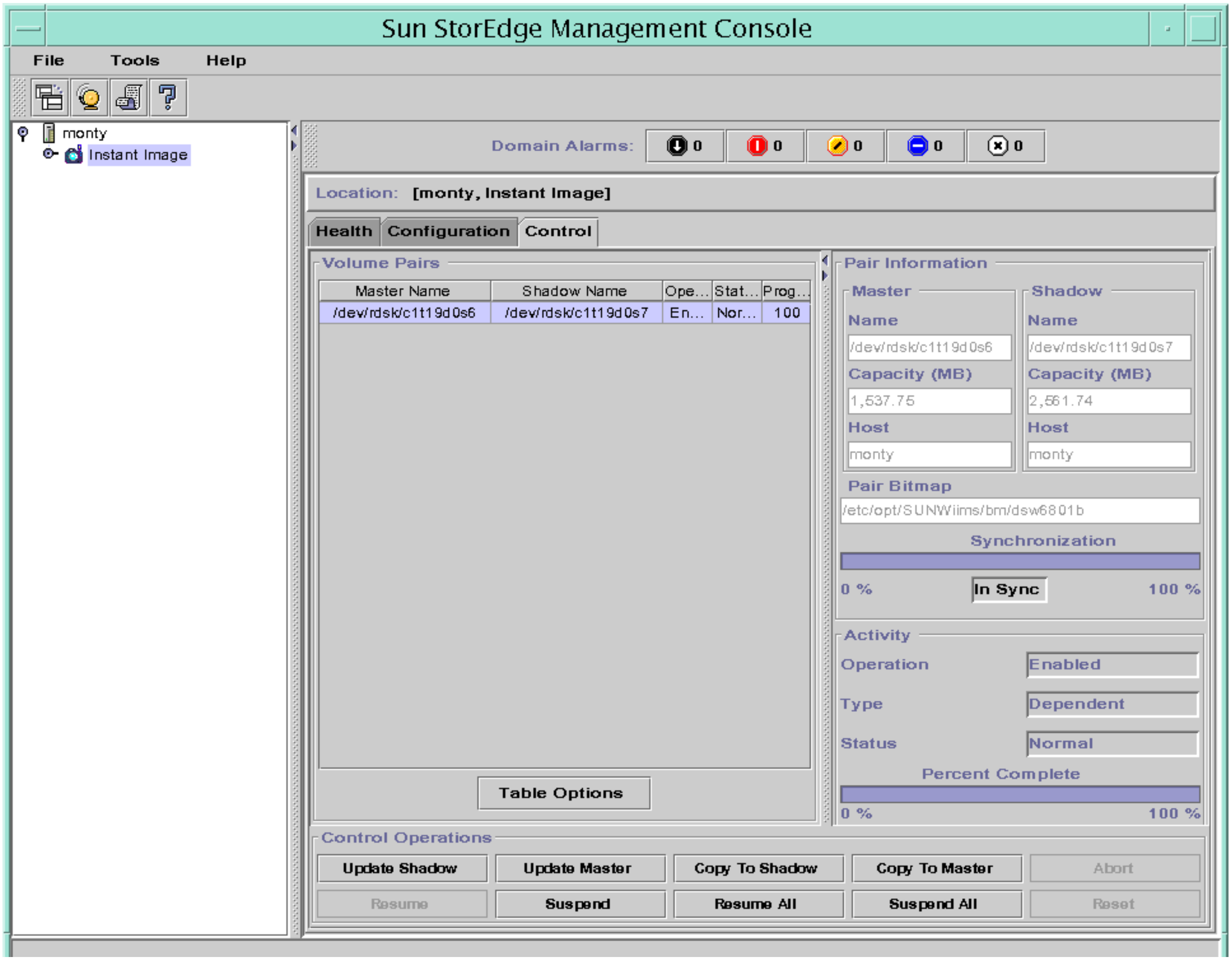
Sun StorEdge™ Instant Image Software

Just the Facts

Sun microsystems

Copyrights

System Positioning



Introduction

Sun StorEdge™ Instant Image software is a live-data snapshot utility that runs on Solaris™ servers to benefit several enterprise applications. Sun StorEdge Instant Image software enables point-in-time data copies that are non-intrusive to backups, data warehouse loading, application development and testing, and data migration. A *point-in-time copy* is a time-fixed, replicated view of data that allows secondary applications to non-disruptively access the data of a primary application.

Non-intrusive, point-in-time copy utilities are in high demand today. Information consumers and administrators frequently need to capture live data for independent read and write purposes. Sun StorEdge Instant Image software fulfills those requirements for Solaris servers and Sun storage disk arrays by complementing database and replication technologies already in place.

Key Messages

- **Business continuance**

  Sun continues to move ahead with business continuance solutions by introducing Sun StorEdge Instant Image software, a Solaris technology-based point-in-time copy facility with rapid refresh.
- **Integrated Sun solution**

  Sun StorEdge Instant Image software is fully integrated with Sun technologies and therefore provides the best point-in-time copy solution for Sun Server/Sun Storage configurations.
- **High-end to low-end solution**

  Sun StorEdge Instant Image software is offered to a broad variety of Solaris server products from the Sun Enterprise™ 250 platform up to the Sun Enterprise 10000 server.

Availability

Sun StorEdge Instant Image software will start pre-announced customer shipments (PACS) on June 25, 1999. General Availability is scheduled for July 20, 1999.

Target Customers

Sun StorEdge Instant Image software targets enterprise computing customers who want to minimize disruption to their online processing and optimize business continuance. This includes businesses that require:

- 24x7 application availability
- Secondary application access to primary application data

Features/Benefits

Feature	Benefit
• Point-in-time copies that can be independently accessed	• Business continuance
• Scoreboarding	• Fast resynchronization
• Master and shadow volumes that span storage subsystems	• Storage subsystem off-loading

Selling Highlights

Market Value Proposition

Sun StorEdge™ Instant Image software can keep critical online transactions going while providing critical data for decision support, contingency planning, and revision control. Prior to Sun StorEdge Instant Image software, OLTP applications were forced to shut down for several hours while copies and backups were made for important secondary activities. These painful disruptions compromise disaster recovery efforts as well as the freshness of decision making. Sun StorEdge Instant Image software only requires a momentary quieting of the master application to create or refresh a point-in-time view.

Applications

Sun StorEdge Instant Image software can benefit several enterprise applications.

- **Backups**

  Sun StorEdge Instant Image software maximizes uptime by allowing online processing to continue while backup processes capture a point-in-time image of online data.

- **Loading data warehouses**

  Sun StorEdge Instant Image software minimizes the disruption of online data processing by populating a data warehouse from a snapshot image of online data. Storage administrators create point-in-time shadow volumes of online data that can be independently accessed by database-load applications. Administrators can load data warehouses more frequently because Sun StorEdge Instant Image software enables online processing in parallel.

- **Application development and testing**

  Sun StorEdge Instant Image software enhances new application development by enabling testing with actual production data. Using production-data snapshots as the test data for new applications helps to accelerate application development.

- **Data migration**

  Sun StorEdge Instant Image software enables data migration from one storage platform to another. Create a snapshot of the data that needs to be migrated. Read that snapshot onto the new storage platform. The data snapshot *becomes* the master volumes for its application on the new platform.

Sun StorEdge Instant Image Software 1.0 Compatibility

Execution Platforms	Sun Enterprise™ 250, 450, 3X00 - 6X00, 10000 servers
Operating Systems	Solaris™ 2.6, Solaris 7 (32-bit and 64-bit) Operating Environment
Storage Platforms	Sun StorEdge™ A1000/D1000, A3500, and A5X00 arrays
Software	Fast Write Cache 1.0 VERITAS Volume Manager 2.6, 3.0.1 VERITAS File System 3.2.1, 3.3.2

Enabling Technology

Technology Overview

Sun StorEdge Instant Image software is a snapshot facility that runs on a Solaris application server or Solaris storage server (future). It enables point-in-time copies to be created on Sun storage. A *point-in-time copy* is a time-fixed, replicated view of data that allows secondary applications to non-disruptively access the data of a primary application. Sun StorEdge Instant Image software tracks the differences between the master volumes and the point-in-time copy, or shadow volumes, after the point-in-time has been established. This accelerates the later re-synchronization of shadow to master, or master to shadow.

Two types of shadow volumes are supported:

- ***Dependent shadow volumes*** rely on master volumes for accessing all unmodified data blocks.
- ***Independent shadow volumes*** are complete independent copies of the master data.

Dependent Copy Operation

A dependent copy relies on the master volumes for accessing all unmodified data blocks. A dependent copy takes only seconds to create because the data is not actually copied to the shadow volume.

Create a Dependent Shadow Volume

At the selected point-in-time, initiate a dependent copy that creates a dependent shadow volume. From this point-in-time forward, updates are made to the master volumes, while old data is written to the shadow volume.

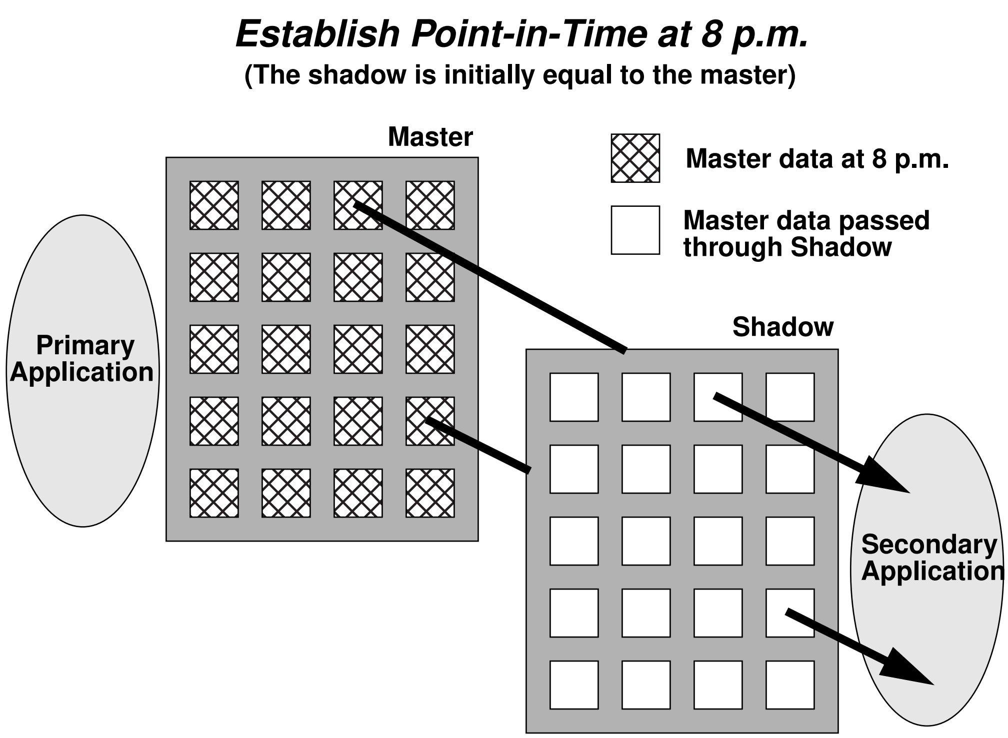


Figure 1. The secondary application accesses unchanged master data via the shadow volume

A bitmap is used to keep track of differences that occur after the established point-in-time. This bitmap records the blocks that have changed between the master and shadow after the established point-in-time and also tracks what has been copied during a copy or update operation.

Access the Dependent Shadow Volume

The dependent shadow volume provides a virtual view to master data frozen at a specific point in time. It appears as a usable copy of a master volume's data. You can read from and write to the shadow volume just like any other volume.

Accesses to the shadow volume of data blocks that have not been modified since the point-in-time snapshot was initiated are serviced from the master volumes. Accesses to the shadow volume of data blocks that have been modified are serviced from the shadow to help ensure the consistent snapshot of data.

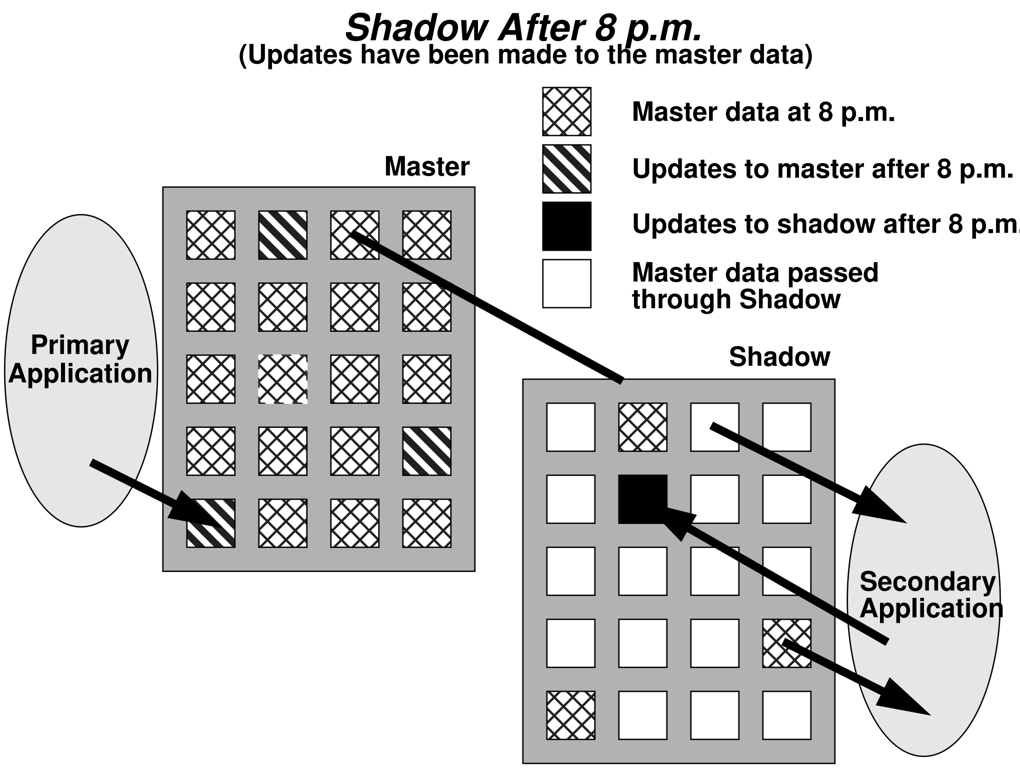


Figure 2. Accessing the dependent copy after changes have occurred

Resynchronize the Shadow to the Master Volumes

To resynchronize the shadow with the master, simply take another dependent snapshot. This clears the bitmaps that are tracking the differences.

Resynchronize the Master to the Shadow Volumes

To resynchronize the master to the shadow, apply the shadow to the master volumes that include any updates made to the shadow.

Independent Copy Operation

Independent copy initiates a complete physical copy of the master volumes after the point-in-time is specified.

The independent copy can be located on the same storage subsystem as the master, or on any other storage subsystem that is connected to the Solaris server running Sun StorEdge Instant Image software. This enables accesses to the independent copy to be off-loaded to a secondary storage subsystem. Also, this makes it easier to add the needed capacity to support the snapshot image.

Create an Independent Shadow Volume

At the selected point-in-time, create an independent copy that initiates a full-volume copy operation between the master and shadow volumes. Once complete, the shadow volumes are identical to the master volumes at the point-in-time the snapshot was initiated.

The shadow volume may be accessed before the copy is complete. During the copy operation, the shadow is accessed as it would be if a dependent copy were initiated. Once the copy is complete, the shadow is accessed as an independent copy of data.

A bitmap is used to keep track of differences that occur after the established point-in-time. This bitmap records the blocks that have changed between the master and shadow after the established point-in-time.

Access the Independent Shadow Volume

Once the copy operation from master to shadow volume is complete, an independent copy of data exists. The secondary application can now access a copy of the data without affecting the performance of the primary application.

In the unlikely event that the copy operation from master to shadow does not complete due to an unforeseen error condition, the error would need to be corrected and a second snapshot would need to be initiated.

Resynchronize the Shadow and Master Volumes

After the snapshot is taken, Sun StorEdge Instant Image software tracks the differences between the master and shadow volumes. When the next snapshot is taken, only the blocks that have been changed need to be copied from master to shadow (or from shadow to master).

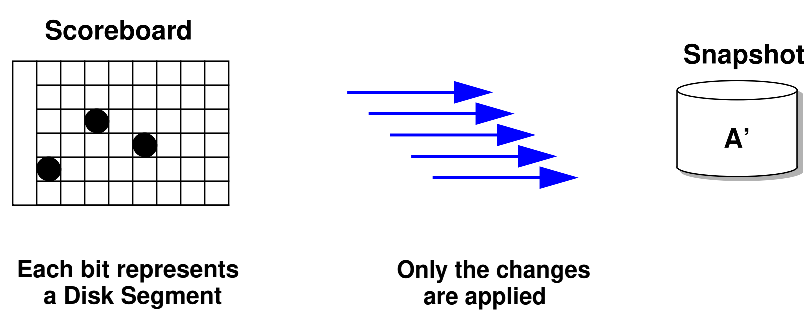


Figure 3. Fast resynchronization

Requirements and Configuration

System Requirements

Server Platforms

The following server platforms are qualified for Sun StorEdge™ Instant Image 1.0 software:

- Sun Enterprise™ 250
- Sun Enterprise 450
- Sun Enterprise 3000
- Sun Enterprise 3500
- Sun Enterprise 4000
- Sun Enterprise 4500
- Sun Enterprise 5000
- Sun Enterprise 5500
- Sun Enterprise 6000
- Sun Enterprise 6500
- Sun Enterprise 10000

Storage Platforms

The following storage platforms are qualified for Sun StorEdge Instant Image 1.0 software:

- Sun StorEdge™ A1000
- Sun StorEdge D1000
- Sun StorEdge A3000
- Sun StorEdge A3500
- Sun StorEdge A5000
- Sun StorEdge A5100
- Sun StorEdge A5200

Operating Environments

The following operating environments are compatible with Sun StorEdge Instant Image 1.0 software:

- Solaris™ 2.6
- Solaris 7

Compatible Software

The following software is compatible with Sun StorEdge Instant Image 1.0 software:

- Fast Write Cache 1.0
- VERITAS File System 3.2.1 and 3.3.2
- VERITAS Volume Manager 2.6 and 3.0.1

Configuration Limitations

Sun StorEdge Instant Image 1.0 software has the following configuration limitations:

- If a secondary host is accessing an independent shadow volume, a ***full resynchronization*** must be done to enable subsequent snapshots to be consistent. This will be addressed in a software update or the next release of Sun StorEdge Instant Image software.

Licensing/Usage

Sun StorEdge Instant Image software is Solaris host-based software. A license must be purchased for the particular server platform hosting Sun StorEdge Instant Image software. Also, release 1.0 is licensed to work only with Sun storage. For the Sun Enterprise 10000 server, one license covers all Sun Enterprise 10000 server domains.

System Administration

Sun StorEdge™ Instant Image 1.0 software is administered through a command line interface (CLI). All configuration and control is done through the CLI.

In the next release, Sun StorEdge Instant Image software will be configured and monitored through a Jiro-compliant graphical user interface. The Jiro™ platform is an open platform initiative that simplifies storage management by providing interoperability between storage vendor products. Jiro technology compliance allows the Sun StorEdge Instant Image software management interface to be combined with multiple management interfaces to leverage storage management across the enterprise.

Ordering Information

Sun StorEdge™ Instant Image 1.0 Software

Order Number	Title and Description
INI9S-100-W999	Sun StorEdge™ Instant Image software licence, CD-ROM media, and documentation for Sun Enterprise™ 250 and Sun Enterprise 450 server platforms
INI9S-100-D999	Sun StorEdge Instant Image software licence, CD-ROM media, and documentation for Sun Enterprise 3X00–5X00 server platforms
INI9S-100-E999	Sun StorEdge Instant Image software licence, CD-ROM media, and documentation for Sun Enterprise 6X00 server platforms
INI9S-100-S999	Sun StorEdge Instant Image software licence, CD-ROM media, and documentation for Sun Enterprise 10000 server platforms
INST-IMAGE-INSTALL	Sun StorEdge Instant Image Installation Services

Ordering Instructions

With Sun StorEdge Instant Image software, you must purchase a storage array and installation services. The following ordering instructions must be followed:

1. Order Quote submitted for Sun StorEdge Instant Image software (INI9S-100-W999, or INI9S-100-D999, or INI9S-100-E999, or INI9S-100-S999), INST-IMAGE-INSTALL (Installation Services), and Sun StorEdge array (A/D1000, A3500, or A5X00).
2. The part is placed on B-hold until steps 3–6 are completed. The B-hold directs the Sun Account Team to `http://service.ebay/HASR`.
3. The Sun Account Team (SR/SE) goes to `http://service.ebay/HASR` and completes the Technical Checklist. The Sun Account Team sends the Technical Checklist to the service desk alias: `ii_service_desk@sf49er.ebay`
4. The Service Desk reviews the Technical Checklist, enabling all questions to be answered. The Service Checklist to the local ES service group to request installation services.
5. The local ES service group schedules Installation Services and completes the CSM/ACSD Checklist. The CSM/ACSD Checklist and Technical Checklist are forwarded to `ii_service_desk@sf49er.ebay` for HQ approval.
6. Once the order has been approved, the Service Desk notifies the Sun Account Team that Installation Services have been scheduled and B-Hold is removed.
7. The B-Hold is removed.
8. The product is shipped to the customer.
9. Installation is provided at the customer's site by the local ES service group.

Service and Support

The SunSpectrum℠ program is an innovative and flexible service offering that allows customers to choose the level of service best suited to their needs, ranging from mission-critical support for maximum solution availability to backup assistance for self-support customers. The SunSpectrum program provides a simple pricing structure in which a single fee covers support for an entire system, including related hardware and peripherals, the Solaris™ Operating Environment software, and telephone support for Sun™ software packages. The majority of Sun's customers today take advantage of the SunSpectrum program, underscoring the value that it represents. Customers should check with their local Sun Enterprise Services representatives for program and feature availability in their areas.

FEATURE	SUNSPECTRUM PLATINUM℠ Mission-critical Support	SUNSPECTRUM GOLD℠ Business-critical Support	SUNSPECTRUM SILVER℠ Systems Support	SUNSPECTRUM BRONZE℠ Self Support
Systems Features				
Systems approach coverage	Yes	Yes	Yes	Yes
System availability guarantee	Customized	No	No	No
Account Support Features				
Service account management team	Yes	No	No	No
Local customer support management	No	Yes	No	No
Personal technical account support	Yes	Yes	Option	No
SunStart™ installation service	Yes	No	No	No
Account support plan	Yes	Yes	No	No
Software release planning	Yes	No	No	No
On-site account reviews	Monthly	Semiannual	No	No
Skills assessment	Yes	No	No	No
Site activity log	Yes	Yes	No	No
Coverage / Response Time				
Standard telephone coverage hours	7 day/24 hour	7 day/24 hour	8 a.m.–8 p.m., Monday–Friday	8 a.m.–5 p.m., Monday–Friday
Standard on-site coverage hours	7 day/24 hour	8 a.m.–8 p.m., Monday–Friday	8 a.m.–5 p.m., Monday–Friday	N/A
7-day/24-hour telephone coverage	Yes	Yes	Option	Option
7-day/24-hour on-site coverage	Yes	Option	Option	N/A
7-day/12-hour on-site coverage	No	Option	No	No
5-day/24-hour on-site coverage	No	Option	No	No

FEATURE	SUNSPECTRUM PLATINUM^{SM} Mission-critical Support	SUNSPECTRUM GOLD^{SM} Business-critical Support	SUNSPECTRUM SILVER^{SM} Systems Support	SUNSPECTRUM BRONZE^{SM} Self Support
Coverage / Response Time (cont.)				
Customer-defined priority setting	Yes	Yes	Yes	Option
• Urgent (phone/on-site)	Live transfer/ 2 hour	Live transfer/ 4 hour	Live transfer/ 4 hour	4 hour / N/A
• Serious (phone/on-site)	Live transfer/ 4 hour	2 hour/next day	2 hour/next day	4 hour / N/A
• Not critical (phone/on-site)	Live transfer/ customer convenience	4 hour/ customer convenience	4 hour/ customer convenience	4 hour / N/A
2-hour on-site response	Yes	Option	Option	N/A
Additional contacts	Option	Option	Option	Option
Premier Support Features				
Mission-critical support team	Yes	For urgent problems	No	No
Sun Vendor Integration Program (SunVIP^{SM})	Yes	Yes	No	No
Software patch management assistance	Yes	No	No	No
Field change order (FCO) management assistance	Yes	No	No	No
Hardware Support Delivery				
Replacement hardware parts	On-site technician	On-site technician	On-site technician	Courier
Two day parts delivery	N/A	N/A	N/A	Yes
Overnight parts delivery	N/A	N/A	N/A	Option
Same-day parts delivery	Yes	Yes	Yes	Option
Remote Systems Diagnostics				
Remote dial-in analysis	Yes	Yes	Yes	Yes
Remote systems monitoring	Yes	Yes	No	No
Remote predictive failure reporting	Yes	Yes	No	No
Software Enhancements and Maintenance Releases				
Solaris enhancement releases	Yes	Yes	Yes	Yes
Patches and maintenance releases	Yes	Yes	Yes	Yes
Sun unbundled software enhancements	Option	Option	Option	Option
Internet and CD-ROM Support Tools				
SunSolve™ license	Yes	Yes	Yes	Yes
SunSolve EarlyNotifier^{SM} Service	Yes	Yes	Yes	Yes

Warranty

Sun StorEdge™ Instant Image software carries the standard software warranty of 90 days.

Glossary

Dependent shadow volume	A snapshot of data that relies on the master volumes for accesses to all unmodified data blocks
Fast resynchronization	A scoreboard is used to track the differences between the master and shadow volumes after the snapshot has been taken. In order to accelerate resynchronization, only the blocks that have been changed need to be updated to resynchronize master and shadow.
Full resynchronization	Full resynchronization is nothing more than a complete disk-to-disk copy.
Independent shadow volume	A snapshot of data that is a complete independent copy of the master data
Intelligent Storage Server™	A platform dedicated to performing storage services.
Jiro™	An open platform initiative that simplifies storage management by providing interoperability between storage vendor products.
Master volume	The data used by the primary application. Snapshots are taken of master volumes.
Point-in-time data (or image, or snapshot)	A frozen or time-fixed, replicated view of data that allows secondary applications to non-disruptively access the data of a primary application
Resynchronization	After the snapshot, the master volume and shadow volume become increasingly different as the primary and point-in-time consumer applications independently update their respective images. The images are then said to be *unsynchronized*. Resynchronization is the process of making one of the images appear as a clone of its companion.
Shadow volumes	A snapshot of the data residing in master volumes resides in the shadow volumes.

Materials Abstract

All materials will be available on SunWIN unless otherwise noted.

Collateral	Description	Purpose	Distribution	Token # or COMAC Order #
References				
– *Sun StorEdge™ Instant Image Software 1.0 Just the Facts*	Reference Guide (this document)	Sales Tool	SunWIN, Reseller Web	107069
– *Sun StorEdge Instant Image Software 1.0 Product Intro*	Introduction E-mail	Sales Tool	SunWIN, Reseller Web, E-mail	107070
– *Sun StorEdge Instant Image Software Customer Presentation*	Customer Presentation	Sales Tool	SunWIN, Reseller Web, First Resort	107068
– *Sun StorEdge Instant Image Software Reducing the Backup Window*	Best Practice Guide	Sales/SE Tool	SunWIN, Reseller Web, First Resort	106175
– *Sun StorEdge Instant Image Application/Version Testing*	Best Practice Guide	Sales/SE Tool	SunWIN, Reseller Web, First Resort	106172
Product Literature				
– *Sun StorEdge Instant Image Software Data Sheet*	Data Sheet	Sales Tool	SunWIN, Reseller Web	DE1049-0, 107065
Competitive				
– *Point-in-Time Copy Solution Comparison*	Competitive Matrix	Sales Tool	SunWIN, Reseller Web	107067
– *Sun StorEdge Instant Image vs. EMC TimeFinder*	Competitive Edge Bulletin	Sales Tool	SunWIN, Reseller Web	107066
Training				
– *SRT Video*	Support Readiness Training Video	Training	SunWIN, Reseller Web	ME2063-0
External Web Site				
– *Sun StorEdge Instant Image Software Information*	`http://www.sun.com/storage/instant_image`			