



SBI-7227R-T2 Blade Module



User's Manual

Revision 1.0a

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WARNING: HANDLING OF LEAD SOLDER MATERIALS USED IN THIS PRODUCT MAY EXPOSE YOU TO LEAD, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

Manual Revision 1.0a

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Preface

About this Manual

This manual is written for professional system integrators, Information Technology professionals, service personnel and technicians. It provides information for the installation and use of Supermicro's SBI-7227R-T2 blade module. Installation and maintenance should be performed by experienced professionals only.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with SBI-7227R-T2 blade module and describes their main features.

Chapter 2: System Safety

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing SBI-7227R-T2 blade module.

Chapter 3: Setup and Installation

Refer to this chapter for details on installing the SBI-7227R-T2 blade module into the SuperBlade® chassis. Other sections cover the installation and placement of memory modules and the installation of hard disk drives into the blade module.

Chapter 4: Blade Module Features

This chapter covers features and component information about SBI-7227R-T2 blade module. Included here are descriptions and information for mainboard components, connectors, LEDs and other features of the blade module.

Chapter 5: RAID Setup Procedure

RAID setup and operations for SBI-7227R-T2 blade module are covered in this chapter.

Chapter 6: BIOS

BIOS setup is covered in this chapter for SBI-7227R-T2 blade module.

Appendix A: BIOS POST Codes

BIOS POST Codes for SBI-7227R-T2 blade module are explained in this appendix.

Notes

Chapter 1

Introduction

1-1 Overview

This user's manual covers the SBI-7227R-T2 blade module. This blade module is a compact self-contained two-node server that connects into a pre-cabled enclosure that provides power, cooling, management and networking functions. One enclosure for the SBI-7227R-T2 blade module can hold ten blade units (twenty nodes).

In this manual, "blade system" refers to the entire system (including the enclosure and blades units), "blade" or "blade unit" refers to a single blade module and "blade enclosure" is the chassis that the blades, power supplies and modules are housed within.

Please refer to our web site for information on operating systems that have been certified for use with the SuperBlade (www.supermicro.com/products/superblade/).

1-2 Product Checklist of Typical Components

Your blade module ships with its B9DRT mainboard already installed in its chassis. Memory, hard disk drives and the CPU must all be installed by the user after shipment. See [Chapter 2: " Setup and Installation" on page 2-1](#) for details on installation of these components.

Aside from the blade module unit itself, the following optional Mezzanine add-on cards (with InfiniBand Switch) may be ordered for your blade module:

- AOC-XEH-iN2
- AOC-IBH-XDD
- AOC-IBH-XQD
- AOC-IBH-XQS
- AOC-IBH-XDS

See the [Supermicro website](#) and the *SuperBlade Network Modules User's Manual* on your SuperBlade system's CD-ROM for more details on these add-on cards.

1-3 Blade Module Features

Table 1-1 lists the main features of the SBI-7227R-T2 blade module. See the proceeding section for components typically included in a blade system and other optional components. Specific details for the SBI-7227R-T2 blade module are found in [Chapter 3: "Blade Module Features" on page 3-1](#).

Table 1-1. SBI-7227R-T2 Blade Module Specification Features

Mainboard	B9DRT (proprietary form factor) Chassis Dimensions (HxWxD): 11.32" x 1.19" x 18.9"
Processors	Supports up to two Intel™ Xeon® E5-2600 series 2011-pin processors per node. Please refer to our web site for a complete listing of supported processors.
QPI Speed	QPI up to 8 GT/s
Chipset	Intel C602
Graphics Controller	Integrated Matrox G200eW Graphics
BIOS	128 MB SPI Flash EEPROM with AMI® BIOS each node for each node
Memory Capacity	Each node supports up to 256 GB of RDIMM and 64 GB of UDIMM DDR3 1600/1333/1066 MHz speed SDRAM in eight (8) 240-pin DIMM sockets
SATA Controller	Intel C602 on-chip controller for two Serial ATA drives for each node
Hard Drive Bays	Each node supports two hot-swap drive bays for 2.5" SATA disk/SSD drives

Processors

Each of the SBI-7227R-T2 blade module's node supports dual 2011-pin (LGA 2011 Socket R) Intel Xeon E5-2600 series processors.

Refer to the Supermicro web site for a complete listing of supported processors (<http://www.supermicro.com/products/superblade>). Please note that you will need to check the detailed specifications of a particular blade module for a list of the CPUs it supports.

Details on installation of the processor into the SBI-7227R-T2 blade module are found in [Chapter 2: "Setup and Installation" on page 2-1](#).

Memory

Each of the SBI-7227R-T2 blade module nodes has eight (8) 240-pin DIMM sockets that can support up to 256 GB RDIMM or 64 GB UDIMM of DDR3 1600/1333/1066 MHz speed SDRAM. Memory is interleaved, which requires modules of the same size and speed to be installed in groups (of two or three).

Please refer to the Supermicro web site for a list of supported memory (www.supermicro.com/products/superblade). The detailed specifications for a blade module will contain a link to a list of recommended memory sizes and manufacturers.

Details on installation of memory modules into the SBI-7227R-T2 blade module are found in [Chapter 2: " Setup and Installation" on page 2-1](#).

Storage

The SBI-7227R-T2 blade module node can have up to two 2.5" SATA (Serial ATA)/SSD hard disk drives in front-mounted easy removable carriers for a total of four for the whole module. See [Chapter 2: " Setup and Installation" on page 2-1](#) for storage installation details.

Density

A maximum of ten blade modules (twenty nodes) may be installed into a single blade enclosure. Each blade enclosure is a 7U form factor, so a standard 42U rack may accommodate up to six enclosures with 60 blade modules (120 nodes), or the equivalent of 120 1U servers. With the inclusion of six CMM modules, twelve Gigabit Ethernet switches and six InfiniBand switches, this would occupy up to 144U space in a conventional 1U server configuration.

1-4 Contacting Supermicro

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Chapter 1

Standardized Warning Statements

1-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition



Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危險。

您正處於可能受到嚴重傷害的工作環境中。在您使用設備開始工作之前，必須充分意識到觸電的危險，並熟練掌握防止事故發生的標準工作程序。請根據每項警告結尾的聲明號碼找到此設備的安全性警告說明的翻譯文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנתן הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسيمة .
قبل أن تعمل على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية

وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고 !

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험 요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오.

BELANGRIJKE VEILIGHEIDSinSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions



Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前，请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker



Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V,

20 A.

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が 250 V、20 A を超えないことを確認下さい。

警告

此产品的短路（过载电流）保护由建筑物的供电系统提供，确保短路保护设备的额定电流不大于 250V, 20A。

警告

此產品的短路（過載電流）保護由建築物的供電系統提供，確保短路保護設備的額定電流不大於 250V, 20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à : 250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250 V, 20 A

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في
المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고 !

이 제품은 전원의 단락 (과전류) 방지에 대해서 전적으로 건물의 관련 설비에 의존합니다 . 보호장치의 정격이 반드시 250V (볼트) , 20A (암페어) 를 초과하지 않도록 해야 합니다 .

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning



Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシ内部にアクセスするには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前，必须将系统完全断电，并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de système.

אזהרה מפני ניתוק חשמלי

אזהרה!

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل الوصول إلى المناطق الداخلية للهيكل لتثبيت أو إزالة مكونات الجهاز

경고 !

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다 .

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen.

Equipment Installation



Warning!

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה !

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتكوين واستبدال أو خدمة هذا الجهاز
경고 !

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area



Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה !

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד').

تم تخصيص هذه الوحدة لتثبيتها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للأمان

경고 !

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling



Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告

電池更換不當會有爆炸危險。請只使用同類電池或製造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢旧電池。

警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية

فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontplofingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies



Warning!

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein Strom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה!

ליחידה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고 !

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다 . 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다 .

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken

Backplane Voltage



Warning!

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理するには注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Quando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה !

קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر من التيار الكهربائي أو الطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고 !

시스템이 동작 중일 때 후면판 (Backplane) 에는 위험한 전압이나 에너지가 발생 합니다 . 서비스 작업 시 주의하십시오 .

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes



Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תאום חוקי החשמל הארצי

אזהרה !

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة
بالكهرباء

경고 !

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다 .

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal



Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה !

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고 !

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다 .

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Hot Swap Fan Warning



Warning!

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告

当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

!אזהרה

כאשר מסירים את חלקי המאוורר מהמארו, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고 !

새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter



Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

電源コードと AC アダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードと AC アダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、UL または CSA 認定のケーブル (UL/CSE マークがコードに表記) を Supermicro が指定する製品以外に使用することを禁止しています。

警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了 Supermicro 所指定的产品,电气用品和材料安全法律规定禁止使用未经 UL 或 CSA 认证的线材。(线材上会显示 UL/CSA 符号)。

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了 Supermicro 所指定的產品,電氣用品和材料安全法律規定禁止使用未經 UL 或 CSA 認證的線材。(線材上會顯示 UL/CSA 符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !

כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרקמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية ومحولات التيار المتردد

التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج

الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات UL أو CSA معتمدة من قبل

لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro (التي تحمل علامة UL/CSA)

경고 !

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC 어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law) 은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL 또는 CSA 에서 인증한 케이블 (전선 위에 UL/CSA 가 표시) 들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Notes

Chapter 2

Setup and Installation

2-1 Overview

This chapter covers the setup and installation of the blade module and its components.

2-2 Installing Blade Modules

Up to ten SBI-7227R-T2 blade modules may be installed into a single blade enclosure. Blade modules with Windows and Linux operating systems may be mixed together in the same blade enclosure.

Powering Up a Blade Unit

Each blade unit may be powered on and off independently from the rest of the blades installed in the same enclosure. A blade unit may be powered up in two ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to apply power using the CMM module.

Powering Down a Blade Unit

A blade unit may be powered down in either of the following ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to power down (if you have Operator or Admin privileges on the CMM).
- Use IPMITool when connected to the CMM to power down (if you have Operator or Admin privileges on the CMM).

Removing a Blade Unit from the Enclosure

Although the blade system may continue to run, individual blades should always be powered down before removing them from the enclosure.

Removing a Blade Unit from the Enclosure

1. Power down the blade unit (see ["Powering Down a Blade Unit"](#) above).
2. Squeeze both handles to depress the red sections then pull out both handles completely and use them to pull the blade unit from the enclosure.

NOTE: Blade Modules can be Hot-Plugged from the enclosure.

Removing/Replacing the Blade Cover

The blade cover must be removed to access the mainboard when you need to install or remove processors, memory units, the onboard battery and so on.

Removing/Replacing the Blade Cover

1. Remove the blade unit from the enclosure (see ["Removing a Blade Unit from the Enclosure"](#) above).
2. Depress the two buttons on the cover while pushing the cover toward the rear of the blade unit. When it stops, lift the cover off the blade unit.
3. To replace the cover, fit the six grooves in the cover into the studs in the sides of the blade, then slide the cover toward the front of the blade to lock it into place.

Installing a Blade Unit into the Enclosure

Make sure the cover of the blade unit has been replaced first before installing a blade unit in the enclosure.

Installing a Blade Unit into the Enclosure

1. Slowly push the blade unit into its bay with the handles fully pulled out (see [Figure 2-1](#)).
2. When the blade stops, push the handles back in to their locked position, making sure the notches in both handles catch the lip of the enclosure (see [Figure 2-2](#)).

NOTE: Blade Modules can be Hot-Plugged into the enclosure.

WARNING: Use extreme caution when inserting a blade module into the enclosure. If the blade's power connector becomes damaged, it can damage pins on other blade bays that it is inserted into.

Figure 2-1. Inserting a Blade into the Enclosure

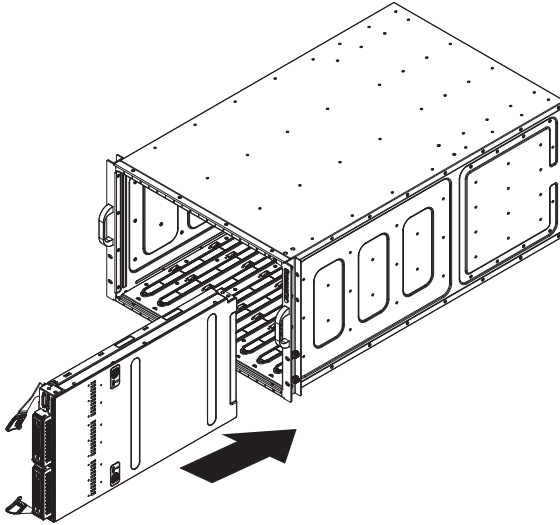
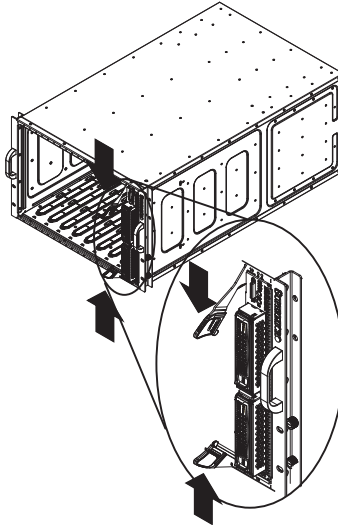


Figure 2-2. Locking the Blade into Position



2-3 Processor Installation

One or two processors may be installed to the mainboard of each blade unit. See [Chapter 1](#) for general information on the features of the blade unit and the [Supermicro web site](#) for further details including processor, memory and operating system support.

WARNING: This action should only be performed by a trained service technician. Allow the processor heatsink to cool before removing it.

Removing a Processor

1. Power down and remove the blade unit from the enclosure (see [Section 2-2: Installing Blade Modules on page 2-1](#) for details).
2. Remove the cover of the blade unit (see ["Removing/Replacing the Blade Cover" on page 2-2](#)).
3. Loosen the four screws that secure the heatsink to the mainboard.
4. Remove the heatsink by *gently* rotating it back-and-forth sideways with your fingers to release it from the processor. Set the heatsink aside and upside-down so that nothing comes into contact with the thermal grease on its underside.
5. Raise the lever of the processor socket up until the processor is released from the socket, then lift the silver cover plate and remove the processor.
6. Reapply plastic socket covers to the LGA2011 sockets to prevent pin damage.

WARNING: This action should only be performed by a trained service technician.

Installing a Processor

WARNING: Warning! When handling the processor package, avoid placing direct pressure on the label area.

WARNING: Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

Important! If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.

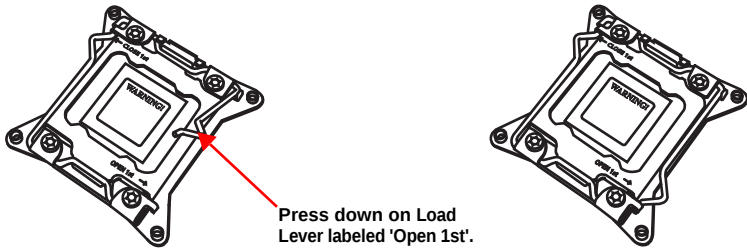
WARNING: Make sure to install the system board into the chassis before you install the CPU heatsink.

WARNING: When receiving a server board without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.

Refer to the Supermicro website for updates on CPU support.

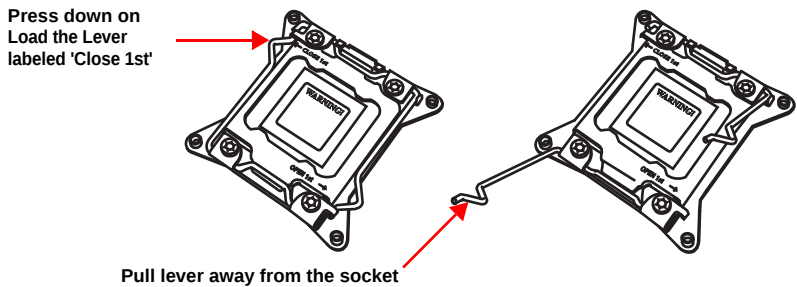
1. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st' (Figure 2-3).

Figure 2-3. Open First Load Lever



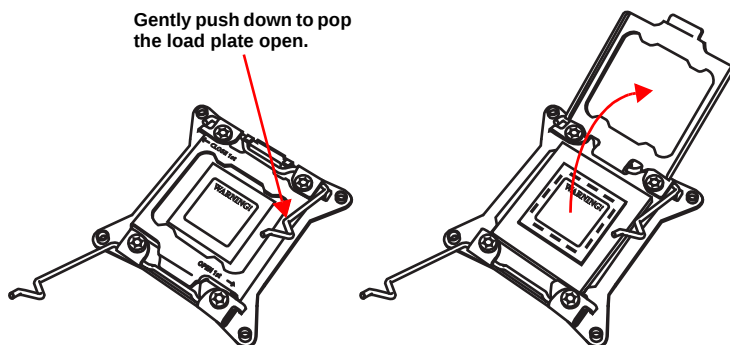
2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position (Figure 2-4).

Figure 2-4. Close First Load Lever



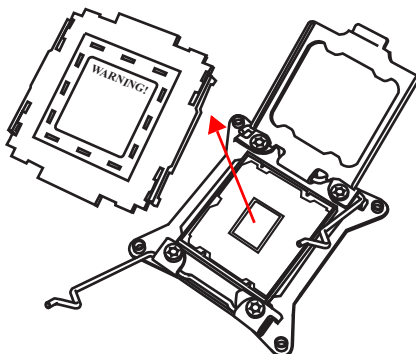
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely (Figure 2-5).

Figure 2-5. Opening the Load Plate



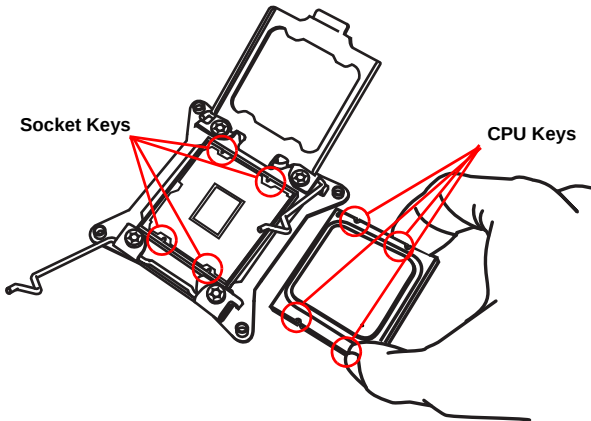
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket (Figure 2-6).

Figure 2-6. Removing the Warning Plastic Cap



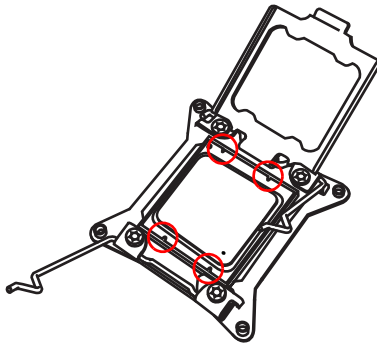
5. Use your thumb and index finger to hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys ([Figure 2-7](#)).

Figure 2-7. Aligning CPU Keys with Socket Keys



6. Once the keys are aligned, carefully lower the CPU straight down into the socket ([Figure 2-8](#)). Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.

Figure 2-8. Lowering the CPU into the Socket



WARNING: You can only install the CPU inside the socket in one direction. Make sure that the CPU is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

8. Close the load plate with the CPU inside the socket (Figure 2-9). Lock the lever labeled 'Close 1st' first (Figure 2-10), then lock the lever labeled 'Open 1st' second (Figure 2-11). Use your thumb to gently push the load levers down to the lever locks.

Figure 2-9. Closing the Load Plate

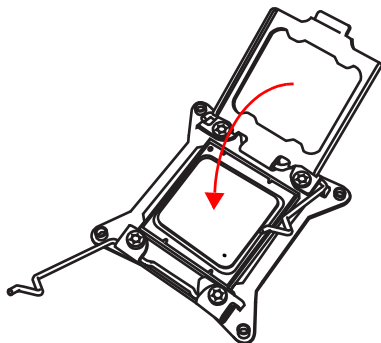


Figure 2-10. Locking the Close First Lever

Push down and lock the lever labeled 'Close 1st'.

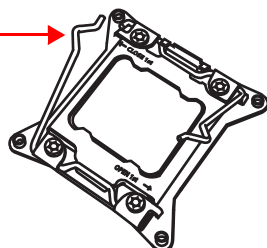
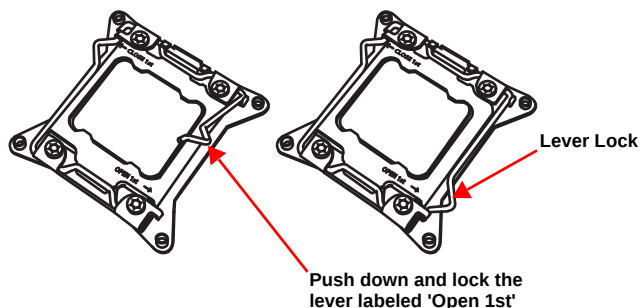


Figure 2-11. Locking the Open 1st Lever

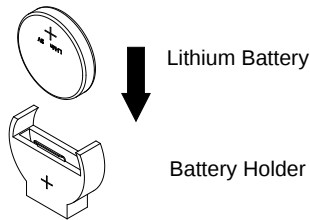


2-4 Onboard Battery Installation

A battery is included on the mainboard to supply certain volatile memory components with power when power has been removed from the blade module. If this battery dies, it must be replaced with an equivalent CR2032 Lithium 3V battery. Dispose of used batteries according to the manufacturer's instructions. See [Figure 2-12](#) for a diagram of installing a new onboard battery.

WARNING: There is a danger of explosion if the onboard battery is installed upside down, which reverses its polarities.

Figure 2-12. Installing the Onboard Battery



2-5 Memory Installation

The mainboard of each blade unit must be populated with DIMMs (Dual In-line Memory Modules) to provide system memory. **The DIMMs should all be of the same size and speed and from the same Super Micro authorized manufacturer due to compatibility issues.** See details below on supported memory and our web site (www.supermicro.com/products/superblade for recommended memory.

Populating Memory Slots

Each node on the mainboard of a SBI-7227R-T2 blade module has eight (8) memory slots, four for each processor. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

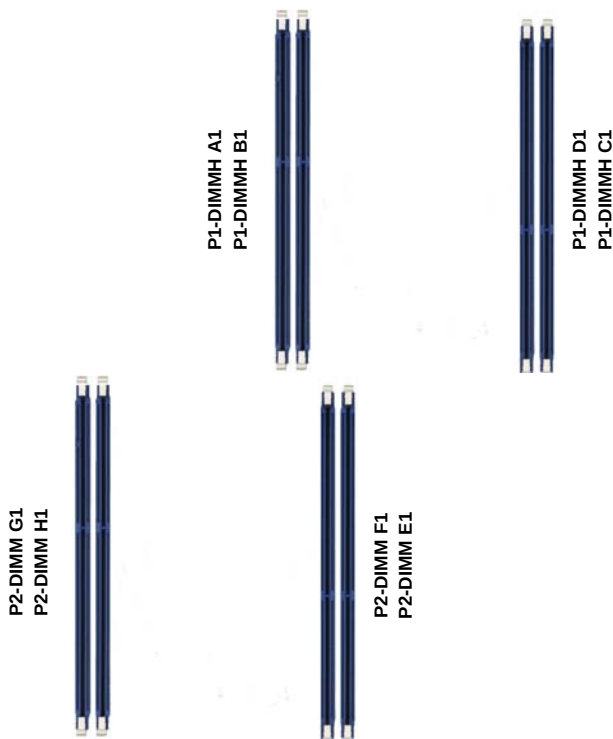
Populating all slots with memory modules of the same size and of the same type will result in interleaved memory, which is faster than single-channel, non-interleaved memory. See [Table 2-1: "Populating Eight Memory Slots for Interleaved Operation \(Each Node\)"](#) on page 2-10 for details.

WARNING: For an interleaved configuration, memory modules of the same size and speed must be used. You should not mix DIMMs of different sizes and speeds.

Table 2-1. Populating Eight Memory Slots for Interleaved Operation (Each Node)

# of DIMMs	CPU1				CPU2			
	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
	A1	B1	C1	D1	E1	F1	G1	H1
8	X	X	X	X	X	X	X	X

Figure 2-13. 8-slot DIMM Numbering



NOTE: Though multiple DIMM memory module types and speeds may be supported, you need to use DIMM memory modules of the same speed and type for each slot.

NOTE: An “X” in [Table 2-1](#) indicates the memory slot is populated by a DIMM module.

NOTE: For an optimized memory bandwidth, it is recommended that you populate the memory modules in sets of four (4) DIMMs for the CPU’s.

DIMM Installation

WARNING: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Installing DIMM Memory Modules

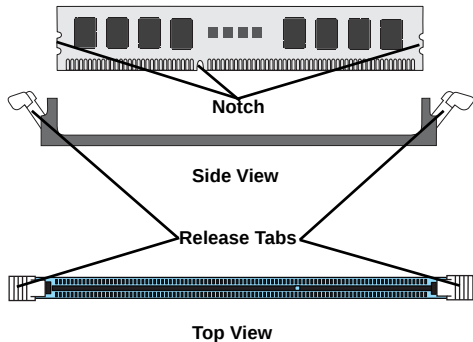
1. Power down the blade module (see ["Powering Down a Blade Unit" on page 2-1](#)).
2. Remove the blade from the enclosure and the cover from the blade (see ["Removing/Replacing the Blade Cover" on page 2-2](#)).
3. Remove the air shroud that covers the DIMM slots.
4. Insert each DIMM vertically into its slot, starting with slots 1A and 2A. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM incorrectly (see [Figure 2-14](#)).

Figure 2-14. Installing a DIMM into a Memory Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.

To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Note: The notch should align with the receptive key point on the slot.



5. Gently press down on the DIMM until it snaps into place in the slot. Repeat for all modules (see [Table 2-1](#) for installing DIMMs into the slots in the correct order).
6. Replace the air shroud and the blade cover and install the blade module back into the enclosure.
7. Power up the blade unit (see ["Powering Up a Blade Unit" on page 2-1](#)).

2-6 Hard Disk Drive Installation

Hard disk drives are installed in “carriers” which are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. A blade module needs a hard disk drive with an operating system installed to operate.

WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

To remove a hard drive carrier, do the following:

Removing a Hard Drive Carrier

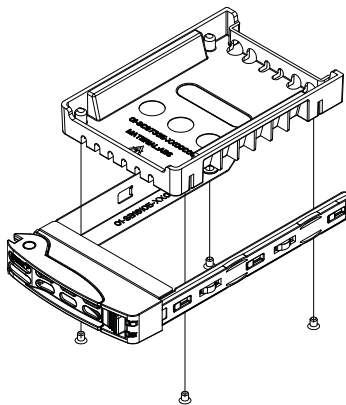
1. Locate the colored “Open” button at the bottom of the drive carrier and press it with your thumb. This action releases the drive carrier from the drive bay.
2. Pull the release handle out about 45-degrees, then use it to pull the drive carrier out.

To Install a hard drive, use the following procedure:

Installing a Hard Drive

1. Remove a blank drive carrier from the blade (see removal procedure above).
2. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.
3. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked “SATA” to aid in correct installation.
4. Secure the drive to the carrier with six screws as shown in [Figure 2-15](#).
5. Insert the drive carrier into its slot keeping the Open button at the bottom. When the carrier reaches the rear of the bay the release handle will retract.
6. Push the handle in until you hear the carrier click into its locked position.

Figure 2-15. Installing a Hard Drive in a Carrier



2-7 Installing the Operating System

An operating system (OS) must be installed on each blade module. Blades with Microsoft Windows OS and blades with Linux OS can both occupy and operate within the same blade enclosure. Refer to the [Supernova web site](#) for a complete list of supported operating systems.

There are several methods of installing an OS to the blade modules.

Installing with an External USB CD-ROM Drive

The most common method of installing the OS is with an external USB CD-ROM drive. Take the following steps to install the OS to a blade module:

WARNING: Installing the OS from an external CD-ROM drive may take several hours to complete.

1. Connect an SUV cable (Serial port/USB port/Video port cable) to the KVM connector on the front of the blade module. You will then need to attach a USB hub to the USB port on this cable to provide multiple USB ports.
2. Connect the external CD-ROM drive, a USB keyboard and a mouse to the USB hub. You will also need to connect a monitor to the video connector on the SUV cable. Turn on the blade module.
3. Insert the CD containing the OS into the CD-ROM drive.
4. Follow the prompts to begin the installation.

Installing via PXE Boot

PXE (Preboot Execution Environment) is used to boot a computer over a network. To install the OS via PXE, the following conditions must be met:

1. The PXE Boot option in BIOS must be enabled.
2. A PXE server has been configured (this can be another blade in the system).
3. The PXE server must be connected over a network to the blade to be booted.
4. The blade has only non-partitioned/unformatted hard drives installed and no bootable devices attached to it.

Once these conditions are met, make sure the PXE server is running. Then turn on the blade on which you wish to boot and/or install the OS. The BIOS in the blade will look at all bootable devices and finding none will connect to the PXE server to begin the boot/install.

Installing via Virtual Media (Drive Redirection)

You can install the OS via Virtual Media through either the *IPMIview* (Java based client utility), *IPMITool* or the *Web-based Management Utility*. With this method, the OS is installed from an ISO image that resides on another system/blade.

Refer to the manuals on the [Supermicro web site](#) for further details on the Virtual Media (CD-ROM or Drive Redirection) sections of these two utility programs.

2-8 Management Software

System management may be performed with either of three software packages: *IPMIview*, *IPMITool* or a *Web-based Management Utility*. These are designed to provide an administrator with a comprehensive set of functions and monitored data to keep tabs on the system and perform management activities.

Refer to the manuals on our website for further details on the various functions provided by these management programs.

2-9 Configuring and Setting up RAID

Each blade module that supports two or more hard drives may be used to create a RAID array. The procedures for doing this vary depending upon the blade model chosen for your SuperBlade system.

See [Chapter 4](#) for details on how to configure and set up RAID on your blade module.

Chapter 3

Blade Module Features

Figure 3-1. SBI-7227R-T2 Blade Unit Front View



This chapter describes the SBI-7227R-T2 blade unit. Installation and maintenance should be performed by experienced technicians only.

See [Figure 3-1](#) for a front view of the blade unit and [Table 3-1](#) for its features.

Table 3-1. SBI-7227R-T2 Blade Unit Features

Feature	Description
Processors	Supports up to two 2011-pin (LGA2011 Socket R) Intel Xeon E5-2600 series processors per node
Memory	Supports up to 256 GB of RDIMM and 64 GB of UDIMM DDR3 1600/1333/1066 MHz speed SDRAM in eight (8) 240-pin DIMM sockets per node
Storage	Up to two hot-plug 2.5" hot pluggable 2.5" enterprise SATA/SSD drives per node
Ports	KVM ports (1) per node (two total)
Features	Each node has an onboard Integrated Matrox G200eW Graphics chip, IPMI 2.0, ATA/100, Plug and Play, APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, Real Time Clock and Watch Dog

3-1 Control Panel

Each of the two nodes for the SBI-7227R-T2 blade has an identical control panel (Figure 3-2) with power on/off button, a KVM connector, a KVM button and four LEDs on both the top and bottom front of the unit. The numbers mentioned in Figure 3-2 are described in Table 3-2.

Figure 3-2. Blade Control Panel

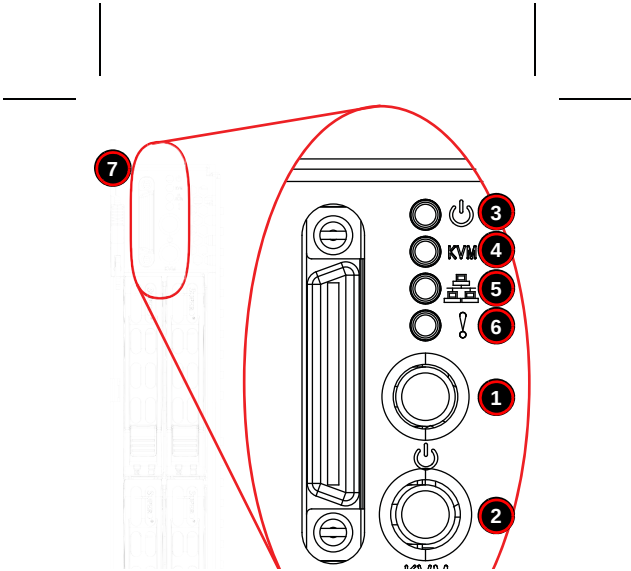


Table 3-2. Blade Control Panel

Item	Function	State	Description
1	Power Button	N/A	Turns blade module on and off
2	KVM Button	N/A	Initiates KVM function
3	Power LED	Green	Indicates power status "On"
		Orange	Indicates power status "Off" (with power cables plugged in)
4	KVM/UID LED	Blue	Indicates KVM being utilized on blade unit
		Flashing Blue	Indicates UID activated on blade module
5	Network/IB LED	Flashing Green	Indicates network activity over LAN
		Flashing Orange	Indicates network activity over InfiniBand module
6	System Fault LED	Red	Indicates a memory error, overheat, VGA error or any error that prevents booting
7	KVM Connector	N/A	Connector for SUV/KVM cable

Power Button

Each node has its own power button so that individual nodes for each blade unit within the enclosure may be turned on or off independently of the others. Press the power button (#1) to turn on the blade server. The power LED (#3) will turn green. To turn off, press and hold the power button for >4 seconds and the power LED will turn orange.

KVM Button

KVM stands for Keyboard/Video/Mouse. With KVM, a user can control multiple blades with a single keyboard/video/mouse setup. Connect your keyboard, mouse and monitor to the USB and VGA connectors on the CMM module, then push the KVM button on the control panel of the blade module you wish to access.

LED Indicators

Blade module LEDs are described below in [Table 3-3](#).

Table 3-3. Blade Module LED Indicators

LED	State	Description
Power LED	Green	Power On
	Amber	Standby
	Red	Power Failure ^a
KVM/UID LED (Blue)	Steady On	Indicates that KVM has been initialized on this blade module
	Flashing	Serves as a UID indicator (the UID function is activated with a management program)
Network LED (Green)	Flashing	Flashes on and off to indicate traffic (Tx and Rx data) on the LAN connection to this blade module.
System Fault LED (Red)	Steady On	This LED illuminates red when a fatal error occurs. This may be the result of a memory error, a VGA error or any other fatal error that prevents the operating system from booting up.

- a. In the event of a power failure, the N+1 Redundant Power Supply (if included in your system's configuration) automatically turns on and picks up the system load to provide uninterrupted operation. The failed power supply should be replaced with a new one as soon as possible.

KVM Connector

Alternatively, you may connect a KVM cable (CBL-0218L, with a keyboard/video/mouse attached) to the KVM connector (#7) of the node you wish to access. To switch to another node, disconnect the cable then reconnect it to the new node.

See the *Web-based Management Utility User's Manual* on your SuperBlade system CD-ROM for further details on using the KVM function remotely.

3-2 Mainboard

The mainboard of the SBI-7227R-T2 blade unit is a proprietary design, which is based on the Intel C602 chipset. See [Figure 3-4](#) for a block diagram of this chipset, [Figure 3-3](#) for a view of the B9DRT mainboard and [Figure 3-5](#) for an exploded view diagram of the blade unit.

Figure 3-3. B9DRT Mainboard

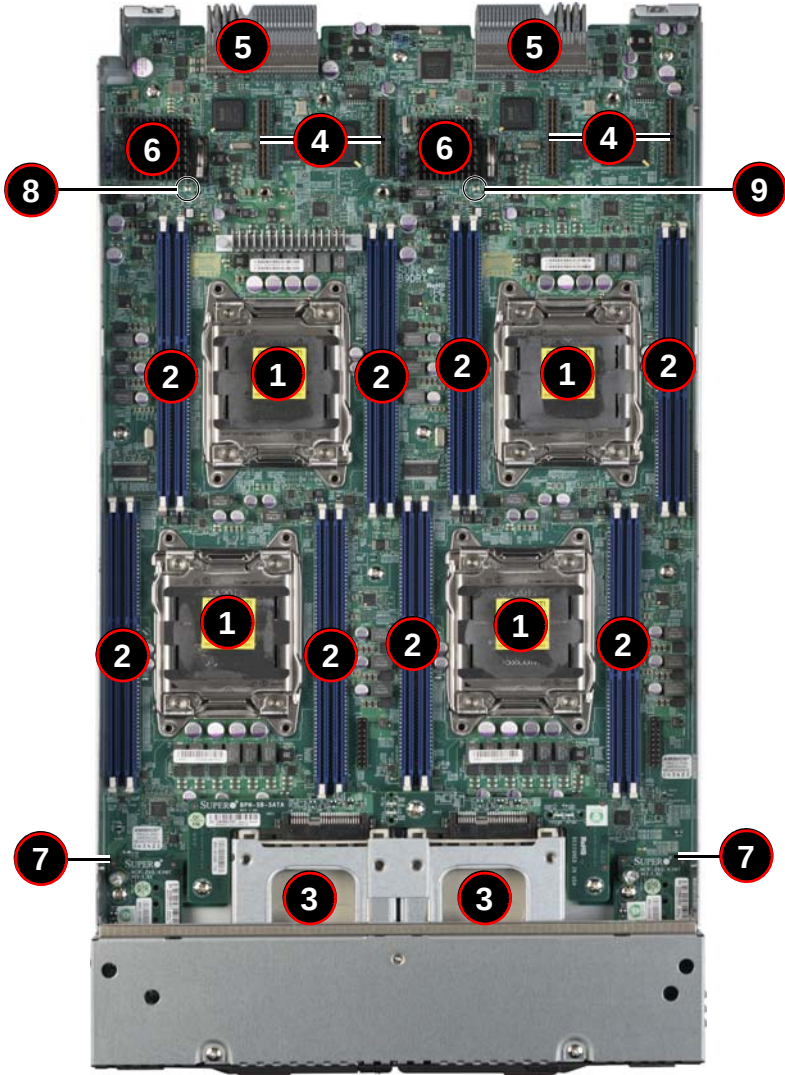
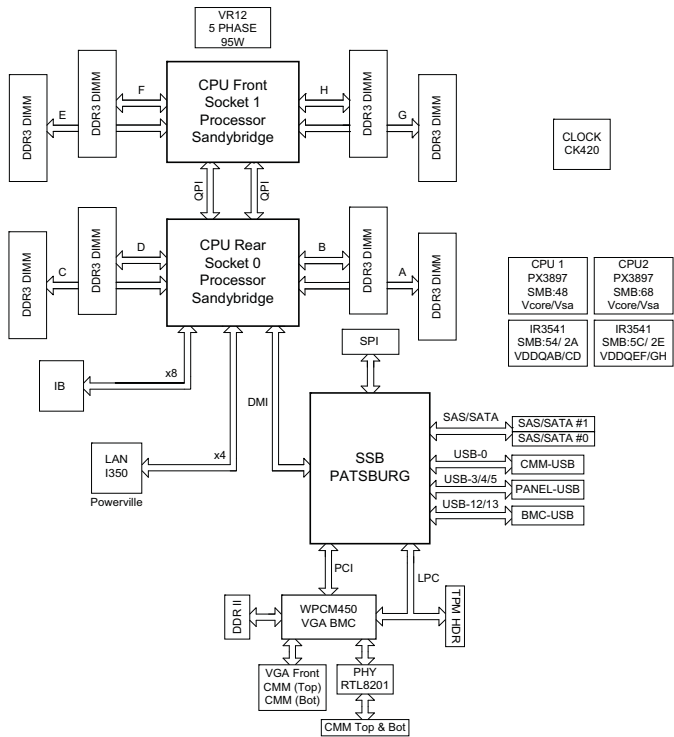


Table 3-4. B9DRT Mainboard Layout

Item	Description
1	LGA 2011 CPU Sockets
2	DIMM Slots (see Figure 2-5: "Memory Installation" on page 2-9 for details)
3	two 2.5" SATA Hard Drive Bays
4	InfiniBand Connectors (for InfiniBand or 10G card)
5	Gbx Connectors (for power and logic to backplane)
6	Intel C602 Chipset
7	KVM Module
8	JBT1 Left Node CMOS Clear
9	JKBT1 Right Node CMOS Clear

Figure 3-4. Intel C602 Chipset: Block Diagram (For Each Node)



Jumpers

The jumpers present on the mainboard are used by the manufacturer only; there are no jumpers used to configure the operation of the mainboard.

CMOS Clear

JBT1 and JKBT1 are each used to clear CMOS for each respective node on the mainboard and will also clear any passwords. Each consists of two contact pads located on the board underneath the chipset heatsinks.

Clearing CMOS

1. First power down the blade and remove it from the enclosure.
2. Remove the blade cover to access the mainboard (see [Section : Removing/ Replacing the Blade Cover on page 2-2](#) for further details). Short the CMOS pads with a metal object such as a small screwdriver.
3. Replace the cover, install the blade back into the enclosure and power it on.

3-3 Blade Unit Components

Figure 3-5. Exploded View of a SBI-7227R-T2 Blade Module

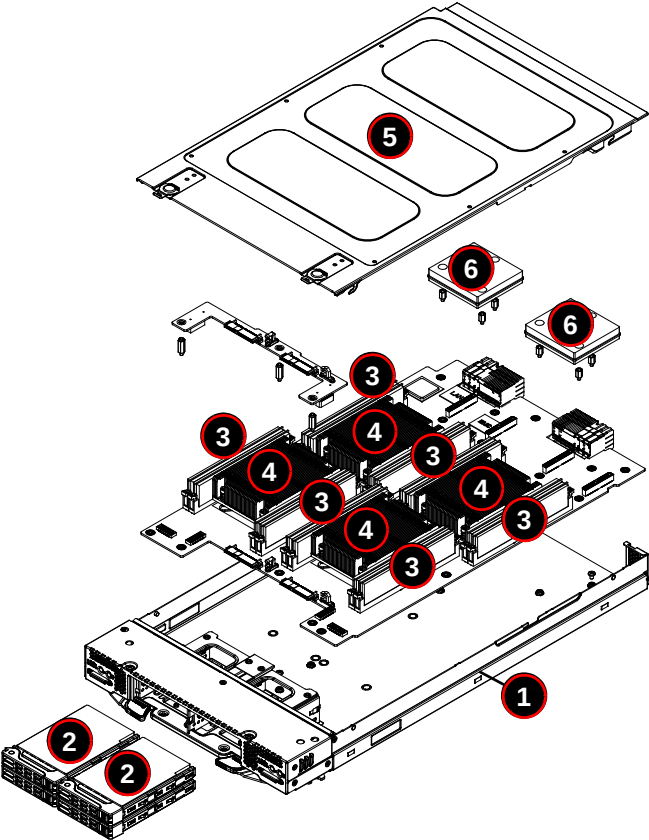


Table 3-5. Main Components of a SBI-7227R-T2 Blade Module

Item	Description
1	Blade Unit/Module
2	2.5" Hard Drives (two)
3	DIMMs (system memory)
4	CPU Heatsinks (2)
5	Top Cover
6	Mezzanine Cards

Memory Support

Each node of the SBI-7227R-T2 blade module supports up to 256 GB of RDIMM and 64 GB of UDIMM DDR3 1600/1333/1066 MHz speed SDRAM in eight (8) 240-pin DIMM sockets. See [Section 2-5: Memory Installation on page 2-9](#) for further details on mainboard memory installation.

Hard Disk Drives

Each node of the SBI-7227R-T2 blade unit supports up to two 2.5" SATA hard disk drives, which are mounted in drive "trays". The drives can be hot-swapped and removed or replaced without powering down the blade unit they reside in. The two drives for each node can be used to set up a RAID array (RAID 0 and 1 Windows; RAID 0 and 1 Linux) or JBOD. These drives use a yellow color for the Blade HDD active LED. See [Chapter 4: "RAID Setup Procedure" on page 4-1](#) for further details on RAID Setup.

WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the tray.

Chapter 4

RAID Setup Procedure

Each SBI-7227R-T2 blade module supports up to three hard drives, which may be used to create a RAID 0 and 1 (Windows) or RAID 0 and 1 (Linux) array. For RAID setup see <http://www.supermicro.com/support/manuals/> under RAID Installation Guides.

Notes

Chapter 5

BIOS

5-1 Introduction

This chapter describes the BIOS for Intel SuperBlade modules. The Intel Blade modules use a 128 MB SPI Flash EEPROM with AMI® BIOS each node™ that is stored in a flash chip. This BIOS can be easily upgraded using a floppy disk-based program. Each node in the SBI-7227R-T2 blade module has its own BIOS system.

NOTE: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the <http://www.supermicro.com/products/SuperBlade/module/> web site for further details on BIOS setup and the BIOS menus for your SuperBlade blade module.

System BIOS

BIOS stands for Basic Input Output System. The 128 MB SPI Flash EEPROM with AMI® BIOS each node BIOS flash chip stores the system parameters, types of disk drives, video displays, in the CMOS. The CMOS memory requires very little electrical power. When the blade unit is turned off, a backup battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the blade is powered on it is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <DELETE> key at the appropriate time during system boot. (See "[Starting the Setup Utility](#)" below.)

Starting the Setup Utility

Normally, the only visible POST (Power-On Self-Test) routine is the memory test. As the memory is being tested, press the <DELETE> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus.

WARNING: To prevent possible boot failure, do not shut down or reset the system while updating the BIOS.

5-2 BIOS Updates

It may be necessary to update the BIOS used in the blade modules on occasion. However, it is recommended that you not update BIOS if you are not experiencing problems with a blade module.

Updated BIOS files are located on our web site(www.supermicro.com/products/superblade/). Please check the current BIOS revision and make sure it is newer than your current BIOS before downloading.

There are several methods you may use to upgrade (flash) your BIOS. After downloading the appropriate BIOS file (in a zip file format), follow one of the methods described below to flash the new BIOS.

Flashing BIOS

Use the procedures below to “Flash” your BIOS with a new update using the KVM dongle, USB ports on the CMM module or by use of a Floppy disk.

Flashing a BIOS using the KVM Dongle:

For this method, you must use a KVM “dongle” cable (CBL-0218L, included with the system).

1. Copy the contents of the zip file to a bootable USB pen drive.
2. Connect the KVM dongle (CBL-0218L) to the KVM connector at the front of the blade you will be flashing the BIOS to.
3. Connect your bootable USB pen drive to one of the two USB slots on the KVM dongle.
4. Boot to the USB pen drive and go to the directory where you saved the contents of the zip file.
5. Type **flash filename.rom** (replace *filename.rom* by the actual ROM file name).

Flashing a BIOS using the USB Ports on the CMM:

1. Copy the contents of the zip file to a bootable USB pen drive.
2. Connect your bootable USB pen drive to one of the two USB slots on the CMM (located on the back side of the enclosure).
3. Boot to the USB pen drive and go to the directory where you saved the contents of the zip file.
4. Type **flash filename.rom** (replace *filename.rom* by the actual ROM file name).

Flashing a BIOS using a Floppy Image File

This method must be performed remotely.

1. Copy the image file from the zip file to your desktop.
2. Use the web browser or IPMIView to access your CMM remotely using its IP Address.

3. Go to the VIRTUAL MEDIA menu and select FLOPPY IMAGE UPLOAD.
4. BROWSE or OPEN to locate the *.img file on your desktop and select it.
5. Press the UPLOAD button and wait a few seconds for the image to upload to the CMM.
6. Once the upload finishes, turn on the blade module and press to enter the BIOS setup utility.
7. In the BOOT MENU, bring **USB LS120: PEPPCMM VIRTUAL DISC 1** to the top of the boot priority list.
8. Exit while saving the changes. The blade module will boot to the virtual media (floppy image) **A:\>**.
9. Type **flash filename.rom**.

NOTE: Replace *filename.rom* by the actual ROM file name (such as **B8DTE142.rom** for example) in the command.

5-3 Running Setup

NOTE: Default settings are in **bold** text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the MAIN BIOS SETUP screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options.

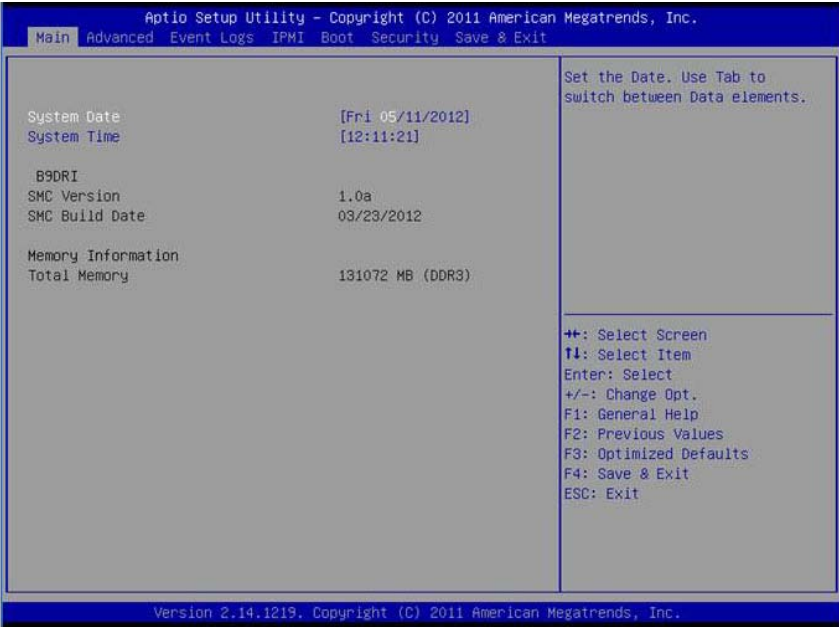
When you first power on the computer, the BIOS is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <DELETE> immediately after turning the system on, or
2. When the message **Press the <Delete> key to enter Setup** appears briefly at the bottom of the screen during the POST, press the <DELETE> key to activate the main SETUP menu:

5-4 Main BIOS Setup

Figure 5-1. BIOS Setup Screen



All Main Setup options are described in this section.

Use the UP/DOWN arrow keys to move among the different settings in each menu. Use the LEFT/RIGHT arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS SETUP menu. The next section describes in detail how to navigate through the menus.

Items that use sub-menus are indicated with the ► icon. With the item highlighted, press the <ENTER> key to access the submenu.

Menu options found in the MAIN BIOS SETUP menu are described in [Table 5-1](#).

Table 5-1. Main BIOS Setup Menu Options

Menu Option	Description
System Date	Using the arrow keys, highlight the month, day and year fields, and enter the correct data for the system date. Press the <Enter> key to save the data.
System Time	To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.
BIOS Information	BIOS static display information including the motherboard number, SMC version, SMC Build Date and Total Memory is also shown on the screen.

5-5 Advanced Setup

Choose **Advanced** from the BIOS Setup Utility main menu with the arrow keys to display the **ADVANCED SETUP** menu. The items with a triangle beside them are sub-menus that can be accessed by highlighting the item and pressing <ENTER>. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <ENTER>.

Table 5-2 describes all sub-menus found in the **ADVANCED SETUP** menu.

Table 5-2. Advanced Setup Menu Options

Sub-menu	Description
► Boot Feature	See Table 5-3 for a description of BIOS setup menu options in this sub-menu.
► CPU Configuration	See Table 5-4 for a description of BIOS setup menu options in this sub-menu.
► Chipset Configuration	See Table 5-5 for a description of BIOS setup menu options in this sub-menu.
► SATA Configuration	See Table 5-6 for a description of BIOS setup menu options in this sub-menu.
► PCIe/PII/PnP Configuration	See Table 5-7 for a description of BIOS setup menu options in this sub-menu.
► SuperIO Configuration (WPCM450)	See Table 5-8 for a description of BIOS setup menu options in this sub-menu.
► Serial Port Console Redirection	See Table 5-9 for a description of BIOS setup menu options in this sub-menu.
► ACPI Configuration	See Table 5-10 for a description of BIOS setup menu options in this sub-menu.
► ME Subsystem	See Table 5-11 for a description of BIOS setup menu options in this sub-menu.

Table 5-3. Boot Feature Submenu

Menu Option	Description
Quiet Boot	When Disabled the BIOS displays normal POST messages. When Enabled the BIOS displays an OEM Logo instead of POST messages.
AddOn ROM Display Mode	This setting sets the display mode for Option ROM. Options include Force BIOS or Keep Current .
Bootup NUM-Lock	This setting selects the Power-On state for Numlock. Options include On or Off .
Wait for 'F1' If Error	When enabled, the system will wait for the F1 key to be pressed if an error occurs. Options are Enabled or Disabled .
Interrupt 19 Capture	When enabled this setting allows option ROMs to trap Interrupt 19. Options include Enabled or Disabled .
Watch Dog Timer	This setting allows the system to restart when it is not active more than 5 minutes. Option include Enabled and Disabled .

Table 5-3. Boot Feature Submenu (Continued)

Menu Option	Description
Power Button Function	This setting specifies the power button's function when pressed. Option include 4 Seconds Override or Instant Off .
Restore on AC Power Loss	This setting specifies what the system will do when power is restored after an AC power loss to the system. Options include Stay Off (system power remains off after power loss), Power-On (system power turns on after power loss) or Last State (allows the system to resume its last state before the power loss).

Table 5-4. CPU Configuration Submenu

Menu Option	Description
► Socket 1 CPU Information	These submenus, when selected, shows information on the Socket 1/Socket 2 processors and other information including CPU Signature, Microcode Patch, CPU Stepping, Max CPU Speed, Min CPU Speed, Processor Cores, Intel HT Technology, Intel VT-x Technology, L1 Data Cache, L1 Code Cache, L2 Cache and L3 Cache. Additionally, the CPU Configuration submenu shows information about the CPU Speed and 64-bit support. The information shown is only readable and cannot be changed.
► Socket 2 CPU Information	
Clock Spread Spectrum	This setting enables or disables spread spectrum modulation. Options are Enabled and Disabled .
Hyper-threading	This setting is Enabled for Windows XP and Linux (OS optimized for Hyper-threading technology), and Disabled for other OSes (any OS not optimized for Hyper-threading technology). When Disabled, only one thread per enabled core is enabled.
Active Processor Cores	This setting selects the number of cores to enable in each processor package. Options include All , 1, 2, 4 and 6.
Limit CPUID Maximum	This setting is disabled for Windows XP. Options include Enabled or Disabled .
Execute Disable Bit	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS such as Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2 or RedHat Enterprise 3 Update 3. Options include Enabled or Disabled.
Hardware Prefetcher	If set to Enabled , the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. Options are Enabled and Disabled. For UP platforms leave it enabled. for DP/MP servers, this setting may be used to tune performance to the specific application.
Adjacent Cache Line Prefetch	The CPU fetches the cache line for 64-bytes if this option is set to Disabled. The CPU fetches both cache lines for 128-bytes as comprised if Enabled . For UP platforms leave it enabled. for DP/MP servers, this setting may be used to tune performance to the specific application.
DCU Streamer Prefetcher	For UP platforms, leave this option Enabled . For DP/MP servers, this option may be used to tune performance to the specific application. Options are Enabled or Disabled.
DCU IP Prefetcher	This setting Enables or Disables prefetch of the next L1 line based upon sequential load history.

Table 5-4. CPU Configuration Submenu (Continued)

Menu Option	Description
Intel® Virtualization Technology	Select Enabled to use this Virtualization Technology feature to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple “virtual” systems in one physical computer system. The options are Enabled and Disabled. Please refer to the Intel website for further detailed information. NOTE: A full reset of the system is required when you change this setting.
► CPU Power Management Configuration	Power management options and information is displayed on this submenu. In addition to the options in this submenu, information is displayed for Factory Long Duration Power Limit, Factory Long Duration Maintained and Recommended Short Duration Power.
Power Technology	This option enables power management features. Options include Disable, Energy Efficient and Custom. Selecting “Custom” allows you to either Enable or Disable the following features and their defaults: • EIST (Enabled) • Turbo Mode (Enabled) • C1E Support (Enabled) • CPU C3 Report (Disabled) • CPU C6 Report (Enabled) • CPU C7 Report (Enabled) • Package C-state Limit (C6) • Energy Performance • Long Duration Power Limit • Long Duration Maintained
Energy Performance	This option allows you to optimize between power and energy savings. Windows 2008 and later OSes overrides this value according to its power plan. Options include Performance, Balanced Performance , Balanced Energy and Energy Efficient.
Long Duration Power Limit	This option allows you to set the long duration power limit in Watts. To set the value, enter a number from your keyboard in the field highlighted. To reset the number, enter a new number.
Long Duration Maintained	This option allows you to set the time window for which the long duration power limit is maintained. To set the time value, enter a number from your keyboard in the field highlighted. To reset the number, enter a new number.
Short Duration Power Limit	This option allows you to set the short duration power limit in Watts. To set the value, enter a number from your keyboard in the field highlighted. To reset the number, enter a new number.

Table 5-5. Chipset Configuration Sub-menu

Menu Option	Description
►North Bridge Configuration	This sub-menu configures North Bridge features and shows configuration information.
►IOH Configuration	This submenu configures Intel VT-d and Intel I/OAT in your system and configures IOU PCIe port bifurcation controls.
Intel VT-d	This setting allows you to Enable or Disable Intel Virtualization Technology for in your system.
Intel I/OAT	This setting allows you to Enable or Disable Intel I/O Acceleration Technology in your system.
DCA Support	This setting allows you to Enable or Disable DCA support in your system.
IOH 0/1 PCIe Port Bifurcation Controls	Both IOH 0 and IOH 1 PCIe port bifurcation controls are available to set IOU Link Speed and PCIe Port settings. Options include Gen 1, Gen 2 or Gen 3 link speed settings or various port PCIe settings for x4x4, x8, x4x4x4, x4x4x8, x8x4x4, x8x8 or x16 (default depends upon setting).
►QPI Configuration	This submenu statically displays Current QPI Link Speed and Current QPI Link Freq as well as providing options for Isoc, QPI Link Speed Mode and QPI Link Frequency Select.
Isoc	This setting allows you to Enable or Disable Isoc in your system.
QPI Link Speed Mode	This setting allows you to select QPI Link Speed as being either Fast or Slow mode.
QPI Link Frequency Select	This setting allows you to select the QPI link frequency. Options include Auto , 6.4 GT/s, 7.2 GT/s or 8.0 GT/s.
►DIMM Configuration	This submenu displays static Memory Configuration information (Current Memory Mode, Current Memory Speed, Mirroring and Sparing), DIMM Information and other option settings.
►DIMM Information	DIMM presence and size information is shown in this submenu when selected.
Memory Mode	This setting sets the system memory mode. Options include the following: • Independent (default) – All DIMMs are available to the operating system. • Mirroring – The mainboard maintains two identical copies of all data in memory for redundancy. • Lock Step – The mainboard uses two areas of memory to run the same set of operations in parallel. • Sparing – A preset threshold of correctable errors is used to trigger fail-over. The spare memory is put online and used as active memory in place of the failed memory.
DRAM RAPL Mode	This setting allows you to select DRAM RAPL Mode for your system. Options include Disabled, DRAM RAPL Mode0 and DRAM RAPL MODE1 .
DDR Speed	This setting allows you to force DDR speed for your system. Options include Auto , Force DDR3 800, Force DDR 1066, Force DDR 1333, Force DDR 1600 and Force SPD.
Channel Interleaving	This setting allows you to select different channel interleaving settings. Options include Auto , 1 Way, 2 Way, 3 Way and 4 Way.

Table 5-5. Chipset Configuration Sub-menu (Continued)

Menu Option	Description
Rank Interleaving	This setting allows you to select different rank interleaving settings. Options include Auto , 1 Way, 2 Way, 4 Way and 8 Way.
Patrol Scrub	This setting allows you to either Enable or Disable Patrol Scrub for your system.
Demand Scrub	This setting allows you to Enable or Disable the Demand Scrubbing in your system.
Data Scrambling	This setting allows you to Enable or Disable the Data Scrambling in your system.
Device Tagging	This setting allows you to Enable or Disable the Device Tagging in your system.
Thermal Throttling	For this setting, selecting Disabled sets Open Loop Thermal Throttling, whereas selecting CLTT sets Closed Loop Thermal Throttling.
► South Bridge Configuration	This sub-menu static displays PCH Information (chipset Name, Stepping and USB Devices), and allows you to configure other South Bridge features.
All USB Devices	This setting allows you to enable USB devices in your system. Options include Enabled or Disabled.
EHCI Controller 1/ EHCI Controller 2	This setting allows you to Enable or Disabled USB 2.0 (EHCI) support for Controller 1/2.
Legacy USB Support	This setting allows you to enable the use of Legacy USB devices. If this option is set to Auto, legacy USB support will be automatically enabled if a legacy USB device is installed on the mainboard, and disabled if no USB devices are connected. The options include Disabled, Enabled and Auto.
Port 60/64 Emulation	This setting Enables or Disables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
EHCI Hand-off	This setting is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by the EHCI driver. Options include Enabled or Disabled .

Table 5-6. SATA Configuration Sub-menu

Menu Option	Description
SATA Configuration	This submenu contains settings for SATA configuration options as well as information at the top on what hard disk drives are installed on the system.
SATA Mode	This setting allows you to specify the SATA mode used for your system. Options include Disabled, IDE Mode, AHCI Mode and RAID Mode.
Aggressive Link Power Management	This setting allows you to Enable or Disable Aggressive Link Power Management for your system.
Port 0-5 Hog Plug	These settings allow you to Enable or Disable SATA Port Hot Plug support for each port specified.
Staggered Startup (5)	These settings allow you to Enable or Disable AHCI Staggered Spin-up support for each drive.

Table 5-7. PCIe/PCI/PnP Configuration Sub-menu

Menu Option	Description
PCI ROM Priority	Use this setting in case of multiple Option ROMs to specify what PCI Option ROM to launch. Options include Legacy ROM and EFI Compatible ROM.
PCI Latency Timer	This sets the value to programmed into the PCI Latency Timer Register. Options include 32, 64 , 96, 128, 160, 192, 224 and 248.PCI Bus Clocks.
Above 4G Decoding	This setting allows you to Enable or Disables decoding of 64-bit capable devices in the Above 4G Address Space. This setting is only usable if your system supports 64-bit PCI decoding.
PERR# Generation	This setting allows you to Enable or Disable the PCI device to generate a PERR#.
SERR# Generation	This setting allows you to Enable or Disable the PCI device to generate a SERR#.
Maximum Payload	Use this setting to set the maximum payload of the PCI Express device or allow the system BIOS to select the value. Options include Auto , 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes or 4096 Bytes.
Maximum Read Request	Use this setting to set the maximum read request size of the PCI Express device or allow the system BIOS to select the value. Options include Auto , 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes or 4096 Bytes.
ASPM Support	This sets the ASPM Level for your system. Options include Disabled (disables ASPM), Auto (lets BIOS auto configure) or Force L0s (force all links to L0s state).
Onboard LAN Option ROM Select	This setting allows you to select the onboard LAN option ROM to be either PXE or iSCSI. Note: If iSCSI is selected, LAN1 Option ROM select will cover all other Onboard LANs.
Load Onboard LAN 1 Option ROM	This setting Enables or Disables onboard option ROM for LAN1.
Load Onboard LAN 2 Option ROM	This setting Enables or Disables onboard option ROM for LAN2.
Network Stack	This setting allows you to Enable or Disable the network stack (Pxe and UEFI).

Table 5-8. SuperIO Configuration Sub-menu

Menu Option	Description
Super IO Chip	This static display shows the name of the Super IO chip installed for your system.
►Serial Port 1 Configuration	This submenu allows you to configure Serial Port 1.
Serial Port	This setting allows you to Enable or Disable the Serial Port.
Change Settings	Use this setting to select an optimal setting for the Super IO device to use for the Serial Port. Options include Auto , IO=3F8h/IRQ=4, IO=3F8h/IRQ=3-12, IO=2F8h/IRQ=3-12, IO=3E8h/IRQ=3-12 and IO=2E8h/IRQ=3-12
Serial Port Mode	This setting allows you to set the Serial Port Mode to either Serial Over LAN (SOL) or COM. Options include Normal or High Speed.

Table 5-8. SuperIO Configuration Sub-menu (Continued)

Menu Option	Description
► Serial Port 2 Configuration submenu	This submenu allows you to configure Serial Port 2.
Serial Port	This setting allows you to Enable or Disable the Serial Port.
Change Settings	Use this setting to select an optimal setting for the Super IO device to use for the Serial Port. Options include Auto , IO=3F8h/IRQ=4, IO=3F8h/IRQ=3-12, IO=2F8h/IRQ=3-12, IO=3E8h/IRQ=3-12 and IO=2E8h/IRQ=3-12
Serial Port Attribute	This setting allows you to set either Serial over LAN (SOL) or COM for the serial port attribute.
Serial Port Mode	This setting allows you to set the Serial Port Mode to either Serial Over LAN (SOL) or COM. Options include Normal or High Speed.

Table 5-9. Serial Port Console Redirection Sub-menu

Menu Option	Description
COM1	
Console Redirection	Use this setting to Enable or Disable Console Redirection for the COM1 port.
► Console Redirection Settings	This submenu contains Console Redirection settings for the COM1 port.
Terminal Type	This setting allows you to select the Terminal Type to use for Console Redirection emulation. Options include ANSI (extended ASCII character set), VT100 (ASCII character set), VT100+ (extends VT100 to support color, function keys, etc.) and VT-UTF8 (uses UTF8 encoding to map Unicode characters onto one or more bytes).
Bits per Second	This setting selects the serial port transmission speed, which must be matched on the other side. Long or noisy lines may require lower speeds. Options include 9600, 19200, 38400, 57600 and 115200 .
Data Bits	This sets the number of data bits as either 7 or 8.
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Options include None (no parity bit), Even (parity bit is 0 if the number of 1's in the data bits is even), Odd (parity bit is 0 if the number of 1's in the data bits is odd), Mark (parity bit is always 1) or Space (parity bit is always 0. The Mark and Space Parity do not allow for error detection).
Stop Bits	Stop bits indicate the end of a serial data packet (a start bit indicates the beginning). The standard setting is 1 stop bit. Communications with slow devices may require more than 1 stop bit. Options are 1 or 2.
Flow Control	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. Options include None and Hardware RTS/CTS.
VT-UTF8 Combo Key Support	This setting Enables or Disables VT-UTF8 Combination Key support for ANSI/VT100 terminals.

Table 5-9. Serial Port Console Redirection Sub-menu (Continued)

Menu Option	Description
Recorder Mode	This setting Enables or Disables Recorder Mode. When enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	This setting Enables or Disables extended terminal resolution.
Legacy OS Redirection Resolution	This allows you to set for legacy OSes the number of rows and columns supported for redirection. Options include 80x24 or 80x25.
Putty KeyPad	This setting allows you to select the funtion key and KeyPad to use on the Putty keyboard. Options include VT100 , LINUX, XTERMR6, SCO, ESCN or VT400.
COM2	
Console Redirection	Use this setting to Enable or Disable Console Redirection for the COM2 port.
► Console Redirection Settings	This submenu contains Console Redirection settings for the COM2 port.
Terminal Type	This setting allows you to select the Terminal Type to use for Console Redirection emulation. Options include ANSI (extended ASCII character set), VT100 (ASCII character set), VT100+ (extends VT100 to support color, function keys, etc.) and VT-UTF8 (uses UTF8 encoding to map Unicode characters onto one or more bytes).
Bits per Second	This setting selects the serial port transmission speed, which must be matched on the other side. Long or noisy lines may require lower speeds. Options include 9600, 19200, 38400, 57600 and 115200 .
Data Bits	This sets the number of data bits as either 7 or 8.
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Options include None (no parity bit), Even (parity bit is 0 if the number of 1's in the data bits is even), Odd (parity bit is 0 if the number of 1's in the data bits is odd), Mark (parity bit is always 1) or Space (parity bit is always 0. The Mark and Space Parity do not allow for error detection.
Stop Bits	Stop bits indicate the end of a serial data packet (a start bit indicates the beginning). The standard setting is 1 stop bit. Communications with slow devices may require more than 1 stop bit. Options are 1 or 2.
Flow Control	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. Options include None and Hardware RTS/CTS.
VT-UTF8 Combo Key Support	This setting Enables or Disables VT-UTF8 Combination Key support for ANSI/VT100 terminals.
Recorder Mode	This setting Enables or Disables Recorder Mode. When enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	This setting Enables or Disables extended terminal resolution.
Legacy OS Redirection Resolution	This allows you to set for legacy OSes the number of rows and columns supported for redirection. Options include 80x24 or 80x25 .

Table 5-9. Serial Port Console Redirection Sub-menu (Continued)

Menu Option	Description
Putty KeyPad	This setting allows you to select the function key and KeyPad to use on the Putty keyboard. Options include VT100 , LINUX, XTERMR6, SCO, ESCN or VT400.
Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)	
Console Redirection	Use this setting to Enable or Disable Console Redirection for Out-of-Band Management/Windows Emergency Management Services (EMS).
► Console Redirection Settings	This submenu contains Console Redirection settings for Out-of-Band Management/Windows Emergency Management Services (EMS). Static display information for Data Bits, Parity and Stop Bits is also shown in this submenu.
Out-of-Band Mgmt Port	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port. This setting allows you to specify which port to use (COM1 or COM2).
Terminal Type	VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. Options include ANSI (extended ASCII character set), VT100 (ASCII character set), VT100+ (extends VT100 to support color, function keys, etc.) and VT-UTF8 (uses UTF8 encoding to map Unicode characters onto one or more bytes).
Bits per Second	This setting selects the serial port transmission speed, which must be matched on the other side. Long or noisy lines may require lower speeds. Options include 9600, 19200, 57600 and 115200 .
Flow Control	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. Options include None , Hardware RTS/CTS and Software Xon/Xoff.

Table 5-10. ACPI Settings Sub-menu

Menu Option	Description
ACPI Sleep State	This setting selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. Options include Suspend Disabled and S1 (CPU Stop Clock) .
High Precision Timer	Use this setting to Enable or Disable the High Precision Event Timer.

Table 5-11. ME Subsystem Sub-menu

Menu Option	Description
Intel ME Subsystem Configuration	This submenu displays static information for the ME BIOS Interface Version and the ME Version for your system.
ME Subsystem	This setting allows you to Enable or Disable ME Subsystem help.

5-6 Event Logs Setup

Table 5-12. Event Logs Menu

Menu Option	Description
► Change SMBIOS Event Log Settings	This submenu allows you to change the SMBIOS Event Log configuration settings.
SMBIOS Event Log	This setting allows you to Enable or Disable SMBIOS Event Logging.
Runtime Error Logging Support	Use this setting to Enable or Disable runtime error logging support.
Memory Corr. Error Threshold	Use this setting to enter the memory correctable error threshold value of between 1 and 15. The default value is 10 .
PCI Error Logging Support	Use this setting to Enable or Disable PCI error logging support.
Erase Event Log	Use this setting for erasing the SMBIOS Event Log. Erasing is done prior to any logging activation during reset. Options are No , Yes Next Reset and Yes Every Reset.
When Log is Full	Use this setting to choose options for reactions to a full SMBIOS Event Log. Options include Do Nothing and Erase Immediately.
Log System Boot Event	Use this setting to choose the option to Enable or Disable logging of system boot events.
MECI	This setting (Multiple Event Count Increment) is used to select the number of occurrences of a duplicate event that must pass before the multiple-event counter associated with the log entry is updated. This is specified as a numeric value in the range of 1 to 255. The default for this setting is set to 1 .
METW	This setting (Multiple Event Time Window) is used to select the number of minutes which must pass between duplicate log entries that utilize a multiple-event counter. The value ranges from 0 to 99 minutes. The default for this setting is set to 60 .
View SMBIOS Event Log	Selecting this option displays the SMIBIOS Event Log for viewing.

5-7 IPMI Setup

Table 5-13. IPMI Menu

Menu Option	Description
IPMI Information	IPMI Firmware Revision and IPMI Status information are statically displayed at the top of this menu.
►System Event Log	Selecting this submenu displays settings for changing the SEL Event Log configuration.
SEL Components	Change this setting to Enable or Disable all features of the System Event Logging during boot-up.
Erase SEL	Use this setting for erasing the SEL. Options are No , Yes On Next Reset and Yes On Every Reset.
When SEL is Full	Use this setting to choose options for reactions to a full SEL. Options include Do Nothing and Erase Immediately.
Log EFI Status Codes	Use this setting to Enable or Disable logging of EFI status codes, log only error codes or only progress codes
►BMC Network Configuration	Use this submenu to configure BMC network parameters.
BMC Network Configuration Information	The submenu contains static display information for the Station IP Address, Subnet Mask, Station MAC Address and Gateway IP Address.
Update IPMI LAN Configuration	Specify Yes or No for the BIOS to use this setting for IPMI in the next boot-up.
Configuration Address Source	This setting allows you to configure LAN channel parameters Statically or Dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during the BIOS phase. Options are DHCP (dynamic) or Static.

5-8 Boot

Choose **Boot** from the BIOS Setup Utility main menu with the arrow keys to bring up the BOOT SETUP menu. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <ENTER>. All Security BIOS settings are described in [Table 5-14](#) below.

Table 5-14. Boot Setup Menu Options

Menu Option	Description
Boot Device Priorities	These menu settings allow you to specify the sequence of priority for the boot device (such as hard disk drives, USB devices, CD-ROM drives, Network drives and so on). The menu options are for 1st Boot Device, 2nd Boot Device and 3rd Boot device, 4th Boot Device and so on. Each numbered boot device can be set to a specific device installed in your system or to Disabled. NOTE: A device enclosed in parenthesis has been disabled in the corresponding type menu.
►USB Device BBS Priorities	This submenu allows you to set the order of the legacy devices in this group for setting the boot order.
►Network Device BBS Priorities	This submenu allows you to set the order of the legacy devices in this group for setting the boot order.
►Add New Boot Option	This submenu allows you to add a new EFI boot option to the boot order.
Add Boot Option	Use this setting to add a new boot option.
Select Filesystem	Use this setting to select one file system from the list.
Path for Boot Option	Enter here a path to the boot option in the format fs0:\path\filename.efi
Create	Select this setting to create your boot option.
►Delete Boot Option	This submenu allows you to remove an EFI boot option form the boot order.

5-9 Security

Choose **Security** from the BIOS Setup main menu with the arrow keys to bring up the SECURITY SETUP menu. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <ENTER>. All Security BIOS settings are described in [Table 5-15](#) below.

Table 5-15. Security Menu Options

Menu Option	Description
Administrator Password	This allows you to create an administrator password for the system.
User Password	This allows you to create user password for the system.

5-10 Save & Exit

Choose **SAVE & EXIT** from the 128 MB SPI Flash EEPROM with AMI® BIOS each node BIOS Setup Utility main menu with the arrow keys to display the **SAVE & EXIT SETUP** menu. All Exit BIOS settings are described in [Table 5-16](#) below.

Table 5-16. Exit Menu Options

Menu Option	Description
Discard Changes and Exit	Highlight this item and hit <ENTER> to exit the BIOS Setup utility without saving any changes you may have made. Any changes you have made to the BIOS Setup will not take effect upon system bootup.
Save Changes and Reset	Highlight this item and hit <ENTER> to save any changes you made and to exit the BIOS Setup utility. The system will reboot and implement the changes you have made to the BIOS Setup.
Save Changes	Highlight this item and hit <ENTER> to save changes done so far to any of the setup options.
Discard Changes	Highlight this item and hit <ENTER> to discard (cancel) any changes you made. You will remain in the Setup utility.
Restore Optimized Defaults	Highlight this item and hit <ENTER> to load the default settings for all items in the BIOS Setup. These are the safest settings to use and are designed for maximum system performance, but may not work best for all computer applications.
Save as Users Defaults	Highlight this item and hit <ENTER> to save changes done so far as user defaults.
Restore User Defaults	Highlight this item and hit <ENTER> to restore the user defaults to all the setup options.
Boot Override	For each boot device you have the option of saving the configuration for it and exiting.

Notes

Disclaimer

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Appendix A

BIOS POST Codes

A-1 BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Table A-1. BIOS POST Messages

BIOS Message	Description
Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
Stuck key	Stuck key on keyboard.
Keyboard error	Keyboard not working.
Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
Keyboard locked - Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
Shadow Ram Failed at offset: nnnn	Shadow RAM failed at offset nnnn of the 64k block at which the error was detected.
System RAM Failed at offset: nnnn	System RAM failed at offset nnnn of in the 64k block at which the error was detected.
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly at offset nnnn .
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
System timer error	The timer test failed. Requires repair of system board.
Real time clock error	Real-Time Clock fails BIOS hardware test. May require board repair.
Check date and time settings	BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of wait states , improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.
Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
Diskette drive A error Diskette drive B error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.
System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
CPU ID:	CPU socket number for Multi-Processor error.
EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
DMA Test Failed	ServerBIOS2 test error: Cannot write to extended DMA (Direct Memory Access) registers.
Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).
Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified device .
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device .
CD ROM Drive	CD ROM Drive identified.
Entering SETUP...	Starting Setup program
Failing Bits: nnnn	The hex number nnnn is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk n (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
nnnn kB Extended RAM Passed	Where nnnn is the amount of RAM in kilobytes successfully tested.
nnnn Cache SRAM Passed	Where nnnn is the amount of system cache in kilobytes successfully tested.
nnnn kB Shadow RAM Passed	Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
nnnn kB System RAM Passed	Where nnnn is the amount of system RAM in kilobytes successfully tested.
One or more I2O Block Storage Devices were excluded from the Setup Boot Menu	There was not enough room in the IPL table to display all installed I2O block-storage devices.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ???? . Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nnnn	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ???? .
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an Option ROM , i.e., an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST. Can be turned off in Setup.
PS/2 Mouse:	PS/2 mouse identified.
Run the I2O Configuration Utility	One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: nnnn	Displays the address nnnn of the upper limit of Upper Memory Blocks , indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

A-2 BIOS POST Codes

This section lists the POST (Power-On Self-Test) codes for the 128 MB SPI Flash EEPROM with AMI® BIOS each node BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

- **One long and two short beeps** – video configuration error
- **One repetitive long beep** – no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to *port 80h*, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to *port 80h*.

Table A-2. Terminal POST Errors

Post Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
22h	1-3-1-3 Test 8742 Keyboard Controller
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line xxxx*
2Eh	1-3-4-3 RAM failure on data bits xxxx* of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
98h	1-2 Search for option ROMs. One long, two short beeps on check-sum failure
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for the boot block in Flash ROM:

Table A-3. Boot Block Flash ROM Terminal POST Errors

Post Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock

Table A-3. Boot Block Flash ROM Terminal POST Errors (Continued)

Post Code	Description
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (xxxx) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the low order byte of the error. It repeats this sequence continuously.

Notes