GE Healthcare

Image Vault, Version 5.0

Service Manual

GE Healthcare Number 5257657-100 Revision 1

Regulatory Requirement

This product complies with regulatory requirements of the following European Directive 93/42/EEC concerning medical devices.

CE

This manual is a reference for the Image Vault. It applies to all versions of the R5.x software.

Proprietary to GE Healthcare

Trademarks

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Copyrights

Contact Information

Contacting GE Healthcare Ultrasound

For additional information or assistance, please contact your local distributor or the appropriate support resource listed on the following pages:

INTERNET

http://www.gehealthcare.com

http://www.gehealthcare.com/usen/ultrasound/products/probe_care.html

USA

GE Healthcare TEL: (1) 800-437-1171
Ultrasound Service Engineering FAX: (1) 414-721-3865
9900 Innovation Drive
Wauwatosa, WI 53226

Clinical Questions

For information in the United States, Canada, Mexico and parts of the Caribbean, call the Customer Answer Center
TEL: (1) 800-682-5327 or (1) 262-524-5698

In other locations, contact your local Applications, Sales or Service Representative.

Service Questions

For service in the United States, call GE CARES

TEL: (1) 800-437-1171

In other locations, contact your local Service Representative.

Accessories Catalog Requests

To request the latest GE Accessories catalog or equipment brochures in the United States, call the Response Center

TEL: (1) 800-643-6439

In other locations, contact your local Applications, Sales or Service Representative.

UNITED KINGDOM

GE Medical Systems TEL: 0800 89 7905 toll free
Coolidge House FAX: +44 753 696067
352 Buckingham Avenue
SLOUGH
Berkshire SL1 4ER

OTHER COUNTRIES

NO TOLL FREE TEL: international code + 33 1 39 20 0007

Manufacturer

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Diagnostics, LLC
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U.S.A

WEEE Label - Purpose & Meaning

The WEEE label has been added to this product's user information.

LABEL	LANGUAGE	PURPOSE/MEANING
	English	This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment.
	Bulgarian (BGR)	Този символ указва, че електронното и електрическото оборудване не трябва да се изхвърля на обикновените места за несортирани отпадъци, а в специални за целта места за разделно събиране. Свържете се с упълномощения представител на производителя за повече информация относно извеждането на оборудването от експлоатация.
	Catalan (CAT)	Aquest símbol indica que els residus dels equips elèctrics i electrònics s'han d'abocar per separat, no com a residus municipals no classificats. Contacteu amb un representant autoritzat del fabricant per obtenir informació sobre com desfer-vos del vostre equip.
	Chinese (CHN)	此符号表示电气和电子设备废弃物不能作为未分类的城市垃圾进行处置，必须另行回收。欲了解关于设备报废的信息，请与制造商授权代表联系。
	Croatian (HRV)	Ovaj simbol znači da se električna i elektronička oprema ne smije bacati kao običan komunalni otpad i da se mora prikupljati odvojeno. Za informacije o odlaganju vaše opreme obratite se ovlaštenom zastupniku proizvođača.
	Czech (CZE)	Tento symbol znamená, že díly elektrických nebo elektronických zařízení nesmí být likvidovány do netříděného odpadu, ale musí být likvidovány samostatně. Obraťte se prosím na autorizovaného představitele výrobce, který poskytne informace týkající se likvidace vašeho přístroje.
	Danish (DAN)	Dette symbol angiver, at elektrisk og elektronisk affald ikke må bortskaffes som usorteret brændbart affald, men skal indsamles særskilt. Kontakt venligst en autoriseret repræsentant for producenten for at få oplysninger om, hvordan dit udstyr skal bortskaffes.

: WEEE Label - Purpose & Meaning

LABEL	LANGUAGE	PURPOSE/MEANING
	Dutch (DUT)	Dit symbool geeft aan dat het afval van elektrische en elektronische apparatuur niet ongescheiden mag worden meegegeven met het huisvuil, maar apart moet worden ingeleverd. Neem contact op met een erkende vertegenwoordiger van de fabrikant voor informatie over het inleveren van uw apparatuur.
	Estonian (EST)	See märk näitab, et tarbetuks muutunud elektri- ja elektroonikaseadmeid ei tohi ära visata sortimata olmejäätmetena, vaid need tuleb eraldi kokku koguda. Seadmete käitlemise kohta küsige lisateavet tootja volitatud esindajalt.
	Finnish (FIN)	Tämä kuvatunnus ilmaisee, että sillä merkittyä sähkö- ja elektroniikkalaitetta ei saa hävittää lajittelemattomana yhdyskuntajätteenä vaan se on kerättävä talteen erikseen. Ota yhteyttä tuotteen valmistajan valtuuttamaan myyntiedustajaan ja kysy lisätietoja laitteen käytöstä poistosta.
	French-France (FRA)	Ce symbole indique que les déchets relatifs à l'équipement électrique et électronique ne doivent pas être jetés comme les ordures ménagères non-triées et doivent être collectés séparément. Contactez un repré sentant agréé du fabricant pour obtenir des informations sur la mise au rebut de votre équipement.
	German (GER)	Dieses Symbol kennzeichnet elektrische und elektronische Geräte, die nicht mit dem gewöhnlichen, unsortierten Hausmüll entsorgt werden dü rfen, sondern separat behandelt werden müssen. Bitte nehmen Sie Kontakt mit einem autorisierten Beauftragten des Herstellers auf, um Informationen hinsichtlich der Entsorgung Ihres Gerätes zu erhalten.
	Greek (GRE)	Αυτό το σύμβολο υποδηλώνει ότι τα απόβλητα ηλεκτρικού και ηλεκτρονικού εξ οπλισμού δεν πρέπει να απορρίπτονται ως κοινά απορρίματα, αλλά να συλλέγον ται ξεχωριστά. Παρακαλούμε επικοινωνήστε με έναν εξουσιοδοτημένο αντιπρό σωπο του κατασκευαστή για πληροφορίες σχετικά με την απόρριψη του εξοπλισ μού.
	Hungarian (HUN)	A szimbólum azt jelzi, hogy az elektromos és elektronikus készülék hulladékát tilos nem szelektív lakossági hulladékként kezelni, hanem elkülönítve kell gyű jteni. Kérjük, a berendezés leselejtezését illetőleg lépjen kapcsolatba a gyártó hivatalos képviseletével.
	Icelandic (ICE)	Merki þetta táknar að rafeindatækjum skal eytt á sérstakan máta, ekki m á losa rafeindatæki í hefðbundin sorphirðuílát sem óflokkað sorp. Vinsamlega hafið samband við umboðsmann framleiðanda fyrir upplý singar um hvernig tækinu skal eytt.

: WEEE Label - Purpose & Meaning

LABEL	LANGUAGE	PURPOSE/MEANING
	Italian (ITA)	Questo simbolo indica che i rifiuti derivanti da apparecchiature elettriche ed elettroniche non devono essere smaltiti come rifiuti municipali indifferenziati e devono invece essere raccolti separatamente. Per informazioni relative alle modalità di smantellamento delle apparecchiature fuori uso, contattare un rappresentante autorizzato del fabbricante.
	Japanese (JPN)	このシンボルは、電気・電子機器の廃棄物を地方自治体の無分別廃棄物として処分してはならず、別個に回収しなければならないということを示しています。ご使用の機器の廃棄方法に関しては、製造元の認可を受けた販売業者にご連絡下さい。
	Korean (KOR)	이 기호는 폐 전기 및 전자 장비를 분류되지 않은 지역별 수거 쓰레기로 폐기해서는 안되며 별도 수집해야 함을 나타냅니다. 장비 폐기와 관련된 정보는 제조업체의 공식 담당자에게 문의하십시오.
	Latvian (LAT)	Šis apzīmējums norāda, ka no elektriskā un elektroniskā aprīkojuma atkritumiem nedrīkst atbrīvoties kā no neškļirotiem mājsaimniecības atkritumiem un tie ir jāsavāc atsevišķi. Lūdzu, sazinieties ar pilnvarotu ražotāja pārstāvi, lai saņemtu informāciju par aprīkojuma ekspluatācijas pārtraukšanu.
	Lithuanian (LIT)	Šis simbolis nurodo, kad elektros ir elektroninės įrangos atliekos turi būti surenkamos atskirai ir negali būti šalinamos kaip nerūšiuotos savivaldybės tvarkomos atliekos. Informacijos apie įrangos veikimo sustabdymą kreipkitės į įgaliotąjį gamintojo atstovą.
	Norwegian (NOR)	Dette symbolet angir at elektrisk og elektronisk utstyr ikke skal kastes som restavfall, men må leveres inn separat. Ta kontakt med en autorisert representant for produsenten hvis du vil ha informasjon om hvordan utstyret skal avhendes.
	Polish (POL)	Ten symbol oznacza, iż składowanie zużytych urządzeń elektrycznych i elektronicznych wraz z ogólnymi odpadami miejskimi jest zabronione. Informacji na temat miejsc składowania tego typu odpadów udziela producent sprzętu.
	Portuguese-Brazilian (POB)	Este símbolo indica que os resíduos do equipamento elétrico e eletrônico não devem ser descartados no sistema de coleta de lixo municipal, e sim coletados separadamente. Favor entrar em contato com um representante autorizado do fabricante para obter informações sobre como descartar seu equipamento.

: WEEE Label - Purpose & Meaning

LABEL	LANGUAGE	PURPOSE/MEANING
	Portuguese-European (PTG)	Este símbolo indica que o lixo resultante de equipamento eléctrico e electrónico não pode ser eliminado como lixo municipal indiferenciado e tem de ser recolhido separadamente. Contacte um representante autorizado do fabricante para obter informações sobre como proceder à eliminação do seu equipamento.
	Romanian (ROM)	Acest simbol indică faptul că deşeurile de echipamente electrice şi electronice nu au voie să fie aruncate nediferențiat ca gunoi menajer şi c ă ele trebuie colectate separat. Vă rugăm să luați legătura cu un reprezentant autorizat al producătorului pentru a obține informații referitoare la eliminarea ecologică a echipamentului dumneavoastră.
	Russian (RUS)	Символ обозначает: недопустимо выбрасывать электрическое и эле ктронное оборудование с неотсортированным бытовым мусором. Он о должно собираться отдельно. Для получения сведений об утилиза ции оборудования обратитесь к авторизованному представителю ко мпании-производителя.
	Serbian (SCC)	Ovaj simbol označava da se otpad električne i elektronske opreme ne sme odlagati zajedno sa običnim gradskim smećem, već se mora pokupiti posebno. Molimo vas da kontaktirate ovlašćenog predstavnika proizvođača svoje opreme, kako biste se informisali o njenom pravilnom rashodu.
	Slovakian (SLK)	Tento symbol označuje, že odpad elektrického a elektronického materiá lu sa nesmie vyhadzovať do netriedeného komunálneho odpadu, ale mus í sa likvidovať oddelene. Viac informácií o likvidácii vášho zariadenia vám poskytne poverený zástupca výrobcu.
	Slovenian (SLN)	Ta simbol obeležava da se elektronski otpad in elektronska oprema ne sme odlagati skup z navadnim mesnim otpadom, ter se mora pobrat posebej. Prosimo vas da kontaktirate pooblaščenega prodajalca opreme, kako bi se informirali o njenem pravilnem rashodu.
	Spanish-Spain (SPA)	Este símbolo indica que el equipo eléctrico y electrónico no debe tirarse con los desechos domésticos y debe tratarse por separado. Contacte con el representante local del fabricante para obtener más información sobre la forma de desechar el equipo.
	Swedish (SWE)	Denna symbol anger att elektriska och elektroniska utrustningar inte får avyttras som osorterat hushållsavfall och måste samlas in separat. Var god kontakta en auktoriserad tillverkarrepresentant för information angående avyttring av utrustningen.

: WEEE Label - Purpose & Meaning

LABEL	LANGUAGE	PURPOSE/MEANING
	Turkish (TUR)	Bu sembol, elektrikli ve elektronik ekipmanların sınıflandırılmamış çöp olarak atılmaması ve ayrı olarak toplanması gerektiğini belirtir. Lütfen ekipmanınızın imhasıyla ilgili olarak üreticinin yetkili temsilcisine baş vurun.

Available Languages

- **THIS SERVICE MANUAL IS AVAILABLE IN ENGLISH ONLY.**
- **IF A CUSTOMER'S SERVICE PROVIDER REQUIRES A LANGUAGE OTHER THAN ENGLISH, IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE TRANSLATION SERVICES.**

WARNING

- **DO NOT ATTEMPT TO SERVICE THE EQUIPMENT UNLESS THIS SERVICE MANUAL HAS BEEN CONSULTED AND IS UNDERSTOOD.**
- **FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY TO THE SERVICE PROVIDER, OPERATOR OR PATIENT FROM ELECTRIC SHOCK, MECHANICAL OR OTHER HAZARDS.**

- **CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.**
- **SI LE PRESTATAIRE DE SERVICES DU CLIENT A BESOIN DE CE MANUEL DANS UNE AUTRE LANGUE QUE L'ANGLAIS, IL INCOMBE AU CLIENT DE LE FAIRE TRADUIRE.**

AVERTISSEMENT

- **NE PAS TENTER D'INTERVENTION SUR LES ÉQUIPEMENTS TANT QUE LE MANUEL DE MAINTENANCE N'A PAS ÉTÉ CONSULTÉ ET COMPRIS.**
- **LE NON-RESPECT DE CET AVERTISSEMENT PEUT ENTRAÎNER CHEZ LE TECHNICIEN, L'OPÉRATEUR OU LE PATIENT DES BLESSURES DUES À DES DANGERS ÉLECTRIQUES, MÉCANIQUES OU AUTRES.**

- **DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.**
- **FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENÖTIGT, IST ES AUFGABE DES KUNDEN, FÜR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.**

WARNUNG

- **WARTEN SIE DIESES GERÄT NUR, WENN SIE DIE ENTSPRECHENDEN ANWEISUNGEN IM KUNDENDIENST-HANDBUCH GELESEN HABEN UND NACHVOLLZIEHEN KÖNNEN.**
- **WIRD DIESE WARNUNG NICHT BEACHTET, SO KANN ES ZU VERLETZUNGEN DES KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH ELEKTRISCHE SCHLÄGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.**

AVISO

- **ESTE MANUAL DE SERVICIO SÓLO ESTÁ DISPONIBLE EN INGLÉS.**
- **SI ALGÚN PROVEEDOR DE SERVICIOS AJENO A GEMS SOLICITA UN IDIOMA QUE NO SEA EL INGLÉS, LA TRADUCCIÓN ES RESPONSABILIDAD DEL CLIENTE.**
- **NO SE DEBERÁ DAR SERVICIO TÉCNICO AL EQUIPO SIN HABER CONSULTADO Y COMPRENDIDO ESTE MANUAL DE SERVICIO.**
- **LA NO OBSERVANCIA DEL PRESENTE AVISO PUEDE DAR LUGAR A QUE EL PROVEEDOR DE SERVICIOS, EL USUARIO O EL PACIENTE SUFRAN LESIONES PROVOCADAS POR DESCARGAS ELÉCTRICAS, PROBLEMAS MECÁNICOS O PELIGROS DE OTRA NATURALEZA.**

ATENÇÃO

- **ESTE MANUAL DE ASSISTÊNCIA TÉCNICA SÓ SE ENCONTRA DISPONÍVEL EM INGLÊS.**
- **SE QUALQUER OUTRO SERVIÇO DE ASSISTÊNCIA TÉCNICA, QUE NÃO A GEMS, SOLICITAR ESTES MANUAIS NOUTRO IDIOMA, É DA RESPONSABILIDADE DO CLIENTE FORNECER OS SERVIÇOS DE TRADUÇÃO.**
- **NÃO TENTE REPARAR O EQUIPAMENTO SEM TER CONSULTADO E COMPREENDIDO ESTE MANUAL DE ASSISTÊNCIA TÉCNICA.**
- **O NÃO CUMPRIMENTO DESTE AVISO PODE PÔR EM PERIGO A SEGURANÇA DO TÉCNICO, OPERADOR OU PACIENTE DEVIDO A CHOQUES ELÉTRICOS, MECÂNICOS OU OUTROS.**

AVVERTENZA

- **IL PRESENTE MANUALE DI MANUTENZIONE È DISPONIBILE SOLTANTO IN INGLESE.**
- **SE UN ADDETTO ALLA MANUTENZIONE ESTERNO ALLA GEMS RICHIEDE IL MANUALE IN UNA LINGUA DIVERSA, IL CLIENTE È TENUTO A PROVVEDERE DIRETTAMENTE ALLA TRADUZIONE.**
- **SI PROCEDA ALLA MANUTENZIONE DELL'APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO.**
- **NON TENERE CONTO DELLA PRESENTE AVVERTENZA POTREBBE FAR COMPIERE OPERAZIONI DA CUI DERIVINO LESIONI ALL'ADDETTO ALLA MANUTENZIONE, ALL'UTILIZZATORE ED AL PAZIENTE PER FOLGORAZIONE ELETTRICA, PER URTI MECCANICI OD ALTRI RISCHI.**

HOIATUS

- **KÄESOLEV TEENINDUSJUHEND ON SAADAVAL AINULT INGLISE KEELES.**
- **KUI KLIENDITEENINDUSE OSUTAJA NÕUAB JUHENDIT INGLISE KEELEST ERINEVAS KEELES, VASTUTAB KLIENT TÕLKETEENUSE OSUTAMISE EEST.**
- **ÄRGE ÜRITAGE SEADMEID TEENINDADA ENNE EELNEVALT KÄESOLEVA TEENINDUSJUHENDIGA TUTVUMIST JA SELLEST ARU SAAMIST.**
- **KÄESOLEVA HOIATUSE EIRAMINE VÕIB PÕHJUSTADA TEENUSEOSUTAJA, OPERAATORI VÕI PATSIENDI VIGASTAMIST ELEKTRILÖÖGI, MEHAANILISE VÕI MUU OHU TAGAJÄRJEL.**

: Available Languages

VAROITUS

- **TÄMÄ HUOLTO-OHJE ON SAATAVILLA VAIN ENGLANNIKSI.**
- **JOS ASIAKKAAN PALVELUNTARJOAJA VAATII MUUTA KUIN ENGLANNINKIELISTÄ MATERIAALIA, TARVITTAVAN KÄÄNNÖKSEN HANKKIMINEN ON ASIAKKAAN VASTUULLA.**
- **ÄLÄ YRITÄ KORJATA LAITTEISTOA ENNEN KUIN OLET VARMASTI LUKENUT JA YMMÄRTÄNYT TÄMÄN HUOLTO-OHJEEN.**
- **MIKÄLI TÄTÄ VAROITUSTA EI NOUDATETA, SEURAUKSENA VOI OLLA PALVELUNTARJOAJAN, LAITTEISTON KÄYTTÄJÄN TAI POTILAAN VAHINGOITTUMINEN SÄHKÖISKUN, MEKAANISEN VIAN TAI MUUN VAARATILANTEEN VUOKSI.**

ΠΡΟΕΙΔΟΠΟΙΗΣΗ

- **ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕΡΒΙΣ ΔΙΑΤΙΘΕΤΑΙ ΣΤΑ ΑΓΓΛΙΚΑ ΜΟΝΟ.**
- **ΕΑΝ ΤΟ ΑΤΟΜΟ ΠΑΡΟΧΗΣ ΣΕΡΒΙΣ ΕΝΟΣ ΠΕΛΑΤΗ ΑΠΑΙΤΕΙ ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕ ΓΛΩΣΣΑ ΕΚΤΟΣ ΤΩΝ ΑΓΓΛΙΚΩΝ, ΑΠΟΤΕΛΕΙ ΕΥΘΥΝΗ ΤΟΥ ΠΕΛΑΤΗ ΝΑ ΠΑΡΕΧΕΙ ΥΠΗΡΕΣΙΕΣ ΜΕΤΑΦΡΑΣΗΣ.**
- **ΜΗΝ ΕΠΙΧΕΙΡΗΣΕΤΕ ΤΗΝ ΕΚΤΕΛΕΣΗ ΕΡΓΑΣΙΩΝ ΣΕΡΒΙΣ ΣΤΟΝ ΕΞΟΠΛΙΣΜΟ ΕΚΤΟΣ ΕΑΝ ΕΧΕΤΕ ΣΥΜΒΟΥΛΕΥΤΕΙ ΚΑΙ ΕΧΕΤΕ ΚΑΤΑΝΟΗΣΕΙ ΤΟ ΠΑΡΟΝ ΕΓΧΕΙΡΙΔΙΟ ΣΕΡΒΙΣ.**
- **ΕΑΝ ΔΕ ΛΑΒΕΤΕ ΥΠΟΨΗ ΤΗΝ ΠΡΟΕΙΔΟΠΟΙΗΣΗ ΑΥΤΗ, ΕΝΔΕΧΕΤΑΙ ΝΑ ΠΡΟΚΛΗΘΕΙ ΤΡΑΥΜΑΤΙΣΜΟΣ ΣΤΟ ΑΤΟΜΟ ΠΑΡΟΧΗΣ ΣΕΡΒΙΣ, ΣΤΟ ΧΕΙΡΙΣΤΗ Ή ΣΤΟΝ ΑΣΘΕΝΗ ΑΠΟ ΗΛΕΚΤΡΟΠΛΗΞΙΑ, ΜΗΧΑΝΙΚΟΥΣ Ή ΑΛΛΟΥΣ ΚΙΝΔΥΝΟΥΣ.**

FIGYELMEZTETÉS

- **EZEN KARBANTARTÁSI KÉZIKÖNYV KIZÁRÓLAG ANGOL NYELVEN ÉRHETŐ EL.**
- **HA A VEVŐ SZOLGÁLTATÓJA ANGOLTÓL ELTÉRŐ NYELVRE TART IGÉNYT, AKKOR A VEVŐ FELELŐSSÉGE A FORDÍTÁS ELKÉSZÍTTETÉSE.**
- **NE PRÓBÁLJA ELKEZDENI HASZNÁLNI A BERENDEZÉST, AMÍG A KARBANTARTÁSI KÉZIKÖNYVBEN LEÍRTAKAT NEM ÉRTELMEZTÉK.**
- **EZEN FIGYELMEZTETÉS FIGYELMEN KÍVÜL HAGYÁSA A SZOLGÁLTATÓ, MŰKÖDTETŐ VAGY A BETEG ÁRAMÜTÉS, MECHANIKAI VAGY EGYÉB VESZÉLYHELYZET MIATTI SÉRÜLÉSÉT EREDMÉNYEZHETI.**

VIÐVÖRUN

- **ÞESSI ÞJÓNUSTUHANDBÓK ER EINGÖNGU FÁANLEG Á ENSKU.**
- **EF ÞJÓNUSTUAÐILI VIÐSKIPTAMANNS ÞARFNAST ANNARS TUNGUMÁLS EN ENSKU, ER ÞAÐ Á ÁBYRGÐ VIÐSKIPTAMANNS AÐ ÚTVEGA ÞÝÐINGU.**
- **REYNIÐ EKKI AÐ ÞJÓNUSTA TÆKIÐ NEMA EFTIR AÐ HAFA SKOÐAÐ OG SKILIÐ ÞESSA ÞJÓNUSTUHANDBÓK.**
- **EF EKKI ER FARIÐ AÐ ÞESSARI VIÐVÖRUN GETUR ÞAÐ VALDIÐ MEIÐSLUM ÞJÓNUSTUVEITANDA, STJÓRNANDA EÐA SJÚKLINGS VEGNA RAFLOSTS, VÉLRÆNNAR EÐA ANNARRAR HÆTTU.**

VÝSTRAHA

- **TENTO SERVISNÍ NÁVOD EXISTUJE POUZE V ANGLICKÉM JAZYCE.**
- **V PŘÍPADĚ, ŽE POSKYTOVATEL SLUŽEB ZÁKAZNÍKŮM POTŘEBUJE NÁVOD V JINÉM JAZYCE, JE ZAJIŠTĚNÍ PŘEKLADU DO ODPOVÍDAJÍCÍHO JAZYKA ÚKOLEM ZÁKAZNÍKA.**
- **NEPROVÁDĚJTE ÚDRŽBU TOHOTO ZAŘÍZENÍ, ANIŽ BYSTE SI PŘEČETLI TENTO SERVISNÍ NÁVOD A POCHOPILI JEHO OBSAH.**
- **V PŘÍPADĚ NEDODRŽOVÁNÍ TÉTO VÝSTRAHY MŮŽE DOJÍT ÚRAZU ELEKTRICKÁM PROUDEM PRACOVNÍKA POSKYTOVATELE SLUŽEB, OBSLUŽNÉHO PERSONÁLU NEBO PACIENTŮ VLIVEM ELEKTRICKÉHOP PROUDU, RESPEKTIVE VLIVEM K RIZIKU MECHANICKÉHO POŠKOZENÍ NEBO JINÉMU RIZIKU.**

ADVARSEL

- **DENNE SERVICEMANUAL FINDES KUN PÅ ENGELSK.**
- **HVIS EN KUNDES TEKNIKER HAR BRUG FOR ET ANDET SPROG END ENGELSK, ER DET KUNDENS ANSVAR AT SØRGE FOR OVERSÆTTELSE.**
- **FORSØG IKKE AT SERVICERE UDSTYRET MEDMINDRE DENNE SERVICEMANUAL ER BLEVET LÆST OG FORSTÅET.**
- **MANGLENDE OVERHOLDELSE AF DENNE ADVARSEL KAN MEDFØRE SKADE PÅ GRUND AF ELEKTRISK, MEKANISK ELLER ANDEN FARE FOR TEKNIKEREN, OPERATØREN ELLER PATIENTEN.**

WAARSCHUWING

- **DEZE ONDERHOUDSHANDLEIDING IS ENKEL IN HET ENGELS VERKRIJGBAAR.**
- **ALS HET ONDERHOUDSPERSONEEL EEN ANDERE TAAL VEREIST, DAN IS DE KLANT VERANTWOORDELIJK VOOR DE VERTALING ERVAN.**
- **PROBEER DE APPARATUUR NIET TE ONDERHOUDEN VOORDAT DEZE ONDERHOUDSHANDLEIDING WERD GERAADPLEEGD EN BEGREPEN IS.**
- **INDIEN DEZE WAARSCHUWING NIET WORDT OPGEVOLGD, ZOU HET ONDERHOUDSPERSONEEL, DE OPERATOR OF EEN PATIËNT GEWOND KUNNEN RAKEN ALS GEVOLG VAN EEN ELEKTRISCHE SCHOK, MECHANISCHE OF ANDERE GEVAREN.**

BRĪDINĀJUMS

- **ŠĪ APKALPES ROKASGRĀMATA IR PIEEJAMA TIKAI ANGĻU VALODĀ.**
- **JA KLIENTA APKALPES SNIEDZĒJAM NEPIECIEŠAMA INFORMĀCIJA CITĀ VALODĀ, NEVIS ANGĻU, KLIENTA PIENĀKUMS IR NODROŠINĀT TULKOŠANU.**
- **NEVEICIET APRĪKOJUMA APKALPI BEZ APKALPES ROKASGRĀMATAS IZLASĪŠANAS UN SAPRAŠANAS.**
- **ŠĪ BRĪDINĀJUMA NEIEVĒROŠANA VAR RADĪT ELEKTRISKĀS STRĀVAS TRIECIENA, MEHĀNISKU VAI CITU RISKU IZRAISĪTU TRAUMU APKALPES SNIEDZĒJAM, OPERATORAM VAI PACIENTAM.**

: Available Languages

ĮSPĖJIMAS

- **ŠIS EKSPLOATAVIMO VADOVAS YRA IŠLEISTAS TIK ANGLŲ KALBA.**
- **JEI KLIENTO PASLAUGŲ TEIKĖJUI REIKIA VADOVO KITA KALBA – NE ANGLŲ, VERTIMU PASIRŪPINTI TURI KLIENTAS.**
- **NEMĖGINKITE ATLIKTI ĮRANGOS TECHNINĖS PRIEŽIŪROS DARBŲ, NEBENT VADOVAUTUMĖTĖS ŠIUO EKSPLOATAVIMO VADOVU IR JĮ SUPRASTUMĖTE**
- **NEPAISANT ŠIO PERSPĖJIMO, PASLAUGŲ TEIKĖJAS, OPERATORIUS AR PACIENTAS GALI BŪTI SUŽEISTAS DĖL ELEKTROS SMŪGIO, MECHANINIŲ AR KITŲ PAVOJŲ.**

ADVARSEL

- **DENNE SERVICEHÅNDBOKEN FINNES BARE PÅ ENGELSK.**
- **HVIS KUNDENS SERVICELEVERANDØR TRENGER ET ANNET SPRÅK, ER DET KUNDENS ANSVAR Å SØRGE FOR OVERSETTELSE.**
- **IKKE FORSØK Å REPARERE UTSTYRET UTEN AT DENNE SERVICEHÅNDBOKEN ER LEST OG FORSTÅTT.**
- **MANGLENDE HENSYN TIL DENNE ADVARSELEN KAN FØRE TIL AT SERVICELEVERANDØREN, OPERATØREN ELLER PASIENTEN SKADES PÅ GRUNN AV ELEKTRISK STØT, MEKANISKE ELLER ANDRE FARER.**

OSTRZEŻENIE

- **NINIEJSZY PODRĘCZNIK SERWISOWY DOSTĘPNY JEST JEDYNIE W JĘZYKU ANGIELSKIM.**
- **JEŚLI FIRMA ŚWIADCZĄCA KLIENTOWI USŁUGI SERWISOWE WYMAGA UDOSTĘPNIENIA PODRĘCZNIKA W JĘZYKU INNYM NIŻ ANGIELSKI, OBOWIĄZEK ZAPEWNIENIA STOSOWNEGO TŁUMACZENIA SPOCZYWA NA KLIENCIE.**
- **NIE PRÓBOWAĆ SERWISOWAĆ NINIEJSZEGO SPRZĘTU BEZ UPRZEDNIEGO ZAPOZNANIA SIĘ Z PODRĘCZNIKIEM SERWISOWYM.**
- **NIEZASTOSOWANIE SIĘ DO TEGO OSTRZEŻENIA MOŻE GROZIĆ OBRAŻENIAMI CIAŁA SERWISANTA, OPERATORA LUB PACJENTA W WYNIKU PORAŻENIA PRĄDEM, URAZU MECHANICZNEGO LUB INNEGO RODZAJU ZAGROŻEŃ.**

ATENȚIE

- **ACEST MANUAL DE SERVICE ESTE DISPONIBIL NUMAI ÎN LIMBA ENGLEZĂ.**
- **DACĂ UN FURNIZOR DE SERVICII PENTRU CLIENȚI NECESITĂ O ALTĂ LIMBĂ DECÂT CEA ENGLEZĂ, ESTE DE DATORIA CLIENTULUI SĂ FURNIZEZE O TRADUCERE.**
- **NU ÎNCERCAȚI SĂ REPARAȚI ECHIPAMENTUL DECÂT ULTERIOR CONSULTĂRII ŞI ÎNȚELEGERII ACESTUI MANUAL DE SERVICE.**
- **IGNORAREA ACESTUI AVERTISMENT AR PUTEA DUCE LA RĂNIREA DEPANATORULUI, OPERATORULUI SAU PACIENTULUI ÎN URMA PERICOLELOR DE ELECTROCUTARE, MECANICE SAU DE ALTĂ NATURĂ.**

- **ДАННОЕ РУКОВОДСТВО ПО ОБСЛУЖИВАНИЮ ПРЕДОСТАВЛЯЕТСЯ ТОЛЬКО НА АНГЛИЙСКОМ ЯЗЫКЕ.**
- **ЕСЛИ СЕРВИСНОМУ ПЕРСОНАЛУ КЛИЕНТА НЕОБХОДИМО РУКОВОДСТВО НЕ НА АНГЛИЙСКОМ ЯЗЫКЕ, КЛИЕНТУ СЛЕДУЕТ САМОСТОЯТЕЛЬНО ОБЕСПЕЧИТЬ ПЕРЕВОД.**

ОСТОРОЖНО!

- **ПЕРЕД ОБСЛУЖИВАНИЕМ ОБОРУДОВАНИЯ ОБЯЗАТЕЛЬНО ОБРАТИТЕСЬ К ДАННОМУ РУКОВОДСТВУ И ПОЙМИТЕ ИЗЛОЖЕННЫЕ В НЕМ СВЕДЕНИЯ.**
- **НЕСОБЛЮДЕНИЕ УКАЗАННЫХ ТРЕБОВАНИЙ МОЖЕТ ПРИВЕСТИ К ТОМУ, ЧТО СПЕЦИАЛИСТ ПО ТЕХОБСЛУЖИВАНИЮ, ОПЕРАТОР ИЛИ ПАЦИЕНТ ПОЛУЧАТ УДАР ЭЛЕКТРИЧЕСКИМ ТОКОМ, МЕХАНИЧЕСКУЮ ТРАВМУ ИЛИ ДРУГОЕ ПОВРЕЖДЕНИЕ.**

- **TÁTO SERVISNÁ PRÍRUČKA JE K DISPOZÍCII LEN V ANGLIČTINE.**
- **AK ZÁKAZNÍKOV POSKYTOVATEĽ SLUŽIEB VYŽADUJE INÝ JAZYK AKO ANGLIČTINU, POSKYTNUTIE PREKLADATEĽSKÝCH SLUŽIEB JE ZODPOVEDNOSŤOU ZÁKAZNÍKA.**

UPOZORNENIE

- **NEPOKÚŠAJTE SA VYKONÁVAŤ SERVIS ZARIADENIA SKÔR, AKO SI NEPREČÍTATE SERVISNÚ PRÍRUČKU A NEPOROZUMIETE JEJ.**
- **ZANEDBANIE TOHTO UPOZORNENIA MÔŽE VYÚSTIŤ DO ZRANENIA POSKYTOVATEĽA SLUŽIEB, OBSLUHUJÚCEJ OSOBY ALEBO PACIENTA ELEKTRICKÝM PRÚDOM, PRÍPADNE DO MECHANICKÉHO ALEBO INÉHO NEBEZPEČENSTVA.**

- **DEN HÄR SERVICEHANDBOKEN FINNS BARA TILLGÄNGLIG PÅ ENGELSKA.**
- **OM EN KUNDS SERVICETEKNIKER HAR BEHOV AV ETT ANNAT SPRÅK ÄN ENGELSKA ANSVARAR KUNDEN FÖR ATT TILLHANDAHÅLLA ÖVERSÄTTNINGSTJÄNSTER.**

VARNING

- **FÖRSÖK INTE UTFÖRA SERVICE PÅ UTRUSTNINGEN OM DU INTE HAR LÄST OCH FÖRSTÅR DEN HÄR SERVICEHANDBOKEN.**
- **OM DU INTE TAR HÄNSYN TILL DEN HÄR VARNINGEN KAN DET RESULTERA I SKADOR PÅ SERVICETEKNIKERN, OPERATÖREN ELLER PATIENTEN TILL FÖLJD AV ELEKTRISKA STÖTAR, MEKANISKA FAROR ELLER ANDRA FAROR.**

- **BU SERVİS KILAVUZU YALNIZCA İNGİLİZCE OLARAK SAĞLANMIŞTIR.**
- **EĞER MÜŞTERİ TEKNİSYENİ KILAVUZUN İNGİLİZCE DIŞINDAKİ BİR DİLDE OLMASINI İSTERSE, KILAVUZU TERCÜME ETTİRMEK MÜŞTERİNİN SORUMLULUĞUNDADIR.**

DİKKAT

- **SERVİS KILAVUZUNU OKUYUP ANLAMADAN EKİPMANLARA MÜDAHALE ETMEYİNİZ.**
- **BU UYARININ GÖZ ARDI EDİLMESİ, ELEKTRİK ÇARPMASI YA DA MEKANİK VEYA DİĞER TÜRDEN KAZALAR SONUCUNDA TEKNİSYENİN, OPERATÖRÜN YA DA HASTANIN YARALANMASINA YOL AÇABİLİR.**

このサービスマニュアルには英語版しかありません。
ＧＥＭＳ以外でサービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。

警告

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この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。

本维修手册仅存有英文本。
非 GEMS 公司的维修员要求非英文本的维修手册时，客户需自行负责翻译。

注意:

未详细阅读和完全了解本手册之前，不得进行维修。
忽略本注意事项会对维修员，操作员或病人造成触电，机械伤害或其他伤害。

경고

- 본 서비 지침는 영 만 이 실 수 있다 .
- 고 서비 제 가 영어 이외 언 요 경우 , 번역 서비 제 는 것은 고 책임다
- 본 서비 지침 참 고 이해지 않는 한은 해당 장 수 시 지 마 오 .
- 이 경 유 지 않 전기 쇼크 , 기 의 혹은 다른 위 부터 서비 제 , 운 혹은 환
  위 가할 수 있다 .

Vermont Mercury Label - Purpose & Meaning

The Vermont Mercury (Hg) label has been added to this product's user information to indicate the presence of mercury (Hg) on the product.

Table 1 Vermont HG Label

LABEL	LANGUAGE	PURPOSE/MEANING
	English	This product consists of devices that may contain mercury, which must be recycled or disposed of in accordance with local, state, or country laws. (Within this sytem, the backlight lamps in the monitor display, contain mercury.)
	Bulgarian	Този продукт е съставен от устройства, които могат да съдържат живак. Живакът трябва да бъде рециклиран или изхвърлен в съответствие с местното, щатско или национално законодателство. (Живак се съдържа във фоновите лампи на дисплея на монитора.)
	Catalan (CAT)	Aquest producte té dispositius que poden contenir mercuri, que s'ha de reciclar o eliminar d'acord amb les lleis locals, estatals o del país. (En aquest sistema, les llums d'iluminació posterior de la pantalla del monitor contenen mercuri.)
	Chinese (CHN)	本产品所含设备可能含有水银，必须根据当地、各省或国家的法律进行回收或处理。（本系统内屏幕显示器的背光灯含有水银。）
	Croatian	Ovaj proizvod se sastoji od uređaja koji mogu sadržavati živu. U skladu s time, njihovo odlaganje ili recikliranje mora se sprovoditi u skladu s važećim lokalnim ili državnim zakonima. (Unutar ovog sustava, žarulje pozadinskog svjetla za zaslon monitora sadrže živu.)

Table 1 Vermont HG Label (Continued)

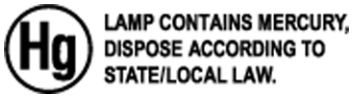
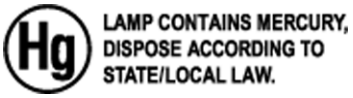
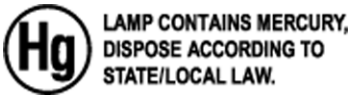
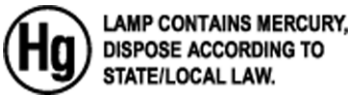
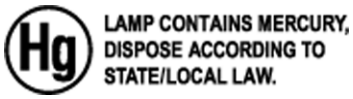
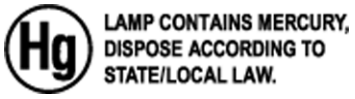
LABEL	LANGUAGE	PURPOSE/MEANING
	Czech (CZE)	Tento výrobek se skládá ze zařízení, která mohou obsahovat rtuť. Ta musí být recyklována nebo zlikvidována v souladu s místními, státními nebo národními zákony. (V tomto systému obsahují rtuť zářivky sloužící k podsvícení monitoru.)
	Danish (DAN)	Dette produkt består af enheder, der kan indeholde kviksølv, som skal genbruges eller bortskaffes i overensstemmelse med lokale eller nationale love. (I dette system indeholder lamperne i baggrundslyset i skærmen kviksølv).
	Dutch (DUT)	Dit product bestaat uit onderdelen die mogelijk kwik bevatten. Deze producten moeten worden gerecycleerd of afgevoerd overeenkomstig de plaatselijke, regionale of landelijke wetgeving. (In dit systeem bevatten de achtergrondverlichtingslampen van het monitorscherm kwik.)
	Estonian (EST)	Käesolev toode koosneb seadmetest, mis võivad sisaldada elavhõbedat. See tuleb ümber töödelda või kasutuselt kõrvaldada vastavalt kohalikele või riiklikele eeskirjadele. (Käesolevas süsteemis sisaldavad elavhõbedat kuvari taustvalgustuse lambid.)
	Finnish (FIN)	Tässä tuotteessa on sellaisia laitteita, jotka voivat sisältää elohopeaa. Elohopea on kierrätettävä tai hävitettävä paikallisten määräysten ja lakien mukaisesti. (Tässä järjestelmässä näytön taustavalon lampuissa on elohopeaa.)
	French- France (FRA)	Ce produit est constitué d'éléments pouvant contenir du mercure. Celui-ci doit être recyclé ou mis au rebut conformément à la législation locale ou nationale. (Dans ce système, les lampes utilisées pour le rétroéclairage de l'écran contiennent du mercure.)

Table 1 Vermont HG Label (Continued)

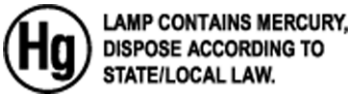
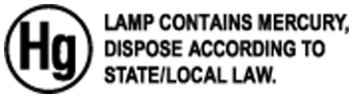
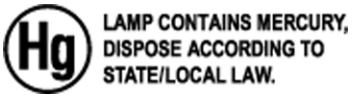
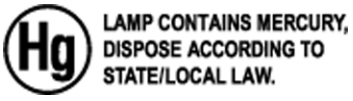
LABEL	LANGUAGE	PURPOSE/MEANING
	German (GER)	Dieses Produkt besteht aus Vorrichtungen, die Quecksilber enthalten können, das in Übereinstimmung mit allen geltenden Vorschriften zu recyceln oder zu entsorgen ist (in diesem System enthalten die Lampen zur Hintergrundbeleuchtung der Monitoranzeige Quecksilber).
	Greek (GRE)	Αυτό το προϊόν αποτελείται από συσκευές που ενδέχεται να περιέχουν υδράργυρο, ο οποίος πρέπει να ανακυκλωθεί ή απορριφθεί σύμφωνα με την τοπική ή εθνική νομοθεσία. (Εντός του συστήματος, οι λυχνίες οπίσθιου φωτισμού στην οθόνη περιέχουν υδράργυρο.)
	Hungarian (HUN)	Ez a termék olyan eszközökből épül fel, amelyek higanyt tartalmazhatnak. Ezeket a helyi vagy országos jogszabályoknak megfelelően kell újrahasznosítani vagy ártalmatlanítani. (Ebben a rendszerben a monitor háttérvilágítását biztosító lámpa tartalmaz higanyt.)
	Icelandic (ICE)	Þessi vara er með búnaði sem getur innihaldið kvikasilfur, sem þarf að endurvinna eða farga í samræmi við lög á hverjum stað eða landslög. (Ljósin fyrir baklýsingu í skjánum í þessi tæki innihalda kvikasilfur.)
	Italian (ITA)	Questo prodotto è costituito da dispositivi che possono contenere mercurio e che devono pertanto essere riciclati e smaltiti in conformità con le normative locali, regionali o statali. Nel caso specifico di questo sistema, il mercurio è contenuto nelle sorgenti luminose di retroilluminazione del monitor.
	Japanese (JPN)	本製品は水銀を含む機器で構成されています。それらは地域法、州法、国法に従って再資源化または廃棄されなければいけません。(本システムでは、モニター画面上のバックライト・ランプに水銀が含まれています。)

Table 1 Vermont HG Label (Continued)

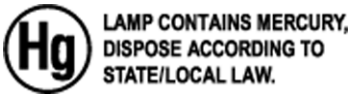
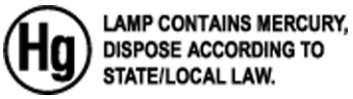
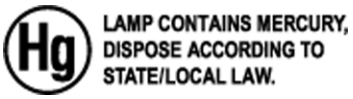
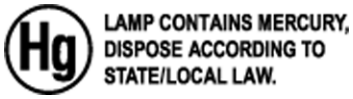
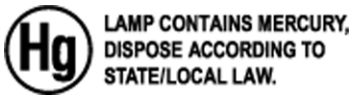
LABEL	LANGUAGE	PURPOSE/MEANING
	Korean	이 제품은 수은이 포함되어 있을 수 있는 장치들로 구성되어 있습니다. 수은은 지방법, 주법 또는 국가 법률에 따라 재생 또는 폐기되어야 합니다. (이 시스템의 경우 모니터 디스플레이의 백라이트 램프에 수은이 들어 있습니다.)
	Latvian (LAT)	Šis produkts sastāv no ierīcēm, kas varētu saturēt dzīvsudrabu, kas jāpārstrādā vai jāutilizē saskaņā ar vietējiem vai valsts likumiem. (Šajā sistēmā monitora displeja aizmugurgaismojuma lampas satur dzīvsudrabu.)
	Lithuanian (LIT)	Šį gaminį sudaro įrenginiai, kuriuose gali būti gyvsidabrio, todėl jie turi būti perdirbti ar išmesti laikantis vietos ar šalies įstatymų. (Šios sistemos monitoriaus vaizdo foninio apšvietimo lempose yra gyvsidabrio.)
	Norwegian (NOR)	Dette produktet består av enheter som kan inneholde kvikksølv, som må resirkuleres eller kasseres i samsvar med lokale eller nasjonale forskrifter. (I dette systemet kan baklyslampene i monitordisplayet inneholde kvikksølv.)
	Polish (POL)	Produkt ten obejmuje urządzenia, które mogą zawierać rtęć; metal ten należy poddawać ponownemu przetworzeniu lub usunąć w sposób zgodny z przepisami lokalnymi oraz państwowymi. (W obrębie systemu, rtęć zawierają lampy tylnego podświetlenia ekranu monitora.)
	Portuguese-Brazilian (POB)	Este produto consiste em dispositivos que podem conter mercúrio, os quais devem ser reciclados ou descartados conforme a legislação local, estadual ou do país. (Neste sistema, as luzes posteriores do monitor contêm mercúrio.)

Table 1 Vermont HG Label (Continued)

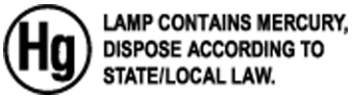
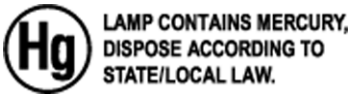
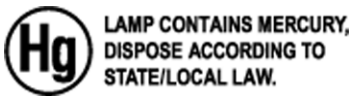
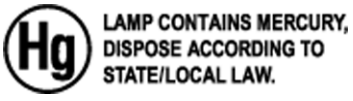
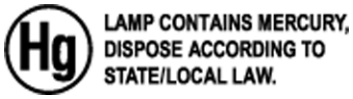
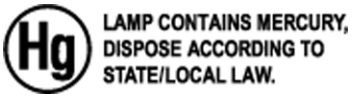
LABEL	LANGUAGE	PURPOSE/MEANING
	Portuguese-Portugal	Este produto é composto por dispositivos que podem conter mercúrio, que deve ser reciclado ou eliminado em conformidade com a legislação local, estatal ou nacional. (Neste sistema, as lâmpadas de retroiluminação incorporadas no visor do monitor contêm mercúrio.)
	Romanian (ROM)	Acest produs include componente care pot conține mercur, ele trebuie deci aruncate sau reciclate în conformitate cu prevederile legale în vigoare, reglementările locale, ale țării sau ale statului. (Lămpile de afişare a monitorului din acest echipament conțin mercur.)
	Russian (RUS)	Это изделие состоит из устройств которые могут содержать ртуть, и утилизация или вторичная переработка которых должна проводиться в соответствии с местными законами, законами штата или страны. (В рамках этой системы ртуть содержат лампы подсветки монитора.)
	Serbian (SCC) (Latin)	Ovaj proizvod se sastoji od komponenata koje možda sadrže živu. One se moraju reciklirati ili odložiti u skladu sa lokalnim, pokrajinskim ili državnim zakonima (u ovom sistemu živu sadrže lampe za pozadinsko osvetljenje monitora).
	Serbian (SCC) (Cyrillic)	Овај производ се састоји од компонената које можда садрже живу. Оне се морају рециклирати или одложити у складу са локалним, покрајинским или државним законима (у овом систему живу садрже лампе за позадинско осветљење монитора).
	Slovakian (SLK)	Tento výrobok pozostáva zo zariadení, ktoré môžu obsahovať ortuť, ktorá sa musí recyklovať alebo likvidovať v súlade s miestnymi, štátnymi alebo národnými právnymi predpismi. (V tomto systéme, žiarovky podsvietenia v displeji monitora obsahujú ortuť.)

Table 1 Vermont HG Label (Continued)

LABEL	LANGUAGE	PURPOSE/MEANING
	Slovenian (SLN)	Ta izdelek sestavljajo naprave, ki lahko vsebujejo živo srebro, zato jih je treba reciklirati ali zavreči v skladu z lokalnimi, zveznimi ali državnimi zakoni. (V tem sistemu živo srebro vsebujejo žarnice za osvetlitev zaslona monitorja iz ozadja.)
	Spanish-Spain (SPA)	Este producto está formado por dispositivos que pueden contener mercurio, el cual ha de ser reciclado o desechado de acuerdo con la legislación local, estatal o nacional (en este sistema, las lámparas de retroiluminación de la pantalla del monitor contienen mercurio).
	Swedish (SWE)	Denna produkt består av enheter som kan innehålla kvicksilver, som måste återvinnas eller kasseras i enlighet med lokala och nationella miljöbestämmelser. (Inuti detta system kan bakgrundsbelysningslamporna i bildskärmen innehålla kvicksilver.)
	Turkish (TUR)	Bu ürün, cýva içerebilen cihazlardan oluțmaktadýr; söz konusu cihazlarýn geri dönüțümü veya imhasý, yerel yasalar ile eyalet ve ülke yasalarýnýn gereklerine uygun țekilde yapýlmalýdýr. (Bu sistemde, monitör ekranýndaki arka aydýnlatma lambalarý, cýva içerir).

For your notes

1 Introduction

For your notes

Revision Information

Each page of this document has the document part number and revision letter at the bottom of the page. The revision letter identifies the document's update level.

The revision history of this document is summarized in the table below.

Revision	Date	Comment
1	April 2009	Initial release of manual

Manufacturer's Responsibilities

GE Healthcare is responsible for the effects of safety, reliability, and performance only if:

- Assembly operations, extensions, readjustments, modifications, or repairs are carried out by trained personnel.
- The electrical installation of the relevant room complies with the requirements of the appropriate regulations.
- The equipment is used in accordance with the instructions for use.

Regulatory Information

Product Classification

United States: The product is a Class 1 exempt medical device, subject only to general controls and applicable Federal radiation protection standards. The hardware is not patient care equipment and is not to be located in a patient care area.

Canada: The product is a Class 1 medical device.

For any other country please contact the local GE sales office in the country you reside.

Conformance

Refer to the applicable hardware vendor manuals to confirm regulatory compliance information. Since the Image Vault application is run on third-party hardware, the respective vendors are responsible for maintaining electro-technical compliance information.

Any changes to accessories, peripheral units or any other part of the system must be approved by the manufacturer. Ignoring this advice may compromise the regulatory approvals obtained for this product.

Safety Information

This device is intended for use under the direct supervision of a licensed health care practitioner.

To ensure patient safety, use only parts and accessories manufactured or recommended by GE Healthcare. Contact GE Healthcare for information before connecting any devices to this equipment that are not recommended in this manual.

If the installation of this equipment, in the USA, uses 240 V rather than 120 V, the source must be a center-tapped, 240 V, single-phase circuit.

GE-certified parts and accessories used meet the requirements of the applicable IEC 60601 series safety standards, and/or the system configuration meets the requirements of the IEC 60601-1-1 medical electrical systems standard.

The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall include:

- use of the accessory in the PATIENT VICINITY; and
- evidence that the safety certification of the ACCESSORY has been performed

in accordance to the appropriate IEC 60601-1 and/or IEC 60601-1-1 harmonized national standard.

NOTE

The manufacturer is not responsible for any interference caused by using other than recommended interconnect cables or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the users' authority to operate the equipment.

NOTE

Under circumstances of strong electrostatic discharge or power surges, the Uninterruptible Power Supply (UPS) stabilizes power to the system. In the event of prolonged power outages (5 - 10 minutes), the UPS automatically shuts down the system to protect the Image Vault information system. In this case, check all exams at the cath lab to ensure they are archived to the Image Vault after power is restored.

NOTE

This equipment generates, uses, and can radiate radio frequency energy. The equipment may cause radio frequency interference to other medical and nonmedical devices and radio communications. To provide reasonable protection against such interference, this product complies with emissions limits for a Group 1, Class A Medical Devices Directive as stated in EN60601–1–2. However, there is no guarantee that interference will not occur in a particular installation.

NOTE

If this equipment is found to cause interference (which may be determined by turning the equipment on and off), the user (or qualified service personnel) should attempt to correct the problem by one or more of the following measure(s):

- reorient or relocate the affected device(s)
- increase the separation between the equipment and the affected device
- power the equipment from a source different from that of the affected device

- consult the point of purchase or service representative for further suggestions

NOTE

To comply with the regulations on electromagnetic interference for a Class A FCC Device, all interconnect cables to peripheral devices must be shielded and properly grounded. Use of cables not properly shielded and grounded may result in the equipment causing radio frequency interference in violation of the FCC regulations.

NOTE

Do not use devices which intentionally transmit radio frequency (RF) signals (Cellular Phones, Transceivers, or Radio Controlled Products) in the vicinity of this equipment as it may cause performance outside the published specifications. Keep the power to these type of devices turned off when near this equipment. The medical staff in charge of this equipment is required to instruct technicians, patients, and other people who may be around this equipment to fully comply with the above requirement.

Warnings and Cautions

WARNING

Do NOT use in the presence of flammable anesthetics.

WARNING

This is a Class I equipment. The main plug must be connected to an appropriate power supply.

WARNING

To reduce the risk of electric shock, DO NOT remove cover (or back). Refer servicing to qualified personnel.

WARNING

U.S. law restricts this device to sale by or on the order of a physician.

WARNING

DO NOT load any software or install any hardware other than that specified by GE Healthcare. Installation of software/hardware not specified by GE Healthcare may cause damage to the system or loss or corruption of data.

Service Information

Service Safety Considerations

WARNING
Dangerous voltages, capable of causing death, are present in this equipment. Use extreme caution when handling, testing, and adjusting.

Use all Personal Protection Equipment (PPE) such as gloves, safety shoes, safety glasses and kneeling pad, to reduce risk of injury.

Turnkey Systems Only

The topics in the Service Information section only pertain to turnkey systems, or systems that were purchased from GE Healthcare and included both hardware and software. If the Image Vault is running on a user-supplied hardware platform, please disregard the information in this section.

Service Requirements

Refer equipment servicing to GE Healthcare authorized service personnel only. Any unauthorized attempt to repair equipment under warranty voids that warranty. It is the user's responsibility to report the need for service to GE Healthcare or to one of their authorized agents.

Failure on the part of the responsible individual, hospital or institution using this equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.

Regular maintenance, irrespective of usage, is essential to ensure that the Image Vault is always functional when required. In the event that service is needed for the equipment, contact your GE Healthcare service representative.

Controls, Connectors and Indicators

See the original equipment manufacturer manuals that shipped with the system for an explanation of the equipment controls, connectors and indicators.

2 ML350 G5 Systems

For your notes

Turnkey Standard Hardware

If a turnkey (ML350 G5) system is purchased, the following specifications are applicable:

Rack Server

Rack Server Drive Specifications

Rack-Mounted Server - Product Specifications	
Server Model	HP ProLiant ML350 G5
Processors	Dual quad-core 2.33 GHz CPU
System Memory	4 GB
Systems Disk	RAID 6
Connections	6 USB ports (two front, two back, two internal)
Network	Dual 10/100/1000 Mbps
Server-attached RAID storage	Starting at 3 TB, expandable to 10 TB
DICOM Ultrasound Exams (100 MB/ Study)*	3 TB - 30,000 studies 10 TB - 100,000 studies
Vivid Raw Data Exams (250 MB/Study)*	3 TB - 12,000 studies 10 TB - 40,000 studies
Server-attached RAID (optional) long-term storage	Starting at 3 TB, expandable with no upper limit (only limited by the number of MSA60 units (3U disk drive enclosure) that will fit in the server rack.
RAID Configuration	Level 6, hot spare
Operating/Shipping Weight	14U rack: 195 lb. / 88.7 KG 22U rack: 237 lb. / 107.7 KG 42U rack: 314 lb. / 142.7 KG
Operating Temperature	10 C to 35 C (50 F to 95 F)
Operating Humidity	10% to 90%
Heat Output	3350 at 100 VAC, 3530 at 120 VAC, 3990 at 240 VAC

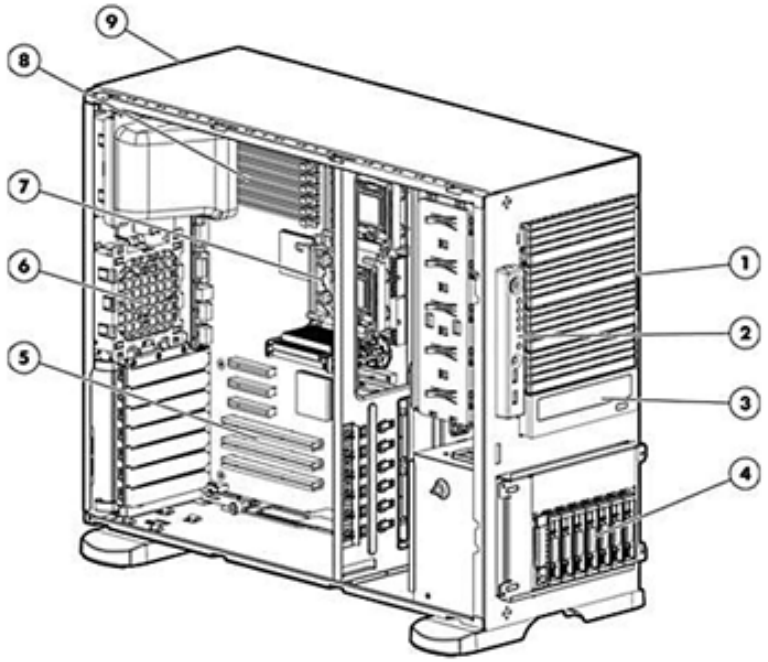
Tower Server

Tower Server Drive Specifications

Tower Server for Private Practice - Product Specifications	
Server model	HP ProLiant ML350 G5
Processors	Dual quad-core 2.33 GHz CPU
System Memory	4 GB
Systems Disk	RAID 6
Connections	6 USB ports (two front, two back, two internal)
Network	Dual 10/100/1000 Mbps
Server-attached RAID storage	3 TB
DICOM Ultrasound Exams (100 MB/ Study)	30,000 studies
Vivid Raw Data Exams (250 MB/Study)	12,000 studies
RAID Configuration	Level 6, hot spare
Dimensions	Height: 18.5 in / 47 cm Depth: 23.6 in / 60 cm Width: 8.6 in / 22 cm
Dimensions with storage extension	Height: 24 in / 61 cm Depth: 35.8 in / 91 cm Width: 20.5 in / 52 cm
Operating/Shipping Weight	67 lb. / 30.4 KG
Operating Temperature	10 C to 35 C (50 F to 95 F)
Operating Humidity	10% to 90%
Heat Output	3350 at 100 VAC, 3530 at 120 VAC, 3990 at 240 VAC

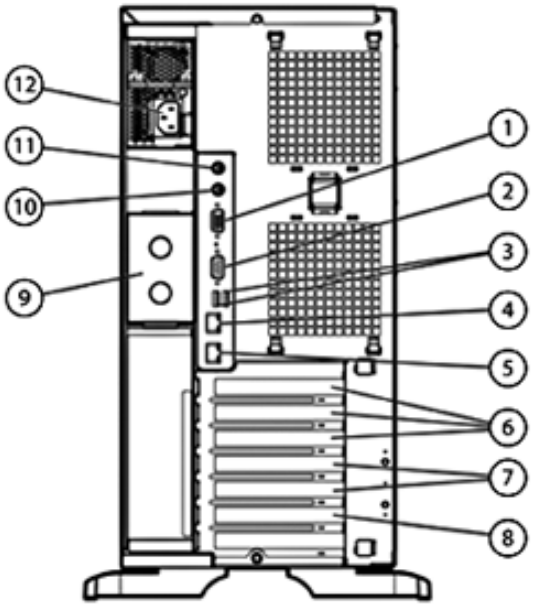
Hardware Specifications

Front View Overview



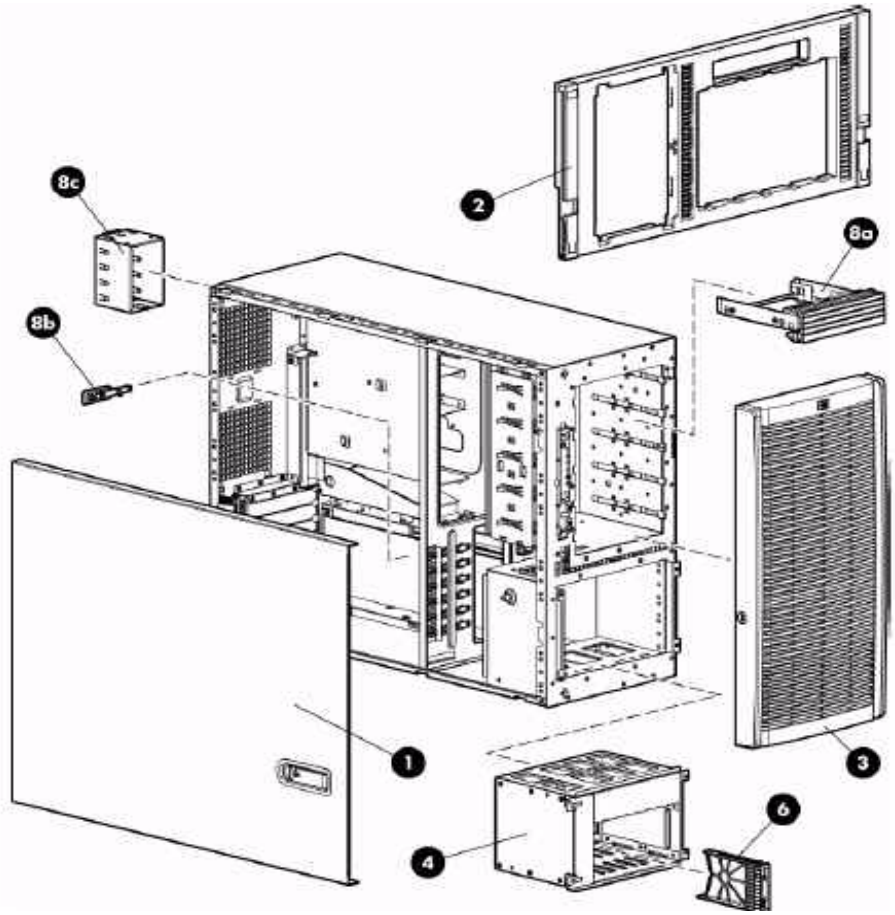
1	Five removable media bays
2	Front display panel; includes power button, UID, two USB 2.0 ports and system status LEDs
3	DVD-ROM drive
4	Eight SFF (2.5") SAS or SATA hot plug drive bays
5	Six expansion slots (three PCI express, three PCI-X)
6	Two system fans standard with support for optional redundant system fans
7	Support for two Quad-Core Xeon 5000 sequence processors
8	Eight PC2-5300 FB-DIMM (DDR2 667) memory sockets
9	Single hot-plug power supply standard, optional second redundant supply for availability

Rear View Overview



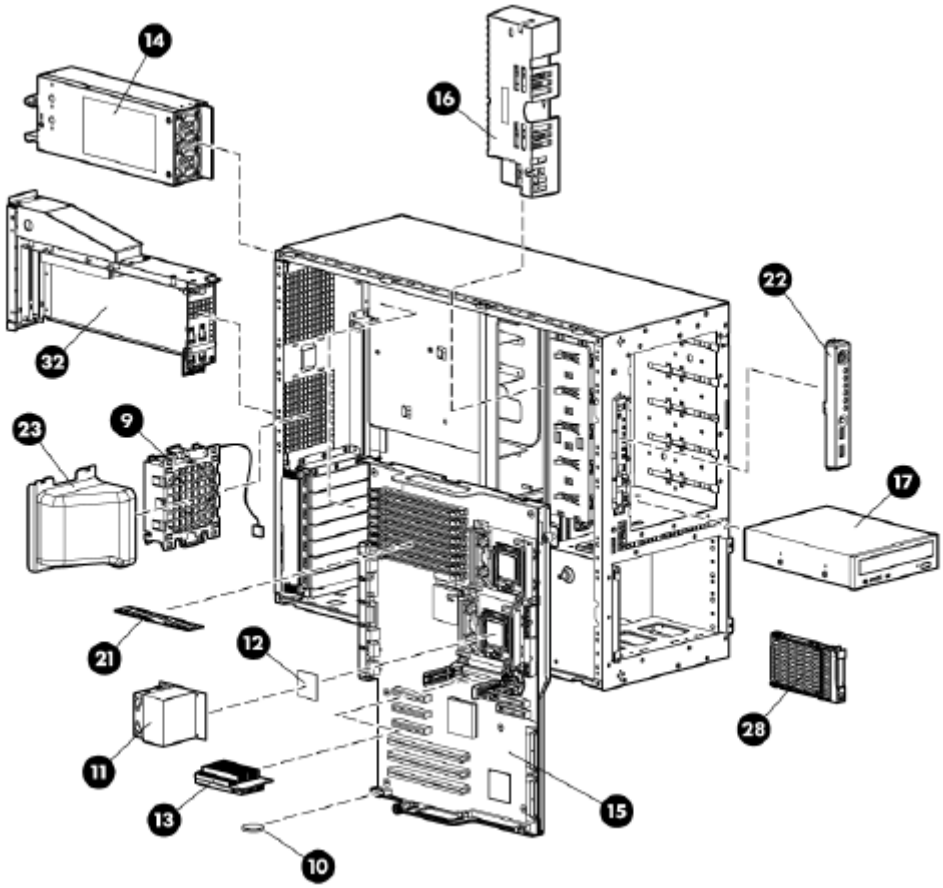
Item	Description
1	Video connector
2	Serial connector
3	USB connectors (2)
4	RJ-45 Ethernet connector (iLO 2 management)
5	RJ-45 Ethernet connector (data)
6	PCI Express x8 slots (x4 routed)
7	PCI-X slots (100-MHz)
8	PCI-X slot (133-MHz)
9	Optional redundant hot-plug power supply bay
10	Mouse connector
11	Keyboard connector

Mechanical Components



1	Access panel
2	Rack bezel
3	Front bezel, tower model
4	SATA/SAS hard drive cage, SFF
5	SATA/SAS hard drive cage, LFF (not shown)
6	Hard drive blank, SFF
7	Hard drive blank, LFF (not shown)
8	Plastics/hardware kit

System Components



9	Fan assembly
10	3V lithium battery
11	Heatsink
12	Processor with thermal grease and alcohol pad
13	PPM
14	Hot-plug power supply, 1000-W, 12-V
15	System board
16	Power supply backplane
17	CD-ROM drive, PATA, 48X
18	CD-RW/DVD-ROM drive, PATA, 48X (not shown)
19	DVD-ROM drive, SATA, 16X (not shown)
20	DVD-RW/DVD-ROM, SATA, 16X (not shown)
21	FBDIMM, registered DDR2
22	Power switch board with cable
23	Air baffle
24	PATA (CD/DVD) drive signal cable (not shown)
25	SATA (DVD) drive signal cable (not shown)
26	SATA (DVD) drive power converter cable (not shown)
27	AC power cable, 1.83 m (6 ft) (not shown)
28	Hot-plug hard drive
29	Parallel and second serial connector bracket (not shown)

30	Keyboard (not shown)
31	Mouse (not shown)
32	PCI-X expansion cage, two-slot assembly
33	Smart Array E200 controller (not shown)
34	Smart Array E200 controller cache module, 64MB, without battery (not shown)
35	Smart Array E200 controller cache module, 128BM (not shown)
36	Smart Array P800 controller (not shown)
37	Smart Array P800 controller cache module, 256MB (not shown)
38	Smart Array P800 controller, 512MB (not shown)
39	Smart Array P800 controller battery pack (not shown)
40	Smart Array P800 controller battery cable assembly, 0.3 m (11.5 in) (not shown)
41	Smart Array P800 controller battery cable assembly, 0.6 m (24 in) (not shown)

Standard Features

Feature	Description
Processor	Quad-Core Intel® Xeon® processors
Cache Memory	4MB (2 x 2MB) Level 2 cache
Upgradability	Upgradeable to 2 processors
Chipset	Intel® 5000Z Chipset
Memory	PC2-5300 Fully Buffered DIMMs (DDR2-667
Network Controller	Embedded NC373i Multifunction Gigabit Network Adapter with TCP/IP Offload Engine
Expansion Slots	I/O (3 total, 3 available): 64-bit/100 MHz hot-plug PCI (2), 64-bit/133 MHz non-hot-plug PCI (1) PCI Voltage: 3.3 Volt or universal card
Storage Controller	HP Smart Array E200i/128 BBWC Controller
Storage	Hard Drives: None included standard Maximum Internal Storage: Hot Plug SFF (2.5") SATA 2.0TB 8 x 250GB
Interfaces	Serial: 1, Pointing Device (Mouse): 1, Graphics: 1, Keyboard: 1, Network RJ-45: 2, USB: 6 (2 front, 2 rear, 2 internal)
Graphics	Integrated ATI ES1000, 32MB video standard
Form Factor	Tower or Rack (5U)
Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support PCI-X 1.0a Compliant Novell Certified Microsoft® Logo certifications USB 2.0
Security	Power-on password Setup password Diskette boot control Parallel and serial interface control Disk configuration lock Power switch security
Manageability	HP Systems Insight Manager SmartStart Redundant ROM System Firmware Update ROMPaq ProLiant RBSU (ROM-Based Setup Utility) Automatic Server Recovery-2 (ASR-2) Dynamic Sector Repairing (with Smart Array Controller) Drive Parameter Tracking (with Smart Array Controller) Pre-Failure Warranty (covers processors, memory, and SAS hard drives)
Power Supply	800 Watt-CE Mark Compliant Hot Plug Power Supply (1000 Watt high line)
System Fans	Two fans will be included with all server configurations.

Feature	Description
OS Support	Microsoft Windows 2000 Server and Advanced Server Microsoft Windows Server 2003 R2 Microsoft Windows Small Business Server 2003 R2 Microsoft Windows Server 2008 Microsoft Windows Small Business Server 2008 and Microsoft Windows Essential Server 2008 Novell NetWare Novell Open Enterprise Server Oracle Enterprise Linux (OEL) Red Hat Enterprise Linux SUSE Linux Enterprise Server SCO OpenServer SCO UnixWare
Rack Airflow Requirements	Rack 10000 Series Cabinets provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors. There is no need to install airflow rack door inserts. NOTE: If using a third-party rack, observe the following additional requirements to ensure adequate airflow: Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm. CAUTION: Always use blanking panels to fill all remaining empty front panel U spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels can result in improper cooling that can lead to thermal damage.
Rack Kit	Tool-free support for racks with square mounting holes
Service and Support	Three-year limited warranty, including hardware diagnostic support, pre-failure warranty (coverage of hard drives, memory and processors). The warranty is fully supported by HP Services and a worldwide network of service providers.

ML350 G5 Tower Server Specifications

Dimensions	
Height (without tower feet)	44.45 cm
Height (with tower feet)	46.7 cm
Depth (with tower bezel)	60 cm
Width	22 cm
Weight (no drives installed)	27.22 kg
Input Requirements	
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	10 A (110 V) to 5 A (220 V)
Rated input power	893 W
BTUs per hour	3049
Power Supply Output	
Rated steady-state power	800 W (low line), 1000 W (high line)
Maximum peak power	1000 W (low line), 1200 W (high line)

ML350 G5 Rack Server Specifications

Dimensions	
Height	21.7 cm
Depth (with bezel)	55.7 cm
Width (with bezel)	44.5 cm
Weight (no drives installed)	27.24 kg
Input Requirements	
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	10 A (110 V) to 5 A (220 V)
Rated input power	1500 W
BTUs per hour	2730
Power Supply Output	
Rated steady-state power	800 W (low line), 1000 W (high line)
Maximum peak power	1000 W (low line), 1200 W (high line)

Environmental Specifications

Temperature Range	
Operating	10°C to 35°C (50° F to 95°F)
Shipping	-40°C to 70°C (-40°F to 158°F)
Maximum wet bulb temperature	28°C (82.4°F)
NOTE: All temperature ratings are shown for sea level. An altitude derating of 1°C per 300 m to 3048 m is applicable. No direct sunlight allowed.	
Relative Humidity (noncondensing)	
Operating	10% to 90%
Non-operating	5% to 95%
NOTE: Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.	

HP StorageWorks 60 Modular Smart Array (MSA60)

Key Features

- 2U rackmount form factor
- SAS host interface
- Dual Domain support with HP Smart Array P800 Controller (requires FW version 5.10 or higher and dual port SAS drives)
- Multi Initiator support (HP-UX and Open VMS on selected HP Integrity Servers) with dual port SAS drives only
- Supports twelve 3.5" hot pluggable drives
- Ability to support 36GB, 72GB ,146GB & 300GB 3.5" 3Gb/s SAS drives
- Ability to support 250GB, 500GB, 750GB and 1TB 3.5" 3Gb/s SATA drives
- Modular design
- 1+3 Cascade support (behind a single SAS port)
- SATA 3Gb/s - Delivering data transfer rates greater than 100MB/s
- Provides storage capacity of up to 12TB per enclosure (using 1TB SATA disk drives)
- Hot pluggable disk drives, power supplies, and fans
- Redundant fans and power supplies ship as standard equipment with base enclosure
- Each MSA60 enclosure comes with dual power supplies that are sufficient to provide power to the
- enclosure and maintain normal operating levels
- Integrated Environmental Monitoring - Monitors environmental conditions within the enclosure and components such as the power supply, fans and temperature
- Easy removal of parts provides better serviceability. No tools are required!
- Supports MS Windows 2003, Red Hat Linux, SUSE Linux, Novell NetWare, HP-UX 11iv2 and 11iv3, Open VMS 8.3 1H
- Supported with Smart Array P800, the Smart Array E500 or the Smart Array P600 controller for HP ProLiant Servers and HP Integrity Servers
- Attached to HP SC44Ge Host Bus Adapter for HP-UX and Open VMS support on selected HP Integrity Servers (servers that support PCI-e cards)
- Supported with ACU, ORCA and HP Systems Insight Manager through configuration utilities provided via the Smart Array controller
- RoHS compliant
- 3 year limited warranty (MSA60 enclosure only

Technical Specifications

LED indicators for drive modules (2)	Online (bottom) Drive failure / ID (top)
LED indicators on front panel	Heartbeat LED Fault LED UID button / LED
LED indicators on rear panel (6)	I/O module LED UID button / LED Heartbeat LED Fault LED Power on / Standby button / System Power LED Power supply LED
Host interface	SAS 3 GB/s
Maximum number of drives	Up to twelve, 3.5 SAS or SATA drives
Temperature range	Operating - 50° to 95° F (10° to 35° C) Shipping - -40° to 150° F (-40° to 66° C) NOTE: Rated 1°C per 1000 feet of elevation to 10,000 ft.
Relative humidity	Operating - 10% to 90% Non-operating - Up to 95%
Input power requirements	Rated Input Voltage - 100 to 240 VAC Rated Input Frequency - 50 to 60 Hz Rated Input Current - 3.9A at 110 VAC typical, 6A maximum Input Power (max) - 345 W
Heat dissipation	1175 BTU/Hr Input power and heat dissipation specifications are maximum values and apply to worst case conditions at full rated power supply load. The power/heat dissipation for your installation will vary depending on the equipment configuration.
User interface	Controller display with status indicators (2) and push buttons (4) on the front of controller.
Logical drives (LUN)	Up to 32 logical drives when connected to P800 smart array controller
Maximum logical drive size	> 2 TB
RAID support	RAID 6 with advanced data guarding
Upgradeable firmware	4 MB flashable
Disk drives and enclosure protocol support	HP 3.5 SAS 3 GB/s
I/O module	Connector type - IPass (mini SAS) Number of ports - Two (one In, one Out)
Form factor	2U rack form factor
Dimensions	3.47 x 17.64 x 23.25 in (8.8 x 44.8 x 59 cm)
Weight (base unit)	34 lb (15.4 kg)
Weight (with all drives)	54 lb (24.6 kg)

TFT7600 Rackmount Keyboard and Monitor Specifications

Physical Dimensions	H x W x D	4.23 x 43.2 x 42.31 cm
	Weight	4.54 kg
Shipping Dimensions	Package (L x W x D)	58.1 x 20 x 61.3 cm
	Weight	11.8 kg
Display	Type	Flat panel, active matrix - TFT LCD
	Display	43.18 cm
	Viewable (diagonal)	43.18 cm digital display
	Maximum Input Graphics Resolution	1600 x 900 @ 75Hz Refresh Rate
	Response time	<25ms
	Brightness	>190 (cd/m ^ 2)
	Contrast ratio	>350:1
Keys	101, 102 or 106 layout, depending on country	
Environmental Temperature	Operating	0 to 35 C
	Storage	-20 to 60 C
Humidity (non-condensing)	Operating	20% to 90%
	Non-operating	5% to 95%
Power	Power source	90 to 264 AC, 47 to 63 Hz
	Maximum Power Consumption	<30W
Supported Graphics	640 x 480 through 1600 x 900 (1440 x 900 WXGA+ recommended for best performance)	
Mode (Output)	60, 70, 72 and 75 Hz refresh rates	
Keyboard/Mouse Output	PS2 and USB connectors	
OSD Language Selection	English, Spanish, French, German, Italian, Japanese, Simplified Chinese	

10000 Series Rack Specifications

Rack Size	Height	Width	Depth
14U	725 mm	600mm	1000 mm
22U	1075 mm	600mm	1000 mm
42U	2000 mm	600mm	1000 mm

The only structural requirement necessary at the installation location is the rack is able to support the server. This should only be a consideration if a customer-supplied rack is being used.

EIA	Conforms to EIA-310D Type A cabinet per section 4.1.1
UL/CES Certification	No
WEEE	Yes
RoHS Compliant	Yes

NOTE

A 10000 Series rack seismic kit is not available and the rack does not have earthquake support at this time. Local contractors in earthquake-prone zones should be able to create custom mounting for that zone.

Hot-Plug Power Supply Calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the server, refer to the HP Enterprise Configurator website (http://h30099.www3.hp.com/configurator/).

PCI-X Gigabit NIC (embedded) Specifications

Item	Description
Network Interface	10Base-T/100Base-TX/1000Base-TX
Compatibility	IEEE 802.3/802/3u compliant
Data Transfer Method	64-bit bus-master PCI-x
Connector	Two RJ-45
Network Transfer Rate	
10Base-T (Half-Duplex)	10 Mb/s
10Base-T (Full Duplex)	20 Mb/s
100Base-TX (Half-Duplex)	100 Mb/s
100Base-TX (Full-Duplex)	200 Mb/s
1000Base-TX (Half-Duplex)	1000 Mb/s
1000Base-TX (Full-Duplex)	2000 Mb/s
Cable Support	
10Base-T	Categories 3, 4, or 5 UTP; up to 328 ft (100m)
100Base-TX	Category 5 UTP; up to 328 ft (100m)
1000Base-TX	Category 5 UTP; up to 328 ft (100m)

Video Controller Specifications

Item	Description
Controller Chip	ATI RAGE XL
Video DRAM	8 MB Video SDRAM
Data Transfer Method	32-bit PCI
Connector	VGA
Support Resolution (Supported Color Depths)	
640 x 480	16.7 M, 64K, 256, 16
800 x 600	16.7 M, 64K, 256, 16
1024 x 768	16.7 M, 64K, 256, 16
1152 x 864	16.7 M, 64K, 256, 16
1280 x 1024	16.7 M, 64K, 256, 16

DVD-ROM Drive Specifications

Specification	Value
Disk formats	DVD (single and double layer), DVD-5, DVD-9, DVD-10, DVD-R, CD-ROM Mode 1 and 2, CD-DA, CD-XA (mode 2, form 1 and 2), CD-I (Mode 2, Form 1 and 2), CD-I ready, CD-Bridge, CD-R, PhotoCD (single and multisession)
Capactiy	4.7 GB (DVD-5), 8.5 GB (DVD-9), 9.4 GB (DVD-10), 550 MB (Mode 1, 12 cm), 640 MB (mode 2, 12 cm), 180 MB (8 cm)
Block size	2368, 2352 bytes (mode 0)
	2352, 2340, 2336, 2048 (mode 1)
	2352, 2340, 2336, 2048 (mode 2)
	2048 bytes (DVD)
Dimensions	
Height	41 mm
Width	147 mm
Depth	172 mm
Weight	1 kg
Data Transfer Rate	
Sustained	4463 - 10,800 KB/s (8X CAV DVD mode), 150 KB/s (sustained 1X CD-ROM), 1552 3600 KB/s (24X CAV CD-ROM)
Burst	150 MB/s
Access Times (typical)	
Full stroke	<210ms CD; <250 ms DVD
Random	< 125 ms CD; <140 ms DVD
Diameter	12 cm, 8 cm
Thickness	1.2 mm
Track pitch	0.74 DVD-ROM; 1.6 CD-ROM
Cache/buffer	128 KB
Startup time	< 15 s
Stop time	< 5 s (single); < 30s (multisession)
Laser Parameters	
Type	Semiconductor laser GaAs
Wave length	700 ± 25 nm
Divergence angle	53.5° ± 1.5°
Output power	0.14 mW
Operating Conditions	
Temperature	5C to 55C
Humidity	10% to 80%

SATA Hard Drive Specifications

Item	750 GB SATA drive
Capacity	750 GB
Height Width Depth	26.4 mm 110.7 mm 184.2 mm
Interface	Serial ATA
Transfer Rate	1.5 Gb/s
Rotational Speed	7,200 rpm
Bytes per sector	512
Logical blocks	1,465,149,168
Operating Temperature	5° to 55° C

DAT 160 Tape Drive

Item	Description
Dimensions	
Physical	4.0 x 14.5 x 18.3cm
Weight	1.2 kg
Capacity	
Native	80GB
Compressed (assumes 2:1 data compression)	160GB
Buffer Size	16 MB
Performance	
Sustained Transfer Rate (native) where 1KB = 1000 Bytes	6.9 MB/s
Sustained Transfer Rate (with 2:1 data compression) where 1KB = 1000 Bytes)	13.8 MB/s
Burst Transfer Rate (SCSI interface) where 1KB = 1000 Bytes	6.9 MB/s (asynchronous) 3 GB/s (synchronous)
Data Access time	50 s
Average Load Time	35 s
Average Unload Time	35 s
Rewind Time	92 s (end to end)
Reliability	
MTBF	125,000 hours at 100% duty cycle
Uncorrected Error Rate	1x10 (-17) bits read
Media	
Recommended Media	DAT 160
Power Specifications	
Power Requirements	+5V ± 5% (100mV Max ripple) @1.1A +12V ± 10% (150mV Max ripple) @0.4A
Power Consumption	10.3 Watts
Environmental Specifications	
Relative Humidity	Storage: 5% to 95% Operating: 20% to 80%
Temperature Range	Storage: -40 to 70 C Operating: 5 to 40 C

UPS R3000 XR

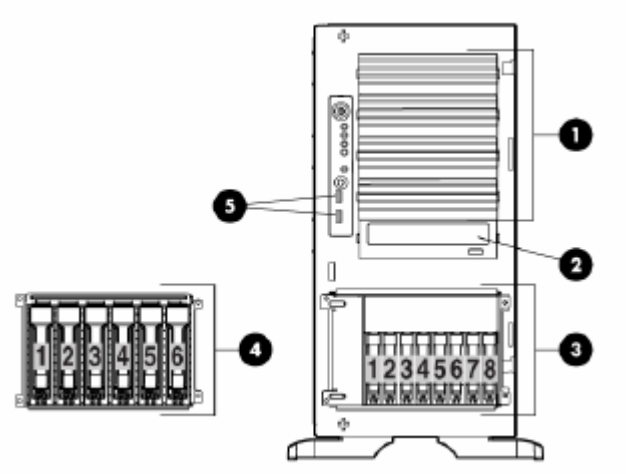
Item	Description
Operating Voltage Settings	120V
Power Out (VA/Watts)	2880/2700
Input Connection	NEMA L5-30P
Output Connection	(1) L5-30R, (6) 5-15R
Frequency	50/60 Hz
Online Efficiency	95%
Surge Suppression	High Energy 6500A peak
Online Regulation	-10% to +6% of nominal voltage
Voltage Wave Form	Sine wave
Output Protection	Resettable circuit protectors
Battery Type	Maintenance-free, sealed, valve-regulated lead acid (VRLA)
Extended Batteries	One ERM with two battery strings
Recharge Time	<3 hours to 80% usuable capacity; <24 hours for complete recharge
Serial Ports	Standard DB-9 ports (ships with communication cable)
Option Slot	One
Option Cards	Six-port card and SNMP/Serial Port card
Operating Temperature	10°C to 40°C
Transit Temperature	-25°C to 55°C
Storage Temperature	0°C to 25°C
Humidity (Operation)	20% to 80% (non-condensing)
Humidity (Non-operating)	5% to 95%
Operating Altitude	Up to 2000m above sea level
Transit Altitude	15,000m above sea level
Audible Noise	< 46db (at 1m from surface of unit)

UPS R1500 XR

Item	Description
Operating Voltage Settings	120V
Power Out (VA/Watts)	1440/1340
Input Connection	NEMA 5-15P
Output Connection	(6) 5-15R
Frequency	50/60 Hz
Online Efficiency	95%
Surge Suppression	High Energy 6500A peak
Online Regulation	-10% to +6% of nominal voltage
Voltage Wave Form	Sine wave
Output Protection	Resettable circuit protectors
Battery Type	Maintenance-free, sealed, valve-regulated lead acid (VRLA)
Extended Batteries	One ERM with two battery strings
Recharge Time	<3 hours to 80% usuable capacity; <24 hours for complete recharge
Serial Ports	Standard DB-9 ports (ships with communication cable)
Option Slot	One
Option Cards	Six-port card and SNMP/Serial Port card
Operating Temperature	10°C to 40°C
Transit Temperature	-25°C to 55°C
Storage Temperature	0°C to 25°C
Humidity (Operation)	20% to 80% (non-condensing)
Humidity (Non-operating)	5% to 95%
Operating Altitude	Up to 3048m above sea level
Audible Noise	< 46db (at 1m from surface of unit)

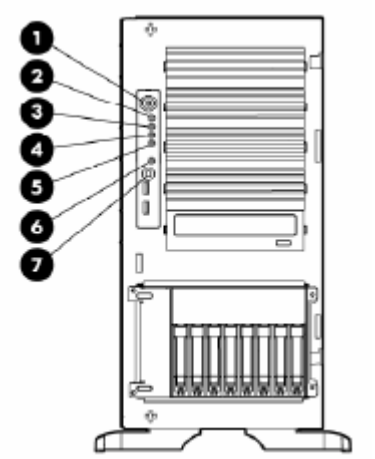
ML350 G5 System Components

Front Panel Components



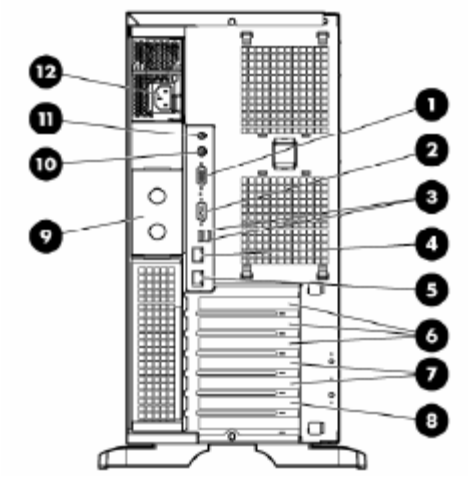
Item	Description
1	Removable media bays (4)
2	CD-ROM drive
3	Hot-plug hard drive bays (8 bay drive cage model)
4	Hot-plug hard drive bays (6 bay drive cage model)
5	USB connectors (2)

Front Panel LEDs and Buttons



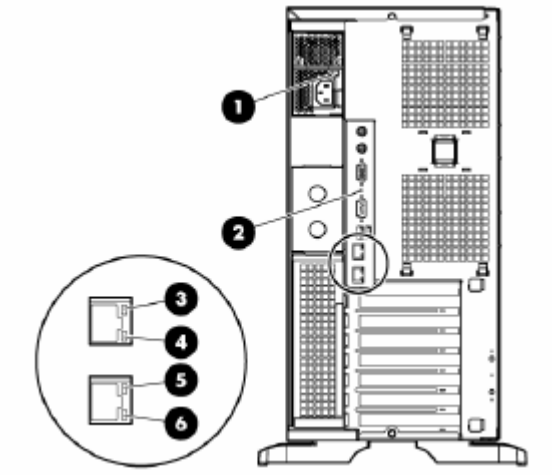
Item	Description	Status
1	Power On / Standby button	--
2	System Power LED	Green - Power On Amber - System shut down, but power still applied Off - No power
3	Internal Health LED	Green - Normal Amber - System degraded. To identify the component in a degraded state, refer to system board LEDs description. Red - System critical. To identify the component in a critical state, refer to system board LEDs description. Off - Normal (when in standby mode)
4	External Health LED (Power Supply)	Green - Normal Amber - Power redundancy failure Red - Critical power failure
5	NIC 1 Activity LED	Green - Network link Flashing - Netowrk link and activity Off - No link to network. If power is off, view status on the rear panel RJ-45 LEDs.
6	UID LED	Blue - Activated Flashing - System remotely managed Off - Deactivated
7	UID Button	--

Rear Panel Components



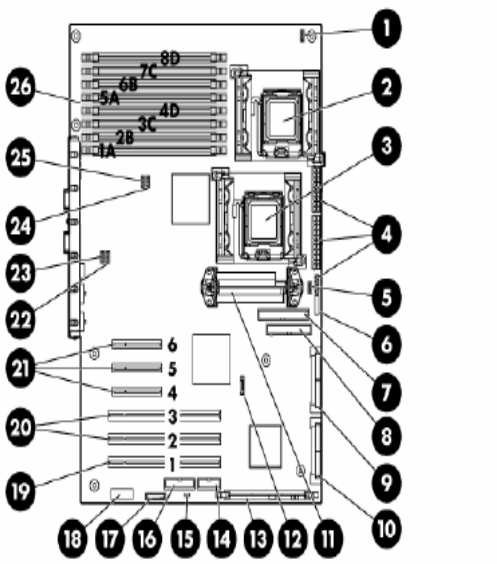
Item	Description
1	Video connector
2	Serial connector
3	USB connectors (2)
4	RJ-45 Ethernet connector (iLO 2 management)
5	RJ-45 Ethernet connector (data)
6	PCI Express x8 slots (x4 routed)
7	PCI-X slots (100-MHz)
8	PCI-X slot (133-MHz)
9	Optional redundant hot-plug power supply bay
10	Mouse connector
11	Keyboard connector
12	Power coard connector

Rear Panel LEDs and Buttons



Item	Description	Status
1	Power supply LED	Green - Power supply is on and functioning Off - No power or inadequate power supply
2	UID LED and button	Blue - Activated Flashing blue - remote inquiry Off - Deactivated
3	iLO 2 Activity LED	Green or flashing - Network activity Off - No network activity
4	iLO 2 Link LED	Green - Linked to network Off - Not linked to network
5	10/100/1000 NIC Link LED	Green or flashing - Network activity Off - No network activity
6	10/100/1000 NIC Link LED	Green - Linked to network Off - Not linked to network

System Board Components



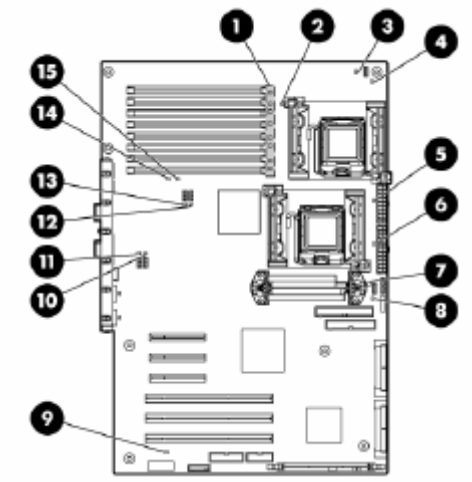
Item	Description	Item	Description
1	Processor 1 heatsink fan connector	14	Optional serial port connector
2	Processor socket 1	15	NMI jumper
3	Processor socket 2	16	Optional parallel port connector
4	Power supply connectors	17	System battery
5	processor 2 heatsink fan connector	18	System maintenance switch
6	Power button / LED connector	19	PCI-X slot 1 (133 MHz)
7	PATA connector	20	PCI-X slots 2-3 (100 MHz)
8	Diskette drive connector	21	PCI Express x8 slots 4-6 (x4 routed)
9	SAS / SATA connector (drives 1-4)	22	Optional redundant system fan 4 connector
10	SAS / SATA connector (drives 5-8)	23	System fan 2 connector
11	PPM 2 slot	24	Optional redundant system fan 3 connector
12	SATA optical connector (select models only)	25	System fan 1 connector
13	HP Smart Array E200i memory connector	26	FBDIMM slots

System Maintenance Switch

Position	Default	Function
S1	Off	Off = iLO 2 security is enabled On = iLO 2 security is disabled
S2	Off	Off = System configuration can be changed On = System configuration is locked
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled On = Power-on password is disabled
S6	Off	Off = No function On = Clear NVRAM
S7/S8	--	Reserved

When the system maintenance switch position 6 is set to the On position, the system is prepared to erase all system configuration settings from both CMOS and NVRAM.

System Board LEDs



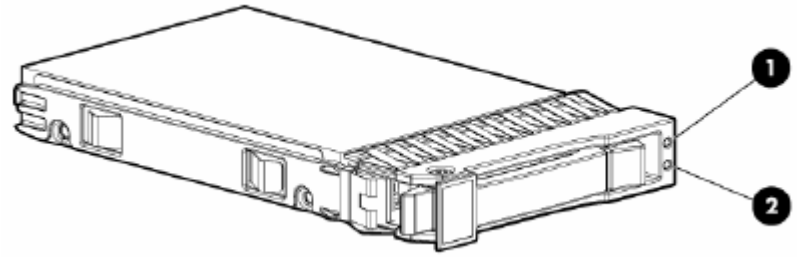
Item	Description	Status
1	FBDIMM 1-8	Amber - FBDIMM failed Off - FBDIMM functioning
2	Processor 1	Amber - Processor 1 failed Off - Processor 1 functioning
3	Processor 1 Fan Failure (Fan 5)	Amber - Fan is not installed or has failed Off - Processor fan is functioning
4	PPM 1 (embedded)	Amber - PPM 1 failed Off - PPM 1 functioning
5	Processor 2	Amber - Processor 2 failed Off - Processor 2 functioning
6	AC Power	Green - Power supply is on and functioning Off - No AC power or failed power supply
7	Processor 2 Fan Failure (Fan 6)	Amber - Fan is not installed or has failed Off - Processor fan is functioning
8	PPM 2	Amber - PPM 2 failed Off - PPM 2 functioning
9	Temperature threshold	Amber - System temperature threshold exceeded Off - Normal operation
10	Optional Redundant System Fan 4	Amber - Redundant fan has failed Off - Redundant fan is functioning
11	System Fan 3	Amber - Fan is not installed or has failed Off - Rear fan is functioning
12	Optional Redundant System Fan 2	Amber - Redundant fan has failed Off - Redundant fan is functioning
13	System Fan 1	Amber - Fan is not installed or has failed Off - Rear fan is functioning
14	Online Spare Memory	Amber - Online spare memory is in use due to memory failover Off - Normal operation
15	Memory mode	Green - System is in online spare memory mode Off - Normal operation

System Insight Display LEDs and Internal Health LED Combinations

When the internal health LED on the front panel illuminates either amber or red, the server is experiencing a health event. Combinations of illuminated system LEDs and the internal health LED indicate system status.

System LED and Color	Internal Health LED Color	Status
Processor failure, socket X (Amber)	Red	One of more of the following conditions may exist: ■ Processor in socket X has failed. ■ Processor in socket X failed over to the second processor. ■ Processor X is not installed in the socket. ■ Processor X is not supported. ■ Processor heatsink is not attached properly.
	Amber	Processor in socket X is in a pre-failure condition
Processor failure, both sockets (Amber)	Red	Processor types are mismatched.
PPM failure (Amber)	Red	One of more of the following conditions may exist: ■ PPM in slot X has failed ■ PPM is not installed, but corresponding processor is installed
FBDIMM failure, slot X (Amber)	Red	■ FBDIMM in slot X has failed. ■ FBDIMM in slot X is an unsupported type, an no valid memory exists in another bank.
	Amber	■ FBDIMM is slot X has reached single-bit correctable error threshold. ■ FBDIMM in slot X is in a pre-failure condition. ■ FBDIMM in slot X is an unsupported type, but valid memory exists in another bank.
Overtemperature (Amber)	Red	■ The Health Driver has detected a cautionary temperatur level. ■ The server detected a hardware critical temperature level.
Fan (Amber)	Red	The minimum fan requirements are not being met. Fan has failed.
	Amber	A fan has failed, but still meets the minimum fan requirements (with redundant fan option only).

SATA Hard Drive LEDs

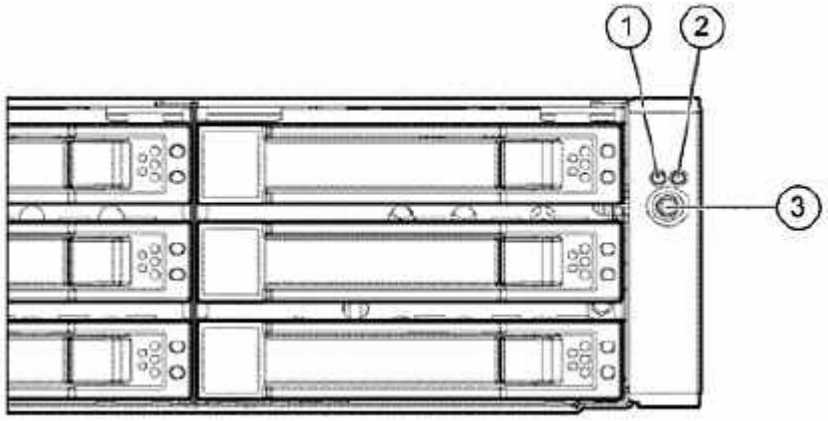


Item	Status
1	Fault / UID LED (amber/blue
2	Online LED (green)

SATA Hard Drive LED Combinations

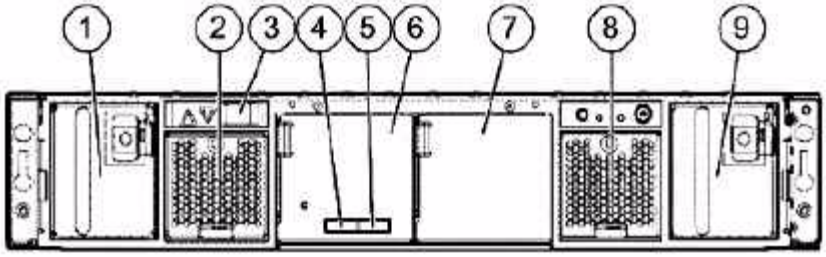
Online/Activity LED (green)	Fault / UID LED (amber/blue)	Interpretation
On, off, or flashing	Alternating amber and blue	The drive has failed, or a predictive failure alert has been received for this drive; it also has been selected by a management application.
On, off, or flashing	Steady blue	The drive is operating nromally, and it has been selected by a management application.
On	Amber, flashing regularly	A predictive failure alert has been received for this drive. Replace this drive as soon as possible.
On	Off	The drive is online, but it is not currently active.
Flashing regularly	Amber, flashing regularly	DO NOT remove the drive. Removing a drive may terminate the current operation and cause data loss. The drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive. To minimize the risk of data loss, do not replace the drive until the expansion or migration is complete.
Flashing regularly	Off	DO NOT remove the drive. Removing a drive may terminate the current operation and cause data loss. The drive is rebuilding, or it is part of an array that is undergoing capacity expansion or stripe migration.
Flashing irregularly	Amber, flashing regularly	The drive is active, but a predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Flashing irregularly	Off	The drive is active, and it is operating normally.
Off	Steadily amber	A critical fault condition has been identified for this drive, and the controller has placed it offline. Replace this drive as soon as possible.
Off	Amber, flashing regularly	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Off	Off	The drive is offline, a spare, or not configured as part of an array.

MSA60 Front Panel LEDs and Buttons



Item	Status
1	Heartbeat LED
2	Fault LED
3	UID button / LED

MSA60 Rear Panel Components



Item	Status
1	Power supply 1
2	System fan 1
3	Dual 7 segment display board (future use)
4	SAS in connector
5	SAS out connector
6	I/O module bay
7	I/O module bay
8	System fan 2
9	Power supply 2

DAT 160 LED Combinations and Meanings

	Ready LED	Clean LED	Tape LED	Drive LED	Meaning
Tape Ready Signal	On steady	Off	Off	Off	The data cartridge is loaded and the drive is ready.
Tape Loading Signal	Flashing Slowly	Off	Off	Off	The cartridge is loading or unloading, or power-on self-test is in progress
Tape Activity Signal	Flashing Slowly	Off	Off	Off	The cartridge is loaded, activity is occurring.
Cleaning Advisory Signal	Off or Flashing	Flashing Slowly	Off	Off	If the cleaning advisory signal is displayed: ■ The drive has detected that cleaning is required to maintain good performance. ■ Wait for the current operation to finish and clean the drive with an appropriate cleaning media, ensuring it has not expired. ■ Continue to use the drive as before. If the signal repeats, consider changing the data media for new media when convenient. ■ Regular cleaning (every 24 hours of tape pulling or weekly) can prevent this signal being shown.
Media Caution Signal	Off or Flashing	Off	Flashing Slowly	Off	If the media caution signal is displayed: ■ The drive has detected that the data media being used is likely to be nearing the end of its life, damaged or degraded. It is recommended that once the current operation is complete, the drive is cleaned with appropriate media and the data media changed. ■ If required, the data from the media flagged as suspect should be transferred to a new media cartridge.
Drive Caution Signal	Off or Flashing	Off	Off	Flashing Slowly	If the drive caution signal is displayed: ■ The drive has detected that the performance of the drive has become degraded. ■ The is an unusual state which is only triggered when there have been issues with multiple data media and the drive has been cleaned regularly. ■ If this occurs, please use Library and Tape Tools to perform further diagnosis or contact HP support for further advice.
Error Condition Signal	Off			On Steady	HP DAT drives perform a comprehensive self-test during power-up. If a hard error causes the self-test to fail, the clean light changes to steady amber. Run HP Library & Tape Tools to help diagnose the problem.
OBDR Signal	Pulsing (2 flashes followed by a pause)				The tape drive is in disaster recovery mode, restoring the operating system.

Basic Server Tasks

Safety Considerations

Before performing service-type procedures, review all the safety information.

Prevent Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when handling the system. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Equipment Symbols

The following symbols may appear on equipment to indicate the presence of potentially hazardous conditions.

	This symbol indicates the presence of hazardous energy circuits or circuit shock hazards. Refer all servicing to qualified personnel. WARNING: to reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades and servicing to qualified personnel.
	This symbol indicates the presence of electric shock hazards. The area contains no user or field sericeable parts. Do not open for any reason. WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.
	This symbol on an Rj-45 receptacle indicates a network interface connection. WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.
	This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.
 27.22 kg 60 lb	This symbol indicates that the component exceeds the recommended weight for one individual to handle safely. WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.
	These symbols, on power supplies or systems, indicate that the equipment is supplied by mulitiple sources of power. WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Rack Warnings

WARNING
To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floow.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

WARNING
To reduce the risk of personal injury or equipment damage when unloading a rack:

- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unusable when being moved on its casters.
- Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.

WARNING
To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one componnet is extended.

Shutdown Procedures

Introduction

System shutdown is a two-stage process (software shutdown includes server and long-term storage location).

1. Shut down the system and Image Vault software services. This allows the system to complete any currently running tasks.
2. Shut down the system hardware.

Plasmon LTS Shutdown

WARNING
DO NOT shut down the LTS before the Image Vault server is shut down.

Turn the power switch at the bottom of the library to the OFF position.

Software Shutdown

NOTE
The Image Vault is not able to receive or route images after a software shutdown.

1. Close all open windows.
2. Select **Start > Shutdown**. When the **Shutdown** screen appears, select **Shutdown the Computer** and click **Yes**. When the **Warning** screen appears, click **Yes**.
3. When the **Shutdown computer** screen appears, you are ready to power off the system.

Hardware Shutdown

NOTE
Never shut down other system components, without first performing a software shutdown and powering off the server.

To reduce the risk of personal injury, electrical shock or damage to the equipment, remove the power cord to remove power from the server. There may be more than one power cord, since there are redundant power supplies/cords. The front panel **Power On/ Standby** button does not completely shut down system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

CAUTION
If installing a hot-plug device, it is not necessary to power down the server.

1. Back up the server data.
2. Shut down the operating system as directed by the operating system documentation.
3. Press the Power On/Standby button to place the server in standby mode. When the server activates standby power mode, the system power LED changes to amber.

4. If the server is installed in a rack, press the UID LED button on the front panel. Blue LEDs illuminate on the front and rear panels of the server. Locate the server by identifying the illuminated rear UID LED button.

5. Disconnect the power cords. There may be more than one power cord, since there are redundant power supplies/cords. Verify that all sources of energy have been disconnected and have been secured through Lock Out Tag Out procedures.

   The server is now without power.

6. Press and hold the **ON/OFF** button on the UPS. This shuts down the remaining system components - RAID, modem, monitor and tape library

Startup Procedure

1. Check that the server **ON/OFF** button is in its extended (OFF) position and the green power LED is off.

2. Press and hold the **ON/OFF** button on the UPS to power up system components - RAID, library, modem, and monitor.

   NOTE

   Although the media library is connected to the UPS, it has a separate ON/OFF switch. Make sure the ON/OFF switch on the library is in its **ON** position before proceeding.

3. Wait 10-15 seconds to allow the RAID drives to spin up to speed. Then press the ON/OFF button on the server. The server goes through its boot sequence and brings up the logon screen.

   NOTE

   After a complete system shutdown the server inventories the media library upon start up. This process may take several minutes, depending on the number of media in the library.

Administrative Logon

To access the system administration utilities, you must be logged on to the system as **IVAdmin**. The administrator account has access to all system applications and utilities.

1. If the system is currently logged in under the **operator** account, click *Start* > *Shutdown* and select *Close all programs and log on as a different user*.

2. When the *Begin Logon* screen appears, press **Ctrl+Alt+Del**. The *Logon* screen appears.

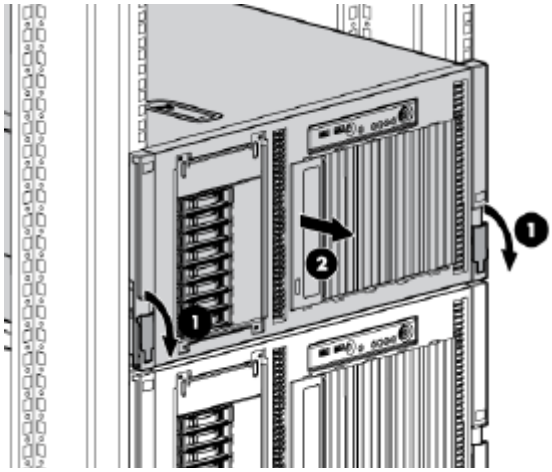
3. Enter the logon name: **GEAdmin** Enter the password: **DaBrewers** (case sensitive**)** and press **Enter**. The *Windows* desktop appears.

Extend Server from Rack

NOTE

Always remove power from the server before extending the server from the rack.

1. Pull down the quick release levers on each side of the server.
2. Extend the server on the rack rails until the server rail-release latches engage.



WARNING

To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack. Be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails can pinch your fingers.

3. After performing the installation or maintenance procedure, press the rail-release latches and slide the server back into the rack.

Remove Server from Rack

To remove the server from a rack:

1. Power down the server.
2. Disconnect the cabling.
3. Extend the server from the rack. Reverse the server installation steps in the documentation that ships with the rack-mounting option.
4. Remove the server from the rack.
5. Place the server on a sturdy, level surface.

General Maintenance

Preventive Maintenance of Server Equipment

A regular equipment maintenance program helps prevent unnecessary equipment and power failures and also reduces possible health hazards. The **Image Vault User and Maintenance Quick Reference** contains information on how to perform system checks.

Preventive Maintenance of Libraries

Preventive maintenance (PM) of the media library includes both Operator and Service maintenance. Both levels are performed per the schedules below.

The Operator PM involves cleaning and inspection (approximately 1 hour). The Service PM consists of more thorough cleaning, lubrication, inspection, and adjustments (approximately 4 hours). Both are performed at the same time by the library vendor.

Inspection and Cleaning

Precautions

Observe the following guidelines when cleaning equipment:

- Turn off the unit and remove all power before inspecting or cleaning.
- Do not immerse any part of the equipment in water.
- Do not use organic solvents, ammonia-based solutions, or abrasive cleaning agents which may damage equipment surfaces.
- Do not use a cleaning solution or solvent on the cassette tapes. Doing so can cause loss of data or damage to the tape drive.
- Do not use metal articles, such as a screwdriver, to clean the tape heads, or bring any magnetic material near the head assembly.

Visual Inspection

Perform a visual inspection daily. Turn off the unit and remove power before making an inspection or cleaning the unit.

- Check the case and display screen for cracks or other damage.
- Verify that all cords, socketed components, and connectors are securely seated.
- Inspect keys and controls for proper operation. Toggle keys should not stick in one position. Knobs should rotate fully in both directions.

Visual Inspection List	
Area	Look for the following problems
I/O Connectors and Cables	■ Fraying or other damage ■ Bent prongs or pins ■ Cracked housing ■ Loose screws in plugs
Interface Cables	■ Excessive tension or wear ■ Loose connection ■ Strain reliefs out of place

Visual Inspection List (Continued)	
Area	Look for the following problems
Ground Wires/Wiring	■ Loose wires or ground strap connections ■ Faulty wiring ■ Wires pinched or in vulnerable position
Power Source	■ Faulty wiring, especially AC outlet ■ Circuit not dedicated to system ■ (Power source problems can cause static discharge, resetting problems, and noise.)
Mounting Hardware	■ Loose or missing screws

Exterior Cleaning

Clean the exterior surfaces once per month, and more frequently if needed, with a clean, soft cloth and a mild dishwashing detergent diluted in water.

- Wring the excess water from the cloth. Do not drip water on and avoid contact with open vents, plugs, or connectors.
- Dry the surfaces with a clean cloth or paper towel.

When cleaning the monitor screen, use a commercial glass cleaner.

- Follow directions for use on product.
- Use non-abrasive, antistatic lint-free cloth.
- Wipe carefully and allow to dry.

Interior Cleaning

Complete any pre-service proedures prior to opening the unit or performing any interior cleaning. All equipment is sealed before it leaves the factory. There should be no dust buildup on the surfaces of the interior PCB assemblies and components when you receive the unit. However, if dust is an environmental problem, use a commercially available dust remover (compressed air). Follow the manufacturer's directions for use. Be sure to turn off power and disconnect power cord from AC power source before removing any equipment covers.

Check UPS

Battery Care

The UPS used in the Image Vault uses sealed lead acid batteries. These batteries do not require any specific preventive maintenance other than testing for functionality.

Keep the area around the unit clean and relatively dust free. If the atmosphere is very dusty, clean the outside of the unit with a vacuum cleaner.

Test UPS

The following test should only be done on a system that is NOT in operation. It should only be done during scheduled down time for preventive maintenance. The following test disconnects the power from the line and attempts to supply the load from the batteries. If the batteries cannot hold the load, the system attached to the UPS will experience a power failure.

There is a self test built into the UPS. This can be run from the front panel of the unit by pressing and holding the Test/Alarm Reset Button for three seconds. The unit does an internal self test. If a problem is found, the unit sounds an alarm and an LED turns on to indicate the nature of the problem.

Annual Maintenance Responsibilities

Replace Backup Tapes

To ensure integrity of the daily backup, it is recommended that the entire set of the seven daily backup tapes be replaced once every year.

Make sure you purchase only approved tape cartridges available through GE Healthcare. These tape cartridges are tested to ensure that they meet the highest standards.

Replace Tape Cleaning Cartridges

Replace the tape cleaning cartridges used for both the Image Vault and the tape library at least once a year.

Troubleshooting Tools

Power Problems

Power Source Problems

1. Press the **Power On/Standby** button to be sure it is on. If the server has a **Power On/ Standby** button that returns to its original position after being pressed, be sure you press the switch firmly.
2. Plug another device into the grounded power outlet to be sure the outlet works. Also, be sure the power source meets applicable standards.
3. Replace the power cord with a known functional power cord to be sure it is not faulty.
4. Replace the power strip with a known functional power strip to be sure it is not faulty.
5. Have a qualified electrician check the line voltage to be sure it meets the required specifications.
6. Be sure the proper circuit breaker is in the On position.

Power Supply Problems

1. Be sure no loose connections exist.
2. If the power supplies have LEDs, be sure they indicate that each power supply is working properly. Refer to the server documentation. If LEDs indicate a problem with a power supply, replace the power supply.
3. Be sure the system has enough power, particularly if you recently added hardware, such as hard drives. Additional power supplies may be required. Check the system information from the IML and use the server documentation for product-specific information.

UPS Problems

UPS is not working properly

1. Be sure the UPS batteries are charged to the proper level for operation. Refer to the UPS documentation for details.
2. Be sure the UPS power switch is in the On position. Refer to the UPS documentation for the location of the switch.
3. Be sure the UPS software is updated to the latest version. Use the Power Management software located on the Power Management CD.
4. Be sure the correct power cord is the correct type for the UPS and the country in which the server is located. Refer to the UPS reference guide for specifications.
5. Be sure the line cord is connected.
6. Be sure each circuit breaker is in the On position, or replace the fuse if needed. If this occurs repeatedly, contact an authorized service provider.
7. Check the UPS LEDs to be sure a battery or site wiring problem has not occurred. Refer to the UPS documentation.
8. If the UPS sleep mode initiated, disable sleep mode for proper operation. The UPS sleep mode can be turned off through the configuration mode on the front panel.
9. Change the battery to be sure damage was not caused by excessive heat, particularly if a recent air conditioning outage has occurred.

   The optimal operating temperature for UPS batteries is 25°C (77°F). For approximately every 8°C to 10°C (16°F to 18°F) average increase in ambient temperature above the optimal temperature, battery life is reduced by 50 percent.

Low battery warning is displayed

1. Plug the UPS into an AC grounded outlet for at least 24 hours to charge the batteries, and then test the batteries. Replace the batteries if necessary.
2. Be sure the alarm is set appropriately by changing the amount of time given before a low battery warning. Refer to the UPS documentation for instructions.

One or more LEDs on the UPS is red

Refer to the UPS documentation for instructions regarding the specific LED to determine the cause of the error.

CD-ROM and DVD Drive Problems

System does not boot from the drive

1. Be sure the drive boot order in RBSU is set so that the server boots from the CD-ROM drive first.
2. If the CD-ROM drive jumpers are set to Cable Select (the factory default), be sure the CD-ROM drive is installed as device 0 on the cable so that it is in position for the server to boot from the drive.

3. Be sure no loose connectionsexist.
4. Be sure the media from which you are attempting to boot is not damaged and is a bootable CD.
5. If attempting to boot from a USB CD-ROM drive:
   - Refer to the operating system and server documentation to be sure both support booting from a USB CD-ROM drive.
   - Be sure legacy support for a USB CD-ROM drive is enabled in RBSU.

Data read from the drive is inconsistent, or drive cannot read data

1. Clean the drive and media.
2. If a paper or plastic label has been applied to the surface of the CD or DVD in use, remove the label and any adhesive residue.
3. Be sure the inserted CD or DVD format is valid for the drive. For example, be sure you are not inserting a DVD into a drive that only supports CDs.

Drive is not detected

1. Be sure no loose connections exist.
2. Refer to the drive documentation to be sure cables are connected as required.
3. Be sure the cables are working properly. Replace with known functional cables to test whether the original cables were faulty.
4. Be sure the correct, current driver is installed.

DAT Drive Problems

Sense error codes are displayed

Refer to the Troubleshooting DAT Drives white paper for information on DAT drive sense error codes. Search for it on the HP website (http://www.hp.com).

DAT drive error or failure occurs

1. Be sure drivers, software, and firmware are upgraded to the latest revisions.
2. Clean the drive at least four times to be sure that the heads are clean and to eliminate dirty heads as the possible cause of the failure.

   DAT drives require cleaning every 8 to 25 hours of use or they may fail intermittently when using marginal or bad media. Be sure you are following the proper cleaning procedures described in the device and server documentation.

   NOTE: New DAT tapes may contain debris that will contaminate the DAT drive read/write head. If using new tapes for backup, clean the DAT drive frequently.

DAT drive is providing poor performance

Be sure the drive is not being used to backup more data than is recommended for the drive. DAT drives are designed with optimum and maximum data backup sizes. Refer to the drive documentation to determine the appropriate data backup size for the drive.

Latest firmware indicates a defective tape, or head clogs occur regularly

Replace the tape.

Other errors are occurring

Replace the drive.

Hard Drive Problems

Contact GE Healthcare service for additional support.

Video Problems

Contact GE Healthcare service for additional support.

System Management and Agents

System Management

System Management Web Page Overview

The System Management web page uses information gathered by the web-enabled management agents to provide troubleshooting information. The web-enabled Management Agents for Servers allow you to view subsystem and status information from a Web browser, either locally or remotely.

Logging In

1. Select **Start > Programs > Internet Explorer**.
2. On the browser screen, type **http://127.0.0.1:2301** in the **URL** field and press **Enter**.
3. When the **Security Alert** screen appears, click **Yes**.
4. When the **Login** screen appears, select **Administrator** from the **Name** pull-down list. Enter the administrator password in the **Password** field and click **OK**. The System Management home page then appears.

Home Page Overview

The **System Management** home page displays all web-enabled System Management software that provides information. In addition, the **System Management** home page displays various boxes that have borders defining the status of the items contained in that box. The **System Management** home page is separated into two frames to include:

- Header frame
- Data frame

Header Frame

The header frame is constantly visible regardless of the page you are viewing. A navigation vector, located in the top section, displays the path you are currently viewing.

The **System Management** home page displays the following:

- System Status
- System Model
- Current User
- Agent Help link

System Status

The **System Status** icon indicates the overall health of the web-enabled management software..

System Model

The **System Model** displays the model of the system. In some cases, the System Model may display **Unknown** if no web-enabled Management Agents are installed on the system.

Current User

The **Current User** displays the user who is currently logged in. If the current user is Administrator, Operator, or User, then there is a **Logout** link. If you have Anonymous access enabled and you are accessing the page anonymously, then the **Current User** displays **Anonymous**, and the **Login** link displays. If **Local Access** is enabled and you are accessing the web-enabled System Management software from a local machine, the **Current User** displays **Administrator** or **Anonymous** (depending on what level of access has been enabled) and **Local Access**.

Help link

The **Agent Help** link launches the help files in a separate window. The help contains a combination of all help files related to the Management software and utilities.

Navigate the Home Page

Home

The **Home** tab is displayed on the **System Management** home page. The following information displays on the **Home** tab.

- **System Status Summary**
- Status boxes
- Left organizational menu

System Status Summary box – The **System Status Summary** box displays all items, with a failed or degraded status, provided by the Web-enabled System Management software. If there are no agents installed or no failed or degraded items, then the **System Status Summary** box displays **None**.

Status boxes – The information that is configured to display in HTTP Server is provided by the web-enabled System Management software. The information provided by the web-enabled System Management software displays in a box. Each box contains links that allow you to drill down into the web-enabled System Management software that is providing the data.

In addition, each box has a border that indicates the status of the web-enabled System Management software information contained in the box.

Indicator	Description
Blue	Unknown
Green	OK
Yellow	Degraded
Orange	Failed
Gray	No Status

Left Organizational Menu – The left organizational menu displays on the **Home** tab. The left organizational menu contains links to the web-enabled Management software to include:

- Integrated Agents
- Other Agents
- Management Processor
- Other Software
- Key Legend

Integrated Agents – The **Integrated Agents** section contains participants and links to their entry points if applicable.

Other Agents – The **Other Agents** section lists the visible web-enabled System Management software that are not participating in the System Management home page. The name of the web-enabled System Management software provides a link so you can still access the agents if they provide a user interface.

Management Processor – The **Management Processor** section displays a link to either the Remote Insight Lights-Out Edition Board or the Integrated Lights-Out Board. This information is provided by web-enabled Management Agents. If no web-enabled System Management software is installed that provides this information, then **None** displays.

Server Agent Information

System

System Information

System Board – The following information about the system board is listed below. The type of information displayed may vary depending on the device type.

- **Product Name** displays the type of device or client PC.
- **System ROM Version** identifies the current system ROM version by date. This information may help you track the configuration of the device or client and may be useful for diagnosing service problems.
- **Redundant ROM Version** identifies the backup system ROM version by date. This field will not show if a Redundant ROM is not available.
- **Serial Number** displays the serial number of the device or client system board. Use this number for identification and registration purposes. N/A appears if you do not have a device or client that supports the asset management feature.
- **Bus Type** identifies the device or client bus type as EISA, EISA/PCI, or non-EISA.

CPU – The following information about each processor in the system is available. This information may vary depending on device type.

- **Processor** lists the type of processor and its speed. For devices, the colored ball indicates the status of each processor.
- **Coprocessor** displays the type and speed of the coprocessor on the device or client PC, such as 80387 at 33 MHz, or W 3167 at 33 MHz.
- **Slot** lists the number of the slot where the processor is installed. Use this information for identification purposes.
- **Slot 0** indicates that a CPU or a memory module is connected directly to the system board and not in an expansion board.
- **Socket** displays the currently selected processor's socket. Use this information for identification purposes.
- **Cache** displays the amount of device or client hardware cache available. For example, Cache L2: 64KB indicates 64 KB of secondary level cache between the processor and system memory.
- **Action** indicates what action, if any, should be taken for the currently selected processor. Possible values include No Action Needed and Replace processor. Step displays the revision level of the processor.

Memory – Device memory information is listed below:

- **Base Memory** [KB] - identifies the maximum amount of memory below the 1-MB boundary that MS-DOS can access directly. For example, 640 KB is a possible value for this field.
- **Total Memory** [KB] - is the total amount of memory available on the device or client PC, such as 8192 KB.
- **Correctable Memory**—Memory errors are corrected by the Error Correcting Code (ECC) memory subsystem when they occur. The correctable memory field displays the status of the Correctable Memory as one of the following:
  - **Logging ECC memory** correction is supported and error logging is enabled.
  - **Disabled ECC memory** correction is supported, but errors are not logged for this device.
  - When a certain rate of errors is exceeded, the health driver automatically disables logging of these errors and sends an alarm. The errors are corrected, but are no longer logged. Logging is re-enabled when the driver is reloaded or the operating system restarts.
  - **Not Supported Logging** of correctable memory errors is not available for this device. Either the device does not support ECC memory or the driver is not loaded.
  - **Unknown** - You may need to upgrade the driver software and Server Agents. The Server Agent cannot determine the status of the device.

Advanced Memory Protection – This section displays the following information about the Advanced Memory Protection Sub-system.

- **Advanced Memory Protection Type Active** - displays the currently active type of Advanced Memory Protection based on the types available. The following connection states are supported:
  - **Other** - The Management Agent cannot determine the Advanced Memory Protection fault tolerance. You may need to upgrade your software.
  - **None** - This system is not configured for Advanced Memory fault tolerance.
  - **OnLine Spare Memory** - A single spare bank of memory is set-aside at boot time. If enough ECC errors occur, the spare memory will be activated and the memory experiencing the errors will be disabled.
  - **Mirrored Memory** - This system is configured for Mirrored Memory Protection. All memory banks are duplicated in Mirrored Memory, as opposed to only one for OnLine Spare Memory. If enough ECC errors occur, the spare memory will be activated and the memory experiencing the errors will be disabled.
- **Advanced Memory Protection Status** displays status of the Advanced Memory Protection sub-system. The following states are supported:
  - **Other** - The system does not support Advanced Memory Protection or the Management Agent cannot determine the status.
  - **Not Protected** - This system supports Advanced Memory Protection but the feature is disabled.
  - **Protected** - The system supports Advanced Memory Protection. The feature is enabled but not engaged.
  - **Degraded** - The system was protected, but the Advanced Memory Protection has been engaged; therefore Advanced Memory Protection is no longer available.
- **Advanced Memory Protection Condition** displays the current condition of the Advanced Memory Protection subsystem. The following states are supported:
  - **Other** - The system does not support fault tolerant memory or the Management Agent cannot determine the state.
  - **Ok** - This system is operating normally.
  - **Degraded** - The Advanced Memory Protection sub-system has been engaged. Schedule server down time to replace the deactivated memory.

ROM Microcode Patches – This section on ROM-Microcode Patches displays the following information:

- **Patch ID** displays the number of a particular microcode patch.
- **Date** displays a patch's date of manufacture.
- **Family** specifies the valid family, model, and step that apply to a patch.
- **Model** displays the model number of a patch. Step displays the revision level of a patch.

This section displays information about the following I/O devices.

- **Keyboard Type** describes the keyboard attached to your monitored system. For example, 101-key Enhanced Keyboard.
- **Video Type** describes the type of video in use with the monitored system. For example, EGA or VGA may appear here.
- **Auxiliary Input** indicates whether the auxiliary input (pointing device or mouse port) is enabled or disabled. If you have an EISA-based machine, use the System Configuration Utility to change this value. If you have an ISA-based machine, use SETUP to change this value.

Serial and Parallel Ports – This section displays the serial ports and the parallel ports that have been enabled for this unit, along with their corresponding I/O addresses.

The industry-standard addresses for parallel ports are as follows:

- Primary Port set to 378h
- Secondary Port set to 3BCh

The industry-standard addresses for serial ports are as follows:

- COM1 set to 3F8h
- COM2 set to 2F8h

These addresses are sometimes changed due to conflicts with another device. Communication ports that have been disabled do not show up in this window.

Universal Serial Bus Port – This section displays the Universal Serial Bus (USB) ports that have been enabled for this unit.

Memory Modules – This section on memory modules lists detailed information about the memory boards and modules installed in the system. The following items may be displayed:

- **Socket Number** - displays the socket number for the memory module.
- **Type** - displays the following value depending on the type of memory module selected.
  - Not installed
- **Board** - The memory module is permanently mounted (not modular) on a system board or memory expansion board.
  - Single width module
  - Double width module
- **SIMM** - (Single Inline Memory Module)
- **PCMCIA** - (Personal Computer Memory Card International Association technology memory module)
  - specific memory module
- **DIMM** - (Dual Inline Memory Module)
  - Size displays the size of the memory module.
  - Speed displays the speed of the memory module.

- **Technology** - displays the possible values for the memory module technology field, including:
  - FPM (Fast-Page Mode)
  - EDO (Extended Data Out)
  - BEDO (Burst Extended Data Out)
  - Synch DRAM (Synchronous DRAM)
  - Unknown

Expansion Boards – This section on expansion boards displays a list of their associated slot numbers. You can also view System Resources that are used by each board. Use the Expansion Boards feature to keep track of boards on the device and which resources are being used.

The Expansion Boards section provides additional information about PCI slots in the system, such as the width and speed of the PCI slot.

Security – The Security section displays each of the following security parameters as either Enabled or Disabled for the selected device.

- **Power On Password**—prevents use of the computer until the password is entered.
- **Network Server Mode**—displays the status of the network server (enabled or disabled).
- **Quick Lock Password**—disables the keyboard without exiting the application. The keyboard is enabled with a power-on password.
- **Quick Blank**—blanks the screen without exiting the application. The screen is enabled with a power-on password.
- **Diskette Boot Control**—prevents startup of the computer from the diskette drives. Some computers use diskette boot control to prevent startup of the computer from all removable media such as CD-ROMs and LS-120 diskette drives.
- **Serial Port Control**—prevents the transfer of data through the integrated serial interface (COM ports).
- **Parallel Port Control**—prevents the transfer of data through the integrated parallel port.
- **USB Port Control**—prevents the transfer of data through the integrated universal serial bus (USB) port.
- **Floppy Disk Control**—prevents writing to the diskette drives and allows read only access.
- **Fixed Disk Control**—is the state of the access control for the fixed disk interface embedded on the system board.

Software Version Information – This section displays the versions of the system software installed on this machine.

System Information – Insight Manager automatically collects configuration information for all devices in the Responsible Device List. Filtering subsystems, which allow you to filter your devices on such things as processor type or network operating system, uses this information. The type of information collected during Configuration Data Collection is useful for asset management.

The following system information is displayed in the Responsible Device List.

General Information –

- **Product name** displays the type of device or client PC.
- **Operating system** displays the type of operating system installed on the device.
- **SMBIOS Version** displays the version of SMBIOS on the device if applicable and available.
- **Machine ID (System Board)** displays the identification number of the machine.

- **Type of expansion bus** identifies the device or client bus type as EISA, EISA/PCI, or non-EISA.

Description Information –

- **System Name** displays the name of the device.
- **Description** displays a description of the device, including hardware and software.
- **Network Management Up Time** displays the amount of time since the network management portion of the system was last reinitialized.
- **Contact Information** displays the name of the person to contact about this device.
- **Location** displays the physical location of the device.
- **IP Address** displays the network location of the device.

Power Management – The Power Management section displays the state of power management on the system (enabled or disabled).

Asset Control Information –

- **Serial Number** displays the serial number of the device or client system board. Use this for identification and registration purposes. N/A appears if you do not have a device or client that supports the asset management feature. Use the System Configuration Utility (or the appropriate utility for your device or client) to enter a system serial number if one does not appear and you have a device or client that supports the asset management feature.
- **Asset Tag** displays a changeable asset control number and is used for identification purposes.
- **Board Rev** displays the system board revision number.
- **Monitor Model** displays the monitor model. Use this item for identification purposes.
- **Monitor Serial Number** displays the serial number for the monitor. Use this number for identification purposes.
- **Monitor Manufacture Date** displays the monitor's date of manufacture.

System Resources – This section on system resources lists the resources in use by the device or client workstation in the following order:

- **IRQ Numbers—**The Interrupt Request number displays, followed by the slot number of the board that is using this interrupt.
- **Port Address—**The port address range displays, followed by the slot number of the board that is using this I/O port range.
- **DMA Channels—**The DMA channel displays, followed by the slot number of the board that is using this channel.
- **Memory—**The memory range displays, followed by the slot number of the board that is using this memory.

Storage

Floppy Drives

The Mass Storage Subsystem section displays a list of floppy drives, including drive letter and type.

Utilization

Processor Utilization – This window displays information about the device's EISA bus, PCI bus, and system processor utilization. The EISA bus bar graph displays the percentage of total possible utilization for the EISA bus over the specified period of time. Use this graph to determine if the EISA bus is a performance bottleneck.

The PCI bus bar graph displays the percentage of total possible utilization for the PCI bus over a specified period of time. Use this graph to determine if the PCI bus is a performance bottleneck.

The system processor bar graphs display the percentage of total possible system processor utilization over the specified period of time. A bar graph is displayed for every processor installed in the device. Use this graph to determine if the system processor is a performance bottleneck.

Recovery

Auto Recovery

This section on Auto Recovery provides Automatic Server Recovery (ASR) configuration information, tells you when the server was last reset, and allows you to modify pager settings. You can modify the Status, ASR Reset Boot Option, Pager Status, Pager Dial String, and Pager Message settings.

The following items display on this window.

General Information –

- **Status** displays the status of ASR. The possible values are:
  - **Enabled**—ASR is enabled for this server.
  - **Disabled**—ASR is disabled for this server. To change this status, run the System Configuration Utility or perform a Set on this item.
  - **Not Available**—ASR is not available for this server or your driver is not loaded. ASR is available only on operating systems using the ASR software support.
  - **Unknown**—You may need to upgrade your support software or Server Agents. The Server Agent cannot determine the status.
- **Last Reset** displays how the last server reset was performed. The following values are possible:
  - **ASR**—The last reset was performed by ASR. Check the Critical Error Log to determine what may have caused ASR.
  - **ASR-Cleared**—The last reset was performed by ASR. The degraded condition caused by the ASR reset has been cleared. Degraded ASR conditions can be cleared by selecting the Clear ASR button on the Auto Server Recovery window.
  - **Manual**—The last reset was performed manually.
  - **Unknown**—You may need to upgrade your driver software or Server Agents. The Server Agent cannot determine the status of the device.

If the last reset was an ASR reset, the ASR condition will be degraded.

- **Timeout** displays how many minutes ASR will wait before initiating the recovery process.

  ASR depends on the software support to routinely notify the ASR hardware that the server is operating properly.

To change the Timeout setting, use the System Configuration Utility. Specify a prudent period of time for this field before resetting the system and activating the recovery process after a fault occurs. If the timeout period is set too low on a heavily used server, the timeout could occur before the software support has time to service the timer.

- **ASR Hardware Version** displays the version of the hardware supporting ASR. Use this information for identification purposes.

Reboot -

- **Reset Boot Option** displays what the server will boot after an ASR reset occurs. When the recovery process is initiated, ASR will reset the server, test all memory, de-allocate any bad memory blocks, and page you (if modem is present in the server and paging is enabled).
- **ASR Reset Limit** displays the number of consecutive times that ASR will attempt recovery.

  The ASR feature can restart a server after a critical hardware or software error occurs. ASR will attempt the recovery process a limited number of consecutive times. You cannot change this number. If the server continues to experience hardware or software errors and the number of recovery cycles exceeds this limit, the server will log an error to the Critical Error Log and continue to boot the Utilities from the hard drive.

  Use the ASR Reset Limit feature in conjunction with the ASR Reset Count feature in the same window. The ASR Reset Count feature displays the number of times that ASR has rebooted the server. If the ASR Reset Count is approaching the reset limit, immediately investigate the server for problems by checking the Critical Error Log and running Diagnostics.

ASR Reset Count displays how many times the ASR feature has rebooted the server. ASR will reboot (or reset) the server a limited number of times. If the ASR Reset Count is incremented, complete the following:

1. Check the Critical Error Log to determine if a serious problem exists.
2. If you suspect a software problem, consult your operating system documentation.
3. If you suspect a hardware problem, run Diagnostics to determine if a problem exists.

The ASR Reset count is reset to 0 when the system is reset manually.

Pager – Pager Status displays the status of the pager.

If a modem is installed in the server and paging is enabled, ASR can send an alarm to a pager when a critical error occurs.

The status can be:

- **Enabled** - Paging will occur.
- **Disabled** - Paging will not occur.
- **Unknown** - You may need to upgrade your support software or Server Agents for the Server Agent to be able to determine the status of this pager.
- **Pager Dial String** displays the pager dial string that the server will dial when an alarm occurs. If a modem is installed in the server and paging is enabled, ASR will send an alarm to a pager and deliver a pager message.
- **Pager Message** displays the pager message sent when an ASR occurs. The pager message is a numeric value of up to seven digits (characters must be 0 through 9) that identifies the server experiencing the hardware or software failure. There is an additional space for a pound sign (#), which many pagers require for ending a sequence. The numbers are chosen to uniquely identify the server so you know which server experienced a problem.

- **Serial Port** displays the communication port that is enabled for use with the ASR feature. For example, this port might be Serial Port 1. ASR will use this port to page the system administrator, and the administrator will use this port when dialing into the device. You can set the Serial Port value.

Environment

This section on Environment displays details on the device environment. The following information is available.

System Information –

- **Degraded Action** allows you to designate what action will be taken when the device environment becomes degraded. The options are:
  - **Continue**—The health or wellness driver will signal the operating system to continue functioning in situations where the temperature is too high or too low. In more serious temperature situations, the device shuts down automatically.
  - **Shut Down**—The health or wellness driver will signal the operating system to shut down in situations where the temperature is too high or too low. In more serious temperature situations, the device shuts down automatically.
  - **Unknown**—You may need to upgrade your driver software or Server Agents if the Server Agents cannot determine the status of the device.
- **Temperature**—displays the current temperature condition of the system or client PC. This value can be:
  - **OK**—The temperature is within normal operating range.
  - **Degraded**—The temperature is above normal for airflow obstructions. Make sure that the cover is on.
  - **CAUTION**—Do not operate the system with the cover removed. Proper airflow is possible only when the cover is in place and properly secured.
  - **Failed**—The temperature is outside the normal operating range and could permanently damage the system. The system will automatically shut down to prevent damage to hardware or data loss.
  - **Unknown**—You may need to upgrade your driver software or Server Agents if the Server Agents cannot determine the status of the device. If you are managing a client with an Unknown temperature status, the client may not support thermal detection.
- **Fans** display an entry for each of the device or system processor fans. The status of each fan can be:
  - **OK**—The fan is operational.
  - **Failed**—The fan has failed. The device will shut down automatically to prevent damage to hardware or data loss. Replace the fan.
  - **Unknown**—You may need to upgrade your driver software or Server Agents if the Server Agents cannot determine the status of this setting.

Power Supply

This section on Power Supply displays information about the power supplies. The following entries may be displayed:

- **Location** displays the bay where the power supply is located.
- **Status** displays the status of the power supply. The following values are possible:
  - **OK**—A power supply is installed and operating normally.
  - **Failed**—A power supply is installed and is no longer operating. Replace the power supply.

- **Not Installed**—Nothing is installed in this power supply bay.
- **Unknown**—The Server Agent is unable to determine if this storage system power supply bay is occupied.

- **Serial Number** displays the serial number of the power supply. This information can be used for identification purposes.
- **Firmware Revision** displays the firmware revision of the power supply.
- **Present**: Represents whether the Power Supply is present in the chassis.
- **Used Capacity (%)**: Represents the current Power Supply capacity which is a percentage of its maximum capacity.
- **Used Capacity (W)**: Represents the Power Supply capacity in Watts.
- **Max Capacity**: Represents the maximum capacity of the Power Supply in watts.
- **Model**: Represents the Power Supply Model name.
- **Voltage**: Represents the Input Main Voltage of the Power Supply in Volts.
- **Redundant**: Represents the redundancy state of the power supply. The following values are possible:
  - Redundant
  - Not Redundant
  - Unknown
- **Hot Pluggable**: Represents if the power supply is capable of being removed and/or inserted while the system is in an operational state. The following values are possible:
  - Hot Plug
  - Not Hot Plug
  - Unknown

Power Converter

The **Power Converter** section displays information about the power converters. The following entries may be displayed:

- **Slot and Socket** displays the location of the power converter.
- **Status** displays the status of the power converter. The following values are possible:
  - **OK**—A power converter is installed and operating normally.
  - **Degraded**—A power converter is installed and is operating in a degraded state. Replace the power converter.
  - **Failed**—A power converter is installed and is no longer operating. Replace the power converter.
  - **Unknown**—The Server Agent is unable to determine the status of this power converter.

Remote Communications

This section of Remote communications displays details about the status of the Integrated Remote Console (IRC) and the Rapid Recovery communications configuration.

The following fields display:

- **Integrated Remote Console**

  Status indicates whether the IRC is supported and enabled. Possible values include Not Supported, Enabled, and Disabled.
  - If IRC is not present on this device, the field displays “Not Supported.”

- If IRC is present and enabled, the field displays "Enabled."
- If IRC is present but disabled, the field displays "Disabled." Three things can cause IRC to be disabled even though you enabled it:

1. The COM port for which IRC is configured does not exist.
2. The COM port for which IRC is configured is a PCI device.
3. The IRQ for which IRC is configured does not match the COM port for which IRC is configured.

Remote PC Communications to Utilities –

- **Network Access** displays the status of the ASR Network Remote Console feature. The following values may display in this field:
  - **Enabled**—Remote Console network access is enabled. If the server ASR reboots to Utilities or if you reboot to Utilities from Insight Manager by pressing the Reboot Button in the Device View Window, then network remote access is enabled. You may access Utilities through Remote Console.
  - **Disabled**—Remote Console network access is not enabled.
  - **Unknown**—You may need to upgrade your driver software or Server Agents if the Server Agents cannot determine the status of this setting.
- **Dial-In Status** displays whether the ASR feature will put the modem into auto-answer mode after an ASR reboot. The following values may display in this field:
  - **Enabled**—Remote Console dial-in access is enabled by putting the modem into auto-answer mode. If the server ASR reboots to Utilities (see Reset Boot Option in Automatic Server Recovery Window) or if you reboot to Utilities from Insight Manager by pressing the Reboot button in the Device View Window, then modem remote access is enabled. You may access Utilities through Remote Console using a modem connection.
  - If you have enabled Dial-Out Status, a dial-out connection will be attempted first. If that connection fails, then dial-in access is enabled. If the dial-out connection is successful, then dial-in is enabled after that connection is terminated.
  - **Disabled**—This feature is not enabled. ASR will not put the modem in auto-answer mode.
  - **Unknown**—You may need to upgrade your driver software or Server Agents if the Server Agents cannot determine the status of this setting.
- **Dial-Out Status**

  After the ASR feature has attempted to deliver an alarm by means of the pager, if the Dial Out Status is enabled and a proper Dial-Out String has been provided, ASR will dial a remote PC. When a session is established, the server administrator can use a third-party terminal emulation program to run the Utilities to diagnose the problem.

  Possible values are:

  - **Enabled**—ASR will dial the Dial-Out String and attempt to set up a connection to a remote PC. ASR will attempt the connection five times. If a connection is not established and the Dial-In Status is enabled, ASR will put the modem into auto-answer mode so that the server administrator can dial in.
  - **Disabled**—This feature is not enabled. ASR will not attempt a remote connection. However, if the Dial-In Status in enabled, ASR will put the modem into auto-answer mode so that the server administrators can dial-in.
  - **Unknown**—You may need to upgrade your driver software or Server Agents if the Server Agents cannot determine the status of this setting.

- **Dial-Out String**

  After the ASR feature has attempted to deliver an alarm by means of the pager, if the Dial-Out Status is enabled and a proper Dial-Out String is provided in this field, ASR will attempt to dial a remote PC. When a session is established, the system administrator can use a third-party terminal emulation program to run the Utilities to diagnose the problem.
- **Serial Port**— displays the communication port that is enabled for use with the ASR feature. For example, this port might be Serial Port 1. ASR will use this port to page the system administrator, and the administrator will use this port when dialing in to the device.

Logs

Critical Errors

The Critical Error Log records non-correctable memory errors, as well as catastrophic hardware and software errors that cause a system to fail. This information helps you to identify quickly and correct the problem, minimizing downtime.

This section displays a description of critical errors. The date and time of each error is followed by a brief description of the error. The time shown is rounded to the nearest hour.

If critical errors are marked with an exclamation point (!), indicating corrective action is required, the log condition is degraded. To eliminate the exclamation mark and indicate that an entry has been corrected, select the entries you wish to clear and click the Correct Marked Entries button or run Diagnostics on the device. An asterisk (*) indicates the log entry to which the Last Failure Message applies.

The following list describes errors that may be logged. If you receive any of these errors, run Diagnostics on your system or consult your software documentation.

- **Abnormal Program Termination**—A device has detected a fatal software error resulting in a device failure.
- **ASR Base Memory Parity Error**—The system detected a data error in base memory following a reset due to an ASR timeout.
- **ASR Extended Memory Parity Error**—The system detected a data error in extended memory following a reset due to an ASR timeout.
- **ASR Memory Parity Error**—The system ROM was unable to allocate enough memory to create a stack. It was unable to put a message on the screen or continue booting the server.
- **ASR Reset Limit Reached**—The maximum number of system resets has been reached. The Utilities will be loaded.
- **ASR Reset Occurred**—No error data is logged.
- **ASR Test Event**—An ASR Test Event was generated by the user through the system utilities. No action is required since the event was user-generated to test the ASR configuration.
- **ASR Timeout NMI**—The server has generated an ASR NMI because the ASR timer has not been refreshed. This generally indicates a driver has not relinquished control of the processor causing a server failure. The resulting ASR NMI was generated to log this event.
- **CPU Internal Corrected Error Threshold Exceeded**—The system has detected that a processor has exceeded the threshold for the number of internal ECC cache errors.
- **CPU Processor Power Module Failed**—The system has detected that a processor's power module has failed.
- **Critical Temperature**—The system's critical temperature has been exceeded and auto shutdown has been initiated.
- **Error Detected On Bootup**—The system detected an error during the Power-On Self-Test.

- **Exception**—The processor has detected a critical exception resulting in a device failure.
- **Fan Failure**—The system or processor fan failed.
- **NMI-Processor Local Error—**The processor experienced a fatal error resulting in a device failure.
- **NMI-Expansion Board Error—**A board on the expansion bus indicated an error condition causing a device failure.
- **NMI-Expansion Bus Arbitration Error—**Memory refresh cycles were delayed, potentially leading to data loss. The error results in a system failure.
- **NMI-Expansion Bus Master Time-out—**A bus master expansion board in the indicated slot did not release the bus after its maximum time resulting in a device failure.
- **NMI-Expansion Bus Slave Time-out—**A board on the expansion bus delayed a bus cycle beyond the maximum time resulting in a device failure.
- **NMI-Failsafe Timer Expiration—**The software was unable to reset the system failsafe timer, resulting in a system failure.
- **NMI-Processor Address Error 1—**A processor internal address parity checking error occurred, resulting in a device failure.
- **NMI-Processor Address Error 2—**The processor detected an address parity error during an inquire cycle.
- **NMI-Processor Cache Parity Error—**A data error occurred within the processor cache, resulting in a system failure.
- **NMI-Processor Internal Error 1—**A processor internal parity error occurred, resulting in a device failure.
- **NMI-Processor Internal Error 2—**The processor detected an internal parity error or a functional redundancy error.
- **NMI-Processor Parity Error—**The processor detected a data error resulting in a device failure.
- **NMI-Software Generated Interrupt—**Software indicated a system error resulting in a system failure.
- **NMI-System Concurrency Error—**A potential error condition was detected within the Data Flow Manager, resulting in a system failure.
- **NMI-Uncorrectable Memory Error—**The device experienced an uncorrectable memory parity error resulting in a device failure.
- **NMI-Unknown Error Type—**The device driver does not recognize this NMI. You may need to upgrade your health driver.
- **Processor Failure—**The processor failed during the Power-On Self-Test.
- **Server Manager Failure—**An error occurred in the server interface with the Server Manager.
- **UPS A/C Line Failure/Shutdown or Battery Low—**The device has initiated a UPS or operating system shutdown, or the battery is almost depleted after an AC line failure.

The Last Failure Message on this window displays the last failure message associated with a critical error.

Correctable Errors

This alarm indicates that a block of memory has failed or is failing and may need to be replaced. This condition is generally non-critical since the memory controller can correct the problem. However, this type of error indicates that a memory component is failing or has failed in the system issuing the alarm. The system continues to correct any errors it can.

Memory errors are corrected by the ECC memory subsystem when they occur. If you notice an increase in these errors, correct the problems as soon as possible. Further degradation of the memory components may occur, and then errors may no longer be correctable.

Power On Messages

The Power On Messages section displays the Power On messages logged when the device was turned on. Refer to your device documentation for a listing of possible Power On error messages and their meanings. Click the Clear Power On Message button to clear the Power On message log. This button is only available if there are messages to clear.

Integrated Management Log

The Integrated Management Log records system events, critical errors, Power-On message errors, and memory errors. The log also records catastrophic hardware and software errors that typically cause a system to fail. This information helps to quickly identify and correct the problem and minimize downtime.

Each event log entry has a status to identify the severity of the event:

- **Informational**—General information about a system event.
- **Repaired**—An entry has been repaired. Users must mark entries as repaired.
- **Caution**—A non-fatal error condition has occurred.
- **Critical**—A component of the system has failed.

If any events in the log have a condition of Caution, the overall log condition will be marked as degraded. If Critical events exist in the log, the overall log condition will be marked as failed.

To clear a degraded or failed event log, mark the log entry as repaired after you have repaired the condition that caused a log entry to be generated. Perform the following steps:

1. Highlight the log entries in the Integrated Management Log.

2. Click the **Mark Repaired** button. This button is located at the bottom of the Integrated Management Log Section of the Web Browser.

The Description column gives a brief description of the error or event. The Update Time column contains the last time this log was updated. The Status column contains the status of the log entry.

Remote Insight Log – The Event Log section displays the list of events stored in the Remote Insight Board event log. A user with the appropriate authority can clear these events. Each event includes the following information:

- **Index** displays a numeric index for each event.
- **Time of Event** displays the time the event occurred.
- **Description** displays a text description of the event.

NIC Agent Information

NIC Subsystem

The NIC Management Agents display all logical Network Interface Controllers (NICs) that are configured on the system you are viewing. The following items can appear in the NIC section of the navigation frame:

- Virtual NIC
- Single NIC
- Team(s) of NICs

Virtual NIC

The Virtual NIC is the TCP/IP Loopback interface. It is provided by operating systems to allow a computer to send packets to itself. A packet is the fundamental unit of transmission on the physical network.

Select the Virtual NIC to view detailed Interface Information.

Single NIC

A single NIC is composed of one physical adapter. Select a single NIC from the list to view more information about that NIC.

The following types of information are available depending on the type of NIC:

- NIC Controller Information
- NIC Interface Information
- Ethernet Statistics
- Token Ring Statistics

Team(s) of NICs

A team of NICs is composed of two or more physical adapters that present a single, logical interface on the network. Select an NIC team from the navigation frame to view detailed information about that team. The Logical Adapter Information displays by default. You can also select one of the physical adapters in the team to display additional information about that adapter.

There are three kinds of NIC teams:

- **Network Fault Tolerant Team**—The logical adapter has two or more physical adapters associated with it. One physical adapter is active on the network, and the other physical adapters are hot standbys.
- **Transmit Load Balancing Team**—The logical adapter has more than one physical adapter associated with it. One physical adapter transmits and receives data, while the others only transmit. If the receiving adapter fails, one of the other adapters assumes this role.
- **Switch-assisted Load Balancing**—The logical adapter has more than one physical adapter associated with it. All physical adapters can receive and transmit data. This requires a switch that cooperates with the adapters. If any adapter fails, the load is spread among the remaining adapters.

The following types of information are available for a selected NIC team:

- Logical Adapter Information
- NIC Controller Information
- Ethernet Statistics

Logical Adapter Information

The following Logical Adapter Information is available for all NIC teams:

Description displays a description of the NIC Team (Network Fault Tolerant. team, Transmit. Load Balancing team, or Switch-assisted Load Balancing Team.).

Status displays the overall status of the NIC team.

- **OK** (green)
- **Degraded** (yellow)
- **Failed** (red)
- **Unknown** (blue)

Group Type displays the group type of the NIC team (Network Fault Tolerant, Transmit, Load Balancing, or Switch-assisted Load Balancing.).

Switchover Mode displays the method used to determine when traffic switches from one adapter to another. There are three types of Switchover Modes:

- **Manual**—Indicates the logical adapter has more than one physical adapter associated with it. Network traffic will only switch from the active adapter to the standby adapter under user control. This Switchover Mode is only available for Network Fault Tolerant Teams.
- **Fail on Fault**—Indicates the logical adapter has more than one physical adapter associated with it. If the active adapter fails, network traffic automatically switches to a standby adapter. The standby adapter remains active until some action (such as manual switch or system restart) restores the primary adapter to active. This is the default Switchover Mode for all team types and is the only available Switchover Mode for Transmit. Load Balancing Teams and Switch-assisted Load Balancing Teams.
- **Preferred Primary—**Indicates the logical adapter has more than one physical adapter associated with it. If the active adapter fails, network traffic automatically switches to a standby adapter. If the original primary adapter recovers from the failure, it automatically becomes active again. This Switchover Mode is only available for Network Fault Toleranct Teams.

Physical (MAC) Address displays the physical address presented on the network by the logical team.

NIC Controller Information

The following information displays about NIC controllers.

Model displays the NIC controller model, such as the NetFlex-2 Controller. Use this information for identification purposes.

Status displays one of three valid states:

- **OK**—The controller is operating normally.
- **Failed**—The controller has failed and is no longer operating.
- **Unknown**—You may need to upgrade your driver software or NIC Agent. The NIC Agent cannot determine the status of the controller.

Link failure—Adapter does not have link.

Slot displays the physical location of the NIC. For example, if this value is 3, then the NIC is located in slot 3 of your computer. Use this information for identification purposes.

The NIC interface slot value is embedded if the NIC is integrated onto the system board. If the slot is unknown, or if the NIC is an ISA card, the slot value is N/A.

Port number is 1 for a single-headed NIC, or the port number for a multiple-headed NIC.

Duplex displays the current state of the Full Duplex Ethernet Support. NICs support the Full Duplex Ethernet if they are attached to a device that also supports Full Duplex.

The following duplex values are possible:

- **N/A—**The NIC Agent cannot determine the current state of the Full Duplex Ethernet Support. You may need to upgrade your software.
- **Not Supported—**Either the hardware does not support duplex, or the NIC Agent cannot determine the current state of the Full Duplex Ethernet Support for this NIC.
- **Half—**The NIC is currently running in half duplex mode.
- **Full—**The NIC is currently running in full duplex mode.

Base I/O Address specifies the starting address of the I/O port used to communicate with this device. Use this information for identification purposes. This I/O port address cannot be used by any other device.

IRQ displays the hardware interrupt that this NIC uses to communicate with the device driver. Use this information for reference purposes.

Base Memory Address displays the base memory address used by this NIC. If this device does not use system memory, or if this information is unavailable, this item is N/A. Use this information for identification purposes.

DMA Channel displays the number of the DMA channel used for this NIC. If this device does not use a DMA channel, or if this information is unavailable, this item is N/A. Use this information for identification purposes.

Physical (MAC) Address displays the physical address presented on the network by the physical adapter.

Role displays the following states:

- **Team Member** - Any adapter in a Switch-Assisted Load Balancing Team.
- **Primary** - The adapter is the primary adapter in the group, or the group consists of a single adapter. The primary adapter in a Fail On Fault group handles all the network traffic unless it fails. The primary adapter in a Transmit Load Balancing group receives all traffic. The physical address of this adapter is the default address of the group.
- **Secondary** - In a Fail On Fault group, this adapter functions as a standby. No network traffic is handled by this adapter other than periodic test packets. In a Transmit Load Balancing group, this adapter is in a secondary role and transmits packets to increase bandwidth.

Hard Drives

Drive Replacement

Should a disk drive fail, replace it using the procedure below. This feature is known as hot pluggable, since the unit does not have to be powered off to replace a drive.The purpose of fault-tolerant configurations on the Smart Array Controller is to protect against data loss due to drive failure. Although the Smart Array Controller firmware is designed to protect against normal drive failure, it is imperative that the correct actions are performed to recover from a drive failure without inadvertently inducing any additional drive failures.

Replace failed drives as soon as possible. Failed drives can be replaced any time during or following the RAID recovery process.

NOTE

When a failed drive is replaced, the system begins rebuilding the RAID again using the new drive. The spare drive returns to its original state after recovery is finished.

CAUTION

The RAID unit used on the Image Vault has a built-in spare. In the event of a drive failure, the RAID uses the spare to rebuild the lost drive unit. This procedure can take several hours. If several drives are removed from the RAID or fail during this procedure, serious and possibly unrecoverable data loss to the entire RAID unit may occur. Replace failed drives as soon as possible.

NOTE

DO NOT remove an active drive while a rebuild is in process; only the failed drive should be removed.

To remove a drive:

1. Press the **Ejector** button in and pivot the **Release Lever** to the full, open positions.
2. Pull out on the drive until it is disconnected from the backplane connector.

To install a drive:

1. Insert the new drive halfway into the enclosure until it is against the backplane connector.
2. Push in the drive while pivoting the **Release Lever** to the full upright position.
3. Push the **Release Lever** until it engages the **Ejector** button.
4. The controller rebuilds the data that was on the failed drive onto the online spare.

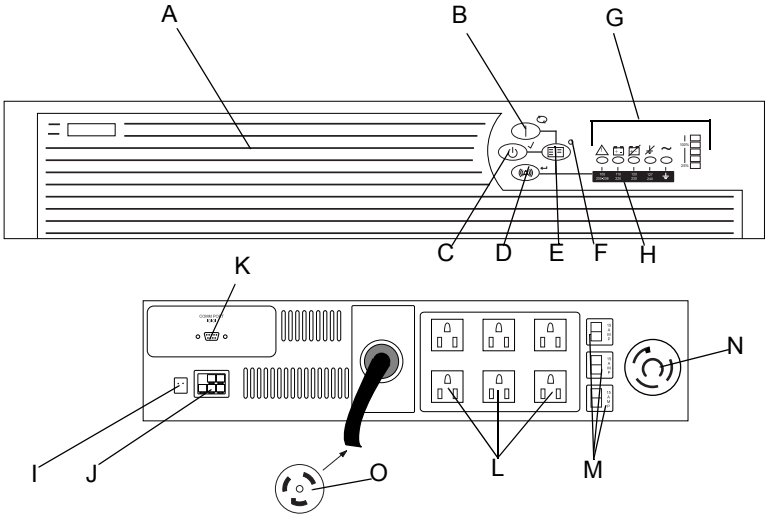
UPS

UPS Overview

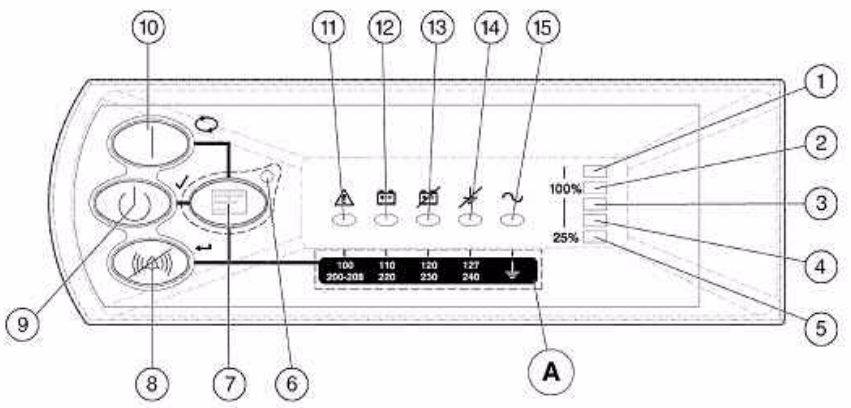
The rack-based Image Vault is supplied with an Uninterruptible Power Supply (UPS) that provides battery backup power in the event of an electrical power failure. The UPS alerts the user and allows time to power down the server in an orderly manner. The Uninterruptable Power Supply (UPS) is connected to the CPU via serial port A located on the CPU.

This chapter provides a basic description of the UPS controls and LEDs. Refer to the UPS manual for additional information.

UPS Components



UPS - Uninterruptible Power Supply, HP R3000 XR		
Item	Name	Description
A	Battery Compartment	Holds battery. Under normal circumstances, batteries should last 3 to 6 years.
B	ON/OFF Button	Turns power to UPS on and off.
C	Standby Button	Puts UPS into standby mode. Battery is charged but no power is available at UPS outlet receptacles.
D	Test/Alarm Button	Initiates a self test and silences alarms.
E	Configure Button	Puts UPS in configure mode.
F	Configure Mode On LED	Illuminates green to indicate UPS is in configure mode
G	LED display	Display settings and status of UPS (AC input level, battery level, etc.)
H	Voltage Configuration Panel	Configuration panel allowing adjustment of nominal voltage.
I	REPO Port	NOT USED - Remote Emergency Power Off
J	ERM Connector	Extended Run Module. An optional Battery Pack Module used to extend battery backup time. Not Used.
K	Communications	Allows communication between UPS and host computer. Connects to serial port B on CPU.
L	Receptacles	Provide AC power output.
M	Circuit Breakers	Provide circuit protection per load segment.
N	PDU Receptacle	Provides power to PDU (Power Distribution Unit)
O	Plug	L5-30P



UPS - Uninterruptible Power Supply, HP R1500 XR	
Item	Description
1	LED indicating Overload capacity
2	LED indicating 76% to 100% load capacity
3	LED indicating 51% to 75% load capacity
4	LED indicating 26% to 50% load capacity
5	LED indicating 0% to 25% load capacity
6	Configure mode on LED
7	Configure button
8	Test/Alarm Reset button
9	Standby button
10	On button
11	General alarm
12	On battery
13	Bad battery / low battery
14	Site wiring fault indicator
15	Utility LED
A	Voltage Configuration Panel - accessible only when teh front bezel is removed

Modes of Operation

The UPS has four modes of operation:

Standby Mode

- No power is available at the UPS output receptacles.
- The UPS charges the batteries as necessary.

Operate Mode

- Power is available at the UPS output receptacles.
- The UPS charges the batteries as necessary.

Configure Mode

- Power is available at the UPS output receptacles.
- The UPS charges the batteries as necessary.
- The user can update the UPS configuration.

Sleep Mode

By default, Sleep mode is disabled.

Configuration

In the *Configure* mode, the front panel LEDs display change functions. The LED display and button controls allow the user to monitor and change the UPS configuration parameters. See the vendor's UPS manual for an explanation of the configuration parameter for each LED control.

Batteries

Charge Batteries

The HP UPS models automatically charge the batteries when connected to utility power. No user intervention is required while the UPS is in use.

Care and Storage of Batteries

To maximize the life of batteries:

- Minimize the amount of time the UPS uses battery power by matching the UPS configuration with the utility voltage. For more information, see the vendor's UPS manual.
- Keep the area around the UPS clean and dust free. If the environment is very dusty, clean the outside of the UPS regularly with a vacuum cleaner.
- Maintain the ambient temperature at 25°C (77°F).
- If storing a UPS for an extended period, recharge the batteries every six months:
  - Connect the UPS to utility power.
  - Allow the UPS to remain in *Standby* mode.
  - Allow the UPS to charge the batteries for 24 hours.
  - Update the *Battery Recharge Date* label.

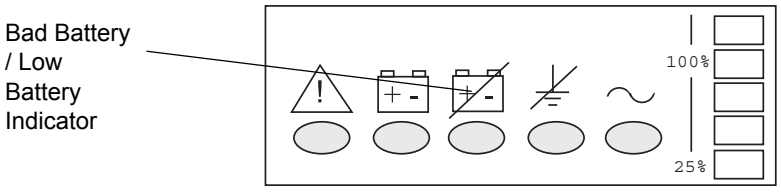
Replacement Procedures

The UPS does not have any field replaceable parts. Replace the UPS if a failure occurs or the Bad Battery/Low Battery Indicator turns red.

When the Bad Battery/Low Battery Indicator turns red, replace the unit within 60 - 90 days before a battery failure occurs.

NOTE

If the audio alarm parameter is enabled, the Battery Service Indicator is accompanied by an audio alarm.



Verify that battery replacement is required by initiating a UPS self test. If the Bad Battery/Low Battery Indicator remains red, the batteries need replacement.

NOTE

Depending on usage and environmental conditions, the batteries should last three to six years.

Power Failures

The UPS shuts down the system automatically if power is not restored within 10 minutes of a power failure. A *Power Manager* screen appears one minute after a power failure occurs, indicating a "Utility Power Failure" and begins counting down the minutes to battery shutdown.

The following tables provide troubleshooting information for the UPS. For more detailed information, see the UPS service manual.

Front Panel LEDs

Each LED (and the condition it indicates in the Operate and Standby modes) is described in the following table.

LED Color and Meaning Table		
LED	Color	Meaning
AC Input LEDs (LEDs 1-4)		
1	Red	The utility voltage is higher than the voltage range for which the UPS was configured. The UPS is supplying battery power. The audio alarm will sound.
	Flashing Red	Utility voltage has returned to the voltage range for which the UPS was configured. The UPS is supplying utility power. The audio alarm should be reset.
2	Green	Utility voltage is within the voltage range for which the UPS was configured.
3	Green	Utility voltage is lower than the current UPS configuration expects. The UPS is compensating and providing power to the loads without the use of batteries.
4	Red	The utility voltage is lower than the voltage range for which the UPS was configured. The UPS is supplying battery power. The audio alarm will sound.
	Flashing Red	Utility voltage has returned to the voltage range for which the UPS was configured. The UPS is supplying utility power. The audio alarm should be reset.
Site Wiring Fault (LED 5)		
5	Red	No ground connection between utility power and the UPS.
		The line and neutral connections between utility power and the UPS are reversed.
		The UPS voltage configuration may be incorrect.
Battery Charge LEDs (LEDs 6-9)		
6	Green	Batteries are between 67% and 100% charged. (LEDs 7 and 8 are also green)
7	Green	Batteries are approximately 66% charged. (LED 8 is also green)
8	Green	Batteries are approximately 33% charged.
9	Red	Batteries are low; approximately three to five minutes of battery backup remain.
Battery Service (LED 10)		
10	Red	Potential battery failure. Note: When LED J is red, the audio alarm sounds, indicating the UPS detected a potential battery failure. The UPS batteries may need to be replaced in 30 to 60 days.
Load Level LEDs (LEDs 11-14)		
11	Red	Load on the UPS exceeds the maximum power available.
12	Green	Load on the UPS is approximately 67% to 100% of the maximum power available. (LEDs 13 and 14 are also green)
13	Green	Load on the UPS is approximately 66% of the maximum power available. (LED N is also green)
14	Green	Load on the UPS is approximately 33% of the maximum power available.
Communication (LED 15)		

LED Color and Meaning Table (Continued)		
LED	Color	Meaning
15	Green	The communication link between the UPS and the host computer is active.
	Flashing Green	Data is being transferred between the UPS and the host computer.
On (LED 16)		
16	Green	Power is available at the UPS output receptacles.

Initiate a Self-test

To initiate a self test, press the **TEST/ALARM RESET** button and hold for three seconds. The UPS acknowledges compliance with five beeps.

NOTE

A portion of the self test requires battery power; the self-test cannot be initiated if the batteries are less than 90% charged.

During the self test, it is normal for the UPS to turn on individual LEDs momentarily; however, if an alarm condition is detected, the UPS turns on the appropriate LED and may sound an audio alarm.

WARNING

To reduce the risk of electric shock from earth conductor leakage current, use the self test procedure to check the UPS batteries (rather than unplugging the UPS).

For the meaning of individual LEDs, see "Front Panel LEDs" on page 2-65.

Audio Alarm

The UPS may sound an audio alarm to warn the user that an alarm condition exists.

NOTE

Certain audio alarms can be disabled. See the UPS manual for more information.

Alarm Conditions

Audio Alarm Conditions		
Alarm Condition	LED Activity	Can be disabled?
Utility power failure	LED 1 or LED 4 red	Yes
Site Wiring Fault	LED 5 red	Yes
Battery Service	LED 10 red	Yes
Internal UPS overvoltage	LED 10 flashing red	No

Interpreting Faults and Alarms

During Start

Troubleshooting During Start		
Symptom	Possible Cause	Suggested Action
UPS will not start	No utility power	Check power at the utility power receptacle or contact a qualified electrician.
	UPS power cord disconnected	Connect the power cord.
	UPS input circuit breaker open	Press the circuit breaker button to reset. If the breaker trips repeatedly, contact an authorized service provider (high models only).
LED 5 is red (Site wiring fault)	Utility power receptacle ungrounded or no ground wire in UPS power cord	Contact a qualified electrician.
	Line & neutral wires reversed in utility power receptacle or in UPS power cord	For units factory-configured for 208V, the Site Wiring Fault function is disabled. If reconfiguring a 230V unit to operate at 208V, the Site Wiring Fault function must be manually disabled (high models only).
LED 10 is red (Battery Service)	Battery voltage is low because UPS was out of service for a long period	Allow the UPS to charge the batteries for 24 hours. Initiate a self test; if LED 10 does not turn off, replace batteries.
	The UPS was powered on with Sleep mode disabled, draining the batteries	Utility voltage has returned to the voltage range for which the UPS was configured. The UPS is supplying utility power. The audio alarm should be reset.

After Start

Troubleshooting After Start		
Symptom	Possible Cause	Suggested Action
Audio Alarm	Alarm condition exists	Identify the red LED associated with this alarm condition. Check this troubleshooting guide to determine the cause of the alarm.
LED 1 is red (Input power)	Utility voltage is too high	The utility voltage is higher than the UPS operating range. The UPS switches to battery power. If this happens repeatedly, update the configuration.
LED 1 is flashing red	Alarm may need to be reset	The utility voltage returned within the UPS operating range. Press the TEST/ALARM RESET button.
LED 4 is red (Input power)	Utility voltage is too low	The utility voltage is lower than the UPS operating range. The UPS switches to battery power. If this happens repeatedly, update the configuration. Contact a qualified electrician to make sure that utility power is suitable for the UPS.
LED 4 is flashing red	Alarm may need to be reset	The utility voltage returned within the UPS operating range. Press the TEST/ALARM RESET button.
UPS frequently switches between utility and battery power	Utility power variations	The utility voltage is frequently outside the UPS operating range. Update the configuration. Contact a qualified electrician to make sure that utility power is suitable for the UPS.
LED 11 is red (Load Level)	Protected devices are exceeding the UPS power rating	Remove one or more devices to reduce the power requirements.
	(UPS may switch from utility to battery power)	Make sure that the devices are not defective.

Troubleshooting After Start (Continued)		
Symptom	Possible Cause	Suggested Action
LED 9 is red (Battery Charge)	Low battery voltage	If the UPS is supplying battery power, save current work and shut down the system. Allow the batteries to charge. If the UPS is supplying utility power, no user intervention is required. Allow the batteries to charge.
Insufficient warning of low batteries	Battery service required	Allow batteries to charge for 24 hours, then initiate self-test. If LED 10 is red, replace batteries.
	Shutdown Delay configuration inappropriate	Update the Shutdown Delay from 5 seconds to 3 minutes. Use Power Management Software to specify a suitable delay.
LED 10 is red (Battery Service)	Potential battery failure detected	Allow batteries to charge for 24 hours, then initiate self-test. If LED 10 is red, replace batteries.
	New batteries improperly connected	Check connections.
LED 10 is flashing red; audio alarm cannot be silenced	Internal UPS overvoltage condition exists	Shut down the UPS. Contact an authorized service provider.

For your notes

3 Hardware Fault Isolation

For your notes

Server Hardware Troubleshooting

If the Server Does Not Start

If the server does not start:

1. Verify that the server and monitor are plugged into a working outlet.
2. Verify the power source is working properly:
   - Check the status using the system power LED on the front panel.
   - Verify that the **Power On/Standby** button was pressed firmly.
   - Refer to *Servers Troubleshooting Guide* for details on checking power source operation.
3. Verify that the power supplies are working properly:
   - Check the status using the power supply LEDs
   - Refer to the *Servers Troubleshooting Guide* for details on checking power supply operation.
4. If the system does not complete POST or start loading an operating system, refer to the *Servers Troubleshooting Guide* for information on loose connections.
5. If the server is rebooting repeatedly, confirm that the system is not rebooting due to a problem that initiates an ASR-2 reboot.

   You can enable ASR-2 to restart the server, automatically loading the operating system. Should a critical error occur, ASR-2 logs the error in the Integrated Management Log and restarts the server. Refer to the *Servers Troubleshooting Guide* for information on ASR-2 and system short circuits.
6. Proceed to next section - Diagnostic Steps for more information.

Diagnostic Steps

If the server does not power up, or powers up but does not complete POST, answer the questions in the following table to determine appropriate actions based on the symptoms observed.

Based on the answers, you are directed to the appropriate troubleshooting table. That table outlines possible reasons for the problem, options available to assist in diagnosis, possible solutions and references to other sources of information.

Question	Action
1. Is the system power LED amber?	If yes, press the Power On/Standby button and then continue to next question. If no, refer to "Is the System Power LED Amber?" on page 3-4.
2. Is the system power LED green?	If yes, continue to next question. If no, refer to "Is the System Power LED Green?" on page 3-4.
3. Is the external health LED green?	If yes, continue to next question. If no, refer to "Is the External Health LED Green?" on page 3-4.
4. Is the internal health LED green?	If yes, continue to next question. If no, refer to "Is the Internal Health LED Green?" on page 3-5.
5. Is the monitor displaying information?	If yes, use the POST messages for further diagnosis. If no, refer to "Is the Monitor Displaying Information?" on page 3-5.

Is the System Power LED Amber?

Answer	Possible Reasons	Possible Solutions
No	The server is not connected to AC power or no AC power is available. The power supply may not be inserted properly, it may have a damaged connector, or it may have failed. A broken connection exists between the following: ■ Power converter module and system board ■ Power converter module and SCSI backplane ■ SCSI backplane and power button/LED board The power converter module, system board, SCSI backplane, and/or power button/LED board may need to be replaced.	Verify that the power cord is connected to the power supply. Verify that the power supply is undamaged and is fully seated. Verify that the system power and power supply signal cables are connected to the system board. Verify that the CD-ROM drive cables are connected to the system board and SCSI backplane. Verify that the power button/LED cable is connected to the SCSI backplane and power button/LED board. Verify that all pins on connectors and components are straight. Refer to the *Servers Troubleshooting Guide* for further options regarding power and general hardware problems.
Yes	If the system power LED is amber: ■ Press the **Power On/Standby** button. ■ Refer to the "Is the System Power LED Green?" on page 3-4.	

Is the System Power LED Green?

Answer	Possible Reasons	Possible Solutions
No	**Power On/Standby** button was not pressed firmly. The power supply may not be inserted properly, it may have a damaged connector, or it may have failed. The system may have experienced a short. The power converter module, system board, SCSI backplane, and/or power button/LED board may need to be replaced. The PCI riser cage is not fully seated.	Firmly press the **Power On/Standby** button. Verify that the power supply is undamaged and is fully seated. Verify that all pins on connectors and components are straight. Reseat expansion boards. Reseat the PCI riser cage.
Yes	If the system power LED is green, refer to "Is the External Health LED Green?" on page 3-4.	

Is the External Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is amber	Power supply redundancy is lost due to a power supply failure.	Verify that the power supply is undamaged and fully seated, or identify and replace the failed power supply. Obtain replacement parts.
No, it is red	All installed power supplies have failed. The system may have experienced a short.	Obtain replacement parts.
Yes	If the external health LED is green, refer to "Is the Internal Health LED Green?" on page 3-5.	

Is the Internal Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is amber	A processor or DIMM is in pre-failure condition. One memory bank is valid, but another bank is missing a DIMM or has a mismatched or unsupported DIMM installed. A memory bank failed and the online spare memory feature has copied information to the redundant bank. A redundant fan failed.	Use amber LEDs to identify: ■ Missing components ■ Degraded components ■ Failed components ■ Improperly installed components Obtain replacement parts if needed.
No, it is red	A processor, PPM, power converter module, or primary fan has failed. Processor 1 or PPM 1 is not installed. A processor is an unsupported type. Processors are mismatched (speed and/or type) A DIMM has experienced a multi-bit error. No valid memory is in the system. Populated banks have unsupported, mismatched or missing DIMMs. The SCSI cabling or terminator configuration is incorrect on SCSI backplane. The PCI riser cage is unseated. An overtemperature condition has occurred.	Use amber LEDs to identify: ■ Missing components ■ Degraded components ■ Failed components ■ Improperly installed components Obtain replacement parts if needed.
Yes	If the internal health LED is green, refer to "Is the Monitor Displaying Information?" on page 3-5.	

Is the Monitor Displaying Information?

Answer	Possible Reasons	Possible Solutions
No	The monitor may not have power. Video may not be connected properly. Nonvolatile RAM (NVRAM) may be corrupted. The system ROM and redundant ROM may be corrupted. The system board and/or PCI riser cage may need to be replaced.	Verify that the monitor power cord is plugged in and that the monitor power switch has been pressed. If a video board is installed, verify that the video cable is properly connected. If a RILOE II board is installed, be sure that the video cable is connected to the video connector on the RILOE II board. Check the video connections. Refer to the *Servers Troubleshooting Guide* for information on video problems. Clear NVRAM in RBSU. Are there any audible indicators, such as a series of beeps? A series of beeps is the audible signal indicating the presence of a POST error message. Refer to the *Servers Troubleshooting Guide* for a complete description of each beep sequence and the corresponding error message.
Yes	Video is available for diagnosis. Determine the next action by observing POST progress and error messages. Refer to the *Servers Troubleshooting Guide* for a complete description of each POST error message.	

For your notes

4 ADU Error Messages

For your notes

ADU Error Messages

Introduction to ADU Error Messages

This section contains a complete alphabetical list of all ADU error messages.

IMPORTANT: This guide provides information for multiple servers. Some information may not apply to the server you are troubleshooting. Refer to the server documentation for information on procedures, hardware options, software tools, and operating systems supported by the server.

Accelerator Board not Detected

Description: Array controller did not detect a configured array accelerator board.

Action: Install an array accelerator board on an array controller. If an array accelerator board is installed, check for proper seating on the array controller board.

Accelerator Error Log

Description: List of the last 32 parity errors on transfers to or from the memory on the array accelerator board. Displays starting memory address, transfer count, and operation (read and write).

Action: If many parity errors are listed, you may need to replace the array accelerator board.

Accelerator Parity Read Errors: X

Description: Number of times that read memory parity errors were detected during transfers from memory on array accelerator board.

Action: If many parity errors occurred, you may need to replace the array accelerator board.

Accelerator Parity Write Errors: X

Description: Number of times that write memory parity errors were detected during transfers to memory on the array accelerator board.

Action: If many parity errors occurred, you may need to replace the array accelerator board.

Accelerator Status: Cache was Automatically Configured During Last Controller Reset

Description: Cache board was replaced with one of a different size.

Action: No action is required.

Accelerator Status: Data in the Cache was Lost...

...due to some reason other than the battery being discharged.

Description: Data in cache was lost, but not because of the battery being discharged.

Action: Be sure the array accelerator is properly seated. If the error persists, you may need to replace the array accelerator.

Accelerator Status: Dirty Data Detected has Reached Limit...

...Cache still enabled, but writes no longer being posted.

Description: Number of cache lines containing dirty data that cannot be flushed (written) to the drives has reached a preset limit. The cache is still enabled, but writes are no longer being posted. This problem usually occurs when a problem with the drive or drives occurs.

Action: Resolve the problem with the drive or drives. The controller can then write the dirty data to the drives. Posted-writes operations are restored.

Accelerator Status: Dirty Data Detected...

...Unable to write dirty data to drives

Description: At least one cache line contains dirty data that the controller has been unable to flush (write) to the drives. This problem usually occurs when a problem with the drive or drives occurs.

Action: Resolve the problem with the drive or drives. The controller can then write the dirty data to the drives.

Accelerator Status: Excessive ECC Errors Detected in at Least One Cache Line...

...As a result, at least one cache line is no longer in use.

Description: At least one line in the cache is no longer in use due to excessive ECC errors detected during use of the memory associated with that cache line.

Action: Consider replacing the cache. If cache replacement is not done, the remaining cache lines generally continue to operate properly.

Accelerator Status: Excessive ECC Errors Detected in Multiple Cache Lines...

...As a result, the cache is no longer in use.

Description: The number of cache lines experiencing excessive ECC errors has reached a preset limit. Therefore, the cache has been shut down.

Action:

1. Reseat the cache to the controller.
2. If the problem persists, replace the cache.

Accelerator Status: Obsolete Data Detected

Description: During reset initialization, obsolete data was found in the cache due to the drives being moved and written to by another controller.

Action: No action is required. The controller either writes the data to the drives or discards the data completely.

Accelerator Status: Obsolete Data was Discarded

Description: During reset initialization, obsolete data was found in the cache, and was discarded (not written to the drives).

Action: No action is required.

Accelerator Status: Obsolete Data was Flushed (Written) to Drives

Description: During reset initialization, obsolete data was found in the cache. The obsolete data was written to the drives, but newer data may have been overwritten.

Action: If newer data was overwritten, you may need to restore newer data; otherwise, normal operation should continue.

Accelerator Status: Permanently Disabled

Description: Array accelerator board has been permanently disabled. It will remain disabled until it is reinitialized using ACU.

Action: Check the **Disable Code** field. Run ACU to reinitialize the array accelerator board.

Accelerator Status: Possible Data Loss in Cache

Description: Possible data loss was detected during power-up due to all batteries being below sufficient voltage level and no presence of the identification signatures on the array accelerator board.

Action: No way exists to determine if dirty or bad data was in the cache and is now lost.

Accelerator Status: Temporarily Disabled

Description: Array accelerator board has been temporarily disabled.

Action: Check the **Disable Code** field.

Accelerator Status: Unrecognized Status

Description: A status was returned from the array accelerator board that ADU does not recognize.

Action: Obtain the latest version of ADU.

Accelerator Status: Valid Data Found at Reset

Description: Valid data was found in posted-write memory at reinitialization. Data will be flushed to disk.

Action: No error or data loss condition exists. No action is required.

Accelerator Status: Warranty Alert

Description: Catastrophic problem exists with array accelerator board. Refer to other messages on Diagnostics screen for exact meaning of this message.

Action: Replace the array accelerator board.

Adapter/NVRAM ID Mismatch

Description: EISA NVRAM has an ID for a different controller from the one physically present in the slot.

Action: Run the server setup utility.

Array Accelerator Battery Pack X not Fully Charged

Description: Battery is not fully charged.

Action: If 75% of the batteries present are fully charged, the array accelerator is fully operational. If more than 75% of the batteries are **not** fully charged, allow 36 hours to recharge them.

Array Accelerator Battery Pack X Below Reference Voltage (Recharging)

Description: Battery pack on the array accelerator is below the required voltage levels.

Action: Replace the array accelerator board if the batteries do not recharge within 36 powered-on hours.

Board in Use by Expand Operation

Description: Array accelerator memory is in use by an expand operation.

Action: Operate the system without the array accelerator board until the expand operation completes.

Board not Attached

Description: An array controller is configured for use with array accelerator board, but one is not connected.

Action: Connect array accelerator board to array controller.

Cache Has Been Disabled Because ADG Enabler Dongle is Broken or Missing

Description: The cache has been disabled because RAID ADG volume is configured but the ADG Enabler Dongle is broken or missing.

Action: Check the ADG Enabler Dongle. Replace if needed.

Cache Has Been Disabled

Likely Caused By a Loose Pin on One of the RAM Chips

Description: Cache has been disabled due to a large number of ECC errors detected while testing the cache during POST. Likely caused by a loose pin on one of the RAM chips.

Action: Try reseating the cache to the controller. If that does not work, replace the cache.

Configuration Signature is Zero

Description: ADU detected that NVRAM contains a configuration signature of zero. Old versions of the server setup utility could cause this.

Action: Run the latest version of server setup utility to configure the controller and NVRAM.

Configuration Signature Mismatch

Description: Array accelerator board is configured for a different array controller board. Configuration signature on array accelerator board does not match the one stored on the array controller board.

Action: To recognize the array accelerator board, run ACU.

Controller Communication Failure Occurred

Description: Controller communication failure occurred. ADU was unable to successfully issue commands to the controller in this slot.

Action:

1. Be sure all cables are properly connected and working.
2. Be sure the controller is working, and replace if needed.

Controller Detected. NVRAM Configuration not Present

Description: EISA NVRAM does not contain a configuration for this controller.

Action: Run the server setup utility to configure the NVRAM.

Controller Firmware Needs Upgrading

Description: Controller firmware is below the latest recommended version.

Action: Run Options ROMPaq to upgrade the controller to the latest firmware revision.

Controller is Located in Special "Video" Slot

Description: Controller is installed in the slot for special video control signals. If the controller is used in this slot, LED indicators on front panel may not function properly.

Action: Install the controller into a different slot, and run the server setup utility to configure NVRAM. Then, run ACU to configure the controller.

Controller Is Not Configured

Description: Controller is not configured. If the controller was previously configured and you change drive locations, there may be a problem with placement of the drives. ADU examines each physical drive and looks for drives that have been moved to a different drive bay.

Action: Look for messages indicating which drives have been moved. If none are displayed and drive swapping did not occur, run ACU to configure the controller and Run Server setup utility to configure NVRAM. **Do not** run either utility if you believe drive swapping has occurred.

Controller Reported POST Error. Error Code: X

Description: The controller returned an error from its internal POST.

Action: Replace the controller.

Controller Restarted with a Signature of Zero

Description: ADU did not find a valid configuration signature to use to get the data. NVRAM may not be present (unconfigured) or the signature present in NVRAM may not match the signature on the controller.

Action: Run the server setup utility to configure the controller and NVRAM.

Disable Command Issued

Description: The issuing of the Accelerator Disable command has disabled posted-writes. This occurred because of an operating system device driver.

Action: Restart the system. Run ACU to reinitialize the array accelerator board.

Drive (Bay) X Firmware Needs Upgrading

Description: Firmware on this physical drive is below the latest recommended version.

Action: Run Options ROMPaq to upgrade the drive firmware to the latest revision.

Drive (Bay) X has Insufficient Capacity for its Configuration

Description: Drive has insufficient capacity to be used in this logical drive configuration.

Action: Replace this drive with a larger capacity drive.

Drive (Bay) X has Invalid M&P Stamp

Description: Physical drive has invalid monitor and performance data.

Action: Run the server setup utility to properly initialize this drive.

Drive (Bay) X Has Loose Cable

Description: The array controller could not communicate with this drive at power-up. This drive has not previously failed.

Action:

1. Be sure all cables are properly connected and working.
2. Power up the system and attempt to reconnect data/power cable to the drive.
3. If the problem persists, replace the cable.
4. If the problem persists, replace the drive.

Drive (Bay) X is a Replacement Drive

Description: This drive has been replaced. This message is displayed if a drive is replaced in a fault-tolerant logical volume.

Action: If the replacement was intentional, allow the drive to rebuild.

Drive (Bay) X is a Replacement Drive Marked OK

Description: This drive has been replaced and marked OK by the firmware, which may occur if a drive has an intermittent failure. For example, a drive has previously failed, then starts working again when ADU is run.

Action: Replace the drive.

Drive (Bay) X is Failed

Description: The indicated physical drive has failed.

Action: Replace this drive.

Drive (Bay) X is Undergoing Drive Recovery

Description: This drive is being rebuilt from the corresponding mirror or parity data.

Action: No action is required.

Drive (Bay) X Needs Replacing

Description: The 210-MB hard drive has firmware version 2.30 or 2.31.

Action: Replace the drive.

Drive (Bay) X Upload Code Not Readable

Description: An error occurred while ADU was trying to read the upload code information from this drive.

Action: If multiple errors occur, the drive may need to be replaced.

Drive Monitoring Features Are Unobtainable

Description: ADU is unable to get monitor and performance data due to fatal command problem (such as drive time-out), or is unable to get data due to these features not being supported on the controller.

Action: Check for other errors such as time-outs. If no other errors occur, upgrade the firmware to a version that supports monitor and performance, if desired.

Drive Monitoring is NOT Enabled for SCSI Port X Drive ID Y

Description: The monitor and performance features have not been enabled on this drive.

Action: Run the server setup utility to initialize the monitor and performance features.

Drive Time-Out Occurred on Physical Drive Bay X

Description: ADU issued a command to a physical drive and the command was never acknowledged.

Action: The drive or cable may be bad. Check the other error messages on the Diagnostics screen to determine resolution.

Drive X Indicates Position Y

Description: Message indicates a designated physical drive, which seems to be scrambled or in a drive bay other than the one for which it was originally configured.

Action: Examine the graphical drive representation on ADU to determine proper drive locations. Remove drive *X* and place it in drive position *Y*. Rearrange the drives according to the ADU instructions.

Duplicate Write Memory Error

Description: Data cannot be written to the array accelerator board in duplicate due to the detection of parity errors. This is not a data-loss situation.

Action: Replace the array accelerator board.

Error Occurred Reading RIS Copy from SCSI Port X Drive ID

Description: An error occurred while ADU was trying to read the RIS from this drive.

Action: HP stores the hard drive configuration information in the RIS. If multiple errors occur, the drive may need to be replaced.

FYI: Drive (Bay) X is Third-Party Supplied

Description: Third-party supplied the installed drive.

Action: If problems exist with this drive, replace it with a supported drive.

Identify Logical Drive Data did not Match with NVRAM

Description: The identify unit data from the array controller does not match with the information stored in NVRAM. This can occur if new, previously configured drives have been placed in a system that has also been previously configured.

Action: Run the server setup utility to configure the controller and NVRAM.

Insufficient Adapter Resources

Description: The adapter does not have sufficient resources to perform postedwrite operations to the array accelerator board. Drive rebuild may be occurring.

Action: Operate the system without the array accelerator board until the drive rebuild completes.

Inter-Controller Link Connection Could Not Be Established

Description: Unable to communicate over the link connecting the redundant controllers.

Action: Be sure both controllers are using the same hardware and firmware revisions. If one controller failed, replace it.

Less Than 75% Batteries at Sufficient Voltage

Description: The operation of the array accelerator board has been disabled due to less than 75% of the battery packs being at the sufficient voltage level.

Action: Replace the array accelerator board if the batteries do not recharge within 36 powered-on hours.

Less Than 75% of Batteries at Sufficient Voltage Battery Pack X Below Reference Voltage

Description: Battery pack on the array accelerator is below the required voltage levels.

Action: Replace the array accelerator board if the batteries do not recharge within 36 powered-on hours.

Logical Drive X Failed Due to Cache Error

Description: This logical drive failed due to a catastrophic cache error.

Action: Replace the array accelerator board and reconfigure using ACU.

Logical Drive X Status = Failed

Description: This status could be issued for several reasons:

- Logical drive is configured for No Fault Tolerance, and one or more drives failed.
- Mirroring is enabled, and any two mirrored drives failed. Data Guarding is enabled, and two or more drives failed.
- Another configured logical drive is in the WRONG DRIVE REPLACED or LOOSE CABLE DETECTED state.

Action: Check for drive failures, wrong drive replaced, or loose cable messages. If a drive failure occurred, replace the failed drive or drives, and then restore the data for this logical drive from the tape backup. Otherwise, follow the procedures for correcting problems when an incorrect drive is replaced or a loose cable is detected.

Logical Drive X Status = Interim Recovery (Volume Functional, but not Fault Tolerant)

Description: A physical drive in this logical drive has failed. The logical drive is operational, but the loss of an additional drive causes permanent data loss.

Action: Replace the failed drive as soon as possible.

Logical Drive X Status = Loose Cable Detected...

...SOLUTION: Turn the system off and attempt to reattach any loose connections. If this does not work, replace the cable(s) and connection(s).

Description: A physical drive or an external storage unit may have a cabling or connection problem.

Action: Power the system down and attempt to reconnect any loose connections. If this does not work, replace the cable(s) and connection(s).

Logical Drive X Status = Overheated

Description: The temperature of the Intelligent Array Expansion System drives is beyond safe operating levels and has shut down to avoid damage.

Action: Check the fans and the operating environment.

Logical Drive X Status = Overheating

Description: The temperature of the Intelligent Array Expansion System drives is beyond safe operating levels.

Action: Check the fans and the operating environment.

Logical Drive X Status = Recovering (rebuilding data on a replaced drive)

Description: A physical drive in this logical drive has failed and has now been replaced. The replaced drive is rebuilding from the mirror drive or the parity data.

Action: No action is required. Normal operations can occur; however, performance will be less than optimal until after the rebuild process completes.

Logical Drive X Status = Wrong Drive Replaced

Description: A physical drive in this logical drive has failed. The incorrect drive was replaced.

Action: Replace the drive that was incorrectly replaced. Then, replace the original drive that failed with a new drive.

Loose Cable Detected - Logical Drives May Be Marked FAILED Until Corrected

Description: ADU found a loose cable. The Smart Array Controller is unable to communicate with one or more physical drives. One or more logical drives may be marked FAILED, and are unusable until the problem is corrected.

Action: Power down the system. Check the cables for a tight connection to the logical drives. Restart the system. If the error persists, the cables may be defective.

Mirror Data Miscompare

Description: Data was found at reset initialization in the posted-write memory; however, the mirror data compare test failed resulting in that data being marked as invalid. Data loss is possible.

Action: Replace the array accelerator board.

No Configuration for Array Accelerator Board

Description: The array accelerator board has not been configured.

Action: If the array accelerator board is present, run ACU to configure the board.

NVRAM Configuration Present, Controller not Detected

Description: EISA NVRAM has a configuration for an array controller, but no board exists in this slot. Either a board has been removed from the system or a board has been placed in the wrong slot.

Action: Place the array controller in the proper slot, or run the server setup utility to reconfigure NVRAM to reflect the removal or new position.

One or More Drives is Unable to Support Redundant Controller Operation

Description: At least one drive in use does not support redundant controller operation.

Action: Replace the drive that does not support redundant controller operation.

Other Controller Indicates Different Hardware Model

Description: The other controller in the redundant controller configuration is a different hardware model.

Action: Be sure both controllers are using the same hardware model. If they are, make sure the controllers are fully seated in their slots.

Other Controller Indicates Different Firmware Version

Description: The other controller in the redundant controller configuration is using a different firmware version.

Action: Be sure both controllers are using the same firmware revision.

Other Controller Indicates Different Cache Size

Description: The other controller in the redundant controller configuration has a different size array accelerator.

Action: Be sure both controllers are using the same capacity array accelerator.

RIS Copies Between Drives Do Not Match

Description: The drives on this controller contain copies of the RIS that do not match. The hard drives in the array do not have matching configuration information.

Action:

1. Resolve all other errors encountered.
2. Obtain the latest version of ADU, and then rerun ADU.
3. If unconfigured drives were added, configure these drives using ACU.
4. If drives or arrays were moved, be sure the movement follows the guidelines listed in the documentation for the array controller.
5. If the error persists after completing steps 1 through 4, contact an authorized service provider.

SCSI Port X Drive ID Y failed - REPLACE (failure message)

Description: ADU detected a drive failure.

Action: Correct the condition that caused the error, if possible, or replace the drive.

SCSI Port X, Drive ID Y Firmware Needs Upgrading

Description: Drive firmware may cause problems and should be upgraded.

Action: Run Options ROMPaq to upgrade the drive firmware to a later revision.

SCSI Port X, Drive ID Y Has Exceeded the Following Threshold(s)

Description: The monitor and performance threshold for this drive has been violated.

Action: Check and resolve the threshold that has been violated.

SCSI Port X, Drive ID Y is not Stamped for Monitoring

Description: The drive has not been stamped with monitor and performance features.

Action: To stamp without destroying the current configuration:

1. Run ACU.
2. Change the array accelerator size and save the configuration.

3. Change the array accelerator back to the original size and save again. This should cause ACU to stamp the drive with monitoring and performance features.

SCSI Port X, Drive ID Y May Have a Loose Connection...

...SOLUTION: Turn the system off and attempt to reattach any loose connections. If this does not work, replace the cable(s) and connection(s).

Description: SMART is unable to communicate with the drive, because the cable is not securely connected, or the drive cage connection has failed.

Action:

1. Power down the system.
2. Reconnect the cable securely.
3. Restart the system.
4. If the problem persists, replace the cables and connectors as needed.

SCSI Port X, Drive ID Y RIS Copies Within This Drive Do Not Match

Description: The copies of RIS on the drive do not match.

Action: Check for other errors. The drive may need to be replaced.

SCSI Port X, Drive ID Y...S.M.A.R.T. Predictive Failure Errors Have Been Detected in the Factory Monitor and Performance Data...

...SOLUTION: Please replace this drive when conditions permit.

Description: A predictive failure warning for this hard drive has been generated, indicating that a drive failure is imminent.

Action: Replace this drive at the earliest opportunity. Refer to the server documentation for drive replacement information before performing this operation.

SCSI Port X, Drive ID Y...S.M.A.R.T. Predictive Failure Errors Have Been Detected in the Power Monitor and Performance Data...

...SOLUTION: Please replace this drive when conditions permit.

Description: A predictive failure warning for this hard drive has been generated, indicating a drive failure is imminent.

Action: Replace this drive at the earliest opportunity. Refer to the server documentation for drive replacement information before performing this operation.

SCSI Port X, Drive ID Y Was Replaced On a Good Volume: (failure message)

Description: ADU found this drive was replaced, even though no problem occurred with the volume.

Action: No action is required.

Set Configuration Command Issued

Description: The configuration of the array controller has been updated. The array accelerator board may remain disabled until it is reinitialized.

Action: Run the server setup utility to reinitialize the array accelerator board.

Soft Firmware Upgrade Required

Description: ADU has determined that the controller is running firmware that has been soft upgraded by the Upgrade Utility. However, the firmware running is not present on all drives. This could be caused by the addition of new drives in the system.

Action: Run the Upgrade Utility to place the latest firmware on all drives.

Storage Enclosure on SCSI Bus X has a Cabling Error (Bus Disabled)...

...SOLUTION: The SCSI controller has an internal and external cable attached to the same bus. Please disconnect the internal or external cable from the controller. If this controller supports multiple buses, the cable disconnected can be reattached to an available bus.

Description: The current cabling configuration is not supported.

Action: Refer to the server documentation for cabling guidelines, and reconfigure as indicated.

Storage Enclosure on SCSI Bus X Indicated a Door Alert...

...SOLUTION: Be sure that the storage enclosure door is closed or the side panel is properly installed.

Description: The side panel of the external storage unit is open.

Action: Be sure the side panel of the storage unit is securely closed.

Storage Enclosure on SCSI Bus X Indicated a Power Supply Failure...

...SOLUTION: Replace the power supply.

Description: A power supply in the external storage unit has failed.

Action: Replace the power supply.

Storage Enclosure on SCSI Bus X Indicated an Overheated Condition...

...SOLUTION: Make sure all cooling fans are operating properly. Also be sure the operating environment of storage enclosure is within temperature specifications.

Description: The external storage unit is generating a temperature alert.

Action:

1. Be sure all fans are connected and operating properly.
2. Be sure the operating environment of the storage unit is within specifications.
3. For better airflow, remove any dust buildup from fans or other areas.
4. Check the server documentation for allowable temperature specifications and additional tips.
5. If the problem persists, replace the fan.

Storage Enclosure on SCSI Bus X is Unsupported with its Current Firmware Version...

...SOLUTION: Upgrade the firmware version on the storage enclosure.

Description: The firmware version of the external storage unit is not supported.

Action: Upgrade the firmware.

Storage Enclosure on SCSI Bus X Indicated that the Fan Failed...

...SOLUTION: Replace the fan.

Description: The cooling fan located in the external storage unit has failed.

Action: Replace the fan.

Storage Enclosure on SCSI Bus X Indicated that the Fan is Degraded...

...SOLUTION: this condition usually occurs on enclosures with multiple fans and one of those fans has failed. Replace any fans not operating properly.

Description: One or more fans in the external storage unit have failed.

Action: Replace the failed fans.

Storage Enclosure on SCSI Bus X Indicated that the Fan Module is Unplugged...

...SOLUTION: Make sure the fan module is properly connected.

Description: A fan in the external storage unit is not connected properly.

Action: Check and reseat all fan connections securely.

Storage Enclosure on SCSI Bus X - Wide SCSI Transfer Failed...

...SOLUTION: This may indicate a bad SCSI cable on bus X. Try replacing the cable.

Description: A cable on bus X has failed.

Action:

1. Replace the failed cable.
2. If the problem persists, contact an authorized service provider.

Swapped Cables or Configuration Error Detected. A Configured Array of Drives...

...was moved from another controller that supported more drives than this controller supports.

SOLUTION: Upgrade the firmware on this controller. If this doesn't solve the problem, then power down system and move the drives back to the original controller.

Description: You have exceeded the maximum number of drives supported for this controller, and the connected controller was not part of the original array configuration.

Action:

1. Upgrade the firmware on this controller.
2. If the problem persists:
   - Replace this controller with the original controller. -Or
   - Replace this controller with a new controller that supports the number of drives in the array.

Swapped Cables or Configuration Error Detected. A Drive Rearrangement...

...was attempted while an expand operation was running. This is an unsupported operation. SOLUTION: Power down system then move drives back to their original location. Power on system and wait for the expand operation to complete before attempting a drive rearrangement.

Description: One or more drive locations were changed while an expand operation was in progress.

Action:

1. Power down the server.
2. Place the drives in their original locations.
3. Restart the server, and then complete the expand operation.
4. Move the drives to their new locations after the expand operation is completed.

Swapped Cables or Configuration Error Detected. Unsupported Drive Arrangement Was Attempted...

...SOLUTION: Power down system then move drives back to their original location.

Description: One or more physical drives were moved, causing a configuration that is not supported.

Action: Move all drives to their original locations, and then refer to the server documentation for supported configurations.

Swapped Cables or Configuration Error Detected. The Cables Appear To Be Interchanged...

...SOLUTION: Power down system then move the drives or cables back to their original location.

Description: ADU has detected a change in the cable configuration. One or more cables may be connected to the incorrect bus or one or more drives have been moved to new locations.

Action:

1. Refer to the server documentation for supported configurations and cabling guidelines.
2. Restore to the original configuration.

Swapped Cables or Configuration Error Detected. Configuration Information on Attached Drives...

...is not backward compatible with this controller's firmware.

SOLUTION: Upgrade the firmware on this controller. If this doesn't solve the problem then power down system then move drives back to the original controller.

Description: The current firmware version on the controller cannot interpret the configuration information on the connected drives.

Action: Upgrade the firmware.

If the problem persists, move the drives to the original controller.

Swapped Cables or Configuration Error Detected. The Maximum Logical Volume Count X...

...was exceeded during logical volume addition. All logical volumes beyond X have been lost and cannot be recovered.

SOLUTION: Identify the drives that contain the lost logical volumes. Move those drives to another controller where the logical volumes can be recreated. NOTE! If a drive contains a valid logical volume and a lost logical volume, then do not move that drive to another controller.

Description: More logical drives were created than are supported on this controller, causing lost logical drive volumes.

Action: Identify the drives containing lost volumes, and then move them to another controller so the lost volumes can be recreated.

System Board is Unable to Identify which Slots the Controllers are in

Description: Slot indicator on system board is not working correctly. Firmware recognizes both controllers as being installed in the same slot.

Action:

1. Be sure both controllers are fully seated in their slots.

   If the problem persists, this might indicate a controller problem or a system board problem.

   CAUTION: Only authorized technicians trained by HP should attempt to remove the system board. If you believe the system board requires replacement, contact HP Technical Support before proceeding.

2. Remove one of the controllers in the configuration and see if the remaining controller generates a POST message.
3. Move the remaining controller to the other slot to see if it still generates a POST message.
4. Repeat these steps with the other controller.

   If both controllers give POST messages in one slot but not the other, it is a system board problem. If one of the controllers gives POST messages and the other controller does not, replace the controller that is giving the POST messages. Contact an authorized service provider for any warranty replacements.

This Controller Can See the Drives but the Other Controller Can't

Description: The other controller in the redundant controller configuration cannot recognize the drives, but this controller can.

Action: Resolve any other errors and then rerun ADU.

The Redundant Controllers Installed are not the Same Model...

...SOLUTION: Power down the system and verify that the redundant controllers are different models. If they are different models, replace the other controller with the same model as this one.

Description: ADU detected two different controller models installed in a redundant controller configuration. This is not supported and one or both controllers may not be operating properly.

Action: Use the same controller models for redundant controller configurations.

This Controller Can't See the Drives but the Other Controller Can

Description: The other controller in the redundant controller configuration can recognize the drives, but this controller cannot.

Action: Resolve any other errors and then rerun ADU.

Unable to Communicate with Drive on SCSI Port X, Drive ID Y

Description: The array controller cannot communicate with the drive.

Action: If the hard drive amber LED is on, replace the drive.

Unable to Retrieve Identify Controller Data. Controller May be Disabled or Failed

...SOLUTION: Power down the system. Verify that the controller is fully seated. Then power the system on and look for helpful error messages displayed by the controller. If this doesn't help, contact your service provider.

Description: ADU requested the identify controller data from the controller but was unable to obtain it. This usually indicates that the controller is not seated properly or has failed.

Action:

1. Power down the server. Be sure the controller is fully seated.
2. Restart the server. Resolve any error messages displayed by the controller.

   If this does not solve the problem, contact an authorized service provider.

Unknown Disable Code

Description: A code was returned from the array accelerator board that ADU does not recognize.

Action: Obtain the latest version of ADU.

Unrecoverable Read Error

Description: Read parity errors were detected when an attempt to read the same data from both sides of the mirrored memory was made. Data loss will occur.

Action: Replace the array accelerator board.

Warning Bit Detected

Description: A monitor and performance threshold violation may have occurred. The status of a logical drive may not be OK.

Action: Check the other error messages for an indication of the problem.

WARNING - Drive Write Cache is Enabled on X

Description: Drive has its internal write cache enabled. The drive may be a third-party drive, or the operating parameters of the drive may have been altered. Condition can cause data corruption if power to the drive is interrupted.

Action: Replace the drive with a supported drive or restore the operating parameter of the drive.

WARNING: Storage Enclosure on SCSI Bus X Indicated it is Operating in Single Ended Mode...

...SOLUTION: This usually occurs when a single-ended drive type is inserted into an enclosure with other drive types; and that makes the entire enclosure operate in single ended mode. To maximize performance replace the single-ended drive with a type that matches the other drives.

Description: One or more single-ended mode SCSI drives are installed in an external storage unit that operates in LVD mode.

Action: The array continues to operate, but installing all LVD drives maximizes performance.

Write Memory Error

Description: Data cannot be written to the cache memory. This typically means that a parity error was detected while writing data to the cache. This can be caused by an incomplete connection between the cache and the controller. This is not a data loss circumstance.

Action: Power down the system and be sure that the cache board is fully connected to the controller.

Wrong Accelerator

Description: This may mean that the board was replaced in the wrong slot or was placed in a system previously configured with another board type. Included with this message is a message indicating (1) the type of adapter sensed by ADU, and (2) the type of adapter last configured in EISA NVRAM.

Action: Check the diagnosis screen for other error messages. Run the server setup utility to update the system configuration.

For your notes

5 SNMP Traps

For your notes

SNMP Traps

Overview

This section contains a listing of the Windows 2003 Event Log messages associated with the SNMP traps, which are generated by the Insight Management Agents for Servers for Windows. Each event entry has the corresponding SNMP trap number used by the agents.

Foundation Agents

Event Identifier	Description
cpqhsmsg.lfm - 256 (Service Event)	Log Severity: Warning (2) Log Message: The Foundation Agents service detected an error. The insertion string is:%1. The data contains the error code.
cpqhsmsg.lfm - 263 (Service Event)	Log Severity: Warning (2) Log Message: The Foundation Agents service could not read the registry value %1. The data contains the error code.
cpqhsmsg.lfm - 264 (Service Event)	Log Severity: Warning (2) Log Message: The Foundation Agents service could not load the module %1. The data contains the error code.
1105 (CPQHSMSG.DLL)	Log Severity: Information (1) Event Title: cpqHo2GenericTrap Log Message: Foundation Agent %1 SNMP Trap: cpqHo2GeneraticTrap - 11003 in CPQHOST.MIB Symptom: Generic Trap
1167 (cpqhsmsg.dll)	Log Severity: Warning (2) Log Message: The cluster resource has become degraded. SNMP Trap: cpqClusterResourceDegraded - 15005 in CPQCLUS.MIB Symptom: This trap is sent any time the condition of a cluster resource becomes degraded. User Action: Make a note of the cluster resource name, then check the resource for the cause of the degraded condition. Supporting SNMP Trap Description: Cluster resource [cpqClusterResourceName] is degraded.
1168 (cpqhsmsg.dll)	Log Severity: Error (3) Log Message: The cluster resource has failed. SNMP Trap: cpqClusterResourceFailed - 15006 in CPQCLUS.MIB Symptom: This trap is sent any time the condition of a cluster resource becomes failed. User Action: Make a note of the cluster resource name, then check the resource for the cause of the failure. Supporting SNMP Trap Description: Cluster resource [cpqClusterResourceName] has failed.
1169 (cpqhsmsg.dll)	Log Severity: Warning (2) Log Message: The cluster network has become degraded. SNMP Trap: cpqClusterNetworkDegraded - 15007 in CPQCLUS.MIB Symptom: This trap is sent any time the condition of a cluster network becomes degraded. User Action: Make a note of the cluster network name, then check the network for the cause of the degraded condition. Supporting SNMP Trap Description: Cluster network [cpqClusterNetworkName] is degraded.
1170 (cpqhsmsg.dll)	Log Severity: Error (3) Log Message: The cluster network %4 has failed. SNMP Trap: cpqClusterNetworkFailed - 15008 in CPQCLUS.MIB Symptom: This trap is sent any time the condition of a cluster network becomes failed. User Action: Make a note of the cluster network name, then check the network for the cause of the failure. Supporting SNMP Trap Description: Cluster network [cpqClusterNetworkName] has failed.

Event Identifier	Description
1171 (cpqhsmsg.dll)	Log Severity: Warning (2) Log Message: The cluster server on %4 has become degraded. SNMP Trap: cpqClusterNodeDegraded - 15003 in CPQCLUS.MIB Symptom: This trap is sent any time the condition of a node in the cluster becomes degraded. User Action: Make a note of the cluster node name, then check the node for the cause of the degraded condition. Supporting SNMP Trap Description: Cluster service on [cpqClusterNodeName] is degraded.
1172 (cpqhsmsg.dll)	Log Severity: Error (3) Log Message: The cluster service on %4 has failed. SNMP Trap: cpqClusterNodeFailed - 15004 in CPQCLUS.MIB Symptom: This trap is sent any time the condition of a node in the cluster becomes failed. User Action: Make a note of the cluster name, then check the node for the cause of the failure. Supporting SNMP Trap Description: Cluster service on [cpqClusterNodeName] has failed.

Storage Agents

Event Identifier	Description
1061 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Physical Threshold Exceeded Log Message: The physical drive in slot %s, port%s, bay%s with serial number %s, has exceeded a drive threshold. SNMP Trap: cpqDa5PhyDrvThreshPassedTrap - 3030 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a factory threshold associated with one of the physical drive objects on a Drive Array is exceeded. User Action: Replace the physical drive.
1062 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Logical Drive Status Change Log Message: Logical drive number %5 on the array control in slot %4 has a new status of %2. SNMP Trap: cpqDa3LogDrvStatusChange - 3008 in CPQIDA.MIB Symptom: This trap signifies that the Insight Agent has detected a change in the status of a Drive Array logical drive. The variable cpqDaLogDrvStatus indicates the current logical drive status. Supporting SNMP Trap Description: Status is now [cpqDaLogDrvStatus].
1063 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Spare Drive Status Change Log Message: The spare drive in slot %4, port %5, bay %6 has a new status of %2. SNMP Trap: cpqDaSpareStatusChange - 3017 in CPQIDA.MIB Symptom: This trap signifies that the Insight Agent detected a change in the status of a Drive Array spare drive. The variable cpqDaSpareStatus indicates the current spare drive status. User Action: If the spare drive status is failed, replace the drive. Supporting SNMP Trap Description: Spare Status is now [cpqDaSpareStatu]
1064 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Physical Drive Status Change Log Message: The physical drive in slot %s, port %s, bay %s with serial number %s, has a new status of %s. Drive status values: 1=other, 2=ok, 3=failed, 4=predictive failure. SNMP Trap: cpqDa5PhyDrvStatusChange - 3029 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Drive Array physical drive. The variable cpqDaPhyDrvStatus indicates that the current physical drive status. User Action: If the physical drive status is failed (3) or predictive failure (4), replace the drive.

Event Identifier	Description
1065 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Accelerator Status Change Log Message: The array accelerator board attached to the array controller in slot %s has a new status of %s. Accelerator status values: 1=other, 2=not configured, 3=enabled, 4=tmp disabled, 5=perm disabled. SNMP Trap: cpqDa5AccelStatusChange - 3025 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Array Accelerator Cache. The current status is represented by the variable cpqDaAccelStatus. User Action: If the accelerator board status is perm disabled(5), you may need to replace the board.
1066 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Accelerator Bad Data Log Message: The array accelerator board attached to the array controller in slot %4 is reporting that it contains bad cached data. SNMP Trap: cpqDa5AccelBadDataTrap - 3026 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a Array Accelerator Write Cache Board that has lost battery power. If data was being stored in the accelerator cache memory when the server lost power, that data is lost. User Action: Verify that no data is lost. Supporting SNMP Trap Description: Accelerator lost battery power. Data loss possible.
1067 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: Drive Array Accelerator Battery Failed Log Message: The array accelerator board attached to the array controller in slot %s is reporting a battery failure. SNMP Trap: cpqDa5AccelBatteryFailed - 3027 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a battery failure associated with the Array Accelerator Cache Board. User Action: Replace the Accelerator Cache Board.
1068 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: SCSI Controller Status Change Log Message: The SCSI controller in slot %s, SCSI bus %s has a new status of %s. Controller status values: 1=other, 2=ok, 3=failed. SNMP Trap: cpqScsi3CntlrStatusChange - 5005 in CPQSCSI.MIB Symptom: The Insight Agent detected a change in the controller status of a SCSI controller. The variable cpqScsiCntlrStatus indicates the current controller status.
1070 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: SCSI Physical Drive Status Change Log Message: The SCSI physical drive with SCSI target %s connected to SCSI bus %s of the controller in slot %s has a new status of %s. Drive status values: 1=other, 2=ok, 3=failed, 4=not configured, 5=bad cable, 6=missing was ok, 7=missing was failed, 8=predictive failure, 9=missing was predictive failure, 10=offline, 11=missing was offline SNMP Trap: cpqScsi5PhyDrvStatusChange - 5020 in CPQSCSI.MIB Symptom: The Storage Agent detected a change in the status of a SCSI physical drive. The current physical drive status is indicated in the cpqScsiPhyDrvStatus variable.
1075 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Fan Status Change Log Message: The %s storage system connected to SCSI bus %s of the controller in slot %s has a new status of %s. Fan status values: 1=other, 2=ok, 3=failed, 4=not installed, 5=degraded SNMP Trap: cpqSs3FanStatusChange - 8008 in CPQSTSYS.MIB Symptom: The agent detected a change in the Fan Status of a HP Storage system. User Action: If the fan status is degraded or failed, replace any failed fans. Supporting SNMP Trap Data: sysName, cpqHoTrapFlags, cpqSsBoxFanStatus

Event Identifier	Description
1076 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: HP Storage System Temperature Failure Log Message: The %6 %7 storage system connected to SCSI bus %5 of the controller in slot %4 has a failed temperature status. Shutdown the storage system as soon as possible. SNMP Trap: cpqSs3TempFailed - 8009 in CPQSTSYS.MIB Symptom: The agent detected that a temperature status is set to failed. The storage system will be shut down. User Action: Shut down the storage system as soon as possible. Ensure that the storage system environment is being cooled properly and that no components are overheated. Supporting SNMP Trap Description: Storage System will be shut down.
1077 (cpqstmsg.dll)	Log Severity: Warning (2) Log Message: The %6 %7 storage system connected to SCSI bus %5 of the controller in slot %4 system has a temperature outside the normal operating range. SNMP Trap: cpqSsTempDegraded - 8010 in CPQSTSTS.MIB Symptom: Storage System temperature degraded. The agent detected a temperature status that was set to degraded. The storage system's temperature is outside the normal operating range. User Action: Shut down the storage system as soon as possible. Ensure that the storage system environment is being cooled properly and that no components are overheated. Supporting SNMP Trap Description: Temp is outside of normal range.
1104 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Fault Tolerant Power Supply Degraded. Log Message: The fault tolerant power supply in the %s storage system connected to SCSI bus %s of the controller in slot %s has a degraded status. Restore power or replace any failed power supply. SNMP Trap: cpqSs4PwrSupplyDegraded - 8015 in CPQSTSYS.MIB Symptom: A storage system power supply status is set to degraded. User Action: Take action to restore power or replace any failed storage system power supply. Supporting SNMP Trap Data: sysName, cpqHoTrapFlags, cpqSsBoxFltTolPwrSupplyStatus
1121 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: cpqIdeDriveDegraded Log Message: IDE Drive Status Degraded. The IDE drive % has a degraded status and should be scheduled for replacement. SNMP Trap: cpqIdeDriveDegraded - 14001 in CPQIDE.MIB Symptom: An IDE drive status is set to degraded. User Action: The drive should be scheduled for replacement. Refer to the appropriate Maintenance and Service Guide for detailed information on a component replacement.
1145 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Logical Drive Status Change. Log Message: Logical drive number %5 on array %4 has a new status of %6. SNMP Trap: cpqExtArrayLogDrvStatusChange - 16022 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a External Array logical drive. The variable cpqFcoLogDrvStatus indicates the current logical drive status. User Action: If the logical drive status is failed, examine the array for failed drives that need replacement. Supporting SNMP Trap Description: Status is now [cpqFcsLogDrvStatus].
1146 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Physical Drive Status Change. Log Message: The physical drive in port %5, bay %6 on array %4 has a new status of %7. SNMP Trap: cpqFca2PhyDrvStatusChange - 16016 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Drive Array physical drive. The variable cpqFcaPhyDrvStatus indicates the current physical drive status. User Action: If the physical drive status is threshExceeded(4), predictiveFailure(5) or failed(6), replace the drive. Supporting SNMP Trap Description: Status is now [cpqFcaPhyDrvStatus] for a physical drive on bus [cpqFcaPhyDrvBusNumber], bay {cpqFcaPhyDrvBay].

Event Identifier	Description
1147 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Spare Drive Status Change. Log Message: The spare drive in port %5, bay %6 on array %4 has a new status of %7. SNMP Trap: cpqFcaSpareStatusChange - 16002 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Fibre Channel Array spare drive. The variable cpqFcaSpareStatus indicates the current spare drive status. The variable cpqFcaSpareBusNumber indicates the SCSI bus number associated with the drive. User Action: If the spare drive status is failed, replace the drive. Supporting SNMP Trap Description: Spare Status is now [cpqFcaSpareStatus] on bus [cpqFcaSpareBusNumber].
1148 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Accelerator Status Change. Log Message: The array accelerator board attached to the external controller in I/O slot %5 of array %4 has a new status of %6. SNMP Trap: cpqFca2AccelStatusChange - 16017 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Array Accelerator Cache Board. The current status is represented by the variable cpqFcaAccelStatus. User Action: If the accelerator board status is perm disabled (5), you may need to replace the accelerator board. Supporting SNMP Trap Description: Status is now [cpqFcaAccelStatus].
1149 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Accelerator Bad Data. Log Message: The array accelerator board attached to the external controller in I/O slot %5 of array %4 is reporting that it contains bad cached data. SNMP Trap: cpqFca2AccelBadDataTrap - 16018 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a Array Accelerator Cache Board that lost battery power. If data was being stored in the accelerator memory when the system lost power, that data is lost. User Action. Verify that no data is lost. Supporting SNMP Trap Description: Accelerator lost battery power. Data loss possible.
1150 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Accelerator Battery Failed Log Message: The array accelerator board attached to the external controller in I/O slot %s of array %s is reporting a battery failure. SNMP Trap: cpqFca2AccelBatteryFailed - 16019 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a battery failure associated with the Array Accelerator Cache Board. User Action: Replace the Accelerator Cache Board.
1151 (cpqstmsg.dll)	Log Severity: Error (3) Event Title: External Array Controller Status Change. Log Message: The external controller in I/O slot %5 of array %4 has a new status of %6. SNMP Trap: cpqFca2CntlrStatusChange - 16020 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Fibre Channel Array Controller. The variable cpqFcaCntlrStatus indicates the current controller status. User Action: If the controller status is offline(4), access to the storage box is lost. Check the storage box and all fibre channel connections for problems. Supporting SNMP Trap Description: Status is now [cpqFcaCntlrStatus].
1152 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Fan Module Status Change. Log Message: Storage system %4 fan module at location %5 has a new status of %6. SNMP Trap: cpqSsEx2FanStatusChange - 8020 in CPQSTSYS.MIB Symptom: The agent detected a change in the fan module status of a HP storage system. The variable cpqSsFanModuleStatus indicates the current fan status. User Action: If the fan status is degraded or failed, replace any failed fans. Supporting SNMP Trap Description: Storage system fan status changed to [cpqSsFanModuleStatus].

Event Identifier	Description
1153 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Power Supply Status Change. Log Message: Storage system %s power supply in bay %s has a new status of %s. Power supply status values: 1=other, 2-not installed, 3=ok, 4=failed. SNMP Trap: cpqSsEx2PowerSupplyStatusChange - 8021 in CPQSTSYS.MIB Symptom: The agent detected a change in the power supply status of a HP storage system. The variable cpqSsPowerSupplyStatus indicates the current status. User Action: If the power supply status is failed, take action to restore power or replace the failed power supply.
1155 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Temperature Sensor Status Change. Log Message: Storage system %s temperature sensor at location %s has a new status of %s and a current temperature value of %s celsius. Temperature sensor status values: 1=other, 2=ok, 3=degraded, 4=failed SNMP Trap: cpqSsExTempSensorStatusChange - 8019 in CPQSTSYS.MIB Symptom: The agent detected a change in the status of a HP storage system temperature sensor. The variable cpqSsTempSensorStatus indicates the current status. User Action: If the temperature status is degraded or failed, shut down the storage system as soon as possible. Ensure that the storage system environment is being cooled properly and that no components are overheated.
1156 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: SCSI Tape Library Failed Log Message: The SCSI tape library with SCSI target %s connected to SCSI bus %s of the controller in slot %s has encountered an error. SNMP Trap: cpqTape3LibraryFailed - 5010 in CPQSCSI.MIB Symptom: The Insight Agent detected an autoloader unit has encountered an error.
1164 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: Drive Array Controller Status Change Log Message: The Drive Array Controller in slot %s has a new status of %s. Controller status values: 1=other, 2=ok, 3=general failure, 4=cable problem, 5=powered off SNMP Trap: cpqDa5CntlrStatusChange - 3028 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a change in the status of an array controller. The variable cpqDaCntlrBoardStatus indicates the current controller status. User Action: If the board status is general failure(3), you may need to replace the controller. If the board status is cable problem(4), check the cable connections between the controller and the storage system.
1174 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: Fibre Channel Tape Library Status Change Log Message: The Fibre Channel tape library on tape controller with world wide %s, SCSI bus %s, SCSI target %s, has a new status of %s. Library status values: 1=other, 2=ok, 3=degraded, 4=failed, 5=offline. SNMP Trap: cpqFcTapeLibraryStatusChange - 16009 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Fiber Channel tape library. The variable cpqFcTapeLibrarySTatus indicates the current tape library status. The variable cpqFcTapeLibraryScsiTarget indicates the SCSI ID of the tape library. User Action: If the tape library is failed or offline, check the tape library front panel and all fiber channel connections.
1179 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: External Array Controller Active. Log Message: The external controller in I/O slot %5 of array %4 has become the active controller. SNMP Trap: cpqFcaCntlrActive - 16014 in CPQFCA.MIB Symptom: This trap signifies that the Storage Agent detected that a backup array controller in a duplexed pair has switched over to the active role. The variable cpqFcsCnltrBoxIoSlot indicates the new active controller index. User Action: Check the partner controller for problems. If this was the result of a user-initiated switchover, no action is required. Supporting SNMP Trap Description: Controller in I/O slot [cpqFcaCntlrBoxIoSlot] is now active on chassis [cpqSsChassisName].

Event Identifier	Description
1180 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: Drive Array Tape Library Status Change Log Message: The tape library in slot %s, SCSI bus %s, SCSI target %s has a new status of %s. Library status values: 1=other, 2=ok, 3=degraded, 4=failed, 5=offline. SNMP Trap: cpqDa2TapeLibraryStatusChange - 3031 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a change in the status of a tape library. The variable cpqqDaTapeLibraryStatus indicates the current tape library status. The variable cpqDaTapeLibraryScsiTarget indicates the SCSI ID of the tape library. User Action: If the tape library is failed, check the tape library front panel.
1182 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: Drive Array Tape Drive Status Change. Log Message: The tape drive in slot %s, SCSI bus %s, SCSI target %s has a new status of %s. Tape drive status values: 1=other, 2=ok, 3=degraded, 4=failed, 5=offline, 6=missingWasOK, 7=missingWasOffline SNMP Trap: cpqDa2TapeDriveStatusChange - 3032 in CPQIDA.MIB Symptom: This trap signifies that the agent detected a change in the status of a tape drive. The variable cpqDaTapeDrvStatus indicates the current tape status. The variable cpqDaTapeDrvScsildIndex indicates the SCSI ID of the tape drive. User Action: If the tape is failed, check the tape and all SCSI connections.
1185 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: Fibre Channel Controller Status Change Log Message: The Fibre Channel Controller in slot %s has a new status of %s. Host controller status values: 1=other, 2=ok, 3=failed, 4=shutdown, 5=connectionDegraded, 6=connectionFailed SNMP Trap: cpqFca2HostCntlrStatusChange - 16021 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of a Fibre Channel Host Controller. The variable cpqFcaHostCntlrStatus indicates the current controller status. User Action: If the controller status is failed, replace the controller.
1186 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: IDE ATA Disk Status Change Log Message: The ATA disk drive with model %s and serial number %s has a new status of %s. ATA disk status values: 1=other, 2=ok, 3=smartError, 4=failed SNMP Trap: cpqIdeAtaDiskStatusChange - 14004 in CPQIDE.MIB Symptom: This trap signifies that the agent detected a change in the status of an ATA disk drive. The variable cpqIdeAtaDiskStatus indicates the current disk drive status. User Action: If the physical drive status is smartError(3) or failed(4), replace the drive.
1187 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: ATA RAID Logical Drive Status Change Log Message: ATA RAID logical drive number %6 on the %5 in slot %4 has a new status of %2. SNMP Trap: cpqIdeLogicalDriveStatusChange - 14005 in CPQIDE.MIB Symptom: This trap signifies that the agent detected a change in the status of an IDE logical drive. The variable cpqIdeLogicalDriveStatus indicates the current logical drive status. User Action: If the logical drive status is failed(5), examine the array for failed drives that need replacement. Supporting SNMP Trap Description: Status is now [cpqIdeLogicalDriveStatus] for the IDE logical drive.
1188 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Fan Status Change Log Message: An enclosure attached to port %s of a storage system %s has a new fan status of %s. The enclosure model is %s. Values: 1=other, 2=notInstalled, 3=ok, 4=degraded SNMP Trap: cpqSsExBackplaneFanStatusChange Symptom: The agent detected a change in the fan status of a HP storage system. The variable cpqSsBackplaneFanStatus indicates the current fan status. User Action: If the fan status is degraded or failed, replace any failed fans.

Event Identifier	Description
1189 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Temperature Status Change Log Message: An enclosure attached to port %5 of storage system %4 has a new temperature status of %7. The enclosure model is %6. SNMP Trap: cpqSsExBackplaneTempStatusChange - 8023 in CPQSTSYS.MIB Symptom: The agent detected a change in the status of the temperature in a HP storage system. The variable cpqScBackplaneTempStatus indicates the current status. User Action: If the temperature status is degraded or failed, shut down the storage system as soon as possible. Ensure that the storage system environment is being cooled properly and that no components are overheated. Supporting SNMP Trap Description: Storage system temperature status changed to [cpqSsBackplaneTempStatus].
1190 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Power Supply Status Change Log Message: An enclosure attached to port %s of storage system %s has a new power supply status of %s. The enclosure model is %s. Status values: 1=other, 2=noFltTolPower, 3=ok SNMP Trap: cpqSsExBackplanePowerSupplyStatusChange Symptom: The agent detected a change in the power supply status of a HP storage system. The variable cpqSsBackplaneFtpsStatus indicates the current status. User Action: If the power supply status is degraded, take action to restore power or replace the failed power supply.
1191 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: SCSI Tape Library Status Change Log Message: The tape library with SCSI target %s connected to SCSI bus %s of the controller in slot %s has a new status of %s. Tape library status values: 1=other, 2=ok, 3=degraded, 4=failed, 5=offline SNMP Trap: cpqTapeLibraryStatusChange - 5018 in CPQSCSI.MIB Symptom: The Storage Agent detected a change in the status of a tape library. The current tape library status is indicated in the cpqTapeLibraryState variable.
1192 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: SCSI Tape Drive Status Change Log Message: The tape drive with SCSI target %s connected to SCSI bus %s of the controller in slot %s has a new status of %s. Tape drive status values: 1=other, 2=ok, 3=failed, 5=offline, 6=missingWasOk, 7=missingWasFailed, 8=missingWasOffline Symptom: The Storage Agent detected a change in the status of a tape drive. The current physical drive status is indicated in the cpqTapePhyDrvStatus variable.
1193 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: External Tape Drive Status Change. Log Message: The tape drive at location %s has a new status of %s. Tape drive status values: 1=other, 2=ok, 3=degraded, 4=failed, 5=offline, 6=missingWasOk, 7=missingWasOffline SNMP Trap: cpqExtTapeDriveStatusChange - 16023 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of an external tape drive. The variable cpqFcTapeDriveStatus indicates the current tape status. User Action: if the tape is failed or offline, check the tape and all connection.
1194 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: External Tape Drive Cleaning Required. Log Message: The tape drive at location %4 requires cleaning. SNMP Trap: cpqExtTapeDriveCleaningRequired- 16024 in CPQFCA.MIB Symptom: The agent detected a tape drive that needs to have a cleaning tape inserted and run. This causes the tape drive heads to be cleaned. Supporting SNMP Trap Description: Cleaning is required for tape drive.

Event Identifier	Description
1195 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: External Tape Drive Replace Cleaning Tape Log Message: The cleaning tape in the tape drive at location %4 needs to be replaced. SNMP Trap: cpqExtTapeDriveCleanTapeReplace - 16025 in CPQFCA.MIB Symptom: The agent detected that an autoloader tape unit has a cleaning tape that is fully used and therefore needs to be replaced with a new cleaning tape. Supporting SNMP Trap Description: Cleaning tape needs replacing.
1196 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Recovery Server Option Status Change. Log Message: Storage system %4 has a new RSO status of %5. SNMP Trap: cpqSsExRecoveryServerStatusChange - 8025 in CPQSTSYS.MIB Symptom: The agent detected a change in the recovery server option status of a HP storage system. The variable cpqSsChassisRsoStatus indicates the current status. User Action: if the RSO status is noSecondary(6) or linkDown(7), ensure that the secondary server is operational and all cables are connected properly. If the RSO status is secondaryRunningAuto(8) or secondaryRunningUser(9), examine the primary server for failed components. Supporting SNMP Trap Description: Storage system recovery server option status changed to [cpqSsChassisRsoStatus].
1197 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: External Tape Library Status Change Log Message: The tape library at location %s has a new status of %s. Library status values: 1=other, 2=ok, 3=degraded, 4=failed, 5=offline. SNMP Trap: cpqExtTapeLibraryStatusChange - 16026 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the status of an external tape library. The variable cpqFcTapeLibraryStatus indicates the current tape library status. User Action: If the tape library is failed or offline, check the tape library font panel and all connections.
1198 (cpqstmsg.dll)	Log Severity: Warning (2) Event Title: External Tape Library Door Status Change Log Message: The tape library at location %4 has a new door status of $7. SNMP Trap: cpqExtTapeLibraryDoorStatusChange - 16027 in CPQFCA.MIB Symptom: This trap signifies that the agent detected a change in the door status of an internal tape library. The variable cpqFcTapeLibraryDoorStatus indicates the current tape library door status. User Action: If the tape library door is open, close the tape library door. Supporting SNMP Trap Description: The door is [dpqFcTapeLibraryDoorStatus] for tape library.

Server Agents

Event Identifier	Description
1024 (cpqsvmsg.dll)	Log Severity: Error (3) Log Message: A cache accelerator parity error indicates a cache module needs to be replaced. SNMP Trap: cpqHe3CacheAccelParityError - 6046 in CPQHLTH.MIB Symptom: A cache accelerator parity error indicates a cache module needs to be replaced. The error information is reported in the variable cpqHeEventLogErrorDesc. Supporting SNMP Trap Data: sysName, cpqHoTrapFlags Supporting SNMP Trap Description: Cache Accelerator errors may require a replacement module.
1025 (cpqsvmsg.dll)	Log Severity: Warning (2) Log Message: The Advanced Memory Protection subsystem detected a memory fault. The Online Spare Memory has been activated. Schedule server down time to replace the memory. SNMP Trap: cpqHeResilientMemOnlineSpareEngaged - 6047 in CPQHLTH.MIB Symptom: Advanced Memory Protection Online Spare Engaged. The Advanced Memory Protection subsystem has detected a memory fault. The Online Spare Memory has been activated. User Action: Schedule server downtime to replace the faulty memory. Supporting SNMP Trap Description: The Advanced Memory Protection subsystem engaged the online spare memory.
1027 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: Advanced Memory Protection Advanced ECC Memory Engaged Log Message: The Advanced Memory Protection subsystem detected a memory fault. Advanced ECC has been activated. Schedule server down time to replace the memory. SNMP Trap: CpqHeResilientAdvancedEccMemoryEngaged - 6052 in CPQHLTH.MIB User Action: Replace the faulty memory. Supporting SNMP Trap Description: The Advanced Memory Protection subsystem engaged the advanced ECC memory.
1071 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: HP Storage System Information Health; Correctable memory error detected. Log Message: The errors are corrected but the memory module should be replaced. SNMP Trap: cpqHe3CorrMemReplaceMemModule - 6029 in CPQHLTH.MIB Symptom: A correctable memory log entry indicates a memory module needs to be replaced. The errors are corrected but the memory module should be replaced. The error information is reported in the variable cpqHeCorrMemErrDesc.
1082 (cpqsvmsg.dll)	Log Severity: Error (3) Log Message: A Thermal Temperature Condition has been set to failed. The system will be shut down due to this thermal condition. SNMP Trap: cpqHe3ThermalTempFailed - 6017 in CPQHLTH.MIB Symptom: The temperature status is set to failed. The system will be shut down due to this thermal condition. Supporting SNMP Trap Description: System will be shut down due to this thermal condition.
1083 (cpqsvmsg.dll)	Log Severity: Warning (2) Log Message: The Thermal Temperature Condition has been set to degraded. The system may be shut down due to this thermal condition depending on the state of the thermal degraded action value %4. SNMP Trap: cpqHe3ThermalTempDegraded - 6018 in CPQHLTH.MIB Symptom: The temperature status is set to degraded. The server's temperature is outside of the normal operating range. The server will be shut down if the cpqHeThermalDegradedAction variable is set to shutdown(3). Supporting SNMP Trap Description: Temperature out of range. Shut down may occur.
1085 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: HP System Information Agent: HP Health: A system fan condition has been set to failed. Log Message: The system may be shut down due to this thermal condition. SNMP Trap: cpqHe3ThermalSystemFanFailed - 6020 in CPQHLTH.MIB Symptom: The system fan status is set to failed. A required system fan is not operating normally. The system will be shut down if the cpqHeThermalDegradedAction variable is set to shutdown(3).

Event Identifier	Description
1086 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: HP System Information Agent: HP Health: A system fan condition has been set to degraded. Log Message: If the system fan is part of a redundancy group, the system will not be shut down. If the system fan is not part of the redundancy group, the system may be shut down depending on the state of the thermal degraded action value %s. Action Values: 1=other, 2=continue, 3=shutdown. SNMP Trap: cpqHe3ThermalSystemFanDegraded. Symptom: An optional system fan is not operating normally.
1088 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: HP System Information Agent: HP Health: A processor fan condition has been set to failed. Log Message: The system will be shut down due to this condition. SNMP Trap: cpqHe3ThermalCpuFanFailed - 6023 in CPQHLTH.MIB Symptom: The CPU fan status is set to failed. A processor fan is not operating normally. The server will be shut down.
1092 (cpqsvmsg.dll)	Log Severity: Warning (2) Log Message: Post errors were detected. One or more Power-On Self Test errors were detected during server startup. SNMP Trap: cpqHe3PostError - 6027 in CPQHLTH.MIB
1103 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: HP System Information Agent: HP Health: The fault tolerant power subsystem is set to degraded. Log Message: Check power connections and replace the power supply as needed. SNMP Trap: cpqHe3FltTolPwrSupplyDegraded - 6028 in CPQHLTH.MIB Symptom: The fault tolerant power supply subsystem condition has been set to degraded. SNMP Trap Data: sysName, cpqHoTrapFlags,
1109 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: Remote Insight Battery Failed Log Message: Remote Insight Agent: The Remote Insight Board detected a battery failure. SNMP Trap: cpqSm2BatteryFailed - 9004 in CPQSM2.MIB Symptom: The Remote Insight battery has failed and needs to be replaced.
1110 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: Remote Insight/Integrated Lights-Out Self Test Error Log Message: Remote Insight Agent: The Remote Insight Board detected self test error %s. SNMP Trap: cpqSm2SelfTestError - 9005 in CPQSM2.MIB Symptom: The Remote Insight/Integrated Lights-Out firmware detected a Remote Insight self test error.
1111 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: Remote Insight/Integrated Lights-Out Interface Error Log Message: Remote Insight Agent: The Remote Insight Board detected a controller interface error. SNMP Trap: cpqSm2InterfaceError - 9006 in CPQSM2.MIB Symptom: The host OS detected an error in the Remote Insight/Integrated Lights-Out interface. The firmware is not responding.
1114 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: System Information Agent: Standard Equipment: A processor has crossed the threshold of allowable corrected errors. Log Message: The processor should be replaced. Slot: %s; Socket %s SNMP Trap: cpqSeCpuThresholdPassed - 1001 in CPQSTDEQ.MIB Symptom: This trap is sent when an internal CPU error threshold has been passed on a particular CPU, causing it to go degraded. This trap is sent when cpqSeCpuThreshPassed transitions from false to true.
1118 (cpqsvmsg.dll)	Log Severity: Information (1) Log Message: The fault tolerant power supply subsystem is returned to the OK state. SNMP Trap: cpqHe4FltTolPowerSupplyOK - 6048 in CPQHLTH.MIB Symptom: The fault tolerant power supply condition is set back to the OK state for the specified chassis and bay location.

Event Identifier	Description
1123 (cpqsvmsg.dll)	Log Severity: Warning (2) Log Message: Post errors were detected. One or more Power On Self Test errors were detected during server startup. SNMP Trap: cpqHe3PostError - 6027 in CPQHLTH.MIB Supporting SNMP Trap Description: Errors occurred during server restart.
1124 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: HP System Information Agent: HP Health: The fault tolerant power supply subsystem is in a degraded state. Log Message: Restore power or replace the failed power supply Chassis: %s, Bay %s. SNMP Trap: cpqHe4FltTolPowerSupplyDegraded - 6049 in CPQHLTH.MIB Symptom: The fault tolerant power supply condition is set to degraded for the specified chassis and bay location.
1125 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: HP System Information Agent: HP Health: The fault tolerant power supply subsystem is in a failed state. Log Message: Restore power or replace the failed power supply Chassis %s, Bay %s. SNMP Trap: cpqHe4FltTolPowerSupplyDegraded - 6049 in CPQHLTH.MIB Symptom: The fault tolerant power supply condition is set to degraded for the specified chassis and bay location.
1129 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: HP System Information Agent: HP Health: The fan subsystem is in a degraded state. Log Message: Replace the fan Chassis %s, Fan %s. SNMP Trap: cpqHe3FltTolFanDegraded - 6035 in CPQHLTH.MIB Symptom: The fault tolerant fan condition is set to degraded for the specified chassis and fan.
1130 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: HP System Information Agent: HP Health: The fan subsystem is in a failed state. Log Message: Replace the fan chassis %s; fan %s. SNMP Trap: cpqHe3FltTolFanFailed - 6036 in CPQHLTH.MIB Symptom: The fault tolerant fan condition is set to failed for the specified chassis and fan.
1134 (cpqsvmsg.dll)	Log Severity: Error (3) Log Message: A Temperature Sensor Condition has been set to failed. The system will be shut down due to this overheat condition. SNMP Trap: cpqHe3TemperatureFailed - 6040 in CPQHLTH.MIB Symptom: The temperature status is set to failed in the specified chassis and location. The system will be shut down due to this condition. Supporting SNMP Trap Description: Temperature exceeded on Chassis [cpqHeTemperatureChassis], location [cpqHeTemperatureLocale].
1135 (cpqsvmsg.dll)	Log Severity: Warning (2) Log Message: A Temperature Sensor Condition has been set to degraded. The system may or may not shut down depending on the state of the thermal degraded action value %6. SNMP Trap: cpqHe3TemperatureDegraded - 6041 in CPQHLTH.MIB Symptom: The temperature status is set to degraded in the specified chassis and location. The server's temperature is outside the normal operating range. The server will be shut down if the cpqHeThermalDegradedAction variable is set to shutdown(3). Supporting SNMP Trap Description: Temperature out of range on Chassis [cpqHeTemperatureChassis], Location [cpqHeTemperatureLocale]. Shutdown may occur.
1137 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: HP System Information Agent: HP Health: The DC-DC power converter is in a degraded state. Log Message: Replace the power converter Chassis: %s, Slot: %s, Socket: %s. SNMP Trap: cpqHe3PowerConverterDegraded - 6043 in CPQHLTH.MIB Symptom: The DC-DC Power Converter condition is set to degraded for the specified chassis, slot and socket.
1138 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: HP System Information Agent: HP Health: The DC-DC power converter is in a failed state. Log Message: Replace the power converter Chassis: %s, Slot: %s, Socket: %s. SNMP Trap: cpqHe3PowerConverterFailed - 6044 in CPQHLTH.MIB Symptom: The DC-DC Power Converter condition is set to failed for the specified chassis, slot and socket.

Event Identifier	Description
1139 (cpqsvmsg.dll)	Log Severity: Warning (2) Log Message: The DC-DC power converter is in a failed state. Replace HP System Information Agent: HP Health: The DC-DC Power Converter subsystem has lost redundancy. Replace any failed or degraded power converters. SNMP Trap: cpqHe3PowerConverterRedundancyLost - 6045 in CPQHLTH.MIB Symptom: The DC-DC Power Converters have lost redundancy for the specified chassis. Supporting SNMP Trap Description: The Power Converters are no longer redundant on Chassis [cpqHePwrConvChassis].
1142 (cpqsvmsg.dll)	Log Severity: Error (3) Log Message: Hot Plug PCI Board Failed. A hot-plug PCI adapter has failed to power up. Ensure that the board and all cables are installed correctly. SNMP Trap: cpqSiHotPlugSlotPowerUpFailed - 2010 in CPQSINFO.MIB Symptom: A hot-plug slot board failed to power up in the specified chassis and slot. User Action: Ensure that the board and all cables are installed correctly and the board type and revision are the same as the replaced board. Supporting SNMP Trap Description: Hot plug slot board failed in chassis [cpqSiHotPlugSlotChassis], slot [cpqSiHotPlugSlotIndex], error [cpqSeHotPlugSlotErrorStatus].
1145 (cpqsvmsg.dll)	Log Severity: Information 1) Event Title: Enclosure Removed Log Message: This trap signifies that an enclosure has been removed from the rack. SNMP Trap: cpqRackEnclosureRemoved - 22003 in CPQRACK.MIB Symptom: The enclosure has been removed. User Action: None Supporting SNMP Trap Description: The enclosure [cpqRackCommonEnclosureName] has been removed from rack [cpqRackName].
1146 (cpqsvmsg.dll)	Log Severity: Information (1) Event Title: Rack Information Agent: Enclosure Inserted %n. This trap signifies that an enclosure has been inserted into the rack. Log Message: Rack Name %s, Rack Unique ID: %s, Enclosure Name %s, Enclosure Model %s, Enclosur Serial Number %s, Enclosure Spare Part Number %s, Trap Sequence Number %s. User Action: None SNMP Trap: cpqRackEnclosureInserted - 22004 in CPQRACK.MIB Symptom: The enclosure has been inserted.
1148 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: Rack Information Agent: Rack Enclosure Overheating %n. This trap signifies that an enclosure temperature sensor has been tripped, indicating a possible overheat condition. Log Message: Rack Name: %s, Rack Unique ID %s, Enclosure Name %s, Enclosure Serial Number %s, Sensor Location %s, Enclosure Spare Part Number %s, Trap Sequence Number %10. Symptom: The enclosure temperature status is set to degraded. This trap signifies that an enclosure temperature sensor has been tripped, indicating a possible overheat condition. User Action: Shut down the enclosure and possibly the rack as soon as possible. Ensure all fans are working properly and that air flow in the rack has not been blocked. SNMP Trap: cpqRackEnclosureTempDegraded - 22006 in CPQRACK.MIB
1150 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: Rack Enclosure Ran Failed. Log Message: This trap signifies that an enclosure fan failed and less than the minimum number of fans in the redundant fan group are operating. This may result in overheating of the enclosure. SNMP Trap: cpqRackEnclosureFanFailed - 22008 in CPQRACK.MIB User Action: Replace the fan as soon as possible. Supporting SNMP Trap Description: The enclosure [cpqRackCommonEnclosureName] fan in rack [cpqRackName] is set to failed.

Event Identifier	Description
1151 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: Rack Information Agent: Rack Enclosure Fan Degraded %n. This trap signifies that an enclosure fan has failed but other fans in the redundant fan group are still operating. Log Message: This may result in the overheating of the enclosure. User Action: Replace the fan as soon as possible. SNMP Trap: cpqRackEnclosureFanDegraded - 22009 in CPQRACK.MIB Symptom: The enclosure fan status is set to degraded. This trap signifies that an enclosure fan failed but other fans in the redundant fan group are still operating. This may result in overheating of the enclosure.
1152 (cpqsvmsg.dll)	Log Severity: Information (1) Event Title: Rack Information Agent: Rack Enclosure Fan OK %n. This trap signifies that an enclosure fan has returned to normal operation. User Action: None SNMP Trap: cpqRackEnclosureFanOk - 22010 in CPQRACK.MIB Symptom: The enclosure fan status has been set to OK.
1155 (cpqsvmsg.dll)	Log Severity: Error (3) Event Title: Rack Power Supply Failed Log Message: This trap signifies that a power supply has failed. SNMP Trap: cpqRackPowerSupplyFailed - 22013 in CPQRACK.MIB Symptom: This power supply status is set to failed. User Action: Replace the power supply as soon as possible. Supporting SNMP Trap Description: The power supply [cpqRackPowerSupplyPosition] in enclosure [cpqRackPowerSupplyEnclosureName] in rack [cpqRackName] has been set to failed.
1156 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: Rack Power Supply Degraded Log Message: This trap signifies that a power supply has degraded. SNMP Trap: cpqRackPowerSupplyDegraded - 22014 in CPQRACK.MIB Symptom: The power supply status is set to degraded. User Action: Replace the power supply as soon as possible. Supporting: SNMP Trap Description: The power supply [cpqRackPowerSupplyPosition] in enclosure [cpqRackPowerSupplyEnclosureName] in rack [cpqRackName] is set to degraded.
1170 (cpqsvmsg.dll)	Log Severity: Warning (2) Event Title: Server Blade Removed Log Message: The server blade was removed from the enclosure. SNMP Trap: cpqRackServerBladeRemoved - 22028 in CPQRACK.MIB Symptom: Server blade removed. User Action: None Supporting SNMP Trap Description: Server blade [cpqRackServerBladeName] removed from position [cpqRackServerBladePosition], in enclosure [cpqRackServerBladeEnclosureName] in rack [cpqRackName].
1171 (cpqsvmsg.dll)	Log Severity: Information (1) Event Title: Server Blade Inserted Log Message: The server blade was inserted from the enclosure. SNMP Trap: cpqRackServerBladeInserted - 22029 in CPQRACK.MIB Symptom: Server blade inserted. The server blade has been inserted into the enclosure. User Action: None Supporting SNMP Trap Description: Server blade [cpqRackServerBladeName] inserted into position [cpqRackServerBladePosition], in enclosure [cpqRackServerBladeEnclosureName] in rack [cpqRackName].

NIC Agents

Event Identifier	Description
1024 (cpqnimsg.lfm)	Log Severity: Warning (3) Component: NIC SNMP Management Agent Error: The SNMP Insight Agent is unable to generate traps due to an error during initialization. Cause: Check to ensure that the SNMP service is running. Reinstalling the agents may fix this error.
1281 (cpqnimsg.dll)	Log Severity: Error (3) Log Message: Connectivity has been lost for the NIC in slot %1, port %2. SNMP Trap: cpqNicConnectivityLost - 18002 in CPQNIC.MIB Symptom: This trap is sent any time the status of a logical adapter changes to the failed condition. This occurs when the adapter in a single adapter configuration fails, or when the last adapter in a redundant configuration fails. This can be caused by loss of link due to a cable being removed from the adapter or the hub or switch. Internal adapter, hub or switch failures can also cause this condition. User Action: Check the cables to the adapter and the hub or switch. If no cable problems are found, the adapter, hub or switch may need replacement. Supporting SNMP Trap Description: Connectivity lost for adapter in slot [cpqNicIfPhysAdapterSlot], port [cpqNicIfPhysAdapterPort].
1283 (cpqnimsg.dll)	Log Severity: Error (3) Log Message: Redundancy has been reduced by the NIC in slot %1, port %2. Number of functional NICs in the team: %3. SNMP Trap: This trap is sent any time a physical adapter in a logical adapter group changes to the failed condition, but at least one physical adapter remains in the ok condition. This can be caused by loss of link due to a cable being removed from the adapter or hub or switch. Internal adapter, hub or switch failures can also cause this condition. User Action: Check the cables to the adapter and the hub or switch. If no cable problems are found, the adapter, hub or switch may need replacement. Supporting SNMP Trap Description: Redundancy decreased by adapter in slot [cpqNicIfPhysAdapterSlot], port [cpqNicIfPhysAdapterPort].
1287 (cpqnimsg.dll)	Log Severity: Error (3) Event Title: cpqNic2RedundancyReduced Log Message: NIC Agent: Redundancy has been reduced by the NIC in slot %1, port %s, Number of functional NICs in the team: %s. SNMP Trap: cpqNic2RedundancyReduced - 18008 in CPQNIC.MIB Symptom: This trap is sent any time a physical adapter in a logical adapter group changes to the failed condition, but at least one physical adapter remains in the OK condition. This is caused by loss of link due to a cable being removed from the adapter or the hub or switch. Internal adapter, hub or switch failures can also cause this condition. User Action: Check the cables to the adapter and the hub or switch. If not cable problems are found, the adapter, hub or switch may need replacement.

For your notes

6 Spare Parts

For your notes

ML350 G5 Spare Parts

The non-HP spare parts listed in the following table are configured in GPO and are available for ordering. The part should be ordered by the GE part number; however, when the part arrives, confirm that the manufacturer part number on the physical piece matches the manufacturer part number listed in the table. For HP parts, the server is under warranty for three years and during the life of the warranty, the parts should be ordered directly from HP.

In addition, if service is required for parts not shown on this list, the FE needs to order the **HP On-Site Service** part number to obtain both HP service and the necessary parts for that service call.

The procedures for replacing these parts are detailed in the *HP ProLiant ML350 Server Maintenance and Service Guide* - available on the *HP Standard Documentation CD* or on the **www.hp.com** website.

Description	GE Part Number	Manufacturer's Part Number
HP ML350R05 E5420 SAS LFF US Server - Rack	5304586	458240-001
HP ML350R05 E5420 SAS LFF US Server - Tower	5304669	AR633A
HP NC364T PCIe 4Pt Gigabit Server Adapter	5325769	435508-B21
HP - Redundant hot plug fan kit	5325770	409579-B21
HP - Power supply - redundant	5325771	399771-B21
HP - Hard drive - 750 GB - hot-swap - 3.5" - SATA-150 - 22-position plug - 7200 rpm	5310338	432341-B21
HP - Memory - 1 GB (2 x 512 MB) - DDR II - 667 MHz / PC2-5300	5325772	397409-B21
HP - Memory - 2 GB (2 x 1 GB) - DDR II - 667 MHz / PC2-5300	5325773	397411-B21
HP StorageWorks DAT 160 USB Internal Drive	5304864	Q1580A
HP StorageWorks DAT 160 Tapes	5314857	C8011A
HP StorageWorks 60 Module Smart Array Al	5314863	418408-B21
HP Ext Mini SAS 2m Cable	5314864	407339-B21
HP 1500 UPS	5314854	418400-001
HP 1500 UPS Battery	5326613	418401-001
HP Plastic's Kit	5325776	414989-001
USB Dongle - US	5304400	HASP4 M4 USB RoHS DEV.ID# GEULSOPT
USB Dongle - EU Assembly	5304341	HASP4 M4 USB RoHS DEV.ID# GEULSOPT
Image Vault Complete Media and Wallet Assembly - EU	5271524	N/A
Image Vault Complete Media and Wallet Assembly - US	5264796	N/A
Image Vault Standard Documentation Kit - EU	5268603	N/A
Image Vault Standard Documentation Kit - US	5257670	N/A

For your notes

7 ML350 FRU Replacement Procedures

For your notes

Before Starting

Required Tools

You will need the following items for some procedures:

- Torx T-15 screwdriver
- Flathead screwdriver
- Diagnostics Utility

Safety Considerations

Prevent Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity may damage system boards or other static-sensitive devices.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Symbols on Equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
Warning: To reduce risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.
Warning: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a network interface connection.
Warning: To reduce the risk of electric shock, fire or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.
Warning: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.
Warning: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.
Warning: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Preparation Procedures

To access some components and perform certain service procedures, you must perform one or more of the following procedures:

- Extend the server from the rack. If you are performing service procedures in a branded rack or a third-party cabinet, you can use the locking feature of the rack rails to support the server and gain access to internal components. See “Extend Server from Rack” on page 7-4 for more information.
- Power down the server. If you must remove a server from a rack or non-hot-plug component from a server, power down the server. See “Power Down the Server” on page 7-3 for more information.
- Remove the server from the rack. If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack.
  - Power down the server.
  - Loosen the front panel thumbscrews that secure the server faceplate to the front of the rack.
  - Disconnect the cabling and remove the server from the rack. Reverse the server installation steps in Chapter 5.
  - Place the server on a sturdy, level surface.
- Remove the access panel to gain access to the internal components. See “Remove the Access Panel” on page 7-5 for more information.

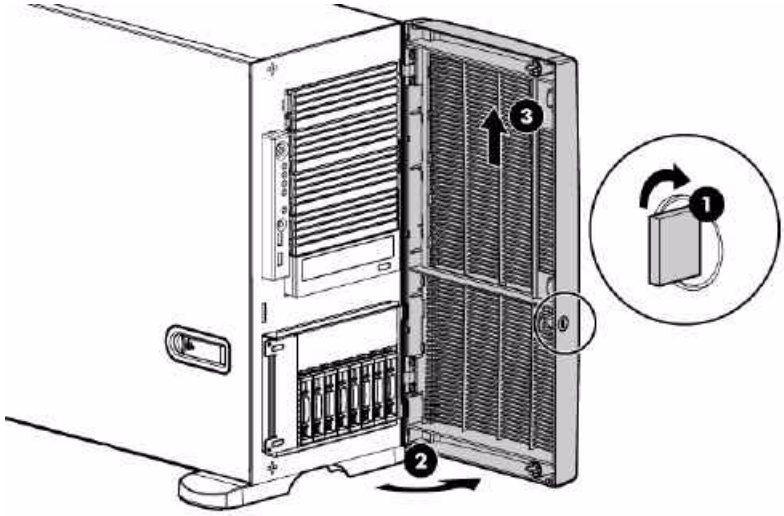
Replacement Procedures

Front Bezel

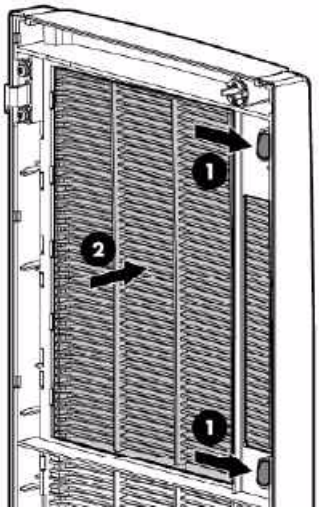
This server has a removable bezel that must be unlocked and opened before accessing the front panel components. The bezel should be kept closed during normal server operations.

Use the key provided with the server to unlock the bezel with a clockwise turn. If necessary, remove the bezel.

To avoid breaking the bezel, remove the bezel before placing the server on its side.



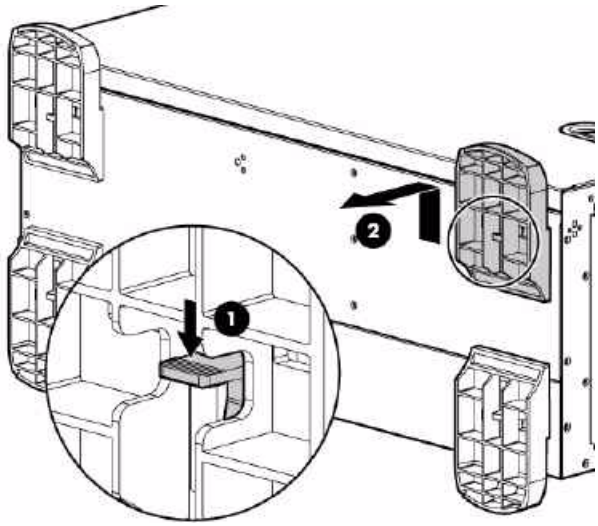
For operations involving removable media bay access, the media bay panel can be removed from the bezel.



Tower Foot

To remove the component:

1. Power down the server.
2. Remove the tower bezel.
3. Place the server on its side.
4. Remove the foot.



To replace the component, reverse the removal procedure.

Access Panel

1. To remove the component:
2. Power down the server.
3. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the tower front bezel.
4. If the locking latch is locked, use a T-15 Torx screwdriver to unlock the latch.
5. Slide the access panel back about 1.5 cm.
6. Lift and remove the access panel.

NOTE

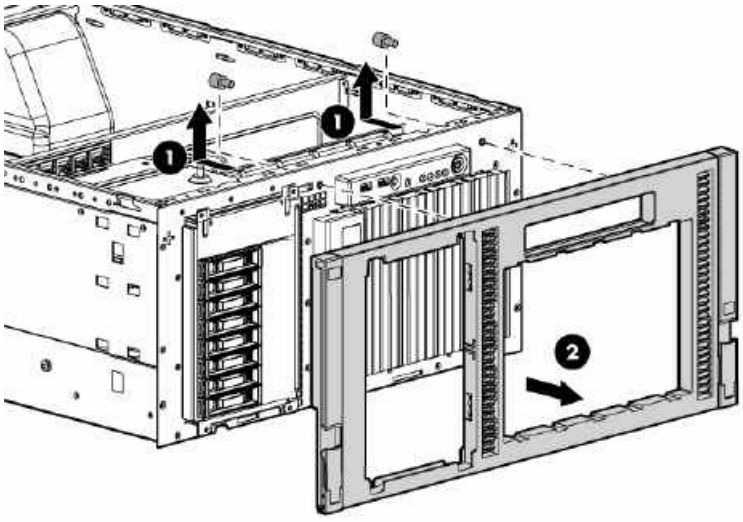
Turn the access panel over to locate the hood labels. These labels provide information on installing various options, flexible memory configuraitons, LED status indicators, and switch settings.

To replace the component, reverse the removal procedure.

Rack Bezel

To remove the component:

1. Power down the server.
2. Extend the server from the rack.
3. Remove the access panel.
4. Remove the bezel.



To replace the component, reverse the removal procedure.

Rack Rails

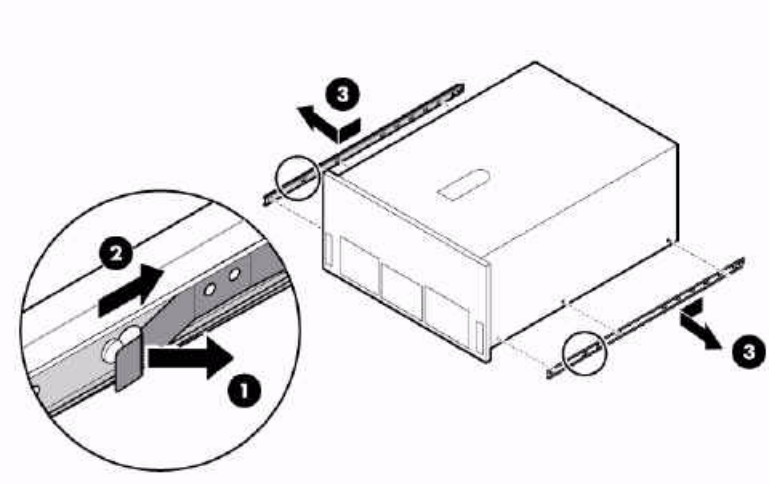
NOTE

This procedure applies to racked servers only.

To remove the component:

1. Power down the server.
2. Remove the server from the rack.
3. Use a flat-head screwdriver to lift the spring tab.

4. Slide the rail forward and remove it from the server.

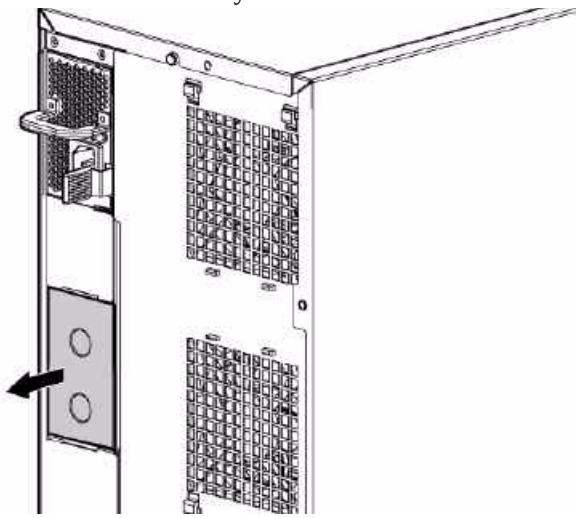


5. Repeat the steps above to remove the other rail.

To replace the component, reverse the removal procedure.

Power Supply Blank

Remove the blank from the bay.



To replace the component, reverse the removal procedure.

Hot Plug Power Supply

NOTE

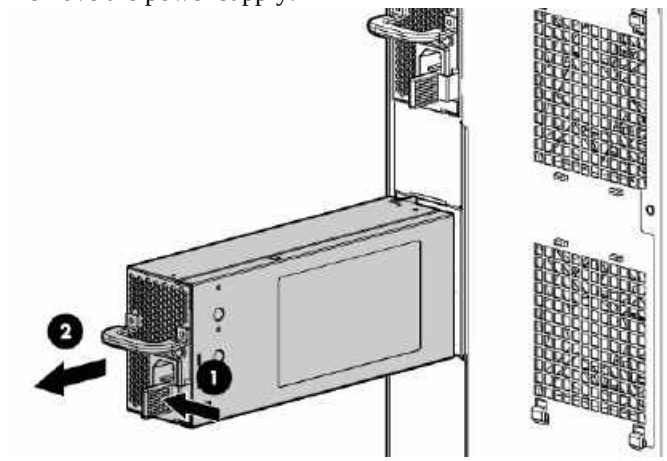
To reduce the risk of electric shock, do not disassemble the power supply or attempt to repair it. Replace it only with the specified spare part.

NOTE

Do not attempt to remove and replace a power supply as a hot-plug procedure unless both bays are populated with power supplies.

To remove the component:

1. Disconnect the power cord from the AC source.
2. Disconnect the power cord from the power supply.
3. Remove the power supply.



NOTE

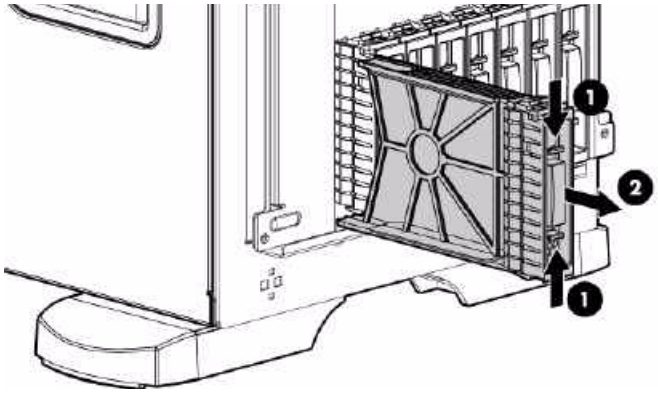
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To replace the component, reverse the removal procedure.

Hard Drive Blanks

To remove the component:

1. Open or remove the tower bezel.
2. Remove the blank.



NOTE

To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

NOTE

Depending on model purchased, the server may look slightly different than shown.

To replace the component, reverse the removal procedure.

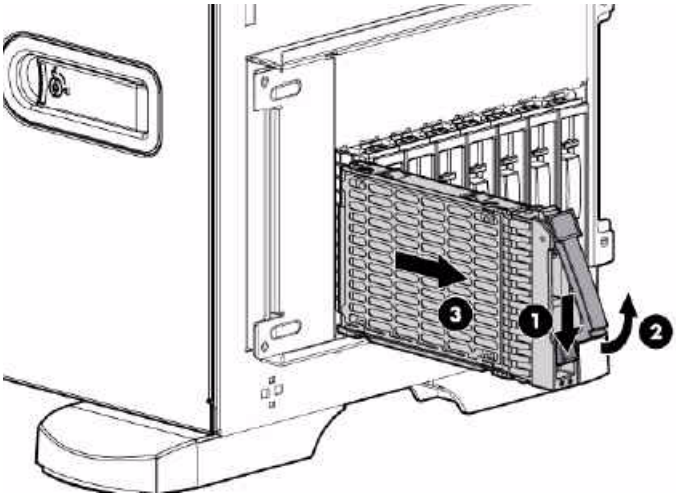
Hot Plug SATA and SAS Hard Drives

To remove the component:

NOTE

To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or blank.

1. Determine the status of the hard drive from the hot-plug hard drive LEDs.
2. Back up all server data on the hard drive.
3. Remove the hard drive.



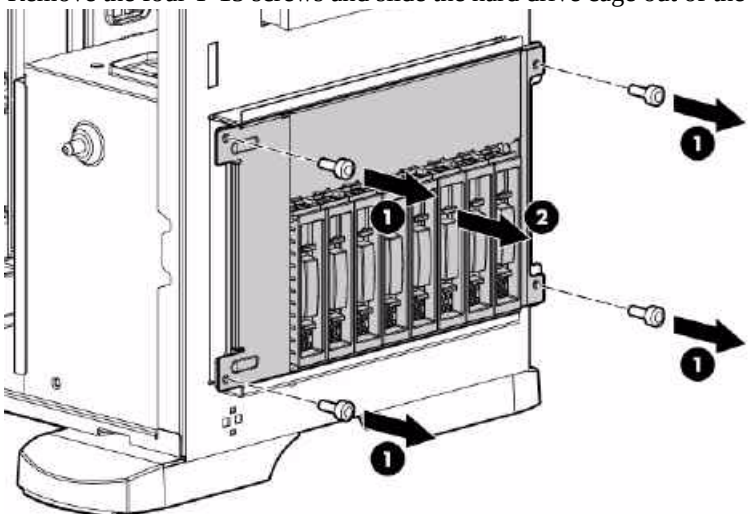
To replace the component, reverse the removal procedure.

Hard Drive Cage

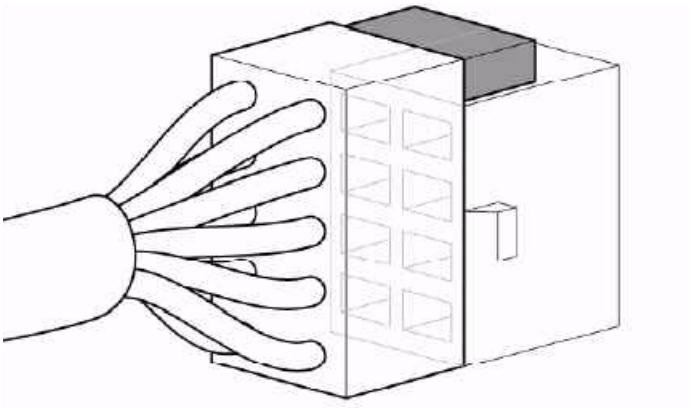
To remove the component:

1. Power down the server.
2. Either unlock and remove the bezel or extend the server from the rack.
3. Remove the access panel.
4. Remove the rack bezel (rack servers only).
5. Disconnect the power and data cables.

6. Remove the four T-15 screws and slide the hard drive cage out of the chassis.



7. Remove all hard drives.



To replace the component, reverse the removal procedure.

NOTE

When replacing or installing a six-bay hard drive cage, connect the 10-pin power cable from the power backplane to the 8-pin power connector on the hard drive cage backplane. When seated properly, the connectors have a two-pin overlap. The overlap is cosmetic only and causes no functional side effects.

System Fans

NOTE

The system fan is a non-hot-pluggable device.

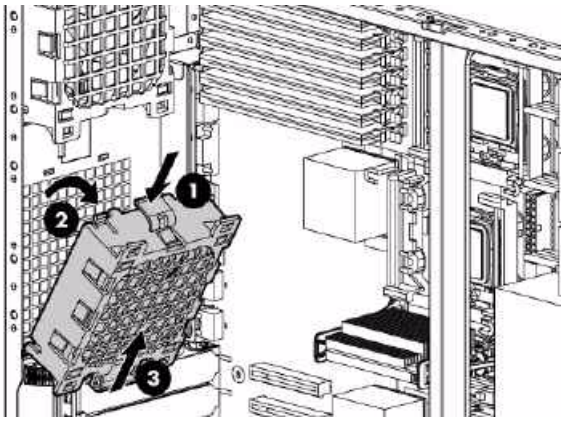
Fan failures are indicated by amber LEDs located on each hot-plug fan and by the front panel internal health LED. When a fan failure occurs, the internal health LED illuminates red in non-redundant mode and amber in redundant mode.

To remove the component:

1. Power down the server.

2. Either unlock and remove the bezel or extend the server from the rack.

3. Remove the access panel.
4. Remove the air baffle.
5. Disconnect the system fan cable from the system board.
6. Remove the fan.

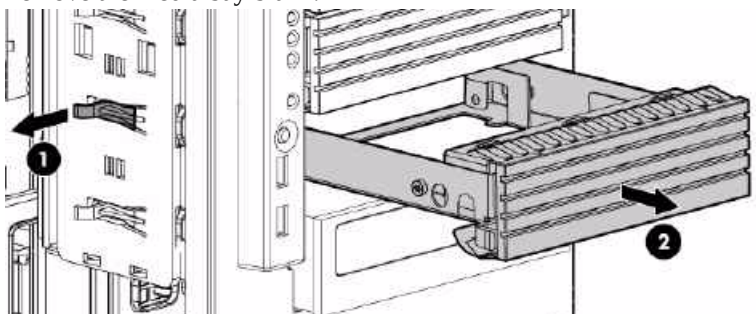


To replace the component, reverse the removal procedure.

Media Bay Blank

To remove the component:

1. Open or remove the tower bezel.
2. Remove the access panel.
3. Remove the media bay blank.



To replace the component, reverse the removal procedure.

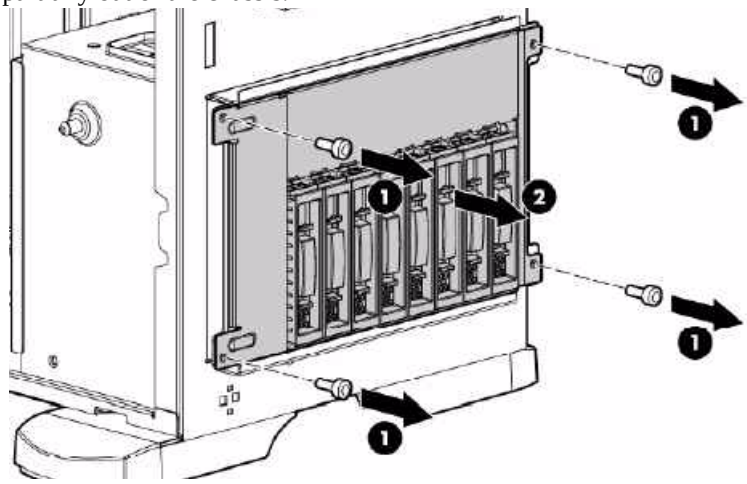
PCI-X Expansion Cage

NOTE

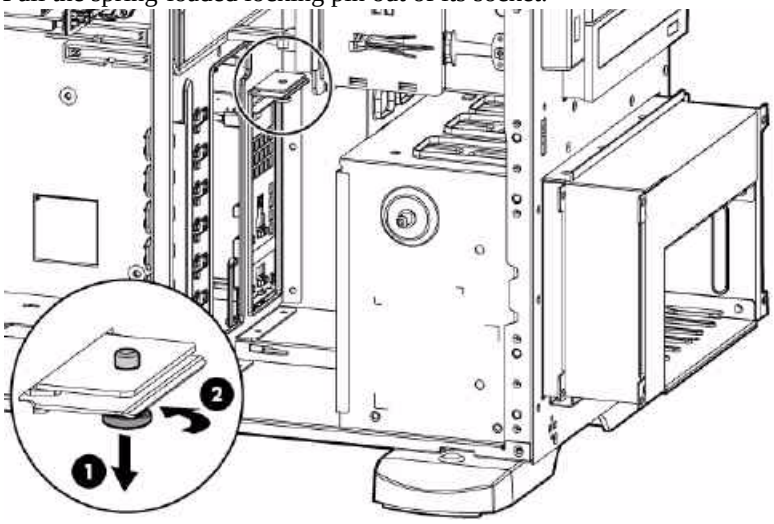
To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI expansion cage.

To remove the component:

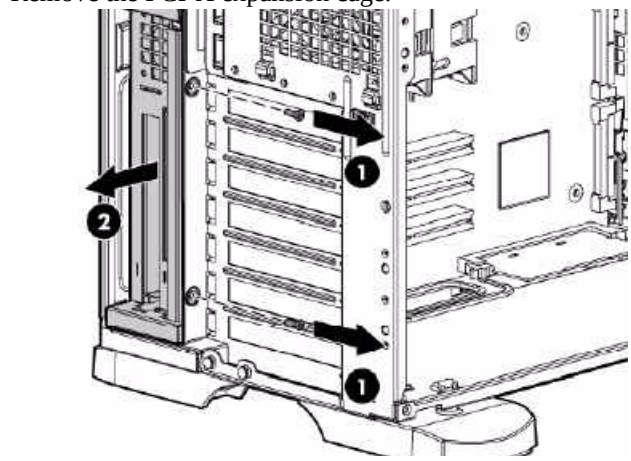
1. Power down the server.
2. Either unlock and remove the bezel or extend the server from the rack.
3. Remove the access panel.
4. Remove the rack bezel (rack servers only).
5. Remove the four T-15 screws from the hard drive cage and then slide the hard drive cage partially out of the chassis.



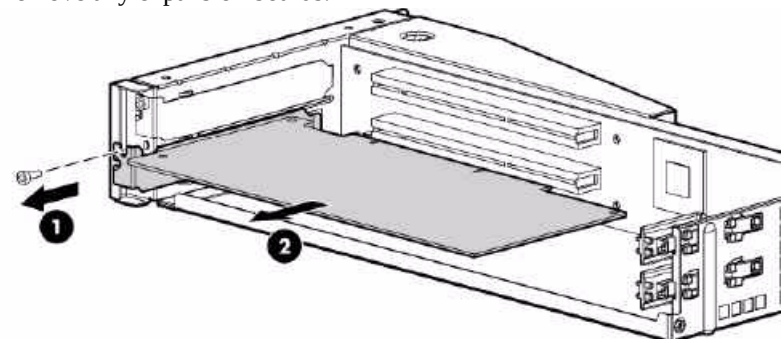
6. Disconnect any external cables from the PCI-X expansion boards.
7. Disconnect the power cable extension and the signal cable from the PCI-X expansion cage.
8. Pull the spring-loaded locking pin out of its socket.



9. Remove the PCI-X expansion cage.



10. Remove any expansion boards.



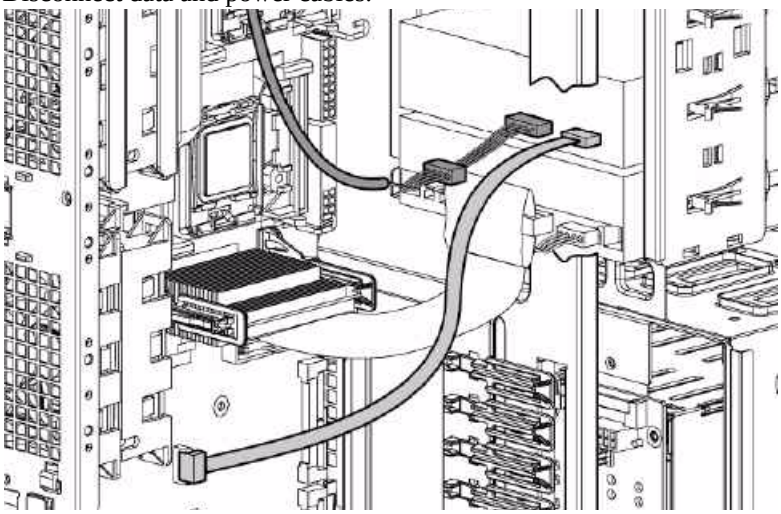
To replace the component, reverse the removal procedure.

Media Device

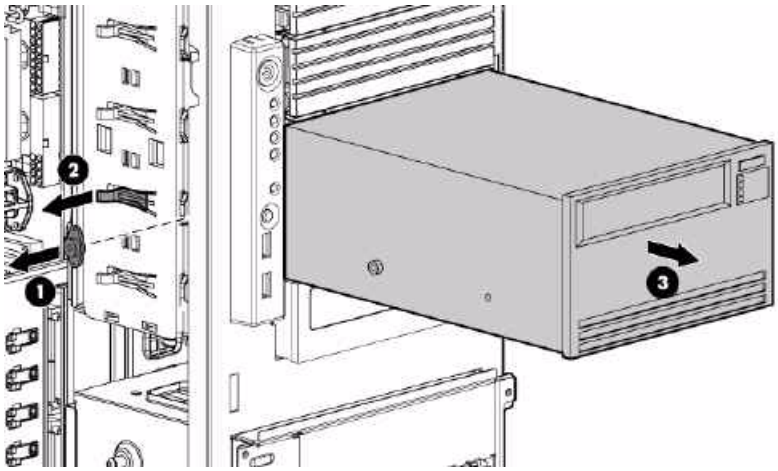
To remove the component:

1. Power down the server.
2. Either unlock and remove the bezel or extend the server from the rack.
3. Remove the access panel.

4. Disconnect data and power cables.



5. Remove the device.



To replace the component, reverse the removal procedure.

NOTE

Be sure to connect the right-angle end of the SATA data cable to the system board. Connecting it to the SATA drive may interfere with other installed media bay devices.

For your notes

8 Functional Checks

For your notes

Image Vault Post-Service Functional Checks

GE Healthcare Field Engineers interact with the Image Vault during two distinct service events:

- Installations, upgrades and/or application of FMI instructions
- Service calls to correct software/hardware problems and/or to apply or correct system configuration changes.

After these service events are completed, the FE needs to confirm the functionality of the system and refer to specific functionality checks when closing the dispatch.

After performing hardware or software changes/installations to the Image Vault, the field engineer needs to perform the functional tests outlined in this chapter and reference this chapter number in the dispatch.

Hardware Changes

New Drive Replacements

After replacing hard disk drives, perform the following procedure to confirm and/or update the firmware levels on the drives.

1. Insert the **Image Vault 5.0 Firmware CD.** Reboot the system; the system then reboots from this media.

2. On the *Firmware Maintenance* screen, allow the software to finish loading - there is no need for any response.

3. On the *Select Language* screen, confirm that **English** is selected and click **Continue**.

4. On the *HP End User License Agreement* screen, click **Agree**.

5. On the *HP Proliant Firmware Maintenance CD* screen. click the **Firmware Update** button**.**

6. In the *Firmware* section of the screen, click **Install Firmware**.

7. The system searches to determine which updates are necessary. If updates are needed, they are listed (and automatically selected) on the *Select Items to be Installed* screen.

   a. If there **are** updates needed, on the *Select Items to be Installed* screen, click **Install**. On the *Installation Results* screen, click **Reboot Now**.

   b. If **no** updates are needed, click **Exit**. (If items are listed but not selected, in the *Installation Not Needed* section, ignore these items.)

      When the confirmation message appears, click **Yes**. Click **Exit** on the *HP Proliant Firmware Maintenance CD* screen. On the confirmation message, click **OK**.

8. Eject the **Image Vault 5.0 Firmware CD**.

Check System Management Web Page

If your system contains a DL380 server, use the System Management web page to check the status of the hardware.

1. Select **Start > Programs > Internet Explorer**. If the *Security* message appears, select the **In the future, do not show this message** checkbox and click **OK**.

2. On the browser screen, type **https://127.0.0.1:2381** in the *URL* field and press **Enter**.

   a. If the *Secure Connections* message appears, select the **In the future, do not show this message** checkbox and click **OK**.

   b. On the *Security Alert* screen, click **Yes**.

   c. On the *Content Blocked* screen, click **Add**.

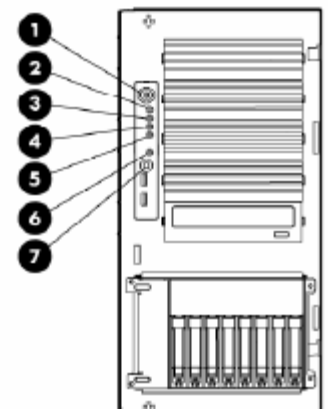
   d. On the *Trusted Sites* screen, verify that the URL appears in the field and click **Add**. Confirm that the URL appears in the list pane and click **Close**.

3. On the *Login* screen, select **Administrator** from the *Name* pull-down list. Enter the standard Image Vault password in the *Password* field and click **OK**. The *System Management* home page then appears.

4. Check the **Failed and Degraded** box on this page to determine if any hardware failures still exist. If no failures are noted, the hardware change completed successfully.

Check System Status Lights

Check Disk Enclosure Lights



Item	Description	Status
1	Internal health LED	Green = Normal Amber = System degraded. Refer to system board LEDs to identify component in degraded state.
2	External health LED (power supply)	Green = Normal Amber = Power redundancy failure; Red = Critical power supply failure
3	NIC 1 link/activity LED	Green = Network link Flashing = Network link and activity Off = No link to network. If power is off, view the rear panel RJ-45 LEDs for status.
4	NIC 2 link/activity LED	Green = Network link Flashing = Network link and activity Off = No link to network. If power is off, view the rear panel RJ-45 LEDs for status.
5	UID LED button	Blue = Activated; Flashing = System remotely managed Off = Deactivated
6	Power On/Standby button/ system power LED	Green = System on Amber = System shut down, but power still applied Off = Power cord not attached or power supply failure.

Confirm that all system status lights are in normal status. If the lights display something other than the normal status, refer to the *HP DL380 G4 Service Manual* (on the HP Standard Documentation CD) for more information.

Check UPS Lights

The UPS uses a series of indicator lights to notify of possible problems with the AC input level, load level, and wiring faults. Several green lights in each column are always on while the system is powered on.

1. Check that no indicator lights are red or flashing red.

2. If the lights display something other than normal status, refer to the UPS manufacturer's service manual for more information.

Software Installation and/or Configuration Changes

Post Installation Functional Checks

These tests should be performed before the system is released for use. Therefore, there should not be any incoming records from the acquisition devices, until the testing process sends them.

Stop Image Vault Services

1. Stop all Image Vault services, including HIS services if applicable.
   - Open the Image Vault interface.
   - Select the **Info** button from the top navigation button bar.
   - When the **Server Information** screen appears in the lower pane, select the **Service Manager** tab.
   - When the service names are displayed in the lower pane, select a service in the Image Vault pane and click **Stop**. Repeat for all Image Vault services.
   - If HIS options are licensed on this system, select a service in the HL7 pane and click **Stop**. Repeat for all HIS services.
2. Check that all Viewpoint services are actually stopped before continuing.
   - Press **Ctrl + Alt + Del**.
   - On the *Windows Security* screen, click **Task Manager**.
   - On the *Windows Task Manager* screen, select the **Processes** tab.
   - Determine if any of the following processes are listed: *VPCardiacReport2DB.exe*, *VPHISComServer.exe* and *VPWebServer.exe*. If yes, select the process and click **End Process**. Repeat as needed to end all three processes.
   - Close the *Task Manager* screen.

Check tasks in queue

1. On the Image Vault, select the **Info** button.
2. On the **Server Information** screen, select the **Tasks** tab.
3. In each section (**Action, Archiver, Router, Web, Storage Commitment** and **Cleanup**), the first field below the heading displays the number of current pending actions or tasks.
4. Confirm that there are no tasks currently in the queue.

Check Ultrasound Setup and Connectivity

1. Select a Vivid client to be used for testing.
2. On the Vivid client connectivity menu, select the **TCPIP** tab and note the local AE Title, IP address, and port number. In the *Remote Archive Setup* pane, enter the Image Vault server AE Title and IP address.
3. Save the settings and click **OK** to the information message to restart the system.

Set Up Non-Ultrasound and/or Non-GE Ultrasound Device (if applicable to this site)

1. Select a non-Ultrasound and/or a non-GE Ultrasound to be used for testing.

2. On the device, set up the Image Vault as the destination device.

Check Non-Ultrasound and/or Non-GE Ultrasound Setup and Connectivity (if applicable to this site)

1. On the Image Vault > **DICOM Network** screen, set up a non-Ultrasound or non-GE Ultrasound acquisition device.

2. For each non-Ultrasound or non-GE Ultrasound acquisition device set up in the previous step, verify a **DICOM Echo** ping is successful from the Image Vault interface (*Add DICOM Network Device* screen).

Start Image Vault Services

1. Start all Image Vault services, including HIS services if applicable.
   - Open the Image Vault interface.
   - Select the **Info** button from the top navigation button bar.
   - When the **Server Information** screen appears in the lower pane, select the **Service Manager** tab.
   - When the service names are displayed in the lower pane, select a service in the Image Vault pane and click **Start**. Repeat for all Image Vault services.
   - If HIS options are licensed on this system, select a service in the HL7 pane and click **Start**. Repeat for all HIS services.

Send Studies to Image Vault

1. From the Vivid client, export two patient studies to the Image Vault, using the workflow appropriate for the site.

2. From a non-Ultrasound and/or non-GE Ultrasound acquisition device (**if applicable to this site**), send two patient studies to the Image Vault.

3. Note the Patient IDs and acquisition devices used in the table below. This table is only for reference purposes, so the same patient records can be used in subsequent tests. This information should not be used at any other site, nor recorded in the site dispatch.

Patient ID	Acq Device	Format

Verify that Patient Records are in Image Vault Database

1. Open the *Image Vault* application.
2. When the *Search/Create Patient* screen appears, type the **Patient ID** (from the table in the previous section).
3. Confirm that the patient is displayed in the *Patient List* section.
4. Repeat this process for each patient ID listed in the previous section.

Check tasks in queue

Note that there will be a two-hour delay before tasks begin processing. At this point, the purpose of this check is to confirm that Archiver tasks were generated due to the image exports.

1. On the Image Vault, select the **Info** button.
2. On the **Server Information** screen, select the **Tasks** tab.
3. In each section (**Action, Archiver, Router, Web, Storage Commitment** and **Cleanup**), the first field below the heading displays the number of current pending actions or tasks.
4. Click **View** in the desired section to display the details for the **Archiver** tasks.On the *View Pending* screen, you can filter the list by selecting a criteria from the **Task Type** pull-down list and clicking **Refresh**. When done examining the list, click **OK** to close the screen.

Review Ultrasound Studies on EchoPAC PC

1. On the EchoPAC PC, access the remote workflow database and view the patient/study list.
2. Verify that the images sent from the Vivid client can be viewed on the review station.

Create a Report

1. Log into the EchoPAC PC as a **Diagnosing Physician** (if this access is available).
2. From the EchoPAC PC, set to remote dataflow, create and store a report, including the measurement data, for one of the previously created studies.

Review Non-Ultrasound Studies on a DICOM Review Station (if applicable)

1. On a DICOM review station, query and retrieve the patients sent from the non-Ultrasound acquisition device.
2. Verify that images sent from the non-Ultrasound acquisition device can be viewed on the review station.

Review Images and Reports on CV Web (if applicable to site)

1. At the CV Web client, open the patient that contains the report created above and select the study for this patient.
2. Review the images for the study and confirm that the images display correctly.
3. Click the **Report** icon.
4. Verify that the report can be reviewed.

Review Measurements on DMS Client (if applicable to site)

Confirm with local staff members that measurements can be reviewed on a DMS client.

Review HL7 Results on EMR System (if applicable to site)

Confirm with local staff members that HL7 results can be reviewed on the EMR system.

Restore Images from Long-Term Storage Location

1. Confirm that the long-term storage location (LTS or DICOM Archive) is set up.
2. On the Image Vault, **Edit View** screen, confirm that the images for one of the test patients created above are in the **Archived** state. Note the number of archived images
   _____
3. Delete the images for this patient from the short-term storage location.
4. Open a command prompt and run **dpupdstate**, for this patient, with the **–pid** option.
5. On the Image Vault, **Edit View** screen, confirm that the images are in the **Nearline** state.
6. Highlight the patient and click **Restore**.
7. Confirm that the **Statistic** window displays the above-noted number of images retrieved for this patient when the retrieval is complete.
8. On the Image Vault, **Edit View** screen, confirm that the images are in the Archived state.

Check tasks in queue

Note that there will be a two-hour delay before Archiver tasks begin to be processed. After this time period elapses, perform the procedure below to confirm that Archiver tasks for the test patients are being processed. Continue to refresh the screen until all tasks are these patients are complete.

1. On the Image Vault, select the **Info** button.
2. On the **Server Information** screen, select the **Tasks** tab.
3. In each section (**Action, Archiver, Router, Web, Storage Commitment** and **Cleanup**), the first field below the heading displays the number of current pending actions or tasks.

4. Click **View** in the desired section to display the details for the **Archiver** tasks. On the *View Pending* screen, you can filter the list by selecting a criteria from the **Task Type** pull-down list and clicking **Refresh**. When done examining the list, click **OK** to close the screen.

5. Click **Refresh** to display the most current number of pending tasks. Continue to refresh the screen until all tasks are complete.

   FUNCTIONAL CHECKS ARE NOW COMPLETE

All Software and/or Hardware Changes

Check Network Communication

Before proceeding, check that:

- All devices on the network are configured with the proper IP addresses, subnet mask, etc.

NOTE

It is a good idea to reboot each device included in the Image Vault configuration to confirm that all configuration changes to the devices are applied.

- All devices are physically connected to the network switch and are up and running.
- All devices communicating with the Image Vault have been identified in the configuration interface.

Check TCP/IP Communication

Verify Loopback

Verify that Image Vault can receive/send responses and TCP/IP is operating correctly.

1. Select **Start > Programs > Command Prompt**.
2. At the C: prompt, type **ping loopback** and press **Enter**. You should receive four replies. If not replies are received, contact the Online Center. Close the command prompt.

Verify TCP/IP Communication with Devices on Network

Verify that Image Vault can communicate on the TCP/IP layer with each device on the network.

1. Select **Start > Programs > Command Prompt**.
2. At the C: prompt, type **ping xxx.xxx.xxx.xxx** and press **Enter** (where **xxx.xxx.xxx.xxx** is the IP address of the device being checked.
3. The command will indicate either that the device is replying or that the device cannot be found or the request has timed out.
4. If the device does not reply, check that:
   - You typed the correct address in the command.
   - The IP address matches the IP address of the device. Note that any devices that had IP setting changes must be rebooted before the changes will take effect.
   - The device is configured using the same subnet mask.
   - The LED corresponding to the port being used on the switch is ON.
   - The network card is good - check the LED on the back of the card.
   - The network connection is good - check all cable connections, including the cable connection to the Image Vault.
5. Repeat steps 2 through 4 for each device on the network. Close the command prompt.

Check DICOM Communication

DICOM Devices

Use the following procedure for all standard DICOM devices.

1. Select **Start > Programs > Command Prompt**.
2. At the C: prompt, type **mc3echo-l <local AE title> <remote AE title>** and press **Enter**. The Echo check successful message should appear.

   If the check is not successful, check that:

   - You typed the correct AE titles in the command.
   - The AE title matches the AE title of the device. Note that on some devices, you may need to reboot the device before any changes to the AE title take effect.
   - The receiving port number was entered correctly in both devices.
   - The IV DICOMServer service is started. (Select **Start > Settings > Control Panel > Services**. Confirm that the IV DICOMServer service states **Started**. If not, start the service.)

Non-DICOM Devices

1. On the EchoPAC PC interface, select **Config > Connectivity**.
2. Select the **Views** tab and click **Network**.
3. In the left pane, locate the Image Vault server.
4. Under the server name, locate and highlight **Remote Archive** and click **Check**. When communication is established, a green checkmark appears next to the device.
5. Under the server name, locate and highlight **Remote Import/Export Archive** and click **Check**. When communication is established, a green checkmark appears next to the device.

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