

# BrightSpeed OpenOC16 Upgrade Instruction

## Service Documentation



5768465-1EN  
Rev 4  
© 2020, GE Company,  
All Rights Reserved.



---

# ***LEGAL NOTES***

---

## **TRADEMARKS**

Adobe, the Adobe logo, Acrobat, the Acrobat logo, Exchange, and PostScript are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions.

Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation.

All other products and their name brands are trademarks of their respective holders.

## **COPYRIGHTS**

All Material, Copyright © 2020 by General Electric Company, Inc. All rights reserved.

*This page intentionally left blank.*

# IMPORTANT PRECAUTIONS

## LANGUAGE

<p><b>警告</b> (ZH-CN)</p>	<ul style="list-style-type: none"> <li>• 本维修手册仅提供英文版本。</li> <li>• 如果维修服务提供商需要非英文版本，客户需自行提供翻译服务。</li> <li>• 未详细阅读和完全理解本维修手册之前，不得进行维修。</li> <li>• 忽略本警告可能对维修人员，操作员或患者造成触电、机械伤害或其他形式的伤害。</li> </ul>
<p><b>VÝSTRAHA</b> (CS)</p>	<ul style="list-style-type: none"> <li>• Tento provozní návod existuje pouze v anglickém jazyce.</li> <li>• V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka.</li> <li>• Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah.</li> <li>• V případě nedodržování této výstrahy může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.</li> </ul>
<p><b>ADVARSEL</b> (DA)</p>	<ul style="list-style-type: none"> <li>• Denne servicemanual findes kun på engelsk.</li> <li>• Hvis en kundes tekniker har brug for et andet sprog end engelsk, er det kundens ansvar at sørge for oversættelse.</li> <li>• Forsøg ikke at servicere udstyret medmindre denne servicemanual har været konsulteret og er forstået.</li> <li>• Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk, mekanisk eller anden fare for teknikeren, operatøren eller patienten.</li> </ul>
<p><b>WAARSCHUWING</b> (NL)</p>	<ul style="list-style-type: none"> <li>• Deze onderhoudshandleiding is enkel in het Engels verkrijgbaar.</li> <li>• Als het onderhoudspersoneel een andere taal vereist, dan is de klant verantwoordelijk voor de vertaling ervan.</li> <li>• Probeer de apparatuur niet te onderhouden voordat deze onderhoudshandleiding werd geraadpleegd en begrepen is.</li> <li>• 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.</li> </ul>
<p><b>WARNING</b> (EN)</p>	<ul style="list-style-type: none"> <li>• This Service Manual is available in English only.</li> <li>• If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.</li> <li>• Do not attempt to service the equipment unless this service manual has been consulted and is understood.</li> <li>• Failure to heed this warning may result in injury to the service provider, operator, or patient, from electric shock or from mechanical or other hazards.</li> </ul>

<p><b>HOIATUS</b> (ET)</p>	<ul style="list-style-type: none"> <li>• Käesolev teenindusjuhend on saadaval ainult inglise keeles.</li> <li>• Kui klienditeeninduse osutaja nõuab juhendit inglise keelest erinevas keeles, vastutab klient tõlketeenuse osutamise eest.</li> <li>• Ärge üritage seadmeid teenindada enne eelnevalt käesoleva teenindusjuhendiga tutvumist ja sellest aru saamist.</li> <li>• Käesoleva hoiatuse eiramine võib põhjustada teenuseosutaja, operaatori või patsiendi vigastamist elektrilöögi, mehaanilise või muu ohu tagajärjel.</li> </ul>
<p><b>VAROITUS</b> (FI)</p>	<ul style="list-style-type: none"> <li>• Tämä huolto-ohje on saatavilla vain englanniksi.</li> <li>• Jos asiakkaan huoltohenkilöstö vaatii muuta kuin englanninkielistä materiaalia, tarvittavan käännöksen hankkiminen on asiakkaan vastuulla.</li> <li>• Älä yritä korjata laitteistoa ennen kuin olet varmasti lukenut ja ymmärtänyt tämän huolto-ohjeen.</li> <li>• Mikäli tätä varoitusta ei noudateta, seurauksena voi olla huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.</li> </ul>
<p><b>ATTENTION</b> (FR)</p>	<ul style="list-style-type: none"> <li>• Ce manuel de service n'est disponible qu'en anglais.</li> <li>• Si le technicien du client a besoin de ce manuel dans une autre langue que l'anglais, c'est au client qu'il incombe de le faire traduire.</li> <li>• Ne pas tenter d'intervenir sur les équipements tant que le manuel service n'a pas été consulté et compris</li> <li>• 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.</li> </ul>
<p><b>WARNUNG</b> (DE)</p>	<ul style="list-style-type: none"> <li>• Diese Serviceanleitung existiert nur in Englischer Sprache.</li> <li>• Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es aufgabe des Kunden für eine Entsprechende Übersetzung zu sorgen.</li> <li>• Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben.</li> <li>• Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, Mechanische oder Sonstige gefahren kommen.</li> </ul>
<p><b>ΠΡΟΕΙΔΟΠΟΙΗΣΗ</b> (EL)</p>	<ul style="list-style-type: none"> <li>• Το παρόν εγχειρίδιο σέρβις διατίθεται στα αγγλικά μόνο.</li> <li>• Εάν το άτομο παροχής σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει υπηρεσίες μετάφρασης.</li> <li>• Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό εκτός εάν έχετε συμβουλευτεί και έχετε κατανοήσει το παρόν εγχειρίδιο σέρβις.</li> <li>• Εάν δε λάβετε υπόψη την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στο άτομο παροχής σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.</li> </ul>

<p><b>FIGYELMEZTETÉS</b> (HU)</p>	<ul style="list-style-type: none"> <li>• Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el.</li> <li>• Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése.</li> <li>• Ne próbálja elkezdni használni a berendezést, amíg a karbantartási kézikönyvben leírtakat nem értelmezték.</li> <li>• Ezen figyelmeztetés figyelmen kívül hagyása a szolgáltató, működtető vagy a beteg áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.</li> </ul>
<p><b>AÐVÖRUN</b> (IS)</p>	<ul style="list-style-type: none"> <li>• Þessi þjónustuhandbók er eingöngu fáanleg á ensku.</li> <li>• Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu.</li> <li>• Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin.</li> <li>• Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.</li> </ul>
<p><b>AVVERTENZA</b> (IT)</p>	<ul style="list-style-type: none"> <li>• Il presente manuale di manutenzione è disponibile soltanto in inglese.</li> <li>• Se un addetto alla manutenzione richiede il manuale in una lingua diversa, il cliente è tenuto a provvedere direttamente alla traduzione.</li> <li>• Si proceda alla manutenzione dell'apparecchiatura solo dopo aver consultato il presente manuale ed averne compreso il contenuto</li> <li>• Il non rispetto 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.</li> </ul>
<p><b>警告</b> (JA)</p>	<ul style="list-style-type: none"> <li>• このサービスマニュアルには英語版しかありません。</li> <li>• 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。</li> <li>• このサービスマニュアルを熟読し理解せずに、装置のサービスを行わないでください。</li> <li>• 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。</li> </ul>
<p><b>경고</b> (KO)</p>	<ul style="list-style-type: none"> <li>• 본 서비스 지침서는 영어로만 이용하실 수 있습니다 .</li> <li>• 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우 , 번역 서비스를 제공하는 것은 고객의 책임입니다 .</li> <li>• 본 서비스 지침서를 참고했고 이해하지 않는 한은 해당 장비를 수리하려고 시도하지 마십시오 .</li> <li>• 이 경고에 유의하지 않으면 전기 쇼크 , 기계상의 혹은 다른 위험으로부터 서비스 제공자 , 운영자 혹은 환자에게 위해를 가할 수 있습니다 .</li> </ul>

<p><b>BRDINJUMS</b> (LV)</p>	<ul style="list-style-type: none"> <li>• Šī apkalpes rokasgrāmata ir pieejama tikai angļu valodā.</li> <li>• Ja klienta apkalpes sniedzējam nepieciešama informācija citā valodā, nevis angļu, klienta pienākums ir nodrošināt tulkošanu.</li> <li>• Neveiciet aprīkojuma apkalpi bez apkalpes rokasgrāmatas izlasīšanas un saprašanas.</li> <li>• Šī brīdinājuma neievērošana var radīt elektriskās strāvas trieciena, mehānisku vai citu risku izraisītu traumu apkalpes sniedzējam, operatoram vai pacientam.</li> </ul>
<p><b>ĮSPĖJIMAS</b> (LT)</p>	<ul style="list-style-type: none"> <li>• Šis eksploatavimo vadovas yra prieinamas tik anglų kalba.</li> <li>• Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, numatyti vertimo paslaugas yra kliento atsakomybė.</li> <li>• Nemėginkite atlikti įrangos techninės priežiūros, nebent atsižvelgėte į šį eksploatavimo vadovą ir jį supratote.</li> <li>• Jei neatkreipsite dėmesio į šį perspėjimą, galimi sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų paslaugų tiekėjui, operatoriui ar pacientui.</li> </ul>
<p><b>ADVARSEL</b> (NO)</p>	<ul style="list-style-type: none"> <li>• Denne servicehåndboken finnes bare på engelsk.</li> <li>• Hvis kundens serviceleverandør trenger et annet språk, er det kundens ansvar å sørge for oversettelse.</li> <li>• Ikke forsøk å reparere utstyret uten at denne servicehåndboken er lest og forstått.</li> <li>• Manglende hensyn til denne advarselen kan føre til at serviceleverandøren, operatøren eller pasienten skades på grunn av elektrisk støt, mekaniske eller andre farer.</li> </ul>
<p><b>OSTRZEŻENIE</b> (PL)</p>	<ul style="list-style-type: none"> <li>• Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.</li> <li>• Jeśli dostawca usług klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta.</li> <li>• Nie próbować serwisować wyposażenia bez zapoznania się i zrozumienia niniejszego podręcznika serwisowego.</li> <li>• Niezastosowanie się do tego ostrzeżenia może spowodować urazy dostawcy usług, operatora lub pacjenta w wyniku porażenia elektrycznego, zagrożenia mechanicznego bądź innego.</li> </ul>
<p><b>ATENÇÃO</b> (PT-BR)</p>	<ul style="list-style-type: none"> <li>• Este manual de assistência técnica só se encontra disponível em inglês.</li> <li>• 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.</li> <li>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.</li> <li>• O não cumprimento deste aviso pode por em perigo a segurança do técnico, operador ou paciente devido a choques elétricos, mecânicos ou outros.</li> </ul>

<p><b>ATENÇÃO</b> (PT-PT)</p>	<ul style="list-style-type: none"> <li>• Este manual de assistência técnica só se encontra disponível em inglês.</li> <li>• Se qualquer outro serviço de assistência técnica, que não a gems, solicitar estes manuais noutra idioma, é da responsabilidade do cliente fornecer os serviços de tradução.</li> <li>• Não tente reparar o equipamento sem ter consultado e compreendido este manual de assistência técnica.</li> <li>• O não cumprimento deste aviso pode colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.</li> </ul>
<p><b>ATENȚIE</b> (RO)</p>	<ul style="list-style-type: none"> <li>• Acest manual de service este disponibil numai în limba engleză.</li> <li>• Dacă un furnizor de servicii pentru clienți necesită o altă limbă decât cea engleză, este de datoria clientului să furnizeze o traducere.</li> <li>• Nu încercați să reparați echipamentul decât ulterior consultării și înțelegerii acestui manual de service.</li> <li>• Ignorarea acestui avertisment ar putea duce la rănirea depanatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.</li> </ul>
<p><b>ОСТОРОЖНО!</b> (RU)</p>	<ul style="list-style-type: none"> <li>• Данное руководство по обслуживанию предлагается только на английском языке.</li> <li>• Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод.</li> <li>• Перед обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения.</li> <li>• Несоблюдение требований данного предупреждения может привести к тому, что специалист по обслуживанию, оператор или пациент получат удар электрическим током, механическую травму или другое повреждение.</li> </ul>
<p><b>UPOZORENJE</b> (SR)</p>	<ul style="list-style-type: none"> <li>• Ovo servisno uputstvo je dostupno samo na engleskom jeziku.</li> <li>• Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilacke usluge.</li> <li>• Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo.</li> <li>• Zanemarivanje ovog upozorenja može dovesti do povređivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehanickih i drugih opasnosti.</li> </ul>
<p><b>UPOZORNENIE</b> (SK)</p>	<ul style="list-style-type: none"> <li>• Tento návod na obsluhu je k dispozícii len v angličtine.</li> <li>• Ak zákazníkovi poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka.</li> <li>• Nepokúšajte sa o obsluhu zariadenia skôr, ako si neprečítate návod na obsluhu a neporozumiete mu.</li> <li>• Zanedbanie tohto upozornenia môže vyústiť do zranenia poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, do mechanického alebo iného nebezpečenstva.</li> </ul>

<p><b>ATENCION</b> (ES)</p>	<ul style="list-style-type: none"> <li>• Este manual de servicio sólo existe en inglés.</li> <li>• Si el encargado de mantenimiento de un cliente necesita un idioma que no sea el inglés, el cliente deberá encargarse de la traducción del manual.</li> <li>• No se deberá dar servicio técnico al equipo, sin haber consultado y comprendido este manual de servicio.</li> <li>• La no observancia del presente aviso puede dar lugar a que el proveedor de servicios, el operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.</li> </ul>
<p><b>VARNING</b> (SV)</p>	<ul style="list-style-type: none"> <li>• Den här servicehandboken finns bara tillgänglig på engelska.</li> <li>• Om en kunds servicetekniker har behov av ett annat språk än engelska ansvarar kunden för att tillhandahålla översättningstjänster.</li> <li>• Försök inte utföra service på utrustningen om du inte har läst och förstår den här servicehandboken.</li> <li>• 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.</li> </ul>
<p><b>DIKKAT</b> (TR)</p>	<ul style="list-style-type: none"> <li>• Bu servis kilavuzunun sadece ingilizcesi mevcuttur.</li> <li>• Eğer müşteri teknisyeni bu kilavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer.</li> <li>• Servis kilavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz.</li> <li>• Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.</li> </ul>
<p><b>ПРЕДУПРЕЖДЕНИЕ</b> (BG)</p>	<ul style="list-style-type: none"> <li>• Това упътване за работа е налично само на английски език.</li> <li>• Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод.</li> <li>• Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа.</li> <li>• Неспазването на това предупреждение може да доведе до нараняване на доставчика на услугата, оператора или пациент в резултат на токов удар или механична или друга опасност.</li> </ul>
<p><b>警告</b> (ZH-HK)</p>	<ul style="list-style-type: none"> <li>• 本服務手冊僅提供英文版本。</li> <li>• 倘若客戶的服務供應商需要英文以外之服務手冊，客戶有責任提供翻譯服務。</li> <li>• 除非已參閱本服務手冊及明白其內容，否則切勿嘗試維修設備。</li> <li>• 不遵從本警告或會令服務供應商、網絡供應商或病人受到觸電、機械性或其他危險。</li> </ul>
<p><b>警告</b> (ZH-TW)</p>	<ul style="list-style-type: none"> <li>• 本維修手冊僅有英文版。</li> <li>• 若客戶的維修廠商需要英文版以外的語言，應由客戶自行提供翻譯服務。</li> <li>• 請勿試圖維修本設備，除非 您已查閱並瞭解本維修手冊。</li> <li>• 若未留意本警告，可能導致維修廠商、操作員或病患因觸電、機械或其他危險而受傷。</li> </ul>

<p><b>UPOZORENJE</b> (HR)</p>	<ul style="list-style-type: none"> <li>• Ovaj servisni priručnik dostupan je na engleskom jeziku.</li> <li>• Ako davatelj usluge klijenta treba neki drugi jezik, klijent je dužan osigurati prijevod.</li> <li>• Ne pokušavajte servisirati opremu ako niste u potpunosti pročitali i razumjeli ovaj servisni priručnik.</li> <li>• Zanimarite li ovo upozorenje, može doći do ozljede davatelja usluge, operatera ili pacijenta uslijed strujnog udara, mehaničkih ili drugih rizika.</li> </ul>
<p><b>OPOZORILO</b> (SL)</p>	<ul style="list-style-type: none"> <li>• Ta servisni priručnik je na voljo samo v angleškem jeziku.</li> <li>• Če ponudnik storitve stranke potrebuje priročnik v drugem jeziku, mora stranka zagotoviti prevod.</li> <li>• Ne poskušajte servisirati opreme, če tega priročnika niste v celoti prebrali in razumeli.</li> <li>• Če tega opozorila ne upoštevate, se lahko zaradi električnega udara, mehanskih ali drugih nevarnosti poškoduje ponudnik storitev, operater ali bolnik.</li> </ul>

**DAMAGE IN TRANSPORTATION**

All packages should be closely examined at time of delivery. If damage is apparent write “Damage In Shipment” on ALL copies of the freight or express bill BEFORE delivery is accepted or “signed for” by a GE representative or hospital receiving agent. Whether noted or concealed, damage MUST be reported to the carrier immediately upon discovery, or in any event, within 14 days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this 14 day period.

To file a report:

- Call 1-800-548-3366 and use option 6.
- Fill out the GIQ workflow for any items missing, damaged, OBF/FOI for in process installs:  
[http://supportcentral.ge.com/ProcessMaps/form\\_new\\_request.asp?prod\\_id=268679&form\\_id=573167&node\\_id=1916016&map\\_id=&reference\\_id=&reference\\_type](http://supportcentral.ge.com/ProcessMaps/form_new_request.asp?prod_id=268679&form_id=573167&node_id=1916016&map_id=&reference_id=&reference_type)
- Contact your local service coordinator for more information on this process.

**CERTIFIED ELECTRICAL CONTRACTOR STATEMENT**

All electrical Installations that are preliminary to positioning of the equipment at the site prepared for the equipment shall be performed by licensed electrical contractors. In addition, electrical feeds into the Power Distribution Unit shall be performed by licensed electrical contractors. Other connections between pieces of electrical equipment, calibrations and testing shall be performed by qualified GE Medical personnel. The products involved (and the accompanying electrical installations) are highly sophisticated, and special engineering competence is required. In performing all electrical work on these products, GE will use its own specially trained field engineers. All of GE’s electrical work on these products will comply with the requirements of the applicable electrical codes.

The purchaser of GE equipment shall only utilize qualified personnel (i.e., GE’s field engineers, personnel of third-party service companies with equivalent training, or licensed electricians) to perform electrical servicing on the equipment.

## IMPORTANT...X-RAY PROTECTION

X-ray equipment if not properly used may cause injury. Accordingly, the instructions herein contained should be thoroughly read and understood by everyone who will use the equipment before you attempt to place this equipment in operation. The General Electric Company, Medical Systems Group, will be glad to assist and cooperate in placing this equipment in use.

Although this apparatus incorporates a high degree of protection against x-radiation other than the useful beam, no practical design of equipment can provide complete protection. Nor can any practical design compel the operator to take adequate precautions to prevent the possibility of any persons carelessly exposing themselves or others to radiation.

It is important that anyone having anything to do with x-radiation be properly trained and fully acquainted with the recommendations of the National Council on Radiation Protection and Measurements as published in NCRP Reports available from NCRP Publications, 7910 Woodmont Avenue, Room 1016, Bethesda, Maryland 20814, and of the International Commission on Radiation Protection, and take adequate steps to protect against injury.

The equipment is sold with the understanding that the General Electric Company, Medical Systems Group, its agents, and representatives have no responsibility for injury or damage which may result from improper use of the equipment.

Various protective materials and devices are available. It is urged that such materials or devices be used.

## LITHIUM BATTERY CAUTIONARY STATEMENTS



**CAUTION**  
Risk of  
Explosion

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



**ATTENTION**  
Danger  
d'Explosion

**Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.**

## OMISSIONS & ERRORS

Customers, please contact your GE Sales or Service representatives.

GE personnel, please use the GEMS CQA Process to report all omissions, errors, and defects in this publication.

# Revision History

Revision	Date	Reason for change
4	05/25/20	Chapter 2, section 4.7: Add Remove Customer Information Chapter 2, section 8.1.2.2: Update Install APPS procedure Chapter 2, section 9.2: Add GPU ECC States
3	09/04/19	Chapter 2, section 7.3: Updated Figure 2-3, Figure 2-7 Chapter 2, section 8.2: updated step 6 according to service feedback
2	08/30/18	Update Chapter 3, section 1.0 old console disposal address
1	05/09/17	Initial Release

Revision History

*This page intentionally left blank.*

# Table of Contents

## Chapter 1

<b>INSTALLATION OVERVIEW .....</b>	<b>17</b>
<b>Section 1.0 System Requirement.....</b>	<b>17</b>
<b>Section 2.0 Overview .....</b>	<b>17</b>
2.1 BrightSpeed Elite & BrightSpeed Elite Select OC Upgrade with ASiR .....	17
2.1.1 BrightSpeed Elite & BrightSpeed Elite Select ASiR Upgrade.....	17
2.1.2 For Non-ASiR OpenOC16 - ASiR Upgrade Kit with SW.....	18
2.1.3 Mandatory Selectable Options.....	18
2.1.4 New Selectable Options .....	19
2.2 BrightSpeed Elite & BrightSpeed Elite Select OC Upgrade with Non-ASiR .....	19
2.2.1 BrightSpeed Elite & BrightSpeed Elite Select Non-ASiR IB Upgrade.....	19
2.2.2 Mandatory Selectable Options.....	19
2.2.3 New Selectable Options .....	21
<b>Section 3.0 Flowchart .....</b>	<b>22</b>

## Chapter 2

<b>Upgrade Procedure .....</b>	<b>23</b>
<b>Section 1.0 Prerequisite.....</b>	<b>23</b>
<b>Section 2.0 Preparative.....</b>	<b>23</b>
2.1 Software Version Checking .....	23
<b>Section 3.0 Save System State .....</b>	<b>24</b>
<b>Section 4.0 Record System Information .....</b>	<b>24</b>
4.1 Record PPS Server Information .....	24
4.2 Record All Remote Host Network Information .....	26
4.3 Record Product Network Filters (PNF) Information .....	29
4.4 Record AW IP for Direct Information .....	30
4.5 Record Option Information Licenses .....	31
4.6 Record Hardware Information.....	31
4.7 Remove Customer Information / Re-Configure Console .....	32
<b>Section 5.0 Old Console Removal .....</b>	<b>33</b>
<b>Section 6.0 Desk Installation.....</b>	<b>33</b>
6.1 Smart Workspace Desk Installation.....	33
6.2 Other Desk.....	33
<b>Section 7.0 OpenOC16 Installation.....</b>	<b>34</b>
7.1 Preparative .....	34
7.2 Unpack OpenOC16 with Z840 PC.....	38
7.3 OpenOC16 Connection .....	40
<b>Section 8.0 Software Installation Procedure .....</b>	<b>45</b>
8.1 LFC Procedure .....	45
8.1.1 Flowchart .....	45
8.1.2 Software Installation .....	45

Table of Contents

8.2 Restore System State ..... 57

8.3 Configure System Information on SUSE ..... 58

    8.3.1 Convert Protocol..... 60

8.4 Flash Download ..... 61

**Section 9.0 ASiR Installation ..... 62**

9.1 Check GPU Card ..... 62

9.2 Check GPU ECC State ..... 63

9.3 Option Installation ..... 65

**Section 10.0 Finalization ..... 65**

**Chapter 3**

**FINALIZATION ..... 67**

Section 1.0 Disposing The Old Console..... 67

Section 2.0 Sending The Product Locator Card ..... 68

**Appendix A**

**Operating Table Installation and Adjustment..... 69**

Section 1.0  
Aurora SWS Table Assembly and Adjustment ..... 69

# Chapter 1

## INSTALLATION OVERVIEW

### Section 1.0 System Requirement

BrightSpeed OpenOC16 with HP Z840 Upgrade Kits are available for the following system configuration:

- BrightSpeed Elite with GOC4, AIO, TIO, NIO with Z800 Host PC
- BrightSpeed Elite Select with LCGOC, AIO, TIO, NIO with Z800 Host PC

### Section 2.0 Overview

This upgrade instruction describes the procedures of GOC4, LCGOC, AIO, TIO, NIO upgrade to OpenOC16. After the upgrade, OpenOC16 will replace the function of GOC4, LCGOC, AIO, TIO, NIO and add some new features.

There are two kinds of upgrade kit for customer to select:

[2.1 - BrightSpeed Elite & BrightSpeed Elite Select OC Upgrade with ASiR](#)

[2.2 - BrightSpeed Elite & BrightSpeed Elite Select OC Upgrade with Non-ASiR](#)

## 2.1 BrightSpeed Elite & BrightSpeed Elite Select OC Upgrade with ASiR

### 2.1.1 BrightSpeed Elite & BrightSpeed Elite Select ASiR Upgrade

Verify that the contents of upgrade kits are correct according to the material list below.

#### BrightSpeed Elite & Brightspeed Elite Select ASiR IB Upgrade Kit

ASiR IB Upgrade Kit	GEHW BCAT
	B79922CB
OpenOC16	B79832CB
OpenOC16 ASiR Collector	B79842CB
TP&SW for IB Upgrade	B79852CB
Media Tower	B75362CB
GSCB for Open Chassis	B79942CB
LCD Monitor	B79792CB
Shipping Collector for IB Upgrade	B79862CB

### 2.1.2 For Non-ASiR OpenOC16 - ASiR Upgrade Kit with SW

If customer hopes to upgrade OpenOC16 to ASiR function, please order B79802CB for site.

<b>ASiR Upgrade Kit</b>	<b>GEHW BCAT</b>
	<b>B79802CB</b>
OpenOC16 ASiR Collector	B79842CB

For site already with OpenOC16, upgrade from Non-ASiR to ASiR (Only available for OpenOC16 with Z840 host computer system)

### 2.1.3 Mandatory Selectable Options

Options	GEHW BCAT
BSD Elite Std Option Key	B79872CB
BSD Elite Select 75kVA Std Option Key	B79892CB
BSD Elite Select 50kVA Std Option Key	B79882CB
English Keyboard & GSCB Overlay Label Kit	B70852RT
French Keyboard & GSCB Overlay Label Kit	B7590FR
German Keyboard & GSCB Overlay Label Kit	B7590DE
Italian Keyboard & GSCB Overlay Label Kit	B7590TT
Swedish Keyboard & GSCB Overlay Label Kit	B7590SW
Asian Keyboard & GSCB Overlay Label Kit	B70842RT
Danish Keyboard & GSCB Overlay Label Kit	B7590DA
Dutch Keyboard & GSCB Overlay Label Kit	B7590NL
Spanish Keyboard & GSCB Overlay Label Kit	B7590ES
Br. Portuguese Keyboard & GSCB Overlay Label Kit	B7590BR
Europe Keyboard & GSCB Overlay Label Kit	B7590ZZ
Chinese Keyboard & GSCB Overlay Label Kit	B70862RT
French Edition 3 Labeling Kit	B7870FR
German Edition 3 Labeling Kit	B7870DE
Italian Edition 3 Labeling Kit	B7870TT
Swedish Edition 3 Labeling Kit	B7870SW
Asian Edition 3 Labeling Kit	B7870YY
Danish Edition 3 Labeling Kit	B7870DA
Dutch Edition 3 Labeling Kit	B7870NL
Spanish Edition 3 Labeling Kit	B7870ES
Br. Portuguese Edition 3 Labeling KitBlack	B7870BR
Europe Collector (English kydb) Edition 3 Labeling Kit	B7870ZZ

### 2.1.4 New Selectable Options

Option Description	Part Number
2nd Set of Manual Collector for BSD Elite Select	B79912CB
2nd Set of Manual Collector for BSD Elite	B79902CB
CT Desk	B78552CA
CT Chair	B77322CA

## 2.2 BrightSpeed Elite & BrightSpeed Elite Select OC Upgrade with Non-ASiR

### 2.2.1 BrightSpeed Elite & BrightSpeed Elite Select Non-ASiR IB Upgrade

Verify that the contents of upgrade kits are correct according to the material list below.

#### BrightSpeed Elite & BrightSpeed Elite Select Non-ASiR IB Upgrade Kit

Non-ASiR IB Upgrade Kit	GEHW BCAT
	<b>B79812CB</b>
OpenOC16	B79832CB
TP&SW for IB Upgrade	B79852CB
Media Tower	B75362CB
GSCB	B77052CA
LCD Monitor	B79792CB
Shipping Collector for IB Upgrade	B79862CB

### 2.2.2 Mandatory Selectable Options

Options	GEHW BCAT
BSD Elite Std Option Key	B79872CB
BSD Elite Select 75kVA Std Option Key	B79892CB
BSD Elite Select 50kVA Std Option Key	B79882CB
English Keyboard & GSCB Overlay Label Kit	B70852RT
French Keyboard & GSCB Overlay Label Kit	B7590FR
German Keyboard & GSCB Overlay Label Kit	B7590DE
Italian Keyboard & GSCB Overlay Label Kit	B7590TT
Swedish Keyboard & GSCB Overlay Label Kit	B7590SW
Asian Keyboard & GSCB Overlay Label Kit	B70842RT
Danish Keyboard & GSCB Overlay Label Kit	B7590DA
Dutch Keyboard & GSCB Overlay Label Kit	B7590NL
Spanish Keyboard & GSCB Overlay Label Kit	B7590ES
Br. Portuguese Keyboard & GSCB Overlay Label Kit	B7590BR
Europe Keyboard & GSCB Overlay Label Kit	B7590ZZ

---

Chinese Keyboard & GSCB Overlay Label Kit	B70862RT
French Edition 3 Labeling Kit	B7870FR
German Edition 3 Labeling Kit	B7870DE
Italian Edition 3 Labeling Kit	B7870TT
Swedish Edition 3 Labeling Kit	B7870SW
Asian Edition 3 Labeling Kit	B7870YY
Danish Edition 3 Labeling Kit	B7870DA
Dutch Edition 3 Labeling Kit	B7870NL
Spanish Edition 3 Labeling Kit	B7870ES
Br. Portuguese Edition 3 Labeling KitBlack	B7870BR
Europe Collector (English kydb) Edition 3 Labeling Kit	B7870ZZ

**2.2.3 New Selectable Options**

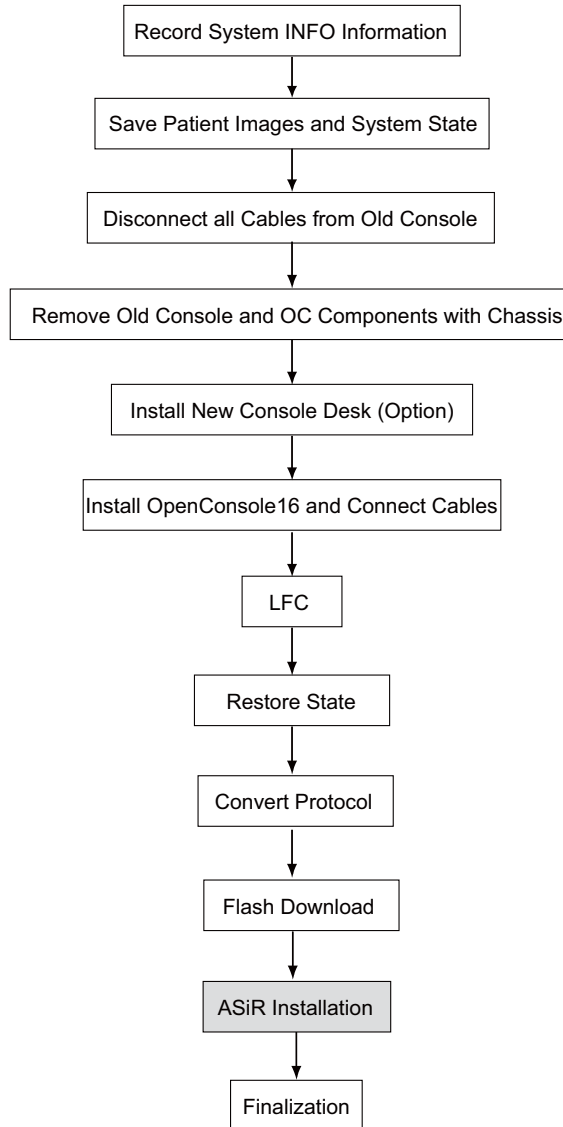
<b>Option Description</b>	<b>GEHW BCAT</b>
2nd Set of Manual Collector for BSD Elite Select	B79912CB
2nd Set of Manual Collector for BSD Elite	B79902CB
CT Desk	B78552CA
CT Chair	B77322CA
Recon enhancement Package	B79822CB

<b>Recon Enhancement Package</b>	<b>GEHW BCAT</b>
	<b>B79822CB</b>
Recon Enhancement (SW)	B78462CB
GPU Fluoro Prerequisite	B79962CB

## Section 3.0 Flowchart

The illustration below shows the main flow of the upgrade procedures.

**Figure 1-1 Process Flowchart**



# Chapter 2

## Upgrade Procedure

---

### Section 1.0 Prerequisite

Please read carefully the related sections of service manuals about the OC installation/de-installation contents.

- BrightSpeed: Service Method 5193755-8EN\_r20 or later.
- BrightSpeed Lite: Service Method 5181166-800\_r23 or later.
- ASiR Installation manual: 5769390-1EN

### Section 2.0 Preparative

#### 2.1 Software Version Checking

Note: Refer to the latest service method about LFC procedure to understand detailed save state procedure and other information saving procedures.

- 1.) Enter the cursor in the monitor screen, then click on the right button of the mouse to select [UnixShellLeft] or [UnixShellRight] in Utilities window.
- 2.) A unix shell window pops up and type the following command to check software and hardware config information:

```
{ctuser@hostname} swhwinfo
```

- 3.) There are two kinds of software version:
  - a.) 11BW46.3
  - b.) 13BW29.5



**NOTICE** The software version 13BW29.5 and 17BW11.x both support the Liquid Bearing tube. But 17BW11.x only support OpenOC16 with Z840 host computer.

Note: If FMI 22942 / 22949 kit and console upgrade kit with Z840 are received at the same time, scrap the SW 13BW29.x shipped with FMI 22942 /22949 kit, Install the FMI Hardware first, then install the OpenOC16 and SW 17BW11.x

---

## Section 3.0 Save System State

If a Save State was just completed, it can be omitted here.

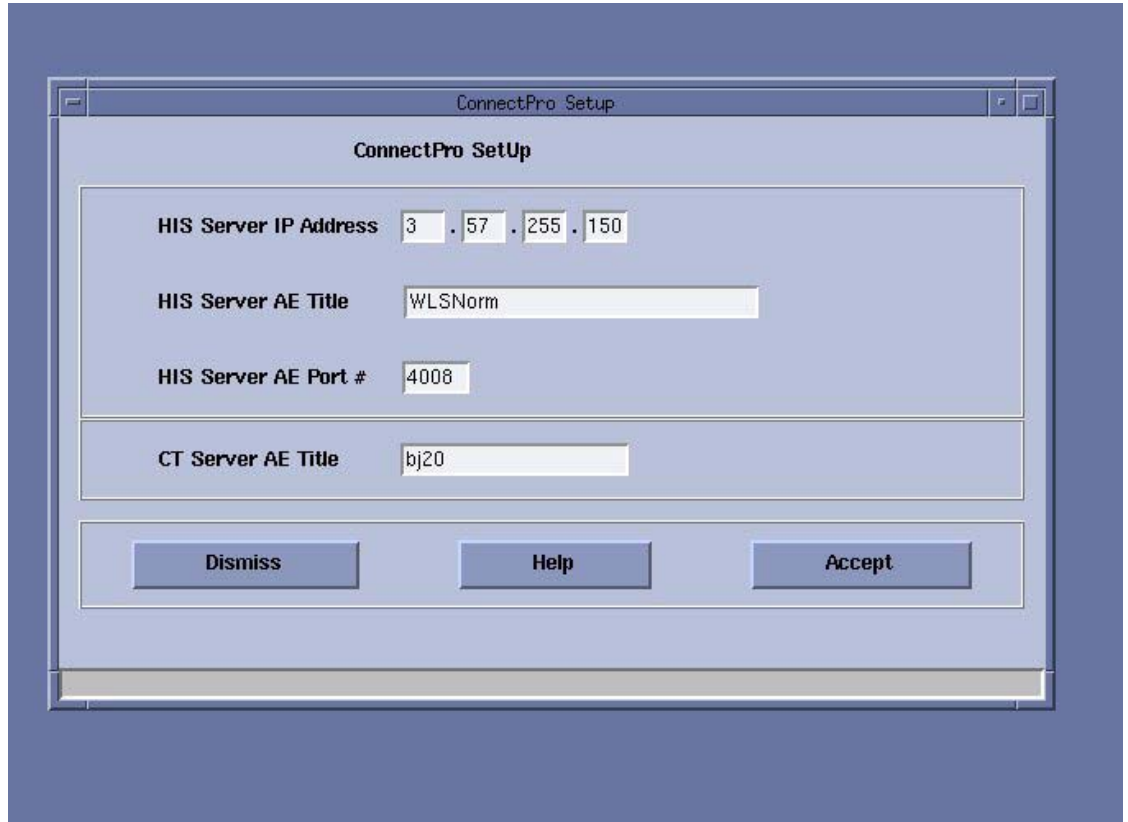
Note: When performing Save/Restore System State, make sure there is **ONLY** one USB storage device plugged in USB ports of both Console and Media Tower simultaneously, otherwise it may result in incorrect data storage.

- 1.) Insert the System State DVD-RAM media into the peripheral tower drive or USB media in any of the console's USB ports.
- 2.) Select [Service Desktop]-> [Utilities].
- 3.) Select [System State] for DVD-RAM media or [System State - USB] for USB media. The System State Save/Restore screen appears.
- 4.) Select [All] to select all the calcs, characterization, etc.
- 5.) Select [Save].
- 6.) If DVD-RAM or USB is ready, select [Yes].
- 7.) When completed select [Dismiss].
- 8.) Remove System State DVD-RAM media from the peripheral tower or USB media from USB port.

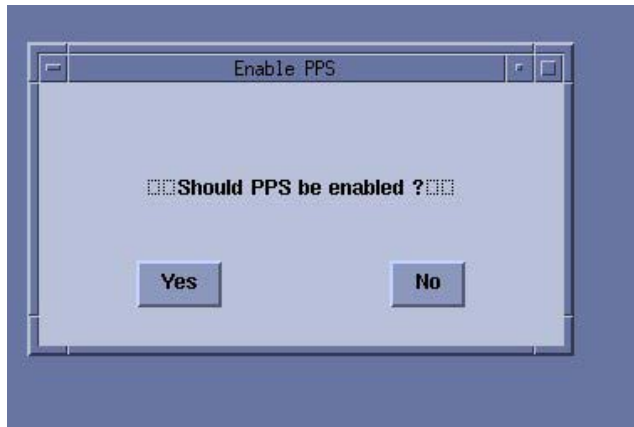
## Section 4.0 Record System Information

### 4.1 Record PPS Server Information

- 1.) Open a Unix Shell:  
`{ctuser@hostname} installhisris`
- 2.) Press <ENTER>, the following illustration appeared, record the data then press [Accept].

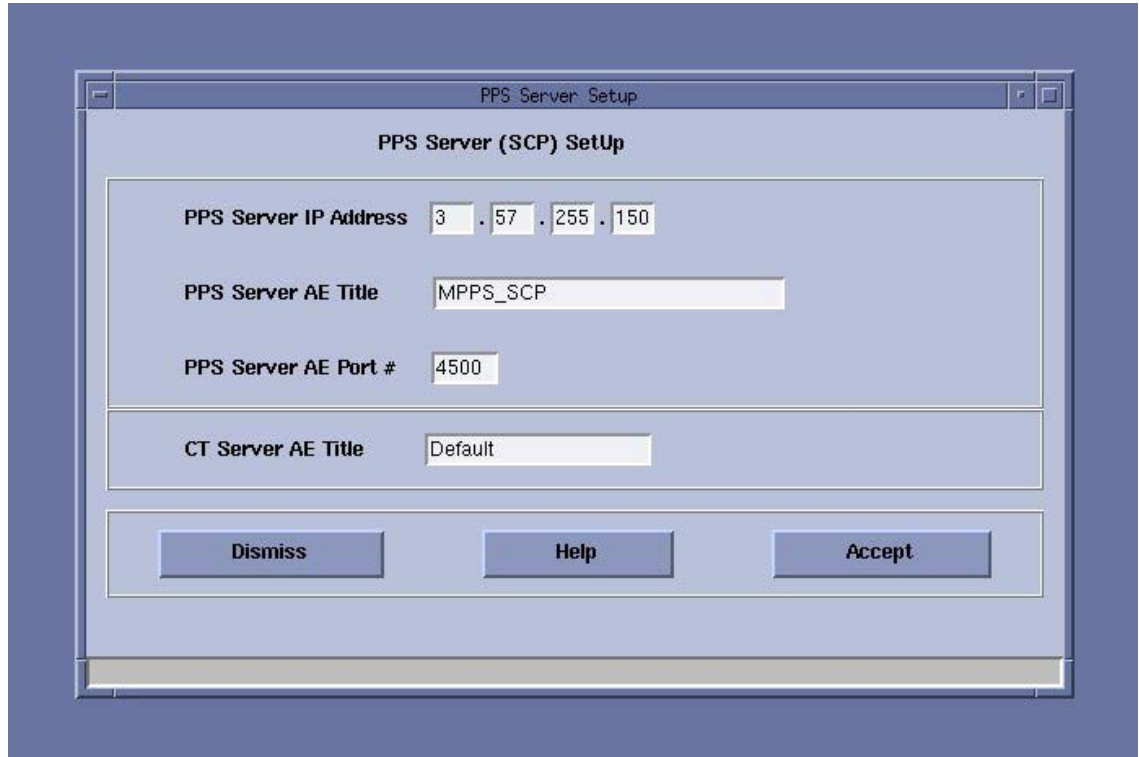


3.) "Should PPS be enabled?" is popped up. Select [Yes].



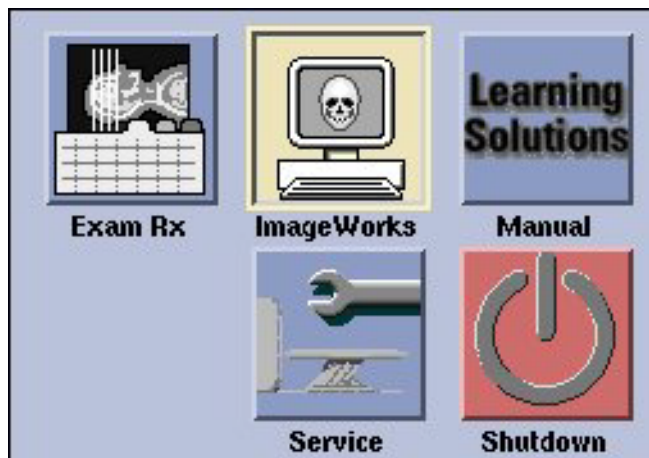
Note: Discuss with customer if they have HIS/RIS and PPS server installed or not, if yes, then select [Yes]; if no, then select [No].

- 4.) Record PPS data then press [Accept].

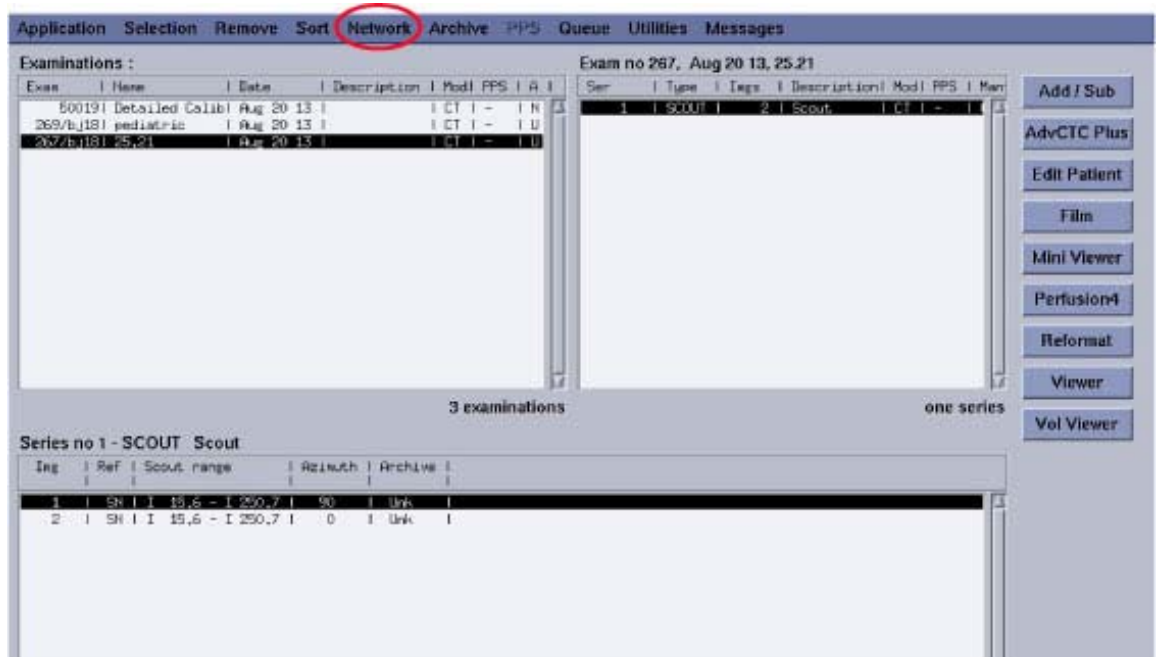


## 4.2 Record All Remote Host Network Information

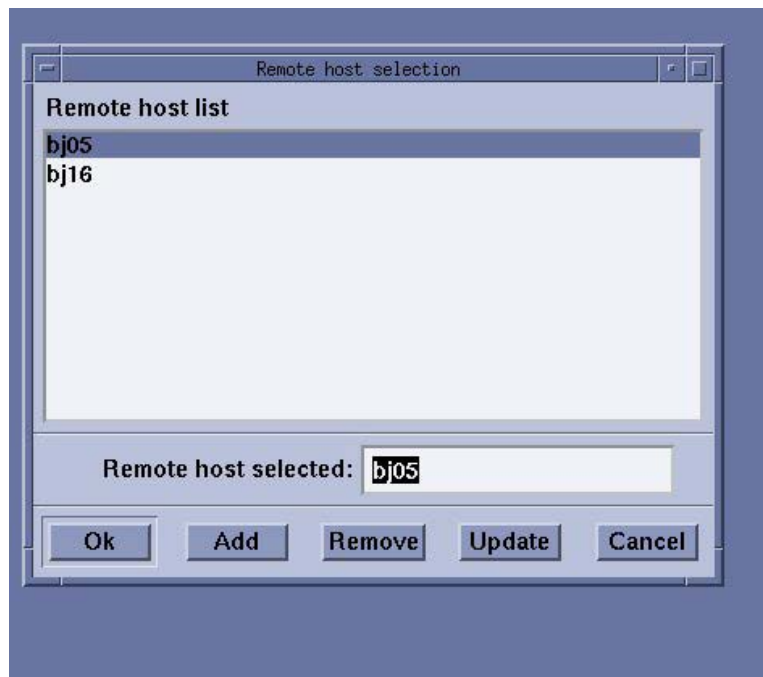
- 1.) Select [ImageWorks] from the desktop.



2.) Select [Network]



- 3.) Click [Select remote host] on the Network list menu
- 4.) Select Remote host from the Remote host list, then click [update].



5.) Record the Network information as below.

Remote host parameters

Host name	bj05
Network address	3.36.231.115
Network protocol	DICOM
Port number	4006
AE Title	bj05
Comment	No Comment

Archive Node:  Auto  Yes  No

Access to local host:

send images?  Yes  No

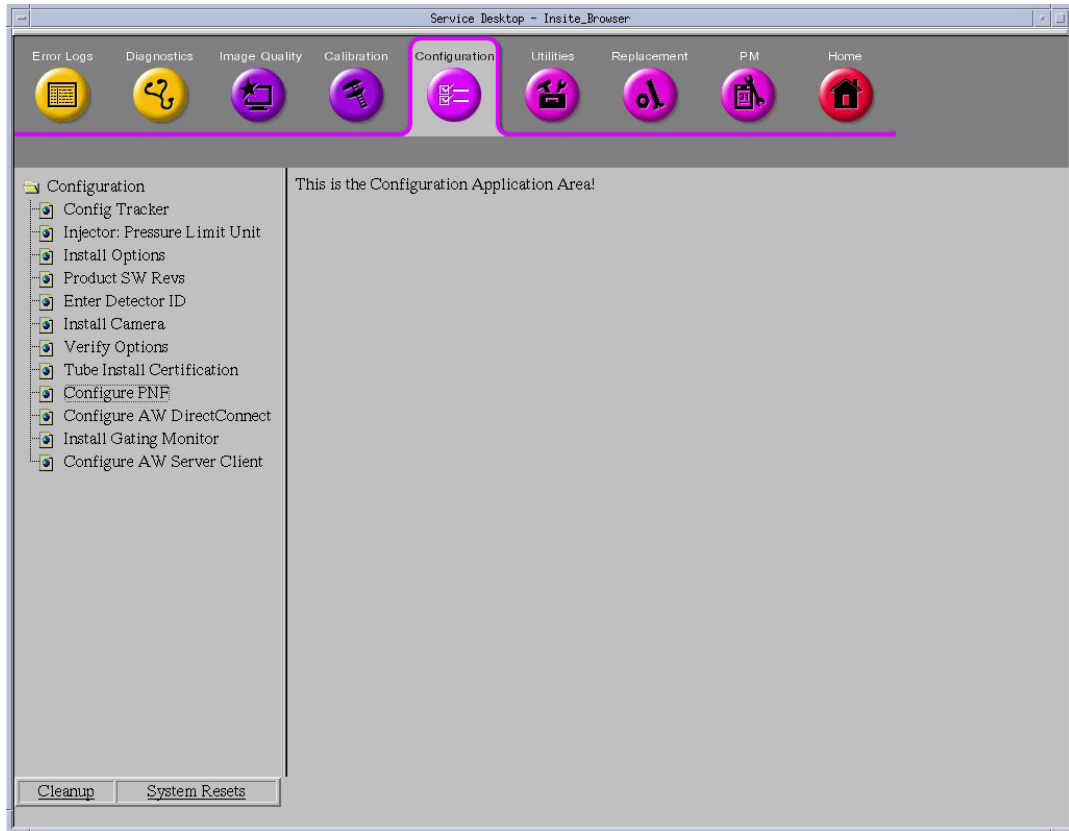
query/retrieve images?  Yes  No

Custom search?  On  Off

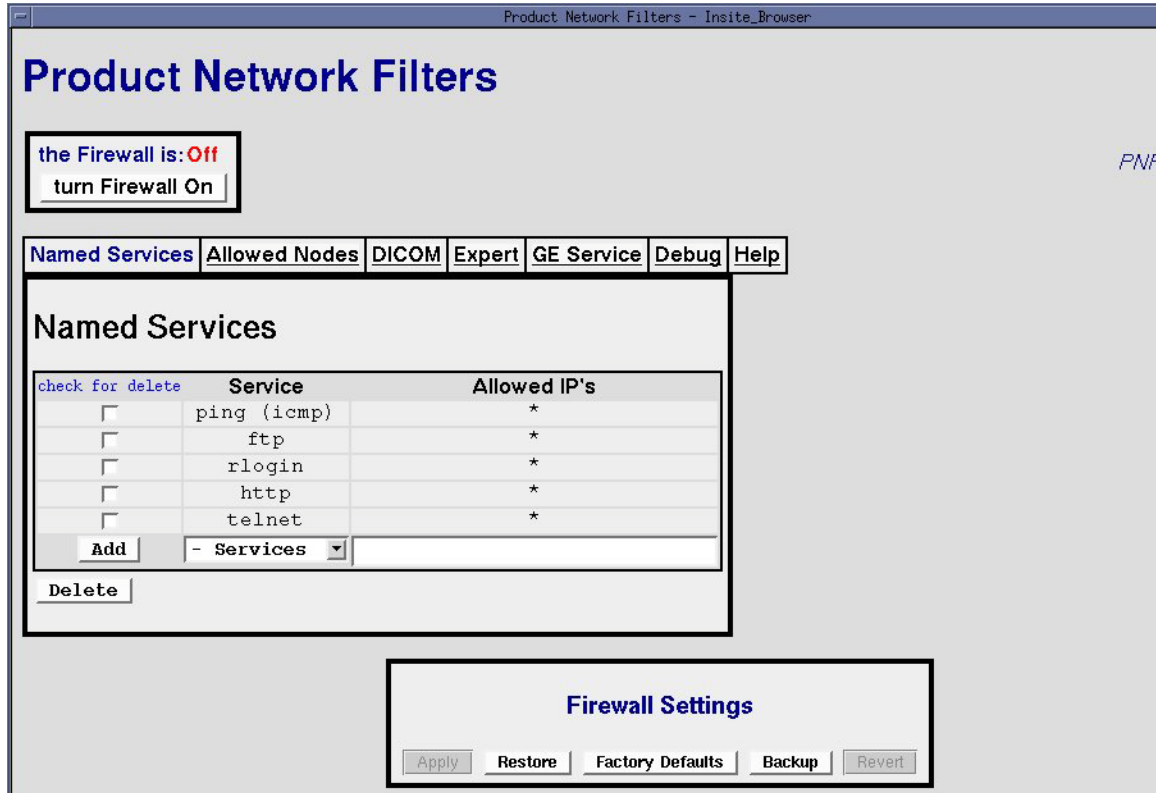
Save Cancel

### 4.3 Record Product Network Filters (PNF) Information

- 1.) Select the [SERVICE DESKTOP].
- 2.) Select in sequence: Configuration → Configure PNF

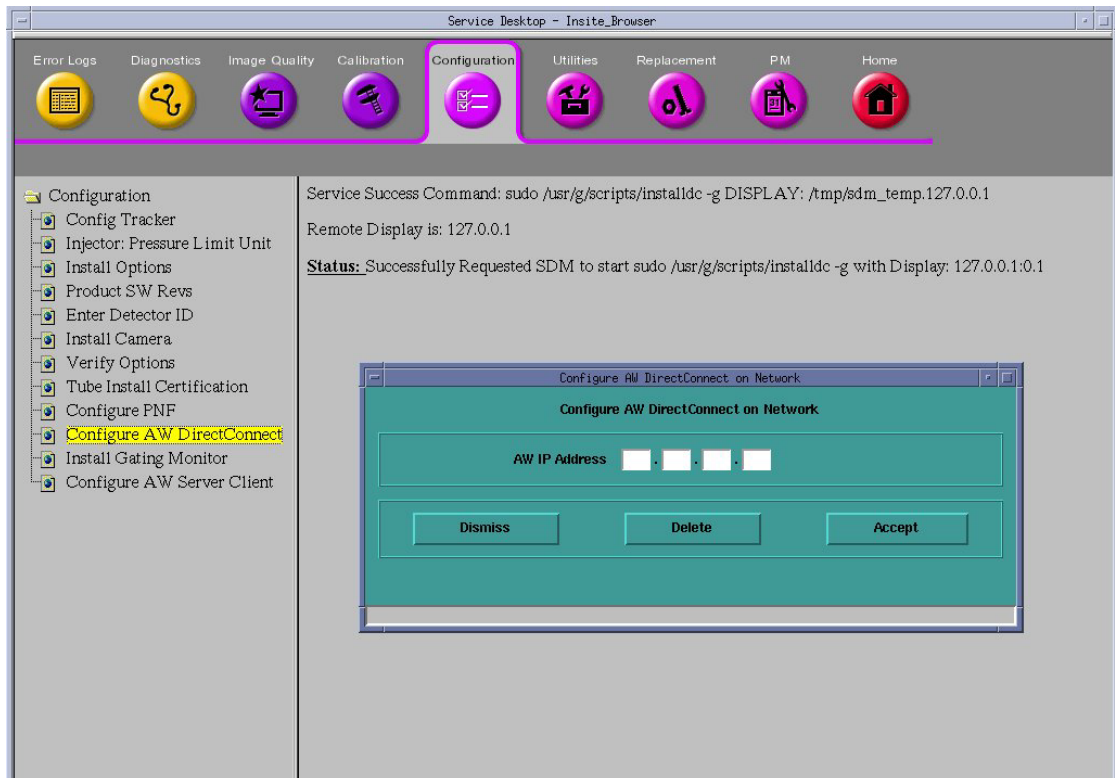


- 3.) Record PNF information.

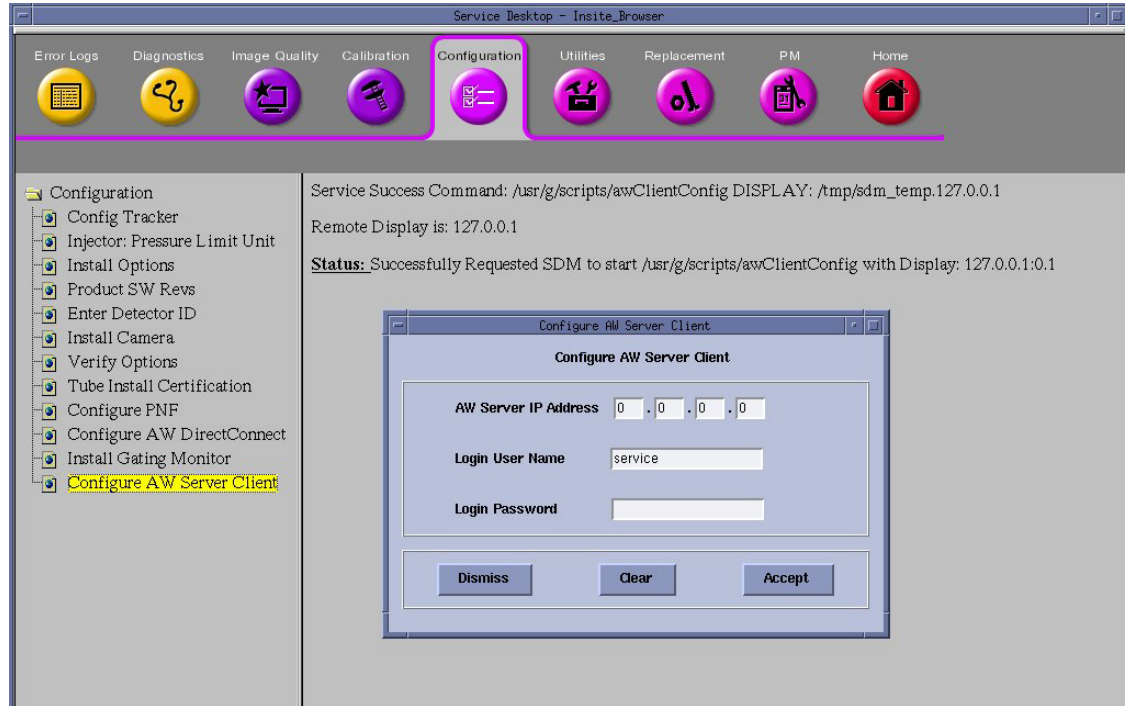


#### 4.4 Record AW IP for Direct Information

- 1.) Select the [SERVICE DESKTOP].
- 2.) Select in sequence: Configuration → Configure AW DirectConnect and record AW IP address



- 3.) Select in sequence: Configuration → Configure AW Server Client and record AW server INFO



## 4.5 Record Option Information Licenses

- 1.) Open a Unix Shell, type **swokinstall -p**.
- 2.) Write down if you have any of the following options installed. After the OC upgrade (from Z800\_CTT to Z840\_SUSE) you will need to go to the e-License Tool to gather the new keys. The e-License Web site to make the needed keys (url is) <http://eLicense.gehealthcare.com/eLicense/>

Option Name	B-Cat on Z800 (CTT System)	B-Cat on Z840 (SUSE System)
<i>AutoBone Xpress</i>	B7870JD	B75042AE
<i>AVA Xpress</i>	B7870JC	B75022AE
<i>Advantage CTC Pro3D</i>	B7864KL	B75032AE
<i>CardIQ Xpress</i>	B7870JB	B75052AE
<i>CT Perfusion 4 Neuro (OC)</i>	B7870HN	B75062AE
<i>CT Perfusion 4 Multi-Organ (OC)</i>	B7870HM	B75072AE

## 4.6 Record Hardware Information

Record Table/Tube/DAS/PDU type information, these information will be used during new SW LFC when need to select hardware configuration.

## 4.7 Remove Customer Information / Re-Configure Console

To maintain data and patient privacy, it is necessary to erase all Personal Healthcare Information (PHI) from the system before it is uninstalled.

- 1.) Shut down application from the Service Desktop.
- 2.) In an xterm window, log in as root:  
Type: `su -` and then [ENTER]  
Type the root password: `password` and then [ENTER].
- 3.) Launch the Install utility  
Type: `reconfig` and then [ENTER] at the prompt  
The Operator Console displays the Install Utility Window.
- 4.) Select [CONFIG] and the Operator Console display the CT Software Configuration Screen

On the *System* Tab of the System Configuration Utility, Perform the following:

- Remove the customer name, replace with [GEMS]
- Remove the Service ID, replace with [GEMS]
- Under *Regenerate Database?* select [YES]

On the *Network* Tab of the System Configuration Utility, Perform the following:

- Remove the site specific network information (ex: Names), replace with [GEMS]
- Remove the site specific network information (ex: IP Addresses) in *Network Settings* and *Advance Options*.

- 5.) Select [ACCEPT] button. Be patient, this takes a few minutes to generate.
- 6.) Select [YES] to reboot. The system will automatically log in as `ctuser` after the reboot.
- 7.) Select [OK] on the Autostart disabled popup message
- 8.) Open a terminal window and type : `st` and then [ENTER]
- 9.) When the system is booted into Applications mode, select [IMAGE WORKS]
- 10.) Confirm that patient image data is not present.

## Section 5.0 Old Console Removal



**NOTICE** Make sure to follow all Lockout/Tagout requirements while performing this procedure. Refer to Equipment Service - Lockout-Tagout-PPE procedure.

- 1.) Shut down the system and power off the Operator Console power switch.
- 2.) Switch OFF the breaker in the Power Distribution Box (hospital supply).

Note: If there is UPS, switch OFF the UPS output.

- 3.) Visually verify proper labeling of each cable and disconnect all console rear cables.
- 4.) Disconnect the cables between the old console and system (Gantry, PDU and local hospital network).
- 5.) Remove the old OC aside.

## Section 6.0 Desk Installation

### 6.1 Smart Workspace Desk Installation

- 1.) If your system has the SWS table, assemble SWS table.  
Refer to [Appendix A](#) for details of SWS desk assembly.
- 2.) Place the SWS table at one side of the console.

### 6.2 Other Desk

Please install other desk if customer has and place it to the proper place.

# Section 7.0 OpenOC16 Installation

## 7.1 Preparative

Figure 2-1 BrightSpeed Elite Select System Interconnect Diagram (with Z840)

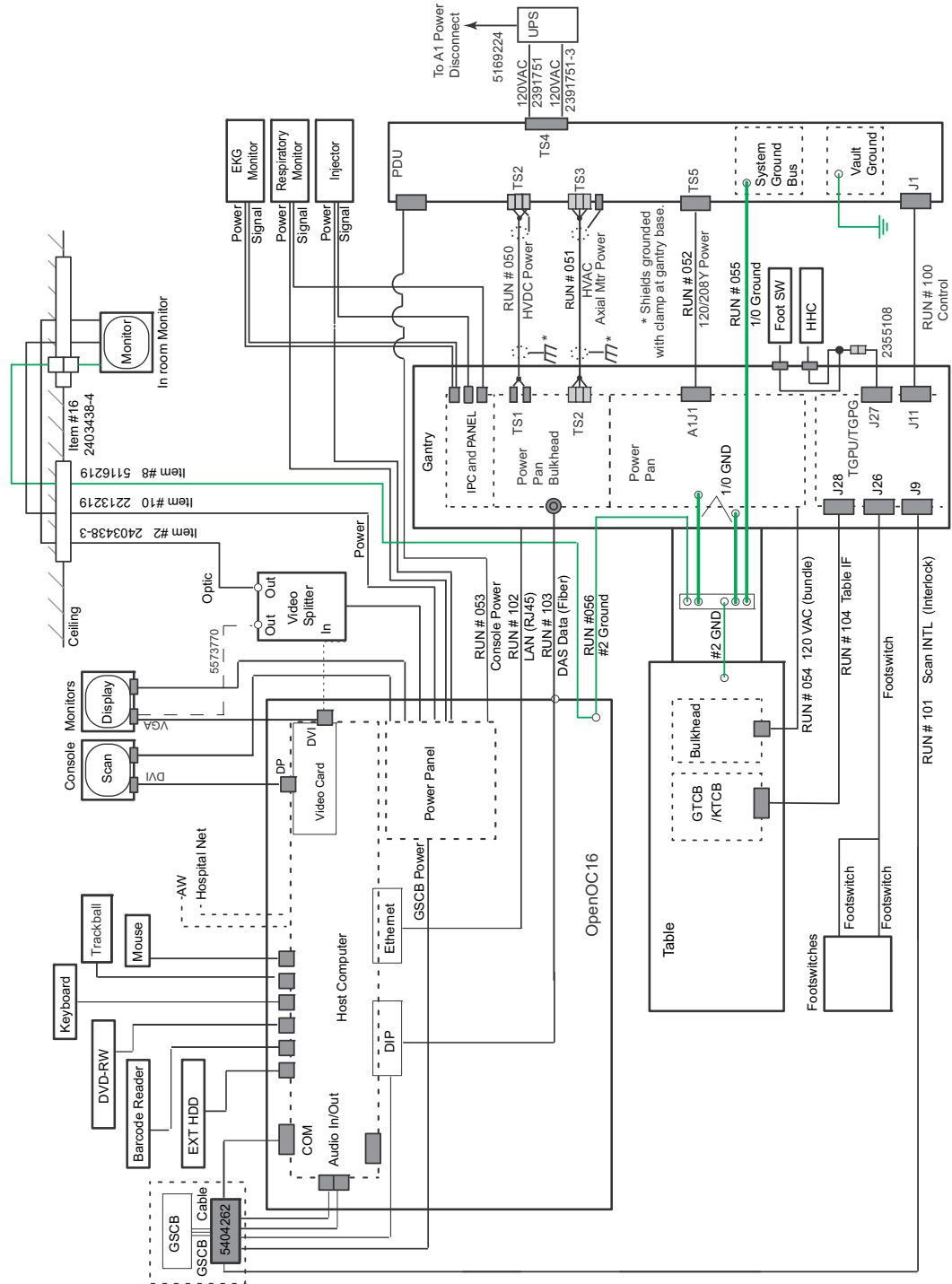
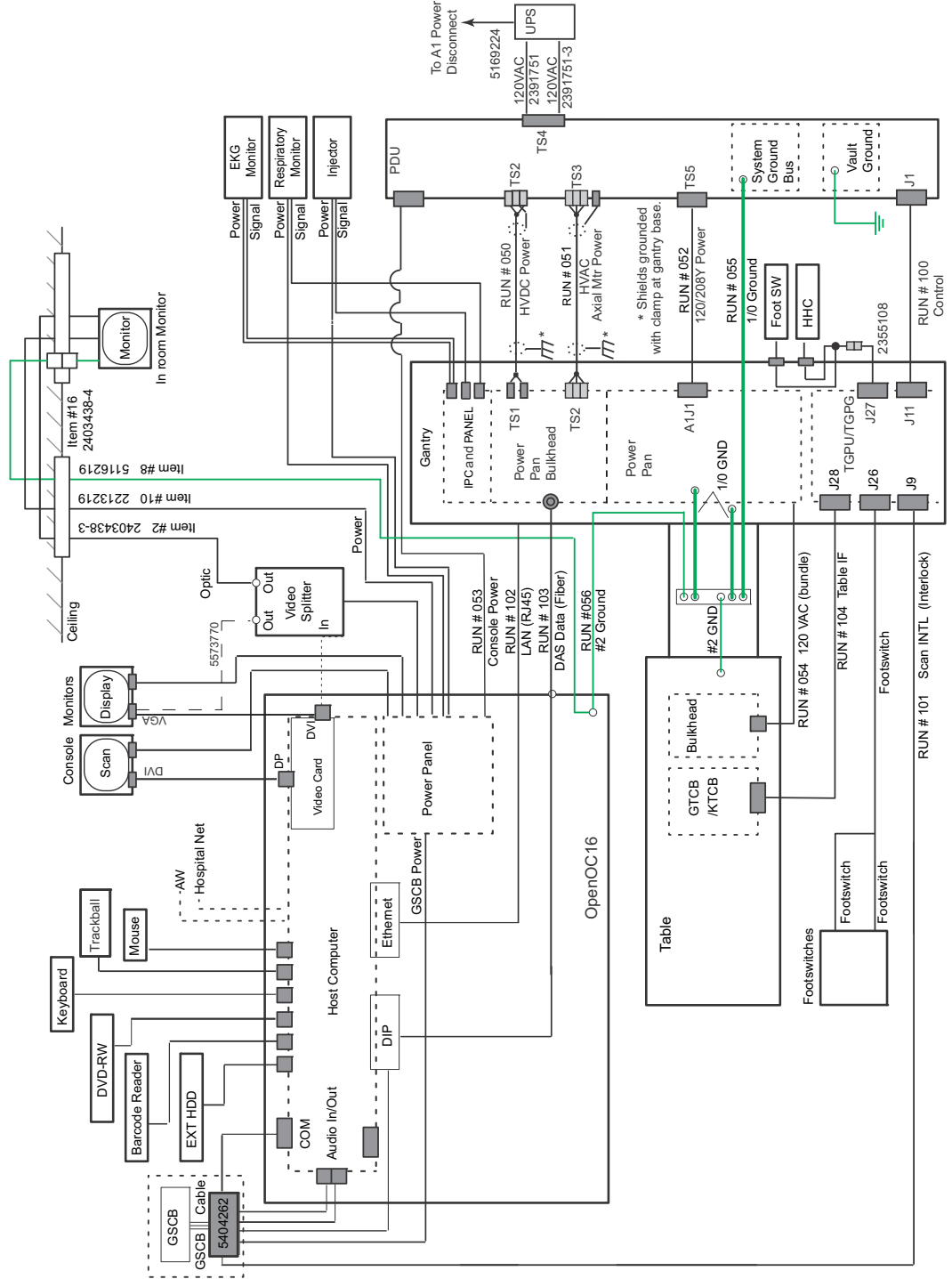


Figure 2-2 BrightSpeed Elite System Interconnect Diagram (with Z840)



**Table 2-1 System Interconnect Cables for Console**

NO.	DESCRIPTION	PART NUMBER	
		LONG CABLES	SHORT CABLES
53	LVAC Power Cable - PDU To Operator's Console Outlet	2343531	2343531-2
56	Ground, Raceway to Console	2371450-3	2371450-4
101	Signal Cable - Gantry to Console	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Console	2373436-2	2373436-3
103	Data Cable (Fiber Optic) - Gantry to Console	5432019	

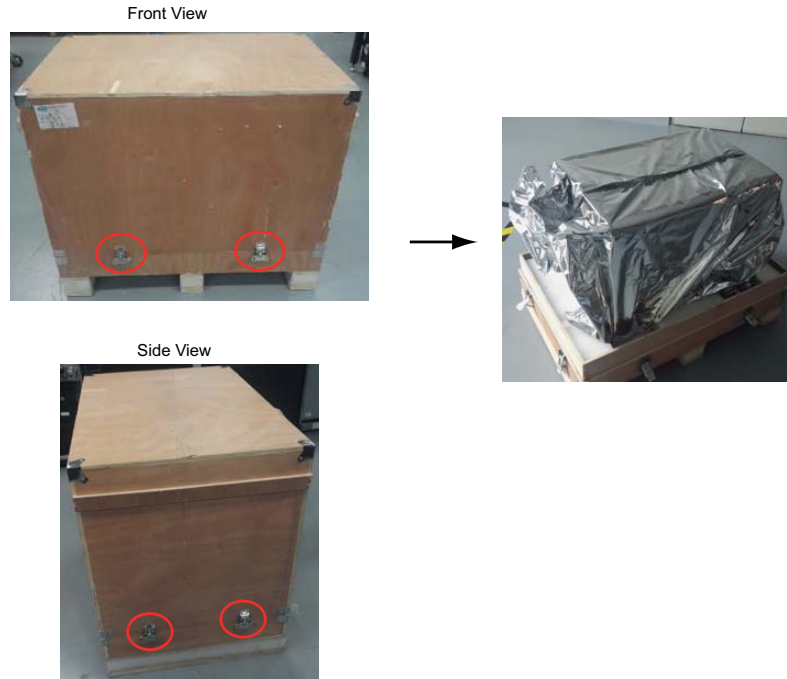


## 7.2 Unpack OpenOC16 with Z840 PC

Please read detail about OpenOC16 installation procedure in Service Manuals

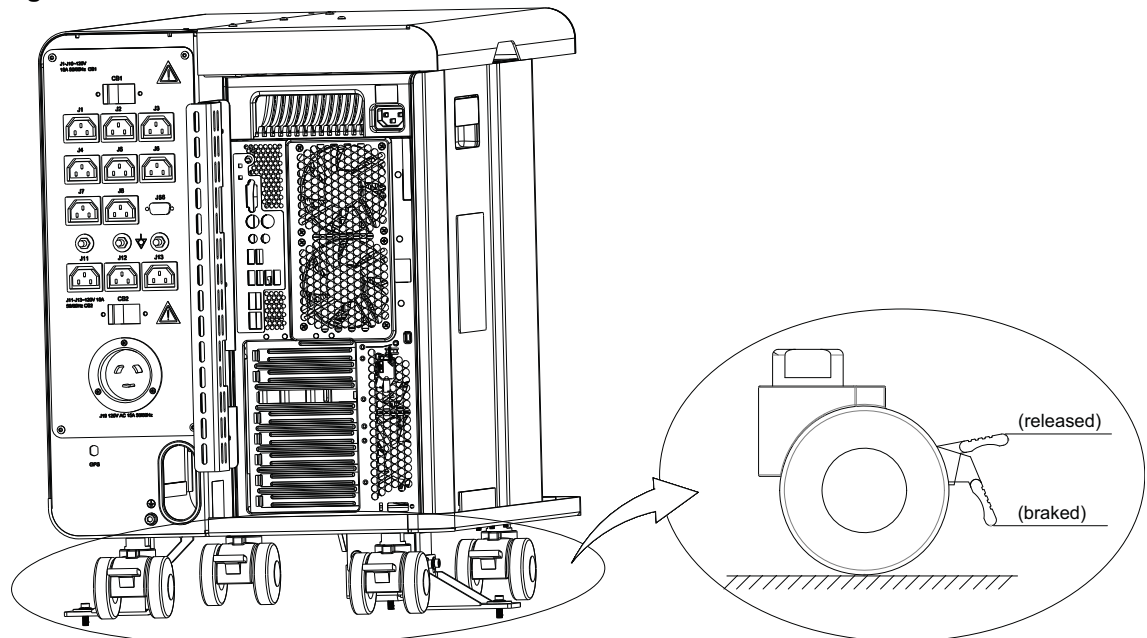
- 1.) Release eight latches and remove the packaging covers.

**Figure 2-4 Console Packaging Removal**



- 2.) Remove all packaging and discard per local requirement
- 3.) Move console to installation location.
- 4.) Adjust console position, and then pedal four brakes to prevent console from sliding.

**Figure 2-5 Brake**



- 5.) If customer buy ASiR with OpenOC16 upgrade kit, then go to next step; if not, go to section [7.3, on page 40](#).
- 6.) Detail Install GPU card procedure, please refer to ***GPU Fluoro Prerequisite Installation Manual (5771958-1EN)***.
- 7.) If site need meet local regulatory or customer requirement, please find the seismic bracket (5357148-2) from the upgrade kit and install on the console.
- 8.) Remove the side access panel by unscrewing its three screws from left side of Z840.

**Figure 2-6 Side Access Panel**



## 7.3 OpenOC16 Connection

**Figure 2-7 Z840 Host Computer Connections**

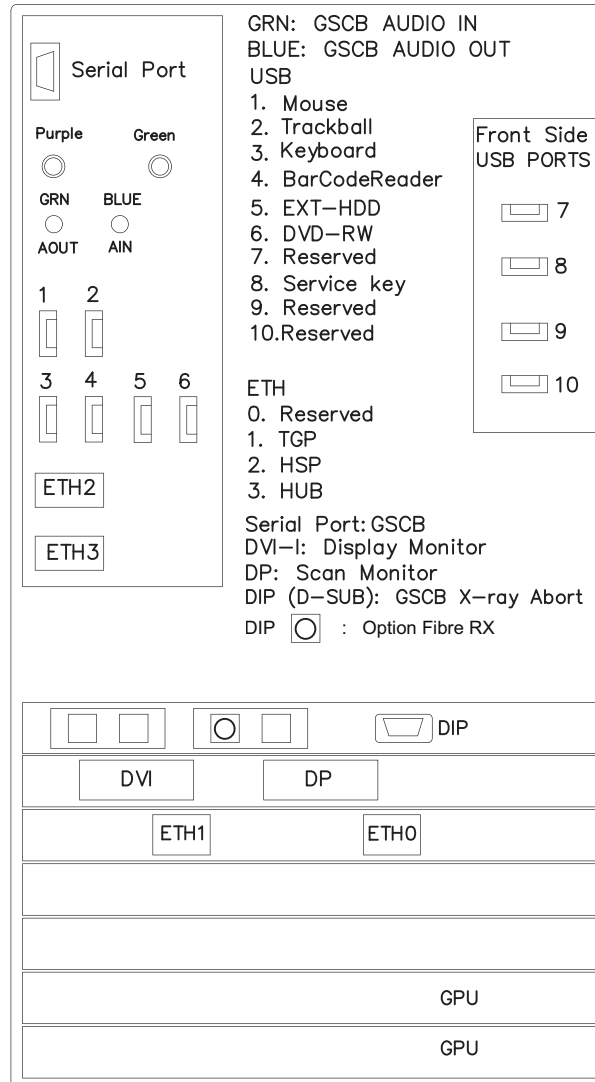


Figure 2-8 OpenOC16 AC Box Assignments



Number	Description
J1	Display Monitor Power Connection
J2	Scan Monitor Power Connection
J4	In-Room Monitor Connection
J5	Peripheral Media Tower Power Connection
J12	RPM Power Connection
J13	Injector Power Connection
J14	GSCB Power Connection

Table 2-2 AC Box Outlet Assignments

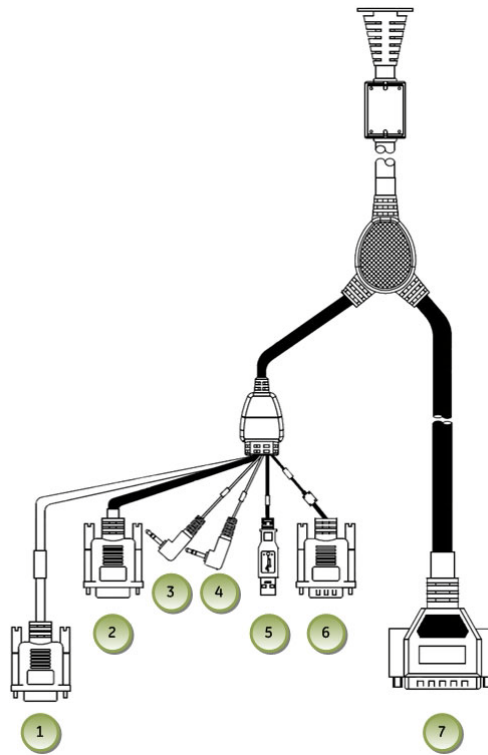
- 1.) Connect the Keyboard and Mouse cables to OpenOC16 Z840 Host Computer.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB extension Cable (Mouse)	5366514	3000 mm	1
USB Cable (Keyboard)	5366514-2	3560 mm	1

Table 2-3 Cable Extension

- 2.) Connect GSCB cables connectors to OpenOC16 AC Box and Z840 Host Computer according to [Figure 2-9](#) and [Table 2-4](#)

Figure 2-9 GSCB Connections



ITEM	DESCRIPTION
1	GSCB - Black DB-9 (Female) Connector Host Computer DIP
2	GSCB - Gray DB-9 (Female) Connector Host Computer RS232
3	GSCB - Green Audio Connector Host Computer Audio Out (Green)
4	GSCB - Blue Audio Connector Host Computer Audio In (Blue)
5	GSCB - USB Connector Reserved
6	GSCB - Black DB-9 (Male) Connector AC Box J14
7	GSCB - Black DB-25 (Male) Connector TGP Gantry Cable

Table 2-4 GSCB Cables

3.) Connect Media Tower cables to OpenOC16 AC Box and Z840 Host Computer.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Cable (PMT)	5315370	2000 mm	2
PMT power cable	5432953-6	3050 mm	1

Table 2-5 Media Tower Cables

4.) Connect LCD Monitor cable connectors to OpenOC16 AC Box and Z840 Host Computer.

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
Scan Monitor Power Cable	5478299-5	3050 mm	1
Image Monitor Power Cable	5478299-6	3050 mm	1
Scan Monitor Video Cable	5408703-2	3000 mm	1
Image Monitor Video Cable	5366259	3000 mm	1

Table 2-6 Monitor Cables for Z840

Figure 2-10 LCD Monitor



ITEM	DESCRIPTION
A	Power Cable Connection
B	DVI Video Connection – Prescription / Scan Monitor (left)
C	D-Sub (VGA) Video Connection – Display / Image Monitor (right)

Table 2-7 LCD Monitor Connections

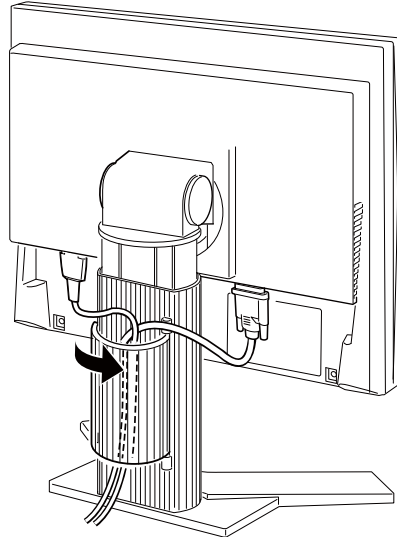
**Scan Monitor**

- Video cable: Z840 PC DP to Monitor DVI
- Power cable: AC Box J1 to Monitor power

**Image Monitor**

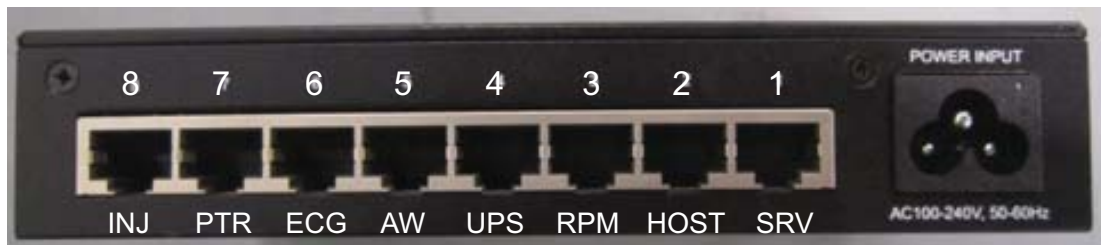
- Video cable: Z840 PC DVI to Monitor VGA
- Power cable: AC Box J2 to Monitor power

Figure 2-11 Cable Routing and Keeper



- 5.) Remove OpenOC16 right side cover and plug cables into Switch Hub on console if request.

Figure 2-12 Switch Hub Connections



- 6.) Connect other cables to Z840 Host Computer according to [Figure 2-7](#), then install right side cover of console.
- 7.) Connect the Power Cable and Ground Cable to the OpenOC16 Panel. See [Figure 2-13](#)

Figure 2-13 OpenOC16 Rear View with AC BOX

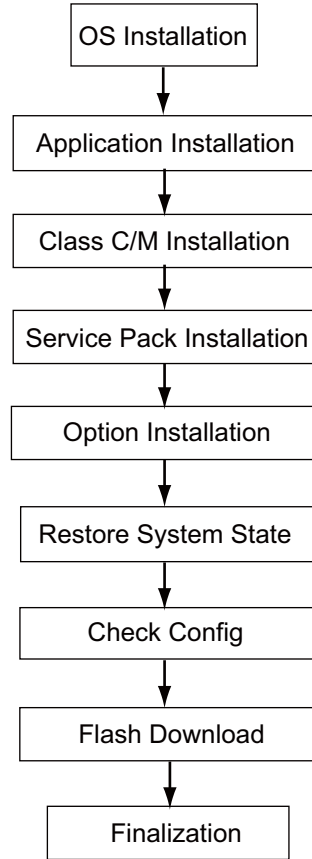


# Section 8.0 Software Installation Procedure

## 8.1 LFC Procedure

### 8.1.1 Flowchart

Figure 2-14 LFC procedure Flowchart



### 8.1.2 Software Installation

#### 8.1.2.1 OS Installation

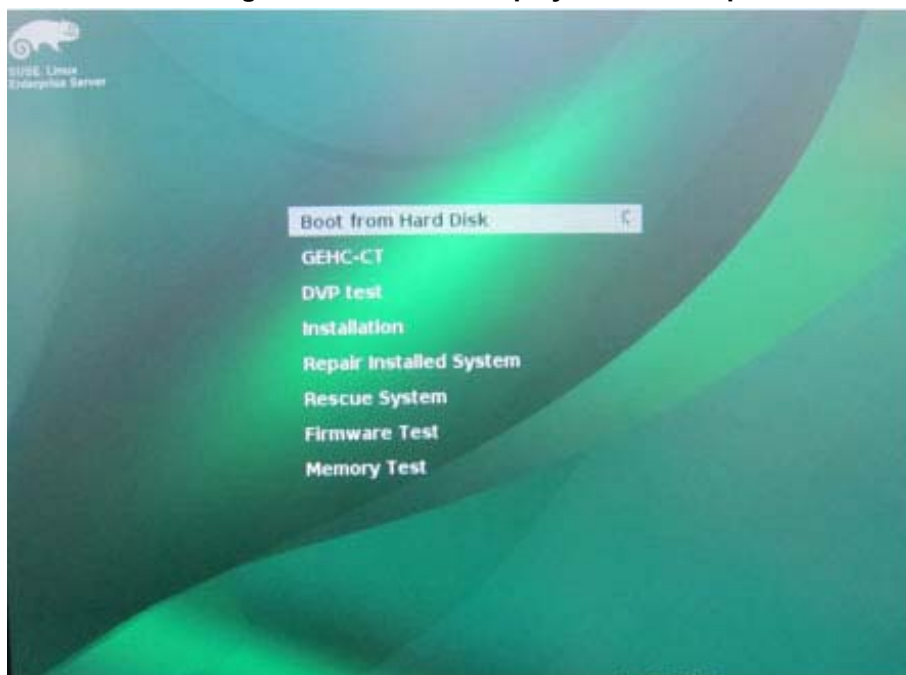
- 1.) Insert the OS disk into the host computer DVD drive.
- 2.) Shutdown and re-power the operator console.
- 3.) As the computer restarts, the installation interface appears, select **GEHC-CT** and enter.

Figure 2-15 Monitor Display - Installation Prompt



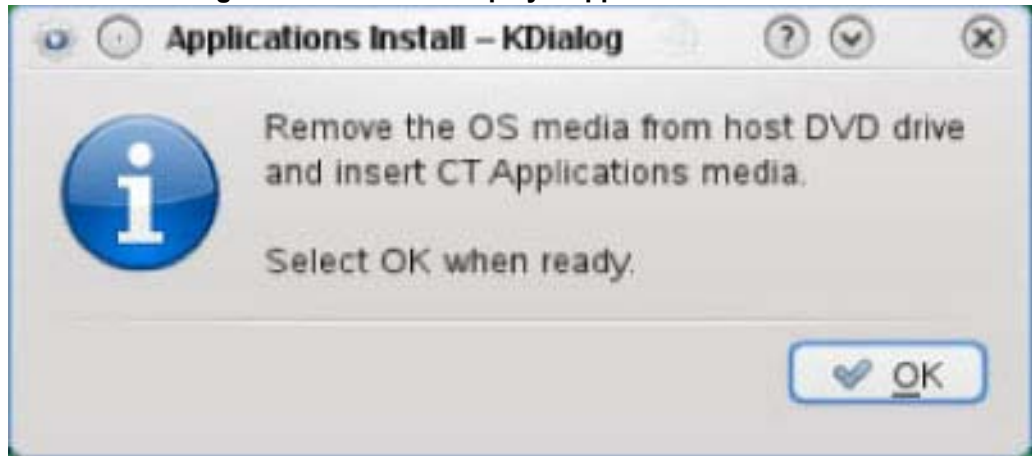
- 4.) System starts Base Installation procedure, includes two steps: AutoYaST Setting and Perform Installation.
- 5.) The computer restarts after about 15 minutes, the installation interface appears again, select **Boot from Hard Disk** and enter.

Figure 2-16 Monitor Display - Boot Prompt



- 6.) System starts Configuration procedure, includes two steps: System Configuration and Clean Up.
- 7.) After the OS is loaded, the Application Install - KDialog window appears.

Figure 2-17 Monitor Display - Application Installation



- 8.) Remove the OS disk from the host computer DVD drive when it ejects.

### 8.1.2.2 Application Installation

- 1.) Insert the APPs disk into the host computer DVD drive and close the tray. When Devices recently plugged in window appears, then click [OK] button in Application Install - KDialog window.

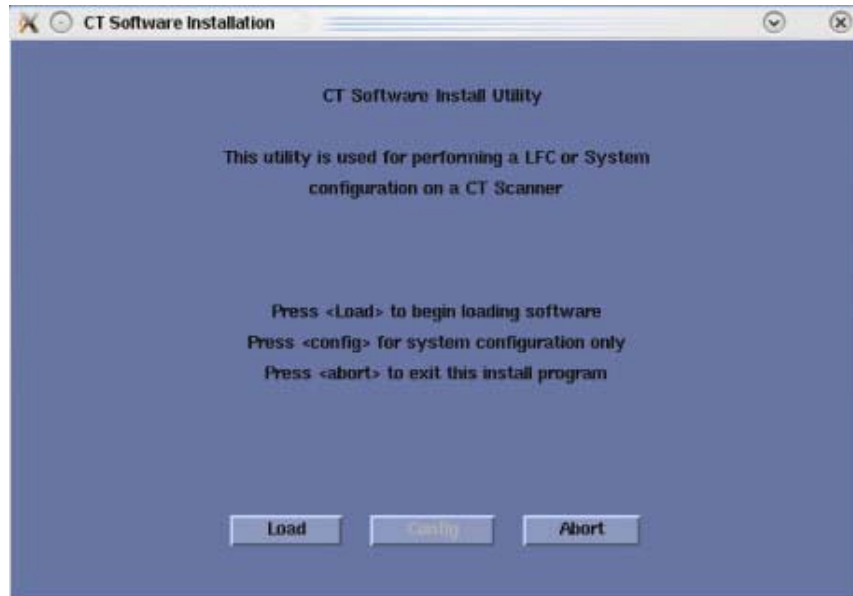
Figure 2-18 Devices Recently Plugged in Window



**NOTE:** The application software disk will open and run automatically.

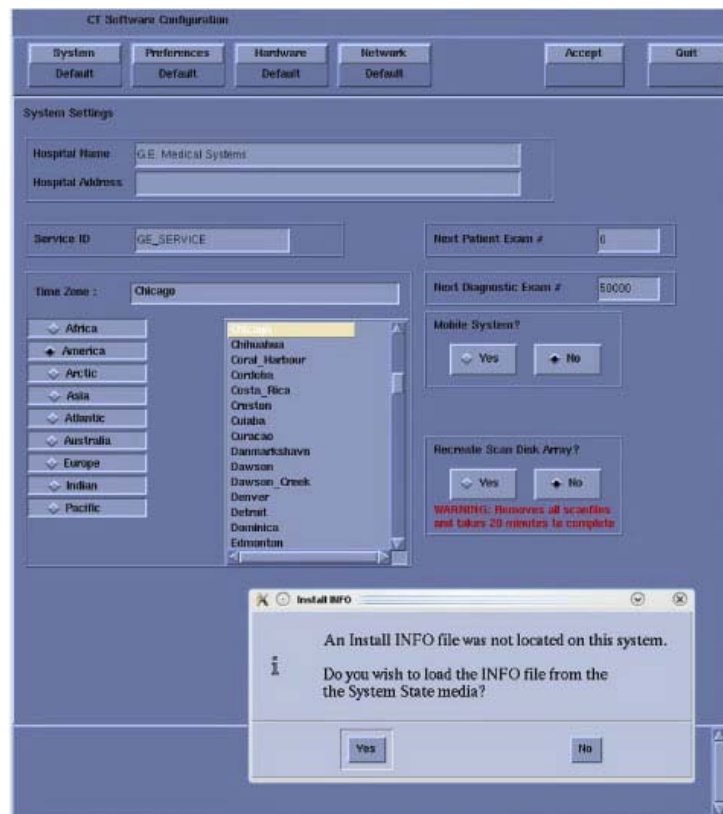
- 2.) Select [Load] in the CT Software Installation window.

Figure 2-19 Apps Load Command Window

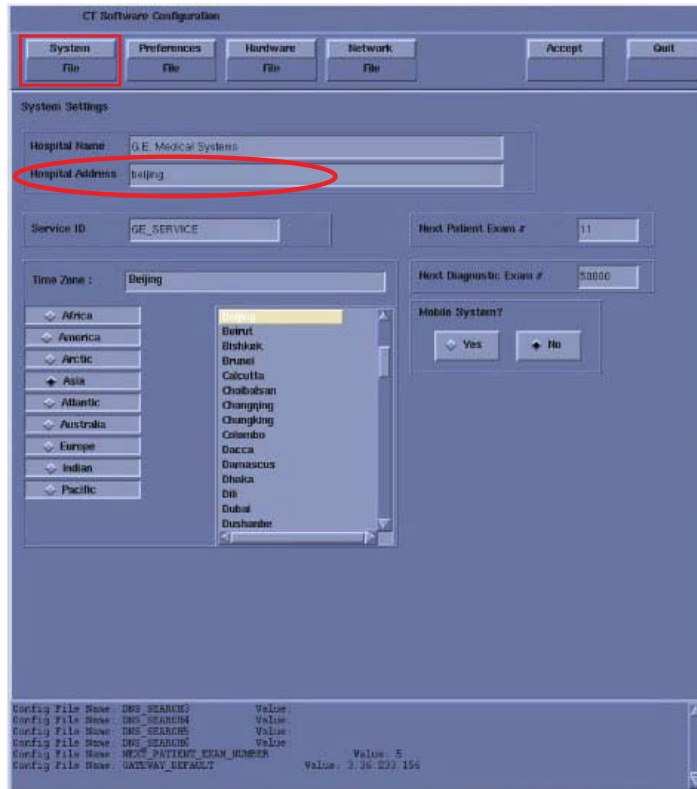


- 3.) A prompt message appears asking if you wish to load the INFO file from the system state backup media. Select [No] and manually configure the Hardware Tab to define system and console type.

Figure 2-20 Install INFO Window

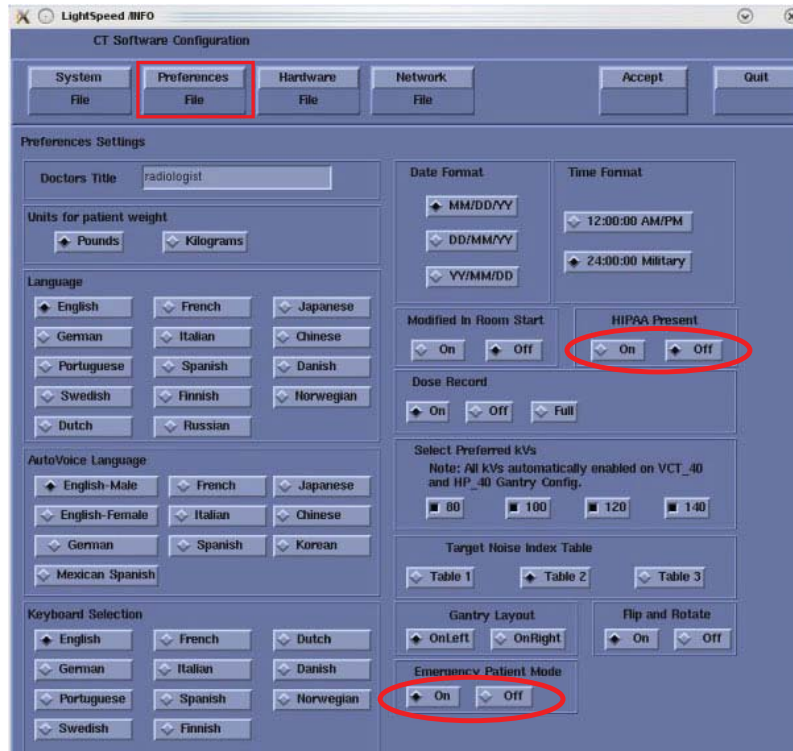


a.) Select **[System]** to access System Settings Screen.



- \* Filling *Hospital Address* is required
- \* Verify that the *Next Patient Exam #* on the System Settings screen is the value restored from Save System State. Otherwise, set to 1.
- \* Verify that the proper *Time Zone* is selected. Select/enter information as required for your system configuration.

b.) Select: **[Preferences]** to access Preferences Settings screen.



- \* Select the *units for patient weight*.
- \* Select *Language*: ([English] or [other]).
- \* Select *AutoVoice Language*.
- \* Select *Keyboard Selection*.
- \* Verify *proper Date Format* is selected.
- \* Verify *proper Time Format* is selected.
- \* Verify *Modified in Room Start* is set to [Off]. Sites in Japan must be set to [On].
- \* *HIPAA* default setting in APP SW is ON, get agreement from customer before select ON or OFF.  
 HIPAA ON/OFF can be selected by *Configure HIPAA* in Common Service Desktop.
- \* Select the site-preferred *Dose Record* option for the site. Default is [ON]. The dose information is saved in a DICOM structured report. The DICOM standard defines a new DICOM X-RAY Radiation SR SOP class, which the other systems must support. The Dose SR feature saves an exam's dose information in this format.
- \* Select *Preferred KVs* - select the kV to be calibrated during FastCal. These kVs should include all kVs that the site uses for patient scanning.
- \* Select *Target Noise Index Table*. (Default is Table 2.)
- \* Select *Gantry Layout*. Configures the preference for patient loading. Choose correct orientation depending on site specific Gantry layout.
- \* Set *Flip and Rotate* to [OFF] as default. Configures the preference for allowing the *Flip and Rotate* feature to be turned on in the User Interface on the (Left) SCAN monitor. This preference allows the customer to apply custom orientation changes based on Exam Type and reconstructions methods on the DICOM images that will be transferred to PACS and related systems.
- \* Select *Emergency Patient Mode* to [Off].

c.) Select: **[Hardware]** to access system hardware configuration screen. In the hardware configuration window, select the appropriate hardware configuration for the system (Refer to below illustration and Table). Then Click **[OK]** when done.

Hardware Configuration Window only an example as shown in Figure 2-21, Select appropriate system on site



System Type	Select Hardware Config
BrightSpeed Elite	HiValue with GDAS16/PDAS16
BrightSpeed Excel / BrightSpeed Edge	HiValue with GDAS4/8
BrightSpeed Elite Select	HiValue Lite with GDAS16/PDAS16
BrightSpeed Excel Select / BrightSpeed Edge Select	HiValue Lite with GDAS4/GDAS8

Figure 2-21 Hardware Configuration Window



d.) Select: **[Network]** to access Network Settings screen.

Figure 2-22 Network Setting Screen



- I.) *Suit Name* - The Suite Name must utilize uppercase letters. It must start with a letter, followed by 3 alphanumeric characters. The total must be four characters long. It is suggested that you choose CT01 for the first scanner (CT02....), unless a different Suite Name is required.
- II.) *Station Name* - The Station Name identifies the text that is stored in the DICOM attribute "Station Name" (DICOM TAG 0008,1010) in all CT images created. Some PACS systems may use the Station Name attribute or system tracking for identification of the scanner where the CT images were generated. Typically, the Host Name and Station Name are the same.

NOTE: The Station Name defaults to the Host Name if it is left blank. If entered it:

- \* MUST NOT exceed 16 characters
- \* MUST only contain the following characters: a through z, A through Z, 0 through 9, - and \_
- \* MUST have at least one Alpha Character (A-Z or a-z) or Special Character (\_ or -)

III.) *Host Name*

NOTE: The Host Name identifies the hostname and AE Title of the scanner. It:

- \* MUST NOT exceed 16 Characters.
- \* MUST only contain the following characters: a through z and 0 through 9
- \* MUST have at least one Alpha Character (A-Z or a-z) or Special Character (\_ or -)

IV.) *IP Address* - Site supplied address.

V.) *Net Mask* - Site supplied address.

NOTE: If the hospital backbone IP address is 192.9.220.xx, then the Net Mask must be set to 255.255.255.252.

VI.) *Broadcast Address* - Site supplied address.

VII.) *Default Gateway* - Site supplied address.

NOTE: Make sure the <NUM LOCK> button on the keyboard is not active. If it is, deselect it to enable the [ACCEPT] button in the next step. Failure to deactivate the NUM LOCK results in load issues.

VIII.) At Enable TCP Segmentation Offload?, the default selection is On. In some situation, TCP Segmentation Offload can't work normally. Please select No at this time.

IX.) If your customer has AW Direct Connect, then select Enable AW Direct Connect?. (Do not configure AW Direct Connect now.)

X.) If there is an Internal Option - Internal Subnet setting displayed and checked, then uncheck it. (This option might not appear on your system.)

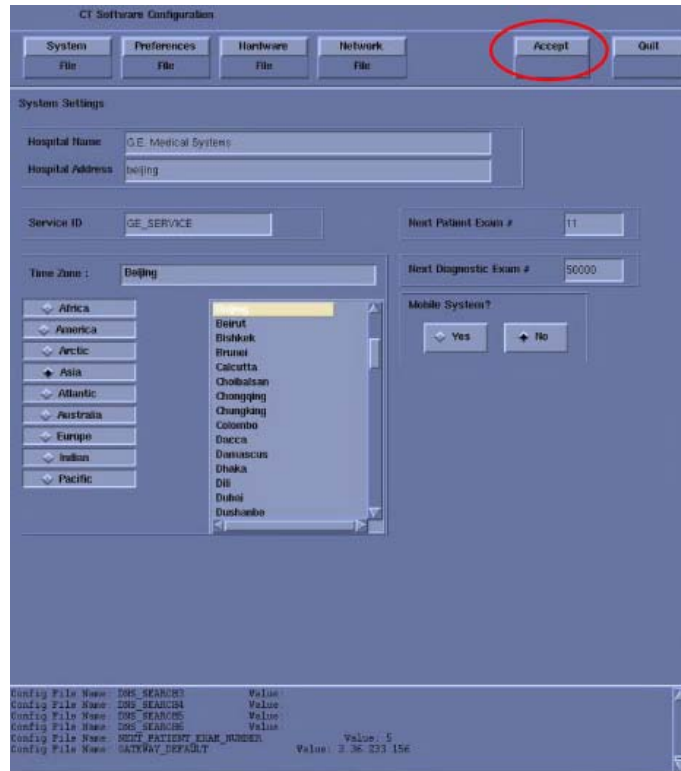
XI.) Verify with customer's network administrator if they have NIS. If they do, ensure the Advanced Options and Use NIS? boxes are checked. If they don't, ensure these selections are not checked.

- \* Domain Name: add your name here (get name from customer's network administrator).
- \* Enter the IP Address of Internal Server: add your IP address here (get IP address from customer's network administrator).

XII.) If your customer wants to synchronize the system time to their NTP server, then select *Enable Network Time Protocol*, and enter the *Primary Server IP address*.

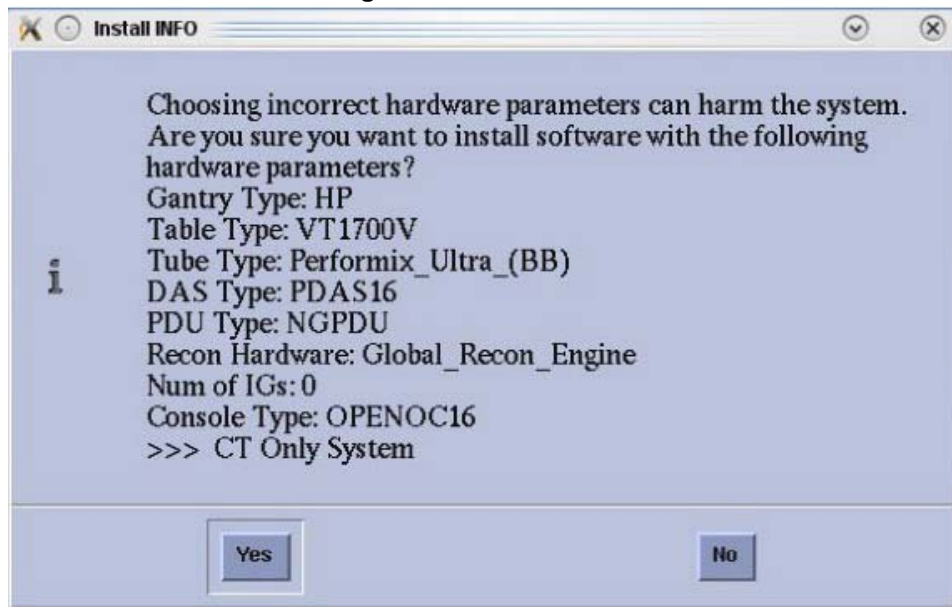
- e.) After manually configuring the system, click [Accept] button at the right corner of the User Interface.

Figure 2-23 System Configuration Utility - Accept Button



- f.) An Install INFO pop-up box is display and a confirmation window will appear. Click [Yes]. Figure 2-24 only an example.

Figure 2-24 Install INFO



- 4.) System Install INFO will be now used to create the CT application load routine. Do not remove the APPs Disk until completed.
- 5.) The APPs is loaded after about 17 minutes, then system will automatically reboot.
- 6.) After the host computer reboots, Click [OK] to close window.
- 7.) Remove APPS disk from Host Computer.

### 8.1.2.3 Load Class C

**Note: Load Class C (For GE Healthcare Employees or Licensed Customers Only)**

- 1.) Open a shell.
- 2.) Type: `su -`  
Password: #bigguy<Enter>
- 3.) Insert the Class C software CD-ROM into the DVD drive. Wait for the disk read to STOP.
- 4.) Install the Class C software on the system:  
At the superuser prompt, type: `install.classC`  
When the installation process is complete, the Console reports the following:  
`Installation ofClass C complete.`
- 5.) Verify that the Class C software is on the system:  
At the superuser prompt, type: `showprods | grep -i classc`  
Verify that the window displays a list of Class C file information and locations.

### 8.1.2.4 Load Class M

**Note: Load Class M (For GE Healthcare Employees Only)**

- 1.) Open a shell.
- 2.) Type: `su -`  
Password: #bigguy<Enter>
- 3.) Insert the Class M software CD-ROM into the DVD drive. Wait for the disk read to STOP.
- 4.) Install the Class M software on the system:  
At the superuser prompt, type: `install.classM`  
When the installation process is complete, the Console reports the following:  
`Class M installation complete.`
- 5.) Verify that the Class M software is on the system:  
At the superuser prompt, type: `showprods | grep -i classm`  
Verify that the window displays a list of Class M file information and locations.
- 6.) Select [Shutdown] icon on the desktop to restart the system.

### 8.1.2.5 Service Pack Load

- 1.) Open a Unix shell.
- 2.) If Application software is up, perform {ctuser@hostname} `cleanMon.`
- 3.) In the Unix Shell, become root:  

```
{ctuser@hostname} su -  
Password: #bigguy
```
- 4.) Check which Service Pack is installed, type {root@hostname} `#swhwinfo.`
- 5.) Insert the Service Pack CD into DVD drive in the host.
- 6.) Perform the following steps to install the Service Pack CD:
  - I.) Type the following install script: [root@hostname] `#patch_install -c`  
I will install update Service Pack Name, is this ok ? [y/n]
  - II.) Input **y** to install this pack or **n** to cancel installation of this pack.
  - III.) After installing the Service Pack CD, type `patch_status` (Class M service key inserted is required to use this command) in the Shell window to determine which Service Pack patches were installed (if any). The following is an alternate command to verify the Service Pack load:  

```
[root@hostname]#showprods | grep -i ServicePack
```
- 7.) Remove the Service Pack CD from Host DVD drive.
- 8.) Type:[root@hostname] `#reboot`

### 8.1.2.6 Install Software Options

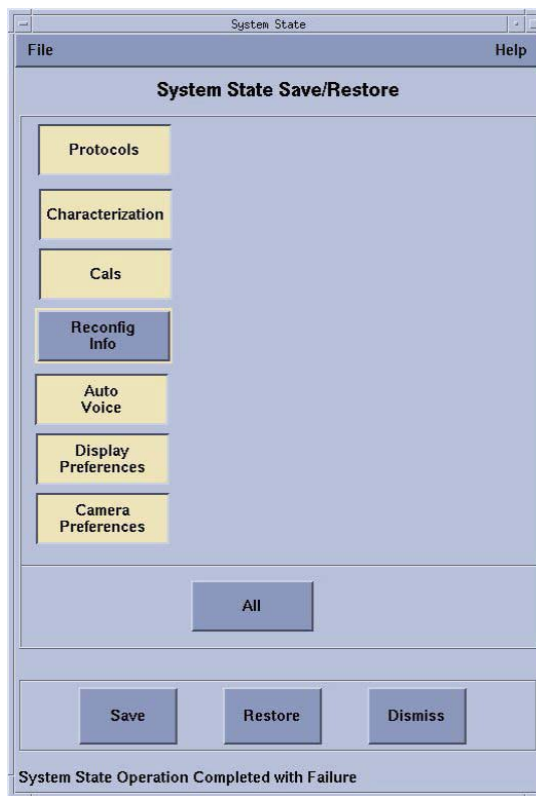
- 1.) Insert the Options DVD in the peripheral tower DVD-RAM drive.
- 2.) With the Applications up, select the [SERVICE DESKTOP].
- 3.) Select [CONFIGURATION].
- 4.) Select [INSTALL OPTIONS]. A blank software options screen appears:
- 5.) Select [INSTALL]. A Select Mechanism window opens, Select the mechanism through which you want to install option keys.
- 6.) Select [Permanent]. A Select Device window opens. Select the mechanism through which you want to install the permanent option keys.
- 7.) Select the [MEDIA] button and insert the options DVD. Available options appear on the software options screen.
- 8.) Perform option installations if applicable.
- 9.) Pick remaining options one at a time from the Available Options list and select [INSTALL] to update each selection and place it on the Installed Options List.
- 10.) When the process is complete, select [Quit] then quit to close the window.

Note: Do not forget to install the reused option by eLicense listed in Section [4.5, on page 31](#)

## 8.2 Restore System State

- 1.) Insert a previously saved System State DVD-RAM Media into the Peripheral Tower DVD-RAM Drive or USB Media in the USB ports
- 2.) Wait until the DVD-RAM Drive or USB Media is ready
- 3.) Select the [Service] icon to access the CSD (Common Service Desktop).
- 4.) Select: [Utilities].
- 5.) Select: [System State] for DVD-RAM Media or [System State - USB] for USB Media. The System State Save/Restore screen appears.
- 6.) Select [All]
- 7.) Click [Reconfig Info] after select [All], See below illustration.

Note: Restoring the Info file will cause problems displaying the CSD ( Common Service Desktop ).



- 8.) Select [Restore]. The Restore System State box appears.
- 9.) Select [Yes]. A message at the end of the System State Log window should display: Restore System State Completed Successfully.

Note: If Dose Check option is installed, Dose Audit tool starts up when Reconfig Info or Protocol is selected. That shows Configuration and Protocol summary. Press [Quit] to continue.

- 10.) Select [Yes] when the Scan Hardware Reset pop-up appears.
- 11.) When completed, select [Dismiss].
- 12.) Remove System State DVD-RAM disk from the DVD Peripheral Tower or USB Media from USB port and place in a safe location.
- 13.) Reboot the Operators Console by selecting [Shutdown] Desktop, then select [Restart] in the Attention Window.

14.) Verify Restore System State

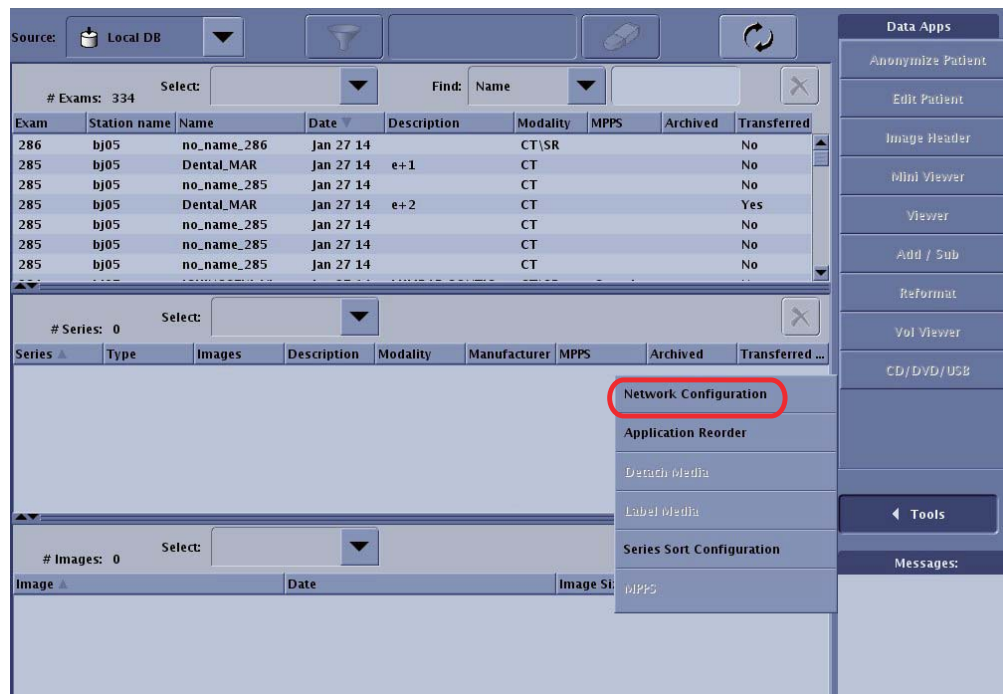
- a.) Visually verify that the system has the correct configuration and preference settings by opening a Terminal Window.
- b.) Execute the system configuration script “reconfig”.

### 8.3 Configure System Information on SUSE

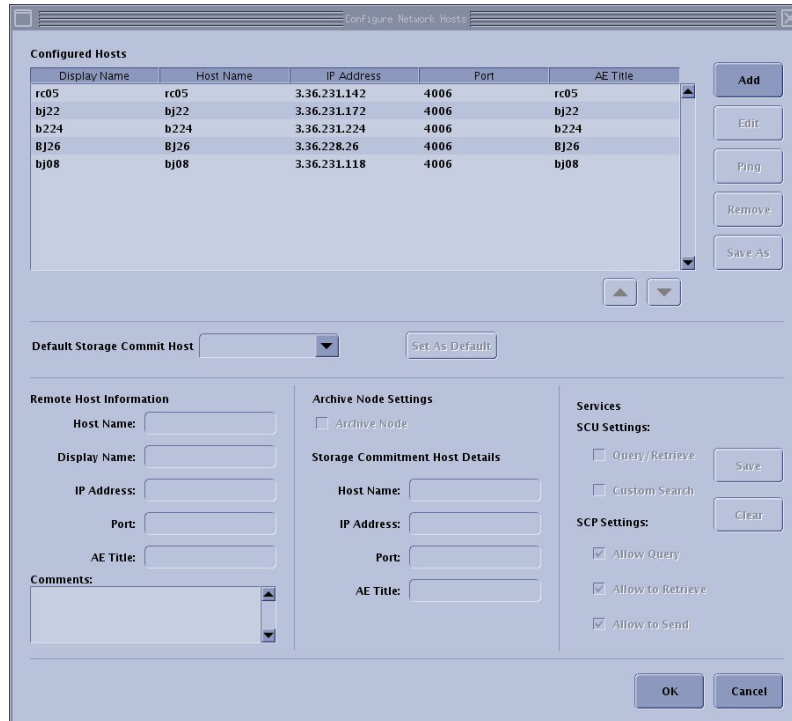
- 1.) Configure PPS server information. Please refer to [4.1, on page 24](#)
- 2.) Configure all remote network information
  - a.) Select [ImageWorks] from the desktop.



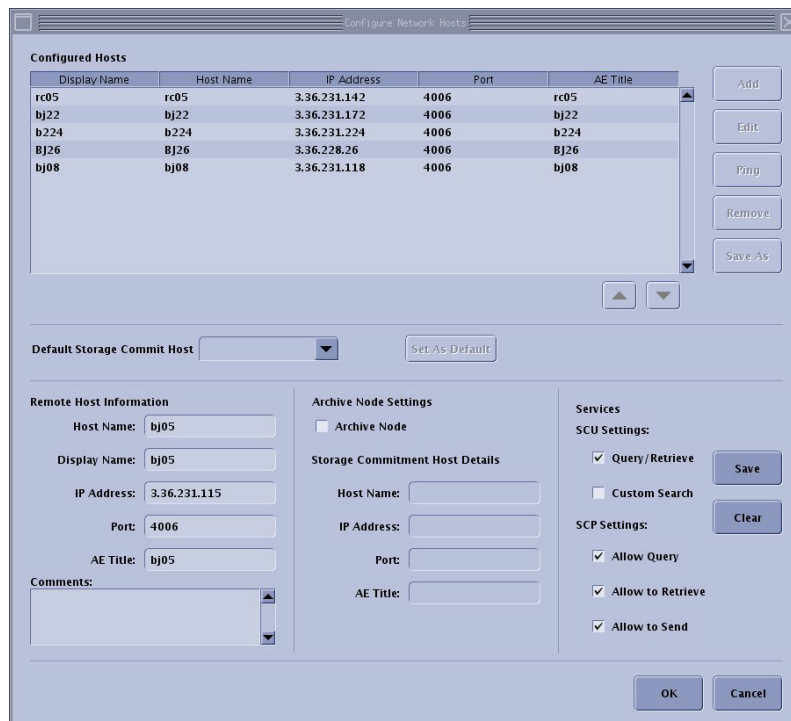
b.) Select in sequence: Tools-> Network Configuration



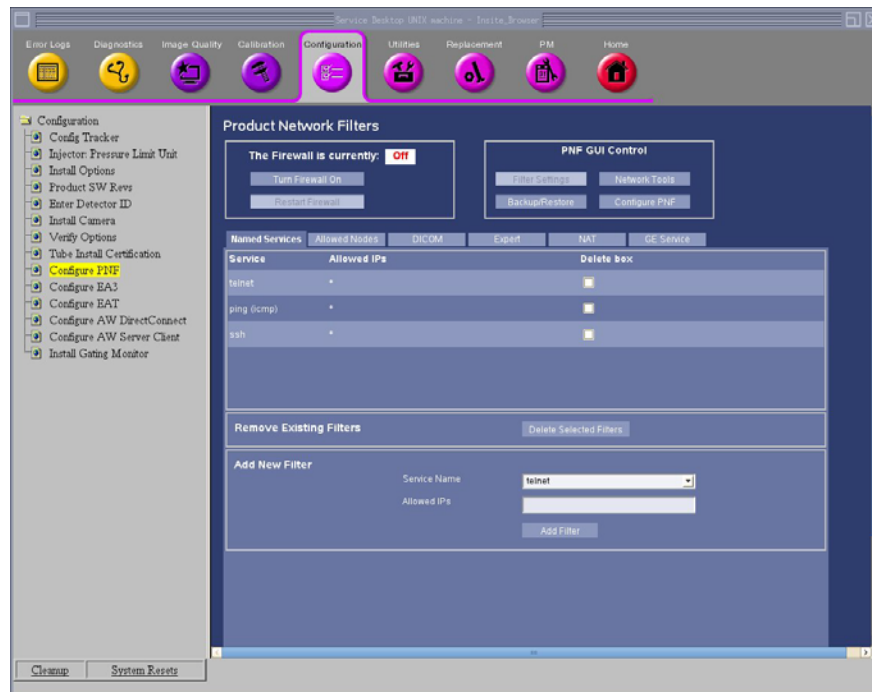
c.) Select [Add]



d.) Input the Host Name then press [Enter].



- 3.) Configure PNF information
  - a.) Select the Service Desktop
  - b.) Select in sequence: Configuration -> Configure PNF



- 4.) Configure AW IP for direct information, Please refer to [4.4, on page 30](#)

### 8.3.1 Convert Protocol

It's necessary for protocol conversion because the protocol of CTT system is not available in SUSE system.

- 1.) Open a Unix Shell, type:  
{ctuser@hostname} **su -**  
Password: **#bigguy**
- 2.) [root@hostname] # **/usr/g/scripts/conv\_proto** <Enter>
- 3.) Input **y** then press [Enter] to convert protocols.  
*Do you want to convert protocols? [Y/N]*
- 4.) Below information should show if the convert protocols successfully:  
*Success, process finished.*

Note: After finishing the user protocol convert, make sure every protocol can be opened by protocol management and save the current system state to another new media.

## 8.4 Flash Download

Note: The Flash Download takes anywhere from 5-30 minutes, depending on which subsystems require updates.

- 1.) Perform the Flash Download Utility found on the Common Service Desktop - Utilities Tab, select [Flash Download].

Figure 2-25 Common Service Desktop - Utilities Tab, Flash Download



- 2.) When the Flash Download Window opens, Select [Update].

Figure 2-26 Flash Download Windows



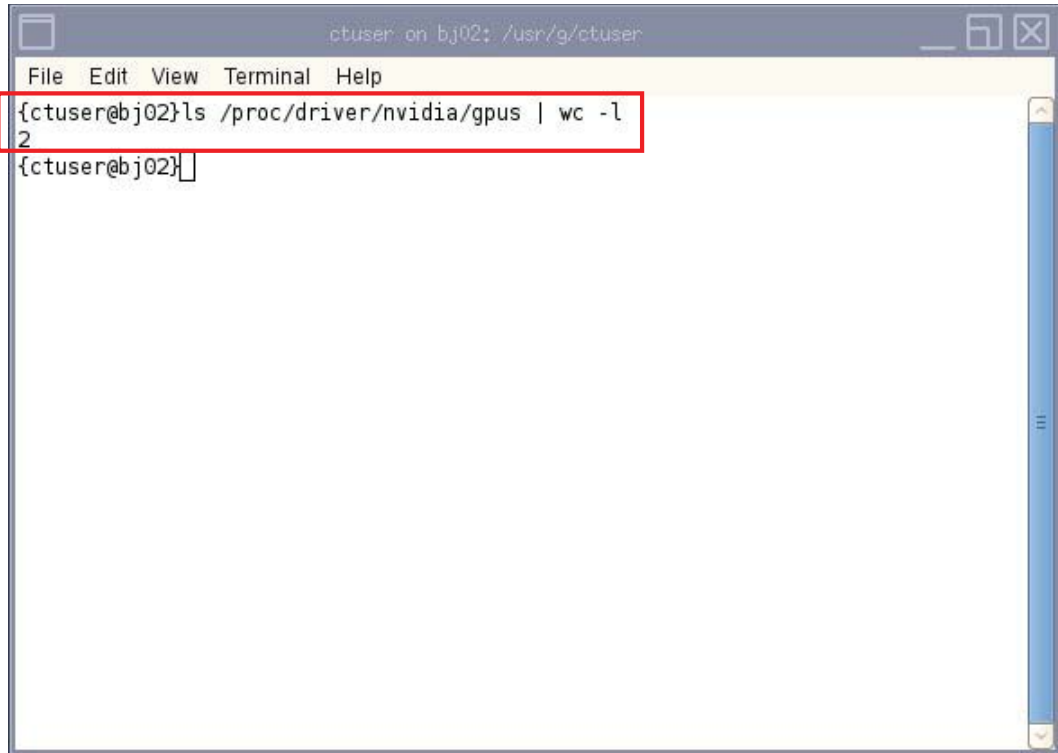
- 3.) Once the Gantry Hardware Flash Downloads successfully, select [Dismiss].
- 4.) Close the Common Service Desktop.

## Section 9.0 ASiR Installation

Note: If customer does not purchase ASiR option, please skip this section

### 9.1 Check GPU Card

- 1.) Confirm Host Computer powers up when console power is turned on.
- 2.) Check the GPU card installed. Open a shell, then type:  
`{ctuser@hostname} ls /proc/driver/nvidia/gpus | wc -l`. Check the result as below.



- If “2” displays, the Recon GPU card is installed.
- If “1” displays, the Recon GPU card is un-installed.

## 9.2 Check GPU ECC State

Ensure GPU ECC state is **ON**:

- 1.) Open a Unix shell and log on as root:
- 2.) Type: `su -` [ENTER]
- 3.) Type the root password [ENTER]
- 4.) Type: `nvidia-smi` [ENTER]
- 5.) Check GPU ECC status as below:

- If the GPU ECC is **ON**, below is what the output would look like (boxed in green):

```

+-----+
| NVIDIA-SMI 361.28      Driver Version: 361.28      |
+-----+-----+
| GPU  Name          Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf    Pwr:Usage/Cap|     Memory-Usage | GPU-Util  Compute M. |
+-----+-----+-----+-----+
|   0   Quadro M5000        Off   | 0000:03:00.0  Off   |           0         |
| 38%   32C   P8      12W / 150W | 109MiB / 7679MiB |      0%          Default |
+-----+-----+-----+-----+
|   1   Quadro K620        Off   | 0000:04:00.0  On    |           N/A        |
| 34%   35C   P8      1W / 30W  | 142MiB / 2047MiB |      0%          Default |
+-----+-----+-----+-----+

+-----+
| Processes:                      GPU Memory |
| GPU      PID  Type  Process name      Usage      |
+-----+-----+-----+-----+
|   0      6177  G    /usr/bin/Xorg      9MiB      |
|   0     13469  C    iungo_ig11        78MiB      |
|   1      6177  G    /usr/bin/Xorg     133MiB     |
+-----+
    
```

- If the GPU ECC is **OFF**, below is what the output would look like (boxed in red):

```

+-----+
| NVIDIA-SMI 361.28      Driver Version: 361.28      |
+-----+-----+
| GPU  Name          Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf    Pwr:Usage/Cap|     Memory-Usage | GPU-Util  Compute M. |
+-----+-----+-----+-----+
|   0   Quadro M5000        Off   | 0000:03:00.0  Off   |           Off        |
| 38%   32C   P8      12W / 150W | 109MiB / 8191MiB |      0%          Default |
+-----+-----+-----+-----+
|   1   Quadro K620        Off   | 0000:04:00.0  On    |           N/A        |
| 34%   35C   P8      1W / 30W  | 142MiB / 2047MiB |      0%          Default |
+-----+-----+-----+-----+

+-----+
| Processes:                      GPU Memory |
| GPU      PID  Type  Process name      Usage      |
+-----+-----+-----+-----+
|   0      6132  G    /usr/bin/Xorg      9MiB      |
|   0     12267  C    iungo_ig11        78MiB      |
|   1      6132  G    /usr/bin/Xorg     133MiB     |
+-----+
    
```

6.) How to turn ECC back on

- Type: `nvidia-smi -g 0 --ecc-config=1` [ENTER]
- A message will show that ECC is enabled and a reboot is required:

```

Enabled ECC support for GPU 0000:03:00.0.
All done.
Reboot required.
    
```

- After reboot, check that the ECC is **ON** according to previous steps.

### 9.3 Option Installation

- 1.) Un-install Neuro 3D Filter option if needed. (This option conflicts with ASIR Application.)
- 2.) Install ASIR Application software (shipped with B79802CB) using Option Install menu.
- 3.) Confirm that system started up normally.
- 4.) Install the Recon Enhancement Option software (shipped with B79822CB) using Option Install menu.

## Section 10.0 Finalization

- 1.) Perform Quality Assurance Test of Functional Checks on Service Methods, make sure all of them pass.
- 2.) Update GIB with the Product Locator Card information. Go to the following address to access the site: [http://gib.gehealthcare.com/gib/gib\\_entry.jsp](http://gib.gehealthcare.com/gib/gib_entry.jsp).
- 3.) Insite Check out, refer to Service Methods
- 4.) Save System State
  - a.) Insert the Save System Sate DVD into the Peripheral Tower DVD-RW drive.
  - b.) Select [SERVICE DESKTOP].
  - c.) If reloading software, select [UTILITIES].
  - d.) Select [SYSTEM STATE].
  - e.) Select [ALL] to select all the calcs, characterization, etc.
  - f.) Select [SAVE].
  - g.) If applicable, select [OK] when the following message appears: System State Media Status: Please insert a DVD into the drive and press Save again
  - h.) When completed select [DISMISS].
  - i.) Close the Service Desktop window in the upper left corner of the screen.



# Chapter 3

## FINALIZATION

### Section 1.0 Disposing The Old Console

The old console has components that are needed to cover FRU shortages, so please **RETURN** the de-installed console GPRS Harvest team. Follow the normal local return process to return the console.

- 1.) Package the old console with the shipping material.
- 2.) Mark type of the old console on the outside of the box. (Example: GOC4, LCGOC, AIO, TIO or NIO)
- 3.) Transporter ships the de-installed console to:

- **For AM**

Return Ship to:

GE Repair Operations Center

Attn: Asset Recovery Leader, Harvest

120 West Opus Drive, Suite J Component Harvest

Oak Creek, WI 53154

- **For Europe**

Stick the harvest return sticker (see below) on the OC box

Geodis Logistics – Harvest

Bat EVL2 Quai 48 – ZI la pièce de la remise

Route de Corbeil -CD26 – 91090 Lisses – France

<b>HARVEST Upgrade</b>	
Upgrade Name	<input type="text"/>
Country	<input type="text"/>
System ID	<input type="text"/>
Order/SO	<input type="text"/>
FSE SSO	<input type="text"/>
<b>Ship to Address</b>	
Geodis Logistics/Harvest	
Bat EVL2 - Porte A1 Quai 9 à 13 - ZI de la remise	
Route de Corbeil CD26 - 91090 Lisses – FRANCE	
Contact : JP Lechat +33 6 72 18 60 32	

- **For ASIA**
  - **Site in Japan**

Kyosai Technos Co.Ltd.  
4-25-2 Atago Tama-City, Tokyo,  
206-0041 Japan
  - **Site in China**

China Repair Center (CRC)  
1 Yongchang North Road Beijing Economic & Technology Development Area,  
Beijing P.R.China 100176
  - **Site in India**

Attn: Harvest Centre  
C/O DHL Supply Chain India Pvt Ltd,  
New Survey Number 131,  
Doddahullur Village,  
Kasaba Hobli Hoskote Taluk,  
Bangalore - 562114
- **For LATAM**
  - **Brazil:**

Av. Dr. Marcos Penteado de Ulhoa Rodrigues, 690-Galpão 8A  
Pq.Jubran Cep-06460-040  
Barueri-SP  
Phone: +55 (11) 3206-733
  - **Argentina:**

OCASA Soluciones Logísticas  
Echeverría 1262/64  
C1428DQN – C. A. de Buenos Aires  
(54 11) 4785-8585

## Section 2.0 Sending The Product Locator Card

- 1.) Fill in the blanks on the Product Locator Card provided in this kit.
- 2.) Send the Product Locator Card to the appropriate address provided below.

**Address for GEMS-AM sites:**

Send to the address printed on the Product Locator Card.

**Address for GEMS-E sites:**

Send to the address printed on the Product Locator Card.

**Address for GEMS-A sites:**

Send to the local PLS or Service Administrator.

---

# Appendix A

## Operating Table Installation and Adjustment

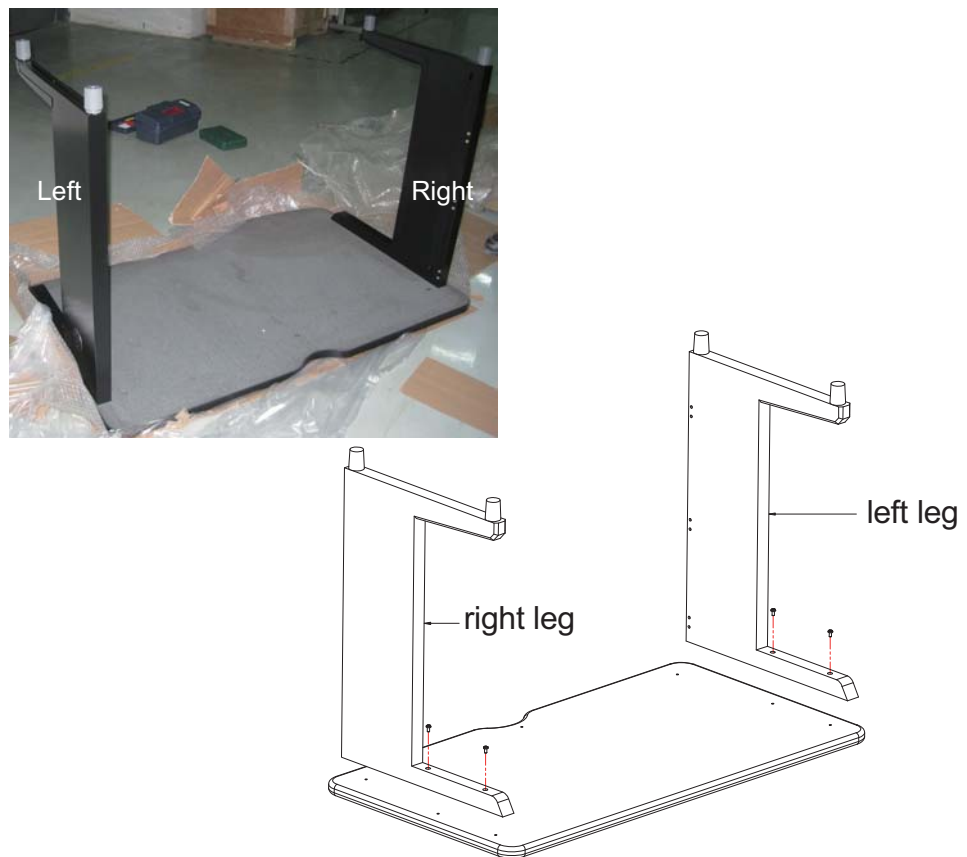
---

### Section 1.0 Aurora SWS Table Assembly and Adjustment

Aurora table is an optional console table.

- 1.) Remove all the transportation packaging from the Aurora Table, use the packing material as cushion and carefully put tabletop on it to avoid scratches.
- 2.) Assembly the left and right legs to the tabletop by screwing 4 screws.

**Figure 1 Table Legs Installation**



- 3.) Prepare crossbar and two beams.



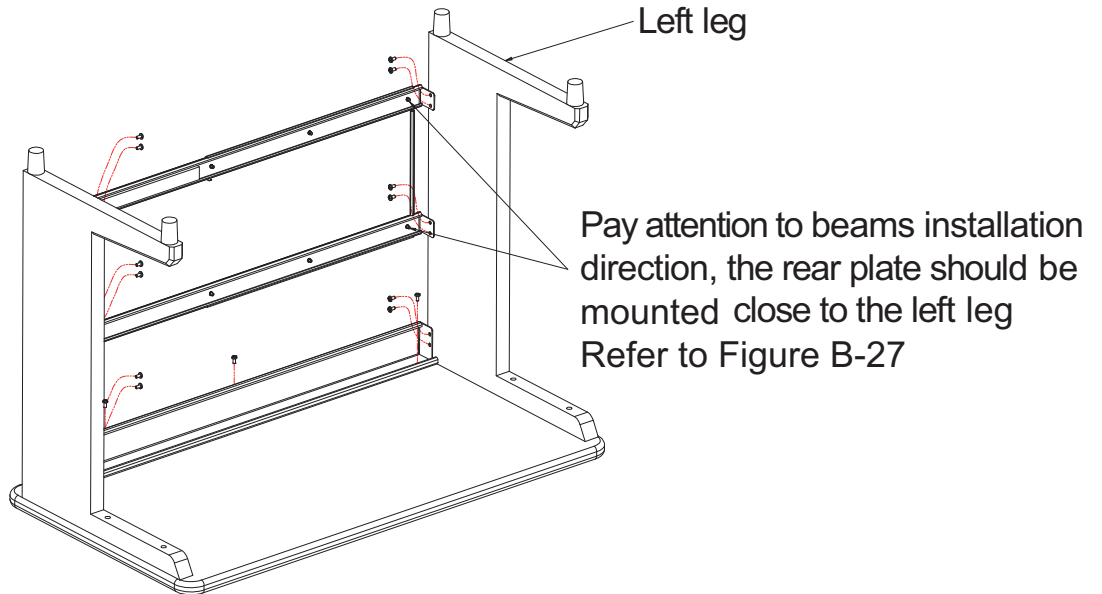
- 4.) Install the upper crossbar by screwing seven screws, three screws for tabletop, four screws for left and right legs.

**Figure 2 Crossbar Installation**



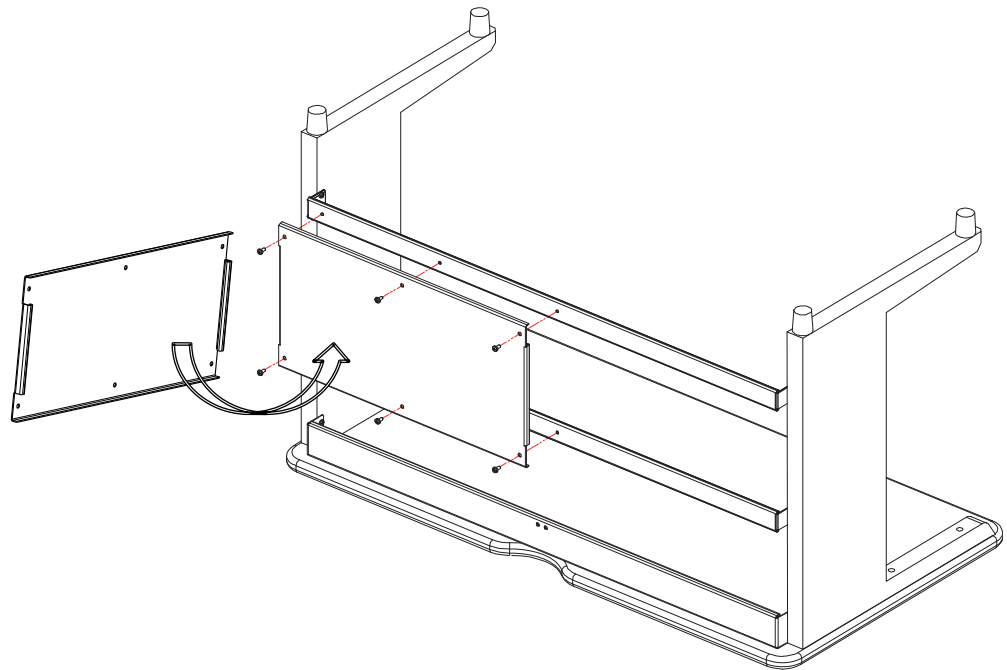
- 5.) Install two beams to the left and right legs as shown in [Figure 3](#). Note to keep all screws loose.

**Figure 3 Beams Installation**



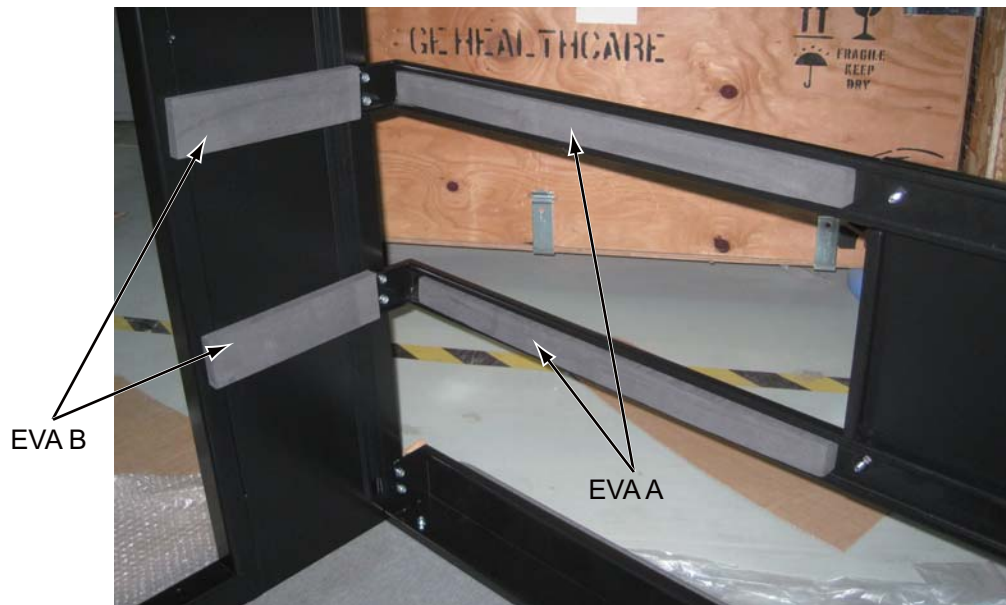
- 6.) Mount the rear plate on two beams by screwing 6 screws.

**Figure 4 Rear Plate Installation**



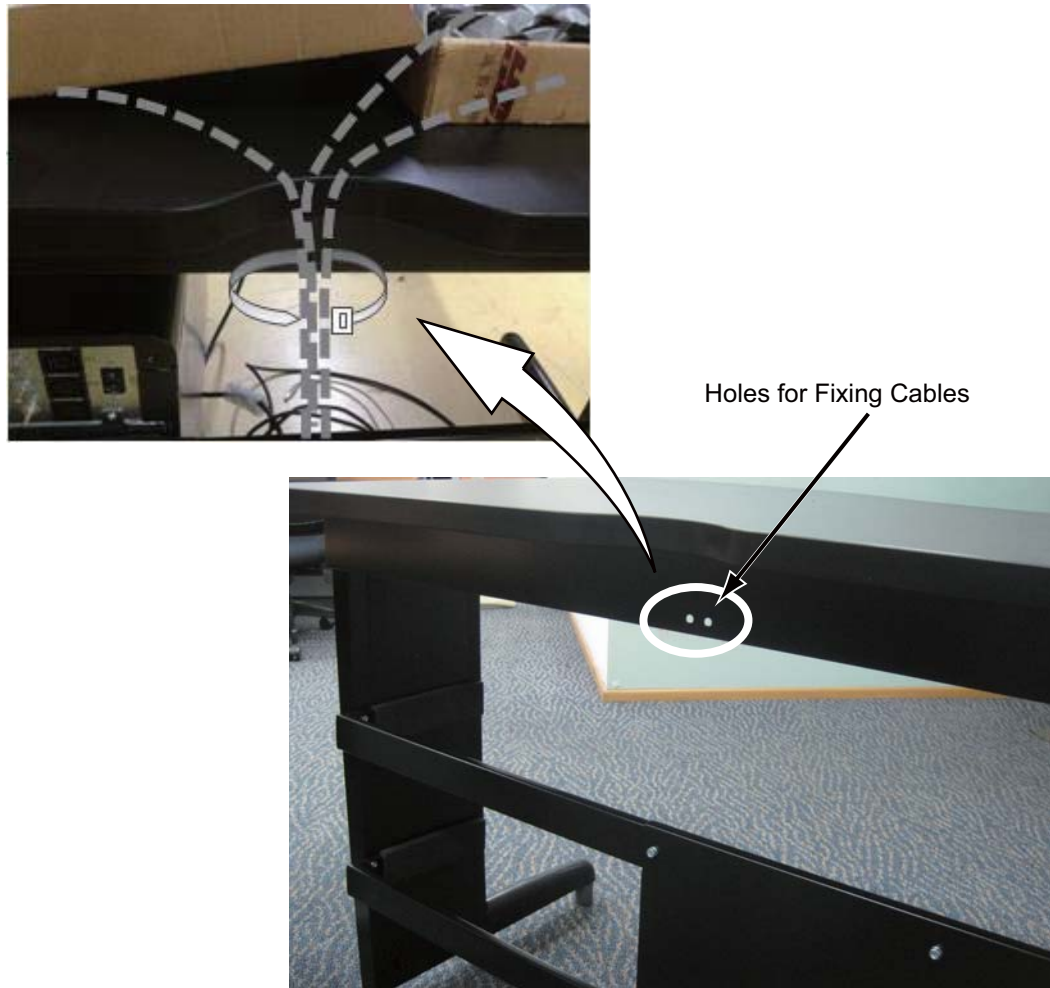
- 7.) Tighten all screws.  
8.) Stick EVA A on the teams and EVA B on the right leg as shown in [Figure 5](#).

Figure 5 EVA Attaching



- 9.) Overturn the table, then place monitors and route cables to the table.

Figure 6





[www.gehealthcare.com](http://www.gehealthcare.com)

