Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 164733

Solicitation Description : Addendum #2 data storage system with encryption capability

Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No		Version
	2016-03-17 13:30:00	SR 0210 ESR03171600000004296		1

VENDOR
000000219154
SOFTWARE INFORMATION SYSTEMS LLC

FOR INFORMATION CONTACT THE BUYER

Stephanie L Gale

(304) 558-8801
stephanie.l.gale@wv.gov

Signature X   **FEIN #**   **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Total: 3.1 Data Storage System	1.00000	EA	$125,300.000000	$125,300.00

Comm Code	Manufacturer	Specification	Model #
25201704			

Extended Description :	An on premise data storage system with encryption capability. Agencies, including PEIA, will utilize this system to encrypt data and to meet Federal regulations. The proposed solution will be installed in the West Virginia Office of Technology Data Center located on the first floor of Building "6" in the State Capitol Complex (in Charleston, West Virginia).

Proc Folder: 164733				
Doc Description: Addendum #2 data storage system with encryption capability				
Proc Type: Central Contract - Fixed Amt				
Date Issued	**Solicitation Closes**	**Solicitation No**		**Version**
2016-03-14	2016-03-17 13:30:00	CRFQ 0210 ISC1600000009		3

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON   WV   25305
US

VENDOR

Vendor Name, Address and Telephone Number:

SIS
Strategy | Technology | Results
200 Association Drive, Charleston, WV 25311

Software Information System, LLC
200 Association Drive, Suite 210
Charleston, WV 25311

304 768-1645

FOR INFORMATION CONTACT THE BUYER
Stephanie L Gale
(304) 558-8801
stephanie.l.gale@wv.gov

Signature X _(signature)_   FEIN # 61-137/685   DATE 3-11-2016

All offers subject to all terms and conditions contained in this solicitation

FORM ID : WV-PRC-CRFQ-001

Addendum #2 issued to:

1. Provide technical questions and responses.

End of Addendum #2

INVOICE TO	SHIP TO
DEPARTMENT OF ADMINISTRATION OFFICE OF TECHNOLOGY 1900 KANAWHA BLVD E, BLDG 5 10TH FLOOR CHARLESTON WV 25305 US	IS&C - DATA CENTER MANAGER DEPARTMENT OF ADMINISTRATION BLDG 6 RM B110 1900 KANAWHA BLVD E CHARLESTON WV 25305-0135 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Total: 3.1 Data Storage System	1.00000	EA	$ 125,300	$ 125,300

Comm Code	Manufacturer	Specification	Model #
25201704			

Extended Description :

An on premise data storage system with encryption capability. Agencies, including PEIA, will utilize this system to encrypt data and to meet Federal regulations.   The proposed solution will be installed in the West Virginia Office of Technology Data Center located on the first floor of Building "6" in the State Capitol Complex (in Charleston, West Virginia).

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Technical Questions Due	2016-03-03

Attachment A - Pricing Page

Item	Qty	Part Number	Description	Unit Price	Ext Price
1	1	2076-524	IBM STORWIZE V7000 SFF CONTROL	$8,640.00	$8,640.00
2	4	2076-524-5305	5M FIBER CABLE (LC)	$34.83	$139.32
3	1	2076-524-9730	POWER CORD - PDU CONNECTION	$7.83	$7.83
4	1	2076-524-ACE1	ENCRYPTION ENABLEMENT	$1,350.00	$1,350.00
5	1	2076-524-ACEA	ENCRYPTION USB FLASH DRIVES 4	$94.50	$94.50
6	1	2076-524-AGBH	SHIPPING AND HANDLING 524	$107.73	$107.73
7	1	2076-524-AHB1	8GB FC ADAPTER PAIR	$1,079.73	$1,079.73
	1	2076-524-AHB5	10GB Ethernet Adapter Pair	$1,565.73	$1,565.73
8	5	2076-524-AHF2	900GB 10K 2.5 INCH HDD	$372.33	$1,861.65
9	7	2076-524-AHG1	1TB 7.2K 2.5 INCH NL HDD	$264.33	$1,850.31
10	3	2076-524-AHH3	800GB 2.5 INCH FLASH DRIVE	$2,814.48	$8,443.44
11	1	5639-CB7	IBM SPECTRUM VIRTUALIZE SOFTWARE FOR STO	$0.00	$0.00
12	1	5639-CB7-0001	BASE SOFTWARE CONTROLLER PER STORAGE DEV	$4,968.00	$4,968.00
13	1	5639-CB7-0003	EASY TIER CONTROLLER PER STORAGE DEVICE	$405.00	$405.00
14	1	5639-CBG	IBM SPECTRUM VIRTUALIZE SOFTWARE FOR STO	$0.00	$0.00
15	1	5639-CBG-0001	BASE SOFTWARE CONTROLLER PER STORAGE DEV	$2,980.80	$2,980.80
16	1	5639-CBG-0003	EASY TIER CONTROLLER PER STORAGE DEVICE	$243.00	$243.00
17	1	2073-720	IBM STORWIZE V7000 UNIFIED	$3,676.25	$3,676.25
18	2	2073-720-5305	5 M FIBER OPTIC CABLE LC-LC	$37.94	$75.88
19	1	2073-720-5709	ETHERNET CABLE - 9FT-GREEN-CAT	$17.35	$17.35
20	1	2073-720-AGB7	SHIPPING AND HANDLING 720	$29.12	$29.12
21	1	5639-SF7	STORWIZE V7000 FILE MODULE 4YR SWMA REGI	$0.00	$0.00
22	1	5639-SF7-0001	BASE PER STORAGE DEVICE 4YR SWMA REG	$882.30	$882.30
23	1	5639-VF1	IBM STORWIZE V7000 FILE MODULE SOFTWARE	$0.00	$0.00
24	1	5639-VF1-0001	PER STORAGE DEVICE W/1YR SW MAINT	$1,470.50	$1,470.50
25	1	2073-720	IBM STORWIZE V7000 UNIFIED	$3,676.25	$3,676.25
26	2	2073-720-5305	5 M FIBER OPTIC CABLE LC-LC	$37.94	$75.88
27	1	2073-720-5709	ETHERNET CABLE - 9FT-GREEN-CAT	$17.35	$17.35
28	1	2073-720-AGB7	SHIPPING AND HANDLING 720	$29.12	$29.12
29	1	5639-SF7	STORWIZE V7000 FILE MODULE 4YR SWMA REGI	$0.00	$0.00
20	1	5639-SF7-0001	BASE PER STORAGE DEVICE 4YR SWMA REG	$882.30	$882.30
31	1	5639-VF1	IBM STORWIZE V7000 FILE MODULE SOFTWARE	$0.00	$0.00
32	1	5639-VF1-0001	PER STORAGE DEVICE W/1YR SW MAINT	$1,470.50	$1,470.50
			Subtotal		$46,039.84

4 Yr 7x24 Warranty with One Hour Custom Technical Support		**$70,860.66**
Training for 3 Employees ($2,800 each)		**$8,400.00**
Total		**$125,300.00**

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: _____

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

[✓] Addendum No. 1   [ ] Addendum No. 6

[✓] Addendum No. 2   [ ] Addendum No. 7

[ ] Addendum No. 3   [ ] Addendum No. 8

[ ] Addendum No. 4   [ ] Addendum No. 9

[ ] Addendum No. 5   [ ] Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Software Information Systems
Company

[signature]
Authorized Signature

_3-17-2017_
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.
Revised 6/8/2012

CERTIFICATIONAND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Software Information Systems, LLC
(Company)

Charles D. Arnett Sr. Chief Executive
(Authorized Signature) (Representative Name, Title)

_304 763-1645   304 763-1671   3/17/2016_
(Phone Number) (Fax Number) (Date)

ATTACHMENT B - VENDOR INFORMATION

Vendor Name   Softaclo Information Systems, LLC

Vendor Address   200 Association Drive

Suite 110

Charleston, WV 25311

Vendor Contact   Charles D. Arnett

Vendor E-Mail Address   carnett@thinksis.com

Vendor Signature   3-17-2016   Date

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"**Debt**" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"**Employer default**" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"**Related party**" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: _Software Integration Systems, LLC_

Authorized Signature: _(signature)_   Date: _3-16-2016_

State of _West Virginia_
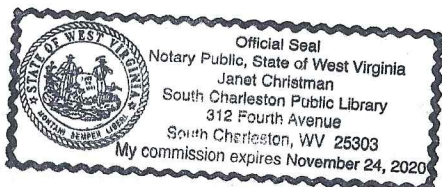
County of _Kanawha_, to-wit:

Taken, subscribed, and sworn to before me this _16_ day of _March_, 20 _16_

My Commission expires _November_, 20 _16_

AFFIX SEAL HERE   NOTARY PUBLIC _Janet Christman_

Purchasing Affidavit (Revised 07/01/2012)

Official Seal
Notary Public, State of West Virginia
Janet Christman
South Charleston Public Library
312 Fourth Avenue
South Charleston, WV 25303
My commission expires November 24, 2020

IBM Storwize V7000 Unified and Storwize V7000

Transforming the economics of data storage

Highlights

- Meet changing business needs with virtualized, enterprise-class, flash-optimized modular storage

- Transform the economics of data storage with hardware-accelerated data compression

- Leverage integrated support for file and block data to consolidate workloads

- Use encryption to help improve security for data on existing storage systems

- Optimize performance with automated storage tiering

- Improve network utilization for remote mirroring with innovative replication technology

- Deploy storage quickly with easy-to-use management tools and built-in support for leading software platforms
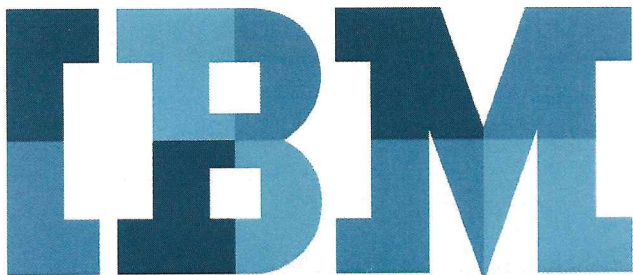
In the era of cloud, big data and analytics, mobile and social computing, organizations need to meet ever-changing demands for storage, while also improving data economics. IT must deliver more services faster and more efficiently, enable real-time insight and support more customer interaction. The right infrastructure allows clients to share information, secure transactions and drive real-time insights.

Built with IBM® Spectrum Virtualize™ software—part of the IBM Spectrum Storage™ family—the IBM Storwize® family helps organizations achieve better data economics by supporting these new workloads that are critical to their success. Storwize family systems can handle the massive volumes of data from mobile and social applications, enable rapid and flexible cloud services deployments, and deliver the performance and scalability needed to gain insights from the latest analytics technologies.

IBM Storwize V7000 Unified and IBM Storwize V7000 are virtualized, enterprise-class hybrid storage systems that provide the foundation for implementing an effective storage infrastructure and transforming the economics of data storage. Designed to complement virtual server environments, these modular storage systems deliver the flexibility and responsiveness required for changing business needs.

In fact, IBM Spectrum Virtualize software in Storwize V7000 Unified and Storwize V7000 provides the latest storage technologies for unlocking the business value of stored data, including virtualization and IBM Real-time Compression™. In addition, the systems include

a powerful hardware platform that can support the massive volumes of data created by today's demanding cloud and analytics applications. They are designed to deliver outstanding efficiency, ease of use and dependability for organizations of all sizes.
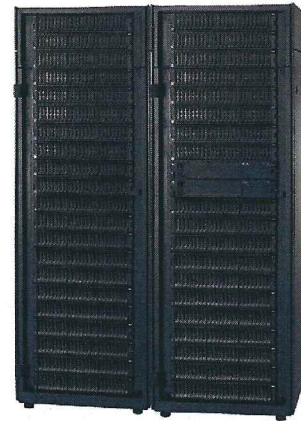
Data virtualization

Storwize V7000 Unified and Storwize V7000 use IBM Spectrum Virtualize data virtualization technology to help insulate applications from physical storage. This enables applications to run without disruption, even when changes are made to the storage infrastructure.

Storwize V7000 Unified and Storwize V7000 also extend data virtualization to other disk systems. When virtualized, data in a disk system becomes part of the Storwize system, and it can be managed in the same way as internal drives. Data in external disk systems inherits all the Storwize functional richness and ease-of-use features, including advanced replication, high-performance thin provisioning, encryption, Real-time Compression and IBM Easy Tier®. Virtualizing external storage helps improve administrator productivity and boost storage utilization while also enhancing and extending the value of existing storage investments.

Moving data is one of the most common causes of planned downtime. Data virtualization enables moving data from existing storage into the new system or between arrays, while maintaining access to the data. This function might be used when replacing older storage with newer storage, as part of load-balancing work or when moving data in a tiered storage infrastructure from disk drives to flash.

Data virtualization can improve efficiency and business value. Nondisruptive migration can speed time-to-value from weeks or months to days, minimize downtime for migration, eliminate the cost of add-on migration tools, and may help

avoid penalties and additional maintenance charges for lease extensions. The result can be real cost savings to your business. Users who have deployed Storwize V7000 report a 29 percent improvement in application availability.[1]

Real-time Compression

IBM Real-time Compression is designed to enable storing up to five times as much data in the same physical disk space by compressing data as much as 80 percent.[2] Unlike other approaches to compression, Real-time Compression is designed to be used with active primary data such as production databases and email systems, which dramatically expands the range of candidate data that can benefit from compression. Real-time Compression operates immediately as data is written to disk, meaning that no space is wasted storing uncompressed data awaiting post-processing.

What's more, Real-time Compression with hardware acceleration transforms the economics of data storage. The benefits include reduced acquisition cost (because less hardware is required), reduced rack space, and lower power and cooling costs throughout the lifetime of the system. And, when combined with external data virtualization, Real-time Compression can significantly enhance the usable capacity of existing storage systems, extending their useful life even further.
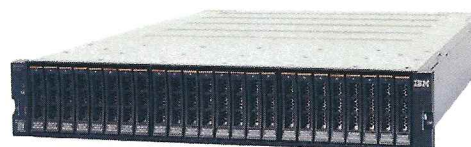
High-performance, scalable platform

Storwize V7000 Unified and Storwize V7000 are built on a new hardware platform designed to deliver both high performance and dramatically improved data economics. A control enclosure contains dual redundant controllers, each with an 8-core 1.9 GHz Intel Xeon processor with 32 GB or 64 GB of cache. Each controller contains a hardware compression accelerator based on Intel QuickAssist technology with an available second accelerator. Flexible host interface options include 16 Gbps and 8 Gbps Fibre Channel, 1 Gbps iSCSI, and 10 Gbps iSCSI or Fibre Channel over Ethernet. This powerful new platform delivers up to twice as much throughput as previous systems.[3]

Each control enclosure supports up to 20 expansion enclosures attached using high-performance 12 Gbps SAS for maximum expansion of 504 drives or approximately 2 PB of capacity. Control enclosures support up to 24 2.5-inch drives and two models of expansion enclosure support up to 24 2.5-inch or 12 3.5-inch drives.

Clustered systems provide scale-out growth in performance and capacity with up to four control enclosures and associated expansion enclosures operating as a single storage system with 64 processor cores, up to 512 GB of cache, supporting up to 1,056 drives and 7.87 PB of total capacity.

Storwize V7000 Unified systems also include dual redundant File Modules with 1 Gbps and 10 Gbps interfaces for network-attached storage (NAS) capability.

Efficiency

IBM Spectrum Virtualize software in Storwize V7000 Unified and Storwize V7000 is designed to deliver extraordinary levels of efficiency, helping to revolutionize data economics and drive down costs for cloud, analytics, virtual server and other enterprise-class deployments. The solution also delivers the performance needed for these demanding environments, so organizations no longer have to choose between performance and efficiency.

Traditional approaches to compression relegate its use to only less active and less performance-sensitive data, which limits the benefits and usability of compressed data. In today's business environment, limiting how and when data can be used could be a costly error. IBM Real-time Compression with hardware acceleration enables Storwize V7000 Unified and Storwize V7000 to deliver higher performance for compressed data than traditional systems offer for uncompressed data, enabling its use for practically all data types.[3]

In addition, automated storage tiering with IBM Easy Tier can help improve performance at a lower cost by enabling more efficient use of flash storage or multiple types of disk drives. Easy Tier automatically identifies more active data and moves that data to faster storage such as flash. This helps organizations use flash storage for the data that will benefit the most, helping deliver the maximum benefit even from small amounts of flash storage capacity. In fact, Easy Tier can deliver up to three times performance improvement with only five percent flash storage capacity.[4]

Storwize V7000 Unified also features IBM Active File Management (formerly known as IBM Active Cloud Engine®) for automated, policy-based placement and tiering of file data—including flash, disk and tape tiers—for highly efficient, low-cost storage. Active File Management operates both within a single system and across systems at multiple locations, enabling automated placement of data closest to users. New integration with IBM Spectrum Scale™ allows file sharing between Storwize V7000 Unified and IBM Spectrum Scale under one single global name space.

When combined with external storage virtualization, Real-time Compression, Easy Tier and Active File Management can help organizations manage internal and external tiers of storage, including IBM FlashSystem®. Using these techniques with existing storage can significantly improve performance for data on these systems, improving service levels and extending asset life.

When replicating block data for business continuity, Storwize V7000 Unified and Storwize V7000 can use IP network connections for simplicity and lower cost. Integrated Bridgeworks SANrockIT technology helps improve network utilization up to three times compared with traditional approaches,[5] which can help reduce networking costs as well as accelerate replication cycles.

High availability

Clients are increasingly deploying virtualized servers using IBM PowerVM®, VMware and other technologies in high-availability configurations. Such configurations provide attractive options for high availability and load balancing.

The IBM HyperSwap® function enables a single Storwize V7000 system to support servers in two data centers. In this configuration, the solution enables servers at both data centers to access data concurrently. When combined with server data mobility functions such as VMware vMotion or PowerVM Live Partition Mobility, this configuration enables nondisruptive storage and virtual machine mobility between the two data centers, which can be up to 300 km (186 miles) apart.

In addition, Distributed RAID technology helps improve data availability by allowing data to be distributed across more physical drives that are used simultaneously, achieving faster rebuild time. This technology can also deliver increased performance since data can be read from/written to more drives for a given I/O.

Ease of use

Storwize V7000 Unified and Storwize V7000, using IBM Spectrum Virtualize software, are designed to be easy to use from the very start. For example, an intuitive management interface enables administrators to easily manage both block and file data in the same system. In fact, a comparative study found that tasks are almost half as time-consuming as managing a competitor's system.[6]

IBM Spectrum Control™, based on IBM Tivoli® Storage Productivity Center can also provide organizations with an end-to-end view of storage health, long-term performance analytics and capacity statistics for Storwize V7000 Unified, Storwize V7000 and the surrounding storage infrastructure.

What's more, IBM Spectrum Virtualize technologies—including Real-time Compression, Easy Tier, IP replication with Bridgeworks SANrockIT technology and Active File Management—operate automatically and require little or no customization.

SANrockIT uses artificial intelligence technology to automatically optimize network use without any manual intervention. Because it's integrated into Storwize V7000 Unified and Storwize V7000, there are no separate appliances to manage. Plus, SANrockIT is not sensitive to data type, so it can deliver consistent benefits even as workloads change.

Storwize V7000 Unified and Storwize V7000 also include storage pool balancing that operates automatically to distribute data across arrays in a pool—including external virtualized storage—to deliver balanced array performance and help eliminate the need for manual tuning.

In addition, Storwize V7000 Unified includes integrated support for IBM Spectrum Protect™, based on Tivoli Storage Manager technology to simplify backups; restores; and application-aware, VMware-aware snapshots. It also supports the Network Data Management Protocol (NDMP) for backing up data with third-party applications.

Dependability

Storwize V7000 Unified and Storwize V7000 are part of the proven IBM Storwize family, with more than 225,000 enclosures and 2.4 exabytes of capacity deployed in organizations worldwide. A new hardware platform and unique compression accelerators using Intel QuickAssist technology deliver the power and flexibility required to support demanding cloud, analytics and virtual server environments.

For example, Storwize V7000 Unified combines both block and file storage into a single, dependable system. As a result, multiple management points can be eliminated, storage tiers—including flash—can be shared across all types of data, and data economics can be improved for a wide range of applications.

The unrelenting tide of data breaches continues to fuel an increasing interest in IBM self-encrypting storage, which automatically secures all information on a disk drive or tape cartridge when physically removed from a storage system. If a drive gets lost or stolen, data encryption renders data inaccessible. Storwize V7000 encryption also provides *cryptographic erasure*, a simple, cost-effective method for cleansing sensitive data from systems that are being retired or repurposed.

IBM Storwize V7000 Unified and Storwize V7000 storage systems at a glance

Maximum drives supported	504 per control enclosure; 1,056 per clustered system
Cores per controller/ control enclosure/ clustered system	8/16/64
Cache per controller/ control enclosure/ clustered system	32 or 64 GB/64 or 128 GB/up to 512 GB

Take the next step. Click here.
⊜ See the full list of specifications.

Support for Network File System (NFS) v4 and Server Message Block (SMB) 3.0 protocols, coupled with multi-tenancy support for file workloads, also enables consolidation with even more application types and deployment scenarios.

With their virtualized storage design and tight affinity with IBM PowerVM, OpenStack, Microsoft ODX, VMware vSphere v6 and VMware vSphere Virtual Volumes (VVOL), Storwize V7000 Unified and Storwize V7000 are an ideal complement for virtualized servers that are at the heart of cloud deployments.

Storwize V7000 Unified and Storwize V7000 support both scaling up (by adding additional enclosures and drives) and scaling out (by clustering) for configuration growth. This flexibility simplifies planning for future requirements and enables organizations to purchase only as much storage and controller capability as needed. For additional investment protection, clusters can include both existing Storwize V7000 systems as well as new Storwize V7000 Unified and Storwize V7000 systems.

Why IBM?

Innovative technology, open standards, excellent performance, and a broad portfolio of proven storage software, hardware and solutions offerings—all backed by IBM with its recognized industry leadership—are just a few of the reasons you should consider storage solutions from IBM, including Storwize V7000 Unified and Storwize V7000.

For more information

To learn more about IBM Storwize V7000 Unified and Storwize V7000, please contact your IBM representative or IBM Business Partner, or visit the following website:
ibm.com/storage/storwizev7000

For a list of currently supported servers, operating systems, host bus adapters, clustering applications and SAN switches and directors, refer to the IBM System Storage Interoperation Center at: ibm.com/systems/support/storage/config/ssic

For a list of high-quality solutions with our partner ISVs, including access to solution briefs and white papers, refer to:
ibm.com/systems/storage/solutions/isv

[6] Edison Group, "Competitive Management Cost Study: IBM Storwize V7000 vs. EMC VNX5500 Storage Systems," April 2012.
http://www.lighthousecs.com/_resources/common/userfiles/file/V7000.pdf

[1] Forrester Consulting, "Total Economic Impact Study of IBM Storwize V7000 – April 2012." The paper is available from our website, including on ibm.com/systems/storage/disk/storwize_v7000/resources.html

[2] IBM lab measurements – April 2012

[3] IBM lab measurements – April 2014

[4] IBM lab measurements – August 2010

[5] IBM lab measurements – September 2013

Please Recycle

IBM Storwize V7000 Unified Implementation Workshop Training

Course #: SSG00 (SSG0G)
Format: Classroom, Online
Duration: 4 days

Authorized Training
Global Training Provider

Choice Award
Winner 2016

Description

IBM Storwize V7000 Unified is a virtualized storage system designed to consolidate block and file workloads into a single storage system for simplicity of management, reduced cost, highly scalable capacity, performance and high availability. IBM Storwize V7000 Unified Storage also offers improved efficiency and flexibility through built-in solid state drive (SSD) optimization, thin provisioning and non-disruptive migration of data from existing storage. The system can virtualize and reuse existing disk systems offering a greater potential return on investment.

The course will focus on planning and implementation of integrating the Storwize V7000 Unified system into a network environment. Both file and block level protocols will be covered with the focus on provisioning storage to network hosts via NFS, CIFS, HTTP and FTP. Included will be file management functions, including Information Lifecycle Management (ILM), tools for backup and antivirus functions, and system management.

This course covers the features unique to the Storwize V7000 Unified product but does not cover the features common to the Storwize V7000 and Storwize V7000 Unified products. The functions of the Storwize V7000 product are covered in course *IBM Storwize V7000 Implementation Workshop (SSE10)*.

Objectives

- Recognize the benefit of implementing a Storwize V7000 Unified file system with both file and block-level access
- Implement physical hardware to establish zoning policies for device access between the Storwize V7000 Unified, native disk storage, and host servers
- Initialize and configure the Storwize V7000 Unified file and block-level modules by using InitTool and EZsetup
- Utilize Storwize V7000 Unified management GUI to configure file system resources and provision storage to network hosts using CIFS, NFS, HTTP and FTP
- Establish file system policies and rules to define file allocation in storage pools based on file attributes, and create a snapshot schedule to support data recovery of file systems and file sets
- Implement storage tiering to optimize solid state drives (SSDs) or flash systems usage on block-level volumes with Easy Tier
- Apply system management strategies to provide simplicity in terms of managing the Storwize V7000 Unified system environment.

Audience

This intermediate course is for individuals who assess or plan to deploy the IBM Storwize V7000 Unified file capabilities.

PreRequisites

You should have:

- A basic understanding of concepts associated with open systems, disk storage systems, and I/O operations.
- Completed *IBM Storwize V7000 Implementation Workshop (SSE1G)* or equivalent knowledge covering

block functions of the Storwize V7000 family.
You should have completed:

- *Storage Area Networking Fundamentals (SN71G)* or equivalent knowledge (Recommended).

Topics

1. Day 1
   - Welcome
   - Unit 1: Introduction to IBM Storwize V7000 Unified
   - Unit 2: Storwize V7000 Unified planning and implementation
   - Exercise 0: Storwize V7000 Unified Hardware Overview
   - Exercise 1: Storwize V7000 Unified initialization
   - Exercise 2: Storwize V7000 Unified EZsetup
   - Exercise 3: Storwize V7000 Unified provisioning RAID storage

2. Day 2
   - Review
   - Unit 3: IBM Storwize V7000 Unified file system management
   - Exercise 4: Single pool file system and CIFS access
   - Exercise 5: Migration ILM file systems

3. Day 3
   - Review
   - Unit 4: External storage virtualization and Easy Tier Technology
   - Exercise 6: Snapshots and data recovery
   - Exercise 7: External storage pools

4. Day 4
   - Review
   - Unit 5: Data protection and resiliency
   - Unit 6: Administration management
   - Exercise 8: Custom file system
   - Exercise 9: Asynchronous replication

Related

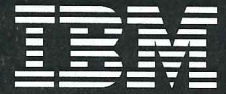You may also be interested in the following courses

Storage Area Networking Fundamentals SN712
   IBM offers a comprehensive portfolio of SAN switches, storage, software, services and solutions to reliably bring information to people in ...

SAN Volume Controller (SVC) Planning and Implementation Workshop SNV10
   This course is designed to leverage SAN storage connectivity by integrating a layer of intelligence or virtualization, the SAN Volume ...

IBM

IBM Software Support Services – custom technical support

Highlights

- **Provides a menu of service support options**

- **Speeds access to highly skilled, dedicated support teams through a single point of entry**

- **Helps anticipate and prevent problems through proactive advice on new applications and technologies**

Getting the custom support you need to meet high-availability requirements

IT is on a roll. It is enabling organizations to innovate, enter new marketplaces, and interact with customers, partners and suppliers more quickly and efficiently than ever before. But along with exciting new IT-based initiatives comes exponential growth in IT infrastructure size and complexity. Some organizations choose to invest heavily in the in-house IT operations skills necessary to keep their IT infrastructures running efficiently. Others choose outsourcing. But many others prefer to rely on outside services to get the technical expertise they need—while still retaining full control and ownership of their IT infrastructures. And that's where IBM Software Support Services – custom technical support comes in.

IBM Software Support Services – custom technical support can provide the comprehensive range of integrated services you need to get more out of your IT infrastructure. Plus, our services are designed to support IBM, Microsoft® and open system platforms; middleware, storage and network systems from IBM

and other vendors; and other popular products such as VMware. You can work directly with a dedicated, highly skilled priority support team that is familiar with your IT infrastructure and its needs and is backed by a global network of competency centers and laboratories.

Selecting the services you need

IBM provides a menu of support service options that lets you select the services you need to help keep your critical IT systems running robustly. If, for example, the standard 30-minute, 24x7 response time for critical issues doesn't meet your needs, you can opt instead for a 15-minute response time during your prime shift. What's more, you can decide which issues you consider "critical."

Another example of the kinds of choices you can make is between an onsite review and the standard remote review of your infrastructure as you begin the service. In other words, if the standard option doesn't meet your needs, you have other options to choose from.

Accessing the services you need—when you need them

When a problem does occur, you can quickly access the help you need using your own direct access code (DAC). This priority access feature bypasses the administrative problem-reporting layer and routes you directly to your dedicated priority support team. As a result, you can get the highly skilled support you need exactly when you need it—typically within 30 minutes for a critical Severity 1 problem—or even sooner if you choose another level of support.

Depending on the product associated with the problem, your team may resolve the issue on its own or coordinate with additional resources as necessary to provide a satisfactory resolution. If the product is outside its area of expertise, the team may route the problem to special teams, providing an escalation path as necessary, along with regular status updates. Almost no matter what combination of products your problem involves, IBM can provide the problem management necessary to drive a fast resolution.

Helping anticipate and prevent problems with proactive advice

As a custom technical support client, you are assigned a technical solutions manager who is prepared to act as an extension of your staff with the added advantage of IBM support. This individual not only strives to make sure that you receive all appropriate aspects of your service and that your priority support team stays aware of your needs, but also offers custom problem prevention assistance to help you make effective maintenance decisions. Using IBM proprietary state-of-the art analysis tools, your technical solutions manager can help anticipate problems and work with you to prevent them. This person can also provide helpful information on new products, practices and technologies as appropriate.

Why IBM?

For almost any level of custom technical support you need, IBM is ready to deliver. You can leverage IBM's highly skilled professionals trained on products from IBM as well as other vendors to act as an extension of your busy staff. Your easy-to-access priority support team can provide timely assistance to resolve problems, calling on IBM's global competency network as necessary. Leveraging IBM's advanced online-service capabilities, the team can provide the support you need remotely or onsite—depending on the options you choose.

For more information

To learn more about IBM Software Support Services – custom technical support, contact your IBM representative or visit:

ibm.com/services/maintenance