StorageTek™ Shared Virtual Array (SVA)

V2X/V2X2 System Assurance

Part Number : 96220
Revision N

StorageTek™ Shared Virtual Array (SVA)

V2X/V2X2

System Assurance

We welcome your feedback. Please contact the Sun Learning Solutions Feedback System at:

SLSFS@Sun.com

or

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USA

Please include the publication name, part number, and edition number in your correspondence if they are available. This expedites our response.

Please
Recycle

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Preface

Notices

Please read the following compliance and warning statements for this product.

Caution: Potential equipment damage: Cables that connect peripherals must be shielded and grounded; refer to cable descriptions in the instruction manuals. Operation of this equipment with cables that are not shielded and not correctly grounded might result in interference to radio and TV reception.

Changes or modifications to this equipment that are not expressly approved in advance by Sun Microsystems Inc. will void the warranty. In addition, changes or modifications to this equipment might cause it to create harmful interference.

United States FCC Compliance Statement

The following compliance statement pertains to Federal Communications Commission Rules 47 CFR 15.105:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Agency Compliance Statement

The SVA complies with the following agencies:

UL–Recognized Component by Underwriters Laboratories Inc. to Standard UL 60950, Information Technology Equipment.

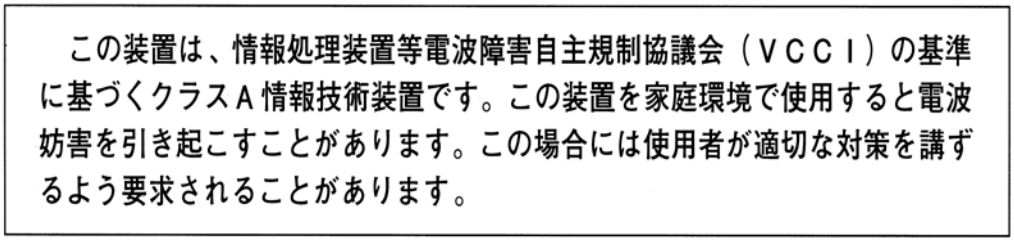
CE–Mark to show compliance to European Union Directives (European Union: Safety & EMC).

CISPR 22 and EN55022 Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japanese Compliance Statement

The following compliance statement in Japanese pertains to VCCI EMI regulations:


この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

English translation: This is a Class A product based on the Technical Requirement of the Voluntary Control Council for Interference by Information Technology (VCCI). In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective actions.

Taiwan Warning Label Statement

The following warning label statement (in Kanji) pertains to BSMI regulations in Taiwan, R.O.C.:


警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策

English translation: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.

Internal Code License Statement

The following is the Internal Code License Agreement from Sun Microsystems Inc.:

NOTICE

INTERNAL CODE LICENSE

PLEASE READ THIS NOTICE CAREFULLY BEFORE INSTALLING AND OPERATING THIS EQUIPMENT. THIS NOTICE IS A LEGAL AGREEMENT BETWEEN YOU (EITHER AN INDIVIDUAL OR ENTITY), THE END USER, AND STORAGE TECHNOLOGY CORPORATION (“Sun Microsystems”), THE MANUFACTURER OF THE EQUIPMENT. BY OPENING THE PACKAGE AND ACCEPTING AND USING ANY UNIT OF EQUIPMENT DESCRIBED IN THIS DOCUMENT, YOU AGREE TO BECOME BOUND BY THE TERMS

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   C. “Maintenance Code” is defined as Microcode and other software, including data files, which may reside or execute in or be used by or in connection with Equipment, and which detects, records, displays, and/or analyzes malfunctions in the Equipment.
   D. “Microcode” is defined as a set of instructions (software) that is either imbedded into or is to be loaded into the Equipment and executes below the external user interface of such Equipment. Microcode includes both Internal Code and Maintenance Code, and may be in magnetic or other storage media, integrated circuitry, or other media.
2. The Equipment you have acquired by purchase or lease is manufactured by or for Sun Microsystems Inc. and contains Microcode. By accepting and operating this Equipment, you

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   (ii) reverse assemble, decode, translate, decompile, or otherwise reverse engineer the Internal Code (except as decompilation may be expressly permitted under applicable European law solely for the purpose of gaining information that will allow interoperability when such information is not otherwise readily available); or

   (iii) sublicense, assign, or lease the Internal Code or permit another person to use such Internal Code, or any copy of it.
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Sun Microsystems Inc. or its licensors. You agree that you shall not use or attempt to use the Maintenance Code or permit any other third party to use and access such Maintenance Code.

You, the end user, agree to take all appropriate steps to ensure that all of your obligations set forth in this Notice are extended to any third party having access to the Equipmen

6. You may transfer possession of the Internal Code to another party only with the transfer of the Equipment on which its use is authorized, and your license to use the Internal Code is discontinued when you are no longer an owner or a rightful possessor of the Equipment. You must give such transferee all copies of the Internal Code for the transferred Equipment that are in your possession, along with a copy of all provisions of this Notice.

   Any such transfer by you is automatically (without further action on the part of either party) expressly subject to all the terms and conditions of this Notice passing in full to the party to whom such Equipment is transferred, and such transferee accepts the provisions of this license by initial use of the Internal Code. You cannot pass to the transferee of the Equipment any greater rights than granted under this Notice, and shall hold Sun Microsystems Inc. harmless from any claim to the contrary by your transferee or its successors or assigns. In addition, the terms and conditions of this Notice apply to any copies of Internal Code now in your possession or use or which you hereafter acquire from either Sun Microsystems Inc. or another party.

7. You acknowledge that copies of both Internal Code and Maintenance Code may be installed on the Equipment before shipment or included with the Equipment and other material shipped to you, all for the convenience of Sun Microsystems Inc.'s service personnel or service providers licensed by Sun Microsystems Inc., and that during the warranty period, if any, associated with the Equipment, and during periods in which the Equipment is covered under a maintenance contract with Sun Microsystems Inc. or service providers licensed by Sun Microsystems Inc., both Internal Code and Maintenance Code may reside and be executed in or used in connection with such Equipment, and you agree that no rights to Maintenance Code are conferred upon you by such facts.

Sun Microsystems Inc. or the licensed service provider may keep Maintenance Code and service tools and manuals on your premises but they are to be used only by Sun Microsystems Inc.'s customer service personnel or those of service providers licensed by Sun Microsystems Inc.. You further agree that upon
(i) any termination of such warranty period or maintenance contract period; or
(ii) transfer of possession of the Equipment to another party, Sun Microsystems Inc. and its authorized service providers shall have the right with respect to the affected Equipment to remove all service tools and manuals and to remove or disable all Maintenance Code and/or replace Microcode which includes both Internal Code and Maintenance Code with Microcode that consists only of Internal Code.

Alert Messages

Alert messages call your attention to information that is especially important or that has a unique relationship to the main text or graphic.

Note: A note provides additional information that is of special interest. A note might point out exceptions to rules or procedures. A note usually, but not always, follows the information to which it pertains.

Caution: *informs you of conditions that might result in damage to hardware, corruption of data, or corruption of application software. A caution always precedes the information to which it pertains.*

WARNING:A warning alerts you to conditions that might result in long-term health problems, injury, or death. A warning always precedes the information to which it pertains.

Mensajes de alerta

Los mensajes de alerta llaman la atención hacia información de especial importancia o que tiene una relación específica con el texto principal o los gráficos.

Nota: Una nota expone información adicional que es de interés especial. Una nota puede señalar excepciones a las normas o procedimientos. Por lo general, aunque no siempre, las notas van después de la información a la que hacen referencia.

Precaución: Una precaución informa sobre situaciones que podrían conllevar daños del hardware, de los datos o del software de aplicación. Las precauciones van siempre antes de la información a la que hacen referencia.

Advertencia: Una advertencia llama la atención sobre condiciones que podrían conllevar problemas de salud crónicos, lesiones o muerte. Las advertencias van siempre antes de la información a la que hacen referencia.

Related Documents

The following publications comprise the SVA document set available to Sun Microsystems Inc. customers.

Shared Virtual Array (SVA) Subsystem

Note: The book part numbers changed. The old numbers are shown in parenthesis.

- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Introduction 96216 (MO9135)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Operation and Recovery 96217 (MO9137)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Planning 96218 (MO9136)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Reference 96219 (MO9139)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 System Assurance 96220 (MO9138)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 System Assurance Tables 96223 (MO9169)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 General Information 96221 (MO9134)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Peer-to-Peer Copy Configuration User's Guide 96225 (MO9211)*

Shared Virtual Array Administrator (SVAA) for OS/390

- *SVAA for OS/390 Configuration and Administration PN 3112905xx*
- *SVAA for OS/390 Reporting PN 3112906xx*
- *SVAA for OS/390 Installation, Customization, and Maintenance PN 3112908xx*
- *SVA SnapShot for OS/390 Installation, Customization, and Maintenance PN 3112913xx*

Shared Virtual Array Administrator (SVAA) for VM

- *SVAA for VM Configuration and Administration PN 3134629xx*
- *SVAA for VM Reporting PN 3134630xx*
- *SVAA for VM Installation, Customization, and Maintenance PN 3134631xx*

Shared Virtual Array Administrator (SVAA) for OS/390 and VM

- *SVAA for OS/390 and VM Messages and Codes PN 3112907xx*

Shared Virtual Array Administrator (SVAA) for Solaris

- *SVAA for Solaris User's Guide PN 3112909xx*
- *SVAA for Solaris Messages PN 3112910xx*
- *SVAA for Solaris Installation PN 3112911xx*
- *SVAA for Solaris Quick Start Guide PN 3134509xx*
- *SVAA for Solaris Command Quick Reference PN 3134119xx*

Shared Virtual Array Administrator (SVAA) for HP-UX

- *SVAA for HP-UX User's Guide PN 3134257xx*
- *SVAA for HP-UX Messages PN 3134244xx*
- *SVAA for HP-UX Installation PN 3134254xx*
- *SVAA for HP-UX Quick Start Guide PN 3134512xx*
- *SVAA for HP-UX Command Quick Reference PN 3134253xx*

Shared Virtual Array Administrator (SVAA) for AIX

- *SVAA for AIX User's Guide PN 3134602xx*
- *SVAA for AIX Messages PN 3134600xx*
- *SVAA for AIX Installation PN 3134599xx*
- *SVAA for AIX Quick Start Guide PN 3134601xx*
- *SVAA for AIX Command Quick Reference PN 3134598xx*

Shared Virtual Array Administrator (SVAA) for Windows 2000 Server and Windows NT Server

- *SVAA for Windows 2000 Server and Windows NT Server User's Guide PN 3134573xx*
- *SVAA for Windows 2000 Server and Windows NT Server Messages PN 3134571xx*
- *SVAA for Windows 2000 Server and Windows NT Server Installation PN 3134570xx*
- *SVAA for Windows 2000 Server and Windows NT Server Quick Start Guide PN 3134572xx*
- *SVAA for Windows 2000 Server and Windows NT Server Command Quick Reference PN 3134569xx*

Shared Virtual Array Console (SVAC) for Windows NT

- *SVAC for Windows NT Quick Start Guide PN 3112993xx*

Other Documents

- *Peer to Peer Remote Copy Configuration Guide MP4007x*
- *Planning For IBM Remote Copy SG24-2595-xx* (IBM document)
- *Remote Copy Administrator's Guide and Reference SC35-0169-xx* (IBM document)

Viewing and Printing Web-Based Electronic Documents

Publications listed in “Related Documents” can be viewed and printed from the Sun Microsystems Inc. Customer Resource Center (CRC) Web site at:

`http://www.support.storagetek.com`

History of Changes

Rev A – Initial release. September, 2002

Rev B – Second release. December, 2002

- Minor changes involving edits and corrections. Major changes include:
- Adding physical capacity to second chapter.

Rev C – Third release. March, 2003. Minor changes involving edits and corrections.

Rev D – Fourth release. March, 2003. Minor changes involving edits and corrections.

Rev E – Fifth release. May, 2003. Minor changes involving edits and corrections.

Rev F – Sixth release. December, 2003. Minor changes involving edits and corrections.

Rev G – Seventh release. April, 2004. Minor changes involving edits and corrections.

Rev H – Eighth release. February, 2005. Minor changes involving edits and corrections major changes include:

- Changed document part number

Rev J – Nineth release. December, 2005. Minor changes involving edits and corredtions.

Rev K–Tenth release. May 2006. Minor changes involving edits and corrections.

Rev L–Eleventh release. June 2006. Minor changes involving edits and corrections.

Rev M – Twelfth release. Late July 2006. Minor changes and corrections.

Rev N – Thirteenth release. November 2006. Minor changes and corrections.

System Assurance Team

1

This Shared Virtual Array (SVA) System Assurance Guide is for:

(Customer Company Name)

(Customer Company Address)

(City, State, Zip Code)

(Country)

(Site Location Number)

(Customer Account Number)

Sun Microsystems Team Membership

Title	Name	Telephone
Account Executive		
Systems Engineer		
Customer Service Engineer		
Customer Service Manager		
Systems Support Representative		

Customer Team Membership

Title	Name	Telephone

Shared Virtual Array Serial Number

This SVA System Assurance Guide is intended for use with one specific subsystem. When the unit serial number is assigned, enter it on the following line.

Shared Virtual Array Subsystem _____

Pre-Installation Planning

2

System Assurance Planning Meeting

Immediately after receiving an order from the customer, the Account Executive schedules a planning meeting with the customer and the appropriate members of the Sun Microsystems system assurance team. The planning meeting is the first of two formal meetings. Its purpose is to:

- Explain SVA system assurance.
- Determine the team membership for both Sun Microsystems and the customer. Record the names of the team members in the spaces provided for that purpose in “System Assurance Team” on page 17.
- Review the responsibilities of the Sun Microsystems and customer team members (refer to “System Assurance Team Member Responsibilities” on page 19). Ensure that the customer and Sun Microsystems personnel know who their counterparts are for each of the assigned responsibilities.
- Set a date and time for the system assurance review meeting. The meeting should be scheduled after the completion of all worksheets, and must occur **at least one week before the shipment** of the subsystem.

System Assurance Team Member Responsibilities

The system assurance team ensures that all aspects of the installation process are carefully planned and efficiently conducted. Sun Microsystems and customer team members provide joint control and ownership of the installation process.

Sun Account Executive Responsibilities

The Sun Microsystems account executive has the following responsibilities (unless otherwise specified):

- Coordinates the system assurance process,
- Owns the system assurance documents, and

- Supplies or obtains all necessary support documentation, such as Sun Microsystems documentation and white papers, if applicable.

Sun Microsystems Service Representative Management Responsibilities (International)

In the international marketplace, the Sun Microsystems service representative manager has the following responsibilities:

- Coordinates the system assurance process,
- Owns the system assurance documents, and
- Supplies or obtains all necessary support documentation, such as Sun Microsystems documentation and white papers, if applicable.

Service Representative Responsibilities

The service representative has the following responsibilities:

- Prepares Customer Service support procedures - The service representative explains available levels of hardware support and discusses the criteria for escalation to subsequent levels.

Note: If the customer desires to use the Detatched Operator Panel (DOP), the service representative must download the customer version from the Customer Resource Center (CRC) and provide that to the customer - customers do not have access to that software package.

- Prepares/completes worksheets - The service representative contacts the customer personnel who provide system and subsystem configuration data and who aid in filling out the appropriate configuration worksheets.

System Engineer/Software Support Representative Responsibilities

The system engineer/software Support Representative (SE) has the following responsibilities:

- Prepares Customer Service software support procedures - The SE prepares to explain available levels of software support and discusses the criteria for escalation to subsequent levels.
- Prepares/completes worksheets - The SE contacts the customer personnel who provide system and subsystem configuration data and who aid in filling out the following configuration worksheets:
  - Hardware Configuration Worksheet (Table 10 on page 42).
  - Customer/Subsystem Configuration Worksheet (Table 13 on page 45).
  - Subsystem Configuration Worksheet (Table 13 on page 45).

- Channel Configuration Worksheet (Table 10 on page 42).

Caution: Host software must be supported by the vendor. IBM is the vendor for z/VM and z/OS and OS/390. Please verify the customer is on host software supported by IBM prior to product installation.
IBM provides the following End of Service (EOS) sites:

- http://www.vm.ibm.com/techinfo/lpmigr/VMLSUM.HTML
- http://www-1.ibm.com/servers/eserver/zseries/zos/support/zos_eos_dates.html

Customer Team Responsibilities

The customer team is expected to provide the following data at the system assurance planning meeting.

- Hardware configuration plan - If the physical and functional configuration plans have been completed, they should be brought to the planning meeting. If they are not available, the customer should be prepared to identify a contact for development of configuration plans (refer to Table 10, “Hardware Configuration,” on page 42).
- Software level information - The customer should be prepared to discuss the current levels of software for all systems which uses the V2X/V2X2 subsystem. The customer should be prepared to identify a contact for all matters related to required software.
- Environmental planning - If a site survey of environmental conditions (such as electrical, cooling, humidity, etc.) is available, it should be brought to the planning meeting. If it is not available, the customer should be prepared to identify a contact to work with the service representative in filling out the table in Table 24 on page 61.
- Data migration information - The customer representative should be able to discuss the data migration concerns. (See the following section, “Data Migration Requirements” on page 22 .)
- Schedule - The customer should be prepared to discuss the schedule and designate a point of contact for all scheduling matters (See “Schedule Planning” on page 23).

Data Migration Requirements

Data migration requirements and strategy for each site must be carefully planned. Guidelines for planning data migration are presented in the V2X/V2X2 Shared Virtual Array *Planning*. When the data migration procedures outlined in that document have been agreed upon and a procedure for data migration has been established, have the appropriate system assurance team members sign in the following blank lines.

Sun Microsystems Representative (date)

Customer Representative (date)

Environmental Planning

Environmental planning refers to the readiness of the physical locations and connections in those locations where the V2X/V2X2 subsystem is installed. Complete guidelines for environmental planning are contained in Table 23 on page 59 and Table 24 on page 61. When specifications provided in those tables have been met and the physical planning checklist in that document has been completed, have the appropriate system assurance team members sign in the following blank lines.

Sun Microsystems Representative (date)

Customer Representative (date)

Schedule Planning

When schedule planning is completed, attach a copy of the proposed schedule to this document and have the appropriate system assurance team members sign in the following blank lines.

Sun Microsystems Account Executive	(date)
Sun Microsystems SE	(date)
Sun Microsystems service representative	(date)
Customer Representative	(date)

Pre-installation Surveys

3

ESCON Survey

This pre-installation survey must be complete by the customer, Sun Microsystems marketing, and the site-responsible or installing CSE.

Table 1 ESCON Survey Information

Question	Additional Information
ESCON Channel Addresses	
What device addresses should be configured on the V2Xf SVA? (See "Functional Device Configuration Worksheets" on page 50.) What disk type emulated is required by the V2Xf SVA for each address?	
ESCON Cable Attachment	
To which SVA ICE3 card and port do the various ESCON cables connect? Each ICE3 card has four ports. **Note:** Since this is completely site dependant, attach a separate sheet to this document. Make sure the table or drawing is complete enough that the installing CSE can find the mainframe/ channel switch/ESCON extender and the required connectors. (Also see Table 14 on page 46 for "Channels A - H" and Table 15 on page 47 for "Channels I - P".)	

Table 1 ESCON Survey Information (Continued)

Question	Additional Information
ESCON Channel Cables	
What length ESCON cables are required? If these are standard length ESCON cables, are they going to be ordered from Sun Microsystems? For non-Sun Microsystems cables, who installs them? For third party cable installations, has the installer been made aware of the installation completion date?	

Fibre Survey

This pre-installation survey must be complete by the customer, Sun Microsystems marketing, and the site-responsible or installing CSE.

Table 2 Fibre Survey Information

Question	Additional Information
Fibre Channel Addresses	
What fibre addresses are to be used by each fibre open systems platform initiator card? ***Requested Loop ID Number***(s) to be used. Indicate the ***Domain addresses*** to be used. **Note:** ***Target addresses*** must be set to **zero**. Indicate the ***Logical Unit Numbers*** to be used. **Note:** Fibre channel attach only supports 3390-3 and 3390-9 devices in the V2Xf SVA.	
Fibre Channel Devices	
Which LUNs are “privileged?” What block size is desired? Options are: 512, 2048, 4096, 8192, or 16384. Device Types 3390-3 or 3390-9? If mixed, indicate which LUNs are -3 and which are -9.	

Table 2 Fibre Survey Information (Continued)

Question	Additional Information
Fibre Channel Cables	
What length fibre cables are required? If these are standard length fibre cables, are they ordered from Sun Microsystems? (See the planning guide for available cable lengths) For non-Sun Microsystems fibre cables, who installs them? For third party fibre cable installations, has the installer been made aware of the installation completion date?	
Host Attachment	
To which port on each ICF card is each open systems host bus adapter attach? The upper port on each ICF card is port 0 and the lower port is port 1. Attach a separate sheet with a drawing of the room layout and cable routing if necessary. Be sure to indicate the ICF card by card slot in the V2X/V2X2 and the ICF card's port for each host.	

Mainframe PPRC Survey

This pre-installation survey must be complete by the customer, Sun Microsystems marketing, and the site-responsible or installing service representative.

Note: The initial offering of the V2X does not support PPRC.

Table 3 PPRC Survey Information

Question	Additional Information
PPRC Cables	
Have the cables required for PPRC been ordered?	
In the event that the PPRC cables are not installed by the Sun Microsystems service representative, has the installer been notified?	
For Mainframe attached SVAs	
Will this setup be Power Direct PPRC or Power PPRC WAN[a]? **Note:** A V2X/V2X2 does not support Standard PPRC.	
Which VOLID(s) are designated for use as the Status Bridge Device(s)? **Note:** Power PPRC WAN only.	
Which VOLID(s) are used as the Data Bridge Device(s)?	
PPRC Cable Connections	
Indicate by ICE2 card slot and port how the PPRC cables are to be connected between the primary and secondary disk storage systems. Attach a separate page or drawing if necessary.	
PPRC Operation	
Indicate the subsystem ID/names for the primary and secondary subsystems.	
Indicate the VCUs involved on the primary and secondary subsystems.	

Table 3 PPRC Survey Information (Continued)

Question	Additional Information
Indicate the FDIDs involved on the primary and secondary subsystems.	
Are there any special requirements for this PPRC connection?	

a. See the caution statement in the PPRC configuration guide on page page 99 regarding channel extenders.

Open Systems PPRC Survey

Notes:

1. This survey is for a V2X/V2X2 operating completely in the open systems environment. For a V2X/V2X2 operating in conjunction with a mainframe, see “Mainframe PPRC Survey” on page 29.
2. See your Sun Microsystems Account Executive for a complete and up to date list of open systems PPRC proxy combinations supported by the V2X/V2X2.
3. To avoid confusion for the installing CSE, add additional sheet of notes or drawings as required.

This pre-installation survey must be complete by the customer, Sun Microsystems marketing, and the site-responsible or installing CSE.

Table 4 Open Systems PPRC Survey Information

Question	***Table 5 Additional Information***
Host Information	
Which VCUs are to be used?	
Which FDIDs are to be used?	
Is this an Open Systems Power PPRC connection or an Open Systems WAN connection?	Power only WAN
Which FDID(s) are used as the Status Bridge Device(s)? (WAN only)	
Which VOLID(s) are used as the Data Bridge Device(s)?	
Cable Connections	
Indicate by ICE2 card slot and port how the PPRC cables are to be connected between the primary and secondary disk storage systems. Attach a separate page or drawing if necessary.	
Have the cables required for PPRC been ordered?	
In the event that the PPRC cables are not installed by the Sun Microsystems CSE, has the installer been notified?	

Table 4 Open Systems PPRC Survey Information (Continued)

Question	*Table 5 Additional Information*
PPRC Operation	
Indicate the subsystem ID/names for the primary and secondary subsystems.	
Indicate the VCUs involved on the primary and secondary subsystems.	
Indicate the FDIDs involved on the primary and secondary subsystems.	
Are there any special requirements for this PPRC connection?	

Physical Capacity Survey

Number of drive trays installed:_____

Note: All drives within an V2X/V2X2 tray must be the same size. See “Mixed Capacity Planning” on page 63 for mixed drive tray sizes.

Remote Maintenance Survey

Will this site allow remote maintenance (circle one)? YES NO

Note: If NO, this survey should not be filled out.

This pre-installation survey must be complete by the customer, Sun Microsystems marketing, and the site-responsible or installing service representative.

Table 6 Remote Maintenance Survey Information

Question	Additional Information
Is remote maintenance allowed at this account?	
Specify phone number for Data Director (if used)	
Specify the IP Address, Subnet (if needed) and Gateway (if needed) for the Service Delivery Platform (if used) ***Caution: The SVA should never be connected directly to an Ethernet. The connections on the tailgate of the SVA are for the SDP connection only.***	

Functional Microcode Survey

The installing CSE must download the functional microcode for the V2Xf SVA from the NPDC Web site prior to installing the V2Xf SVA. At this writing functional microcode took more than ten high density (1.44 MB) floppies.

Table 7 Functional Microcode Survey Information

Question	Additional Information
Functional Microcode downloaded?	
Special floppies available as required (VIP, other PSPAM options, or Maintenance on)?	

Installation Checklist

4

The installation checklist should be completed at the time of installation. Verify that all issues listed in the following table have been addressed and resolved. Circle **Yes** or **No**, as appropriate, for each item. For unresolved issues, assign a required action with a due date to the appropriate member(s) of the team.

Table 8 Shared Virtual Array Installation Checklist

Item Description	Yes/No	Action Required, Due Date, Responsible Person
Software Installation		
SVAA/SnapShot software installed	Yes No	
Hardware Installation		
Subsystem functional configuration completed	Yes No	
Remote service items installed	Yes No	
Remote servicing tested	Yes No	
Subsystem Testing		
Production partition configured	Yes No	
MPST runs successfully	Yes No	
ServiceTek Plus configured	Yes No	
ServiceTek Plus connect to subsystem OK	Yes No	
ServiceTek Plus test completed	Yes No	
Event log data download to CSC OK	Yes No	
Subsystem diagnostic from CSC OK	Yes No	
Customer Testing		
Customer data migrated	Yes No	
Installation verification program executed	Yes No	
SVA Tools		
SVAAT installed	Yes No	
ExPR installed	Yes No	

Post-Installation Worksheet

5

The service representative is responsible for completing the worksheet contained in the table on the following page. This worksheet can be used to complete the CSDC report; however, **this worksheet does not replace the CSDC reporting requirement**.

If you know how the delivery and installation process could be improved, or if any events occurred during the installation process that you would like to call to the attention of the corporate system assurance team, complete and mail (or fax) this worksheet to:

Sun Microsystems

Worldwide Equipment Movement and Control Department

One StorageTek Drive

Louisville, CO 80028-4350

Fax telephone number

(303) 673-6123

A “Yes” answer to all questions indicates a successful delivery and installation. For any “No” answers, complete the follow-up questions

and route the completed worksheet to the address or fax telephone number listed above.

Table 9 Post-Installation Review Worksheet (Sheet 1 of 3)

Yes	No	Questions
		During delivery, did the shipment arrive when scheduled? If no, when *did* it arrive? (How many days/hours early/late? If you know why the shipment did not arrive as scheduled, explain here.)
		Did the delivery go smoothly? If no, what problems occurred? _____ Wrong size truck _____ Dock height _____ Elevator _____ Power lift gate _____ Stairs _____ Other: _____ Comments:

Table 9 Post-Installation Review Worksheet (Sheet 2 of 3)

Yes	No	Questions
		Were all items received in good condition? If no, what damage was found?
		Was the unit hardware shipment complete?
		Were all line items on the packing list accounted for?
		Did the packing list match the order? If no, explain.
		Was the unit software shipment complete?
		Were all line items on the packing list accounted for?
		Was the ISP shipment complete?
		Were all line items on the packing list accounted for?
		Was the cable shipment complete?
		Were all line items on the packing list accounted for?
		Was the hardware installation error-free? If no, what problems were encountered?
		Was the software installation error-free? If no, what problems were encountered?
		Was the subsystem diagnostic testing error-free? If no, what problems were encountered?

Table 9 Post-Installation Review Worksheet (Sheet 3 of 3)

Yes	No	Questions
		Was the subsystem configuration process error-free? If no, what problems were encountered?
		Was all required documentation available throughout the sales and installation process? If no, what was needed, and when?
		Were all Sun Microsystems and customer personnel adequately trained to support the sales and installation process? If no, what was needed, and when?
		Was shipping and installation planning complete and correct? If no, what would you add to or remove from the procedures to make it complete and correct?

System Assurance Worksheets

A

This section contains a series of worksheets that, when completed, provide the service representative with a precise configuration guide. Complete the worksheets prior to the installation date.

Worksheet Instructions:

Fill in the blanks and/or circle the appropriate selections to document the site where the subsystem is to be installed. When the hardware configuration has been documented and verified, have the appropriate system assurance team members sign in the blanks provided.

- Please print clearly.
- Slash zeros to distinguish them from the letter ‘O’.
- Complete, with the customer’s help, the checklists used in the installation process. This provides joint ownership of the information and helps to ensure a successful installation.

Hardware Configuration Worksheet

The following worksheet provides a place to record the V2X/V2X2 hardware configuration information.

Table 10 Hardware Configuration

SVA Controller	
Cache Size (see the following note)	
Channel Extender Attach (McData not supported)	YES / NO
Number of Channel Extenders	

Note: Increased Virtual Capacity (IVC) is supported on V2X2 with B01.11.14.00 (or higher) microcode upgrade. A minimum of 48GB of effective cache is required to take advantage of the increased virtual capacity (IVC). In addition, while not required, an upgrade to IPX5 processor cards (feature IPX5) is highly recommended.

Sun Microsystems SE (date)

Customer Representative (date)

Software Configuration Worksheet

Caution: Host software must be supported by the vendor. IBM is the vendor for z/VM and z/OS and OS/390. Please require and verify the customer is on host software supported by IBM prior to product installation.

The following worksheet provides a place to record software configuration information for all operating systems connected to the SVA. Note if and when required maintenance applies.

Table 11 Software Configuration

Mainframe:	**Processor 1**	**Processor 2**	**Processor 3**	**Processor 4**
Operating System				
SAS Release				
SAS/Graph Release				
SVAA Snapshot Release				
PPRC Support[a]				
Backup/Recovery Software				
Archival/Migration Software				
Performance Monitoring Software				
Other Storage Management Software				
Other issues not covered above:				

a. The customer needs, and needs to be familiar with, the IBM books Planning For IBM Remote Copy (SG24-2595-XX) and the Remote Copy Administrator's Guide and Reference (SC35-0169-XX) if PPRC is to be installed.

_____

Sun Microsystems SE (date)

_____

Customer Representative (date)

Customer Configurable Items Worksheet

The following table defines the customer-configurable items.

Table 12 Customer Configurable Items

Customer Configurable Items	
Customer Access Password	
CSE Password	
Hardware Support (RRC) Phone Number	

Sun Microsystems SE (date)

Customer Representative (date)

Subsystem Configuration Worksheet

The following table defines the subsystem configuration.

Table 13 Subsystem Configuration

SVA Subsystem Configuration	
Site Name	
Subsystem Name	
SSIDs[a]	
Site Location Number (Local operator panel only)	
Model	Entered by Subsystem
Serial Number (S/N)	Entered by Subsystem
Channel Configuration Completed? Processors? Subsystem?	Yes/No Yes/No Yes/No
Hardware Configuration Definition (HCD) Completed?	Yes/No

a. SSIDs must be *unique* hexadecimal numbers (0001 – FFFF) for each subsystem. Assign sixteen SSIDs to each SVA. **Note**: leading zeros are not used, and a SSID of zero is not valid.

Sun Microsystems SE (date)

Customer Representative (date)

I/O Interface Worksheets - ESCON/FICON Bridge

Channels A - H

Table 14 ESCON I/O Interface - Channels A - H

Channel ID	Interface Card	Channel Name	CHPID/ Director	ESCON Port #	EMIF Y/N	Cable Length	FICON Bridge Support
A							
B							
C							
D							
E							
F							
G							
H							

Note: FICON bridge and FCV mainframe host channels require processor, director, and operating system support. Native FICON support is currently unavailable. ESCON connectivity to the V2Xf SVA is required, and the FICON bridge is optional.

Channels I - P

Table 15 ESCON Interface - Channels I - P

Channel ID	Interface Card	Channel Name	CHPID/ Director	ESCON Port #	EMIF Y/N	Cable Length	FICON Bridge Support
I							
J							
K							
L							
M							
N							
O							
P							

I/O Interface Worksheets - Fibre Channel Attach

Note: Open systems only.

Channels A - H

Table 16 Fibre Channel I/O Interface - Channels A - H

Channel ID	ICF Card #	Channel Name	Requested Loop ID #[a]	Domain Number	Cable Length
A					
B					
C					
D					
E					
F					
G					
H					

a. The HBA normally uses address 0. The SVA would use 1 unless there are other devices on the fibre channel, in which case the customer has to assign a loop Id number. If there is a hub involved, there are definitely other devices on this fibre channel.

Channels I - P

Table 17 Fibre Channel I/O Interface - Channels I - P

Channel ID	ICF Card #	Channel Name	Requested Loop ID #	Domain Number	Cable Length
I					
J					
K					
L					
M					
N					
O					
P					

Functional Device Configuration Worksheets

The Functional Device Configuration Worksheets on the following few pages define the subsystem's functional device configuration. Fill in the blanks for each defined functional device. Designate at least one privileged ECAM device. When completed, have the appropriate system assurance team members sign in the following blank lines.

Note: When consecutive devices are going to be configured identically, enter the configuration information for the *group of devices*.

Enter the FDID from the following ranges:

• 000 - 0FF	400-4FF	800-8FF	C00-CFF
• 100 - 1FF	500-5FF	900-9FF	D00-DFF
• 200 - 2FF	600-6FF	A00-AFF	E00-EFF
• 300 - 3FF	700-7FF	B00-BFF	F00-FFF

Sun Microsystems SE (date)

Customer Representative (date)

The forms on the following pages may be replicated for 16 VCUs, 0-F.

On the underscore preceding the device address, enter 0 - F. E.g.: _00 - _FF *may* become 100 - 1FF.

For FlexVolumes, indicate the number of cyclinders in the Type column under the device type. E.g.:

3390-3
2000

Devices _00 - _3F

Table 18 Functional Device Configurations for Devices_00 - _3F

FDID	Type[a]	Enable Y/N	FDID	Type[1]	Enable Y/N	FDID	Type[1]	Enable Y/N
0			16			2C		
1			17			2D		
2			18			2E		
3			19			2F		
4			1A			30		
5			1B			31		
6			1C			32		
7			1D			33		
8			1E			34		
9			1F			35		
A			20			36		
B			21			37		
C			22			38		
D			23			39		
E			24			3A		
F			25			3B		
10			26			3C		
11			27			3D		
12			28			3E		
13			29			3F		
14			2A					
15			2B					

a. 1 = 3380J, 2 = 3380K, 3 = 3380KE, 4 = 33901, 5 = 33902, 6 = 33903, 7 = 33909

Devices _40 - _7F

Table 19 Functional Device Configurations for Devices_40 - _7F

FDID	Type[a]	Enable Y/N	FDID	Type[1]	Enable Y/N	FDID	Type[1]	Enable Y/N
40			56			6C		
41			57			6D		
42			58			6E		
43			59			6F		
44			5A			70		
45			5B			71		
46			5C			72		
47			5D			73		
48			5E			74		
49			5F			75		
4A			60			76		
4B			61			77		
4C			62			78		
4D			63			79		
4E			64			7A		
4F			65			7B		
50			66			7C		
51			67			7D		
52			68			7E		
53			69			7F		
54			6A					
55			6B					

a. 1 = 3380J, 2 = 3380K, 3 = 3380KE, 4 = 33901, 5 = 33902, 6 = 33903, 7 = 33909

Devices _80 - _BF

Table 20 Functional Device Configurations for Devices_80 - _BF

FDID	Type[a]	Enable Y/N	FDID	Type[1]	Enable Y/N	FDID	Type[1]	Enable Y/N
80			96			6A		
81			97			AD		
82			98			AE		
83			99			AF		
84			9A			B0		
85			9B			B1		
86			9C			B2		
87			9D			B3		
88			9E			B4		
89			9F			B5		
8A			A0			B6		
8B			A1			B7		
8C			A2			B8		
8D			A3			B9		
8E			A4			BA		
8F			A5			BB		
90			A6			BC		
91			A7			BD		
92			A8			BE		
93			A9			BF		
94			AA					
95			AB					

a. 1 = 3380J, 2 = 3380K, 3 = 3380KE, 4 = 33901, 5 = 33902, 6 = 33903, 7 = 33909

Devices _C0 - _FF

Table 21 Functional Device Configurations for Devices_C0 - _FF

FDID	Type[a]	Enable Y/N	FDID	Type[1]	Enable Y/N	FDID	Type[1]	Enable Y/N
C0			D6			EC		
C1			D7			ED		
C2			D8			EE		
C3			D9			EF		
C4			DA			F0		
C5			DB			F1		
C6			DC			F2		
C7			DD			F3		
C8			DE			F4		
C9			DF			F5		
CA			E0			F6		
CB			E1			F7		
CC			E2			F8		
CD			E3			F9		
CE			E4			FA		
CF			E5			FB		
D0			E6			FC		
D1			E7			FD		
D2			E8			FE		
D3			E9			FF		
D4			EA					
D5			EB					

a. 1 = 3380J, 2 = 3380K, 3 = 3380KE, 4 = 33901, 5 = 33902, 6 = 33903, 7 = 33909

ICE/ICF Card Configurations

B

Table 22 ICE2, ICE3 and ICF Normal Locations

Feature Numbers	# of ICE3 Cards	# of ICE2 Cards	# of ICF Cards	Cluster 0				Cluster 1			
				Slot 00	Slot 01	Slot 02	Slot 03	Slot 10	Slot 11	Slot 12	Slot 13
ICE3 Cards Only											
	2	0	0	ICE3				ICE3			
	4	0	0	ICE3	ICE3			ICE3	ICE3		
	6	0	0	ICE3	ICE3	ICE3		ICE3	ICE3	ICE3	
	8	0	0	ICE3	ICE3	ICE3	ICE3	ICE3	ICE3	ICE3	ICE3
ICE2 and ICE3 Cards											
	2	2	0	ICE3	ICE2			ICE3	ICE2		
	4	2	0	ICE3	ICE2	ICE3		ICE3	ICE2	ICE3	
	6	2	0	ICE3	ICE2	ICE3	ICE3	ICE3	ICE2	ICE3	ICE3
	4	4	0	ICE3	ICE2	ICE3	ICE2	ICE3	ICE2	ICE3	ICE2
ICF Cards Only											
	0	0	2	ICF				ICF			
	0	0	4	ICF	ICF			ICF	ICF		
	0	0	6	ICF	ICF	ICF		ICF	ICF	ICF	
	0	0	8	ICF	ICF	ICF	ICF	ICF	ICF	ICF	ICF

Table 22 ICE2, ICE3 and ICF Normal Locations (Continued)

Feature Numbers	# of ICE3 Cards	# of ICE2 Cards	# of ICF Cards	Cluster 0				Cluster 1			
				Slot 00	Slot 01	Slot 02	Slot 03	Slot 10	Slot 11	Slot 12	Slot 13
ICE3 and ICF Cards											
	2	0	2	ICE3	ICF			ICE3	ICF		
	2	0	3	ICE3	ICF	ICF		ICE3	ICF		
	3	0	2	ICE3	ICF	ICE3		ICE3	ICF		
	3	0	3	ICE3	ICF	ICE3	ICF	ICE3	ICF		
	2	0	4	ICE3	ICF	ICF		ICE3	ICF	ICF	
	4	0	2	ICE3	ICF	ICE3		ICE3	ICF	ICE3	
	3	0	4	ICE3	ICF	ICE3	ICF	ICE3	ICF	ICF	
	4	0	3	ICE3	ICF	ICE3	ICF	ICE3	ICF	ICE3	
	5	0	2	ICE3	ICE3	ICE3	ICF	ICE3	ICE3	ICF	
	2	0	5	ICE3	ICF	ICF	ICF	ICE3	ICF	ICF	
	4	0	4	ICE3	ICF	ICE3	ICF	ICE3	ICF	ICE3	ICF
	5	0	3	ICE3	ICE3	ICE3	ICF	ICE3	ICF	ICE3	ICF
	3	0	5	ICE3	ICF	ICE3	ICF	ICE3	ICF	ICF	ICF
	6	0	2	ICE3	ICE3	ICE3	ICF	ICE3	ICE3	ICE3	ICF
	2	0	6	ICE3	ICF	ICF	ICF	ICE3	ICF	ICF	ICF
ICE2 and ICF Cards											
	0	2	2	ICE2	ICF			ICE2	ICF		
	0	2	3	ICE2	ICF	ICF		ICE2	ICF		
	0	2	4	ICE2	ICF	ICF		ICE2	ICF	ICF	
	0	2	5	ICE2	ICF	ICF	ICF	ICE2	ICF	ICF	
	0	2	6	ICE2	ICF	ICF	ICF	ICE2	ICF	ICF	ICF
	0	4	4	ICE2	ICF	ICE2	ICF	ICE2	ICF	ICE2	ICF

Table 22 ICE2, ICE3 and ICF Normal Locations (Continued)

Feature Numbers	# of ICE3 Cards	# of ICE2 Cards	# of ICF Cards	Cluster 0				Cluster 1			
				Slot 00	Slot 01	Slot 02	Slot 03	Slot 10	Slot 11	Slot 12	Slot 13
ICE3, ICE2, and ICF Cards											
	2	2	2	ICE3	ICF	ICE2		ICE3	ICF	ICE2	
	2	2	3	ICE3	ICF	ICE2	ICF	ICE3	ICF	ICE2	
	3	2	2	ICE3	ICE2	ICE3	ICF	ICE3	ICE2	ICF	
	2	2	3	ICE3	ICF	ICE2	ICF	ICE3	ICF	ICE2	
	3	2	2	ICE3	ICE2	ICE3	ICF	ICE3	ICF	ICE2	
	2	2	4	ICE3	ICF	ICE2	ICF	ICE3	ICF	ICE2	ICF
	3	2	3	ICE3	ICE2	ICE3	ICF	ICE3	ICF	ICE2	ICF
	4	2	2	ICE3	ICE2	ICE3	ICF	ICE3	ICE2	ICE3	ICF
	2	4	2	ICE3	ICE2	ICE2	ICF	ICE3	ICE2	ICE2	ICF

Note: ICE2 cards are required for PPRC connections. ICE3 cards are required for standard ICE2CON connections.

Site Electrical Wiring

C

This survey should be completed by the site electrician. You may wish to obtain comments on any “No” item checked.

Table 23 Site Electrical Survey

Yes	No	Objective
		Neutral properly connected to the distribution transformer and distribution transformer properly grounded to the service entrance ground via a full-sized insulated conductor (not just the small strap furnished with the transformer).
		Neutral and ground wiring insulated and full-sized, as above (same or larger size as phase conductors).
		Verify that all connections are tight by checking tightness and visually inspecting for discoloration.
		With an ohmmeter, check and verify that all isolated ground terminals are terminated to the same point. Remove the incoming ground connection (with power off) and verify that the outlets are not grounded with the incoming ground removed. Remove the incoming neutral. Verify that there are no neutral-to-ground shorts or bonding on the load side and that there are no neutral-to-ground reversals.
		All portions of mainframe, related peripherals, and nearby terminals (including CRTs, consoles, printers, etc.) powered via protected power.
		All voltages at proper levels, as required. Adjust distribution transformers if voltages are out of tolerance.
		All wiring at least the minimum size required by the NEC and preferably one size larger per 30.5 meters (100 feet) of run. **Note:** Always review and adhere to local codes and regulations.
		Each circuit has a full-size neutral and full-size ground conductor not shared with any other circuit.
		Ground NOT shared or common with neutral except at service entrance or main ground point; neutral NOT bonded at panel.
		Consistent grounding (preferably single-point reference) used on all of the above. (Not random conduit.)
		System ground not bonded at circuit breaker panel.

Table 23 Site Electrical Survey

Yes	No	Objective
		Install all isolated ground (orange) outlets.
		Above wiring loaded to less than or equal to 80% as shown by ammeter while system is operating with maximum activity (steady state load only). Distribution transformers not overloaded.
		Verify all connections are tight and not discolored.

Physical Planning Checklist

D

The following table provides a worksheet that aids in planning and installing the subsystem, and helps to ensure that all minimum requirements for installation are met.

Table 24 Physical Planning Checklist

Yes	No	Objective	Comments
		Is adequate space available for the V2X/V2X2?	
		Have all required cables been identified by type and length?	
		Are site environmental conditions within tolerance.	
		Are all floors at the installation site, and along the path to that site, of adequate structural integrity to support the subsystem?	
		Are site electrical power and grounding of sufficient quality to provide reliable power that is free from interference or disturbance?	
		Is site power within specification for voltage and frequency?	
		Is the site properly equipped to meet the subsystem heat dissipation requirements?	
		Is the site power distribution system capable of handling the additional load provided by the V2X/V2X2?	
		Are the proper connectors available to connect site power to the V2X/ V2X2?	

Table 24 Physical Planning Checklist (Continued)

Yes	No	Objective	Comments
		Have all issues of redundant power sources been addressed and resolved?	
		Are the feeder wires to the branch circuit distribution panels large enough to handle the load of the equipment?	
		Do branch circuit panels meet the minimum requirements for breaker rating and code conformance?	
		Is each circuit breaker labeled to indicate which circuit it is protecting?	
		Is branch circuit grounding properly connected?	
		Is lightning protection properly installed on the site power source?	
		Is a storage area being provided?	
		Have all codes and regulations for safety and fire-prevention been reviewed as they apply to this system installation?	

Mixed Capacity Planning

E

The SVA supports the use of different drive sizes in the same frame. However, all trays must be fully populated and all drives within a drive tray must be the same size. All drive sizes are shown in giga-bytes.

Table 25 V2X/V2X2 Mixed Drive Size Variations Supported

Drive Tray #1[a] (bottom)	Drive Tray #2	Drive Tray #3	Drive Tray #4 (top)
36	36	36	36
36	36	36	
36	36		
36	36	73	73
73	73	73	73
73	73	73	
73	73		
73	73		

a. All drive trays contain 16 drives.

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Argentina: 5411-4317-5636 • **Australia:** 1-800-550-786 • **Austria:** 43-1-601-26-0 • **Balkans:** 301-6188-111 • **Belgium:** 32 2-704 89 83 • **Brazil:** 55-11-51872100 • **Brunei:** 65-216-8333 • **Canada:** 1-800-422-8020 **(General);** 416-964-2001 **(Learning Management System Sales,Toronto)** • **Chile:** 562-372-4500 • **Colombia:** 571-629-2323 **Czech Republic:** 420 2 33009311 • **Denmark:** 45 4556 5040 • **Egypt:** 00 202 570 9442 • **Finland:** 358-9-525-561 • **France:** 33-1-41-33-17-17 • **Germany:** 49-89-460-08-2788 • **Greece:** 30-01-6188101 • **Hong Kong:** 852-2877-7077 • **Hungary:** 361-202-4415 • **India:** 91-80-229-8989 • **Indonesia:** 65-216-8333 • **Ireland:** 353-1-668-4377 **Israel:** 972-9-9710500 • **Italy:** 39-02-9259511 • **Japan:** 81-3-5779-1820 • **Korea:** 82-2-3453-6602 • **Malaysia:** 603-2116-1887 • **Middle East:** 00 9714 3366333 • **Mexico:** 525-261-0344 • **Netherlands:** 31-33-4515200 • **New Zealand:** 0800-786-338 • **North West Africa:** 00 9714 3366333 • **Norway: From Norway:** 47-22023950, **To Norway:** 47-23369650 • **Pakistan:** 00-9714-3366333 • **People's Republic of China:** 8610-6803-5588 • **Philippines:** 632-885-7867 • **Poland:** 48-22-8747848 • **Portugal:** 351-21-413-4000 • **Russia:** 7-095-935-8411 • **Saudi Arabia:** 00 9714 3366333 • **Singapore:** 65-216-8300 • **South Africa:** 27-11-256-6300 • **Spain:** 34-902-210-412 • **Sri Lanka:** 65-2168333 • **Sweden:** 46-8-631 22 00 • **Switzerland:** 41-1-908-90-50 **(German)** 41-22-999-0444 **(French)** • **Taiwan:** 886-2-25185735 • **Thailand:** 662-344-6855 • **Turkey:** 90 212 335 22 00 • **United Kingdom:** 44-1276-416-520 • **United States:** 1-800-422-8020 • **Venezuela:** 582-905-3800 • **Vietnam:** 65-216-8333 • **Worldwide Headquarters:** 1-650-960-1300