

# Storage Manager Powered by Profiler

## Heterogeneous Storage Management for Your Physical AND Virtual Infrastructure

#### SUPPORTED STORAGE DEVICES INCLUDE:

EMC®	LSITM
NetApp®	ONStor™
<b>IBM</b> ®	Pillar®
Dell®	Sun®
Dell EqualLogic™	Dell Compellent
Xlotech™	SGI™
HP®	HP 3PAR

And more!

Usable Storage				Raw Storage		
	Used Used	14.24 TB	70.29%			51 TB 78.76%
	Free Free	6.02 TB	29.71%			24 TB 16.85%
	Total Usable	20.26 TB				37 TB 4.39%
					Total Row 31	12.78
kelated Links: <u>Storage Summary</u>   UN Performance	Slorage Foreca	al   Free LUP	ia .		_	
op 10 LUNs by Total 10Ps .UN ID	Array		Total IOs/sec	Top 10 LUKs by Latency	ATTRI	Latency MS
Sydney VC41 ESX Cluster LUN 0	Clarice C	20.46	1941 1051540		Clarice CX3-10c	77.0
Dell M032001 Vol02	Del HD3		7.07	Bestopne VC40 ESX Cluster LUN 2	Clarice CX3-10c	70.65
ab xiy yol03		2610-MX900		ab-iefband-volume01	HP P4K (Lethard)	7.00
Dell M03600i Vol11	Del HD3		8.05		BM XIV 2810-8039011	
ab sty yoli2		2510-MX300			Dell MD3220	2 2.34
SI Eng3 3994 Vol02	LSI Engl		1.99		BM XXV 2810.4009001	
Curtibe VC41 ESX Cluster LUN 1	Clarion C		1.40		Clarice CX3-10c	19
lastoone VC40 ESX Cluster LUN			1.36		Del MD3600	0.30
vollab esx 09 000.x0	retacca	and the	1.04	Nolve5New-Lun	netacce	0.20
vollab eax 09 010un0	retacoa		0.90	Antivativa	netacca	0.20
op 10 LUNs by Reads				Top 10 LUNs by Writes		
OP NULLUNIS BY READS	Array	_	Read Kinised		Attar	Wate IOster
Dell M032001 V602	Del HD3	100	620		Clarice CX3-10c	13.22
		20-10	5.09		EM XIV 2010-0039001	
Sydney VC41 ESX Cluster LUN 0 Dell M036001 Vol11	Del NO3		5.05	Outboa VC41 ESX Cluster LUN 1	Clarine CX3,100	122

You probably don't need anyone to tell you that virtualization has added a whole new set of storage performance and capacity management challenges to what was already a tough job! But, our storage management software can make your job a lot easier—and at a very affordable price point that won't attract unwanted attention from your CFO.

SolarWinds Storage Manager helps you keep a sharp eye on the performance and capacity of your physical and virtual storage infrastructure—end to end, from VM to spindle! With Storage

Manager at your side, you can quickly and easily monitor storage performance, isolate hotspots, automate storage capacity planning, map VMs to physical storage, analyze storage usage to reclaim storage space, manage fibre channel switches, gain visibility into your multi-vendor SAN fabric and more—all through a single pane of glass!

### Storage Manager Highlights:

#### Storage Performance Monitoring & Hot Spot Isolation

- Simplifies troubleshooting of shared storage and server performance bottlenecks
- Isolates storage I/O hot spots and the source of contention

#### **Automated Storage Capacity Planning**

- Automates the collection of forecasting data
- Makes it easy to view storage growth rates and project when storage capacity will be reached and forecast costs

#### VM to Physical Storage Mapping

 Automatically maps VMs, applications and logical connections to the physical storage environment, enabling root-cause analysis

#### **Storage File Analysis and Data Classification**

Provides insight into the types of files being stored, their age and access history, so you can reclaim
wasted space and stay compliant

#### **Storage LUN Views**

- Understand how your virtual infrastructure is mapped to your LUNs
- Identify which VMs are using the most storage I/O and the most storage capacity
- Determine if your LUN is being affected by other LUNs on the same RAID group or pool

#### **Multi-Vendor SAN & Fibre Channel Switch Management**

- Single pane of glass across your multi-vendor SAN with support for arrays from all of the major storage vendors
- Delivers visibility into fibre channel switches and your SAN fabric

#### In-Depth Analytics & Storage Reporting

- · Aggregates data from multiple arrays and vendors into consolidated dashboards and reports
- Shows capacity, allocation, usage and forecasting at all levels of the storage environment (raw, RAID, LUN, data store and file system)

Supports the most common arrays from all of the major storage vendors





## SolarWinds Storage Manager Features

#### Storage I/O Hotspot Detection

Storage Manager looks across your multi-vendor SAN, identifies potential issues, and enables you to quickly drill down to detailed information about the physical or virtual resource causing the problem. By mapping your virtual and physical infrastructure to physical storage, Storage Manager makes it easy to isolate storage I/O hotspots before they impact performance. Even better, Storage Manager shows you how a potential bottleneck can impact the physical and virtualized elements in your infrastructure and identifies available capacity you can leverage for a quick fix.

Storage Manager can even help you manage the "VM I/O Blender" effect that can occur as VMs multiply. As traditional, predictable I/O patterns get tossed and new streams blend together to create new I/O dynamics and transient hotspots, the storage I/O hotspot detection capabilities in Storage Manager can help you pinpoint bandwidth issues, quickly resolve them, and prevent them from happening again.

#### VM to Physical Storage Mapping

The VM to physical storage mapping feature in SolarWinds Storage Manager automatically maps VMs and logical connections to the physical storage environment in order to provide you with a complete view across all resources in your virtualized infrastructure. Storage Manager is the only intuitive, web-based storage management solution that combines VM to physical storage mapping with storage monitoring, reporting, alerting and forecasting across the entire multi-vendor storage stack for DAS, NAS and SAN systems.

#### Automated Storage Capacity Planning

Storage Manager collects storage forecasting data and tracks performance over time to identify hot spots, peak hours and potential outages. By automating the collection of forecasting data, Storage Manager makes it easy to view growth rates, project when capacity will be reached, and forecast costs and budgetary requirements. In addition, this same data provides the information you need to avoid outages due to full disk errors. Storage Manager even supports your tiered storage strategy by classifying data according to frequency of access, making it easy to determine which data should be stored on a top-tier storage device and which data can be moved to tape.

#### Multi-Vendor Storage Performance Monitoring

Storage Manager ensures that your storage network is always running at peak performance by providing comprehensive storage performance monitoring and alerting across SAN, NAS, and DAS arrays from every major storage vendor. Using agentless performance monitoring technology, Storage Manager enables you to identify how storage resources are currently being used and how they will be used in the future—without impacting network and device performance.

SolarWinds Storage Manager delivers monitoring data on volumes, RAID groups/storage pools, disks, initiators, target ports, operational status for the array, processors and all the associations between each entity. With its powerful storage performance monitoring capabilities, Storage Manager helps you manage space consumption on RAID groups, map storage volumes back to the host and understand how these volumes are load balanced across each storage processor on the array. This gives you valuable insight into storage utilization across the enterprise, so you can identify the impact of a failure and trend and forecast for capacity planning and business continuity decisions. You can also quickly and easily configure a full range of custom and pre-defined alerts. From a single interface, you can easily set thresholds, alerts, filters and notifications. These alerts help you recognize and correct issues before your users experience performance degradation or availability issues.

•	VC 5.0 7	\$1999									
	P. 10.750 1.50 CB. Minare VC										
Com		Performance Asset Comp									
		stanformati Visitaia Viatra			Vilvan Sta	alah a					
22	ATALIASS PLOGATOREDS LOS	okinesis States Seets	The Prov	MACKS							
٥g	ical Mapping										
ŧ	Description re-VCLLopicel Teaching										
in.	Friends										
hrv	Delastore Name	Extent	Derive	Tabl	3.5md	Band	Initiator	Crateral	( Don'	Served Name	
	and the second second	Lances	ESS DORDA	SI		XXX			1		
	10.1004/54 Calcy content (UMS_2001)		1	64.84		1	NA	MPS .	44	Anite State (CMS) (M	
	def-m0000rvsm	100 5142620000001/1/1000041442311054	1	18.75		1	KIN 2006-EK COM BLOOK GLANDEZE DENITZEANKIN N		4	Del MOREN VARI	
	Del 1012330 (1462)	144-800209/80000/8079000004104x74/842	1	445.75		1	GR 1996-01 COX VENARE ETF-ESK-01-2098EA18	400	90	244 103200 1040	
			1	1.488.75		¢			0	84	
	90-to-eng4-7900-d01										
	LAD-NY/VINE2	AV 0017380104940003	1	943.73							
	Lab-2017/0422 LSL.51(2):2014_50(2)	+4.0017380107640000 144.00040000028017~000002014c7c192		199.75		1	10 30 30 30 40 40 50 50	rc .	i.	LSI 6143 2894 1682	
	Lab-2017/0422 LSL(51(2),2044,5042 heliop_bel002,5644	+4.0017300105640000 Ask-0004060000300174000003014c7e1142 Ask-0040000057724035444306e11445379	1	198.75 4.75	440 36.40	1	18 30 30 30 40 48 40 50 50 Kin 1996-01 COM, WINARE 677-651-01-2098-416	PC	1	Solitate and OD ODArd	
	Leo.0079052 LSLEngt.3054,5962 hetings_hold8_5661 hetings_hold8_5662	+4.0017380107640000 144.00040000028017~000002014c7c192	1	198.75 4.75 2.75	4.0 38.40 88.54	1	18:30:30:30:30:40:50:66 GN: 1966-0: CDH: VANARE (5TH-554-0+2286A-16 GN: 1966-0: CDH: VANARE (5TH-554-0+2286A-16	PC 609 609	1	Solisk and 20 005ml Solisk and 20 055ml	
	Lab.201952 LSU592,3294,5982 helps_boli0_3961 helps_boli0_3962 helps_boli0_3962	+4.0017300105640000 Ask-0004060000300174000003014c7e1142 Ask-0040000057724035444306e11445379	1	199.75 4.75 2.75 2.00	440 26.40 46.54	1	10.00.00.00.00.00.00 GR 1966-0.000.VMIAAR_ETHESK-04-2086A-10 GR 1966-0.000.VMIAAR_ETHESK-04-2086A-10 SA	PC 609 609		Solbit and DO Otherd Solbit and DO Otherd Solbit and DO Otherd	
	Leo.0079052 LSLEngt.3054,5962 hetings_hold8_5661 hetings_hold8_5662	+4.0017300105640000 Ask-0004060000300174000003014c7e1142 Ask-0040000057724035444306e11445379	1	198.75 4.75 2.75 2.60 8.60	440 26.40 46.54 6.55	1	1930303429-00582 GN 1986442004 VMILABE STILESK-442088A46 GN 1986442004 VMILABE STILESK-442088A46 SKA SKA	PC 609 609 MPS MPS	1	Solihit and D. Silved Solihit and D. Silved Anithety Sol (2) Anithety Solidit and	
	Lab-Inviration LSL,5x42,3044,5442 select_seld2_seld select_seld2_seld select_seld2_seld select_seld2_seld select_seld2_seld results	+4.0017300105640000 Ask-0004060000300174000003014c7e1142 Ask-0040000057724035444306e11445379	1	198.75 4.75 2.75 2.66 8.60 6.00	440 36.40 46.54 6.46 6.86 6.84	1	1930 00 00 C 24 40 50 M CAK 1996 41 COX VANABE (TH ESA 41 4296E A 16 CAK 1996 41 COX VANABE (TH ESA 41 4296E A 16 EA EA EA EA EA	FC 609 609 645 645 645 645	1	Solihi ana 20.054m) Solihi ana 20.054m) Asihi ang 20.051 Asihi ang 20.051 Asihi ang 20.051 Asihi ang 20.051 Asihi ang 20.051	
	Lab.30/1942 LSL542,3064,5682 wites_fe004,5664 wites_fe004,5664 wites_fe004,5665 wites_fe0045,5665	+4.0017300105640000 Ask-0004060000300174000003014c7e1142 Ask-0040000057724035444306e11445379	1	198.75 4.75 2.75 2.66 8.60 6.00	440 26.40 46.54 6.55		1939 50 6 C 2 A 5 5 M GR 1996 4 C GR VIII ARE STN 5 N 4 A 2016 A VI GR 1996 4 C GR VIII ARE STN 5 N 4 A 2016 A VI SA SA SA SA SA	PC 609 609 MPS MPS	1	Solihit and D. Silved Solihit and D. Silved Anithety Sol (2) Anithety Solidit and	



	Description are DC: Datastores Thin Prov Friendly	visioning				
	0		250	500	750	1.000
1	10.199.1.202_LocalDisk		_	_		
10	0.199.8.98_LocalDi#02	0148.15%				
1	10.199.8.114_LocalDisk	@124.81%				
10.1	199.8.92_LocalStorage	-	_	_	01	6.5746
	MD 3000 SAS	_		7.59%		
	Del[_MD32001_Vel02	-	_	-		@1.80%
Row	_	Capacity GB	Used Space GB	Free Space GB	Thin Provisioned Space GB	
Row 1	_	Capacity GB	Used Space GB 287.21	Free Space GB 408.29	Thin Provisioned Space GB 1,492.91	
	Datastore Name					Thin Provis
1	Datastore Name	695.50	287.21	408.29	1,492.91	Thin Provis 214.65
1	Datastore Name 10.190.1.202_LocaDisk 10.199.6.98_LocaDisk02	695.50 60.75 68.50	287.21 19.77	408.29 40.98	1,492.91 90.00	Thin Provis 214.65 148.15
1 2 3	Datastore Name 10.199.1.202_LocaDisk 10.199.6.98_LocaDisk02 10.199.6.114_LocaDisk	695.50 60.75 68.50	287.21 19.77 38.85	408.29 40.98 27.65	1,492.91 90.00 83.00	Thin Provis 214.65 148.15 124.81
1 2 3 4	Datastore Name 10.199.1.202_LocaDak 10.199.6.98_LocaDak02 10.199.6.114_LocaDak 10.199.6.92_LocaDak	695.50 60.75 66.50 929.25	287 21 19.77 38.85 158.34	408.29 40.98 27.65 770.91	1,492.91 90.00 83.00 154.00	Thin Provis 214.66 148.15 124.81 16.57
1 2 3 4 5	Datastore Name 10.199.1.202_LocaDisk 10.199.6.98_LocaDisk02 10.199.6.114_LocaDisk 10.199.6.92_LocaDistorage MD_3000_SAS	695.50 60.75 68.50 929.25 408.25	287.21 19.77 38.85 158.34 12.97 16.85	408.29 40.98 27.65 770.91 395.28	1,492.91 90.00 83.00 154.00 31.00	Thin Provis 244.66 148.15 124.81 16.57 7.59

#### Managing Virtualized Storage

Storage Manager allows you to more effectively manage VMware Thin Provisioning. Thin provisioning enables administrators to allocate storage to multiple VMs very easily on a just-enough and just-in-time basis and relies on efficient use of over-provisioning. Storage Manager helps you view, analyze and plan thin provisioning deployments by collecting and reporting on detailed information on virtual disks for managing the level of over-commitment on your datastores.

#### Automated Storage Discovery

Using SMI-S Provider information and APIs, Storage Manager's discovery engine will quickly scan for EMC<sup>®</sup>, LSI<sup>™</sup>, NetApp<sup>®</sup> filers, VMware vCenter<sup>™</sup> and standalone ESX arrays. When new arrays or hosts are discovered, Storage Manager displays the hostnames and IP addresses, so you can easily assign them to the management server to be configured. The storage discovery feature saves you valuable time and makes deploying Storage Manager faster and easier than ever before.

Credentials by I	each type of device that yo	Li Bartana (
Add credentials for	each type of device that yo	u would like to scan for.
Add Credential for:	NetApp Filers	<ul> <li>Add Credentia</li> </ul>
Order	Credential	Credential Type
1	NetApp	NETAPP
2	EMC	SMIS
3	IBM	SMIS
4	vmware	VMWARE

#### **Cross-Vendor Storage Reporting**

Storage Manager's reporting console houses hundreds of pre-defined and fully-customizable reports that provide in-depth information on every aspect of your multi-vendor storage environment, including domains, servers, volumes, files and owners. A custom grouping feature even allows you to group storage, servers and file systems into unique business-related entities for charge back, division reporting or geographic analysis. All reports can be automated, emailed and published on a schedule and exported as HTML or CSV files for further customization.

Orph Data	Host Utilization Datastores aned VMDK Physical Ma AStore Forecast				CElles tore Thin Provisioning	VMware Snapsho
	Store Forecast					
/Mwa	Description re VC: DataStore Forecast Friendly Datastore Name	Datastore	Datastore	V Datastore %	Eighty Percent	Ninety Percent
		Used GB	Size GB	Used		
2	10.199.6.100_LocalDisk	59.80	60.25 147.25	99.25 59.04	Already reached	Already reached
-	10.199.6.96_LocalStorage	38.85	66.50	58.43	2+ years	2+ years
3	10.199.6.114_LocalDisk	38.85	4.75	58.43 53.82	Usage is decreasing	Usage is decreasing Sep 3, 2011
	netapp_fas960_vol01		4.75	53.82	Aug 1, 2011	
					Usage is decreasing	Usage is decreasing
5	vmm-store	250.30		44.30	May 22, 2012	Aug 21, 2012
5	10.199.1.202_LocalDisk	287.21	695.50	41.30	May 23, 2012	Aug 31, 2012
5 6 7	10.199.1.202_LocalDisk netapp_fas960_vol04	287.21 1.02	695.50 3.00	33.87	2+ years	2+ years
5 6 7 8	10.199.1.202_LocalDisk netapp_fas960_vol04 10.199.6.98_LocalDisk02	287.21 1.02 19.77	695.50 3.00 60.75	33.87 32.55	2+ years Jan 2, 2012	2+ years Feb 22, 2012
4 5 6 7 8 9 10	10.199.1.202_LocalDisk netapp_fas960_vol04	287.21 1.02	695.50 3.00	33.87	2+ years	2+ years

#### Storage Data Classification

Enjoy complete file and data classification (with drill-down capability), including automated usage trend reporting, storage capacity planning and realtime storage monitoring. These data classification capabilities can help you understand what kinds of files are being stored, their age and access history, so you can reclaim wasted space and stay compliant. Storage Manager makes it easy to build rules to identify specific files across the enterprise, obtain detailed information (host, path, owner, size, age), and take further action by sending this information to other applications via Storage Manager's self-contained reporting engine.

Storage	L	U	N	۷	'ie\
---------	---	---	---	---	------

Storage LUN views provide a single pane of glass for a LUN and all related infrastructure, both physical and virtual, allowing you to diagnose performance issues. You can quickly determine if storage is truly the reason for poor performance of a VM. If you determine that the culprit is another VM or LUN, you can drill down and continue to diagnose the issue within the tool.

The new storage LUN views are the perfect integration point between SolarWinds Virtualization Manager and Storage Manager. Virtualization Manager is linked to the LUN view from the Cluster, ESX, VM or datastore view, enabling you to see the storage under your VM infrastructure, putting you just a click away from total visibility.

MODEL	MANAGES:
STM25	Up to 25 Disks
STM50	Up to 50 Disks
STM150	Up to 150 Disks
STM300	Up to 300 Disks
STM500	Up to 500 Disks
STM1000	Up to 1,000 Disks
STM1500	Up to 1,500 Disks
STM3000	Up to 3,000 Disks
STM5000	Up to 5,000 Disks
STM7500	Up to 7,500 Disks
STM10000	Up to 10,000 Disks
STM12500	Up to 12,500 Disks
STM15000	Up to 15,000 Disks

#### Multi-Vendor SAN & Fibre Channel Switch Management

SolarWinds Storage Manager provides comprehensive storage monitoring, reporting, and alerting to ensure that your storage systems are always running at peak performance across EMC, NetApp, Dell, HP, IBM, Hitachi, and more. Storage Manager also supports a broad range of Fibre Channel Switches including Brocade, Cisco MDS, McData and Qlogic.

SYSTEM REQUIREM	ENTS
HARDWARE	MINIMUM REQUIREMENTS
Processors	2
Memory	4-8 GB
Hard Drive	50 GB
SOFTWARE	MINIMUM REQUIREMENTS
Operating Systems	Windows <sup>®</sup> 2003/2008 (32- or 64-bit); Linux <sup>®</sup> RedHat <sup>®</sup> /SUSE 64 bit
Console	Internet Explorer®, Mozilla® Firefox®

NOTE: The requirements listed above are recommendations that vary depending on each network configuration and server load.

## **About SolarWinds**

SolarWinds (NYSE: SWI) provides powerful and affordable IT management software to customers worldwide from Fortune 500 enterprises to small businesses. In all of our market areas, our approach is consistent. We focus exclusively on IT Pros and strive to eliminate the complexity that they have been forced to accept from traditional enterprise software vendors. SolarWinds delivers on this commitment with *unexpected simplicity* through products that are easy to find, buy, use and maintain while providing the power to address any IT management problem on any scale. Our solutions are rooted in our deep connection to our user base, which interacts in our online community, thwack, to solve problems, share technology and best practices, and directly participate in our product development process. Learn more today at http://solarwinds.com.



For additional information, please contact SolarWinds at 866.530.8100 or e-mail <u>sales@solarwinds.com</u>. To locate an international reseller near you, visit <u>www.solarwinds.com/distributor/locator.html</u>

2012 SolarWinds, Inc. All rights reserved. SolarWinds, SolarWinds.com and thwack are registered trademarks of SolarWinds. All other company and product names mentioned are used only for identification purposes and may be trademarks or registered trademarks of their respective companies.