

# **Sun 10GbE XFP SR PCI Express Card and Sun Dual 10GbE XFP 2 SR PCI Express Card**

User's Guide



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# Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

## FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**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 it is not installed and used in accordance with the instruction manual, it 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.

**Modifications:** Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

## ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## VCCI 基準について

### クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

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

## BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance label.

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



## CCC Class A Notice

The following statement is applicable to products shipped to China and marked with "Class A" on the product's compliance label.

以下声明适用于运往中国且其认证标志上注有 "Class A" 字样的产品。

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。  
在这种情况下，可能需要用户 对其干扰采取切实可行的措施。



## GOST-R Certification Mark





# Safety Agency Compliance Statements

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing an Oracle product.

## Safety Precautions

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

- Follow all cautions 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 could cause fire, electric shock, or damage to your equipment.
- This product is intended for restricted access whereby access is controlled through the use of a means of security (for example, key, lock, tool, badge access) and personnel authorized for access have been instructed on the reasons for the restrictions and any precautions that need to be taken.
- Do not directly connect this product to outdoor metallic communications cables. Always connect the product to outdoor metallic communications cables using a protection device that is designed for direct connection to outdoor metallic communications cables (such as a switch or router), or use optical non-metallic communications cables upon leaving the building.
- Do not directly connect this product to outdoor power cables.
  - For AC Power, connect the product only to an indoor power distribution system that uses current-limiting circuit breakers for AC power.
  - For DC Power, connect the product only to earthed power systems that are completely contained within one building.

## Symbols

The following symbols may appear in this book:



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**Caution** – There is a risk of personal injury and equipment damage. Follow the instructions.

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**Caution** – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

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**Caution** – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

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Depending on the type of power switch your device has, one of the following symbols may be used:



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**On** – Applies AC power to the system.

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**Off** – Removes AC power from the system.

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**Standby** – The On/Standby switch is in the standby position.

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## Modifications to Equipment

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

## Placement of an Oracle Product



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**Caution** – Do not block or cover the openings of your Oracle product. Never place a Oracle product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Oracle product.

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## SELV Compliance

Safety status of I/O connections comply to SELV requirements.

## Power Cord Connection



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**Caution** – Oracle products are designed to work with power systems having a grounded neutral (grounded return for DC-powered products). To reduce the risk of electric shock, do not plug Oracle 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.

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**Caution** – Not all power cords have the same current ratings. Do not use the power cord provided with your equipment for any other products or use. 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 Oracle product.

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The following caution applies only to devices with a Standby power switch:



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**Caution** – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

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The following caution applies only to devices with multiple power cords:



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**Caution** – For products with multiple power cords, all power cords must be disconnected to completely remove power from the system.

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## Battery Warning



**Caution** – There is danger of explosion if batteries are mishandled or incorrectly replaced. On systems with replaceable batteries, replace only with the same manufacturer and type or equivalent type recommended by the manufacturer per the instructions provided in the product service manual. Do not disassemble batteries or attempt to recharge them outside the system. Do not dispose of batteries in fire. Dispose of batteries properly in accordance with the manufacturer's instructions and local regulations. Note that on Oracle CPU boards, there is a lithium battery molded into the real-time clock. These batteries are not customer replaceable parts.



**Caution** – For product installed in California, USA: This product may contain a time-of-day battery which may contain perchlorate where special handling may apply. See <http://www.dtsc.ca.gov/hazardouswaste/perchlorate>.

## Energy Storage Module Caution



**Caution** – There is a danger of shock or equipment damage if energy storage modules are mishandled or incorrectly replaced. When replacing the energy storage modules, use only replacement modules that have been provided by Oracle, following the instructions provided in the product service manual. Do not disassemble modules or attempt to recharge them outside of the system. Do not dispose of the modules; instead, return them to Oracle in accordance with Oracle procedures for the product

## System Unit Cover

You must remove the cover of your Oracle computer system unit to add cards, memory, or internal storage devices. Be sure to replace the cover before powering on your computer system.



**Caution** – Do not operate Oracle products without the cover in place. Failure to take this precaution may result in personal injury and system damage.

## Rack System Instructions

The following or similar rack-mount instructions are included with the installation instructions:

- **Elevated Operating Ambient** – If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
- **Reduced Air Flow** – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

- **Mechanical Loading** – Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading** – Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable Earthing** – Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).




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**Caution** – Slide/rail mounted equipment must not be used as a shelf or workspace.

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## Rack System Warning

The following warnings apply to Racks and Rack Mounted systems.




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**Caution** – For safety, equipment should always be loaded from the bottom up. That is, install the equipment that will be mounted in the lowest part of the rack first, then the next higher systems, etc.

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**Caution** – To prevent the rack from tipping during equipment installation, the anti-tilt bar on the rack must be deployed.

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**Caution** – To prevent extreme operating temperature within the rack insure that the maximum temperature does not exceed the product's ambient rated temperatures.

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**Caution** – To prevent extreme operating temperatures due to reduced airflow consideration should be made to the amount of air flow that is required for a safe operation of the equipment.

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**Caution** – Take adequate precautions when moving a rack or library that contains rack-installed equipment. The weight of some rack equipment may have altered the rack or library center of gravity and could cause an overbalance/tip condition during a move.

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**Caution** – For tape libraries, ensure that the equipment to be installed in the rack has UL Listing, CSA or C-UL Certification, and is CE marked.

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## Laser Compliance Notice

Your Oracle product may contain Class 1M Laser Transceivers.



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**Caution** – Class 1M laser radiation when open. Do not view directly with optical instruments.

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## CD and DVD Devices

The following caution applies to CD, DVD, and other optical devices.



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**Caution** – Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

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## Conformité aux normes de sécurité

Veuillez lire attentivement cette section avant de commencer. Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Oracle.

### Mesures de sécurité

Pour votre sécurité, nous vous recommandons de suivre scrupuleusement les mesures de sécurité ci-dessous lorsque vous installez votre matériel:

- Suivez tous les avertissements et toutes les instructions inscrites sur le matériel.
- Assurez-vous que la tension et la fréquence de votre source d'alimentation correspondent à la tension et à la fréquence indiquées sur l'étiquette de la tension électrique nominale du matériel
- N'introduisez jamais d'objets quels qu'ils soient dans les ouvertures de l'équipement. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet étranger conducteur risque de produire un court-circuit pouvant présenter un risque d'incendie ou de décharge électrique, ou susceptible d'endommager le matériel.
- Ce produit est destiné à être utilisé dans des zones à accès limité, dans lesquelles les accès sont contrôlés au moyen de systèmes de sécurité (par exemple, à clé, verrou, dispositif ou badge). Le personnel autorisé à accéder à ces zones doit avoir été préalablement informé des raisons justifiant la limitation des accès et de toutes les précautions à prendre.
- Ne connectez pas directement ce produit à des câbles de communication métalliques situés à l'extérieur. Pour connecter ce produit à des câbles de communication métalliques situés à l'extérieur, utilisez toujours un appareil de protection prévu à cet effet (commutateur ou routeur). Vous pouvez également utiliser du câble optique non métallique à l'extérieur du bâtiment.
- Ne connectez pas directement ce produit à des câbles électriques situés à l'extérieur.
  - Avec du courant alternatif, le produit ne peut être connecté qu'à un système électrique intérieur qui utilise des disjoncteurs limiteurs de courant alternatif.
  - Avec du courant continu, le produit ne peut être connecté qu'à un système électrique raccordé à la terre compris dans les limites d'un seul bâtiment.

### Symboles

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



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**Attention** – Vous risquez d'endommager le matériel ou de vous blesser. Veuillez suivre les instructions.

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**Attention** – Surfaces brûlantes. Evitez tout contact. Les surfaces sont brûlantes. Vous risquez de vous blesser si vous les touchez.

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**Attention** – Tensions dangereuses. Pour réduire les risques de décharge électrique et de danger physique, observez les consignes indiquées.

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Selon le type d'interrupteur marche/arrêt dont votre appareil est équipé, l'un des symboles suivants sera utilisé:



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**Marche** – Met le système sous tension alternative.

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**Arrêt** – Met le système hors tension alternative.

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**Veilleuse** – L'interrupteur Marche/Veille est sur la position de veille.

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## Modification du matériel

N'apportez aucune modification mécanique ou électrique au matériel. Oracle décline toute responsabilité quant à la non-conformité éventuelle d'un produit Oracle modifié.

## Positionnement d'un produit Oracle



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**Attention** – Evitez d'obstruer ou de recouvrir les orifices de votre produit Oracle. N'installez jamais un produit Oracle près d'un radiateur ou d'une source de chaleur. Si vous ne respectez pas ces consignes, votre produit Oracle risque de surchauffer et son fonctionnement en sera altéré.

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## Conformité SELV

Le niveau de sécurité des connexions E/S est conforme aux normes SELV.

## Connexion du cordon d'alimentation



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**Attention** – Les produits Oracle sont conçus pour fonctionner avec des systèmes d'alimentation équipés d'un conducteur neutre relié à la terre (conducteur neutre pour produits alimentés en CC). Pour réduire les risques de décharge électrique, ne branchez jamais les produits Oracle sur une source d'alimentation d'un autre type. Contactez le gérant de votre bâtiment ou un électricien agréé si vous avez le moindre doute quant au type d'alimentation fourni dans votre bâtiment.

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**Attention** – Tous les cordons d'alimentation ne présentent pas les mêmes caractéristiques électriques. Les cordons d'alimentation à usage domestique ne sont pas protégés contre les surtensions et ne sont pas conçus pour être utilisés avec des ordinateurs. N'utilisez jamais de cordon d'alimentation à usage domestique avec les produits Oracle.

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L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur Veille:



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**Attention** – L'interrupteur d'alimentation de ce produit fonctionne uniquement comme un dispositif de mise en veille. Le cordon d'alimentation constitue le moyen principal de déconnexion de l'alimentation pour le système. Assurez-vous de le brancher dans une prise d'alimentation mise à la terre près du système et facile d'accès. Ne le branchez pas lorsque l'alimentation électrique ne se trouve pas dans le châssis du système.

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L'avertissement suivant s'applique uniquement aux systèmes équipés de plusieurs cordons d'alimentation:



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**Attention** – Pour mettre un système équipé de plusieurs cordons d'alimentation hors tension, il est nécessaire de débrancher tous les cordons d'alimentation.

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## Mise en garde relative aux batteries



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**Attention** – Les batteries risquent d'exploser en cas de manipulation maladroite ou de remplacement incorrect. Pour les systèmes dont les batteries sont remplaçables, effectuez les remplacements uniquement selon le modèle du fabricant ou un modèle équivalent recommandé par le fabricant, conformément aux instructions fournies dans le manuel de service du système. N'essayez en aucun cas de démonter les batteries, ni de les recharger hors du système. Ne les jetez pas au feu. Mettez-les au rebut selon les instructions du fabricant et conformément à la législation locale en vigueur. Notez que sur les cartes processeur de Oracle, une batterie au lithium a été moulée dans l'horloge temps réel. Les batteries ne sont pas des pièces remplaçables par le client.

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## Avertissement - Module de stockage d'énergie



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**Attention** – Si vous manipulez ou remplacez les modules de stockage d'énergie incorrectement, vous risquez de les endommager ou de vous exposer à un choc électrique. Remplacez les modules de stockage d'énergie uniquement par les modules de remplacement que Oracle fournit, en veillant à respecter les instructions indiquées dans le manuel d'entretien du produit. Ne démontez pas les modules. N'essayez pas de les recharger hors du système. Ne jetez pas les modules, mais retournez-les à Oracle conformément aux procédures Oracle relatives au produit.

---

## Couvercle de l'unité

Pour ajouter des cartes, de la mémoire ou des périphériques de stockage internes, vous devez retirer le couvercle de votre système Oracle. Remettez le couvercle supérieur en place avant de mettre votre système sous tension.



---

**Attention** – Ne mettez jamais des produits Oracle sous tension si leur couvercle supérieur n'est pas mis en place. Si vous ne prenez pas ces précautions, vous risquez de vous blesser ou d'endommager le système.

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## Instructions de montage en rack

Les instructions de montage en rack suivantes ou similaires à celles-ci sont fournies avec les instructions d'installation :

- **Température ambiante de fonctionnement élevée** : en cas d'installation dans un châssis fermé ou contenant plusieurs appareils, la température ambiante de fonctionnement au niveau du rack peut être supérieure à la température ambiante de la pièce. En conséquence, il convient de veiller à installer le matériel dans un environnement compatible avec la température ambiante maximale (T<sub>ma</sub>), spécifiée par le fabricant.



- **Débit d'air réduit** : l'installation du matériel dans un rack doit être effectuée de façon à ne pas compromettre le débit d'air nécessaire pour un fonctionnement sûr de ce matériel.
- **Charge mécanique** : le montage de l'équipement en rack doit être réalisé de manière à éviter toute situation dangereuse résultant d'une charge déséquilibrée.
- **Surcharge de circuit** : il convient de prendre les précautions nécessaires pour la connexion du matériel au circuit d'alimentation et de réfléchir aux conséquences d'une éventuelle surcharge des circuits sur la protection de surintensité et sur le câblage d'alimentation. En l'occurrence, les valeurs nominales de la plaque signalétique du matériel doivent être prises en compte.
- **Mise à la terre fiable** : une mise à la terre fiable du matériel monté en rack doit être assurée. Une attention toute particulière est requise pour les raccordements d'alimentation autres que ceux effectués directement sur le circuit principal (par exemple, en cas d'utilisation de blocs multiprises).




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**Attention** – L'équipement monté sur glissière/rail ne doit servir ni d'étagère ni d'espace de travail.

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## Mise en garde relative au système en rack

La mise en garde suivante s'applique aux racks et aux systèmes montés en rack.




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**Attention** – Pour des raisons de sécurité, le matériel doit toujours être chargé du bas vers le haut. En d'autres termes, vous devez installer, en premier, le matériel qui doit se trouver dans la partie la plus inférieure du rack, puis installer le matériel sur le niveau suivant, etc.

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**Attention** – Afin d'éviter que le rack ne penche pendant l'installation du matériel, tirez la barre anti-basculement du rack.

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**Attention** – Pour éviter des températures de fonctionnement extrêmes dans le rack, assurez-vous que la température maximale ne dépasse pas la fourchette de températures ambiantes du produit déterminée par le fabricant.

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**Attention** – Afin d'empêcher des températures de fonctionnement extrêmes provoquées par une aération insuffisante, assurez-vous de fournir une aération appropriée pour un fonctionnement du matériel en toute sécurité.

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**Attention** – Prenez les précautions adéquates pour déplacer un rack ou une bibliothèque qui contient du matériel installé en rack. Le poids de certains équipements en rack ayant pu modifier le centre de gravité du rack ou de la bibliothèque pourrait provoquer un effet de contrepoids ou de déséquilibre durant le déplacement.

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**Attention** – Pour les bibliothèques de bandes, vérifiez que le matériel à installer dans le rack est homologué UL, CSA ou C-UL, et porte la mention CE.

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## Avis de conformité des appareils laser

Votre produit Oracle peut contenir des appareils émetteurs/récepteurs de rayons laser de classe 1M.



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**Attention** – Rayonnement laser de classe 1M à l'ouverture. Ne pas regarder directement à l'aide d'instruments optiques.

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## Périphériques CD et DVD

L'avertissement suivant s'applique aux périphériques CD, DVD et autres périphériques optiques:



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**Attention** – L'utilisation de contrôles et de réglages ou l'application de procédures autres que ceux spécifiés dans le présent document peuvent entraîner une exposition à des radiations dangereuses.

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# Einhaltung sicherheitsbehördlicher Vorschriften

Lesen Sie vor dem Ausführen von Arbeiten diesen Abschnitt. Im folgenden Text werden Sicherheitsvorkehrungen beschrieben, die Sie bei der Installation eines Oracle-Produkts beachten müssen.

## Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz bei der Installation des Geräts die folgenden Sicherheitsvorkehrungen:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Stellen Sie sicher, dass Spannung und Frequenz der Stromversorgung den Nennleistungen auf dem am Gerät angebrachten Etikett entsprechen.
- Führen Sie niemals Fremdoobjekte in die Öffnungen am Gerät ein. Es können gefährliche Spannungen anliegen. Leitfähige Fremdoobjekte können einen Kurzschluss verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.
- Dieses Produkt unterliegt Zugangsbeschränkungen. Der Zugang wird mithilfe eines Sicherheitsmechanismus kontrolliert (z. B. einem Schlüssel, einer Sperre, einem Tool oder eines Werksausweises) und das autorisierte Zugangspersonal wurde über die Gründe für die Beschränkungen und die zu treffenden Sicherheitsmaßnahmen unterrichtet.
- Schließen Sie dieses Produkt nicht direkt an metallische Fernmeldekabel in Außenbereichen an. Verwenden Sie zum Anschließen des Produkts an metallische Fernmeldekabel in Außenbereichen immer eine Schutzvorrichtung, die für den direkten Anschluss an metallische Fernmeldekabel in Außenbereichen vorgesehen ist (etwa einen Switch oder einen Router). Alternativ dazu können Sie für Außenbereiche (ab Gebäudeaußenseite) optische nichtmetallische Fernmeldekabel verwenden
- Schließen Sie dieses Produkt nicht direkt an metallische Fernmeldekabel in Außenbereichen an.
  - Versorgung mit Wechselstrom: Schließen Sie das Produkt ausschließlich an Energieverteilungssysteme in Innenbereichen an, bei denen Strombegrenzungsschalter für Wechselstrom eingesetzt werden.
  - Versorgung mit Gleichstrom: Schließen Sie das Produkt ausschließlich an geerdete Energiesysteme an, die sich vollständig innerhalb eines Gebäudes befinden.

## Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:



**Achtung** – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen.



**Achtung** – Heiße Oberfläche. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.



**Achtung** – Gefährliche Spannungen. Befolgen Sie die Anweisungen, um Stromschläge und Verletzungen zu vermeiden.

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole verwendet werden:



**Ein** – Versorgt das System mit Wechselstrom.



**Aus** – Unterbricht die Wechselstromzufuhr zum Gerät.



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**Wartezustand** – Der Ein-/Standby-Netzschalter befindet sich in der Standby-Position.

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## Modifikationen des Geräts

Nehmen Sie keine elektrischen oder mechanischen Gerätemodifikationen vor. Oracle ist für die Einhaltung der Sicherheitsvorschriften von modifizierten Oracle-Produkten nicht haftbar.

## Aufstellung von Oracle-Geräten



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**Achtung** – Geräteöffnungen Ihres Oracle-Produkts dürfen nicht blockiert oder abgedeckt werden. Oracle-Geräte sollten niemals in der Nähe von Heizkörpern oder Heißluftklappen aufgestellt werden. Die Nichtbeachtung dieser Richtlinien kann Überhitzung verursachen und die Zuverlässigkeit Ihres Oracle-Geräts beeinträchtigen.

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## SELV-Konformität

Der Sicherheitsstatus der E/A-Verbindungen entspricht den SELV-Anforderungen.

## Anschluss des Netzkabels



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**Achtung** – Oracle-Geräte sind für Stromversorgungssysteme mit einem geerdeten neutralen Leiter (geerdeter Rückleiter bei gleichstrombetriebenen Geräten) ausgelegt. Um die Gefahr von Stromschlägen zu vermeiden, schließen Sie das Gerät niemals an andere Stromversorgungssysteme an. Wenden Sie sich an den zuständigen Gebäudeverwalter oder an einen qualifizierten Elektriker, wenn Sie nicht sicher wissen, an welche Art von Stromversorgungssystem Ihr Gebäude angeschlossen ist.

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**Achtung** – Nicht alle Netzkabel verfügen über die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastschutz und sind daher für Computersysteme nicht geeignet. Verwenden Sie bei Ihrem Oracle-Produkt keine Haushalts-Verlängerungskabel.

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Die folgende Warnung gilt nur für Geräte mit Standby-Netzschalter:



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**Achtung** – Beim Netzschalter dieses Geräts handelt es sich nur um einen Ein-/Standby-Schalter. Zum völligen Abtrennen des Systems von der Stromversorgung dient hauptsächlich das Netzkabel. Stellen Sie sicher, dass das Netzkabel an eine frei zugängliche geerdete Steckdose in der Nähe des Systems angeschlossen ist. Schließen Sie das Stromkabel nicht an, wenn die Stromversorgung vom Systemchassis entfernt wurde.

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Die folgende Warnung gilt nur für Geräte mit mehreren Netzkabeln:



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**Achtung** – Bei Produkten mit mehreren Netz-kabeln müssen alle Netzkabel abgetrennt werden, um das System völlig von der Stromversorgung zu trennen.

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## Warnung bezüglich Batterien



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**Achtung** – Bei unsachgemäßer Handhabung oder nicht fachgerechtem Austausch der Batterien besteht Explosionsgefahr. Verwenden Sie bei Systemen mit austauschbaren Batterien ausschließlich Ersatzbatterien desselben Typs und Herstellers bzw. einen entsprechenden, vom Hersteller gemäß den Anweisungen im Service-Handbuch des Produkts empfohlenen Batterietyp. Versuchen Sie nicht, die Batterien auszubauen oder außerhalb des Systems wiederaufzuladen. Werfen Sie die Batterien nicht ins Feuer. Entsorgen Sie die Batterien entsprechend den Anweisungen des Herstellers und den vor Ort geltenden Vorschriften. CPU-Karten von Oracle verfügen über eine Echtzeituhr mit integrierter Lithiumbatterie. Diese Batterie darf nur von einem qualifizierten Servicetechniker ausgetauscht werden.

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## Sicherheitshinweise zum Energiespeichermodul



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**Achtung** – Bei unsachgemäßer Handhabung oder unsachgemäßem Austausch von Energiespeichermodulen besteht die Gefahr eines Stromschlags oder Geräteschadens. Verwenden Sie beim Austausch von Energiespeichermodulen nur Ersatzmodule, die von Oracle bereitgestellt wurden, und folgen Sie den im Service Manual zum Produkt enthaltenen Anweisungen. Versuchen Sie auf keinen Fall, Module auszubauen oder diese außerhalb des Systems wiederaufzuladen. Entsorgen Sie die Module bitte nicht. Geben Sie sie stattdessen an Oracle gemäß den Oracle-Verfahren für das Produkt zurück.

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## Gehäuseabdeckung

Sie müssen die Abdeckung Ihres Oracle-Computersystems entfernen, um Karten, Speicher oder interne Speichergeräte hinzuzufügen. Bringen Sie vor dem Einschalten des Systems die Gehäuseabdeckung wieder an.



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**Achtung** – Nehmen Sie Oracle-Geräte nicht ohne Abdeckung in Betrieb. Die Nichtbeachtung dieses Warnhinweises kann Verletzungen oder Geräteschaden zur Folge haben.

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## Anweisungen zur Rack-Montage

Die folgenden oder ähnlichen Anweisungen zur Rack-Montage wurden in die Installationsanweisungen aufgenommen:

- **Erhöhte Betriebsumgebungstemperatur** - Wenn das Rack in einer geschlossenen Rack-Baugruppe oder in einer Multi-unit-Rack-Baugruppe installiert ist, kann die Betriebsumgebungstemperatur der Rack-Umgebung höher sein als die Umgebungstemperatur des Raumes. Deshalb sollte berücksichtigt werden, das Gerät in einer Umgebung zu installieren, die kompatibel zu der vom Hersteller angegebenen maximalen Umgebungstemperatur (T<sub>ma</sub>) ist.
- **Reduzierter Luftstrom** - Die Installation des Geräts in einem Rack sollte so erfolgen, dass die Luftstrommenge, die für den sicheren Betrieb des Geräts erforderlich ist, nicht beeinträchtigt wird.
- **Mechanische Belastung** - Die Montage des Geräts im Rack sollte so erfolgen, dass bei einer ungleichmäßigen mechanischen Belastung keine gefährliche Betriebsbedingung entstehen kann.
- **Stromkreisüberlastung** - Der Anschluss des Geräts an den Speisestromkreis und die Wirkung, die ein Überlasten der Stromkreise auf das Überstromschutz-Gerät und die Speisestromkreisverkabelung haben kann, sollten sorgfältig geprüft und berücksichtigt werden. Beim Behandeln dieses Aspekts sollten besonders die Lastangaben auf dem Leistungsschild des Geräts sorgfältig geprüft werden.
- **Zuverlässige Erdung** - Ausrüstung, die in Racks montiert ist, muss zuverlässig geerdet sein. Besonders müssen hierbei die Stromanschluss-leitungen und weniger die direkten Verbindungen zum Abzweigstromkreis beachtet werden (z. B. durch die Verwendung von Adapterleisten).



**Achtung** – Verwenden Sie Geräte in Steckplätzen bzw. auf Schienen nicht als Regal oder Arbeitsbereich.



## Warnungen bezüglich in Racks eingebauter Systeme

Die folgenden Warnungen gelten für Racks und in Racks eingebaute Systeme:



**Achtung** – Aus Sicherheitsgründen sollten sämtliche Geräte von unten nach oben in Racks eingebaut werden. Installieren Sie also zuerst die Geräte, die an der untersten Position im Rack eingebaut werden, gefolgt von den Systemen, die an nächsthöherer Stelle eingebaut werden, usw.



**Achtung** – Verwenden Sie beim Einbau den Kippschutz am Rack, um ein Umkippen zu vermeiden.



**Achtung** – Um extreme Betriebstemperaturen im Rack zu vermeiden, stellen Sie sicher, dass die Maximaltemperatur die Nennleistung der Umgebungstemperatur für das Produkt nicht überschreitet



**Achtung** – Um extreme Betriebstemperaturen durch verringerte Luftzirkulation zu vermeiden, sollte die für den sicheren Betrieb des Geräts erforderliche Luftzirkulation eingesetzt werden.



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**Achtung** – Treffen Sie ausreichende Vorkehrungen, wenn Sie ein Rack oder eine Bibliothek bewegen, die rackmontierte Geräte enthält. Durch das Gewicht mancher Ausrüstungsteile im Rack wurde möglicherweise der Schwerpunkt des Racks bzw. der Bibliothek verändert, was zu einem Ungleichgewicht bzw. Umkippen eines Ausrüstungsteils während einer Bewegung führen kann.

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**Achtung** – Stellen Sie bei Bandbibliotheken sicher, dass auf den im Rack zu installierenden Geräten das UL-Prüfzeichen, die CSA- bzw C-UL-Zertifizierung, und die CE-Kennzeichnung angebracht sind.

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## Hinweis zur Laser-Konformität

Ihr Oracle-Produkt kann Laserfunkgeräte der Klasse 1M umfassen.



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**Achtung** – In geöffnetem Zustand Laser-Strahlung der Klasse 1M. Nicht mit optischen Instrumenten direkt in den Strahl schauen.

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## CD- und DVD-Geräte

Die folgende Warnung gilt für CD-, DVD- und andere optische Geräte:



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**Achtung** – Die hier nicht aufgeführte Verwendung von Steuerelementen, Anpassungen oder Ausführung von Vorgängen kann eine gefährliche Strahlenbelastung verursachen.

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# Dichiarazioni di conformità alle norme di sicurezza

Leggere la presente sezione prima di iniziare qualsiasi procedura. Il seguente testo descrive le misure precauzionali da adottare durante l'installazione dei prodotti Oracle.

## Misure precauzionali

Osservare le seguenti misure precauzionali durante l'installazione dell'apparecchiatura:

- Seguire tutte le avvertenze e le istruzioni riportate sull'apparecchiatura.
- Verificare che la tensione e la frequenza della sorgente di alimentazione corrispondano ai valori di tensione e frequenza riportati sull'apposita targhetta dell'apparecchiatura.
- Non inserire mai oggetti di alcun tipo nelle aperture dell'apparecchiatura. I componenti interni possono essere attraversati da corrente ad alta tensione. I corpi estranei di materiale conduttore possono produrre un corto circuito e provocare incendi, scosse elettriche o danni all'apparecchiatura.
- L'accesso al presente prodotto deve essere limitato attraverso l'impiego di misure di sicurezza (tramite chiave, blocco, uso di attrezzi o di tesserini distintivi) e il personale autorizzato all'accesso deve essere informato delle ragioni alla base delle restrizioni e delle precauzioni necessarie.
- Non collegare direttamente il prodotto a cavi di comunicazione metallici esterni. Per il collegamento del prodotto a cavi di comunicazione metallici esterni, utilizzare sempre un dispositivo di protezione atto a tale scopo, quale un interruttore o un router. In alternativa, utilizzare cavi di comunicazione ottici non metallici in uscita dall'edificio.
- Non collegare direttamente il prodotto a cavi di alimentazione esterni.
  - Per l'alimentazione CA, collegare il prodotto esclusivamente a un sistema di distribuzione dell'alimentazione interno che utilizzi appositi interruttori differenziali a limitazione di corrente.
  - Per l'alimentazione CC, collegare il prodotto esclusivamente a sistemi di alimentazione dotati di messa a terra e che siano circoscritti al singolo edificio.

## Simboli

In questo documento possono essere riportati i seguenti simboli:



**Attenzione** – Rischio di danni alle persone o alle apparecchiature. Seguire le istruzioni.



**Attenzione** – Superficie molto calda. Evitare il contatto. Le superfici sono molto calde e, in caso di contatto, possono provocare ustioni.



**Attenzione** – Componenti attraversati da alta tensione. Per ridurre il rischio di scosse elettriche e per garantire l'incolumità personale, attenersi alle istruzioni.

A seconda del tipo di interruttore di alimentazione presente sul dispositivo, potrebbe essere utilizzato uno dei seguenti simboli:



**Acceso** – Applica al sistema la corrente alternata.



**Spento** – Interrompe il flusso di corrente alternata al sistema.





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**Standby** – L'interruttore di accensione/standby è in posizione di attesa.

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## Modifiche all'apparecchiatura

Non modificare i componenti elettrici o meccanici dell'apparecchiatura. Oracle non sarà responsabile della conformità ai regolamenti di un prodotto Oracle modificato.

## Collocazione dei prodotti Oracle



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**Attenzione** – Non ostruire o coprire le prese d'aria del prodotto Oracle. Non posizionare il prodotto Oracle accanto a caloriferi o altre fonti di calore. La mancata osservanza delle presenti linee guida può causare il surriscaldamento del prodotto Oracle, compromettendone l'affidabilità.

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## Conformità SELV

Lo stato di sicurezza dei collegamenti I/O è conforme ai requisiti della normativa SELV.

## Collegamento del cavo di alimentazione



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**Attenzione** – I prodotti Oracle sono progettati per operare con sistemi di alimentazione dotati di un conduttore neutro con messa a terra (ritorno attraverso la terra per i prodotti alimentati a corrente continua). Per ridurre il rischio di scosse elettriche, non collegare i prodotti Oracle a sistemi di alimentazione di tipo diverso. In caso di dubbi sul tipo di rete elettrica utilizzata nell'edificio, contattare un responsabile della struttura o un elettricista qualificato.

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**Attenzione** – Non tutti i cavi di alimentazione supportano gli stessi valori di corrente. Non utilizzare il cavo di alimentazione fornito con l'apparecchiatura per altri prodotti o impieghi. Le prolunghe per uso domestico sono prive di protezione contro il sovraccarico di corrente e non sono destinate all'uso con i computer. Non utilizzare prolunghe per uso domestico con il prodotto Oracle.

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L'avvertenza seguente si applica solo ai dispositivi dotati di interruttore di alimentazione con funzione di standby:



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**Attenzione** – L'interruttore di alimentazione del presente prodotto funziona solo come dispositivo di standby. Il cavo di alimentazione agisce da dispositivo di disconnessione primario del sistema. Collegare sempre il cavo di alimentazione a una presa di corrente con messa a terra situata in prossimità del sistema e facilmente accessibile. Non collegare il cavo di alimentazione quando l'alimentatore è stato rimosso dallo chassis.

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L'avvertenza seguente si applica solo ai dispositivi con più cavi di alimentazione:



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**Attenzione** – Per i prodotti con più di un cavo di alimentazione, è necessario disconnettere tutti i cavi per interrompere il flusso di corrente elettrica al sistema.

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## Avviso relativo alle batterie



**Attenzione** – Se maneggiate o sostituite in modo non corretto, le batterie possono dare luogo a esplosioni. Nei sistemi con batterie sostituibili, utilizzare solo batterie dello stesso produttore e tipo o di tipo equivalente consigliate dal produttore, come da istruzioni fornite nel manuale di manutenzione del prodotto. Non disassemblare o tentare di ricaricare le batterie all'esterno del sistema. Non gettare le batterie nel fuoco. Attenersi alle istruzioni del produttore e alle normative locali per lo smaltimento delle batterie. Le schede CPU Oracle sono dotate di batteria al litio integrata nel clock di tempo reale. Questo tipo di batterie non è sostituibile da parte dell'utente.

## Avvertenza relativa al modulo di alimentazione



**Attenzione** – Se maneggiati o sostituiti in modo non corretto, i moduli di alimentazione possono causare scosse elettriche e danni alle apparecchiature. Per la sostituzione dei moduli di alimentazione, utilizzare solo moduli sostitutivi forniti da Oracle e seguire le istruzioni disponibili nel manuale del prodotto. Non disassemblare o tentare di ricaricare i moduli all'esterno del sistema. Non smaltire i moduli. Restituirli a Oracle in base alle procedure Oracle relative al prodotto.

## Copertura dell'unità centrale

È necessario rimuovere la copertura dell'unità centrale Oracle per aggiungere schede, memoria o dispositivi di memorizzazione interni. Riapplicare sempre la copertura prima di accendere il computer.



**Attenzione** – Non utilizzare mai i prodotti Oracle senza l'apposita copertura. La mancata osservanza di questa precauzione può causare danni alle persone o al sistema.

## Istruzioni relative ai sistemi rack

Le seguenti istruzioni (o istruzioni di natura simile) relative alle unità installabili in rack sono incluse nelle istruzioni per l'installazione.

- **Ambiente di esercizio sopraelevato** – Se l'installazione viene eseguita in un assembly composto da più unità in rack, la temperatura di esercizio dell'ambiente rack può essere superiore a quella del locale. È pertanto necessario installare l'apparecchiatura in ambienti compatibili con i requisiti di temperatura ambientale massima (T<sub>ma</sub>) specificati dal produttore.
- **Riduzione del flusso d'aria** – L'installazione dell'apparecchiatura in rack deve avvenire in modo da non ostruire il flusso d'aria necessario al corretto funzionamento dell'apparecchiatura.
- **Carico meccanico** – L'installazione dell'apparecchiatura in rack deve essere effettuata in modo da evitare condizioni di pericolo dovute a carichi meccanici non uniformi.

- **Sovraccarico dei circuiti** – È necessario prestare attenzione ai collegamenti dell'apparecchiatura al circuito di alimentazione e agli effetti di eventuali sovraccarichi del circuito sulla protezione contro la sovracorrente e sui cavi di alimentazione. Tenere in considerazione i valori di classificazione riportati sulle etichette delle apparecchiature durante questa fase dell'installazione.
- **Affidabilità della messa a terra** – È necessario mantenere un livello di affidabilità adeguato della messa a terra per le apparecchiature installate in rack. Prestare particolare attenzione alle connessioni di alimentazione diverse dai collegamenti diretti al circuito derivato (ad esempio, quando si utilizzano strisce di alimentazione).



**Attenzione** – L'apparecchiatura con montaggio su guide di scorrimento non deve essere utilizzata come piano di appoggio o area di lavoro.



## Avviso relativo ai sistemi rack

Le avvertenze seguenti si applicano ai sistemi rack o installati in rack.



**Attenzione** – Per motivi di sicurezza, è opportuno caricare sempre le apparecchiature dal basso verso l'alto, ovvero installare prima le apparecchiature da collocare nella parte inferiore del rack e procedere quindi verso l'alto per l'installazione dei sistemi successivi.



**Attenzione** – Per impedire l'inclinazione delle apparecchiature durante l'installazione, utilizzare la barra antipendenza.



**Attenzione** – Per evitare temperature di esercizio estreme all'interno del rack, verificare che la temperatura massima non superi il limite imposto per l'ambiente di utilizzo del prodotto.



**Attenzione** – Per evitare temperature di esercizio estreme dovute a riduzioni del flusso d'aria, è necessario prestare attenzione alla quantità d'aria necessaria all'utilizzo sicuro dell'apparecchiatura.



**Attenzione** – Per spostare un rack o una libreria che contiene apparecchiatura montata in rack, adottare le precauzioni necessarie. Il peso di alcune apparecchiature su rack potrebbe aver modificato il centro di gravità della libreria o del rack e potrebbe causare uno sbilanciamento o una condizione di pericolo durante lo spostamento.



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**Attenzione** – Per le librerie a nastro, verificare che l'apparecchiatura da installare nel rack disponga di una certificazione UL, CSA o C-UL e che sia dotata di marchio CE.

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## Conformità alle certificazioni laser

Il prodotto Oracle potrebbe contenere ricetrasmittitori laser di classe 1M.



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**Attenzione** – Se aperto, emette radiazioni laser di classe 1M. Evitare la visualizzazione diretta con strumenti ottici.

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## CD e DVD

L'avvertenza seguente si applica a CD, DVD e altri dispositivi ottici.



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**Attenzione** – L'uso di controlli, regolazioni o l'esecuzione di procedure diverse da quelle qui specificate può causare l'esposizione a radiazioni nocive.

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# Normas de Conformidade da Agência de Segurança

Leia esta seção antes de começar qualquer procedimento. Este texto traz medidas de segurança que devem ser adotadas na instalação do produto Oracle.

## Medidas de segurança

Para sua proteção, siga as medidas de segurança a seguir para instalar seu equipamento.

- Tome todas as precauções e siga todas as instruções indicadas no equipamento.
- Verifique se a tensão e a frequência de sua fonte de alimentação são iguais à tensão e à frequência descritas na etiqueta de classificação elétrica do equipamento.
- Jamais insira qualquer tipo de objeto nas aberturas do equipamento. Pode haver tensões perigosas. Objetos estranhos, condutores de eletricidade, podem provocar curto circuito, causando incêndio, choque elétrico ou danos em seu equipamento.
- O acesso a este produto deve ser restrito e controlado por dispositivos de segurança (por exemplo: chave, trava, ferramenta, autorização por crachá eletrônico), e o pessoal com acesso autorizado deve estar ciente dos motivos das restrições e tomar todas as precauções necessárias.
- Não conecte este produto diretamente a cabos metálicos de comunicação instalados ao ar livre. Para conectar o produto a cabos metálicos de comunicação instalados ao ar livre, sempre utilize um dispositivo de proteção próprio para conexões diretas a esses tipos de cabos (um interruptor ou um roteador) ou utilize cabos óticos não metálicos para comunicação na parte externa da área edificada.
- Não conecte este produto diretamente a cabos elétricos instalados ao ar livre.
  - No caso de corrente alternada, conecte o produto somente a um sistema interno de distribuição de energia elétrica que utilize disjuntores limitadores próprios para corrente alternada.
  - No caso de corrente direta, conecte o produto somente a sistemas elétricos aterrados que estejam totalmente contidos em uma área edificada.

## Símbolos

Estes símbolos constam deste manual:



**Atenção** – Existe risco de lesão física e dano do equipamento. Siga as instruções.



**Atenção** – Superfície quente. Evite o contato. Superfícies quentes que podem provocar queimaduras se tocadas.



**Atenção** – Tensão perigosa. Para evitar choques elétricos e danos à saúde, siga as instruções.

Dependendo do tipo de chave de força do seu dispositivo, um destes símbolos pode ser usado.



**Ligado** – Aplica energia AC ao sistema.



**Desligado** – Elimina energia AC do sistema.



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**Standby** – A chave Ligar/Standby está na posição standby.

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## Modificações no equipamento

Não faça modificações elétricas nem mecânicas no equipamento. A Oracle não se responsabiliza pela conformidade normativa de um produto Oracle modificado.

## Instalação de produto Oracle



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**Atenção** – Não bloqueie nem cubra qualquer abertura de seu produto Oracle. Jamais instale um produto Oracle próximo a um radiador ou registro de aquecimento. A não observância dessas orientações pode provocar superaquecimento e afetar a confiabilidade de seu produto Oracle.

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## Conformidade SELV

Status de segurança das conexões de entrada/saída e as exigências da SELV.

## Conexão dos cabos de energia



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**Atenção** – Os produtos Oracle são produzidos para operar em sistemas de energia com fio neutro aterrado (cabo de retorno aterrado para produtos que operem com energia CC). Para reduzir o risco de choque elétrico, não conecte os produtos Oracle a qualquer outro tipo de sistema de energia. Contate o gerente de manutenção ou um eletricista qualificado se você não tiver certeza do tipo de energia elétrica fornecida no seu prédio.

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**Atenção** – Nem todos os cabos de força têm a mesma classificação de corrente. Não use o cabo de força fornecido com seu equipamento em qualquer outro produto ou para qualquer outro uso. Os cabos de extensão domésticos não são protegidos contra sobrecargas e não são destinados ao uso em sistemas de computação. Não use cabos de extensão domésticos em seu produto Oracle.

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Estas precauções devem ser observadas apenas em dispositivos com chave de força Standby:



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**Atenção** – A chave de força deste produto funciona somente como dispositivo do tipo standby. O cabo de força serve como dispositivo de desconexão primária do sistema. Certifique-se de ligar o cabo de força em tomada com fio neutro aterrado próxima ao sistema e prontamente acessível. Não conecte o cabo de força se o dispositivo de alimentação de energia tiver sido removido do chassi do sistema.

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Estas precauções devem ser observadas apenas em dispositivos com vários cabos de força:



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**Atenção** – No caso de produtos com vários cabos de força, todos os cabos devem ser desconectados para eliminar totalmente a energia do sistema.

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## Alerta sobre baterias



**Atenção** – As baterias podem explodir se manuseadas ou substituídas incorretamente. Nos sistemas com bateria substituível, substitua a bateria somente por outra do mesmo fabricante ou tipo, ou de tipo equivalente recomendado pelo fabricante, de acordo com as instruções do manual de atendimento ao cliente. Não desmonte a bateria nem tente recarregá-la fora do sistema. Não descarte a bateria no fogo. Descarte as baterias corretamente, de acordo com as instruções do fabricante e as normas locais. Observe que as placas de CPU da Oracle têm baterias de lítio moldadas no clock de tempo real. Essas baterias não podem ser substituídas pelo cliente.

## Aviso do módulo de armazenamento de energia



**Atenção** – Haverá risco de choque ou dano ao equipamento se os módulos de armazenamento de energia forem mal utilizados ou substituídos de forma incorreta. Ao trocar os módulos de armazenamento de energia, use somente módulos de substituição fornecidos pela Oracle, de acordo com as instruções do manual de serviço do produto. Não desmonte os módulos ou tente recarregá-los fora do sistema. Não descarte os módulos; devolva-os para a Oracle de acordo com os procedimentos do produto.

## Gabinete da unidade do sistema

Você deve remover o gabinete da unidade do sistema de computação para inserir placas, memória ou dispositivos internos de armazenamento. Recoloque o gabinete antes de ligar o sistema de computação.



**Atenção** – Não opere os produtos Oracle sem o gabinete colocado. A não observância desse procedimento pode resultar em lesões físicas e danos ao sistema.

## Instruções do sistema de gabinete

Estas instruções de montagem de gabinete ou outras similares estão incluídas nas instruções de instalação:

- **Temperatura ambiente operacional elevada** – Se o equipamento for instalado em gabinete fechado ou gabinete com várias unidades, a temperatura do ambiente operacional pode ficar acima do ambiente da sala. Portanto, deve-se considerar a instalação do equipamento em ambiente compatível com a temperatura ambiente máxima especificada pelo fabricante.
- **Fluxo de ar reduzido** – O equipamento deve ser instalado no gabinete de forma a não comprometer o fluxo de ar necessário para uma operação segura.
- **Carga mecânica** – O equipamento deve ser montado no gabinete de forma a evitar condições de risco decorrentes de carga mecânica irregular.

- **Circuito sobrecarregado** – Deve-se atentar para a conexão do equipamento com o circuito de energia e os possíveis efeitos da sobrecarga na proteção contra corrente excessiva e na fiação de força. Consultar a classificação correta da placa de identificação do equipamento ao tratar dessa questão.
- **Aterramento confiável** – Deve-se manter um aterramento confiável para o equipamento montado em gabinete. Deve-se atentar especificamente para as conexões de energia além das conexões diretas com o circuito de ramal (por exemplo, uso de tiras de força).



**Atenção** – Os equipamentos montados sobre correções/trilhos não devem ser utilizados como prateleira ou área de trabalho.



## Alerta sobre o sistema de gabinete

Estes alertas se aplicam aos gabinetes e sistemas montados em gabinetes.



**Atenção** – Por questão de segurança, o equipamento sempre deve ser carregado de baixo para cima. Ou seja, instalar primeiro o equipamento que será montado na parte inferior do gabinete, em seguida, os sistemas das partes superiores e assim por diante.



**Atenção** – Para evitar a inclinação do gabinete durante a instalação do equipamento, usar a barra anti-inclinação.



**Atenção** – Para evitar temperatura operacional excessiva dentro do gabinete, certifique-se de que a temperatura máxima não ultrapasse as temperaturas ambientais estabelecidas para o produto.



**Atenção** – Para evitar temperatura operacional excessiva em virtude do fluxo reduzido de ar, deve-se verificar o fluxo de ar exigido para a operação segura do equipamento.



**Atenção** – Tome medidas adequadas ao mover um rack ou biblioteca com equipamento instalado em rack. O peso de alguns equipamentos em rack pode alterar o centro de gravidade do rack ou da biblioteca e levar a uma condição de desequilíbrio durante uma movimentação.



**Atenção** – Em bibliotecas de fitas, confirme se o equipamento a ser instalado no rack está na Listagem UL ou tem certificação CSA ou C-UL e se tem a marcação CE.



## Nota de conformidade para a tecnologia laser

Seu produto Oracle pode conter Transceivers a Laser Class 1M.



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**Atenção** – Há incidência de radiação laser de classe 1M quando aberto. Não olhar diretamente com instrumentos óticos.

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## Dispositivos de CD e DVD

Os cuidados a seguir se aplicam a dispositivos de CD, DVD e outros dispositivos óticos.



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**Atenção** – O uso de controles, a realização de ajustes ou a adoção de procedimentos não especificados neste documento podem provocar exposição perigosa à radiação.

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# Normativas de seguridad

Lea esta sección antes de realizar cualquier operación. En ella se explican las medidas de seguridad que debe tomar al instalar un producto de Oracle.

## Medidas de seguridad

Para su protección, tome las medidas de seguridad siguientes durante la instalación del equipo:

- Siga todos los avisos e instrucciones indicados en el equipo.
- Asegúrese de que el voltaje y frecuencia de la fuente de alimentación coincidan con el voltaje y frecuencia indicados en la etiqueta de clasificación eléctrica del equipo.
- No introduzca objetos de ningún tipo por las rejillas del equipo, ya que puede quedar expuesto a voltajes peligrosos. Los objetos conductores extraños pueden producir cortocircuitos y, en consecuencia, incendios, descargas eléctricas o daños en el equipo.
- Este producto se ha concebido para un acceso restringido y, por tanto, éste se controla mediante mecanismos de seguridad (p. ej., acceso con clave, bloqueo, herramienta y tarjeta de identificación). Las personas con acceso autorizado están al corriente de los motivos de esta restricción y de las precauciones que se deben tomar.
- No conecte este producto con cables de comunicación metálicos para uso en exteriores directamente. Para conectarlo, utilice siempre un dispositivo de protección diseñado para la conexión directa con ellos (por ejemplo, un conmutador o un router), o bien utilice cables de comunicación ópticos no metálicos en la parte exterior del edificio.
- No conecte este producto con cables de alimentación para uso en exteriores directamente.
  - En el caso de alimentación por corriente alterna (CA), conecte el producto únicamente con un sistema de distribución de alimentación para interiores que utilice interruptores automáticos para corriente alterna.
  - En el caso de alimentación por corriente continua (CC), conecte el producto únicamente a sistemas con conexión a tierra que se encuentren completamente dentro del edificio.

## Símbolos

En este documento aparecen los siguientes símbolos:



**Precaución** – Existe el riesgo de que se produzcan lesiones personales y daños en el equipo. Siga las instrucciones.



**Precaución** – Superficie caliente. Evite todo contacto. Las superficies están calientes y pueden causar lesiones personales si se tocan.



**Precaución** – Voltaje peligroso. Para reducir el riesgo de descargas eléctricas y lesiones personales, siga las instrucciones.

En función del tipo de interruptor de alimentación del que disponga el dispositivo, se utilizará uno de los símbolos siguientes:



**Encendido** – Suministra alimentación de CA al sistema.



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**Apagado** – Corta la alimentación de CA del sistema.

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**Espera** – El interruptor de encendido/espera está en la posición de espera.

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## Modificaciones en el equipo

No realice modificaciones de tipo mecánico ni eléctrico en el equipo. Oracle no se hace responsable del cumplimiento de normativas en caso de que un producto Oracle se haya modificado.

## Colocación de un producto Oracle



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**Precaución** – No obstruya ni tape las rejillas del producto Oracle. Nunca coloque un producto Oracle cerca de radiadores ni fuentes de calor. Si no sigue estas indicaciones, el producto Oracle podría sobrecalentarse y la fiabilidad de su funcionamiento se vería afectada.

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## Cumplimiento de la normativa para instalaciones SELV

Las condiciones de seguridad de las conexiones de entrada y salida cumplen los requisitos para instalaciones SELV (del inglés *Safe Extra Low Voltage*, voltaje bajo y seguro).

## Conexión del cable de alimentación



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**Precaución** – Los productos Oracle se han diseñado para funcionar con sistemas de alimentación que cuenten con un conductor neutro a tierra (con conexión a tierra de regreso para los productos con alimentación de CC). Para reducir el riesgo de descargas eléctricas, no conecte ningún producto Oracle a otro tipo de sistema de alimentación. Póngase en contacto con el encargado de las instalaciones de su empresa o con un electricista cualificado en caso de que no esté seguro del tipo de alimentación del que se dispone en el edificio.

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**Precaución** – No todos los cables de alimentación tienen la misma clasificación eléctrica. Los alargadores de uso doméstico no cuentan con protección frente a sobrecargas y no están diseñados para su utilización con sistemas informáticos. No utilice alargadores de uso doméstico con el producto Oracle.

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La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de un interruptor de alimentación de espera:



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**Precaución** – El interruptor de alimentación de este producto funciona solamente como un dispositivo de espera. El cable de alimentación hace las veces de dispositivo de desconexión principal del sistema. Asegúrese de que conecta el cable de alimentación a una toma de tierra situada cerca del sistema y de fácil acceso. No conecte el cable de alimentación si la unidad de alimentación no se encuentra en el bastidor del sistema.

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La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de varios cables de alimentación:



**Precaución** – En los productos que cuentan con varios cables de alimentación, debe desconectar todos los cables de alimentación para cortar por completo la alimentación eléctrica del sistema.



## Advertencia sobre las baterías



**Precaución** – Si las baterías no se manipulan o reemplazan correctamente, se corre el riesgo de que estallen. En los sistemas que cuentan con baterías reemplazables, reemplácelas sólo con baterías del mismo fabricante y el mismo tipo, o un tipo equivalente recomendado por el fabricante, de acuerdo con las instrucciones descritas en el manual de servicio del producto. No desmonte las baterías ni intente recargarlas fuera del sistema. No intente deshacerse de las baterías echándolas al fuego. Deshágase de las baterías correctamente de acuerdo con las instrucciones del fabricante y las normas locales. Tenga en cuenta que en las placas CPU de Oracle, hay una batería de litio incorporada en el reloj en tiempo real. Los usuarios no deben reemplazar este tipo de baterías.

## Advertencia relativa al módulo de almacenamiento de energía



**Precaución** – Existe un peligro de electrocuciones o daños en el equipo si se manipulan o sustituyen incorrectamente los módulos de almacenamiento de energía. Cuando cambie los módulos de almacenamiento de energía, utilice exclusivamente módulos de sustitución que hayan sido suministrados por Oracle, de conformidad con las instrucciones indicadas en el manual de servicio del producto. No desmonte módulos ni intente recargarlos fuera del sistema. No elimine los módulos. En su lugar, devuélvalos a Oracle de conformidad con los procedimientos de Oracle para el producto.

## Cubierta de la unidad del sistema

Debe extraer la cubierta de la unidad del sistema informático Oracle para instalar tarjetas, memoria o dispositivos de almacenamiento internos. Vuelva a colocar la cubierta antes de encender el sistema informático.



**Precaución** – No ponga en funcionamiento los productos Oracle que no tengan colocada la cubierta. De lo contrario, puede sufrir lesiones personales y ocasionar daños en el sistema.

## Instrucciones para el montaje en armario

Las siguientes instrucciones de montaje en armario u otras similares se incluyen en las instrucciones de instalación:

- **Temperatura de funcionamiento elevada** - si se instala en un armario cerrado o con más unidades, la temperatura ambiente de funcionamiento del entorno del armario puede ser superior a la de la habitación. Por tanto, el equipo debería instalarse en un entorno compatible con la temperatura ambiente máxima (T<sub>ma</sub>) especificada por el fabricante.

- **Flujo de aire reducido** - para instalar el equipo en un armario hay que asegurarse de que se mantendrá el flujo de aire necesario para el correcto funcionamiento del equipo.
- **Carga mecánica** - el montaje del equipo en el armario debería realizarse de modo que no se dé una situación de peligro debido a una carga mecánica irregular.
- **Sobrecarga del circuito** - debe prestarse atención a la conexión del equipo al circuito de alimentación y a las consecuencias que puede tener la sobrecarga de los circuitos en la protección de sobrecorriente y el cableado de alimentación. En caso de sobrecarga, es recomendable tener en cuenta la potencia del equipo que aparece en la placa de identificación.
- **Puesta a tierra fiable** - debería mantenerse una puesta a tierra fiable del equipo montado en un armario. Debería prestarse especial atención a las conexiones de suministro que no sean las directas al circuito derivado (p. ej., las regletas de distribución).



**Precaución** – Los equipos instalados por deslizamiento o sobre raíles no deben utilizarse como estantería o espacio de trabajo.



## Advertencia sobre el sistema en bastidor

Las advertencias siguientes se aplican a los sistemas montados en bastidor y a los propios bastidores.



**Precaución** – Por seguridad, siempre deben montarse los equipos de abajo arriba. A saber, primero debe instalarse el equipo que se situará en el bastidor inferior; a continuación, el que se situará en el siguiente nivel, etc.



**Precaución** – Para evitar que el bastidor se vuelque durante la instalación del equipo, debe extenderse la barra antivolcado del bastidor.



**Precaución** – Para evitar que se alcance una temperatura de funcionamiento extrema en el bastidor, asegúrese de que la temperatura máxima no sea superior a la temperatura ambiente establecida como adecuada para el producto.



**Precaución** – Para evitar que se alcance una temperatura de funcionamiento extrema debido a una circulación de aire reducida, debe considerarse la magnitud de la circulación de aire requerida para que el equipo funcione de forma segura.



**Precaución** – Al mover un bastidor o una librería que contiene un equipo instalado en bastidor, tome las precauciones necesarias. El peso de algunos equipos instalados en bastidor puede haber alterado el centro de gravedad de la librería o del bastidor y podría ocasionar pérdida de equilibrio o volcarse durante su traslado.



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**Precaución** – Para librerías de cintas, compruebe que el equipo que vaya a instalarse en el bastidor tenga la certificación UL Listing, CSA o C-UL, y la marca CE.

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## Aviso de cumplimiento de la normativa para la utilización de láser

Su producto Oracle puede contener transceptores láser de clase 1M.



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**Precaución** – Radiación láser Clase 1M si se abre. No mirar directamente con instrumentos ópticos.

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## Dispositivos de CD y DVD

La siguiente medida se aplica a los dispositivos de CD y DVD, así como a otros dispositivos ópticos:



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**Precaución** – La utilización de controles, ajustes o procedimientos distintos a los aquí especificados puede dar lugar a niveles de radiación peligrosos.

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## Japanese

# 安全性試験機関のコンプライアンスに関する声明

作業を開始する前に、必ずこの節をお読みください。以下では、Oracle の製品を安全に取り扱っていただくための注意事項について説明しています。

## 取り扱いの注意

システムを設置する際は、次のことに注意してください。

- 装置に記載されている注意事項および取り扱い方法に従ってください。
- 使用している電源の電圧や周波数が、装置の電気定格表示と一致していることを確認してください。
- 装置の開口部に物を差し込まないでください。内部は高電圧になります。金属などの胴体を入れるとショートして、発火、感電、装置の損傷の原因となることがあります。
- この製品は、セキュリティ保護のための手段 (キー、ロック、ツール、バッジなど) によりアクセスが制御されること、およびアクセスを許可された人物が、守る必要のある制限や注意事項の理由について説明を受けていることを想定しています。
- 屋外の金属通信ケーブルにこの製品を直接接続しないでください。屋外の金属通信ケーブルに製品を直接接続するには、必ず屋外の金属通信ケーブルに直接接続するように設計されている遮断装置 (スイッチまたはルーターなど) を使用するか、建物の外では非金属光通信ケーブルを使用します。
- 屋外の電源ケーブルにこの製品を直接接続しないでください。
  - AC 電源に関しては、AC 電源に限流ブレーカーを使用する室内の配電システムにのみ製品を接続してください。
  - DC 電源に関しては、1 つの建物内に完全に収められている接地電力システムにのみ製品を接続してください。

## 記号

本書に記載されている記号の意味は次のとおりです。



注意 – 怪我をしたり装置が損傷を受ける恐れがあります。指示に従ってください。



注意 – 表面は高温です。触れないでください。表面が熱くなっているため、触れると火傷をする恐れがあります。



注意 – 高電圧です。感電や怪我を防ぐため、指示に従ってください。

装置の電源スイッチの種類によって、次のいずれかの記号を使用しています。



オン – システムに AC 電源を提供します。



オフ – システムへの AC 電源をの供給を停止します。



スタンバイ – オン/スタンバイスイッチがスタンバイの位置になっています。

## 装置の改造

装置に対して機械的または電気的な改造を行わないでください。Oracle は、改造された Oracle 製品について法規制上のコンプライアンスに対する責任を負いません。

## Oracle 製品の設置



注意 – Oracle 製品の開口部をふさいだり覆ったりしないでください。Oracle 製品をラジエータまたは熱を発する機器の近くに設置しないでください。これらのガイドラインに従わない場合、過熱が生じ、お使いの Oracle 製品の信頼性に影響が出る可能性があります。

## SELV 対応

I/O 接続の安全状態は、SELV (Safety Extra Low Voltage) の条件を満たしています。

## 電源コードの接続



注意 – Oracle 製品は、アースされた中性線 (DC 電源製品の場合はアースされた帰線) を持つ電力系を使用する設計になっています。感電を防ぐため、それ以外の電源に Oracle 製品を接続しないでください。建物に供給されている電力の種類がわからない場合は、施設の管理者または有資格の技術者に問い合わせてください。



注意 – 必ずしもすべての電源コードの定格電流が同じではありません。装置に付属している電源コードを別の製品に使用しないでください。家庭用の延長コードには過負荷保護がなく、コンピュータシステムで使用することを前提に設計されていません。家庭用の延長コードを Oracle 製品に使用しないでください。

次の注意事項は、スタンバイ電源スイッチがある機器にのみ適用されます。



注意 – この製品はスタンバイ形式の電源スイッチのみを採用しています。システムの下電源を完全に切るためには、電源プラグを抜いてください。設置場所の近くのアースされた電源コンセントに電源プラグを差し込んでください。システムシャーンから電源が取り外された状態で、電源コードを接続しないでください。

次の注意事項は、複数の電源コードを使用する装置にのみ適用されます。



注意 – 複数の電源コードを使用する製品では、システムへの電力供給を完全に停止するには、すべての電源コードをシステムから外す必要があります。





## 電池に関する注意



注意 – 電池の取り扱いや交換を正しく行わないと、爆発する危険があります。交換可能な電池を使用するシステムでは、製品のサービスマニュアルに記載されている手順に従い、同じ製造元の同じ種類のもの (または製造元が推奨する同等の種類のもの) と交換してください。電池を分解したり、システムの外部で充電したりしないでください。電池を火の中へ投げ込まないでください。電池を破棄する際は、製造元の説明およびお住まいの自治体の条例に従って適切に処分してください。Oracle の CPU ボードでは、リチウム電池が実時間時計に取り付けられています。これらの電池については、お客様による交換はできません。

## エネルギーストレージモジュールに関する注意



注意 – エネルギーストレージモジュールの取り扱いや交換を正しく行わないと、感電したり装置が故障したりする危険があります。エネルギーストレージモジュール交換時には、製品のサービスマニュアルに記載されている手順に従い、Oracle が提供する交換モジュールのみを使用してください。モジュールを分解したり、システムの外部で充電したりしないでください。モジュールは破棄せず、製品に関する Oracle の手続きに従い、Oracle に返却してください。

## システム本体のカバー

カード、メモリー、内部記憶装置を増設する際は、Oracle コンピュータシステム本体のカバーを取り外す必要があります。作業後は、必ずカバーを元に戻してからコンピュータシステムの電源を入れてください。



注意 – カバーが取り付けられていない状態で Oracle 製品を動作させないでください。怪我やシステムの故障の原因となる恐れがあります。

## ラックシステムに関する注意

インストール手順には、次の、またはこれに類似したラックマウントの手順が含まれています。

- **動作時周辺温度の上昇** – 密閉されたラックアセンブリまたはマルチユニットのラックアセンブリに設置している場合、ラック環境の動作時周辺温度が室内の周辺温度より高くなる場合があります。したがって、製造元により指定されている最大周辺温度 (T<sub>ma</sub>) に適した環境に装置を設置するようにしてください。
- **通気の減少** – 装置の安全な動作に必要な通気が妨げられないように、装置はラック内に設置してください。
- **装置の配置** – 不均等な装置の配置によって危険な状態が発生しないように、装置はラック内に取り付けてください。
- **回路の過負荷** – 電源回路への装置の接続、および回路の過負荷によって発生する可能性のある過電流対策や電源配線についても考慮してください。これについて対処するときは、装置のネームプレートに表示された定格電力に従った配慮が必要です。
- **確実なアース** – ラックマウント型装置にアースが確実に取り付けられている状態を維持してください。分岐回路への直接接続以外の電源接続 (電源タップの使用など) の場合は、特に注意してください。



注意 – スライド/レールが取り付けられた装置を、シェルフまたはワークスペースとして使用しないでください。



## ラックシステムに関する注意

次の警告は、ラックおよびラック搭載型のシステムに適用されます。



注意 – 安全のために、装置は下から順にラックに取り付けてください。つまり、ラックの一番下に配置する装置を最初に取り付け、次にその上に配置するシステムを取り付けるようにします。



注意 – 装置の取り付け作業中にラックが倒れないように、必ずラックの転倒防止バーを使用してください。



注意 – ラック内で動作時の温度が極端に高くなるのを避けるため、最大温度は製品の周辺温度を超えないようにしてください。



注意 – 通気の減少によって動作時の温度が極端に高くなるのを避けるため、装置の安全な動作に必要な通気を確保するよう配慮が必要です。



注意 – ラックに設置された装置を含むラックまたはライブラリを移動する際には、十分に注意してください。ラック内の装置の重さにより、移動中にラックまたはライブラリの重心が変わり、バランスを失った状態または傾いた状態になることがあります。



注意 – テーブライブラリに関しては、ラックに設置する装置に UL の Listing 認証、CSA 認証または C-UL 認証を受け、CE マークが付いていることを確認してください。

## レーザーの規定適合について

ご使用の Oracle 製品には、クラス 1M レーザートランシーバが搭載されている場合があります。



注意 – 放射されるクラス 1M レーザーを、光学機器で直接見ないようにしてください。

## CD および DVD 装置

次の注意事項が、CD 装置、DVD 装置、およびその他の光学装置に適用されます。



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注意 – ここに記載されていない制御、調整、手順を行うと、有害な放射線が発生する恐れがあります。

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## 안전 기관 준수 규정

절차를 시작하기 전에 이 섹션을 먼저 읽어 보십시오. 다음은 Oracle 제품 설치 시 준수해야 하는 안전 예방 조치입니다.

### 안전 예방 조치

안전을 위해, 장비를 설치할 때는 다음과 같은 안전 예방 조치를 준수하십시오.

- 장비에 표시된 모든 주의 사항 및 지침을 따르십시오.
- 전원의 전압 및 주파수가 장비의 전기 정격 레이블에 명시된 전압 및 주파수와 일치하는지 확인하십시오.
- 장비의 개구부에 이물질을 넣어서는 안 됩니다. 위험한 전압이 흐를 수도 있습니다. 전도성 이물질을 넣으면 합선이 발생하여 화재, 감전 또는 장비 손상을 일으킬 수 있습니다.
- 일부 접근만 허용하도록 만들어진 이 제품은 보안 수단(예: 열쇠, 자물쇠, 도구, 배지 접근)을 통해서 접근이 제어되며, 접근이 허용된 사람은 준수해야 할 예방 조치 및 제한 사항의 근거에 대해 교육을 받은 사람입니다.
- 이 제품을 실외 금속 통신 케이블에 직접 연결하지 마십시오. 항상 이 제품을 실외 금속 통신 케이블(스위치 또는 라우터)에 직접 연결하도록 설계된 보호 장치를 사용하는 실외 금속 통신 케이블에 연결하거나 건물을 벗어날 경우에는 비금속 광 통신 케이블을 사용하십시오.
- 이 제품을 실외 전원 케이블에 직접 연결하지 마십시오.
  - AC 전원의 경우, 이 제품을 AC 전원선에 대한 전류 제한 회로 차단기를 사용하는 실내 배전 시스템에만 연결하십시오.
  - DC 전원의 경우, 이 제품을 완전히 한 건물 내에 있는 접지된 전원 시스템에만 연결하십시오.

### 기호

다음은 이 설명서에 나올 수 있는 기호입니다.



주의 - 신체적 상해 및 장비 손상의 위험이 있습니다. 지침을 따르십시오.



주의 - 표면이 뜨겁습니다. 만지지 마십시오. 표면이 뜨거우므로 만지면 상해를 입을 수 있습니다.



주의 - 위험한 전압이 흐릅니다. 감전 및 신체적 상해의 위험을 줄이려면 다음과 같은 지침을 따르십시오.

장치의 전원 스위치 유형에 따라 다음 기호 중 하나가 사용될 수 있습니다.



켜기 – AC 전원이 시스템에 적용됩니다.



끄기 – AC 전원이 시스템에서 제거됩니다.



대기 – 켜기/대기 스위치가 대기 위치에 있습니다.

## 장비 개조

기계적으로나 전기적으로 장비를 개조하지 마십시오. Oracle은 개조된 Sun 제품에 대한 규정 준수 책임이 없습니다.

## Oracle 제품 배치



주의 – Oracle 제품의 개구부를 차단하거나 가리지 마십시오. 라디에이터나 열 조절 장치 주변에는 절대 Oracle 제품을 배치하지 마십시오. 이러한 지침을 따르지 않으면 Oracle 제품이 과열되어 안정성에 영향을 줄 수 있습니다.

## SELV 준수

I/O 연결에 대한 안전 상태는 SELV 요구 사항을 준수합니다.

## 전원 코드 연결



주의 - Oracle 제품은 접지된 중성 도체가 접지된(DC 전원 제품 접지 반환) 전력 시스템으로 작동하도록 설계되었습니다. 감전의 위험을 줄이려면 Oracle 제품을 기타 다른 유형의 전력 시스템에 연결하지 마십시오. 해당 건물에 공급되는 전원의 유형을 잘 알지 못하면 설비 관리자나 공인 전기 기술자에게 문의하십시오.



주의 - 전원 코드의 정격 전류가 모두 같지는 않습니다. 기타 다른 제품에 사용하는 전원 코드 또는 다른 용도로 제공된 전원 코드를 사용하지 마십시오. 가정용 연장 코드에는 과부하 방지 기능이 없으므로 컴퓨터 시스템용으로 사용할 수 없습니다. Oracle 제품에 가정용 연장 코드를 사용하지 마십시오.

다음 주의 사항은 대기 전원 스위치가 있는 장치에만 적용됩니다.



주의 - 이 제품의 전원 스위치는 대기 유형 장치로만 작동합니다. 전원 코드는 시스템의 기본 연결 해제 장치로 사용됩니다. 전원 코드를 시스템 주변에 있고 쉽게 접근할 수 있는 접지된 전원 콘센트에 연결해야 합니다. 전원 공급 장치가 시스템 새시에서 제거된 경우에는 전원 코드를 연결하지 마십시오.

다음 주의 사항은 다중 전원 코드가 사용되는 장치에만 적용됩니다.



주의 - 전원 코드가 여러 개인 장치의 경우, 모든 전원 코드가 연결 해제되어야 시스템의 전원이 완전히 제거됩니다.



## 배터리 경고



주의 - 배터리를 올바르게 다루거나 잘못 교체하는 경우 폭발의 위험이 있습니다. 교체 가능한 배터리가 있는 시스템의 경우, 제조업체 및 유형이 같은 배터리 또는 제품 서비스 설명서의 지침에 따라 제조업체에서 권장하는 유형의 배터리로만 교체해야 합니다. 배터리를 분해하거나 시스템 외부에서 충전하지 마십시오. 배터리를 불에 태워 폐기하지 마십시오. 배터리를 폐기할 때는 제조업체의 지침 및 지역 규정에 따라 적절히 처리해야 합니다. Oracle CPU 보드에는 실시간 시계 모양으로 만들어진 리튬 배터리가 있음에 유의하십시오. 이러한 배터리는 고객이 교체할 수 있는 부분이 아닙니다.



## 에너지 저장소 모듈에 대한 주의 사항



주의 - 에너지 저장소 모듈을 잘못 취급하거나 제대로 교체하지 않으면 감전되거나 장비가 손상될 위험이 있습니다. 에너지 저장소 모듈을 교체할 때는 제품 서비스 설명서에 나와 있는 지침에 따라 Oracle에서 제공한 교체 모듈만 사용해야 합니다. 모듈을 분해하거나 시스템 외부에서 충전하지 마십시오. 모듈을 폐기하지 말고 해당 제품에 대한 Oracle 절차에 따라 Oracle에 반환하십시오.

## 시스템 장치 덮개

카드, 메모리 또는 내장 저장 장치를 추가하려면 Oracle 컴퓨터 시스템의 덮개를 제거해야 합니다. 덮개는 컴퓨터 시스템의 전원을 켜기 전에 다시 덮어 놓아야 합니다.



주의 - 덮개가 열린 채로 Oracle 제품을 작동하지 마십시오. 이 예방 조치를 지키지 않으면 신체적 상해가 발생하거나 시스템이 손상될 수 있습니다.

## 랙 시스템 지침

다음 지침 또는 이와 유사한 내용의 랙 마운트 지침이 설치 지침에 포함되어 있습니다.

- 작동 환경 온도 상승 - 폐쇄 또는 다중 장치 랙 어셈블리에 설치된 경우 랙 주변의 작동 환경 온도는 방 온도보다 높을 수 있습니다. 따라서 제조업체가 지정한 최대 주변 온도(Tma) 조건에 맞는 환경에 장비를 설치하도록 해야 합니다.
- 감소된 공기 유량 - 랙에 장비를 설치할 때는 장비를 안전하게 작동하는 데 필요한 공기 유량이 줄어들지 않도록 해야 합니다.
- 기계 부하 - 랙에 장비를 마운트할 때는 기계 부하의 불균형으로 인해 위험한 환경이 만들어지지 않도록 해야 합니다.
- 회로 과부하 - 장비를 전원 공급 장치 회로와 연결할 때 회로에 과부하가 발생하지 않도록 해야 합니다. 회로가 과부하될 경우를 대비해 과전류 방지 기능을 갖추고 전원 공급 장치 배선 계획을 세워야 할 수 있습니다. 이 문제를 해결할 때 장비 이름판에 대해 적절히 고려해야 합니다.
- 안전한 접지 - 랙 마운트 장비에 대한 접지가 안전하게 유지되어야 합니다. 분기 회로에 직접 연결하지 않고 다른 방법으로 전원 공급 장치에 연결할 때는 특히 주의해야 합니다(예: 파워 스트립 사용).



주의 - 슬라이드/레일 마운트 장비를 선반이나 작업 공간으로 사용해서는 안 됩니다.



## 랙 시스템 경고

다음과 같은 경고는 랙 및 랙 마운트 시스템에 적용됩니다.



주의 - 안전을 위해, 장비 적재는 항상 아래에서부터 시작해야 합니다. 즉, 랙의 맨 아랫부분에 마운트한 장비를 먼저 설치한 후, 다음 상위 시스템을 설치하는 방식입니다.



주의 - 장비를 설치할 때 랙이 기울어지지 않도록 하려면 전도 방지대를 랙에 배치해야 합니다.



주의 - 랙 내부의 작동 온도가 최고치에 이르지 않도록 하려면 최대 온도가 제품의 주변 정격 온도를 넘지 않도록 해야 합니다.



주의 - 감소된 공기 유량으로 인한 작동 온도 극단화를 방지하려면 안전한 장비 가동을 위한 공기 유량을 고려해야 합니다.



주의 - 랙이나 랙이 설치된 장비가 포함된 라이브러리를 이동할 때는 적절한 예방 조치를 취해야 합니다. 이동 중에 일부 랙 장비의 무게로 인해 랙이나 라이브러리의 무게 중심이 변경되어 균형을 잃거나 기울어질 수 있습니다.



주의 - 테이프 라이브러리의 경우 랙에 설치할 장비가 UL 목록, CSA 또는 C-UL 인증이 있고 CE 표시가 있는지 확인해야 합니다.

## 레이저 준수 알림

Oracle 제품에는 클래스 1M 레이저 트랜스시버가 포함되어 있을 수 있습니다.



주의 - 켜 있을 때의 레이저 방사급이 클래스 1M입니다. 광학 기기로 직접 보지 마십시오.



## CD 및 DVD 장치

다음 주의 사항은 CD, DVD 및 기타 광학 장치에 적용됩니다.



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주의 - 여기에 명시된 사항 이외의 제어 또는 조정을 사용하거나 절차를 수행할 경우 위험한 방사선에 노출될 수 있습니다.

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# Traditional Chinese

## 安全規範遵循說明

開始任何程序之前，請先閱讀本小節。以下內容為安裝 Oracle 產品時需遵循之安全防範措施。

### 安全防範措施

為了安全起見，安裝設備時，請遵循以下安全防範措施：

- 遵循設備上標示的所有注意事項與操作指示。
- 確保電源的電壓和頻率與設備的電力額定值標籤上所標示之電壓和頻率相符。
- 切勿將任何物體插入設備的開口處。可能存在危險電壓。可導電的外來物體會造成短路，進而引發火災、造成觸電或損壞設備。
- 本產品會透過安全措施 (例如鑰匙、鎖、工具、識別證存取) 的管控限制存取，且具存取授權的人員皆已瞭解限制的原因，以及必須採取之任何預防措施。
- 請勿將此產品直接連接至室外金屬通訊纜線。請一律使用專為直接連接至室外金屬通訊電纜而設計的保護裝置 (如交換器或路由器)，將產品連接至室外金屬通訊電纜，或於離開建築物時使用光學的非金屬通訊電纜。
- 請勿將此產品直接連接至室外電纜。
  - 如果使用 AC 電源，請僅將產品連接至對 AC 電源使用限流斷路器的室內配電系統。
  - 如果使用 DC 電源，請僅將產品連接至完全位於建築物中的接地電力系統。

### 號

本書中可能會出現下列符號：



注意 – 有對人體造成傷害並損壞設備的風險。請按說明操作。



注意 – 灼熱表面。請勿碰觸。表面溫度很高，碰觸可能對人體造成傷害。



注意 – 危險電壓。為降低觸電和危害人身健康的風險，請按說明操作。

根據裝置的電源開關類型，可能會使用下列其中一個符號：



開啓 – 供應系統交流電源。



關閉 – 切斷系統交流電源。



待機 – 開啓/待機開關處於待機位置。

## 設備改造

切勿對設備的機械或電氣部分進行改造。經改造之 Sun 產品的法規遵循事宜，Oracle 概不負責。

## 設備改造

切勿對設備的機械或電氣部分進行改造。經改造之 Oracle 產品的法規遵循事宜，Oracle 概不負責。

## Oracle 產品的放置位置



**注意** – 切勿阻塞或覆蓋 Oracle 產品的開口處。請勿將 Oracle 產品放置在電熱器或熱風口附近。若不遵循上述指示，可能會導致溫度過高，並影響 Oracle 產品的穩定性。

## SELV 規範遵循

I/O 連接的安全狀況符合 SELV 要求。

## 電源線連接



**注意** – Oracle 產品在設計上需要使用具有接地中性線 (直流電源產品的接地迴路) 的電源系統。為降低觸電的風險，請勿將 Oracle 產品接入任何其他類型的電源系統。如果無法確定所在建築物的電源供應系統類型，請聯絡設備管理員或合格的電工。



**注意** – 電源線的電流額定值並非全都相同。請勿將本裝置隨附的電源線用於任何其他產品或做其他用途。家用延長線不具備過載保護功能，不適用於電腦系統。請勿將家用延長線用於 Oracle 產品。

以下注意事項僅適用於具備待機電源開關的裝置：



**注意** – 本產品的電源開關僅具有待機類型裝置的功能。電源線是系統的主要斷電裝置。請務必將電源線插入系統附近便於使用的接地電源插座。從系統機架移除電源供應器後，切勿連接電源線。

以下注意事項僅適用於具有多條電源線的裝置：



**注意** – 對於有多條電源線的產品，必須拔掉所有電源線，才能完全切斷系統的電源。



## 電池警告



**注意** – 如果電池處理不當或更換錯誤，會有爆炸的危險。在可更換電池的系統上，請依照產品服務手冊中的說明，僅更換同一製造商所提供之同一類型的電池或製造商建議的同等電池。切勿拆卸電池或嘗試在系統外充電。切勿將電池棄置於火中。請依製造商的說明及當地法規適當地棄置電池。請注意，在 Oracle CPU 板上的即時時鐘內，有一個內建的鋰電池。客戶請勿自行更換這些電池。

## 電力儲存模組注意事項



**注意** – 如果電力儲存模組處理不當或更換錯誤，可能有觸電或損壞設備的危險。更換電力儲存模組時，請僅使用 Oracle 所提供的替換模組，並遵照產品服務手冊中所提供的說明操作。請勿拆卸模組或嘗試在系統外充電。切勿將模組棄置，請依產品適用的 Oracle 程序將其送回 Oracle。

## 系統裝置外殼

您必須移除 Oracle 電腦系統裝置的外殼，才能新增卡、記憶體或內部儲存裝置。請務必先裝好外殼，再開啓電腦系統電源。



**注意** – 外殼未放回原處時，切勿操作 Oracle 產品。違反此防範措施可能造成人體傷害及系統損壞。

# 機架系統操作指示

安裝操作指示內包含下列或類似之機架掛載操作指示：

- **運作環境溫度升高** – 如果安裝在密閉或包含多台設備的機架組內，機架環境的運作環境溫度可能會高於室內環境溫度。因此，安裝設備時，務必確保安裝環境符合製造商所指定環境溫度上限 (Tma) 的規定。
- **空氣流量減少** – 將設備安裝在機架內時，請確保設備安全運行所需的空氣流量不會受到阻礙。
- **機械負荷** – 在機架內的掛載設備時，請確保不會因為機械負荷不平衡造成危險情況。
- **電路過載** – 設備連接至供電電路時，請特別注意電路過載可能對過電流保護和供電線路的影響。處理此問題時，請務必採用設備銘牌上標示的額定值。
- **可靠的接地系統** – 掛載於機架的設備應具備可靠的接地系統。請特別注意未直接連接分支電路的電源供應 (例如，使用延長線)。



注意 – 不得使用滑動/軌道式掛載設備作為機箱或工作區。



# 機架系統警告

下列警告適用於機架和機架掛載系統。



注意 – 為安全起見，請一律由下而上裝載設備。換言之，先安裝要掛載在機架最底部的設備，再安裝較上面的系統，依此類推。



注意 – 為防止機架在設備安裝時傾倒，請務必在機架上架設防傾桿。



注意 – 為防止機架內的運作溫度過高，請確保最高溫度不超過產品的額定環境溫度。



注意 – 為防止因通風不良而導致運作溫度過高，應注意設備安全運作所需之空氣流量。



注意 – 移動機架或含有機架安裝設備的機櫃時，請採取適當預防措施。部分機架設備的重量可能會改變機架或機櫃的重心，在移動過程造成失去平衡/傾倒的情況。



注意 – 針對磁帶櫃，請確定要安裝在機架內的設備具備 UL Listing、CSA 或 C-UL 認證，並標有 CE 標示。

## 雷射規範遵循公告

您的 Oracle 產品可能含有「Class 1M 雷射收發器」。



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**注意** – 開啓時會放射 Class 1M 雷射。請勿直接使用光學儀器檢視。

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## CD 和 DVD 裝置

以下注意事項適用於 CD、DVD 及其他光學裝置。



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**注意** – 未依此處規定的程序進行控制、調整或執行，可能造成輻射曝露的危險情形。

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# Simplified Chinese

## 安全规范遵循说明

在开始执行任何操作过程之前，请先阅读本节内容。下文介绍了安装 Oracle 产品时应遵守的安全防范措施。

### 安全防范措施

为保证您的人身安全，请在安装设备时遵守以下安全防范措施：

- 请遵守设备上标注的所有注意事项和说明。
- 确保电源的电压和频率与设备电气额定值标签上标示的电压和频率相符。
- 切勿通过设备的开口塞入任何物品。可能存在危险电压。具有导电性的外部物品有可能会造成短路，进而引起火灾、电击或设备损坏。
- 本产品用于限制访问，通过使用安全手段（例如，钥匙、锁、工具以及识别卡访问）对访问进行控制，并且已对授权访问的人员说明了限制访问的原因以及需要采取的防范措施。
- 请勿将此产品直接连接到室外金属通信电缆。将该产品连接到室外金属通信电缆时，请务必使用专用于直接连接到室外金属通信电缆的保护设备（例如交换机或路由器），或者在离开建筑物时使用非金属通信光缆。
- 请勿将此产品直接连接到室外电源电缆。
  - 对于交流电源，请仅将该产品连接到对交流电源使用限流断路器的室内配电系统。
  - 对于直流电源，请仅将该产品连接到完全位于一座建筑物中的接地电源系统。

### 符号

本书中有可能出现以下符号：



注意 – 存在人身伤害和设备损坏的危险。请遵守相应的说明。



注意 – 表面灼热。避免接触。表面灼热，如接触可能导致人身伤害。



注意 – 存在危险电压。为了降低电击风险以及减轻对人身健康的危害，请按照相应说明进行操作。

根据设备的电源开关类型，可能使用以下符号中的一种：



打开 – 接通系统的交流电源。



关闭 – 断开系统的交流电源。



待机 – “打开/待机”开关处于“待机”位置。



## 设备改装

请勿对设备进行机械或电气改装。对于因改装 Oracle 产品而导致的法规符合性问题，Oracle 概不负责。

## Oracle 产品的放置



注意 – 不要阻塞或遮盖 Oracle 产品的开口部位。请勿将 Oracle 产品放置在散热器或热源附近。不遵守上述指导原则会导致设备过热而影响 Oracle 产品的稳定性。

## SELV 規範遵循

I/O 連接的安全狀況符合 SELV 要求。

## 電源線連接



注意 – Oracle 產品在設計上需要使用具有接地中性線 (直流電源產品的接地迴路) 的電源系統。為降低觸電的風險，請勿將 Oracle 產品接入任何其他類型的電源系統。如果無法確定所在建築物的電源供應系統類型，請聯絡設備管理員或合格的電工。



注意 – 并非所有电源线都有同样的电流额定值。请勿将随本设备提供的电源线用于任何其他产品或其他用途。家用电源延长线没有过载保护，不能用于计算机系统。切勿在 Oracle 产品上使用家用电源延长线。

以下注意事项仅适用于带有一个待机电源开关的设备：



注意 – 本产品的电源开关仅具有待机类型装置的功能。电源线是该系统的主要断电装置。请务必将电源线插入到系统附近便于使用的接地电源插座。从系统机箱移除电源设备后，切勿连接电源线。

以下注意事项仅适用于带有多条电源线的设备：



注意 – 对于带有多条电源线的产品，必须断开所有电源线才能完全切断系统的电源。



## 电池警告



注意 – 如果电池处理不当或更换不正确，则存在爆炸危险。对于可更换电池的系统，请按照产品服务手册中的说明，仅使用同一制造商生产的同一型号电池或使用制造商建议的等同型号电池进行更换。切勿拆开电池或尝试在系统外部为其充电。切勿将电池丢弃到火中。请根据制造商的说明和当地规章合理处置电池。请注意，Oracle CPU 板上的实时时钟中内嵌了一块锂电池。用户不可自行更换这些电池。



## 能量存储模块注意事项



**注意** – 如果能量存储模块处理不当或更换不正确，则存在电击或设备损坏危险。更换能量存储模块时，只能使用由 Oracle 提供的替换模块，并按照产品服务手册中的说明进行操作。切勿拆开模块或尝试在系统外部为其充电。切勿私自处置这些模块；而应按照 Oracle 规定的产品处理措施将其返回给 Oracle。

## 系统单元盖板

您必须拆下 Oracle 计算机系统单元的盖板，才能添加卡、内存或内部存储设备。请确保在打开计算机系统电源之前装回盖板。



**注意** – 请勿在盖板没有就位的情况下操作 Oracle 产品。不遵守此防范措施可能会导致人身伤害和系统损坏。

## 机架系统说明

安装说明包含下列或类似的机架安装说明：

- **操作环境温度升高** – 如果安装在一个密闭的或多单元机架装置中，机架环境的操作环境温度可能会高于室内环境温度。因此，应注意在符合制造商所指定的最高环境温度 (maximum ambient temperature, Tma) 的环境中安装此设备。
- **气流量减少** – 在机架中安装此设备应保证不会减少设备安全操作所必需的气流量。
- **机械负载** – 在机架中装配设备时，应该保证不会由于机械负载不均匀而造成危险情况。
- **电路过载** – 应该注意设备到电源电路的连接，以及电路过载可能对过流保护和电源接线产生的影响。在解决这一问题时，应充分注意到设备标牌上的额定值。
- **可靠接地** – 应该保持机架装配设备的可靠接地。应特别注意除直接连接到分支电路之外的电源连接（例如，使用电源板）。



**注意** – 切勿将滑轨装配设备用作机框或工作区。



# 机架系统警告

以下警告适用于机架和机架装配系统。



注意 – 为安全起见，应始终由下至上装入设备。也就是说，首先安装将装配在机架最底部的设备，然后安装较高位置的系统，依此类推。



注意 – 为防止机架在设备安装过程中翻倒，必须在机架上安装防翻支架。



注意 – 为了避免机架内的操作温度过高，请确保最高温度不超过产品的额定环境温度。



注意 – 为了避免因气流量减少而导致极端的操作温度，应注意确保设备安全操作所需的气流量。



注意 – 移动包含机架安装设备的机架或库时，应采取适当的防范措施。某些机架设备的重量可能会改变机架或库的重心，从而导致在移动过程中出现失去平衡/倾倒情况。



注意 – 对于磁带库，请确保要安装到机架中的设备具有 UL Listing、CSA 或 C-UL 认证，并带有 CE 标志。

## 符合激光标准声明

您的 Oracle 产品可能包含 1M 类激光收发器。



注意 – 在打开时会有 1M 类激光辐射。请勿直接用光学仪器查看。

## CD 和 DVD 设备

以下注意事项适用于 CD、DVD 以及其他光学设备。



注意 – 未按此处规定的过程进行控制、调节或操作均有可能造成有害辐射。

## Nordic Lithium Battery Cautions

### Norge



**Advarsel** – Litiumbatteri — Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

### Sverige



**Varning** – Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

### Danmark



**Advarsel!** – Litiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

### Suomi



**Varoitus** – Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

## Nordic Power Distribution Cautions

### English



**Caution** – This product is also designed for an IT power distribution system with phase-to-phase voltage of 230V.

### Danmark



**Advarsel!** – Dette produkt er også beregnet til et IT-strømfordelingssystem med en fase-til-fase spænding på 230 V.

## Nordic Grounded Socket Cautions

English



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**Caution** – The appliance must be connected to a grounded socket.

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Norge



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**Advarsel** – Apparatet må tilkoples jordet stikkontakt.

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Sverige



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**Varning** – Apparaten skall anslutas till jordat uttag.

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Suomi



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**Varoitus** – Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

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# Single-Port Card Declaration of Conformity

Compliance Model Number: EXPX9501FXSRGP5  
Product Family Name: Sun 10GbE XFP SR PCI Express card

## EMC

### USA—FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1.This equipment may not cause harmful interference.
- 2.This equipment must accept any interference that may cause undesired operation.

### Canada

This Class A digital apparatus complies with Canadian ICES-003.

### European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

As Information Technology Equipment (ITE) Class A per (as applicable):

EN 55022:2006	Class A
EN 61000-3-2:2000 +A2:2005	Pass
EN 61000-3-3:1995 +A1:2001	Pass
EN 55024:1998 +A1:2001 +A2:2003	Required Limits:
IEC61000-4-2	4 kV (Direct), 8 kV (Air)
IEC61000-4-3	3 V/m
IEC61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
IEC61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines, 2 kV AC Line-Gnd, 0.5 kV DC Power Lines
IEC61000-4-6	3 V
IEC61000-4-8	1 A/m
IEC61000-4-11	Pass

## Safety

This equipment complies with the following requirements of the Low Voltage Directive2006/95/EC:

EC Type Examination Certificates:

EN 60950-1:2001, 1st Edition

IEC 60950-1:2001, 1st Edition

Evaluated to all CB Countries

UL 60950-1:2003, CSA C22.2 No. 60950-03

CB Scheme Certificate No. NO44811

File: E139761

Vol. 43

Sec. 2

## Supplementary Information

This product was tested and complies with all the requirements for the CE Mark.

This equipment complies with the Restriction of Hazardous Substances (RoHS) directive 2002/95/EC.

/S/

Dennis P. Symanski

DATE

Worldwide Compliance Office

Sun Microsystems, Inc.

4150 Network Circle, MPK15-102

Santa Clara, CA 95054 U.S.A.

Tel: 650-786-3255 Fax: 650-786-3723

# Dual-Port Card Declaration of Conformity

Compliance Model Number: EXPX9502FXSRGP5  
Product Family Name: Sun Dual 10GbE XFP 2 SR PCI Express card

## EMC

### USA—FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1.This equipment may not cause harmful interference.
- 2.This equipment must accept any interference that may cause undesired operation.

### Canada

This Class A digital apparatus complies with Canadian ICES-003.

### European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

As Information Technology Equipment (ITE) Class A per (as applicable):

EN 55022:2006	Class A
EN 61000-3-2:2000 +A2:2005	Pass
EN 61000-3-3:1995 +A1:2001	Pass
EN 55024:1998 +A1:2001 +A2:2003	Required Limits:
IEC61000-4-2	4 kV (Direct), 8 kV (Air)
IEC61000-4-3	3 V/m
IEC61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
IEC61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines, 2 kV AC Line-Gnd, 0.5 kV DC Power Lines
IEC61000-4-6	3 V
IEC61000-4-8	1 A/m
IEC61000-4-11	Pass

## Safety

This equipment complies with the following requirements of the Low Voltage Directive2006/95/EC:

EC Type Examination Certificates:

EN 60950-1:2001, 1st Edition			
IEC 60950-1:2001, 1st Edition	CB Scheme Certificate No. NO44811		
Evaluated to all CB Countries			
UL 60950-1:2003, CSA C22.2 No. 60950-03	File: E139761	Vol. 43	Sec. 2

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Dennis P. Symanski  
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4150 Network Circle, MPK15-102  
Santa Clara, CA 95054 U.S.A.  
Fax: 650-786-3723

DATE

# Using This Documentation

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This user's guide provides hardware and software installation instructions for the Sun 10GbE XFP SR PCI Express card and Sun Dual 10GbE XFP 2 SR PCI Express card from Oracle.

This document also describes how to configure the `ixgbe` driver for the Solaris, Linux, and Microsoft Windows Server 2003 operating systems.

These instructions are designed for enterprise system administrators with experience installing network hardware and software.

---

**Note** – In this document the term x86 refers to 64-bit and 32-bit systems manufactured using processors compatible with the SPARC, AMD64, Intel Xeon ,or Intel Pentium product families.

---

- “Product Notes” on page lxiii
- “Related Documentation” on page lxiv
- “Feedback” on page lxiv
- “Support and Accessibility” on page lxiv

---

## Product Notes

For late-breaking information and known issues about this product, refer to the products notes at:

- For Sun 10GbE XFP SR PCI Express Card:  
<http://www.oracle.com/pls/topic/lookup?ctx=E19268-01>
- Sun Dual 10GbE XFP 2 SR PCI Express Card:  
<http://www.oracle.com/pls/topic/lookup?ctx=E19884-01>

---

## Related Documentation

Documentation	Link
All Oracle products	<a href="http://www.oracle.com/documentation">http://www.oracle.com/documentation</a>
Sun 10GbE XFP SR PCI Express Card	<a href="http://www.oracle.com/pls/topic/lookup?ctx=E19268-01">http://www.oracle.com/pls/topic/lookup?ctx=E19268-01</a>
Sun Dual 10GbE XFP 2 SR PCI Express Card	<a href="http://www.oracle.com/pls/topic/lookup?ctx=E19884-01">http://www.oracle.com/pls/topic/lookup?ctx=E19884-01</a>
Oracle Solaris OS and systems software library	<a href="http://www.oracle.com/technetwork/indexes/documentation/index.html#sys_sw">http://www.oracle.com/technetwork/indexes/documentation/index.html#sys_sw</a>

---

## Feedback

Provide feedback about this documentation at:

<http://www.oracle.com/goto/docfeedback>

---

## Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	<a href="http://support.oracle.com">http://support.oracle.com</a>
	For hearing impaired: <a href="http://www.oracle.com/accessibility/support.html">http://www.oracle.com/accessibility/support.html</a>
Learn about Oracle's commitment to accessibility	<a href="http://www.oracle.com/us/corporate/accessibility/index.html">http://www.oracle.com/us/corporate/accessibility/index.html</a>



## Overview

---

This chapter describes the Sun 10GbE XFP SR PCI Express card and Sun Dual 10GbE XFP 2 SR PCI Express card hardware and software, and includes the following sections:

- “Shipping Kit Contents” on page 1
- “Sun PCI Express Card Hardware Overview” on page 1
- “Hardware and Software Requirements” on page 4
- “Patches and Updates” on page 5

---

## Shipping Kit Contents

The carton in which your card was shipped should contain the following items:

- The card
- Your card’s getting started guide. Example: *Sun Dual 10GbE XFP 2 SR PCI Express Card Getting Started Guide*

---

## Sun PCI Express Card Hardware Overview

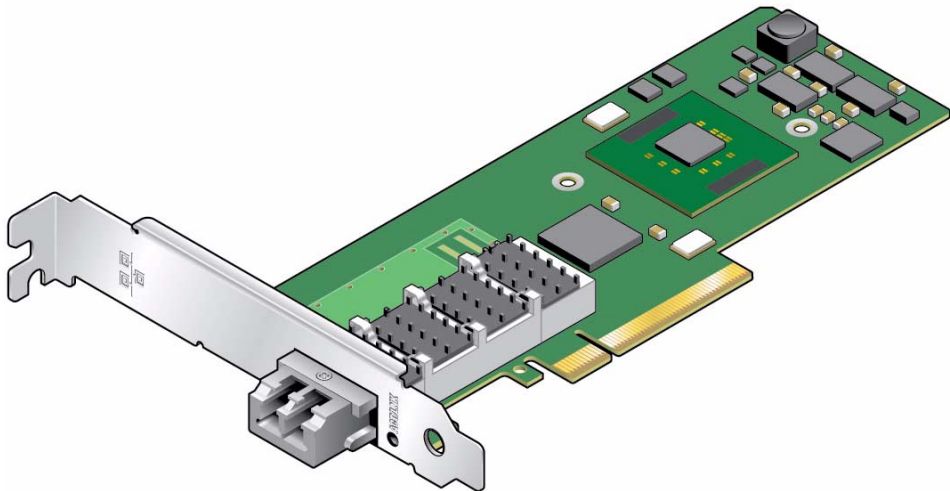
This product includes a high-performance, highly integrated Ethernet LAN card for PCI Express systems.

The card is a low-profile, 10-Gigabit Ethernet (10GbE) fiber network interface card (NIC) for PCI Express systems. It is based on the dual-port Intel 82598EB 10GbE controller.

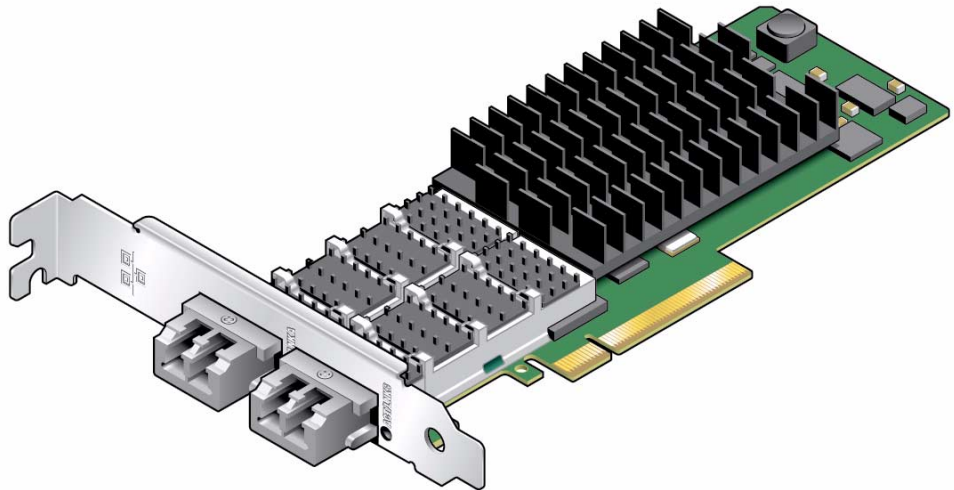
The card is optimized for Intel I/O Acceleration Technology (I/OAT), which is designed to optimize network I/O. The card is a high-performance, highly integrated 10-Gigabit Ethernet LAN card with PCIe host interface and fiber LAN connectors on the optical modules. This card is designed to the PCIe low-profile add-in card specification and can be used in low-profile form factor systems.

The product conforms to the IEEE 802.3 standard and supports standards for system manageability and power management.

**FIGURE 1-1** Sun 10GbE XFP SR PCI Express Card, shown without heat sink



**FIGURE 1-2** Sun Dual 10GbE XFP 2 SR PCI Express Card



## Adapter Features

The card provides the following features and benefits:

- Intel 82598EB 10 Gigabit Ethernet controller
- Low-profile
- Load balancing on multiple CPUs
- Intel I/O Acceleration Technology (I/OAT)
- iSCSI remote boot support (Windows and Linux only)
- MSI-X support
- Virtual Machine Device queues (VMDq)
- Low latency
- Optimized queues – 32 transmit (Tx) and 64 receive (Rx) per port
- Compatible with x8 standard and low-profile PCI Express slots
- Support for most network operating systems (NOS)
- Remote management support
- Multimode fiber 62.5/50 micrometers
- RoHS compliant, lead-free technology
- Intel PROSet Utility for Windows Device Manager

## LED Display on the Card

Green light from an LED inside the optical module is visible through a hole next to the connector in the front panel of the card. For the viewing hole location, see [FIGURE 1-2](#).

The green light from the LED indicates the following:

- The light is steady when the port is connected to a link partner.
- The light is blinking when port is transmitting or receiving activity.

---

## Hardware and Software Requirements

Before using the Sun 10GbE XFP SR PCI Express card and Sun Dual 10GbE XFP 2 SR PCI Express card, ensure that your system meets the hardware and software requirements in [TABLE 1-1](#) and [TABLE 1-4](#).

**TABLE 1-1** Hardware Requirements: Intel Xeon

---

**Supported Hardware: Intel Xeon**

---

Sun Fire X2250 Server  
Sun Fire X4150 Server  
Sun Fire X4250 Server  
Sun Fire, X4450 Server

**TABLE 1-2** Hardware Requirements: AMD Opteron

---

**Supported Hardware: AMD Opteron**

---

Sun Fire X2100 M2 Server  
Sun Fire X2200 M2 Server  
Sun Fire X4100 M2 Server  
Sun Fire X4200 M2 Server  
Sun Fire X4600 M2 Server  
Sun Fire X4140 Server  
Sun Fire X4440 Server  
Sun Fire X4540 Server

**TABLE 1-3** Hardware Requirements: SPARC

---

**Supported Hardware: SPARC**

---

Sun SPARC Enterprise M3000 Server  
Sun SPARC Enterprise M4000 Server  
Sun SPARC Enterprise M8000 Server  
Sun SPARC Enterprise T1000 Server  
Sun SPARC Enterprise T2000 Server  
Sun SPARC Enterprise T5120 Server  
Sun SPARC Enterprise T5140 Server  
Sun SPARC Enterprise T5220 Server  
Sun SPARC Enterprise T5240 Server  
Sun SPARC Enterprise T5440 Server

---

**TABLE 1-4** Software Requirements

---

**Supported Operating Systems**

---

Solaris 10 10/08  
Windows 2008 32bit/ 64bit  
Windows 2003 32bit/64bit  
RHEL 5.1/5.2 32bit/64bit  
RHEL 4.6/4.7 32bit/64bit  
SLES 9 SP4 64bit\*  
SLES 10 SP1/SP2 64bit  
VMWare ESX 3.5

\* SLES 9 SP4 is supported only on the Sun Fire  
X4200 M2 and Sun Fire X4600 M2.

Note that hardware and software support changes over time. For the latest information concerning I/O options supported by your server, check:

<http://www.oracle.com/us/products/servers/overview/>

---

## Patches and Updates

Check My Oracle Support to ensure that you have the latest recommended patch clusters and security patches, which you can download from:

<http://support.oracle.com>

- Check the product site at:

<http://www.oracle.com/us/products/servers-storage/networking/ethernet>

- To download the most recent drivers for the Solaris OS, go to:

<http://www.sun.com/download>

For Solaris 10 SPARC, search on patch number 142909-17. For Solaris 10 X86, search on patch number 142910-17

- To download the most recent drivers for Windows or a Linux OS, go to:

<http://www.intel.com/support/network/adapter>

## Installing and Setting Up the Device Driver Software

---

The `ixgbe` device driver software comes bundled with Solaris software. This chapter explains how to verify the `ixgbe` device driver software is present on an x86 or SPARC system that uses the Solaris OS, and how to download and install the `ixgbe` driver on Solaris, Linux and Microsoft Windows systems. This chapter contains the following sections:

- “Verifying, Installing and Removing the Driver on a Solaris Platform” on page 7
- “Downloading, Installing and Removing the Driver on a Linux Platform” on page 9
- “Downloading, Installing and Removing the Driver on a Windows Platform” on page 11

---

### Verifying, Installing and Removing the Driver on a Solaris Platform

The Solaris 10 10/08 OS is the first release of Solaris to support the driver, and the driver is bundled with the OS. Therefore, downloading of the driver is not required.

Check the version of the driver to ensure the Sun PCI Express card is properly loaded and is recognized by the Solaris OS.

## ▼ To Check the Driver Version on a Solaris Platform

- Check that the version of the `ixgbe` driver is no older than 1.0.4:

```
modinfo | grep ixgbe
226 ffffffff3f0f000 151b8 67 1 ixgbe (Intel 10Gb Ethernet 1.0.4)
```

---

**Note** – If the version number is older than 1.0.4, you must install the latest driver patch. See [“Patches and Updates” on page 5](#).

---

## ▼ To Install the Driver for a Solaris Platform

The driver comes bundled with the Solaris OS. However, check for and install the latest patches.

- Apply the necessary patch to get the latest driver.

```
# patchadd /absolute_path/patchID
```

See `patchadd(1M)`.

## ▼ To Remove the Driver for a Solaris Platform

- Remove the driver.

```
# pkgrm SUNWixgbe
```

See `pkgrm(1M)`.



---

# Downloading, Installing and Removing the Driver on a Linux Platform

If your system uses the RedHat or SuSe Linux operating system, you must download the `ixgbe` device driver to install it.

## ▼ To Download the Driver for a Linux Platform

**1. Log in to your system.**

**2. With a browser, go to this location:**

<http://www.intel.com/support/network/adapter>

Select one of the following for your single-port or dual-port card:

Intel 10 Gigabit XF SR Server Adapter

Intel 10 Gigabit XF SR Dual Port Server Adapter

**3. Select this option:**

Download drivers and software

**4. Select Linux as the operating system.**

**5. Locate the following driver and select Download:**

Network Adapter Driver for 10 GbE PCI-E Based Network Connections for Linux

**6. Review and accept the software license agreement.**

**7. Select this option:**

Download Network Adapter Driver for 10 GbE PCI-E Based Network Connections for Linux

The download begins. The file named `ixgbe-x.x.x.x.tar.gz` is saved in the `~/Desktop` directory of your system.

---

**Note** – The primary driver link is a buildable source archive that works with Linux 2.6.x kernels only and requires that the currently running kernel match the SRC RPM kernel files and headers in order to build the driver. See the bundled README file in the unpacked archive from Intel for more information.

---

## ▼ To Install the Driver for a Linux Platform

For this procedure, assume the file is named `ixgbe-1.3.16.1.tar.gz`. The actual driver might have different version/subversion numbers.

1. Copy the file containing the driver from `~/Desktop` to `/temp`.
2. Uncompress and untar the file:

```
# tar -zxvf ixgbe-1.3.16.1.tar.gz
```

3. Go to the newly created `src` directory:

```
# cd /temp/ixgbe-1.3.16.1/src
```

4. Compile the driver source file with these commands:

```
# make  
# make install
```

5. Load the `ixgbe` driver with the `modprobe` command:

```
# modprobe ixgbe
```

6. Verify that the `ixgbe` driver has been successfully installed with this `lsmod` command:

```
# lsmod | grep ixgbe
```

The output should be similar to the following:

```
ixgbe          118052  0
```

7. Check the `ixgbe` driver version with this `modinfo` command:

```
# modinfo ixgbe | grep ver
```

For example, the output might be the following:

```
filename:      /lib/modules/2.6.18-53.el5/kernel/drivers/net/ixgbe/ixgbe.ko  
version:       1.3.16.1-lro  
description:   Intel(R) 10 Gigabit PCI Express Network Driver  
srcversion:    5CFF6AEB A251050F8A4B746  
vermagic:      2.6.18-53.el5 SMP mod_unload gcc-4.1
```

## ▼ To Remove the Driver From a Linux Platform

- Use the `rmmmod` command:

```
# rmmmod ixgbe
```

---

## Downloading, Installing and Removing the Driver on a Windows Platform

If your system uses the Microsoft Windows Server 2003 operating system, perform the following procedures to download and install the device driver.

### ▼ To Download and Install the Driver on a Windows Platform

1. Log in to your system.
2. With a browser, go to this location:  
<http://www.intel.com/support/network/adapter>
3. Select one of the following for your single-port or dual-port card:  
Intel 10 Gigabit XF SR Server Adapter  
Intel 10 Gigabit XF SR Dual Port Server Adapter
4. Select this option:  
Download drivers and software
5. Select one of the following as the operating system:
  - For a 64-bit driver: Windows Server 2003 Standard x64 Edition
  - For a 32-bit driver: Windows Server 2003 Standard Edition
6. Locate one of the following and select **Download** next to it:
  - For a 64-bit driver: Network Adapter Driver for Windows XP Professional x64 Edition or Windows Server 2003 x64 Edition
  - For a 32-bit driver: Network Adapter Drivers for Windows 2000, Windows XP, and Windows Server 2003
7. Review and accept the software license agreement.

**8. Select one of the following to start the download:**

- Download Network Adapter Driver for Windows XP Professional x64 Edition or Windows Server 2003 x64 Edition
- Download Network Adapter Drivers for Windows 2000, Windows XP, and Windows Server 2003

The download begins.

**9. Click on the following .exe files to install the driver:**

- **For a 64-bit driver:** PROEM64T.exe
- **For a 32-bit driver:** PRO2KXP.exe

**10. Follow the instructions in the installation wizard.**

**11. If the Found New Hardware Wizard screen is displayed, click Cancel.**

The autorun automatically runs after you have extracted the files.

## ▼ To Remove the Driver From a Windows Platform

- 1. From the Control Panel, double-click Add/Remove Programs.**
- 2. Select Intel PRO Network Connections Drivers.**
- 3. Click Add/Remove.**
- 4. When the confirmation dialog displays, click OK.**

## Installing the Card

---

This chapter describes how to install the card in your system and verify that the card is properly loaded and is recognized by the operating system.

This chapter contains the following sections:

- [“Installing the Card in a System” on page 13](#)
- [“Verifying the Installation” on page 14](#)

---

## Installing the Card in a System

The following instructions describe the basic tasks required to install the card. Refer to your system installation or service manual for detailed PCI Express (PCIe) card installation instructions.

### ▼ To Install the Card

1. **Halt and power off your system.**
2. **Power off all of the peripherals connected to your system.**
3. **Open the system unit.**
4. **Attach the adhesive copper strip of the antistatic wrist strap to the metal casing of the power supply.**  
Wrap the other end twice around your wrist, with the adhesive side against your skin.
5. **Holding the card by the edges, align the card edge connector with the PCIe slot.**
6. **Slide the card face plate into the small slot at the end of the PCIe opening.**

7. Applying even pressure at both corners of the card, push the PCIe card until it is firmly seated in the slot.



---

**Caution** – Do not use excessive force when installing the card into the PCIe slot. You might damage the card's PCIe connector. If the card does not seat properly when you apply even pressure, remove the card and carefully reinstall it.

---

8. Detach the wrist strap and close the system unit.
9. Connect the cables.
10. Power on the system.

---

## Verifying the Installation

After you have installed the card, perform the following tasks to verify the installation.

### ▼ To Verify the Installation on a Solaris System

1. Power on the system.
2. Check the driver version on your system.

```
# modinfo|grep ixgbe
226 ffffffff3f0f000 151b8 67 1 ixgbe (Intel 10Gb Ethernet 1.0.4)
```

3. Check to see if the card is properly installed and recognized by the OS:

```
# grep ixgbe /etc/path_to_inst
```

If the card is properly installed, you will see output similar to the following:

```
"/pci@0,0/pci10de,376a/pci108e,f35f@0" 0 "ixgbe"
"/pci@79,0/pci10de,376a/pci108e,f25f@0" 1 "ixgbe"
"/pci@79,0/pci10de,376a/pci108e,f25f@0,1" 2 "ixgbe"
```

## ▼ To Verify the Installation in a Linux System

- **Verify the new network interface instances corresponding to your card:**
  - For the single-port card:

```
# ifconfig -a | grep eth  
  
eth6      Link encap:Ethernet  HWaddr 00:1B:21:12:18:92
```

- For the dual-port card:

```
# ifconfig -a | grep eth  
  
eth4      Link encap:Ethernet  HWaddr 00:1B:21:12:18:96  
eth5      Link encap:Ethernet  HWaddr 00:1B:21:12:18:91
```

## ▼ To Verify the Installation in a Windows System

1. **Click on Control Panel.**
2. **Click on Network Connection.**

The Ethernet adapter interfaces labeled "Intel(R) 82598EB 10 Gigabit AF [Dual Port] Network Connection" will be displayed at the Network Connection window screen, if the driver is installed successfully.
3. **To check the driver version, use the Administration Tool.**

The minimum Windows Server 2003 driver version is 1.2.22.0.
4. **In the Administration Tool click Computer Management, Device Manager, and Network Adapter.**





## Network Configuration

---

This chapter describes how to edit the network host files after the card has been installed on your system. This chapter contains the following section:

- [“Configuring the Network Host Files for a Solaris System” on page 17](#)
- [“Configuring the Network Host Files for Booting Over the Gigabit Ethernet Network for Linux Systems” on page 19](#)

---

**Note** – To do a PXE boot (or netboot) on a dual-port card, you *must* use the topmost port. That port is the logical Port 0, and it has the lowest MAC address.

---

---

### Configuring the Network Host Files for a Solaris System

After installing the driver software, you must plumb up the card by using either of the following methods:

- For each card (using instance number), create a file named `/etc/hostname.ixgbe#`. When the Solaris OS is booted up, each of these ixgbe cards is plumbed up automatically. (See [“To Configure the Network Host Files by Creating `/etc/hostname.ixgbe\_#` Files” on page 18.](#))
- Use the `ifconfig` command to plumb up the ixgbe card. (See [“To Configure the Network Host Files Using the `ifconfig` Command” on page 18.](#))

## ▼ To Configure the Network Host Files by Creating `/etc/hostname.ixgbe_#` Files

---

**Note** – Use this procedure to configure the network host files permanently. The new settings will be restored at each reboot.

---

1. **Create a file named `/etc/hostname.ixgbe_#` for each ixgbe interface.**  
Where # is the interface's instance number.
2. **Edit the `/etc/hosts` file to include an IP address and host name for each ixgbe interface.**
3. **Boot the Solaris OS.**

The ixgbe interfaces will be plumbed up automatically when you boot.

## ▼ To Configure the Network Host Files Using the `ifconfig` Command

---

**Note** – Use this procedure to configure the network host files dynamically on the command line. At reboot, the settings will revert.

---

1. **Create a file named `/etc/hostname.ixgbe#` for each ixgbe interface, where # is the ixgbe interface instance number you plan to use.**

For example, to bring up ixgbe0 at boot, create a file called `/etc/hostname.ixgbe0`, where 0 is the number of the ixgbe interface. If the instance number were 1, the filename would be `/etc/hostname.ixgbe1`. The `/etc/hostname.ixgbe#` file must contain the host name for the appropriate ixgbe interface.

2. **At the command line, use the `dladm` command to get the ixgbe instances:**

```
# dladm show-dev
```

The output might include lines similar to the following:

```
ixgbe0 link: up speed: 10000 Mbps duplex: full
nge0 link: up speed: 1000 Mbps duplex: full
nge1 link: down speed: 0 Mbps duplex: unknown
ixgbe1 link: up speed: 10000 Mbps duplex: full
ixgbe2 link: up speed: 10000 Mbps duplex: full
```

3. Use the `ifconfig` command to set up the adapter's `ixgbe` interfaces.

Your `ifconfig` command might look similar to the following:

```
# ifconfig ixgbe0 plumb ip_address netmask [255.255.255.0] broadcast + up
```

For more information, see `ifconfig(1M)`.

## ▼ To Boot Over the Network using PXE

- See “x86: Overview of Booting and Installing Over the Network With PXE” in the *Solaris 10 Installation Guide: Network-Based Installations*:  
<http://docs.sun.com/app/docs/doc/817-5504>

---

# Configuring the Network Host Files for Booting Over the Gigabit Ethernet Network for Linux Systems

## ▼ To Boot Over the Network on Linux Systems

1. Obtain the MAC address of the first card port by checking the label of the card.  
For the dual-port card, the MAC address on the label is for the first port. The second port's MAC address is the MAC address from the label, plus 1.
2. Set up the PXE boot server with the MAC addresses.
3. Plug the Ethernet cable to the card port.
4. Power on the system.
5. Press the F2 key or the Control-E keys to go to the BIOS.
6. Check and ensure that the boot order of the network devices is higher than the hard drive.
7. Press the F10 key to save the boot configuration changes and exit.  
The system should reboot after saving the boot configuration.

**8. Press the F12 key to install the OS from the network.**

If the cable is connected to the correct port, you should see the MAC address that you assigned to your PXE server displayed by BIOS.

```
image : pxe-mac-addr
PXE-E61: Media test failure, check cable
PXE-MOF: Exiting Intel Boot Agent.

NVIDIA Boot Agent 217.0513
Copyright (C) 2001-2005) NVIDIA Corporation
Copyright (C) 1997-2000) NVIDIA Corporation
PXE-E61: Media test failure, check cable
PXE-MOF: Exiting Intel Boot Agent.

NVIDIA Boot Agent 217.0513
Copyright (C) 2001-2005) NVIDIA Corporation
Copyright (C) 1997-2000) NVIDIA Corporation
PXE-E61: Media test failure, check cable
PXE-MOF: Exiting Intel Boot Agent.

Intel (R) Boot Agent GE v1.2.43 Beta-1
Copyright (C) 1997-2006) Intel Corporation

CLIENT MAC ADDR; 00 15 17 13 90 00 GUID: 00000000 0000 0000 0000
00144F26E0B7
```

**9. Install the ixgbe driver and configure the Ethernet adapter.**

**10. After the Linux OS install completes, use the BIOS to change the boot device priority to Boot from Hard Disk in order to boot up the newly installed OS.**

Unless the boot device priority is changed, the OS installation process will repeat.

## Configuring the Driver Parameters

---

The `ixgbe` device driver controls the card interfaces. You can manually set the `ixgbe` device driver parameters to customize each device in your system.

This chapter lists the available device driver parameters and describes how you can set these parameters.

- [“Driver Overview” on page 21](#)
- [“Driver Parameters for Solaris” on page 22](#)
- [“Driver Parameters for Linux Systems” on page 26](#)
- [“Setting ixgbe Driver Parameters in Linux Systems” on page 27](#)

---

### Driver Overview

Each `ixgbe` channel provides 10000BASE-T networking interfaces.

The `ixgbe` driver is capable of supporting 10000 Mbit/sec, full-duplex.

# Driver Parameters for Solaris

TABLE 5-1 describes the functions of the driver parameters.

**TABLE 5-1** Driver Parameters

Type	Keyword	Description
Jumbo Frame	default_mtu	The size of the default MTU (payload without the Ethernet header). Allowed values: 1500 to 16366 (default =1500)
Flow Control	flow_control	Ethernet flow control. Allowed values (default = 3): 0 - Disable 1 - Receive only 2 - Transmit only 3 - Receive and transmit
Transmit and Receive Queues	tx_queue_number (Solaris 10 only)	The number of the transmit queues. Allowed values: 1 to 32 (default = 8)
Transmit and Receive Queues	tx_ring_size	The number of the transmit descriptors per transmit queue. Allowed values: 64 to 4096 (default = 512)
Transmit and Receive Queues	rx_queue_number(Solaris 10 only)	The number of the receive queues. Allowed values: 1 to 64 (default = 8)
Transmit and Receive Queues	rx_ring_size	The number of the receive descriptors per receive queue. Allowed values: 64 to 4096 (default = 512)
Transmit and Receive Queues	mr_enable (Solaris 11 only)	Enable multiple transmit queues and receive queues (RSS). Allowed values: 0 or 1 (default = 1 (enabled))
Transmit and Receive Queues	rx_group_number (Solaris 11 only)	The number of the receive groups. Allowed values: 1 to 16 (default value = 1)
Mode	dcb_mode (Solaris 11 only)	Enable DCB mode. Allowed values (default = 0): 0 - Disable 2 - 8 TCs mode 4 - 8 TCs * 4 RSS mode

---

# Setting ixgbe Driver Parameters in Solaris

## ▼ To Set Driver Parameters Using the `ixgbe.conf` File

### 1. Obtain the hardware path names for the ixgbe devices in the device tree.

Check the `/etc/driver_aliases` file to identify the name associated with a particular device. For example:

```
# grep ixgbe /etc/driver_aliases
ixgbe "pciex8086,10c6"
ixgbe "pciex8086,10c7"
```

### 2. Locate the path names and the associated instance numbers in the `/etc/path_to_inst` file.

For example:

```
# grep ixgbe /etc/path_to_inst
"/pci@0,0/pci10de,376@a/pci108e,f35f@0" 0 "ixgbe"
"/pci@79,0/pci10de,376@a/pci108e,f25f@0" 1 "ixgbe"
"/pci@79,0/pci10de,376@a/pci108e,f25f@0,1" 2 "ixgbe"
```

In the examples shown above:

- The first part within the double quotes specifies the hardware node name in the device tree.
- The number not enclosed in quotes is the instance number (shown in bold for emphasis).
- The last part in double quotes is the driver name. To identify a PCI-E device unambiguously in the `ixgbe.conf` file, use the name, parent name, and the unit-address for the device. Refer to the `pci(4)` man page for more information about the PCI-E device specification.
- The name is "pciex8086,10c6", the parent is "/pci@0,0/pci10de,376@a", and the unit address is "0".

**3. Set the parameters for the ixgbe devices in the `/kernel/drv/ixgbe.conf` file.**

For example, to set the `flow_control` parameter to 3 for `ixgbe0`:

```
name = "pciex8086,10c6"  
parent = "/pci@0,0/pci10de,376@a"  
unit-address = "0"  
flow_control = 3;
```

**4. Save the `ixgbe.conf` file.**

**5. Reboot the system.**

## ▼ To Enable Modes Using the `ixgbe.conf` File

By default, both DCB and VMDQ modes are disabled, and the `ixgbe` device uses receive-side-scaling (RSS), whose number of queues depends on the value of `rx_queue_number` (see [TABLE 5-1](#)).

**1. To enable the modes, perform one of the following steps:**

- a. **Enable VMDQ mode on the device, set `rx_group_number` greater than 1.**
- b. **Enable DCB mode on the device, set `dbc_mode` greater than 0.**

---

**Note** – The DCB mode and VMDQ mode are mutually exclusive. If both modes are enabled on the device, the DCB mode overrides the VMDQ mode. Any value that is set for `rx_group_number` is ignored and the device will run in DCB mode.

---

**2. Save the `ixgbe.conf` file.**

**3. Reboot the system.**

---

## Improving Performance in Solaris

Based on system configuration, some system and driver variables may need to be tuned to appropriate values for better performance in Solaris. For example:

1. `rx_queue_number` should be less than or equal to a minimum of `#CPU - 1`, and the MSI-X allocation limit (that is, `dde_msix_alloc_limit`).



2. `ddi_msix_alloc_limit` / `pcplusmp:apic_multi_msi_max` / `pcplusmp:apic_msix_max` should be equal to `rx_queue_number + 1`, as tx and other events, such as link status change, require an additional interrupt vector.
3. `ip:ip_soft_rings_cnt` should be tuned based on system type.

Changes similar to the following might improve performance on both x86 and SPARC platforms.

## ▼ To improve performance in case of large numbers of connections and packets

1. Add the following lines to the `/etc/system` file:

```
set ddi_msix_alloc_limit=9
set pcplusmp:apic_multi_msi_max=9
set pcplusmp:apic_msix_max=9
set pcplusmp:apic_intr_policy=1
set ip:ip_soft_rings_cnt=4
set ip_squeue_soft_ring=1
```

2. Set the `rx_queue` number to 8 in the `/kernel/drv/ixgbe.conf` file:

```
rx_queue_number = 8;
```

3. Reboot the server.

# Driver Parameters for Linux Systems

TABLE 5-2 lists the tunable ixgbe driver parameters for Linux operating systems, and describes their function.

**TABLE 5-2** Tunable ixgbe Driver Parameters for Linux Operating Systems

Keyword	Valid Range	Default Value	Description
FlowControl	0 to 3 (0=none, 1=Rx only, 2=Tx only, 3=Rx and Tx)	Read from the EEPROM If EEPROM is not detected, default is 3.	This parameter controls the automatic generation (Tx) and response (Rx) to Ethernet PAUSE frames.
RxDescriptors	64 to 512	512	This value is the number of receive descriptors allocated by the driver. Increasing this value allows the driver to buffer more incoming packets. Each descriptor is 16 bytes. A receive buffer is also allocated for each descriptor and can be either 2048, 4056, 8192, or 16384 bytes, depending on the MTU setting. When the MTU size is 1500 or less, the receive buffer size is 2048 bytes. When the MTU is greater than 1500, the receive buffer size will be either 4056, 8192, or 16384 bytes. The maximum MTU size is 16114.
RxIntDelay	0 to 65535 (0=off)	72	This value delays the generation of receive interrupts in units of 0.8192 microseconds. Receive interrupt reduction can improve CPU efficiency if properly tuned for specific network traffic. Increasing this value adds extra latency to frame reception and can end up decreasing the throughput of TCP traffic. If the system is reporting dropped receives, this value might be set too high, causing the driver to run out of available receive descriptors.
TxDescriptors	80 to 4096	256	This value is the number of transmit descriptors allocated by the driver. Increasing this value allows the driver to queue more transmits. Each descriptor is 16 bytes.
XsumRX	0 to 1	1	A value of 1 indicates that the driver should enable IP checksum offload for received packets (both UDP and TCP) to the Ethernet adapter hardware.

---

# Setting ixgbe Driver Parameters in Linux Systems

## ▼ To Configure Jumbo Frames

Jumbo Frames can support up to 15000 MTU. The default value is 1500 MTU.

- Use the `ifconfig` command to increase MTUs to allow transmission of Jumbo Frames.

For example, where the IP address for `eth7` is `192.1.1.200`, the following command increases MTUs to the maximum:

```
# ifconfig eth7 192.1.1.200 mtu 15000 up
```



# Configuring Link Aggregation

---

This chapter describes how to configure link aggregation. It contains the following sections:

- [“Link Aggregation Overview” on page 29](#)
- [“Configuring Link Aggregation in a Solaris Environment” on page 30](#)

---

## Link Aggregation Overview

Link aggregation enables one or more network links to be aggregated together to form a link aggregation group. This link aggregation group appears to MAC clients as a regular link. Link aggregation is defined by IEEE 802.3ad and it provides the following benefits:

- Increased bandwidth
- Linearly incremental bandwidth
- Load sharing
- Automatic configuration
- Rapid configuration and reconfiguration
- Deterministic behavior
- Low risk of duplication or misordering
- Support of existing IEEE 802.3ad MAC clients

---

# Configuring Link Aggregation in a Solaris Environment

This section explains how to configure link aggregation in a Solaris environment.

## ▼ To Configure Link Aggregations

The example in this procedure aggregates sample interfaces `ixgbe0`, `ixgbe1`, `ixgbe2`, and `ixgbe3`. Arbitrary key numbers (1 and 2) are used for each aggregation.

### 1. Unplumb the interfaces to be aggregated:

```
# ifconfig ixgbe0 unplumb
# ifconfig ixgbe1 unplumb
# ifconfig ixgbe2 unplumb
# ifconfig ixgbe3 unplumb
```

### 2. Create a link aggregation group with key 1 containing the first two interfaces.

In this example, the `-l active` option turns on LACP mode:

```
# dladm create-aggr -l active -d ixgbe0 -d ixgbe1 1
# ifconfig aggr1 plumb
# ifconfig aggr1 192.2.2.84 up
```

### 3. Create a link aggregation group with key 2 containing the other two interfaces.

No mode is specified for the link aggregation group in this example:

```
# dladm create-aggr -d ixgbe2 -d ixgbe3 2
# ifconfig aggr2 plumb
# ifconfig aggr2 193.2.2.84 up
```

---

**Note** – These commands change the contents of the `/etc/aggregation.conf` file.

---

## ▼ To Display Information About Link Aggregations

The `ifconfig` and `dladm` commands provide different details about link aggregations, as in the following examples. For additional command options, see the man pages for `ifconfig` (1M) and `dladm` (1M).

1. Use the `ifconfig` command to examine the details about a link aggregation:.

The following examples display the information about the two link aggregations created in [“To Configure Link Aggregations”](#) on page 30.

```
# ifconfig aggr1
aggr1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 32
  inet 192.2.2.84 netmask ffffffff00 broadcast 192.2.2.255
  ether 0:15:17:75:ff:81
# ifconfig aggr2
aggr2: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 33
  inet 193.2.2.84 netmask ffffffff00 broadcast 193.2.2.255
  ether 0:15:17:75:ff:83
```

2. Use the `dladm show-aggr` command to show link aggregation status.
3. Use the `dladm show-aggr -s` command to show link aggregation statistics.
4. Use the `dladm show-aggr -L` command to display LACP specific information.

## ▼ To Delete Link Aggregations

1. Use the `ifconfig` command to unplumb each link aggregation you want to delete.

For example:

```
# ifconfig aggr1 unplumb
# ifconfig aggr2 unplumb
```

2. Use the `dladm` command to delete each unwanted link aggregation.

For example:

```
# dladm delete-aggr 1
# dladm delete-aggr 2
```





# Configuring VLANs

---

This chapter describes how to configure virtual local area networks (VLANs). It contains the following sections:

- [“VLAN Overview” on page 33](#)
- [“Configuring VLANs” on page 36](#)
- [“Configuring Bonding for Multiple Interfaces” on page 40](#)

---

**Note** – If you change any of the VLAN configuration parameters, you must reboot the system before the changes take effect. If you make changes and do not reboot, you might experience configuration problems.

---

---

## VLAN Overview

With multiple VLANs on an adapter, a server with a single adapter can have a logical presence on multiple IP subnets. By default, 128 VLANs can be defined for each VLAN-aware adapter on your server. However, this number can be increased by changing the system parameters.

If your network does not require multiple VLANs, you can use the default configuration, in which case no further configuration is necessary.

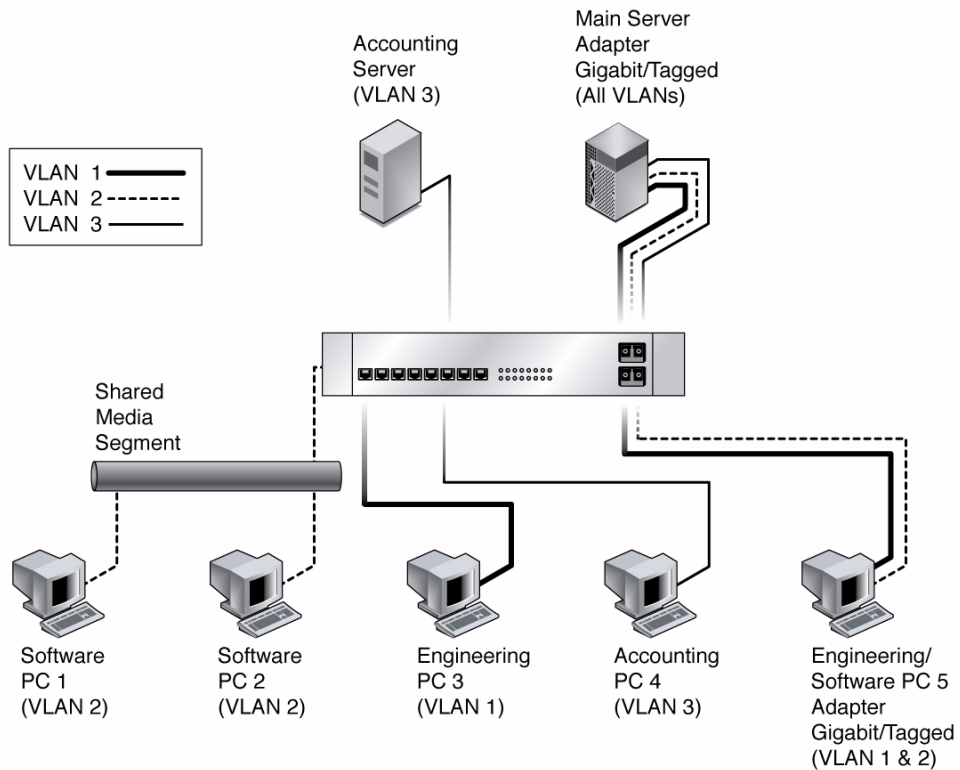
VLANs enable you to split your physical LAN into logical subparts, providing an essential tool for increasing the efficiency and flexibility of your network.

VLANs are commonly used to separate groups of network users into manageable broadcast domains, to create logical segmentation of workgroups, and to enforce security policies among each logical segment. Each defined VLAN behaves as its own separate network, with its traffic and broadcasts isolated from the others, increasing the bandwidth efficiency within each logical group.

Although VLANs are commonly used to create individual broadcast domains or separate IP subnets, it can be useful for a server to have a presence on more than one VLAN simultaneously. Several Sun products support multiple VLANs on a per-port or per-interface basis, allowing very flexible network configurations.

FIGURE 7-1 shows an example of a network that uses VLANs.

**FIGURE 7-1** Example of Servers Supporting Multiple VLANs With Tagging Adapters



The example network has the following features:

The physical LAN network consists of a switch, two servers, and five clients. The LAN is logically organized into three different VLANs, each representing a different IP subnet.

- VLAN 1 is an IP subnet consisting of the Main Server, Client 3, and Client 5. This VLAN represents an engineering group.
- VLAN 2 includes the Main Server, Clients 1 and 2 by means of a shared media segment, and Client 5. This VLAN is a software development group.
- VLAN 3 includes the Main Server, the Accounting Server, and Client 4. This VLAN is an accounting group.

The Main Server is a high-use server that must be accessed from all VLANs and IP subnets. The server has a Sun PCI Express adapter installed. All three IP subnets are accessed by means of the single physical adapter interface. The server is attached to one of the switch's Gigabit Ethernet ports, which is configured for VLANs 1, 2, and 3. Both the adapter and the connected switch port have tagging turned on. Because of the tagging VLAN capabilities of both devices, the server is able to communicate on all three IP subnets in this network, but continues to maintain broadcast separation between all of those subnets. The following list describes the components of this network:

- The Accounting Server is available to only VLAN 3. The Accounting Server is isolated from all traffic on VLANs 1 and 2. The switch port connected to the server has tagging turned off.
- Clients 1 and 2 are attached to a shared media hub that is then connected to the switch. Clients 1 and 2 belong only to VLAN 2 and are logically in the same IP subnet as the Main Server and Client 5. The switch port connected to this segment has tagging turned off.
- Client 3 is a member of VLAN 1 and can communicate only with the Main Server and Client 5. Tagging is not enabled on Client 3's switch port.
- Client 4 is a member of VLAN 3 and can communicate only with the servers. Tagging is not enabled on Client 4's switch port.
- Client 5 is a member of both VLANs 1 and 2, and has a Sun PCI Express card installed. Client 5 is connected to switch port 10. Both the adapter and the switch port are configured for VLANs 1 and 2, and both have tagging enabled.

VLAN tagging is only required to be enabled on switch ports that create trunk links to other VLAN-aware Ethernet switches or on ports connected to tag-capable end-stations, such as servers or workstations with VLAN-aware adapters.

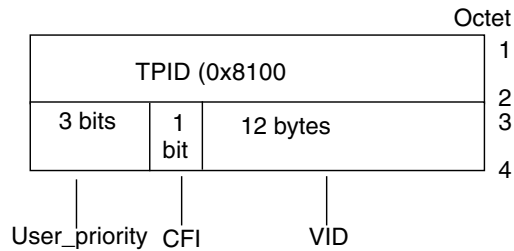
---

## Configuring VLANs

VLANs can be created according to various criteria, but each VLAN must be assigned a VLAN tag or VLAN ID (VID). The VID is a 12-bit identifier between 1 and 4094 that identifies a unique VLAN. For each network interface (`ixgbe0`, `ixgbe1`, `ixgbe2`, and so on), 4094 possible VLAN IDs can be selected for each port.

Tagging an Ethernet frame requires the addition of a tag header to the frame. The header is inserted immediately following the destination MAC address and the source MAC address. The tag header consists of two bytes of Ethernet Tag Protocol identifier (TPID, 0x8100) and two bytes of tag control information (TCI). [FIGURE 7-2](#) shows the Ethernet tag header format.

**FIGURE 7-2** Ethernet Tag Header Format



By default, a single VLAN is configured for every port, which groups all ports into the same broadcast domain, just as if there were no VLANs at all. This means that VLAN tagging for the switch port is turned off.

---

**Note** – If you configure a VLAN virtual device for an adapter, all traffic sent or received by that adapter must be in VLAN-tagged format.

---

## ▼ To Configure Static VLANs in a Solaris Environment

1. **Create one `/etc/hostname.ixgbe_number` file for each VLAN that will be configured for each adapter on the server.**

Use the following naming format, which includes both the VID and the physical point of attachment (PPA):

VLAN logical PPA =  $1000 * VID + Device\ PPA$   
 $123000 = 1000 * 123 + 0$

So the VLAN interface will be `ixgbe123000`.

This format limits the maximum number of PPAs (instances) you can configure to 1000 in the `/etc/path_to_inst` file.

For example, if the virtual ID is 123 and physical adapter is instance 2:

VLAN logical PPA =  $1000 * VID + [Device\ PPA]$   
 $123002 = 123000 + 2$

So the VLAN interface is ixgbe123002. This format limits the maximum number of PPAs (instances) that can be configured in the `/etc/path_to_inst` file to 1000 .

For example, on a server with the Sun PCI Express card having an instance of 2, belonging to a member of two VLANs, with VID 123 and 224, you would use ixgbe123002 and ixgbe224002, respectively, as the two VLAN PPAs.

## 2. Use the `ifconfig` command to configure each VLAN virtual device.

Include the IP address in the command you type. For example, if the IP address is 192.2.2.84, type:

```
# ifconfig ixgbe123002 plumb 192.2.2.84 up
```

## 3. Type the `ifconfig -a` command to see details about the VLAN devices.

This example shows the output of `ifconfig -a` on a system having VLAN devices ixgbe123002 and ixgbe224002:

```
ixgbe123002: flags=201000843<UP,BROADCAST,RUNNING,\
MULTICAST,IPv4,CoS> mtu 1500 index 4
inet 192.2.2.82 netmask ffffffff broadcast 192.2.2.255
ether 0:13:20:f5:f6:dc
ixgbe224002: flags=201000843<UP,BROADCAST,RUNNING,\
MULTICAST,IPv4,CoS> mtu 1500 index 5
inet 0.0.0.0 netmask ffffffff
ether 0:13:20:f5:f6:dc
```

---

**Note** – In the above examples, the second NIC output for ixgbe224002 was plumbed and up'd but had no IP address. By default, the netmask and broadcast are set by the system, which uses IP class C to make that setting 255.255.255.0. When the address is set, the `ifconfig` command by default does not display the broadcast address if the explicit IP addr is not set.

---

Refer to the documentation that came with your switch for specific instructions for setting VLAN tagging and ports.

# ▼ To Configure VLANs in a Linux Environment

## 1. Ensure that the `ixgbe` module is loaded:

```
# modprobe ixgbe
```

## 2. Plumb the Sun PCI Express card interface:

```
# ifconfig eth6 xxx.xxx.xx.xxx up
```

where *xxx.xxx.xx.xxx* is the IP address of the interface.

## 3. Add the VLAN instance (VID).

For example:

```
# vconfig add eth6 5
```

where *eth6* is the interface and *5* is the VID.

---

**Note** – In Linux systems, you can use any single digit as the VID.

---

## 4. Configure the ixgbe VLAN (eth2 in this example):

```
# ifconfig eth6.5 xxx.xxx.xx.xxx up
```

where *xxx.xxx.xx.xxx* is the IP address of the interface.

# ▼ To Configure VLANs in a Microsoft Windows 2003 Environment

1. Click Control Panel.
2. Click Network Connection.
3. Click the folder icon from the sub-manual bar.
4. Right-click the Sun PCI Express card port, then select Properties.
5. Click Configure.
6. Click VLAN, then click on New.
7. Type VLAN with *ID* (for example, type *Vlan10*).
8. Click Internet Protocol (TCP/IP).
9. Click Use the following IP address.
10. Type the IP address.

11. Click **Subnet Mask**.

The value 255.255.255.0 is displayed.

12. Click **OK**.

13. Repeat [Step 3](#) through [Step 10](#) until all the network ports are VLAN configured.

---

**Note** – Ensure that the firewall is turned off, or VLANs will not work.

---

## Configuring Bonding for Multiple Interfaces

### ▼ To Configure Bonding for Multiple ixgbe Interfaces

1. Type the `modprobe` command to configure the mode:

```
# modprobe bonding mode=balance-rr miimon=100 max_bonds=1
```

where:

- `max_bonds` is the number of bond interfaces to be created.
- `mode` specifies the bonding policy. (This example uses `balance-rr`.)

2. Type the `ifconfig` command to create the bond:

```
# ifconfig bond0 192.2.2.4 netmask 255.255.255.0 broadcast  
192.2.2.255
```

where `bond0` is the bonding device.

### 3. Configure the `bond0` interface.

In this example, `bond0` is the master of two slaves:

```
# ifenslave bond0 eth6 eth7 eth8 eth9
# ifconfig bond0:1 193.2.2.4 netmask 255.255.255.0 broadcast
193.2.2.255
# ifconfig bond0:2 194.2.2.4 netmask 255.255.255.0 broadcast
194.2.2.255
```

Refer to Linux documentation for more information.

## ▼ To Remove Bonding

- Type the `rmmmod` command to remove bonding:

```
# rmmmod bonding
```



# Specifications

---

This appendix lists the specifications for the Sun 10GbE XFP SR PCI Express card and Sun Dual 10GbE XFP 2 SR PCI Express card from Oracle, and contains the following sections:

- [“Operating Range” on page 41](#)
- [“Performance Specifications” on page 42](#)
- [“Physical Characteristics” on page 42](#)
- [“Power and Environmental Requirements” on page 43](#)
- [“Connectors” on page 43](#)

---

# Operating Range

TABLE A-1 lists the operating range for connections to the Sun 10GbE XPF SR PCI Express cards.

**TABLE A-1** Operating Range

Fibre Type	Minimal Modal Bandwidth at 850nm (Mhz x km)	Operating Range (meters)
62.5 micrometers MMF	160	2 to 26
	200	2 to 33
50 micrometers MMF	400	2 to 66
	500	2 to 82
	2000	2 to 300

---

# Performance Specifications

**TABLE A-2** Performance Specifications

Feature	Specification
Data rate supported per port	10 Gigabit (Gb)
Bus type	PCI Express 2.0
Bus width	x8 lane PCI Express
Bus speed (x8, encoded rate)	20 Gbps unidirectional
	40 Gbps bidirectional
Interrupt levels	INTA, MSI, MSI-X

# Physical Characteristics

**TABLE A-3** Physical Characteristics

Dimension	Measurement
Length (without brackets)	6.59 inches (16.74 cm)
Width (without brackets)	2.71 inches (8.89 cm)
Height of low-profile end bracket	3.12 inches (7.92 cm)

# Power and Environmental Requirements

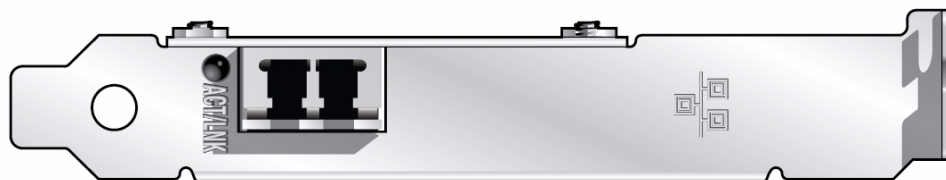
**TABLE A-4** Card Power Requirements

Specification	Measurement
Typical power consumption	10.4W (0.87A at 12V) single port 14W (1.17A at 12V) dual port
Operating temperature	0 to 55 degrees C (32 to 131 degrees F) with 100 linear feet per minute (LFM) forced-air flow (single port) or 150 LFM (dual port)
Storage temperature	-40 to 70 degrees C (-40 to 158 degrees F)
Storage humidity	90 percent noncondensing relative humidity at 35 degrees C

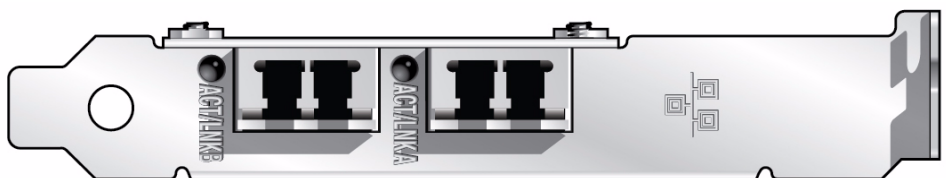
# Connectors

[FIGURE A-1](#) shows the connector for the single-port card. [FIGURE A-2](#) shows the connectors for the dual-port card.

**FIGURE A-1** Sun 10GbE XFP SR PCI Express Card Connector



**FIGURE A-2** Sun Dual 10GbE XFP 2 SR PCI Express Card Connectors



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