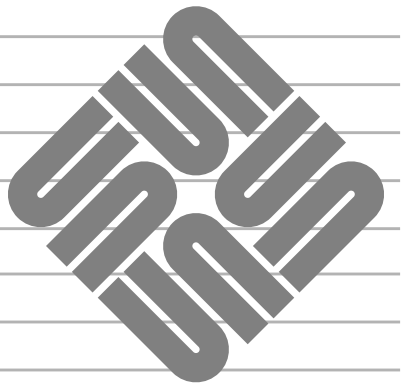
SPARCstation 1+ Installation Guide



Part No: 800-5520-10
Revision A (FCS) of 2 November 1990

System Classes

Please read all of the following information to determine the class of system you have and the environment in which it should be installed and operated.

In the United States, the Federal Communications Commission (FCC) governs the levels of electromagnetic emissions from a digital device. Electromagnetic emissions can interfere with radio and television transmission. To reduce the risk of harmful interference the FCC has established requirements for manufacturers of digital devices.

A manufacturer of a digital device must test and label the product to inform an end-user of the maximum emission level from the product when used in accordance with its instructions. The FCC has established two classes of levels, Class A and Class B. A system which meets the FCC Class A requirements may be marketed for use in an industrial or a commercial area. A system which meets the more stringent FCC Class B requirements may be marketed for use in a residential area in addition to an industrial or a commercial area.

An end-user in the United States is responsible for ensuring that his system is suitable for its environment as stated in the above paragraph and bears the financial responsibility for correcting harmful interference.

For a system to be considered an FCC Class B system, all peripherals of the system (workstation, monitor, keyboard, mouse, external disk and tape drives, modem, printer, etc.) must be labeled as such. If any peripheral or the workstation itself is labeled as FCC Class A, the entire system becomes FCC Class A and should not be used in a residential area.

To determine if your system is FCC Class A or FCC Class B, you must check the marking on each peripheral and on your workstation. Each piece of equipment should have an FCC statement marked on the unit. The FCC statement should identify the equipment as Class A or Class B. If there is no indication of the Class in the FCC statement, consider it to be Class A unless there is a mark which states "FCC ID:" followed by alpha-numeric characters. If it has this FCC ID mark, it is Class B. If any of the peripherals in your system is not marked with an FCC statement, the equipment should not be used in a home because of the greater likelihood of interference to radio and television reception. Contact the manufacturer of the peripheral if you have any questions.

If an SBus board is added to the workstation by the end-user, the FCC Class of the machine could be affected. An SBus board should be marked to indicate the FCC Class of the board. If an FCC Class A SBus board is added to an FCC Class B workstation, the system becomes FCC Class A.

Modifications

If SIMMs or internal drives are added to the workstation by the end-user, the FCC Class of the machine could be affected. All SIMMs and internal drives offered by Sun for use in a Sun Workstation have been tested and will not change the FCC Class labeled on the workstation if installed per the instructions in the Sun Installation Guide. If memory or drives are purchased from sources other than Sun, the FCC Class of the workstation may be adversely affected. Modifications not approved by Sun may void the authority granted by the FCC to operate the equipment.

Shielded Cables

Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

One of the following notices applies to your system. Please reference the appropriate statement.

FCC Class A Notice

If your system is FCC Class A, the following applies:

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 own expense.

FCC Class B Notice

If your system is FCC Class B, the following applies:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ❑ Reorient or relocate the receiving antenna.
- ❑ Increase the separation between the equipment and receiver.
- ❑ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ❑ Consult the dealer or an experienced radio/TV technician for help.

Canada (English Text)

Communications Canada (i.e. the Department of Communications) regulates digital devices similar to the FCC in the United States. Every product should be labeled or provided with documentation which states the class of the product. The DOC defines the environment in which a digital device should be used as the FCC does, DOC Class A is for an industrial or a commercial area and DOC Class B is for a residential, an industrial, or a commercial area.

As it is with the FCC, every peripheral of a system must meet DOC Class B levels in order for a system to be considered DOC Class B. If any peripheral or the workstation is DOC Class A, the system is DOC Class A and should not be used in a residential area.

An end-user in Canada is responsible for ensuring that his system is suitable for its environment as stated in the above paragraph.

To determine if your system is DOC Class A or DOC Class B, you must check the marking on each peripheral and on your workstation. Each piece of equipment should have a DOC marking on the unit or a notice included with the equipment stating the DOC Class. If any peripheral or workstation does not have any indication of the DOC Class, consult the manufacturer of the product.

If an SBus board is added to the workstation by the end-user, the DOC Class of the machine could be affected. An SBus board should be marked to indicate the DOC Class of the board or a notice stating the DOC Class should be included. If a DOC Class A SBus board is added to a DOC Class B workstation, the system becomes DOC Class A.

If SIMMs or internal drives are added to the workstation, the DOC Class of the machine could be affected. All SIMMs and internal drives offered by Sun for use in a Sun Workstation have been tested and will not change the DOC Class labeled on the workstation if installed per the instructions in the Sun Installation Guide. If memory or drives are purchased from sources other than Sun, the DOC Class of the workstation may be adversely affected.

Please reference the following notice which applies to your system.

DOC Class A Notice

If your system is DOC Class A, the following applies:

This digital apparatus does not exceed Class A limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

DOC Class B Notice

If your system is DOC Class B, the following applies:

This digital apparatus does not exceed Class B limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Canada (Texte français)

Communications Canada (c'est-à-dire le DOC, Ministère des Communications) règlemente les dispositifs numériques de façon analogue aux presciptions de la FCC (Commission fédérale des communications) aux Etats Unis. Chaque produit doit être étiqueté ou livré avec une documentation spécifiant sa classe. Le DOC définit, comme le fait la FCC, l'environnement dans lequel un dispositif numérique doit être utilisé. La classe A, spécifiée par le DOC, s'applique aux zones industrielles ou commerciales, alors que la classe B s'applique aux zones résidentielles, industrielles ou commerciales.

Comme il en est le cas avec la FCC, chaque périphérique d'un système doit répondre aux spécifications de la classe B définie par le DOC afin qu'un système puisse être considéré comme faisant partie de cette classe. Si un périphérique ou un poste de travail quelconque appartient à la classe A, le système appartient alors à la classe A définie par le DOC et par conséquent ne doit pas être mis en service dans une zone résidentielle.

Au Canada il revient à l'utilisateur de s'assurer que son système est approprié pour l'environnement auquel il appartient, tel que spécifié dans le paragraphe ci-dessus.

Pour déterminer si votre système appartient à la classe A ou B définie par le DOC, vous devez vérifier le marquage figurant sur chaque périphérique ainsi que sur votre poste de travail. Toute pièce de matériel doit porter un marquage du DOC ou être accompagnée d'un document spécifiant la classe DOC à laquelle elle appartient. Si aucune référence à la classe définie par le DOC n'est présente sur un périphérique ou un poste de travail, contactez le fabricant du produit.

Si l'utilisateur ajoute une carte de type SBus au poste de travail, cela risque d'affecter la classe définie par le DOC. Une carte de type SBus doit être marquée pour indiquer à quelle classe elle appartient, ou un document spécifiant sa classe doit l'accompagner. Si une carte de type SBus de la classe A du DOC est ajoutée à un poste de travail de la classe B, le système appartiendra alors à la classe A, telle qu'elle est définie par le DOC.

Si des unités internes ou des barrettes de mémoire SIMM sont ajoutées à un poste de travail, la classe du DOC de

la machine risque d'être affectée. Toutes les unités internes et barrettes de mémoire SIMM offertes par Sun et destinées à être utilisées sur un poste de travail Sun ont été soumises à des essais. Elles ne changeront pas la classe du DOC figurant sur le poste de travail si l'installation est conforme aux instructions spécifiées dans le Guide d'installation Sun. Si l'utilisateur se procure des unités et des barrettes de mémoire ailleurs que chez Sun, la classe du poste de travail définie par le DOC risque d'être défavorablement affectée.

Veuillez consulter celui des avis suivants qui s'applique à votre système:

Avis concernant les systèmes appartenant à la classe A du DOC:

Si votre système appartient à la classe A du DOC, ce qui suit s'y applique:

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Avis concernant les systèmes appartenant à la classe B du DOC:

Si votre système appartient à la classe B du DOC, ce qui suit s'y applique:

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Bundesrepublik Deutschland -- Federal Republic of Germany

Hiermit wird bescheinigt, dass der SPARCstation 1+, Model 147B in Übereinstimmung mit den Bestimmungen der Verfügung 1046/1984 funk-entstörst ist.

Der Deutschen Bundespost wurde das inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Sun Microsystems, Inc.
2550 Garcia Avenue
Mountain View, California 94043-1100
U.S.A.

Nippon – Japan

第一種VCCIの表記があるワークステーションは、第一種情報装置であり、下記が該当します。

第一種VCCI基準に関するお知らせ

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Contents

About This Book

The *SPARCstation™ 1+ Installation Guide* is the first book in the SPARCstation 1+ Owner's Set. It guides you through unpacking the shipping cartons, to connecting major system components, and powering up. It also includes a brief description of the software that comes with the SPARCstation 1+.

SPARCstation 1+ Installation Guide provides illustrated instructions for adding hardware to your system, such as printers, terminals, and modems.

The appendixes are devoted to the topics of installing SBus boards, monitors and of identifying different types of cables for serial devices.

The instructions and examples in this manual reflect SunOS™ release 4.1.1. If you are using a different version of SunOS, some of the commands may not appear or operate exactly as described in this manual.

Who Should Read This Book

The *SPARCstation 1+ Installation Guide* is for those of you who are new to using Sun Workstations. You should be somewhat familiar with working on computers, but by no means do you need to be a computer expert to use this book.

How to Use This Book

In this book each chapter and appendix begins with an introduction that tells you what the chapter or appendix contains. By reading the introduction you can quickly determine whether a particular chapter or appendix relates to what you want to do.

It is a good idea to skim through a procedure (so you will know what is coming) before you begin to actually do each step.

No two readers will use this book in exactly the same way. Some readers will prefer reading or skimming the chapters and appendixes sequentially to become thoroughly familiar with the system components.

Other readers will want to read the first two chapters and then skip to whatever chapters are of particular interest, or perhaps skip to the other two books in the SPARCstation 1+ Owner's Set:

- *Sun System User's Guide*
- *Sun System & Network Manager's Guide*

All three books in the Owner's Set contain information to help you get started using your SPARCstation 1+.

Typographic Conventions

This book uses a number of typographic conventions:

- *This font* is used for titles of books or to give special emphasis. For example:

  When you press the switch, the power goes *on*.

- `This font` indicates messages or prompts from the system that appear on your screen. For example:

  `Configuration successfully completed`.

  It is also used to represent the lowercase SunOS commands, such as:

  Use the `stty` command.

In addition, it is used within text instructions to indicate characters or words that you type. For example:

At the prompt, type `stty`.

- **`This font`** is used in screen examples to show what you should type. For example:

```
nevada% passwd
```

- A rectangular box around text indicates a key that you press. For example:

  Press the [Return] key.

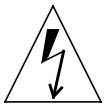
  When you see two key names within one rectangular box, press and hold the first key, then type the second character. For example:

  To press [L1-A], press and hold [L1], and then type a lower case a.

Safety Precautions

The following international symbols appear in this book when you must perform procedures requiring proximity to electrical current.

Caution: If the instructions are not heeded, there is a risk of damage to the equipment.



Warning: Hazardous voltages are present. If the instructions are not heeded, there is a risk of electrical shock and danger to personal health.

Complete information on safety which must be adhered to is covered in "Safety Agency Compliance." Be sure to read the entire preface before installing and operating this equipment.

The information in the preface is also translated into French, German, and Spanish respectively.

Safety Agency Compliance

This appendix provides safety precautions to follow when you are installing a Sun Microsystems, Inc., product.

Safety Precautions

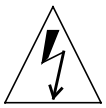
For your protection, observe the following safety precautions when setting up your equipment:

- ❑ Follow all warnings and instructions marked on the equipment.
- ❑ Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- ❑ Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that can cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols mean:

Caution: You risk damaging your equipment if you do not heed the instructions.



Warning: Hazardous voltages are present. To lessen the risk of electrical shock and danger to personal health, follow the instructions carefully.

On: The principal On / Off switch is in the *On* position.

Off: The principal On / Off switch is in the *Off* position.

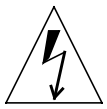
Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems, Inc. is not responsible for regulatory compliance of a modified Sun product.

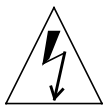
Placement of a Sun Product

Caution: To ensure reliable operation of your Sun product and to protect it from overheating, openings in the equipment must not be blocked or covered. A Sun product should never be placed near a radiator or heat register.

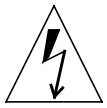
Power Cord Connection



Warning: Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.



Warning: Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.



Warning: Your Sun product is shipped with a grounding type (3-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

Ergonomics

Your Sun product is designed to conform with the West German ergonomics standard, ZH1/618. An anti-glare screen (such as an OCLI filter) is required on the monitor to comply with this standard. Anti-glare filters are standard on color monitors. For text processing, a positive mode display (black characters on a white background) is recommended.

To comply with the layout requirements of ZH1/618, a German keyboard is required

Lithium Battery

Caution: On Sun CPU boards, a lithium battery is molded into the Mostek real-time clock, No. MK48T02BU or No. MK48T02BU-xx.

Batteries are not customer replaceable parts. They may explode if mistreated. Do not dispose of the battery in fire. Do not disassemble it or attempt to recharge it.

System Unit Cover

You must open the Sun computer system unit to add boards, memory, and internal storage devices. Be sure to close the system unit before powering up your computer system.

Caution: It is not safe to operate Sun products without the system unit cover in place. Failure to take this precaution may result in personal injury and system damage.

Conformité aux Normes de Sécurité

Cette préface traite des mesures de sécurité qu'il convient de suivre pour l'installation d'un produit Sun Microsystems, Inc.

Mesures de Sécurité

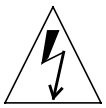
Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel:

- ❑ Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- ❑ Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- ❑ Ne jamais introduire d'objet quel qu'il soit dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence d'éléments haute tension. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés:

Attention: Si l'on omet de suivre les instructions, on risque d'endommager le matériel.



Avertissement: Présence de haute tension. Si l'on ne tient pas compte des instructions, on encourt un risque d'électrocution et de danger pour la santé.

Marche: Le commutateur marche / arrêt principal est en position de *marche.*

Arrêt: Le commutateur marche / arrêt principal est en position *d'arrêt*.

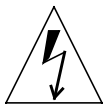
Modification du Matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems, Inc., n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

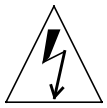
Positionnement d'un Produit Sun

Attention: Pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'un registre de chaleur.

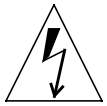
Connexion du Cordon d'Alimentation



Avertissement: Les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.



Avertissement: Tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.



Avertissement: Votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils du type avec prise de terre. Pour écarter les risques d'électrocution, toujours brancher ce cordon dans une prise mise à la terre.

Ergonomie

Votre produit Sun a été conçu en conformité avec la norme d'ergonomie ouest-allemande ZH1/618. Selon les stipulations de cette norme, un écran antireflets (du type filtre OCLI) doit être installé sur le moniteur. Les filtres antireflets sont un accessoire standard des moniteurs couleur. Pour le traitement de texte, on recommande un affichage en mode positif (c'est-à-dire des caractères noirs sur fond blanc).

Pour que la configuration du clavier soit conforme aux dispositions de la norme ZH1/618, il est nécessaire d'utiliser un clavier allemand.

Batterie au Lithium

Attention: Sur les cartes UC Sun, une batterie au lithium (référence MK48T02BU) a été moulée dans l'horloge temps réel Mostek.

Les batteries *ne sont pas* des pièces remplaçables par le client. Elles risques d'exploser en cas de mauvais traitement. Ne pas jeter la batterie au feu. Ne pas la démonter ni tenter de la recharger.

Couvercle

Pour ajouter des cartes, de la mémoire, ou des unités de stockage internes, vous devrez démonter le couvercle du système ordinateur Sun. Ne pas oublier de remettre ce couvercle en place avant de mettre le système sous tension.

Attention: Il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels.

Sicherheitsbehördliche Vorschriften

In diesem Vorwort werden die Sicherheitsmaßnahmen beschrieben, die bei der Installation eines Produkts von Sun Microsystems, Inc., zu befolgen sind.

Sicherheits-maßnahmen

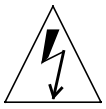
Beachten Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsmaßnahmen, wenn Sie Ihre Geräte aufbauen:

- ❑ Beachten Sie alle auf den Geräten angebrachten Warnungen und Anweisungen.
- ❑ Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- ❑ Stecken Sie niemals irgendwelche Gegenstände in Öffnungen in den Geräten. Es können gefährliche Spannungen vorliegen. Leitfähige fremde Gegenstände könnten einen Kurzschluß verursachen, der zu Feuer, Elektroschock oder einer Beschädigung Ihrer Geräte führen könnte.

Symbole

Die verwendeten Symbole haben die folgende Bedeutung:

Vorsicht: Bei Nichtbeachtung der Anweisungen besteht Gefahr von Geräteschäden.



Warnung: Gefährliche Spannungen. Bei Nichtbeachtung der Anweisungen besteht Gefahr von Elektroschock und Personenverletzung.

Ein: Der Hauptschalter steht auf *Ein.*

Aus: Der Hauptschalter steht auf *Aus.*

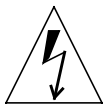
Änderung der Geräte

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, Inc., ist nicht verantwortlich für die Einhaltung behördlicher Vorschriften, wenn an einem Sun-Produkt Änderungen vorgenommen wurden.

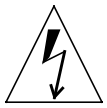
Aufstellungsort eines Sun-Produkts

Vorsicht: Um einen zuverlässigen Betrieb Ihres Sun-Produkts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder bedeckt werden. Ein Sun-Produkt sollte niemals in der Nähe eines Heizkörpers oder einer Heizluftklappe aufgestellt werden.

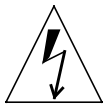
Anschluß des Stromkabels



Warnung: Sun-Produkte sind für den Betrieb mit Einphasen-Stromsystemen mit einem geerdeten Mittelleiter vorgesehen. Um die Elektroschockgefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Arten von Stromsystemen an. Wenden Sie sich an Ihren Anlagenleiter oder einen qualifizierten Elektriker, wenn Sie sich nicht sicher sind, welche Art von Strom Ihr Gebäude erhält.



Warnung: Nicht alle Stromkabel besitzen die gleichen Stromnennwerte. Haushaltsverlängerungsschnuren haben keinen Überlastungsschutz und sind nicht zum Gebrauch mit Computersystemen bestimmt. Benutzen Sie keine Haushaltsverlängerungsschnuren für Ihr Sun-Produkt.



Warnung: Ihr Sun-Produkt wird mit einem Erdungs-Netzkabel (3-Leiter) geliefert. Um die Elektroschockgefahr zu reduzieren, schließen Sie das Kabel nur an eine geerdete Steckdose an.

Ergonomie

Ihr Sun-Produkt ist so ausgelegt, daß es die Ergonomie-Norm ZH1/618 der Bundesrepublik Deutschland erfüllt. Zur Einhaltung dieser Norm muß der Monitor mit einer Blendschutzscheibe (z.B. einem OCLI-Filter) versehen sein. Blendschutzfilter gehören bei Farbmonitoren zur Standardausstattung. Für die Textverarbeitung wird eine positive Anzeige (schwarze Zeichen auf weißem Hintergrund) empfohlen.

Es ist eine deutsche Tastatur erforderlich, um die Anforderungen nach ZH1/618 in bezug auf die Tastaturgestaltung zu erfüllen.

Lithiumbatterie

Vorsicht: Eine Lithiumbatterie ist in die Mostek-Echtzeituhr, Nr. MK48T02BU, von Sun-CPU-Karten eingepreßt.

Batterien können *nicht* vom Kunden ausgewechselt werden. Bei falscher Behandlung können sie explodieren. Batterien nicht in Feuer werfen und nicht auseinandernehmen oder wiederaufladen.

Obere Abdeckung

Wenn Sie Karten, Speicherelemente oder interne Speichereinheiten in Ihr Sun-Computersystem einbauen wollen, müssen Sie die obere Abdeckung der Einheit abnehmen. Vergessen Sie nicht, die obere Abdeckung wieder anzubringen, bevor Sie Ihr Computersystem einschalten.

Vorsicht: Der Betrieb von Sun-Produkten ohne obere Abdeckung ist nicht sicher. Bei Nichteinhalten dieser Vorsichtsmaßregel kann es zu Personenverletzung und Systemschäden kommen.

Conformidad Con La Agencia de Seguridad

Este apéndice presenta las precauciones de seguridad a seguir cuando se instala un producto de Sun Microsystems, Inc.

Precauciones de Seguridad

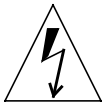
Para su protección, observe las siguientes precauciones de seguridad al instalar su equipo:

- ❑ Siga todos los avisos e instrucciones marcados en el equipo.
- ❑ Asegúrese de que el voltaje y la frecuencia de su fuente de alimentación sean iguales al voltaje y frecuencia indicados en la etiqueta de la capacidad eléctrica nominal del equipo.
- ❑ No introduzca jamás objetos de ninguna clase por las aberturas del equipo porque pueden estar presentes voltajes peligrosos. Cualquier objeto conductor extraño puede producir cortocircuito que podría causar incendio, electrochoque o daños a su equipo.

Símbolos

Los siguientes símbolos significan:

Precaución: Si no sigue las instrucciones, corre peligro de dañar el equipo.



Aviso: Hay voltajes peligrosos presentes. Si no obedece las instrucciones, existe el riesgo de sufrir electrochoque poniendo en peligro su salud personal.

Encendido (On): El interruptor principal de encendido / apagado está en la posición de *encendido.*

Apagado (Off): El interruptor principal de encendido / apagado está en la posición de *apagado.*

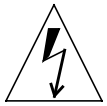
Modificaciones al Equipo

No haga modificaciones mecánicas o eléctricas al equipo. Sun Microsystems, Inc., no se hace responsable del cumplimiento de las regulaciones de un producto Sun si ha sido modificado.

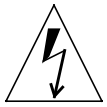
Colocación de un Producto Sun

Precaución: Para lograr un funcionamiento seguro de su producto Sun y protegerlo contra el calentamiento excesivo, no se deben bloquear o cubrir las aberturas del aparato. Ningún producto Sun se debe colocar jamás cerca de un radiador o una fuente térmica.

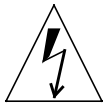
Conexión del Cable de Alimentación



Aviso: Los productos Sun han sido diseñados para funcionar con sistemas de alimentación monofásicos que tengan un conductor neutro a tierra. Para reducir el riesgo de electrochoque, no enchufe los productos Sun a ningún otro tipo de sistema de alimentación. Si no está seguro del tipo de alimentación eléctrica que se suministra a su edificio, consulte al administrador de la propiedad o a un electricista profesional.



Aviso: No todos los cables de alimentación tienen la misma capacidad nominal de corriente. Las extensiones tipo casero no tienen protección contra sobrecargas y no están destinadas a usarse con sistemas de computasion. No use extensiones caseras con su producto Sun.



Aviso: Su producto Sun se le provee con un cable de alimentación con salida a tierra (trifilar). Para reducir el riesgo de electrochoque, enchufe siempre el cable a un tomacorriente con conexión a tierra.

Ergonomiá

Su producto Sun está diseñado en conformidad con la norma ergonómica ZH1/618 de Alemania Occidental. Para cumplir esta norma, se necesita una pantalla antideslumbrante (por ejemplo, un filtro OCLI) en el monitor. Los filtros antideslumbrantes son norma general en los monitores a colores. Para el procesamiento de texto se recomienda una unidad de presentación visual en modo positivo (caracteres negros sobre un fondo blanco)

Se necesita un teclado de alemán para satisfacer los requisitos de disposición de teclado de ZH1/618.

Batería de Litio

Precaución: En los tableros de la CPU de Sun, viene instalada una batería de litio moldeada a reloj de tiempo real, Mostek No. MK48T02BU.

El cliente *no* debe cambiar las baterías porque pueden estallar si no se manejan como es debido. No se deshaga de las baterías echándolas al fuego. No las desmonte ni trate de volverlas a cargar.

Cubierta Superior

Para agregar tableros, memoria o dispositivos internos de almacenamiento, debe quitar la cubierta superior de su sistema de computadora Sun. Asegúrese de volver a colocar la cubierta superior antes de aplicar energía eléctrica a su sistema de computadora.

Precaución: Los productos Sun no pueden funcionar sin riesgo si la cubierta superior no está colocada en su sitio. Si no toma esta precaución, correrá el riesgo de lesionarse personalmente y dañar el equipo.

1

Introducing the SPARCstation 1+

The SPARCstation 1+ is a high-performance workstation designed to be used on its own or as part of a network. This chapter introduces you to the SPARCstation 1+, and covers the following topics:

- ❑ Selecting a work area
- ❑ Unpacking the shipping cartons
- ❑ Taking inventory
- ❑ Identifying internal parts
- ❑ Installing internal parts
- ❑ Examining the system unit

Complete safety information is covered in the preface as "Safety Agency Compliance." Be sure to read the entire preface before installing and operating this equipment.

The information in the preface is also translated into French, German, and Spanish respectively.

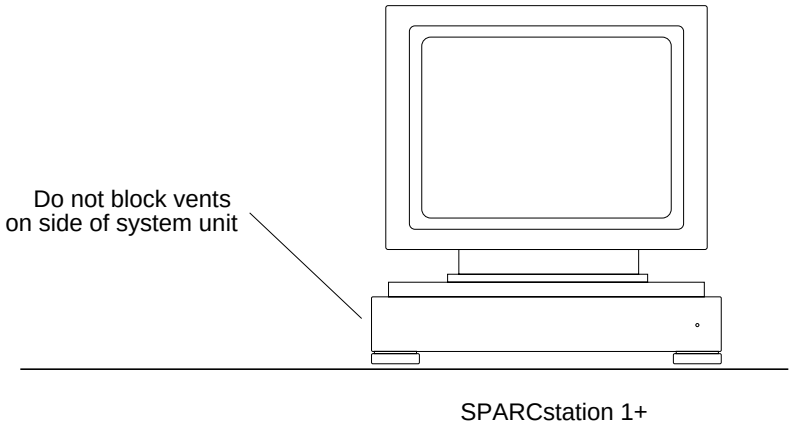
After you finish reading this chapter, you will be ready to take the first steps in connecting some of the basic system components and plugging in the power cords. These topics are covered in Chapter 2.

Selecting a Work Area

Before unpacking your system, you should decide where you want to put it and how you want to use it.

Select an appropriate work area. Start with an area on your desktop that allows plenty of room for the system unit, monitor, keyboard, and mouse, as well as for the cables and power cords.

Caution: The SPARCstation 1+ system unit has vents on its left panel. When you place the unit on a desktop, make sure that no physical objects block the vents.



SPARCstation 1+

The SPARCstation 1+ is a sturdy machine, but it is a piece of electronic equipment and must be treated properly. Avoid extremes in temperature and other environmental hazards when selecting your work area.

Generally, if your working conditions are comfortable for you, then your environment is suitable for the SPARCstation 1+.

The acceptable environmental ranges are:

- ❑ Temperature: Between 32 and 104 degrees Fahrenheit (0 and 40 degrees Celsius)
- ❑ Humidity: Between 5% and 80% (relative noncondensing)
- ❑ Altitude: Between 0 and 10,000 feet (0 and 3,048 meters)
- ❑ Ventilation: Keep the work area well ventilated or air-conditioned to avoid overheating.
- ❑ Dust: Keep the work area as dust-free as possible.

Power and Grounding Requirements

Your SPARCstation 1+ and associated equipment use nominal input voltages of 115 VAC or 230 VAC. Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

In planning where to place your equipment, remember that each of the following items requires access (by way of a separate power cord) to a power outlet:

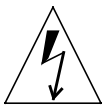
- ❑ SPARCstation 1+ system unit
- ❑ Monitor
- ❑ External peripherals (disks, tapes, printers)

Note: See Figure 1-1 for an illustration of these items.

Cable Length

Cables supplied with Sun equipment are of sufficient length to meet the needs of most installations. If you find that the cables packed with your equipment are too short for your particular installation, ask your Sun sales representative about the availability of alternate cables.

Some of the cables supplied with your Sun equipment are of specific lengths in conformity with engineering and safety standards. Using other cables may be hazardous and may also degrade the performance of your equipment.



Warning: Not all power cords have the same current ratings. Household extension cords do not have overload protection, and are not meant for use with computer systems. Do not use household extension cords with your SPARCstation 1+ and associated equipment.

Unpacking the Shipping Cartons

To unpack your SPARCstation 1+:

1. Inspect the shipping cartons before opening.

   If there is evidence of damage to a carton, arrange for an agent of the carrier to be present when you remove the equipment.

2. Remove the contents of the shipping cartons.

   The inside flaps of the shipping cartons for the monitor and system unit show you how to remove the contents.

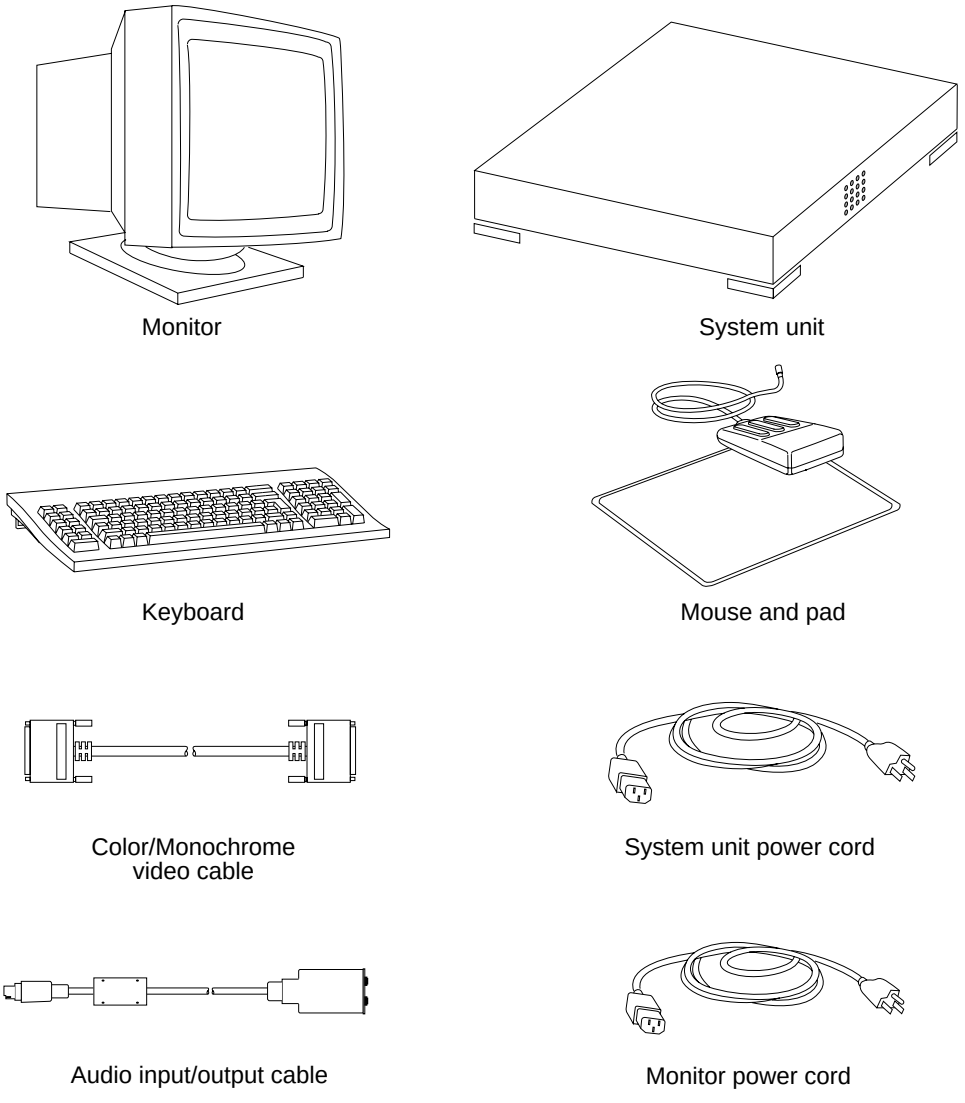
   The system unit and monitor are heavy. They are packed tightly in protective foam molds. Carefully remove them from the cartons.

3. Save the cartons and the packing material. You will need them if you ever want to ship your system elsewhere.

Taking Inventory

Check the packing slip to make sure you have everything you ordered. Figure 1-1 shows the basic parts of the system. If you ordered optional parts, such as external drives, see the installation manuals that came with them.

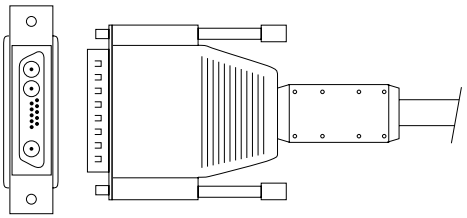
Figure 1-1. Basic System Parts



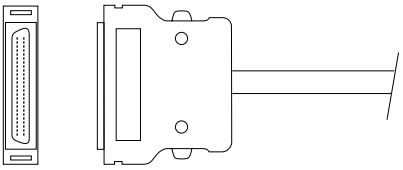
Identifying Cables and Connectors

Use the following chart of cable connectors in figure 1-2 to identify cables as you unpack them. The cables you have will depend on the optional parts you ordered. As you follow procedures in Chapters 2 and 5, you may want to refer again to this chart.

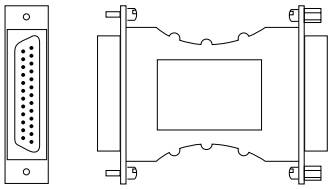
Figure 1-2. Identifying Cables and Connectors



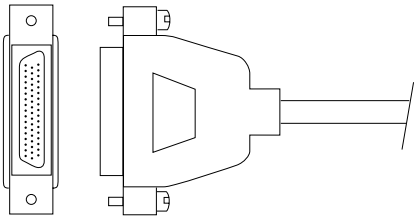
13W3 Plug



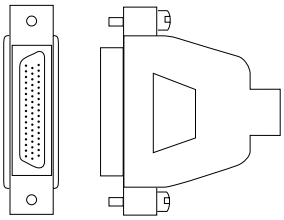
Micro-miniature SCSI connector



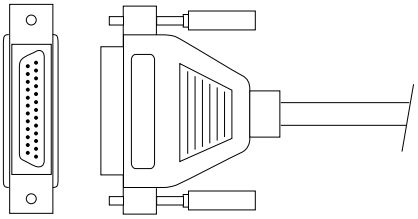
Null modem converter



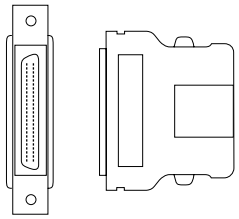
Sub-miniature D SCSI connector



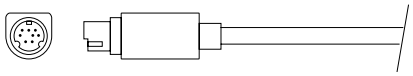
Subminiature D SCSI terminator



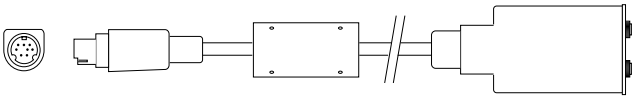
Modem cable



Micro-miniature SCSI terminator



Keyboard cable plug and mouse plug



Audio Input/Output cable

Identifying Internal Parts

Some parts of your SPARCstation 1+ system may need to be installed inside the system unit. See figure 1-3 to identify these parts. Some of these items are packed in antistatic bags:

- ❑ Frame buffer board: sends a picture signal from the system to your monitor.

  Note: A frame buffer board is an SBus board.

- ❑ SIMM (single inline memory module): provides additional memory for your system.
- ❑ Internal diskette drive unit: allows you to use diskettes in your system.
- ❑ Internal hard disk drive unit: provides internal storage for software and data files.

Installing Internal Parts

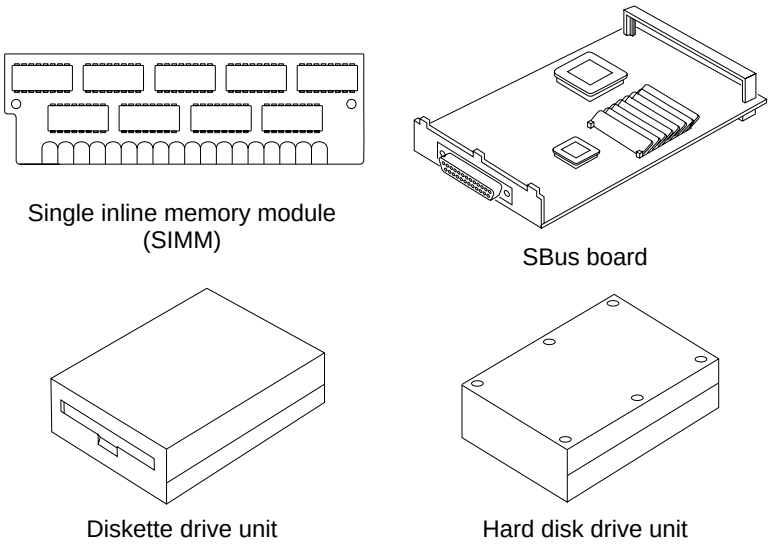
If you ordered additional internal parts for your system, each part or group of parts comes with its own installation guide:

- ❑ *Installing SPARCstation 1+ SIMMS*
- ❑ *Installing SPARCstation 1 Internal Drives* (Use this document with the SPARCstation 1 and the SPARCstation 1+)

Also see Appendix A of this guide for instructions on installing SBus boards and SIMMS.

Caution: Integrated circuit chips and boards can be damaged by static electricity from finger-touching. When you install these parts, never remove them from their antistatic bags until you have discharged yourself by touching a grounded object. Handle these parts only at the non-conducting edges. See Appendix A for complete precautions.

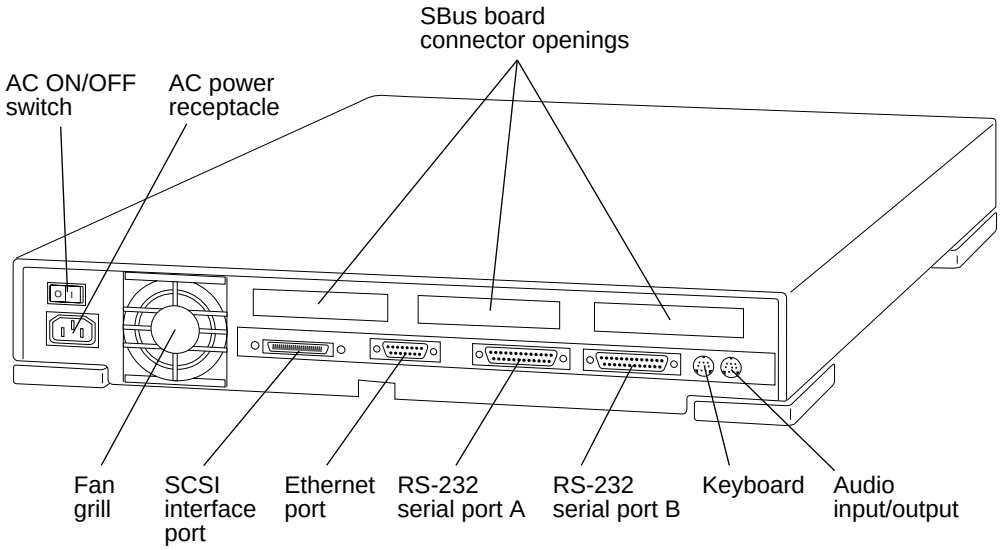
Figure 1-3. System Unit Installable Parts



Examining the System Unit

Take a moment to examine the system unit so you can locate the parts on the back panel as you connect the rest of your system.

Figure 1-4. Back Panel of the System Unit



What's Next

You have finished Chapter 1, and have done the following:

- ❑ Selected a work area
- ❑ Unpacked the shipping cartons
- ❑ Taken inventory
- ❑ Identified internal parts
- ❑ Examined the system unit

Now you are ready to take the first steps in connecting some of the basic system components and plugging in the power cords. These topics are covered in Chapter 2.

2

Performing the First Steps

This chapter tells you how to connect some of the basic components of your SPARCstation 1+:

- ❑ Connecting the mouse to the keyboard
- ❑ Connecting the keyboard to the system unit
- ❑ Installing your monitor
- ❑ Plugging in the power cords to your monitor and system unit.
- ❑ Connecting audio devices (if any) to the system unit

This chapter also tells you where to find procedures for installing internal parts like the diskette drive unit, hard drive unit, SBus boards, and SIMMs. In a new system that is being set up and used for the first time, all internal parts must be installed before you turn on power to the system unit.

After you have performed the procedures in this chapter, you will be ready to move on to *either* Chapter 3 *or* Chapter 4. If you are going to use your SPARCstation 1+ as a *single system* (that is, a system that is not connected to a network), read Chapter 3. If you are going to connect your SPARCstation 1+ to a *network,* skip Chapter 3 and read Chapter 4.

Safety Information

Be sure to read the safety information in the preface, "Safety Agency Compliance." Read the entire preface before installing and operating this equipment.

The information in the "Safety Agency Compliance" preface also appears in consecutive French, German, and Spanish translations with the following titles:

- "Conformité aux Normes de Sécurité"
- "Sicherheitsbehördliche Vorschriften"
- "Conformidad Con La Agencia de Seguridad"

Identifying Internal Parts

In Chapter 1 you learned how to identify some of the internal parts of your SPARCstation 1+ system unit: the diskette drive unit, hard drive unit, SBus boards (for example, a frame buffer board), and SIMMs. If these items need to be installed in your system unit, see the following bulleted list for installation procedures before continuing with the remainder of this chapter:

- Appendix A for instructions about installing SBus boards and SIMMS (Single inline Memory Modules)
- *Installing SPARCstation 1+ SIMMs**
- *Installing SPARCstation 1 Internal Drives** for instructions on installing hard and internal drives. Use this document with the SPARCstation 1 and the SPARCstation 1+.

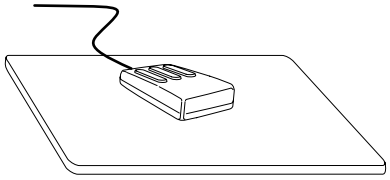
Note: *These documents come packed with the installable parts.

In a new system that is being set up and used for the first time, all internal parts must be installed before you turn on power to the system unit.

Connecting the Mouse to the Keyboard

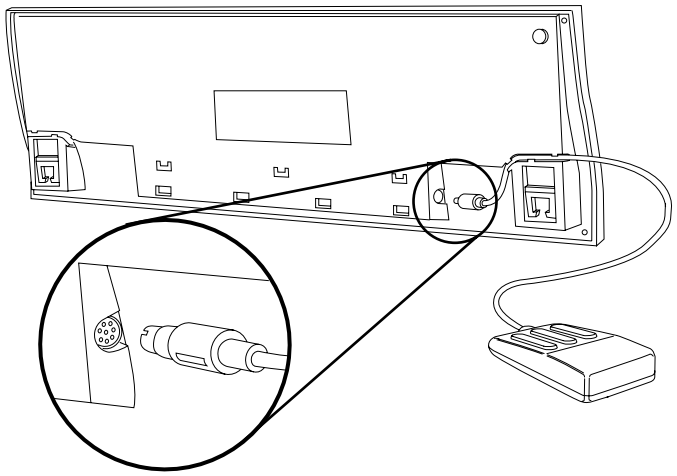
To connect the mouse to your keyboard:

1. Find the mouse with its attached cable.



2. Remove the protective end cap from the plug.
3. Insert the plug on the end of the mouse cable into one of the keyboard jacks, depending on where you want to locate the mouse on your desktop.

   Insert the plug into the left jack if you are left-handed, or into the right jack if you are right-handed.



4. After inserting the plug, press the loose cable into the groove on the bottom of the keyboard.

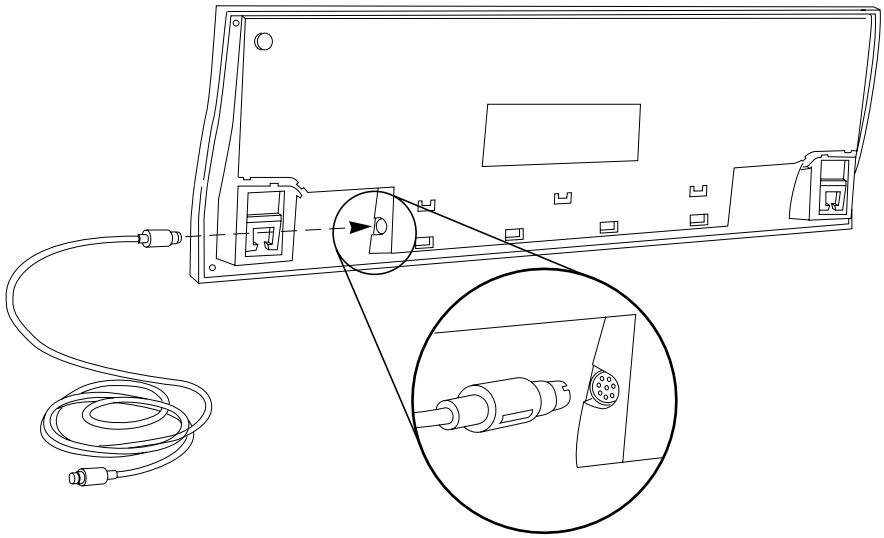
Connecting the Keyboard to the System Unit

To connect the keyboard to the system unit:

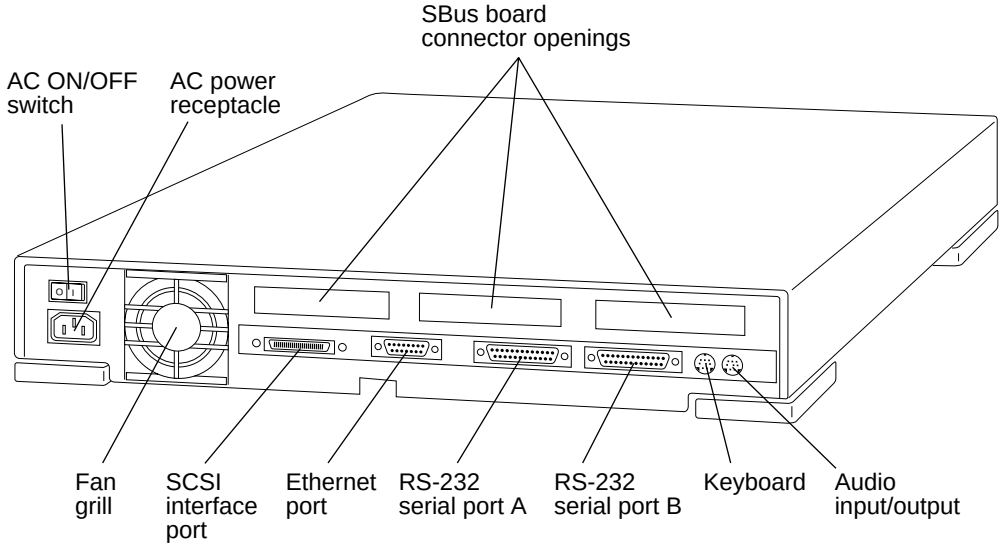
1. Remove the protective end caps from the plugs at both ends of the cable.
2. Insert the connector on either end of the keyboard cable into the unused keyboard jack.

   If you plugged the mouse into the right keyboard jack, use the left keyboard jack for the keyboard. If you plugged the mouse into the left keyboard jack, use the right keyboard jack for the keyboard.

After inserting the plug, press the loose cable into the groove on the bottom of the keyboard.



3. Find the keyboard port on the back panel of the system unit.



4. Push the keyboard cable plug into the keyboard port.
   - ❑ Align the key groove on the cable plug with the key slot on the port.
   - ❑ Push the cable plug into the port so that the cable is firmly connected.
5. Place the keyboard in a comfortable position on your desk top.
6. Set the mouse on the mouse pad.

Installing Your Monitor

A monitor is a device that allows you to view the progress and operation of the system. It has a video display screen and receives its picture signal from a frame buffer board that is installed in the SPARCstation 1+ system unit.

Use the procedures in this section to connect your monitor to the frame buffer board installed in your SPARCstation 1+ system unit.

A cable of the correct length is provided with your workstation (4 feet / 1.2 meters). You can order a longer cable (14.8 feet / 4.5 meters) if you need it.

Note: Some Sun cables are of specific lengths in conformity with engineering and safety standards. Using an inappropriate alternative cable may degrade the peformance of your equipment and may be hazardous.

Additional Information About Monitors

See Appendix B for additional information about monitors:

- ❑ Illustrations of several available monitors
- ❑ Table of available monitors for the SPARCstation 1+
- ❑ How to identify the different types of monitor input ports
- ❑ Information about monitor controls
- ❑ How to install older Sun monitors

Additional Information About Frame Buffer Boards

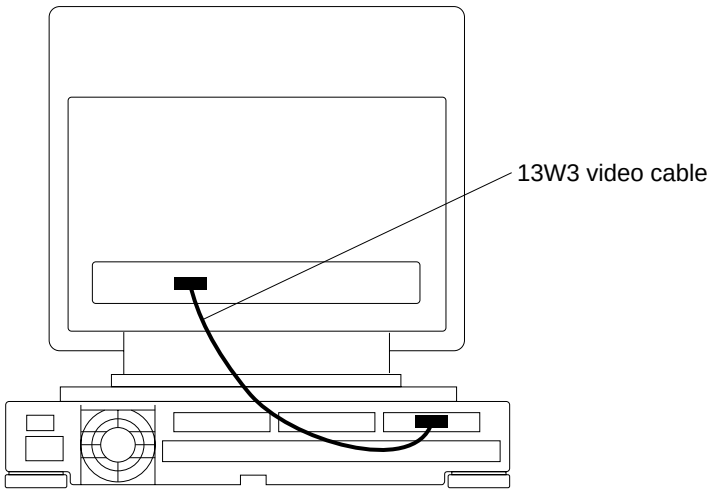
See the following sections in Appendix A for additional information about frame buffers:

- ❏ "Identifying SBus Boards," to see what a frame buffer board looks like
- ❏ "SBus Boards," to see what kinds of frame buffer boards are available
- ❏ "Installing SBus Boards," to see where and how to install frame buffer boards

13W3 Port

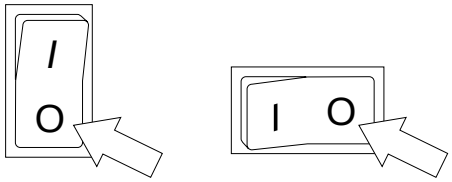
Since your monitor has a 13W3 port on its back panel, you must connect it to the frame buffer 13W3 port on the back panel of the system unit with a 13W3 cable. The 13W3 cable has male 13W3 plugs at each end. See Chapter 1 "Introducing the SPARCstation 1+" for an illustration of the 13W3 cable and connector.

Figure 2-1. 13W3 Video Cable Connected to Frame Buffer and Monitor



To connect your monitor to the frame buffer:

1. Make sure that the power to both the system unit and the monitor is turned OFF. The power cord is *not plugged in* to the power receptacle on the back panel of the monitor at this time.
2. Remove the protective caps from both ends of the 13W3 cable.



Power switches in the off position

3. Insert either 13W3 cable plug into the 13W3 port on the back panel of the monitor.
4. Hand tighten the two screws on both sides of the 13W3 plug by turning the screws clockwise.
5. Insert the other 13W3 cable plug into the 13W3 port on the frame buffer (see Appendix A for information about installing frame buffer cards).

   The frame buffer is mounted in an SBus slot (see Appendix A for details), and its 13W3 port is on the back panel of your SPARCstation 1+ system unit.
6. Hand tighten the two screws on both sides of the 13W3 plug by turning the screws clockwise.

Plugging in the Power Cords

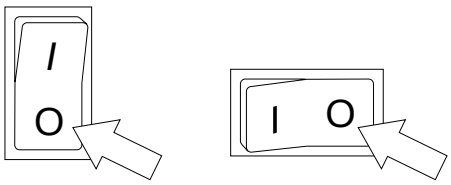
This section describes how to plug in power cords for the monitor and the system unit.

Warning: Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Check the power rating on your outlet before connecting all devices to the wall outlet or power strip. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Plugging in the Monitor

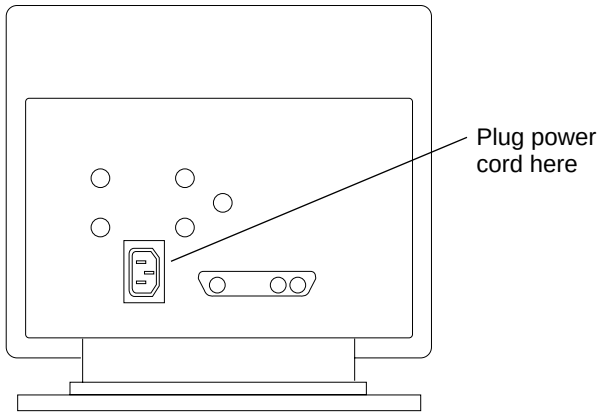
To plug a power cord into your monitor:

1. Make sure the power switch on the monitor is in the OFF (or 0) position. The switch may be located in different places depending on the type of monitor. Most common locations are on the front of the unit or on the back panel.



Power switches in the off position

2. Plug the female end of the power cord into the receptacle on the back of the monitor.

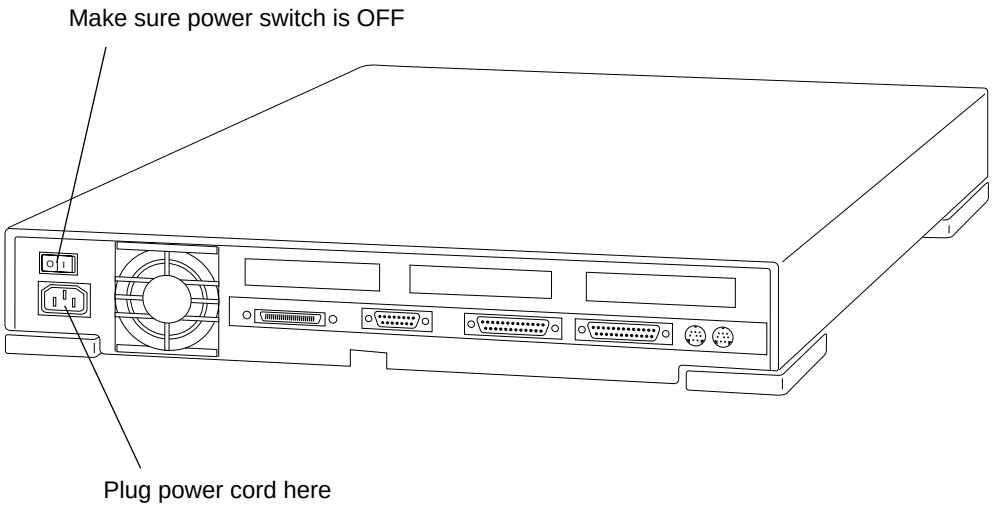


3. Plug the male end of the power cord into a power outlet.

Plugging in the System Unit

To plug in the system unit, take one of the power cords and follow these steps:

1. Make sure the power switch on the system unit is in the OFF position. The switch is located on the back panel. The power is off when the 0 side of the rocker switch is pressed.

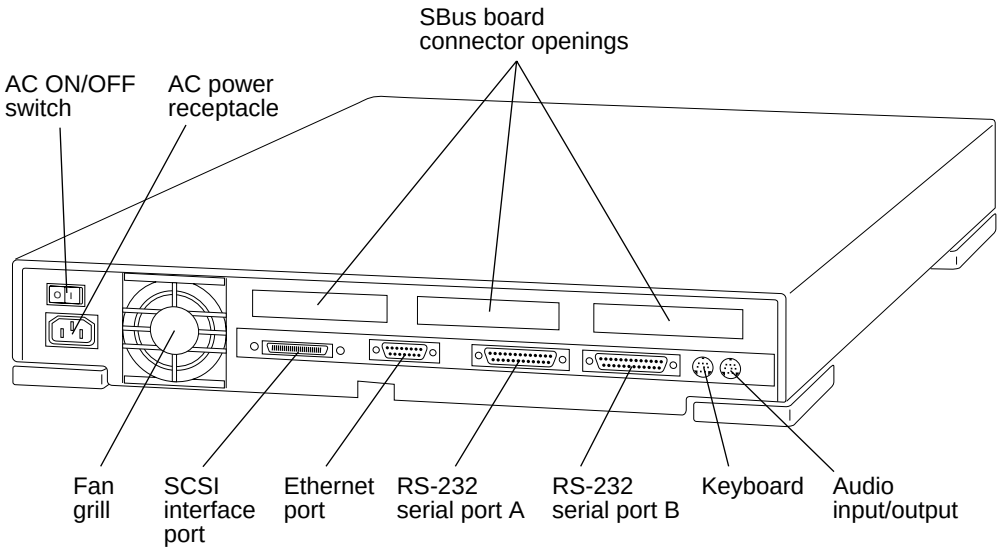


2. Plug the female end of the power cord into the receptacle on the back of the system unit.
3. Plug the male end of the system unit power cord into a power outlet.

Connecting Audio Devices

The SPARCstation 1+ system unit has an audio input/output port on its back panel. See Figure 2-2.

Figure 2-2. Back Panel of System Unit



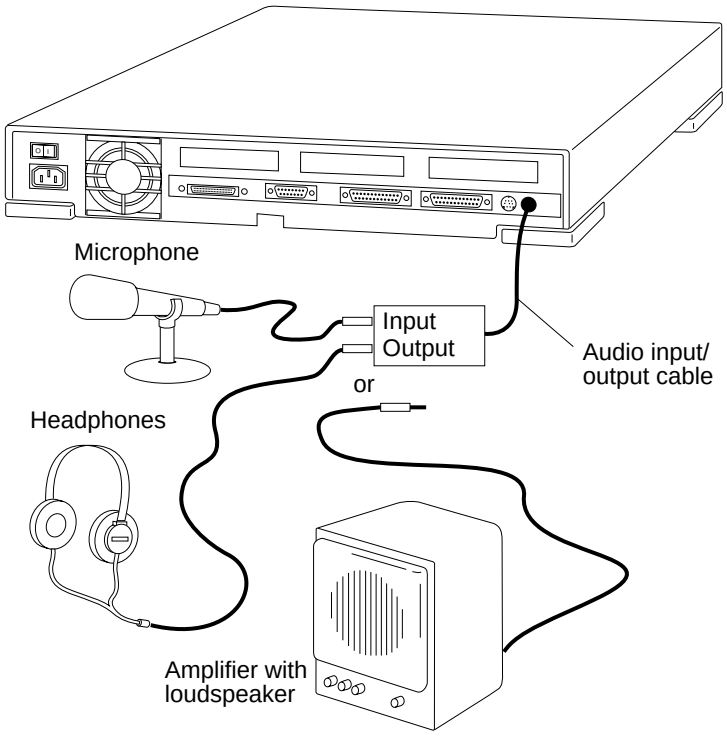
You can plug the following audio devices into the SPARCstation 1+:

- ❏ Dynamic, high-impedance microphone (10,000 ohms to 50,000 ohms impedance)
- ❏ Dynamic, low-impedance microphone (300 ohms to 1000 ohms impedance)—adjust recording volume as needed
- ❏ Audio tape player equipped with attenuating adapter
- ❏ Compact disc player equipped with attenuating adapter
- ❏ Headphones (30 ohms to 100 ohms impedance)
- ❏ External amplifier and loudspeaker

Figure 2-3 shows audio equipment connected to the system unit.

The sound capabilities of your SPARCstation 1+ can be shown with Soundtool, an audio demonstration program included with the SunOS Operating System. See Appendix C, "About Sound," in the *Sun System User's Guide* for additional information.

Figure 2-3. Connecting Audio Equipment



Parts Needed to Connect an Audio Tape Player or a Compact Disc Player

Before you connect an audio tape player or a compact disc player to the SPARCstation 1+ audio input/output port, you need the following items:

- ❑ Attenuating adapters
- ❑ Stereophonic Y-adapter
- ❑ Stereophonic-monophonic adapter

These adapters may be obtained at many electronics parts stores.

Plugging in the Audio Cable

To connect the audio cable to the system:

1. Locate the audio port on the system unit.
2. Align the key groove on the audio cable plug with the key slot on the jack.
3. Push the cable plug into the jack so that the cable is firmly connected.

What's Next

You have finished Chapter 2, and have done the following:

- ❑ Connected the mouse to the keyboard
- ❑ Connected the keyboard to the system unit
- ❑ Installed your monitor
- ❑ Plugged in the power cords to your monitor and system unit
- ❑ Connected audio devices (if any) to the system unit

Now you are ready to move on to *either* Chapter 3 *or* Chapter 4. If you are going to use your SPARCstation 1+ as a *single system* (that is, a system that is not connected to a network), read Chapter 3. If you are going to connect your SPARCstation 1+ to a *network*, you should skip Chapter 3 and read Chapter 4.

3

Starting Up a Single SPARCstation 1+

If you are going to use your SPARCstation 1+ by itself and not connect it to a computer network, read this chapter. If you are going to connect your SPARCstation 1+ to a computer network, *skip this chapter* and read "Setting Up and Starting a Networked SPARCstation 1+," Chapter 4.

This chapter tells you how to do the following:

- ❑ Prepare your system before turning on the power.
- ❑ Turn on the power to the parts of your system.
- ❑ Start using the software that is pre-installed on a pre-installed internal hard drive.
- ❑ Turn off the power to the parts of your system.

Before Powering Up

To prepare your system for powering up for the first time:

- ❑ Make sure that the frame buffer, memory modules, diskette drive, and hard disk drive(s) (if any) are installed. These parts may have been pre-installed in your system. If not, there are instructions for installing boards in Appendix A; for memory modules in *Installing SPARCstation 1+ SIMMs*; for internal drives in *Installing SPARCstation 1 Internal Drives* (use this document with the SPARCstation 1 and the SPARCstation 1+); or in an instruction sheet that comes with the hardware item. For information about installing an external drive, see the *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual.* These manuals are shipped with your external drive.

  If your system was delivered without internal hard disk drives and you installed one or two hard disk drive(s), the operating system is not pre-installed on the internal hard disk drive. If you need to install the operating system on the drive, see *Installing the SunOS* for installation procedures. If your system has an internal hard disk drive already installed, you will not need to install the operating system.

- ❑ Make sure that you have connected all the parts of the system. Instructions for connecting the parts of the system are in "First Steps," Chapter 2.

- ❑ See the *Desktop Storage Pack Installation Guide* if you ordered a Desktop Backup Pack, Desktop Disk Pack, or Desktop SunCD™ Pack. If you ordered an External Storage Module, see the *Sun External Storage Module Installation Manual.*

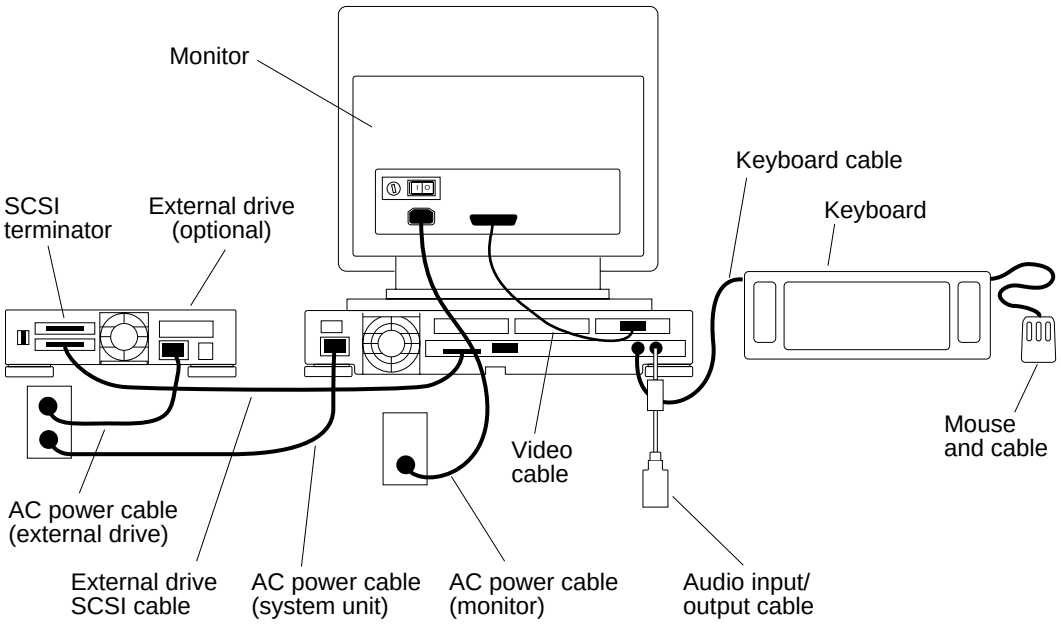
- ❑ Make sure that you have plugged in the various power cords. To check your system setup, see Figure 3-1.

- ❑ Make sure the system is at room temperature before powering it up.

  If the equipment was shipped when outdoor temperatures were significantly above or below room temperature, it is best to wait several hours before you power up.

Caution: Once the power is on, you should leave the system running, except when one of the few situations exists that warrants shutting it down. Conditions that warrant shutting down the system and turning the power off are described in "Powering Down Your System—When To Turn the Power Off" near the end of this chapter. The instructions for powering up a working system after it has been shut down are in "Powering Down Your System—How To Turn the Power Back On" near the end of this chapter.

Figure 3-1. Checking the System Setup

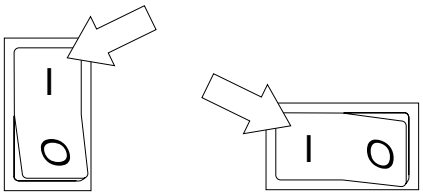


Powering Up Your System

To power up your system:

1. Turn on the power to the monitor.

   Find the power switch on the monitor. Press the side labeled 1.

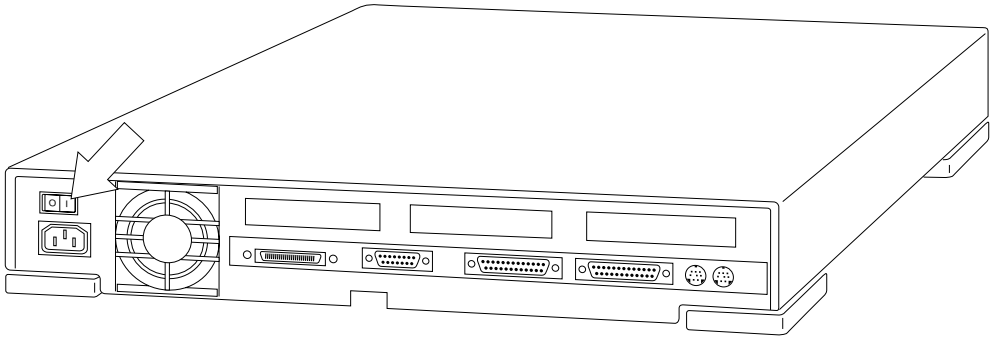


2. If your system is connected to an external drive unit, such as a Desktop Disk Pack, turn on the power to it. Press the side of the switch labeled 1.

   Note: If you have more than one external drive on your system, refer to the manuals that came with them for information about the order in which to turn them on when powering up.

   Note: The External Storage Module has a voltage selection switch on the back panel. This switch must be set to the proper voltage *before* you turn on power to the unit. For instructions abour how to set the voltage selection switch, see the *Sun External Storage Module Installation Manual.*

3. Turn on the power to the system unit. Press the side of the switch labeled 1.



When the power is turned on and your system's monitor is operating properly, the SPARCstation 1+ displays a banner screen after about 15 to 30 seconds:

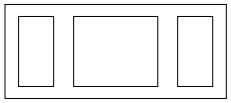
```
SPARCstation 1+, Type-4 Keyboard
ROM Rev. X.XY, X.X MB memory installed, Serial #XXX
Ethernet address X:X:YY:Z:A:BB, Host ID:  01010101.
```

It then runs its power-on tests. As your system runs its power-on tests, various system messages will be displayed on the screen.

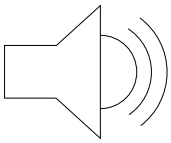
If you do not see the banner screen when you turn on the power, that could mean that your SPARCstation 1+ has failed a power-on test or that its monitor is not operating properly. If that happens, call your Sun service representative for advice and assistance.

Note: Make sure all cable connections are secure. Loose cables are a common source of computer "failures"!

Note: Be sure the keyboard cable is plugged into the keyboard port, not the audio input/output port, on the back panel of the system unit. Each port is labeled with an icon:



Keyboard port



Audio input/output port

In this application the serial port on your terminal must be set at 9600 baud. See Chapter 5 for additional information.

When your system unit fails a power-on test, it sends failure messages to serial port A on the back panel. If you have a terminal connected to serial port A, you will see test failure messages displayed on the terminal screen. Your monitor is different from a terminal and is not connected to either serial port. See Chapter 5 for terminal installation procedures and configuration.

Starting Up Your System

This section gives the procedure to follow when you first start up your system software. It assumes that your SPARCstation 1+ is equipped with at least one internal hard drive, and that the SunOS Operating System is pre-installed on a pre-installed internal hard drive. At the end of this section, Figures 3-2 and 3-3 give a summary of the procedure.

When you are finished with the start-up procedure, you need an account name to log in on your SPARCstation 1+. If you have not set up a user account, see "Administering User Accounts," Chapter 5 in the *Sun System & Network Manager's Guide.*

To start up your SPARCstation 1+ system with a pre-installed internal hard disk drive for the first time:

1. If you have not done so already, turn on the power to all system parts following the procedure given earlier in this chapter.
2. Wait for the power-on tests to run.
3. If your system passes all power-on tests and you are using a *monitor*, go to Step 7.

   You will be prompted for your system name.
4. If your system passes all power-on tests and you are using a *terminal*, go to Step 6.

   You will be prompted for your terminal type.

A monitor is a video display device that connects to a frame buffer that is installed within your SPARCstation 1+'s system unit. A terminal is a video display device that connects to either of the serial ports on the back panel of your SPARCstation 1+'s system unit.

If you do not see the banner screen when you turn on the power, that could mean that you have a loose cable connection.

To check for loose cables:

1. Power down the equipment using the instructions in the section titled "Powering Down Your System".
2. Check for loose cables.
3. Then power up the system again using the instructions in the section titled "How to Turn the Power Back On".

If you still do not see the banner in 30 to 60 seconds, call your authorized Sun service representative for further advice and assistance.

5. If you are NOT using a Sun monitor and keyboard, the system will ask you to enter your terminal type. Otherwise, it will skip this step.

   You can choose from the following menu choices:

```
Select terminal type:
     1) Televideo 925
     2) Wyse Model 50
     3) Sun Workstation
     4) Other
>> 2
```

   The System Name screen appears.

6. Press Delete, Control-U, or the Back Space key to erase the sample response (noname). Enter your system (or machine) name and press Return.

```
                              SYSTEM NAME
------------------------------------------------------------------------


  This screen assigns a name to your workstation.  If your system is
  connected to a network, choose a name that is unique within your local
  area network.  Type '?' if you want more information about selecting
  a name.

  hostname  :  nevada
```

The above illustration shows an example of the System Name screen with the sample system name nevada entered.

7. Review the time zone instructions displayed on your screen. It is necessary to correctly set the time zone so your system clock will operate correctly.

```
                              TIMEZONE
-------------------------------------------------------------------------
  Select one of the following regions.

                          x  *   United States

                             *   Canada

                             *   Mexico

                             *   South America

                             *   Europe

                             *   Asia

                             *   Australia and New Zealand

                             *   Greenwich Mean Time

Press <Return> or <Space> to move forward to your choice and type 'x'.
Type '?' if you need more information about choosing a time zone.
```

8. Press the Return key or the space bar to move the cursor to a category. Type `x` to display a submenu of timezones for that category. Type `?` if you need more information about choosing a time zone.

If you select the `United States`, for example, the system displays the following screen:

```
                        UNITED STATES

          Please use x or X to select your choice

    TIME ZONE NAME                 AREA

    US/Eastern                     Eastern time zone, USA

    US/Central                     Central time zone, USA

    US/Mountain                    Mountain time zone, USA

  X US/Pacific                     Pacific time zone, USA

    US/Pacific-New                 Pacific time zone, USA
                                   with proposed changes to Daylight
                                   Saving Time near election time

    US/Alaska                      Alaska time zone, USA

    US/East-Indiana                Eastern time zone, USA
                                   no Daylight Saving Time

    US/Hawaii                      Hawaii

    Return to Timezone Category Screen
```

9. Press the Return key or the space bar to move the cursor to the appropriate timezone, and type `X`.

   Having gathered the information needed to set the internal system clock, the system displays the System Time screen to ask for confirmation.

```
                              SYSTEM TIME
------------------------------------------------------------------------
 This screen sets the system clock.  If you type 'n' and press <Return>,
 you must enter the correct time yourself.  Type '?' for information
 about entering the time.

  Is 'Sat Apr  1 01:01:01 1990 PST' the correct time? [y/n] y
```

10. If the displayed time is correct, press Return to select the default y. Go to the Network screen. Otherwise, type n and press Return.

    If you answer n, the Set Time screen is displayed.

```
                              SET TIME
------------------------------------------------------------------------
 Enter the correct date and local time in the format
        month/day/year    hours:minutes:seconds
 If it is 2:20PM on November 20, 1990, for example, enter:
        11/20/90   14:20:00

  correct time:   11/20/90  13:26:47
```

11. Press Delete, Control-U, or the Back Space key to erase the sample response for the correct time. Enter the correct date and time and press Return.

    Be prepared to specify the date and time in a format such as:

`dd/mm/yy`	(two-digit day/two-digit month/two-digit year)
`hh:mm:ss`	(two-digit hour:two-digit minutes:two-digit seconds)

    The system displays a list of available formats so you can set the date and time yourself. If you enter y, the system uses the displayed information to set your system clock.

    Next, the system asks whether or not your system is attached to a network.

```
                                NETWORK
-------------------------------------------------------------------------

  This screen determines whether or not your system will be configured
  into a network.  If you answer 'y' you will need to answer some
  additional questions.

  Before the network installation begins, verify that an Ethernet cable
  is plugged into the back of your system.

  Is your workstation attached to a network? [y/n] n
```

12. The default response is `y`. Since your system is not on a network, type `n` and press Return.

    Next, the Confirmation screen is displayed.

```
                             CONFIRMATION
-------------------------------------------------------------------------

  Hostname         : nevada
  Timezone         : US/Pacific

  <non-networked workstation>

  Use this information? [use/reenter/abort] : u
```

13. Confirm the hostname and timezone information as displayed, or start over to change the information.

    - To confirm, type `u` and press Return.
    - To start over, type `r` and press Return. You will be presented with the System Name screen.
    - To abort this installation procedure, type `a` and press Return.

For example, to confirm the example configuration information listed on the Confirmation screen:

```
                              CONFIRMATION
-------------------------------------------------------------------------

  Hostname         : nevada
  Timezone         : US/Pacific

  <non-networked workstation>

  Use this information? [use/reenter/abort] : u
```

Next, the Installation screen is displayed.

```
                              INSTALLATION
-------------------------------------------------------------------------

  Hostname         : nevada
  Timezone         : US/Pacific

  <non-networked workstation>
```

The system confirms the configuration information you have chosen for your machine on the Installation screen, then prompts for a root password.

14. Follow the directions in the Superuser Password screen.

```
                              SUPERUSER PASSWORD
------------------------------------------------------------------------------
 To prevent other users from using the Superuser account on
 your workstation, you should give it a password.  To give a
 password to the root account, enter the password below.

 If you don't want to assign a password, just press RETURN.

 Type '?' for help

 Password:
```

After you have typed a password and pressed Return or have only typed Return, your system will prompt you to set up a user account.

15. Read and follow the instructions in the User Account screen, and type `y` in response to the question it asks.

```
                                USER ACCOUNT
------------------------------------------------------------------------------
 To use your system you must have a user account.  You may
 set up an account now.

 Before setting up an account, you will need to know the following
 information:
     user full name - the common name of the user, e.g. "John Doe"
     user name - the login name of the user, e.g. "jdoe"
     user id - the system numerical id of the user

 Do you want to set up a user account? : y
```

16. Respond to the User Account – Full Name screen by typing your “full name” and pressing Return.

```
                        USER ACCOUNT – FULL NAME
------------------------------------------------------------------------
 Please enter your "full name".
 This is the usual name of the user, e.g. "John Doe."  It is put into the
comment field of the password file and used by various programs to attach
a more meaningful name to a user than the system user name or the user id
number.

 Enter your full name:  Suzanne Smith - Corporate Marketing
```

The above illustration shows the example of a system with a “full name” of `Suzanne Smith - Corporate Marketing`.

17. Respond to the User Account – User Name screen by typing your “user name” and pressing Return.

```
                        USER ACCOUNT – USER NAME
------------------------------------------------------------------------
 Each user account must have a "user name".  Your user name
 is the name you will be known by on the system.  Your user
 name may have up to eight lower-case letters, but no
 spaces.  User names often consist of the user’s first initial
 and last name.

 User name:  ssmith
```

The above illustration shows the example of a system with the user name of `ssmith`.

The user name and password are very important because you use them to log in to the system.

18. Respond to the User Account – User ID screen by typing your account number and pressing Return.

```
                        USER ACCOUNT – USER ID
-------------------------------------------------------------------------
 Each user account must have a number known as the "uid".
 This number needs to be unique throughout all systems attached to
 your network.  It must be an integer with a value between 10
 and 60000.  If you are in doubt, please ask your system
 administrator for help in getting a unique uid number.

 uid number:  29877
```

The above illustration shows the example of a system with a user identification (user id) of 29877.

19. Respond to the User Password screen by typing your password and pressing Return.

```
                                USER PASSWORD
------------------------------------------------------------------------
 You may select a password.  Passwords are not required, but
 they are recommended for security reasons.  If you don't
 choose a password now, you can choose one later while you
 are using the system.

 If you don't want to enter a password, just press RETURN.

 Type '?' for help.

 Password:
```

The system finishes the booting process and displays the `login` prompt.

```
Automatic reboot in progress...
...
nevada login:
```

You can now log in to the system with your account name and password.

See the information about logging in and logging out in "Beginning and Ending a Session," Chapter 2 in the *Sun System User's Guide.*

Figure 3-2. Starting Up Your System: Summary

Here are the basic steps for starting up a SPARCstation 1+ system. For complete details, be sure to read the procedures earlier in this chapter.

(After you type a response on the screen and press Return, the next screen appears.)

1. Turn ON power to all system parts, in this order: monitor, external drives (farthest on the SCSI bus from system unit first), system unit.
2. If you are using a terminal, the terminal type selection list appears. Enter the type of terminal you are using.
3. When the System Name screen appears, type your system's system name.
4. When the Time Zone screen appears, select the appropriate time zone category.
5. When the list of choices appears, select your specific time zone.
6. When the System Time screen appears, choose to confirm or to reset the time and date.

   If you choose to reset, when the Set Time screen appears type a new time and date.
7. When the Network screen appears, answer n to indicate that you will not be working on a network.
8. When the Confirmation screen appears, use the existing information (type u), reenter (type r), or abort (type a) the installation.
9. Next, the Installation screen appears, which confirms the configuration information.

(Continued in Figure 3-3 on the next page.)

Figure 3-3. Starting Up Your System: Summary

(Continued from Figure 3-2 on the previous page.)

10. When the Superuser Password screen appears, type your superuser password.
11. When the User Account screen appears, type y to set up a user account.
12. When the User Account – Full Name screen appears, type your user's full name.
13. When the User Account – User Name screen appears, type your user name.
14. When the User Account – User ID screen appears, type your user identification account number.
15. When the User Password screen appears, type your user password.

When the configuration is successfully completed, the system displays the login prompt.

Powering Down Your System

Turning off a computer is not as simple as turning off a household appliance like a stereo or television set. You must follow a specific procedure before turning off the power.

The SPARCstation 1+ is designed to be left running continuously. Turning the power on and off too frequently can damage the system's electrical components. Always allow at least 10 seconds between turning off the power on all system components and turning the power on again.

When to Turn the Power Off

Turn off the power only if you want to:

- ❏ Stop the software installation procedure. To stop the software installation procedure, type L1-A. If that does not stop the procedure, only then should you turn off the power.
- ❏ Remove or install a part inside the system unit.
- ❏ Install an external drive unit.
- ❏ Unplug the system unit power cord, for example to move the system to a new location.
- ❏ Recover from a "hung" or "frozen" system—a system that does not respond to the keyboard or the mouse.
- ❏ Prepare for an expected power outage in your building.

Note: You cannot plan for an unexpected power outage. When an unexpected outage occurs, turn off the power switches on all your equipment. Doing this protects your equipment from possible power surge damage when power is restored to your building.

How to Turn the Power Off

To turn off the power when your system is working normally:

1. Save all your work.

   See the *Sun System User's Guide* for more information about ending a work session and saving your files. If you do not save your work, you could lose it when you switch off the power.

2. Return to the SunOS Operating System environment and type the following in sequence:

   - ❏ `/usr/bin/su` Return
   - ❏ your superuser `password` Return
   - ❏ `sync;sync`
   - ❏ `/usr/etc/halt` Return

For example, for a system with the hostname `nevada` and the superuser password `welcome`, you would type the following:

```
nevada% /usr/bin/su
Password: welcome (not displayed on the screen)
nevada# sync;sync
nevada# /usr/etc/halt
```

Note: For additional information about superuser passwords, see "Becoming Superuser," Chapter 2 in the *Sun System & Network Manager's Guide.*

After you have typed `/usr/etc/halt` Return, watch for the following message:

```
syncing file systems...  [1][1]done
Halted
Program terminated
Type b(boot), c(continue), n(new command mode)
>
```

When it appears, you can safely turn off the power to the system unit. You can also safely turn off the power when you see the following message:

```
Type help for more information
ok
```

3. Turn off the power in sequence to:
   - ❑ External drive units (if any)
   - ❑ SPARCstation 1+ system unit
   - ❑ Monitor

If you use a Wyse WY-50, VT100, or compatible terminal as the console with your SPARCstation 1+ system unit, press Break instead of L1-A.

Note: To end a work session and save your work when your system does not respond to the mouse, you will need to use a different procedure. Press L1-A to enter the PROM (Programmable Read-Only Memory) monitor command mode. The monitor command prompt is indicated on the screen with either a "greater than" symbol `>` .

Type `b` Return at the > prompt (or type `boot` at the `ok` prompt).

```
Type b (boot), c (continue), n (new command mode)
> b
system messages
system messages
system messages
system messages
system messages
system messages
system messages

nevada login:
```

Wait for the `login` prompt to return.

Log in as superuser (`root`), and type `halt` Return. After the `Halted` message appears, turn off the power.

How to Turn the Power Back On

If you have turned off the power after using the system, turning the power on again is relatively simple.

Caution: Always allow 10 seconds between turning off the power and turning it back on again. This pause prevents possible damage to power supply components in your system unit.

Turn the power switches on in this order: monitor, external drive unit (if you have one), and system unit.

Note: If you have multiple external drives in a daisy-chain, turn on the power in this order: monitor, external drives (farthest on the SCSI bus from system unit first), system unit.

After a minute or so, you should see the login prompt.

```
system messages
system messages
system messages
system messages
system messages
system messages
system messages
system messages
system messages

nevada login:
```

When you see the login screen, you can log in to your system and begin using it again. For more information on logging in, see Chapter 2 in the *Sun System User's Guide.*

What's Next

You have finished Chapter 3, and have learned how to do the following:

- ❑ Prepare your system before turning on the power.
- ❑ Turn on the power to the parts of your system.
- ❑ Start using the software that is pre-installed on the hard drive.
- ❑ Turn off the power to the parts of your system.

Now you can read any of the following chapters depending on what you want to do:

- ❑ If you want to connect a printer, terminal, or modem to your system, read Chapter 5.
- ❑ If you want a brief description of your system's software, read Chapter 6.
- ❑ If you want to learn where to find more information about using diskettes, read Chapter 7.
- ❑ If your system is connected to an external tape drive unit or an external compact disc drive unit and you want to learn where to find more information about how to use cartridge tapes and compact discs, read Chapter 7.
- ❑ For information about installing external drives, see the *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual.*

4

Starting Up a Networked SPARCstation 1+

If you are going to connect your SPARCstation 1+ to a computer network, read this chapter. If you are going to use your SPARCstation 1+ by itself and *not* connect it to a computer network, read "Starting Up a Single SPARCstation 1+," Chapter 3.

Getting your system up and running as part of a network requires assistance and information from the person who is in charge of the network. Be sure to contact your system administrator before you attempt to perform the procedures in this chapter.

This chapter tells you how to do the following:

- ❑ Connect the transceiver cable.
- ❑ Check how your system is set up.
- ❑ Prepare your system before turning on the power.
- ❑ Turn on the power to the parts of your system.
- ❑ Start using the software that is pre-installed on the pre-installed internal hard drive.

- ❑ Turn off the power to the parts of your system.

You will need the help and cooperation of your system administrator to do the following:

- ❑ Obtain an Ethernet cable.
- ❑ Set up a user account and password.
- ❑ Agree upon a suitable hostname.
- ❑ Obtain an Internet address.
- ❑ If necessary, obtain a Network Information Services (NIS) domain name.

Networks

If you have more than one SPARCstation 1+, you will probably want to set up your workstations on a network. Using a network facilitates communication between computer users and encourages sharing of computer resources like data, files, printers, and so forth.

A *network* is two or more systems that can communicate with other systems and can share software and files. A system that is not connected to any network is called a *standalone system*.

For network use, an Ethernet cable must be installed at your site, and you must have a transceiver cable to connect each system to the Ethernet cable. You should see the person in charge of your network about getting an Ethernet transceiver cable for your system.

The procedure you should follow depends on how you are planning to use your system. You can use your system in one of three ways:

- ❑ System on a network—a system connected to other systems on an Ethernet cable. In a network, the network administrator must prepare the network to accept a new system by supplying information to a server about the system. See “Starting Up Your System” in this chapter for instructions on powering up a system on a network.

- ❑ Master server—a system that provides basic services to other systems on the network. The master server must be the first system set up on a new network. If you are setting up a master server, see "Network Concepts," Chapter 11 and "Managing Systems on a Network," Chapter 14 in the *Sun System & Network Manager's Guide.*
- ❑ Slave server—all servers installed after the master server.

Connecting the Transceiver Cable

If your system is going to be part of an existing network, you must connect it to the network by using an Ethernet transceiver cable. The cable is not part of the basic SPARCstation 1+ system; you should obtain your Ethernet transceiver cable from the person who is in charge of your network.

Every SPARCstation 1+ system unit has at least one Ethernet port. See Figure 4-1. In addition, you can add up to a maximum of three additional Ethernet ports by purchasing additional Ethernet boards that plug into the SBus slots in your system unit. See Appendix A.

If you are setting up a new network, you must first read the *Sun System & Network Manager's Guide.*

To connect a transceiver cable:

1. Connect the end of the cable without pins to the Ethernet tap.

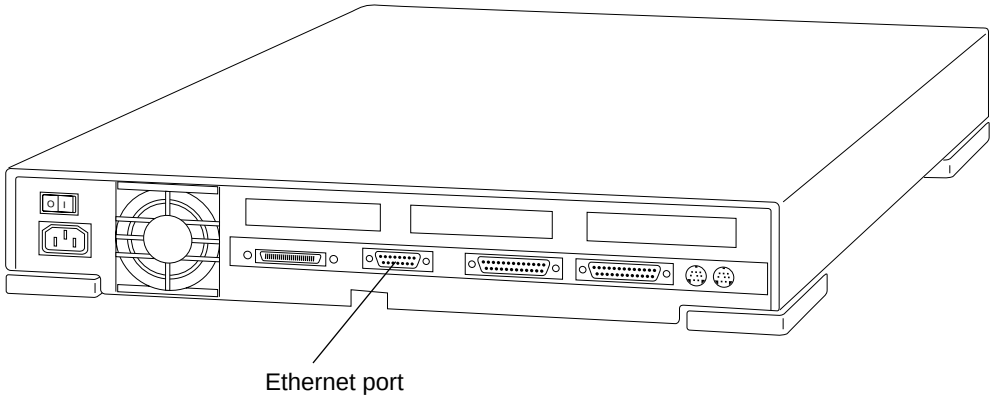
   The Ethernet tap may be set in the wall or the floor, or descend from the ceiling. Locate the Ethernet tap and align the holes in the connector with the pins in the tap. Align the slide-lock so that the screws on the tap can pass through. Push the connector firmly onto the tap. Then push the slide-lock to lock the connector in place.

   Note: The Ethernet cable is very heavy and the slide-lock is fragile. Leave enough slack in the cable to avoid excessive strain on the installed cable connector.

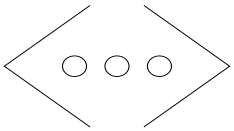
2. Connect the other end of the cable (with the pins) to the Ethernet port on the back of the system unit.

   Locate the Ethernet port on the back of the system unit. See Figure 4-1 to locate the Ethernet port.

Figure 4-1. Ethernet Port on System Unit Back Panel

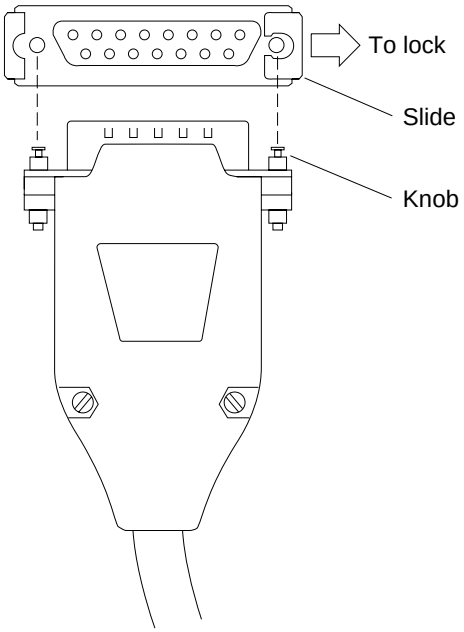


The Ethernet port is labeled with this icon:



Align the pins in the connector with the holes in the port. Connect this end of the cable just as you did the other end. Make sure that the slide-lock allows firm insertion of the connector pins into the port holes. After you have inserted the connector to the port, slide the slide-lock to secure the connector. See Figure 4-2.

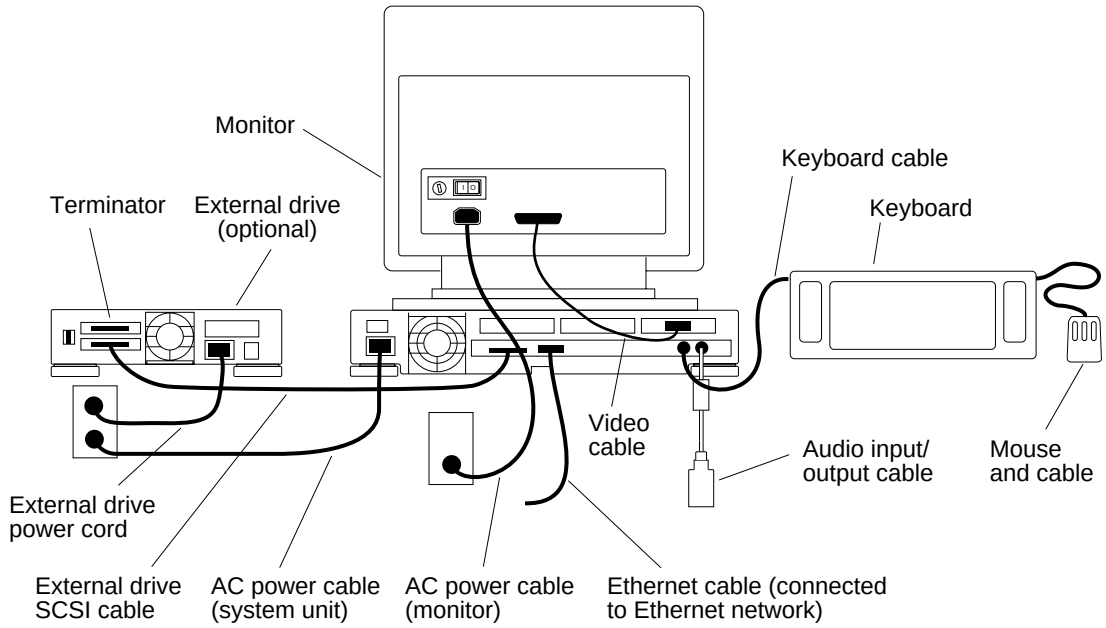
Figure 4-2. Securing the Transceiver Cable Connector



Checking System Setup

To check your setup, see Figure 4-3. It shows the rear view of a connected SPARCstation 1+ system. For information about installing external drives, see the *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual.*

Figure 4-3. Checking System Setup



Before Powering Up

The system should be at room temperature before you power it up. If the equipment was shipped when outdoor temperatures were significantly above or below room temperature, it is best to wait several hours before you power up your system.

Caution: Once the power is on, you should leave the system running, except when one of the few situations exists that warrants shutting it down. Conditions that warrant shutting down the system and turning the power off are described in "Powering Down Your System—When To Turn the Power Off" near the end of this chapter. The instructions for powering up a working system after it has been shut down are in "Powering Down Your System—How To Turn the Power Back On" near the end of this chapter.

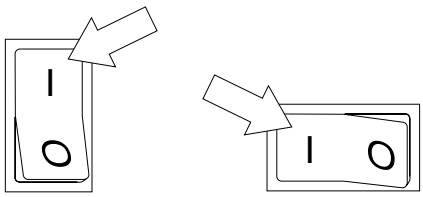
Powering Up Your System

Tell your network administrator that you wish to turn on the power to your system for the first time, and make sure you have any information you need before powering up. After you receive permission from the system administrator to power up your system, perform the following procedure.

To power up your system:

1. Turn on the power to the monitor.

   Find the power switch on the monitor. Press the side labeled 1.

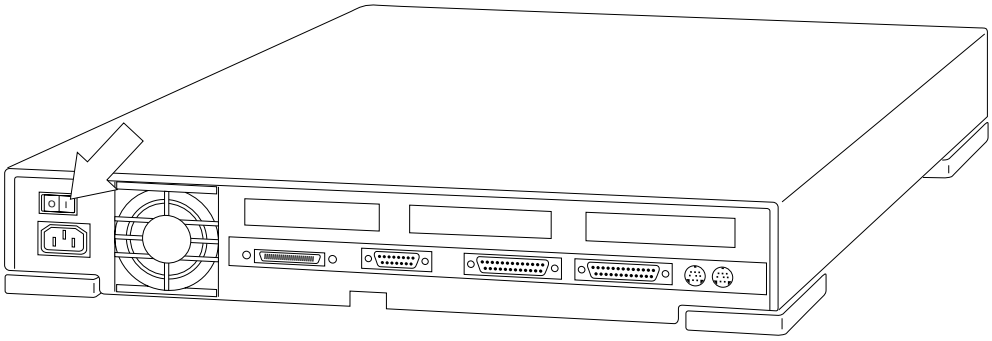


2. If your system is connected to an external drive unit, such as the Desktop Disk Pack, turn on the power to it. Press the side of the switch labeled 1.

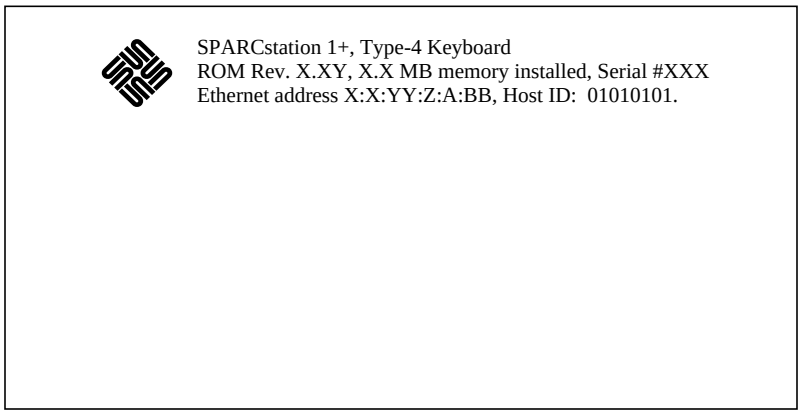
   Note: If you have more than one external drive on your system, refer to the manuals that came with them for information about the order in which to turn them on when powering up.

   Note: The External Storage Module has a voltage selection switch on the back panel. This switch must be set to the proper voltage *before* you turn on the power to the unit. For instructions about how to set the voltage selection switch, see the *Sun External Storage Module Installation Manual.*

3. Turn on the power to the system unit. Press the side labeled 1.



When the power is turned on and your system's monitor is operating properly, the SPARCstation 1+ displays a banner screen after about 15 to 30 seconds:



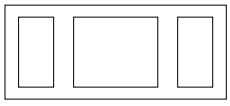
It then runs its power-on tests. As your system runs its power-on tests, various system messages will be displayed on the screen.

If you do not see the banner screen when you turn on the power, that could mean that your SPARCstation 1+ has failed a power-on test or that its monitor is not operating properly. If that

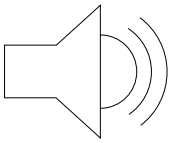
happens, call your Sun service representative for advice and assistance.

Note: Make sure all cable connections are secure. Loose cables are a common source of computer "failures"!

Note: Be sure the keyboard cable is plugged into the keyboard port, not the audio input/output port on the back panel of the system unit. Each port is labeled with an icon:



Keyboard port



Audio input/output port

In this application the serial port on your terminal must be set at 9600 baud. See Chapter 5 for additional information.

When your system unit fails a power-on test, it sends failure messages to serial port A on the back panel. If you have a terminal connected to serial port A, you will see test failure messages displayed on the terminal screen. Your monitor is different from a terminal and is not connected to either serial port. See Chapter 5 for terminal installation procedures and configuration.

Starting Up Your System

This section gives the procedure to follow when you first start up your system software. It assumes that your SPARCstation 1+ is equipped with at least one internal hard drive, and that the SunOS Operating System is pre-installed on the pre-installed internal hard drive. At the end of this section, Figures 4-4 and 4-5 give a summary of the procedure.

You may need to get some or all of the following from your system administrator:

- ❑ A system name for your SPARCstation 1+
- ❑ Your user account and password

- ❏ The Internet address for your SPARCstation 1+
- ❏ An NIS domain name

To start up your networked SPARCstation 1+ system for the first time:

1. If you have not done so already, turn on the power to all system parts following the procedure given earlier in this chapter.
2. Wait for the power-on tests to run.
3. If your system passes all power-on tests and you are using a *monitor*, go to Step 6.

   You will be prompted for your system name.
4. If your system passes all power-on tests and you are using a *terminal*, go to Step 5.

   You will be prompted for your terminal type.

   If you do not see the banner screen when you turn on the power, that could mean that your SPARCstation 1+ has *failed* a power-on test. Call your authorized Sun service representative for further advice and assistance.
5. Enter your terminal type.

   You can choose from the following menu choices:

```
Select terminal type:
     1) Televideo 925
     2) Wyse Model 50
     3) Sun Workstation
     4) Other
>> 2
```

   The System Name screen appears.

A monitor is a video display device that connects to a frame buffer that is installed within your SPARCstation 1+'s system unit. A terminal is a video display device that connects to either of the serial ports on the back panel of your SPARCstation 1+'s system unit.

6. Press Delete, Control-U, or the Back Space key to erase the sample response (noname). Enter your system (or machine) name and press Return.

```
                              SYSTEM NAME
-------------------------------------------------------------------------


  This screen assigns a name to your workstation.  If your system is
  connected to a network, choose a name that is unique within your local
  area network.  Type '?' if you want more information about selecting
  a name.

  hostname  :  nevada
```

The above illustration shows an example of the System Name screen with the sample system name nevada entered.

7. Review the time zone instructions displayed on your screen. It is necessary to correctly set the time zone so your system clock will operate correctly.

```
                              TIMEZONE
-------------------------------------------------------------------------
  Select one of the following regions.

                         x  *   United States

                            *   Canada

                            *   Mexico

                            *   South America

                            *   Europe

                            *   Asia

                            *   Australia and New Zealand

                            *   Greenwich Mean Time

Press <Return> or <Space> to move forward to your choice and type 'x'.
Type '?' if you need more information about choosing a time zone.
```

8. Press the Return key or the space bar to move the cursor to the desired category. Type `x` to display a submenu of timezones for that category. Type `?` if you need more information about choosing a time zone.

If you select the `United States`, for example, the system displays the following screen:

```
                        UNITED STATES

          Please use x or X to select your choice

    TIME ZONE NAME                AREA

    US/Eastern                    Eastern time zone, USA

    US/Central                    Central time zone, USA

    US/Mountain                   Mountain time zone, USA

  X US/Pacific                    Pacific time zone, USA

    US/Pacific-New                Pacific time zone, USA
                                  with proposed changes to Daylight
                                  Saving Time near election time

    US/Alaska                     Alaska time zone, USA

    US/East-Indiana               Eastern time zone, USA
                                  no Daylight Saving Time

    US/Hawaii                     Hawaii

    Return to Timezone Category Screen
```

9. Press the Return key or the space bar to move the cursor to the appropriate timezone, and type `X`.

   Having gathered the information needed to set the internal system clock, the system displays the System Time screen to ask for confirmation.

```
                              SYSTEM TIME
------------------------------------------------------------------------
  This screen sets the system clock.  If you type 'n' and press <Return>
  you must enter the correct time yourself.  Type '?' for information
  about entering the time.

  Is 'Sat Apr  1 01:01:01 1990 PST' the correct time? [y/n] y
```

10. If the displayed time is correct, press Return to select the default `y`. Go to the Network screen. Otherwise, enter `n` and press Return.

    If you answer `n`, the Set Time screen is displayed.

```
                              SET TIME
------------------------------------------------------------------------
  Enter the correct date and local time in the format
        month/day/year    hours:minutes:seconds
  If it is 2:20PM on November 20, 1989, for example, enter:
        11/20/89   14:20:00

  correct time:   11/20/90  13:26:47
```

11. Press Delete, Control-U, or the Back Space key to erase the sample response for the correct time. Enter the correct date and time and press Return.

    Be prepared to specify the date and time in a format such as:

`dd/mm/yy`	(two-digit day / two-digit month / two-digit year)
`hh:mm:ss`	(two-digit hour:two-digit minutes:two-digit seconds)

    The system displays a list of available formats so you can set the date and time yourself. If you enter `y`, the system uses the displayed information to set your system clock.

    Next, the system asks whether or not your system is attached to a network.

```
                                NETWORK
-------------------------------------------------------------------------

 This screen determines whether or not your system will be configured
 into a network.  If you answer 'y' you will need to answer some
 additional questions.

 Before the network installation begins, verify that an Ethernet cable
 is plugged into the back of your system.

 Is your workstation attached to a network? [y/n] y
```

12. Since you are setting up a networked system, press Return to select the default y.

    Next, the system requests your Internet address.

```
                            NETWORK ADDRESS
-------------------------------------------------------------------------

 This screen assigns a network address to your workstation.  Do not use
 the displayed address (192.9.200.1).  Contact your System Administrator
 for the unique network address of your system.  Do not enter an address
 unless you are sure it is correct.

 Type '?' for information about entering your network address

 Internet Address:  192.1.111.1
```

13. Press Delete, Control-U, or the Back Space key to erase the sample response, and enter your Internet Address.

Next, the system displays the following screen:

```
                              NIS NAME SERVICE
----------------------------------------------------------------------

The NIS is the Network Information Services.  If your site uses
NIS, enter 'y' to ensure correct access to the service.  Ask your System
Administrator if you do not know whether your site uses NIS.

 Will your workstation be using NIS [y/n] : y
```

14. If your system will use NIS (Network Information Service), press Return to select the default y. If your machine will not use NIS, enter n instead.

    - ❏ Continue the installation at the Confirmation screen if you enter n.
    - ❏ If you answer y, the system requests your domain name.

```
                                DOMAIN NAME
----------------------------------------------------------------------

 Your domain name distinguishes your network from all other networks.
 Do not use the displayed name (noname).  Contact your System
 Administrator for the existing domain name of your network.

 Type '?' for information about domain names.

 Domain name : crater.moon.com
```

15. Press Delete, Control-U, or the Back Space key to erase the sample response (noname), and enter your domain name.

    Next, the Confirmation screen is displayed.

```
                              CONFIRMATION
------------------------------------------------------------------------

  Hostname         : nevada
  Timezone         : US/Pacific
  Internet address : 192.1.111.1

  NIS domain 'crater.moon.com'

  Use this information? [use/reenter/abort] : u
```

16. Confirm the hostname, timezone, Internet address, and NIS domain name information as displayed, or start over to change the information.

    If you have a networked system not running NIS, you will see the hostname, timezone, and Internet address information.

    - ❏ To confirm, type u and press Return.
    - ❏ To start over, type r and press Return. You will be presented with the System Name screen.
    - ❏ To abort this installation procedure, type a and press Return.

    For example, to confirm the example configuration information listed on the Confirmation screen:

```
                              CONFIRMATION
------------------------------------------------------------------------

  Hostname         : nevada
  Timezone         : US/Pacific
  Internet address : 192.1.111.1

  NIS domain 'crater.moon.com'

  Use this information? [use/reenter/abort] : u
```

Next, the Installation screen is displayed.

```
                              INSTALLATION
-------------------------------------------------------------------------

  Hostname         : nevada
  Timezone         : US/Pacific
  Internet address : 192.1.111.1

  NIS domain 'crater.moon.com'
```

The system confirms the configuration information you have chosen for your machine on the Installation screen, then prompts for a root password.

17. Follow the directions in the Superuser Password screen.

```
                            SUPERUSER PASSWORD
-------------------------------------------------------------------------
 To prevent other users from using the Superuser account on
 your workstation, you should give it a password.  To give a
 password to the root account, enter the password below.

 If you don't want to assign a password, just press RETURN.

 Type '?' for help

 Password:
```

After you have typed a password and pressed Return or have only typed Return, your system will prompt you to set up a user account.

If your system does *not* use NIS (that is, it is *either* not networked *or* networked but not using NIS), after the

Superuser Password screen you will be asked if you want to set up a user account.

If your system uses NIS, it completes the installation process without asking you to set up a user account. Skip Steps 18-22. Go to Step 23.

18. Read and follow the instructions in the User Account screen, and type `y` in response to the question it asks.

```
                              USER ACCOUNT
------------------------------------------------------------------------
 To use your system you must have a user account.  You may
 set up an account now.

 Before setting up an account, you will need to know the following
 information:
     user full name - the common name of the user, e.g. "John Doe"
     user name - the login name of the user, e.g. "jdoe"
     user id - the system numerical id of the user

 Do you want to set up a user account? : y
```

19. Respond to the User Account – Full Name screen by typing your "full name" and pressing Return.

```
                         USER ACCOUNT – FULL NAME
------------------------------------------------------------------------
 Please enter your "full name".
 This is the usual name of the user, e.g. "John Doe."  It is put into the
comment field of the password file and used by various programs to attach
a more meaningful name to a user than the system user name or the user id
number.

 Enter your full name:  Suzanne Smith - Corporate Marketing
```

The above illustration shows the example of a system with a "full name" of `Suzanne Smith - Corporate Marketing`.

20. Respond to the User Account – User Name screen by typing your "user name" and pressing Return.

```
                        USER ACCOUNT – USER NAME
------------------------------------------------------------------------
 Each user account must have a "user name".  Your user name
 is the name you will be known by on the system.  Your user
 name may have up to eight lower-case letters, but no
 spaces.  User names often consist of the user's first initial
 and last name.

 User name:  ssmith
```

The above illustration shows the example of a system with the user name of `ssmith`.

The user name and password are very important because you use them to log in to the system.

21. Respond to the User Account – User ID screen by typing your account number and pressing Return.

```
                        USER ACCOUNT – USER ID
------------------------------------------------------------------------
 Each user account must have a number known as the "uid".
 This number needs to be unique throughout all systems attached to
 your network.  It must be an integer with a value between 10
 and 60000.  If you are in doubt, please ask your system
 administrator for help in getting a unique uid number.

 uid number:  29877
```

The above illustration shows the example of a system with a user identification (user id) of `29877`.

22. Respond to the User Password screen by typing your password and pressing Return.

```
                                USER PASSWORD
------------------------------------------------------------------------
 You may select a password.  Passwords are not required, but
 they are recommended for security reasons.  If you don't
 choose a password now, you can choose one later while you
 are using the system.

 If you don't want to enter a password, just press RETURN.

 Type '?' for help.

 Password:
```

23. The system finishes the booting process and displays the `login` prompt.

```
Automatic reboot in progress...
...
nevada login:
```

You can now log in to the system with your account name and password. See the information about logging in and logging out in "Beginning and Ending a Session," Chapter 2 in the *Sun System User's Guide.*

For all NIS systems and any other system that does not yet have a user account, log in as `root`. Then see "Administering User Accounts," Chapter 5 in the *Sun System & Network Manager's Guide.*

```
nevada login: root
password: (Type superuser password.)
Apr 12 18:29:43 nevada login: ROOT LOGIN console
Last login: Fri Apr 6 07:08:25 on console
SunOS Release 4.1.1 : Wed Mar 28 21:17:46 PDT 1990
nevada#
```

Figure 4-4. Starting Up a Networked System: Summary

Follow these steps to start up a SPARCstation 1+ on a network. For complete details, read the procedures earlier in this chapter. After you type a response on the screen and press Return, the next screen appears.

Consult your system administrator about your system name, Internet address, NIS domain name, account, and password.

1. Turn ON power to all system parts, in this order: monitor, external drives (farthest on the SCSI bus from system unit first), system unit.
2. If you are using a terminal, the terminal type selection list appears. Enter the type of terminal you are using.
3. At the System Name screen, type your system name.
4. At the TimeZone screen, select the appropriate time zone category.
5. At the list of choices, select your specific time zone.
6. At the System Time screen, choose to confirm or to reset the time and date.

   If you chose to reset the time and/or date, when the Set Time screen appears type a new time and date.
7. At the Network screen, type y to indicate that you will be working on a network.
8. At the Network Address screen, type your Internet address.
9. At the NIS screen, indicate whether you will be using NIS.
10. If you will be using NIS, type your NIS domain name at the Domain Name screen.
11. At the Confirmation screen, confirm, start over, or abort the installation.
12. Next, the Installation screen appears, which confirms the configuration information.

(Continued in Figure 4-5 on the next page.)

Figure 4-5. Starting Up Your System: Summary

(Continued from Figure 4-4 on the previous page.)

13. When the Superuser Password screen appears, type your superuser password.

    If your system does *not* use NIS (that is, it is *either* not networked *or* networked but not using NIS), after the Superuser Password screen you will be asked if you want to set up a user account.

14. When the User Account screen appears, type y to set up a user account.

15. When the User Account – Full Name screen appears, type your system's full name.

16. When the User Account – User Name screen appears, type your user name.

17. When the User Account – User ID screen appears, type your user identification account number.

18. When the User Password screen appears, type your user password.

    If your system uses NIS, it completes the installation process without asking you to set up a user account.

When the configuration is successfully completed, the system displays the login prompt.

Powering Down Your System

Turning off a computer is not as simple as turning off a household appliance like a stereo or television set. You must follow a specific procedure before turning off the power.

The SPARCstation 1+ is designed to be left running continuously. Turning the power on and off too frequently can damage the system's electrical components. Always allow at least 10 seconds between turning off the power on all system components and turning the power on again.

When to Turn the Power Off

Turn off the power only if you want to:

- ❑ Stop the software installation procedure.

Note: To stop the software installation procedure, press L1-A. If that does not stop the procedure, only then should you turn off the power.

- ❑ Remove or install a part inside the system unit.
- ❑ Install an external drive unit.
- ❑ Unplug the system unit power cord, for example to move the system to a new location.
- ❑ Recover from a "hung" or "frozen" system—a system that does not respond to the keyboard or the mouse.
- ❑ Prepare for an expected power outage in your building.

Note: You cannot plan for an unexpected power outage. When an unexpected outage occurs, turn off the power switches on all your equipment. Doing this protects your equipment from possible power surge damage when power is restored to your building.

How to Turn the Power Off

To turn off the power when your system is working normally:

1. Save all your work.

   See the *Sun System User's Guide* for more information about ending a work session and saving your files. If you do not save your work, you could lose it when you switch off the power.

2. Return to SunOS Operating System environment and type the following in sequence:

   - `/usr/bin/su` Return
   - your superuser `password` Return
   - `sync;sync`
   - /usr/etc/halt Return

   For example, for a system with the hostname `nevada` and the superuser password `welcome`, you would type the following:

```
nevada% /usr/bin/su
Password: welcome (not displayed on the screen)
nevada# sync;sync
nevada# /usr/etc/halt
```

Note: For additional information about superuser passwords, see "Becoming Superuser," Chapter 2 in the *Sun System & Network Manager's Guide.*

After you have typed `/usr/etc/halt` Return, watch for the following message:

```
syncing file systems...  [1][1]done
Halted
Program terminated
Type b(boot), c(continue), n(new command mode)
>
```

When it appears, you can safely turn off the power to the system unit. You can also turn off the power when you see the following message:

```
Type help for more information
ok
```

3. Turn off the power in sequence to:

   - ❏ External drive units (if any)
   - ❏ SPARCstation 1+ system unit
   - ❏ Monitor

If you use a Wyse WY-50, VT100, or compatible terminal as the console with your SPARCstation 1+ system unit, press Break.

Note: To end a work session and save your work when your system does not respond to the mouse, you will need to use a different procedure. Press L1-A to enter the PROM (Programmable Read-Only Memory) monitor command mode. The monitor command prompt is indicated on the screen with either a "greater than" symbol `>` .

Type `b` Return at the "greater than" prompt (or type `boot` at the `ok` prompt).

```
Type b (boot), c (continue), n (new command mode)
> b
system messages
system messages
system messages
system messages
system messages
system messages
system messages

nevada login:
```

Wait for the `login` prompt to return.

Log in as superuser (`root`), and type `halt` Return. After the `Halted` message appears, turn off the power.

How to Turn the Power Back On

If you have turned off the power after using the system, turning the power on again is relatively simple.

Caution: Always allow 10 seconds between turning off the power and turning it back on again. This pause prevents possible damage to power supply components in your system unit.

Turn the power switches on in this order: monitor, external drive unit (if you have one), and system unit.

Note: If you have multiple external drives in a daisy-chain, turn on the power in this order: monitor, external drives (farthest on the SCSI bus from system unit first), system unit.

After a minute or so, you should see the login prompt.

```
system messages
system messages
system messages
system messages
system messages
system messages
system messages
system messages
system messages

nevada login:
```

When you see the login screen, you can log in to your system and begin using it again. For more information on logging in, see Chapter 2 in the *Sun System User's Guide.*

What's Next

You have finished Chapter 4, and have done the following:

- ❑ Connected the Ethernet transceiver cable
- ❑ Checked how your system is set up
- ❑ Prepared your system before turning on the power
- ❑ Turned on the power to the parts of your system
- ❑ Started using the software that is pre-installed on the hard drive
- ❑ Learned how to turn off the power to the parts of your system

Now you can read any of the following chapters depending on what you want to do:

- ❑ If you want to connect a printer, terminal, or modem to your system, read Chapter 5.
- ❑ If you want a brief description of your system's software, read Chapter 6.
- ❑ If you want to learn where to find more information about using diskettes, read Chapter 7.
- ❑ If your system is connected to an external tape drive unit or an external compact disc drive unit and you want to learn where to find more information about how to use cartridge tapes and compact discs, read Chapter 7.
- ❑ For information about installing external drives, see the *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual.*

5

Printers, Terminals, and Modems

This chapter tells you how to do the following:

- ❏ Find information about connecting a printer
- ❏ Connect a terminal
- ❏ Connect a modem

What You Need

Before you connect any of these peripheral devices to your system, you need the following:

- ❏ A SPARCstation 1+ that is up and running
- ❏ The correct cable
- ❏ The manual for the printer, terminal, or modem

Power to your SPARCstation 1+ may be left *on* when you install a printer, terminal, or modem.

You must consult the manual for the specific printer, terminal, or modem for information about what it can do and how you operate it.

Supported Devices

The SPARCstation 1+ supports the following kinds of peripheral devices (among others):

- ❑ Laser printer
- ❑ Most popular types of terminals
- ❑ Hayes™ and Hayes-compatible modems

Laser Printer

You can purchase a laser printer through Sun Microsystems. A laser printer uses laser beam technology rather than a mechanical print head. A laser printer purchased from Sun Microsystems is capable of printing anything that appears on your screen (except colors) and it produces a high-quality image suitable for commercial reproduction.

After a printer is connected to the SPARCstation 1+, you should consult the *Sun System & Network Manager's Guide* for information about defining a printer to your system.

Terminals

A terminal consists of a screen and keyboard that can be connected to your SPARCstation 1+ to display and enter information. The terminal is a second point of access—in addition to your monitor and standard keyboard—to your system.

Modems

A modem is a device that enables your system to communicate with another computer over telephone lines.

Cable Requirements

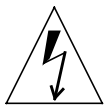
Figure 5-1 gives the cable requirements for connecting certain types of terminals and modems mentioned in the remainder of this chapter. For additional information about cables, see Appendix B.

Figure 5-1. Table of Device Cable Requirements

Device	Cabling Equipment
Wyse WY-50 terminal	Male-male null modem cable
VT-100 terminal	Female-male null modem cable
Hayes and compatible modems	Male-male modem cable

Power and Outlet Requirements

Each terminal and modem operates with a separate power cord and plugs into a separate grounded power outlet.



Warning: All power cords do not have the same current ratings. Household extension cords do not have overload protection, and are not meant for use with computer systems. Do not use household extension cords with your SPARCstation 1+ and associated equipment.

Connecting a Printer

After a printer is connected to the SPARCstation 1+, consult the *Sun System & Network Manager's Guide* for information about defining a printer to your system.

For information about setting up and operating your printer, refer to the owenr's manual that came with it.

You can leave the power to the SPARCstation 1+ *on* when you connect a terminal.

To connect a printer to the SPARCstation 1+:

1. Set up the printer for operation.

Read the operator's manual that comes with your printer to determine how to set up the unit for operation. Locate the power switch on the printer, and make sure it is set to the *Off* position.

2. Connect the printer's serial port cable to the desired port on the SPARCstation 1+ system unit.
3. Connect the other end of the printer's serial port cable to the printer.

Connecting Wyse WY-50 and VT-100 Terminals

Consult your terminal operations manual, or your dealer, if you are not sure whether the terminal you plan to connect is compatible with a Wyse WY-50 or VT-100.

Power to your SPARCstation 1+ may be left *on* when you install a terminal.

To connect a terminal to the SPARCstation 1+:

1. Set up the terminal for operation.

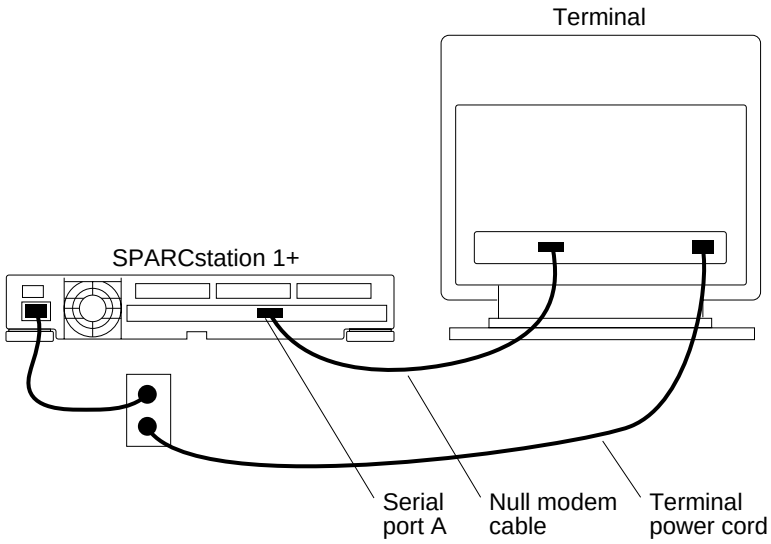
   Read the operator's manual that comes with your terminal to determine how to set up the unit for operation. Locate the power switch on the terminal and make sure it is set to the OFF position.

2. Connect the null modem cable to the terminal.

   Plug one end of a null modem cable into the serial port on the terminal. The Wyse WY-50 serial port requires a male connector. The VT-100 serial port requires a female connector. See the terminal owner's manual for the location of the serial port on your terminal.

3. Connect the other end of the cable to one of the SPARCstation 1+ serial ports. If you see failure messages, connect the other end of the cable to serial port A.

   The SPARCstation 1+ serial port requires a male cable plug.



4. Plug in the terminal power cord to an AC outlet. Then turn on the power.
5. Configure the terminal.

   The Wyse WY-50 and VT-100 terminals have setup menus that enable you to control how the terminal operates. The setup options control features that need to be adjusted only once (unless you decide to change how the terminal operates). See your terminal operation manual to find out how to access the setup menu.

   Then set the options as follows:

   - ❏ Wyse WY-50—Set at TVI925 emulation mode
   - ❏ 8 data bits per character
   - ❏ 1 stop bit
   - ❏ No parity
   - ❏ 9600 baud
   - ❏ X ON / X OFF enabled

6. Define the terminal to the system.

   After the terminal has been connected, powered up, and configured, you must tell your system that it is there. The SPARCstation 1+ needs to know where to send the data that you want to display on the terminal, and where to look for the data that you want to enter from the terminal.

   For information about how to set up terminals software, see "Printer, Terminal, and Modem Software," Chapter 15 in the *Sun System & Network Manager's Guide.*

Connecting Other Types of Terminals

The SPARCstation 1+ is designed to work with the terminals specified above. To find out which other terminal types your SPARCstation 1+ supports, type `more /etc/termcap` Return.

Although the null modem cable assembly described in Appendix C will probably work with other terminals, you may have to make a custom cable. See the terminal manual and Appendix C of this book for information about making a custom null modem cable.

Connecting Hayes and Hayes-Compatible Modems

The Hayes Smartmodem 1200™, Hayes Smartmodem 2400™, and Hayes-compatible modems respond to a special set of commands from your keyboard.

Power to your SPARCstation 1+ may be left *on* when you install a modem.

To connect a Hayes or Hayes-compatible modem:

1. Set up the modem for operation.

   Read the operator's manual that comes with your modem to determine the proper setup procedure for the unit. Locate the power switch on the modem and make sure it is set to the OFF position.

The default switch settings for the Hayes Smartmodem 2400™ are compatible with the SPARCstation 1+. If you have a Hayes-compatible modem, the switches may not correspond exactly to the Hayes switches. The standard switch settings are provided here, so that you can emulate the Hayes standards on other modems.

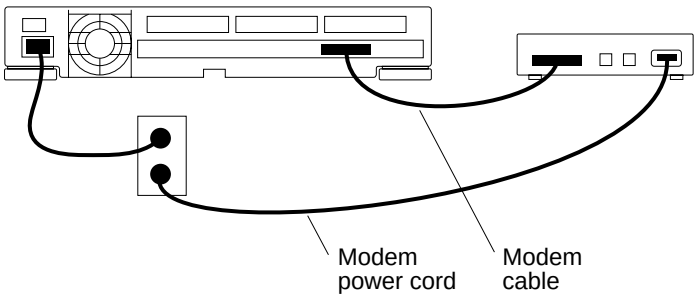
- ❏ Baud rate: This refers to the speed at which data is transmitted. The baud rate can sometimes be set using the modem switches, but it is also specified when using your SPARCstation 1+ software (see Step 5). Be sure your modem's baud rate is the same as the baud rate of the other modem(s) with which it must communicate.
- ❏ DTR: OFF. The SPARCstation 1+ uses X ON / X OFF to control data flow, rather than DTR (Data Terminal Ready).
- ❏ Numeric result codes: ON
- ❏ Suppress result codes: OFF
- ❏ Echo off-line commands: OFF
- ❏ Auto-answer on ring: OFF, unless you are using the modem to answer incoming calls from other computers.
- ❏ Normal carrier detect: OFF
- ❏ Single phone connection: OFF
- ❏ Normal AT command set: ON. This enables the modem to respond to commands from your keyboard.
- ❏ Disconnect with +++ : ON. This enables you to break the phone connection by typing three plus (+) signs.

2. Connect the modem cable to the modem.

   Plug one male end of the modem cable into the serial port on the modem.

3. Connect the modem cable to the SPARCstation 1+.

   Plug the other male end of the modem cable to either serial port A or serial port B on the SPARCstation 1+.



4. Plug the modem's power cord into the AC outlet and power up the modem.
5. Define the modem to the system.

   After the modem has been connected and powered up, you must tell your system that it is there. The SPARCstation 1+ needs to know where to send the data that travels over the telephone lines.

   For information about how to define modems in the SunOS Operating System, see Chapter 15 in the *Sun System & Network Manager's Guide.*

Connecting Other Types of Modems

If you use your SPARCstation 1+ with a modem that is not Hayes-compatible, you must:

- ❑ Make sure that the modem cable conforms to SPARCstation 1+ requirements described in Appendix C of this book.
- ❑ Use the method described in Chapter 15 in the *Sun System & Network Manager's Guide* to define a non-Hayes modem to the system.

What's Next

You have finished Chapter 5 and know how to do the following:

- ❑ Find information about connecting a printer to your SPARCstation 1+ system unit
- ❑ Connect a Wyse WY-50 or VT-100 terminal to your SPARCstation 1+ system unit
- ❑ Connect a Hayes or Hayes-compatible modem to your SPARCstation 1+ system unit

Now you can read any of the following chapters depending on what you wish to do:

- ❑ If you want a brief description of your system's software, read Chapter 6.
- ❑ If you want to learn where to find more information about using diskettes, read Chapter 7.
- ❑ If your system is connected to an external tape drive unit or an external compact disc drive unit and you want to learn where to find more information about how to use cartridge tapes and compact discs, read Chapter 7.
- ❑ For information about installing external drives, see the *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual.*

6

Introduction to SunOS

The operating system is the software that allows you to control the resources of your system:

- ❏ Hardware
- ❏ Programs
- ❏ Data
- ❏ User access

This chapter briefly describes the SunOS Operating System (SunOS) and consists of the following sections:

- ❏ Access to SunOS
- ❏ References about SunOS installation
- ❏ Before you start
- ❏ SunOS features
- ❏ Optional categories
- ❏ Reinstalling SunOS

Access to SunOS

The SPARCstation 1+ operating system software is called SunOS. To access SunOS, it must be installed on your system or on a network server, as follows:

- ❏ If your system unit is shipped with a pre-installed internal hard drive, SunOS is already installed.
- ❏ If your SPARCstation 1+ is equipped with a diskette drive and an internal hard drive, you can install SunOS from a series of diskettes.
- ❏ If your SPARCstation 1+ is equipped with an internal hard drive and is connected to an external tape drive *or* to another Sun Workstation that is connected to an external tape drive, you can install SunOS from a cartridge tape.
- ❏ If your SPARCstation 1+ is equipped with an internal hard drive and is connected to an external compact disc drive, you can install SunOS from compact disc.
- ❏ If your SPARCstation 1+ is connected to a network, you can access SunOS on a network server.

SunOS is available on the following media: 0.25-inch (6.35 mm) cartridge tape or 4.76-inch (120 mm) compact disc. Your workplace may have copies of SunOS on various media—tape and compact disc.

SunOS installation instructions are provided in *Installing the SunOS* and the *Quick Install Guide.*

Additional Information about SunOS

For additional information about installing SunOS, see:

- ❏ "Starting Your System" either in Chapter 3 for single systems or in Chapter 4 for networked systems.
- ❏ Chapter 14 of the *Sun System & Network Manager's Guide.*
- ❏ *Installing the SunOS 4.1.1* and the *Quick Install Guide.* These manuals are shipped with your operating system (when you order the operating system separately).

Before You Start

If you are using your SPARCstation 1+ for the first time and are not familiar with SunOS commands, follow the introductory lessons and read Chapters 2 and 4 of the *Sun System User's Guide.*

You can generally rely on the *Sun System User's Guide* for information about how to use SunOS.

SunOS Features

SunOS contains a core system that has all the software you need for general use of the SPARCstation 1+. This section summarizes some of the outstanding features of SunOS, including windowing system applications, the Soundtool audio demonstration program, and other optional programs.

Windowing Systems

The windowing system on your SPARCstation 1+ lets you use the mouse to manipulate windows, menus, and common graphics symbols.

The windowing environment is a set of graphical, window-based desktop tools. It lets you use your SPARCstation 1+'s mouse to "drag" files from one application and "drop" them in another application when you copy, move, print, and back up files.

You can use either the OpenWindows™ or SunView windowing system on the SPARCstation 1+.

For information about starting up and using OpenWindows, see the following Sun publications:

- *OpenWindows Version 2 User's Guide*
- *DeskSet Environment Reference Guide*
- *OpenWindows Version 2 Installation and Start-up Guide*
- *OpenWindows Version 2 Release Notes*

For information about starting up and using SunView, see the *Sun System User's Guide.*

Windowing System Applications

This section describes some of the many applications that you can access in your windowing system. For information on using these tools in the OpenWindows DeskSet™ environment, see the *DeskSet Environment Reference Guide*. For information on using them in the SunView Desktop environment, see the *Sun System User's Guide*.

- Mail

The Mail icon appears on your Sun windowing system as a small mailbox. When you select the Mail icon with the mouse, a window opens that allows you to send, receive, read, and print mail from other people on your network.

- Text Editor

The Text Editor icon appears on the Sun windowing system as a symbol of a small printed page. When you select the Text Editor icon with the mouse, a window opens that serves as a scratch pad. You can compose letters or reports in the Text Editor window and save them for later use. Using some of the text processing programs in SunOS, you can format this text as a first step toward producing visually pleasing pages.

- Command Tool

The Command Tool window is where you run commands that are part of the SunOS environment. There are hundreds of useful commands, although you may only need a few of them.

- Clock

The system Clock icon appears on the Sun windowing system as a small clock face. It shows you the time and if you select the Clock icon with the mouse, the day of the week, the date, and the time are displayed.

- Network

The SPARCstation 1+ has software that lets you communicate over a network with other workstations. You can send and receive mail, and you can use software made available by network servers. If you have been authorized to do so, you can use files created by others on the network.

Soundtool

Soundtool is an audio demonstration program that demonstrates the sound capabilities of the SPARCstation 1+.

Soundtool allows you to:

- Digitize sounds and store them as files
- Retrieve sounds from files
- Play sounds through the system speaker
- Play sounds through the audio input / output port on the back panel of the system unit using an external amplifier and loudspeaker

For additional information on Soundtool, see Appendix C of the *Sun System User's Guide.*

Optional Categories

The optional categories are additional applications, system software, and data files that are included in SunOS. You can store the categories on cartridge tape, on CD-ROM, or both. Some of the categories are very specialized, while other categories, such as communications, games, demos, and document preparation, are of general interest.

The optional categories are not preloaded; you can choose which applications you want to install on your hard drive. This allows you greater flexibility in using disk space. You can load the software from diskette or compact disc when you need it.

Reinstalling SunOS

If your system fails to work, consult a technical person at your workplace or your service representative. If your SPARCstation 1+ has a hard drive, it may be necessary to reinstall SunOS on the drive from cartridge tape or compact disc.

Caution: SunOS should be reinstalled only if there are no other remedies that will work. Reinstalling SunOS erases everything on your hard drive, so you should back up all of your personal work files (and system configuration files) before beginning. For information about how to back up files, see the *Sun System User's Guide*. If you do not make a regular practice of backing up your files, it may be too late to do so when you need to reinstall SunOS.

Note: If you are not familiar with using cartridge tapes or compact discs see Chapter 7.

After you have reinstalled SunOS, you can restore your personal work files from your backup files, if you have them. For more information about making backups of your work files, see the *Sun System User's Guide.*

To reinstall SunOS, see *Installing the SunOS 4.1.1* and the *Quick Install Guide*. These manuals are shipped with your operating system (when you order the operating system separately).

What's Next

You have finished Chapter 6 and have learned:

- ❑ How to access and use SunOS
- ❑ Which Sun publications to consult for more information about installing SunOS
- ❑ About some of the special features of SunOS

Now you can read any of the following chapters, depending on what you wish to do:

- ❑ If you want to connect a printer, terminal, or modem to your system, read Chapter 5.
- ❑ If you want to learn where to get more information about using diskettes, read Chapter 7.
- ❑ If your system is connected to an external tape drive unit, and you want to learn where to get more information about using cartridge tapes, read Chapter 7.
- ❑ If your system is connected to an external compact disc drive unit, and you want to learn where to get more information about using compact discs, read Chapter 7.

7

Using Diskettes, Tapes, and Compact Discs

This chapter provides an overview explaining where to get more information about using diskettes, cartridge tapes, and compact discs with your SPARCstation 1+. Read this chapter if your system unit is:

- ❏ Equipped with a diskette drive
- ❏ Connected to a Desktop Backup Pack
- ❏ Connected to an External Storage Module equipped with a tape drive
- ❏ Connected to a Desktop SunCD Pack

For information on installing and using external drive units, see the manuals included with them.

This chapter consists of the following sections:

- ❏ Overview
- ❏ Cartridge tape overview

Overview

Most SPARCstation 1+ system units are equipped with a diskette drive. The SPARCstation 1+ uses 3.5-inch (88.9 mm) high density (HD) diskettes. Use diskettes to:

- ❏ Load software onto your system
- ❏ Save work files
- ❏ Make backup copies of work files for data security

To save and back up your work files, you must purchase your own, new diskettes.

For information on handling diskettes, inserting and removing diskettes, formatting diskettes, and write-protecting diskettes, see Appendix B "About Diskettes" in the *Sun System User's Guide.*

Tape cartridges are used with your SPARCstation 1+ if it is:

- ❏ Connected to an optional external tape drive unit
- ❏ Has network access to another SPARCstation 1+ that is connected to an optional external tape drive unit
- ❏ Has network access to other Sun servers that use 0.25-inch (6.36 mm) cartridge tape

For complete information about cartridge tapes, see the *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual.* The following section "Cartridge Tape Overview" provides additional information.

Compact discs are used with your SPARCstation 1+ if it is:

- ❏ Connected to an optional external compact disc drive unit
- ❏ Has network access to another Sun system that is connected to a compact disc drive

For information on handling compact discs, see the *Desktop Storage Pack Installation Guide.*

Cartridge Tape Overview

For saving work files and making backup copies, you will need to purchase additional 0.25-inch (6.35 mm) cartridge tapes. Figure 7-1 gives information about the kinds of cartridge tapes to be used when your SPARCstation 1+ is connected to specific external tape drive units.

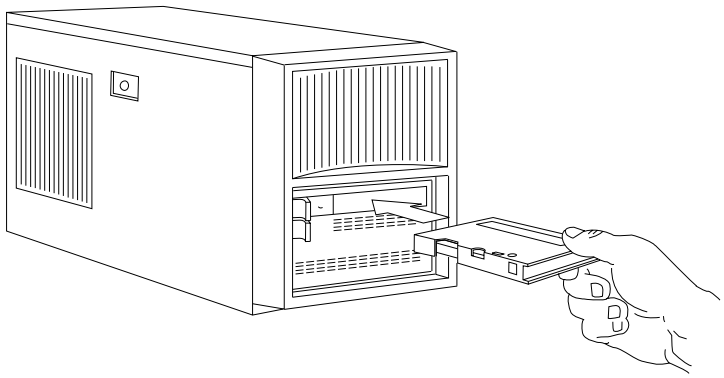
Figure 7-2. Table for Selecting Cartridge Tapes

Drive Unit	Cartridge Tape	MB
Desktop Backup Pack	DC6150 †	150
External Storage Module	DC300-XLP	45
	DC600A	60

†The Desktop Backup Pack can read data from cartridge tapes used with other Sun external drive units. However, the DBP can only write data to DC6150 and DC600-XTD cartridge tapes. DC6150 cartridge tapes were formerly designated DC600-XTD.

For information on how to insert a cartridge tape in the Desktop Backup Pack, see the *Desktop Storage Pack Installation Guide.* Figure 7-2 illustrates how to insert a cartridge tape in an External Storage Module.

Figure 7-3. Inserting a Cartridge Tape: External Storage Module



What's Next

You have finished Chapter 7, and have learned about the following:

- ❑ Where to get more information about handling diskettes
- ❑ Where to get more information about cartridge tapes and a brief overview of cartridge tapes
- ❑ Where to get more information about compact discs

Now you can read any of the following chapters depending on what you wish to do:

- ❑ If you want to connect a printer, terminal, or modem to your system, read Chapter 5.
- ❑ If you want a brief description of your system's software, read Chapter 6.

A

Installing SBus Boards and SIMMS

This appendix tells you:

- How to remove the system unit cover
- How to install SIMMs, the frame buffer board, and other SBus boards
- How to replace the system unit cover

Before Starting a New System

In a new SPARCstation 1+ that is being set up and used for the first time, all internal parts must be installed before you turn on power to the system unit.

Powering Down Your System

If you have already used your system, you should save all your work and stop the system.

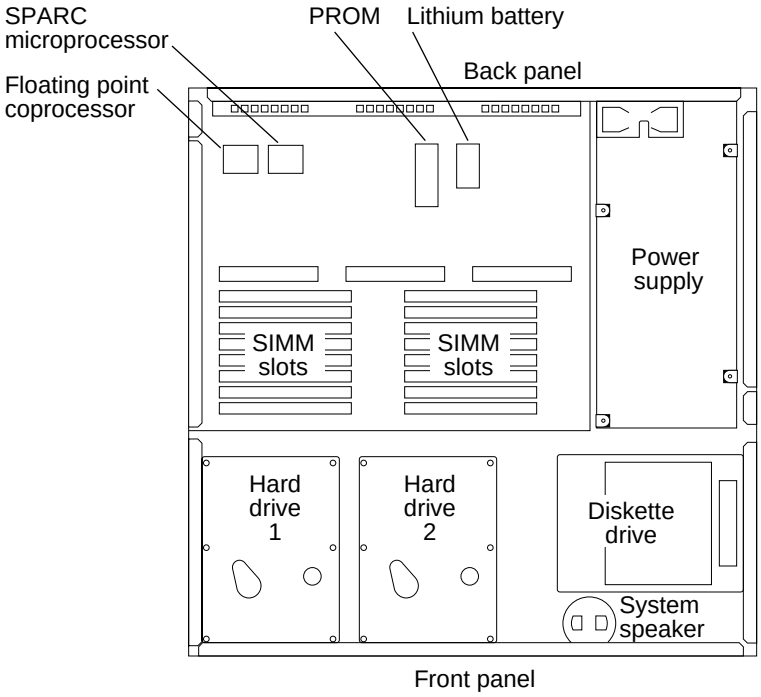
Chapters 3 and 4 of this book describe how to shut down your system in preparation for turning off the power. For details, see:

- "Powering Down Your System" in Chapter 3 for single systems
- "Powering Down Your System" in Chapter 4 for networked systems

For information about how to save your work, see "Using the Text Editor," Chapter 6 and "Using the Mail Tool," Chapter 7 in the *Sun System User's Guide.*

Caution: Microchips and printed circuit boards are made of delicate electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can damage them. Handle boards only by the non-conducting edges. Do not touch the components on the boards or any metal parts. Wear a grounding strap when handling the boards. **Do not disconnect the power cord from the system unit's power receptacle when replacing SBus boards or SIMMs. The power cord should be left plugged in to a grounded power outlet.** This connection provides the ground path necessary so that you can safely remove and install printed circuit boards and other components. Be sure that the system unit's power is turned OFF by observing that the green light-emitting diode (LED) at the front of the chassis is not lit and the fan in the power supply is not running.

Warning: There is a lithium battery molded into the Mostek real-time clock, No. MK48TO2BU or No. MK48TO2B-XX, where X may be any number from 1–9. It is located on the main-logic board of the system unit next to the programmable read-only memory (PROM). The MK48TO2BU or MK48TO2B-XX is *not* a customer-replaceable part. The battery may explode if mistreated. Do not disassemble it or attempt to recharge it.

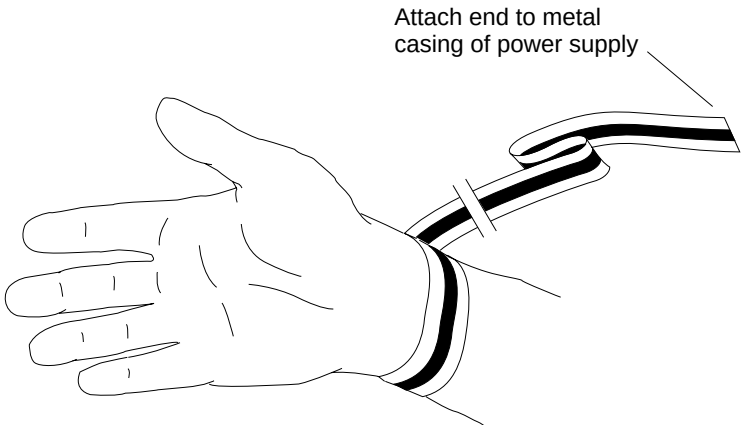


Attaching a Wrist Strap

A wrist strap is a device that provides grounding between your body and the chassis of the system unit. **Boards and modules can be damaged by harmful electrical charges if you do not wear a wrist strap.** Electric current and voltage do not pass through the wrist strap. A wrist strap must be attached to your wrist and to the chassis. Parts that require the use of a wrist strap are packed with one.

To use a wrist strap:

1. Wrap the grounding strap with the conductive adhesive tape twice around your wrist. Make sure the adhesive side is against your skin.



2. Attach the end with the adhesive copper strip to a non-painted area on the bottom of the chassis.

Removing the System Unit Cover

The top cover attaches to the chassis at the front with molded plastic tabs. When you push the cover forward, you release the front of the cover from its points of attachment to the chassis.

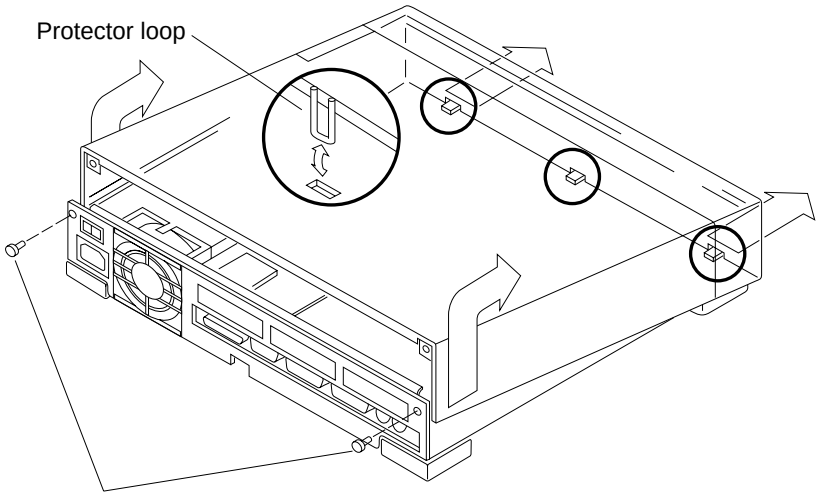
To remove the cover from the system unit:

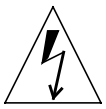
1. Place the system unit on a work table.
2. Remove the top cover from the system unit.

   Do the following in sequence:

   - ❏ Remove the two screws holding the cover to the back panel. Use a Phillips screwdriver to remove the screws.
   - ❏ Grasp the sides of the cover from the rear and tilt the cover until the protector loop clears the chassis.
   - ❏ Gently push the cover towards the front about one-half inch (13 mm) so that the plastic tabs clear the chassis.
   - ❏ Remove the cover by lifting vertically.

Caution: The plastic tabs at the bottom of the top cover are fragile. Be sure the tabs clear the chassis before removing the cover.





Warning: Before powering up your system again, be sure to replace the top cover using the procedure near the end of this appendix. It is not safe to operate the SPARCstation 1+ without its top cover in place .

Identifying SBus Boards and SIMMS

SBus boards as well as single in-line memory modules (SIMMs) come packaged in antistatic bags to protect them from harmful electrical charges.

Before you attempt to install a new SBus board or SIMM —or replace a defective one, make sure that you have the right item. Figures A-1 and A-2 show two types of circuitry that can be installed in the system unit: SIMMs and SBus boards.

Figure A-1. Single Inline Memory Module

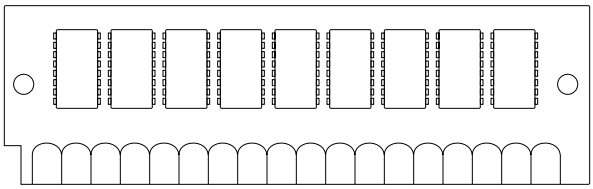
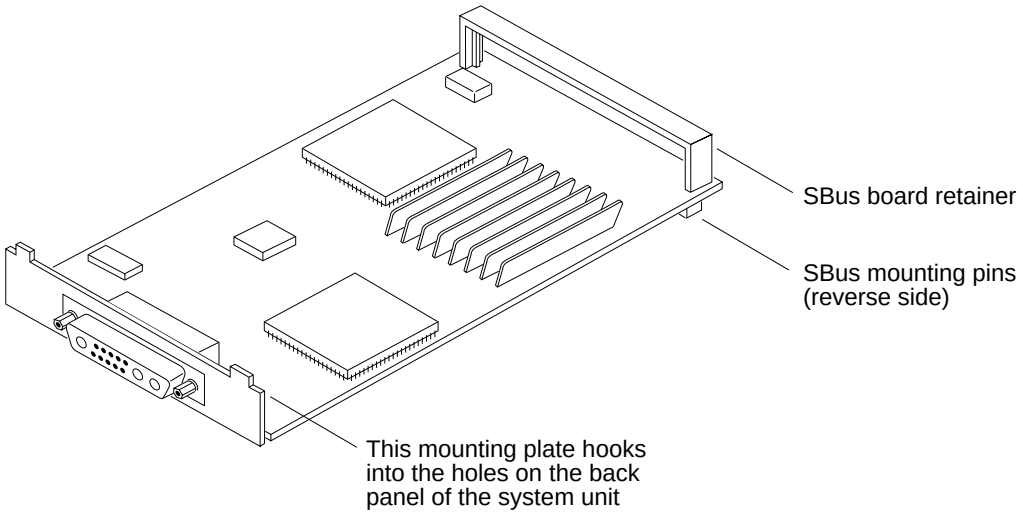


Figure A-2. An SBus Board: Color Frame Buffer



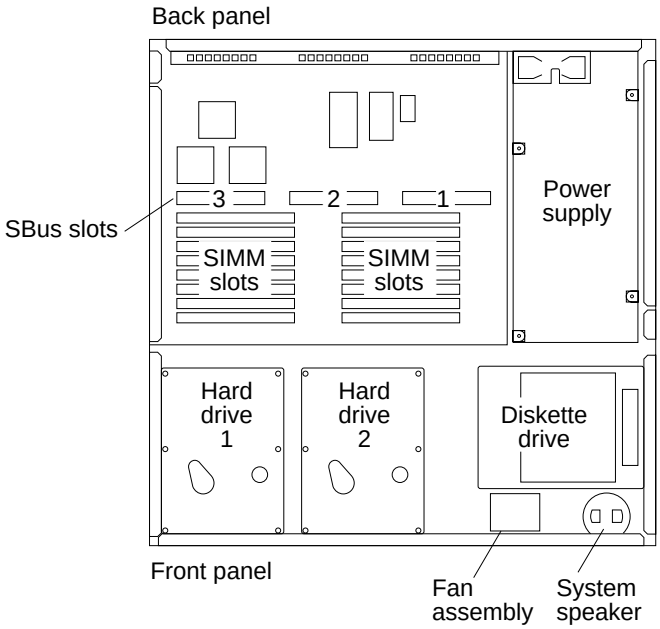
SBus Boards

The SPARCstation 1+ is very versatile and can be equipped with a variety of optional printed circuit boards. The SBus boards plug into the *SBus slots* on the main-logic board of your SPARCstation 1+.

The next section of this appendix, "Identifying SBus Slots," tells you how to identify these slots.

Identifying SBus Slots

The illustration shows where the slots are located and how they are numbered.



Installing SBus Boards

SBus boards plug into the SBus slots. Figure A-3 shows which boards plug into which slots.

Figure A-3. Table for Plugging Boards into SBus Slots

Board	Install in SBus Slot(s)
GX Graphics Accelerator	3 + 2 or 2 + 1
Frame buffer boards	3, 2, or 1
Ethernet	2 or 1

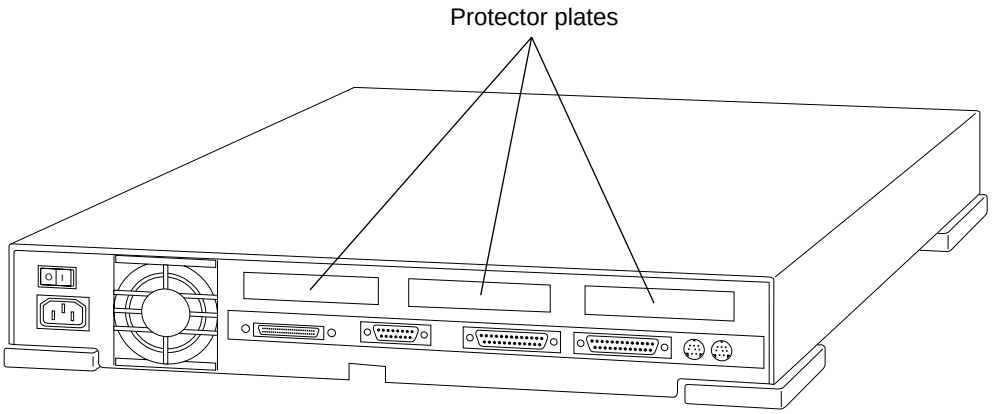
Note: The GX board and frame buffer boards should be plugged into slot 3 whenever slot 3 is available. If slot 3 is being used for some other board, then it is permissible to plug the GX board into slots 2 and 1, and any of the frame buffer boards into either slots 2 or 1.

Caution: Microchips and printed circuit boards are made of delicate electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can damage them. Handle boards only by the non-conducting edges. Do not touch the components on the boards or any metal parts. Wear a grounding strap when handling the boards. **Do not disconnect the power cord from the system unit's power receptacle. The power cord should be left plugged in to a grounded power outlet.** This connection provides the ground path necessary so that you can safely remove and install printed circuit boards and other components. Be sure that the system unit's power is turned OFF by observing that the green light-emitting diode (LED) at the front of the chassis is not lit and the fan in the power supply is not running.

This procedure assumes that the appropriate slots are available.

To install an SBus board in the system unit:

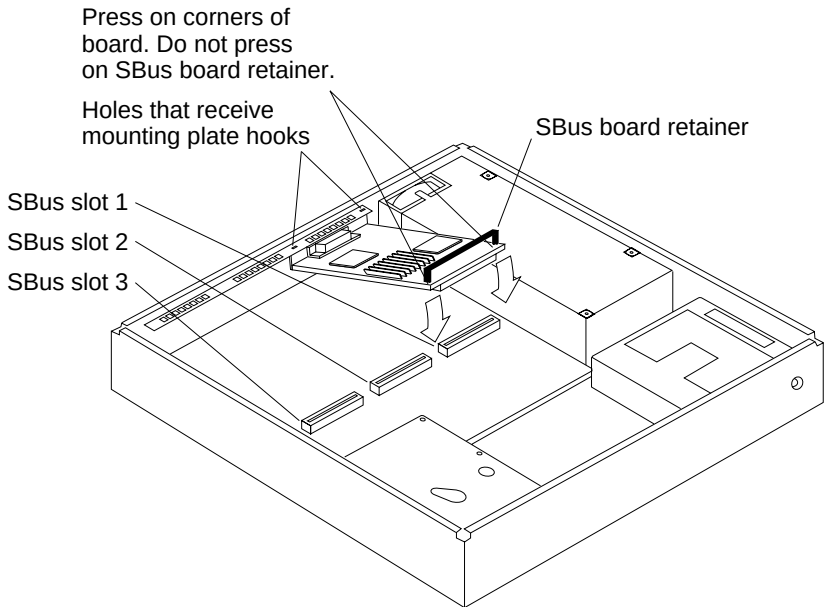
1. Remove the sheetmetal protector plate(s) for the desired slot(s) from the inner surface of the back panel of the system unit.



2. Slide the SBus board at an angle into the back panel of the system unit.

   Make sure that the mounting plate on the SBus board hooks into the holes on the back panel of the system unit.

The mounting holes are above the rectangular opening in the back panel.



3. Push the SBus board against the back panel. Align the plug with the slot. Gently press the plug into the slot by pressing on the corners of the board. Using excessive force may bend or damage pins.

Caution: The plastic SBus board retainer is *not* a handle. Pressing on the retainer can cause it to break.

4. Replace the top cover onto the system unit.

   See "Replacing the System Unit Cover" at the end of this appendix.

5. Connect any required cables to the SBus board.

In a new SPARCstation 1+ that is being set up and used for the first time, all internal parts must be installed before you turn on power to the system unit.

6. Turn the system unit power ON, and check for proper operation of the system unit and the installed SBus board.

   See "Powering Up Your System" in Chapter 3 for single systems.

See “Powering Up Your System” in Chapter 4 for networked systems.

Single Inline Memory Modules (SIMMs)

Most SPARCstation 1+ system units come equipped with 8 megabytes of random access memory (RAM). Physically, RAM chips are grouped together in single inline memory modules (SIMMs). Each SIMM contains 1 megabyte of memory and plugs into a SIMM slot located on the main-logic board of the system unit. Additional SIMMs may be added to your system unit as needed in 4-megabyte increments, up to a maximum of 16 SIMMs.

Caution: SIMMs are made of delicate electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can destroy SIMMs. Handle SIMMs only by the edges. Do not touch the components on the SIMM or any metal parts. Wear a grounding strap before unpacking and during handling of the SIMMs. **Do not disconnect the power cord from the system unit’s power receptacle. The power cord should be left plugged in to a grounded power outlet. This connection provides the ground path necessary** so that you can safely remove and install SIMMs and other components. Be sure that the system unit’s power is turned OFF by observing that the green light-emitting diode (LED) at the front of the chassis is not lit and the fan in the power supply is not running.

In addition to the standard 1 megabyte SIMMs, 4 megabyte SIMMs are also available. You can upgrade your SPARCstation 1+ with 4 megabyte SIMMs or combine 1 megabyte SIMMs with 4 megabyte SIMMs. If you order 4 megabyte SIMMs from Sun Microsystems, Inc., follow the installation instructions that come packaged with your 4 megabyte SIMMs.

Installing a SIMM

To install a SIMM:

1. Make sure that the power is turned off to your system unit.

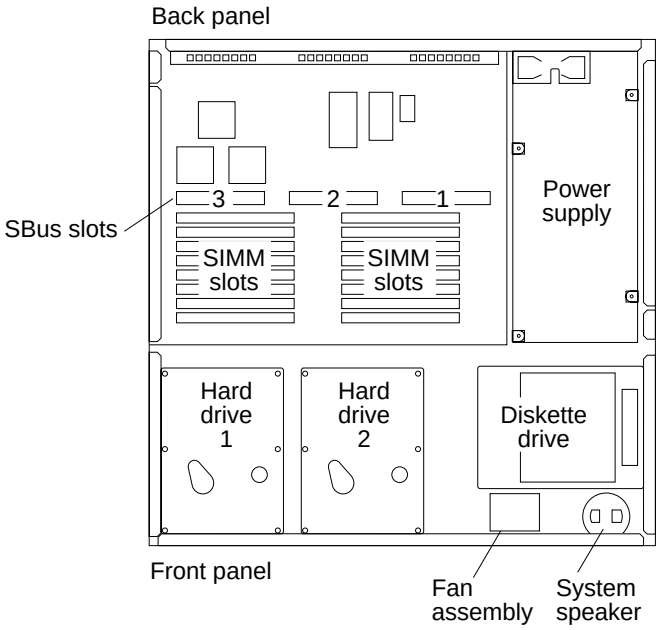
   See “Powering Down Your System” in Chapter 3 for single systems.

   See “Powering Down Your System” in Chapter 4 for networked systems.

2. Remove the top cover from your system unit.

   See “Removing the System Unit Cover” earlier in this appendix.

3. Locate the SIMM slots on the main-logic board.

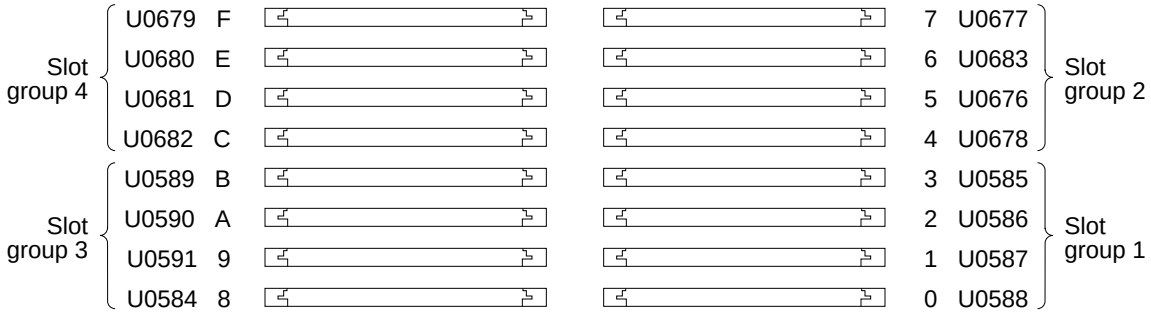


4. Install additional SIMMs by slot groups on the main-logic board.

   See Figure A-4. You must install additional SIMMs in unoccupied slots so that the slots are filled by groups: 0–3 (slot group 1), 4–7 (slot group 2), 8–B (slot group 3), and C–F (slot group 4).

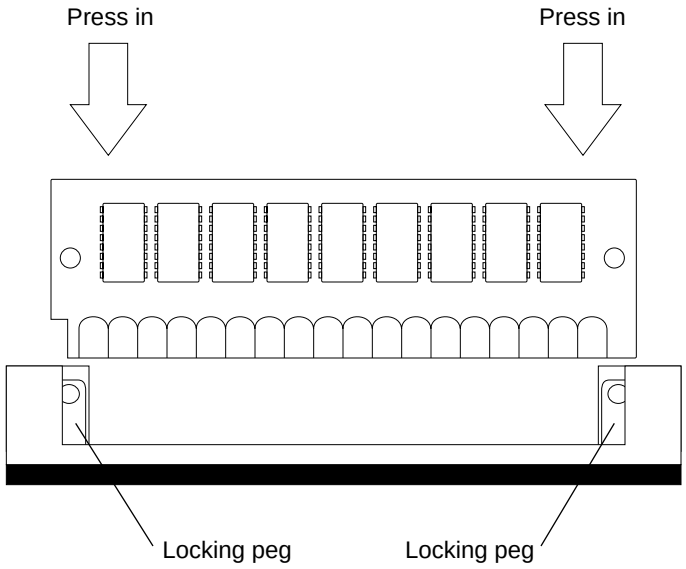
   For example, suppose slot groups 1 and 2 are already filled. Slot groups 3 and 4 do not have SIMMs installed. You want to add four SIMMs. You may install the additional SIMMs either in slot group 3 or in slot group 4.

Figure A-4. Installing Additional SIMMs



5. Place an antistatic mat, shiny side down, next to the system unit. The mat comes with your SIMMs.
6. Make sure the wrist strap is securely attached to your wrist and the bottom of the system unit chassis. The wrist strap comes with your SIMMs.
7. Open the antistatic envelope and take out the SIMMs.
8. Place the SIMMs on the antistatic mat.

9. Holding a SIMM at its edges, insert it into the plastic guides. The SIMM should rest loosely in the slot.



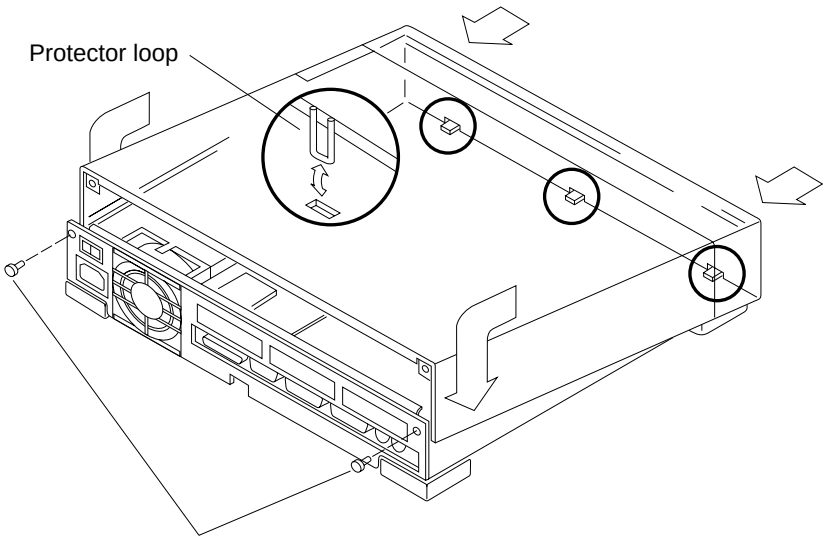
10. Place your thumbs on opposite corners of the SIMM and press firmly until the SIMM snaps into place.

Note: In a new SPARCstation 1+ that is being set up and used for the first time, all internal parts must be installed before you turn on the power to the system unit.

Replacing the System Unit Cover

To replace the cover of your system unit:

1. Hold the cover at an angle of approximately 30 degrees in relation to the system unit chassis, and gently guide the plastic tabs on the cover into the tab slots on the front of the chassis. Continue to hold the cover with your hands.



Caution: Holding the cover at angles greater than 30 degrees can prevent insertion of the tabs into the tab slots. Once the tabs are in the slots, raising the cover to angles greater than 30 degrees can break the tabs.

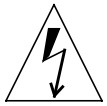
2. Slowly lower the cover onto the chassis, and be sure the protector loop clears the diskette drive (if equipped) and seats into the protector loop slot on the bottom of the chassis.

3. Push down on the top cover's right and left sides.
4. Insert and tighten the two screws which hold the top cover to the back panel.

   Use a Phillips screwdriver to tighten the two screws.

Note: See the following sections in other chapters or other manuals about powering up your system:

- ❑ "Powering Up the System," Chapter 3, for single systems
- ❑ "Powering Up the System," Chapter 4, for networked systems
- ❑ *Desktop Storage Pack Installation Guide* and the *Sun External Storage Module Installation Manual* for powering up external drive units



Warning: Do not power up the system unit without replacing the cover and securing it. Failure to take this precaution may result in personal injury and system damage.

What's Next

You have finished Appendix A, and have learned how to do some or all of the following:

- ❑ Use a wrist strap.
- ❑ Remove the system unit cover.
- ❑ Identify boards.
- ❑ Identify slots.
- ❑ Install SBus boards.
- ❑ Install SIMMs.
- ❑ Replace the system unit cover.

If you are setting up your SPARCstation 1+ for the first time and have finished doing all the tasks required in Chapter 2 before referring to this appendix, you can now move on to *either* Chapter 3 *or* Chapter 4. If you are going to use your SPARCstation 1+ as a *single system* (that is, a system that is not connected to a network), read Chapter 3. If you are going to connect your SPARCstation 1+ to a *network*, skip Chapter 3 and read Chapter 4.

If your system was already up and running before you referred to this appendix, you can start using your system according to the procedures contained in this appendix *and* in the documentation that came packed with the boards or SIMMs that you have just finished installing.

B

Monitors

A SPARCstation 1+ may be ordered with a video monitor. How you connect your monitor to the system depends on the type of monitor and frame buffer (SBus board) you have ordered.

This appendix contains reference information about monitors used with the SPARCstation 1+:

- Illustrations of monitors
- List of monitors
- German Ergonomics Standard ZH1/618
- Monitor 13W3 input port
- Location of monitor controls
- How to install older Sun monitors

Available Monitors

Your SPARCstation 1+ can be operated with any of the Sun video display monitors listed in Figure B-1. Figures B-2 throuigh B-4 show the available monitors.

Figure B-1. Table of Monitors

Size/in.	Size/mm	Resolution	M/C/G
16	407	1152 x 900	Color
19	483	1152 x 900	Color
17	432	1152x 900	Grayscale
19	483	1152 x 900	Grayscale

Figure B-2. 16 and 19-inch (407 and 483 mm) Color Monitors

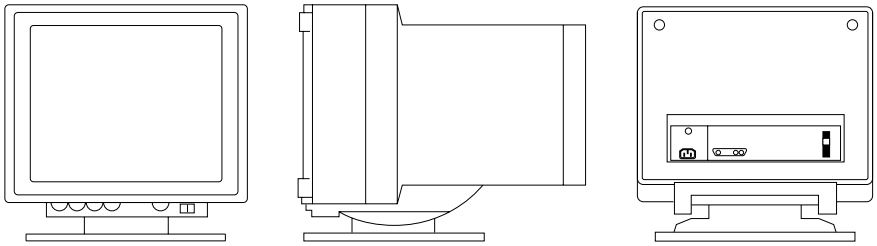


Figure B-3. 17-inch (432 mm) Grayscale Monitor

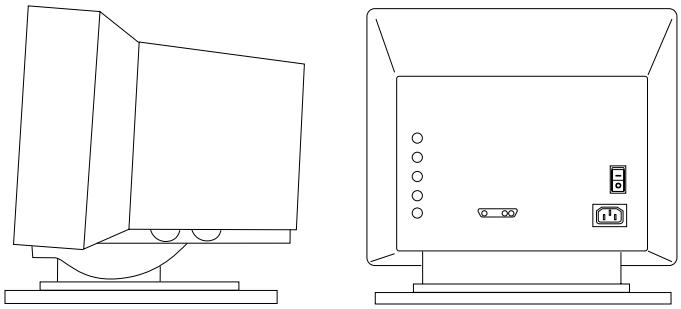
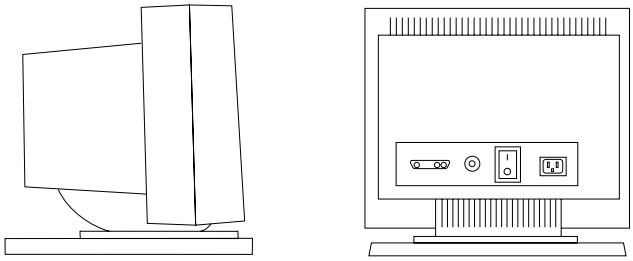


Figure B-4. 19-in. (483 mm) Grayscale Monitor



German Ergonomics Standard ZH1/618

Sun Microsystems monitors are designed to conform with German Federal Republic ergonomics standard ZH1/618. Anti-glare filters are standard on color monitors. For text processing, a positive mode (black characters on a white background) display is recommended.

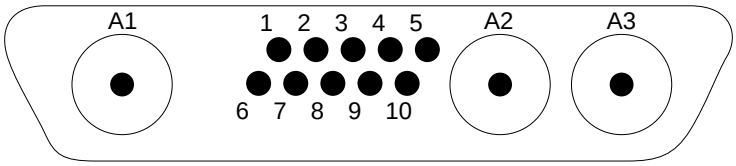
Monitor 13W3 Input Port

Your SPARCstation 1+ must be equipped with an appropriate frame buffer board in order for its output to be displayed on a video display monitor. All SPARCstation 1+ frame buffer boards plug into an SBus slot in the system unit, and have an output port that connects to a video display monitor through the back panel of the system unit.

All current Sun monitors are equipped with a 13W3 input port. See the section “Installing Older Sun Monitors” later in this chapter for information on DB9 and BNC ports.

13W3 ports (sockets) use a subminiature D-type shell. Plugs contain 10 pins and 3 coaxial cavities. In the illustration below, pin-holes are numbered 1 through 10, and coaxial cavities are numbered A1 to A3.

Figure B-5. 13W3 Interface Pin Configuration (Slot)



Monitor Controls

Sun monitors are equipped with various user controls as indicated in the following figures. User controls are either thumbwheels or hand-turned knobs. Depending on the monitor, it may also be possible to adjust the controls with a flathead screwdriver.

Figure B-6. 16 and 19 inch (407 and 483 mm) Color Monitor Controls

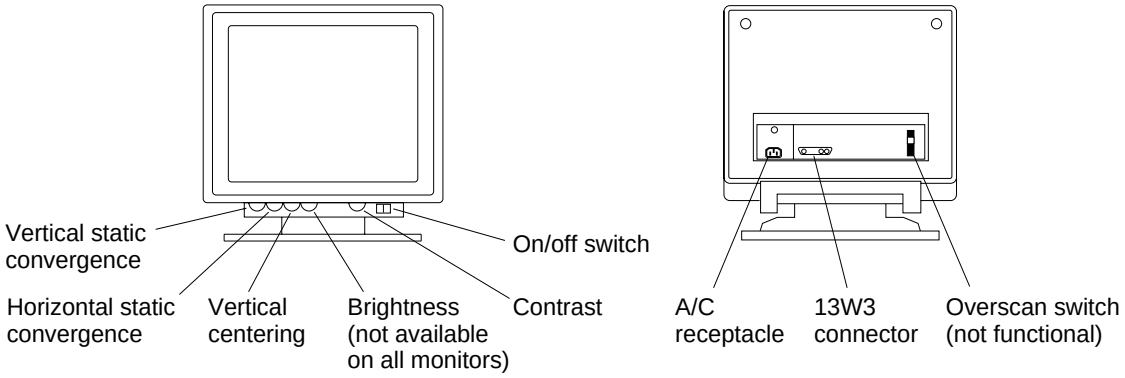


Figure B-7. 17-inch. (432 mm) Grayscale Monitor Controls

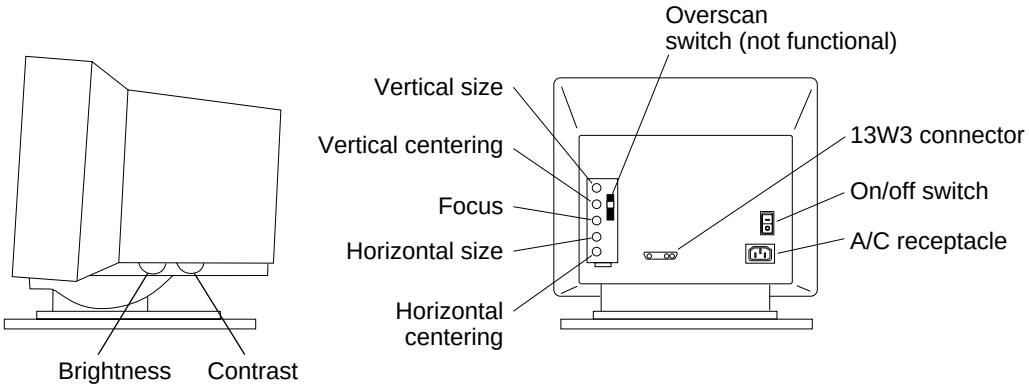
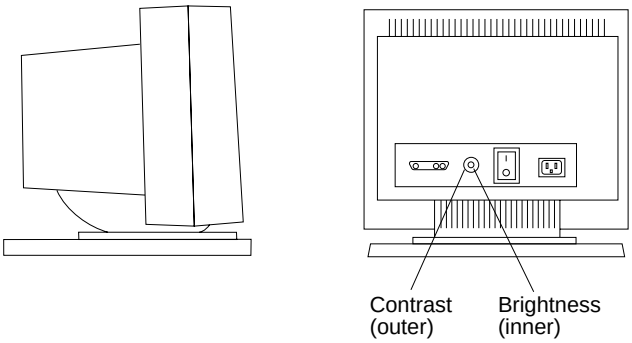


Figure B-9. 19-inch (480 mm) Grayscale Monitor Controls



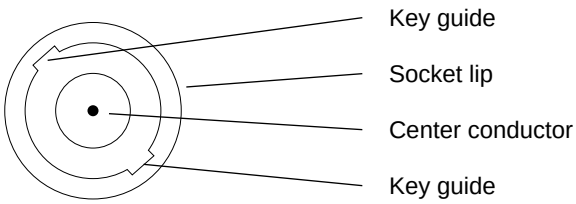
Installing Older Sun Monitors

This section describes how to install older Sun color monitors with BNC ports and older Sun monochrome monitors with DB9 ports.

BNC Ports

Older Sun color monitors are equipped with BNC ports (sockets) which provide individual connection points for coaxial cables equipped with BNC twist-type plugs.

Figure B-10. BNC Socket



You need these cables which can be obtained from Sun:

- ❏ BNC / 13W3 adapter cable
- ❏ 13W3 male-male cable

Figures B-11 and B-12 detail the BNC / 13W3 adapter cable and the 13W3 male-male cable.

Figure B-11. BNC /13W3 Adapter Cable

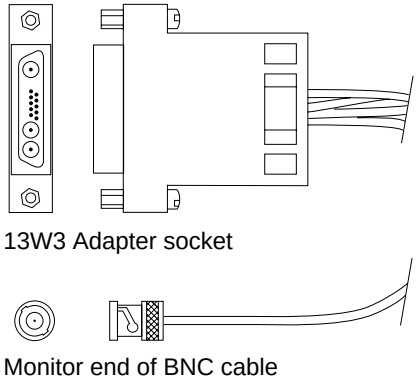
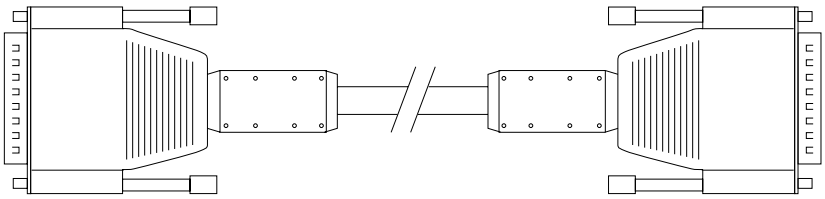


Figure B-12. 13W3 Male-Male Cable



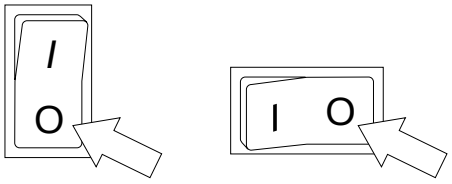
Note: Use either 4 ft / 1.2 m or 14.8 ft / 4.5 m 13W3 male-male cables based on your site requirements.

Note: Cables supplied by Sun are of sufficient length to meet the needs of most installations. If you have special cable length requirements, ask your Sun sales representative about the availability of alternate cables.

Some cables supplied by Sun are of specific lengths in conformity with engineering and safety standards. Using other cables may be hazardous and may also degrade the performance of your equipment.

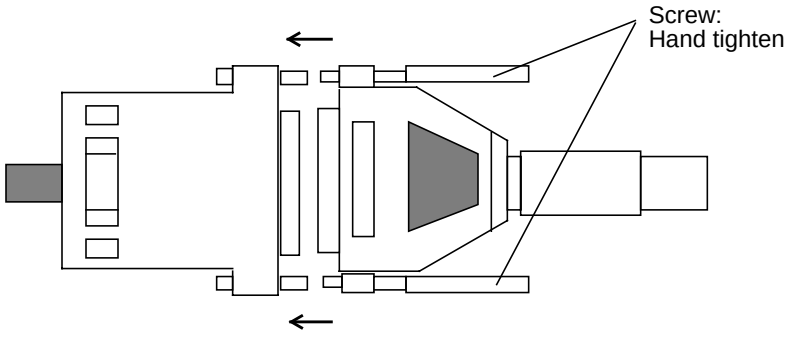
To connect your monitor to the frame buffer:

1. Make sure that the power to both the system unit and the monitor is turned OFF. The power cord is *not plugged in* to the power receptacle on the back panel of the monitor at this time.



Power switches in the off position

2. Insert one of the 13W3 male-male cable plugs into the 13W3 socket on the BNC / 13W3 adapter cable.

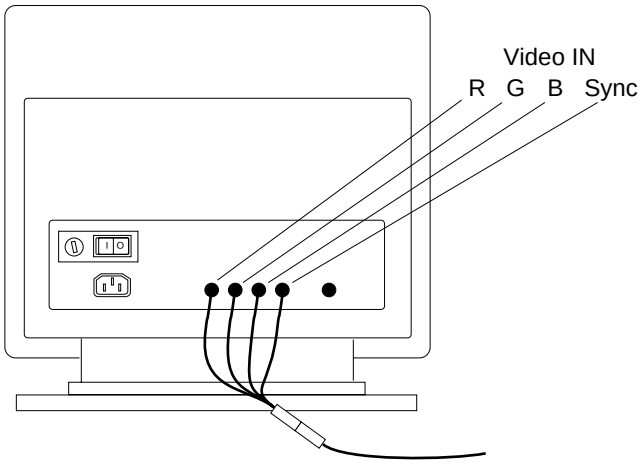


BNC/13W3 Adapter Cable Socket 13W3 Cable Plug

3. Hand tighten the two screws on both sides of the 13W3 plug by turning the screws clockwise.
4. Insert each of the BNC cables on the BNC / 13W3 adapter cable into its proper BNC port on the back panel of the monitor. Each port is labeled, and corresponds to a color-coded lead on the BNC / 13W3 adapter cable:

   - ❏ R = Red
   - ❏ G = Green
   - ❏ B = Blue
   - ❏ Sync = White

Twist each BNC plug clockwise to secure the connection.

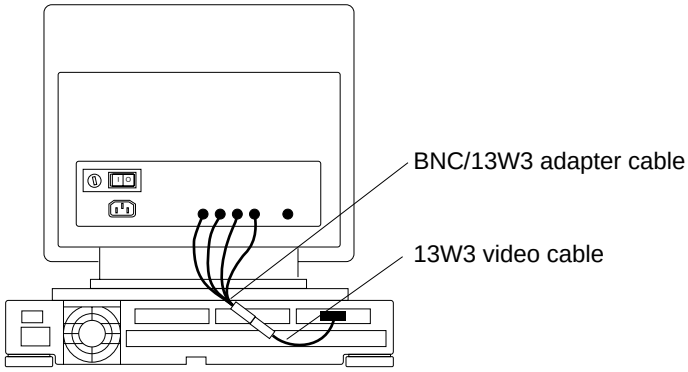


5. Insert the other 13W3 cable plug into the 13W3 port on the frame buffer. See Appendix A for information about installing frame buffer boards.

   The frame buffer is mounted in an SBus socket (see Appendix A for details), and its 13W3 port is on the back panel of your SPARCstation 1+ system unit.

6. Hand tighten the two screws on both sides of the 13W3 plug by turning the screws clockwise.

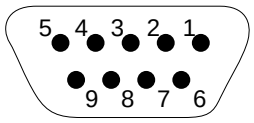
Figure B-13. BNC Video Cable Connected to Frame Buffer and Monitor



DB9 Ports

Older Sun monochrome monitors are equipped with DB9 ports. DB9 ports use a D-type shell. Sockets contain 9 pin-holes.

Figure B-14. DB9 Interface Pin Configuration (Socket)



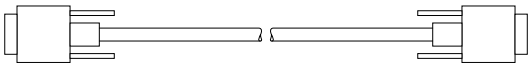
You need a cable with a DB9 female connector at one end, and a DB9 male connector at the other end. You can obtain this cable from Sun. The cable plugs into a frame buffer board that also has a DB9 port on its back panel. (See Appendix A for information about installing frame buffer boards.)

Note: Cables supplied by Sun are of sufficient length to meet the needs of most installations. If you have special cable length requirements, ask your Sun sales representative about the availability of alternate cables.

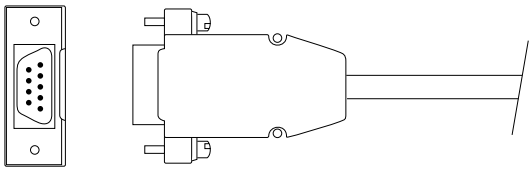
Some cables supplied by Sun are of specific lengths in conformity with engineering and safety standards. Using other cables may be hazardous and may also degrade the performance of your equipment.

Figure B-15 details the monochrome video cable and the DB9 connector.

Figure B-15. Monochrome Video Cable and DB9 Connector



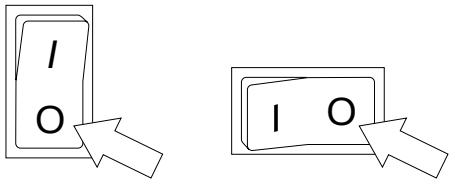
Monochrome video cable



DB9 connector

To connect your monitor to the frame buffer:

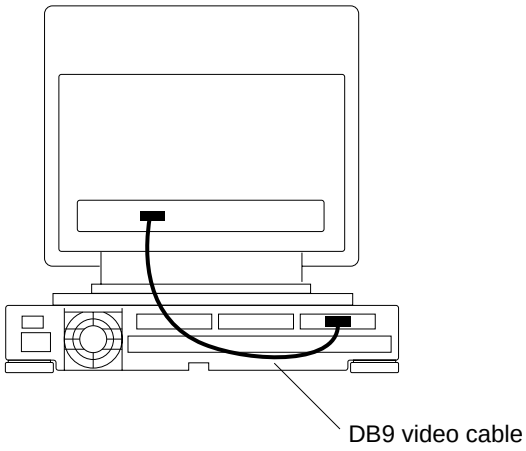
1. Make sure that the power to both the system unit and the monitor is turned OFF. The power cord is *not plugged in* to the power receptacle on the back panel of the monitor at this time.



Power switches in the off position

2. Insert the DB9 cable female connector into the DB9 male connector on the back panel of the monitor.
3. Insert the DB9 cable male connector into the DB9 female connector on the frame buffer at the back of the system unit.

Figure B-16. DB9 Video Cable Connected to Frame Buffer and Monitor



4. Hand tighten the two screws on both sides of the DB9 cable connectors by turning the screws clockwise.

C

Cables for Serial Devices

This appendix gives information about serial cables used to connect the SPARCstation 1+ system unit to peripheral devices such as printers, terminals, and modems. You may purchase ready-made cables, or make them yourself.

Cable Types

There are two basic types of cables:

- Serial modem cable: connects to the SPARCstation 1+ system unit serial port
- Serial null modem cable: connects to the SPARCstation 1+ system unit serial port

Serial Modem Cables

Modem cables are a type of serial cable. If you are connecting a Hayes or Hayes-compatible modem, you must obtain a cable with a male connector for the modem end and a male connector for the system unit end. The modem cable is connected to either of the system unit serial ports. You can obtain the correct cable from most computer dealers or computer supplies stores.

In a serial modem cable, the pins in the connectors are wired "straight through." This means that the pins function identically on the two connectors at either end of the cable.

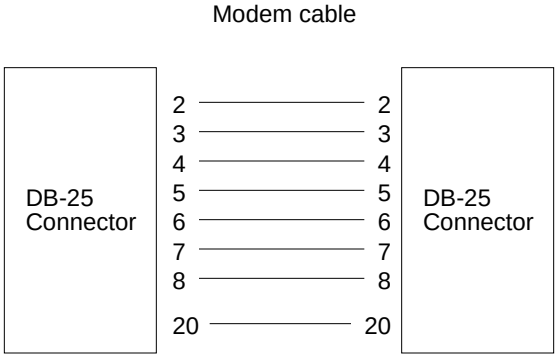
The acronym DTE stands for Data Terminal Equipment. Typically, DTE includes terminals, personal computers, and

workstations. The acronym DCE stands for Data Communications Equipment. Modems are a good example of DCE.

A modem cable connects the SPARCstation 1+ system unit to a modem. Since DTE and DCE devices send and receive through different pins, their signals will not “collide.”

Figure C-1 shows the wiring of a serial modem cable that enables the SPARCstation 1+ system unit to communicate with a Hayes or Hayes-compatible modem. If you obtain a serial cable wired like the one shown, it will properly connect a SPARCstation 1+ system unit and a Hayes-type modem.

Figure C-1. Serial Modem Cable

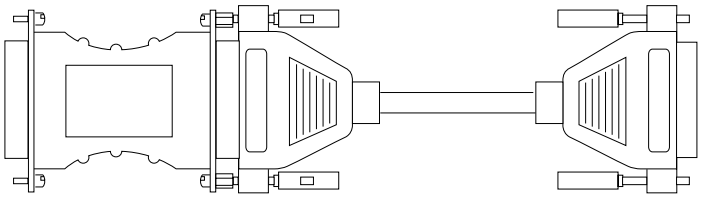


Null Modem Cables

Null modem cables are another type of serial cable, but the cable wires are attached to the pins in the connectors differently than in a modem cable. Printers and terminals use a null modem cable. The cable should have a male 25-pin connector for the system unit end. The gender of the connector at the other end of the cable depends upon the device you are connecting to the system unit.

You can make a null modem cable by connecting a *null modem converter* to a modem cable. See Figure C-2.

Figure C-2. An Assembled Null Modem Cable



Or, a better alternative is to purchase a ready-made *null modem cable*.

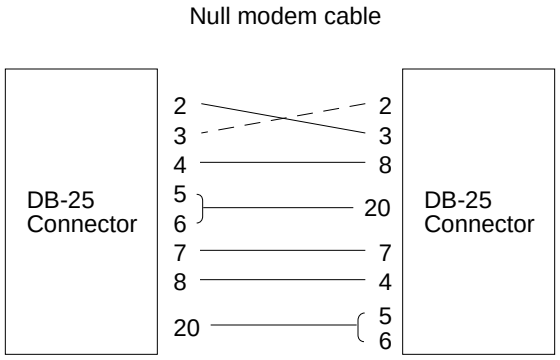
The serial null modem cable is designed for devices that send and receive data on the same pins. Like the SPARCstation 1+ system unit, printers and terminals are DTE devices—both expect to send data on pin 2 and receive it on pin 3. Because both devices are trying to send and receive on the same wire, these wires must be crossed. If you are making your own null modem cable, you must connect the wire from pin 2 on the system unit end of the cable to pin 3 on the device end, and connect the wire from pin 3 on the system unit end of the cable to pin 2 on the device end. See Figure C-3.

A null modem cable also disables certain features of a peripheral device by “jumpering” wire from one pin to another pin on the same connector. The diagram below shows pins 5 and 6 jumpered and then connected to pin 20. Also, pins 4 and 8 are wired to each other.

A cable wired like the one in Figure C-3 will properly connect a SPARCstation 1+ system unit and a Wyse WY-50 or a VT-100 terminal.

If you have some other type of device, you will have to consult the manual for the device to determine whether jumpering is necessary and which pins should be involved.

Figure C-3. Null Modem Cable



Cables for Unsupported Devices

When system administration software recognizes a device, you can define it as such a device to your system. For the SPARCstation 1+ system unit to communicate with devices that system administration software does not support, you have to tell your system about them by using the methods described in "Printer, Terminal, and Modem Software," Chapter 15 in the *Sun System & Network Manager's Guide.*

But first you will have to select a serial cable that enables the SPARCstation 1+ system unit and the peripheral device to communicate. Because each device is different, there is no general rule for selecting or creating a serial cable. To obtain the correct cable, you will need to know which of the serial port pins are active. The manual for the printer, modem, or terminal should specify the active pins and what type of signal is sent or received on each pin. It should also specify what type of cable is required.

You should also consult Figure C-5. The figure identifies the pins that the system unit serial ports use. Not all pins are active.

If a pin is not listed, that means it is inactive—it does not send or receive any signal.

To cable an unsupported device:

1. Make sure the device is a serial device.

   Peripheral devices are cabled to the system unit serial ports. This procedure applies only to serial devices.

2. Determine whether the device is DCE or DTE.

   The manual or your dealer should have this information. Modems are generally DCE devices; most terminals and printers are DTE.

3. If the device is DCE, try a modem cable. If it is DTE, try a null modem cable.

   Begin by trying the cables with the pin configuration specified earlier in this appendix. These cables work with most devices.

If these typical cable specifications do not work, see the device manual to determine which pins are active and consult Figure C-5 for the active system unit pins. You will have to wire the cable connectors according to the needs of both the peripheral device and the system unit serial port. You may succeed only after some experimentation.

Figure C-4. Serial Port (Active Pins Highlighted)

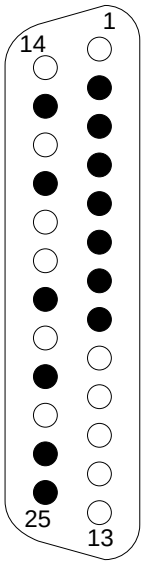


Figure C-5. Table of Serial Port Specifications

Pin	Circuit	Signal	Direction	Description
2	BA	TXD	output	**Transmit Data:** Sends data to peripheral equipment.
3	BB	RXD	input	**Receive Data:** Receives data from peripheral equipment.
4	CA	RTS	output	**Request To Send:** Signal asking if peripheral device is ready to receive data.
5	CB	CTS	input	**Clear To Send:** Signal from other device saying it is ready to accept data.
6	CC	DSR	input	**Data Set Ready:** Signal from other device indicating its status.
7	AB	GND	none	**Ground Signal:** Provides reference level for other signals.
8	CF	DCD	input	**Data Carrier Detect:** Signal that indicates that modem has detected signal from another modem over phone lines.
15	DB	DB	output	**Transmit Clock:** Not used for asynchronous devices.
17	DD	DD	input	**Receive Clock:** Not used for asynchronous devices
20	CD	DTR	output	**Data Terminal Ready:** Indicates that the SPARCstation 1+ is ready to communicate with the device.
22	CE	RI	input	**Not connected** on the SPARCstation 1+.
24	DA	DA	output	**Transmit Clock:** Not used for asynchronous devices.
25	-	–	-	**Not connected** on the SPARCstation 1+.

Glossary

account The means by which you access the system and the space assigned for your files and directories.

address This term refers to a location within a computer system's memory. The word "location" is a synonym. Reference is usually made to an *addres*s for the purpose of retrieving or storing information.

audio input/output cable A cable that physically connects to the system's audio input/output port. You can plug the following devices into the audio input/output port through the audio input/output port cable: dynamic, high-impedance microphone; audio tape player equipped with attenuating adapter; compact disc player equipped with attenuating adapter; headphones; external amplifier; and loudspeaker.

audio input/output port The port on the SPARCstation 1+ system unit where the audio input/output cable is connected.

backup The process of making a copy of files on a diskette or tape.

backup copy A duplicate copy of files.

boards See *printed circuit board*. In the SPARCstation 1+, a board occupies one or more SBus slots.

boot To load the system software into memory and start it running.

cables Wires or bundles of wires configured with connectors at each end and used to connect two or more hardware devices.

cartridge tape 0.25-inch (6.35 mm) magnetic tape used in a cartridge tape drive to read and write data.

client A system on a network that relies on another system (called a server) for resources.

daisy-chain A means of connecting a number of devices to a controller (usually peripherals to a workstation). A cable is connected from the controller to one of the devices. Then a separate cable connects the first device to the second device, and the process is repeated as required. This allows a single port on the controller to serve a variable number of devices. It also reduces cable costs and eases installation when several devices must be connected.

DCE The acronym DCE stands for Data Communications Equipment. Modems are a good example of DCE. Any equipment that connects to DTE (Data Terminal Equipment) using an RS-232 or CCITT V.24 standard interface.

default A preset value that is assumed to be correct unless changed by the user.

Desktop Storage Pack An external data storage unit that contains a disk drive (Desktop Disk Pack), a tape drive (Desktop Backup Pack), or a compact disc drive (Desktop SunCD Pack) and that can be connected to a SPARCstation 1+.

disk A round platter, or set of platters, coated with magnetic medium and organized into concentric tracks for storing data.

disk drive The mechanism that rotates a disk.

diskette A removable disk of magnetic medium for storing software and information. The outer jacket of the diskette is made of firm plastic that measures 3.5 inches (88.9 millimeters) across.

diskette drive A device that reads and writes diskettes. If installed, the diskette drive access is located on the right side of the SPARCstation 1+ system unit.

DTE The acronym DTE stands for Data Terminal Equipment. Typically, DTE includes terminals, personal computers, and workstations.

DTR The acronym DTR stands for Data Terminal Ready. DTR is the name of a circuit used to control the switching of data communications equipment to the communication channel. When DTR is in the On condition, the circuit prepares the data communications equipment to be connected to the communications channel and maintains the connection established. When DTR is in the Off condition, the data communications equipment is removed from the communications channel following completion of any transmission that is already in progress.

Ethernet A type of network hardware that allows communication between systems connected directly by transceiver taps, transceiver cables, and a coaxial cable.

Ethernet address A unique number assigned to each system when it is manufactured. The Ethernet address of your system is displayed on the banner screen that appears when you power up the SPARCstation 1+.

External Storage Module An external unit that contains disk / tape drives and that can be connected to a SPARCstation 1+. Abbreviated as ESM.

formatting Preparing a diskette or hard disk so that information can be stored on it.

frame buffer The printed circuit board for controlling video display that is installed in an SBus slot of the system unit.

hostname A name that you (or your system administrator) assign to your system unit to uniquely identify it to SunOS (and also to the network).

hung system A system that does not respond to input from the keyboard or the mouse.

keyboard An input device for entering information by typing.

keyboard port The port on the SPARCstation 1+ system unit where the keyboard cable is connected.

laser printer A high-speed, high-resolution printer that uses laser technology to produce computer output.

log in The process of gaining access to a system by entering a username and, optionally, a password.

log out The process of exiting from a system.

modem A device that enables a computer or terminal to establish a connection with another computer or terminal and to communicate data through telephone lines.

modem cable A cable that physically connects a modem or some other device to a SPARCstation 1+ serial port. The modem cable is wired "straight through." See also *null modem cable.*

monitor A video display unit that is part of the SPARCstation 1+. Not the same thing as a terminal.

mouse A hand-held device that controls the position of a pointer on the screen.

mouse button One of three buttons on the mouse that you press to perform an operation.

mouse pad A thin pad that is used as a surface on which to move and position the mouse.

network A collection of two or more systems connected by an Ethernet cable.

network address A unique number assigned to each system on a network, consisting of the network number and the system number. Also known as Internet address.

null modem cable A cable used to connect a printer, terminal, or some other device to the SPARCstation 1+. Unlike the modem cable, the null modem cable is not wired "straight through"; some wires are crossed or jumpered to change the flow of data in a particular way.

online Man Pages The online manual pages, also known as *man page*s, contain documentation of SunOS commands. They permit you to view the documentation on your screen (provided that they are loaded onto your system).

password A character string that is associated with a username and provides security for a user account. The SPARCstation 1+ requires you to type a password when you log into your system so that unauthorized people cannot use your system.

printed circuit board Any board with electronic wiring etched on it.

printer A physical device that takes electronic signals, interprets them, and prints them on paper.

SCSI SCSI stands for Small Computer System Interface and is pronounced “scuzzy.”

SCSI cable A cable that connects the Desktop Storage Packs or External Storage Module to the SCSI port of the SPARCstation 1+ system unit.

SCSI port The ports on the Desktop Disk Pack, Desktop Backup Pack, External Storage Module, and SPARCstation 1+ system unit where the SCSI cable is connected.

SCSI terminator A device that terminates the signal coming through an unused SCSI port.

serial port A port on the back of the system unit where a serial cable is connected. The SPARCstation 1+ has two serial ports on the back panel of the system unit.

server A system that is on a network and provides other systems with resources.

single inline memory module (SIMM) A small printed circuit board that contains random access memory (RAM) chips.

single system A system that is used by itself and is not connected to a computer network.

slot An electronic connection and a long, narrow groove or opening in the system unit designed to receive a module or a printed circuit board (such as a SIMM or an SBus board).

Sun Operating System The Sun Operating System (SunOS) is software that allows you to control the resources of your system: hardware, programs, data, and user access.

Sun Windowing System The windowing screen, such as the Open Windows or the SunView desktop—a gray background containing a menu for access to files and applications. Refers to both the background screen and the objects on it, such as icons and windows.

superuser A user who has full access privileges on a system, unlike a regular user whose access to files and accounts is limited.

system Any computer that allows you to run programs or applications. In this book, the term is used to mean the SPARCstation 1+ system unit as well as SunOS and peripheral hardware devices.

system unit The enclosure containing the system's memory, central processing unit, hard drive, diskette drive, and frame buffer.

tape drive A drive that reads information from and writes information to a 0.25-inch (6 millimeter) cartridge tape.

terminal A device that consists of a video display and a keyboard that you use to type and display information. A terminal may be connected to either of the serial interface ports on the back panel of the SPARCstation 1+. Not the same thing as a monitor.

transceiver cable A cable with a slidelock at each end that connects the system unit to the Ethernet cable.

username A combination of letters, and possibly numbers, that identifies a user to the system.

write-protect To manually set a tab or arrow on a diskette or cartridge tape to prevent the diskette or tape drive from writing information on, or erasing information from, the diskette or tape.

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