaming.
Warranty	HP SSA is a freeware offering available with your Smart Array controller.

Technical Specifications

HP Smart Storage Administrator (SSA)	**Interfaces**	Graphic User Interface via browsers listed below • Command Line Interface • Scripting
	Upgradeability	Available as a SPP Download or as a single HP SSA download
	Video Support	HP SSA GUI requires a minimum resolution of 1024 x 768 (16 bpp)
	Operating System Support	Please reference this URL: www.hp.com/go/ossuport HP SSA is support on all supported OSes per server with the exception of Microsoft Windows Server 2003
	Client Browser Support	Minimum requirements to run the HP SSA GUI include the following browsers: Mozilla Firefox 9.0 or later Microsoft Internet Explorer 8.0 or later Google Chrome
	Command Line Support	For CLI, the serial port access is only available when the user selects F5 at boot on the controller ROM to start HPSSA. HP SSA CLI is also started and can be accessed from the serial port. As far as secure shell support (ssh), that is really based on the customer's OS and what they have available in their environment. They can use ssh to invoke hpssacli on a remote server if that server supports ssh.
	HP OneView	RAID configurations setup with HP SSA Scripting beginning with HP OneView v1.05
	Hardware Requirements	HP SSA will officially support the following existing controllers or devices: • HP Smart Array Px3x Controllers • HP Smart Array Px2x Controllers • HP Smart Array Px1x Controllers • HP Smart Array P700m Controller • HP Smart Array P800 Controller • HP Dynamic Smart Array B110i, B120i, and B320i Controllers • HP Hx2x Host Bus Adapters
Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Technical Specifications