

OpenOC with Z8G4 Upgrade Instruction

Service Documentation



5882450-1EN

Rev 1

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IMPORTANT PRECAUTIONS

LANGUAGE

<p>警告 (ZH-CN)</p>	<ul style="list-style-type: none"> • 本维修手册仅提供英文版本。 • 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。 • 未详细阅读和完全理解本维修手册之前，不得进行维修。 • 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。
<p>VÝSTRAHA (CS)</p>	<ul style="list-style-type: none"> • Tento provozní návod existuje pouze v anglickém jazyce. • V případě, že externí služba zákazníkům potřebuje návod v jiném jazyce, je zajištění překladu do odpovídajícího jazyka úkolem zákazníka. • Nesnažte se o údržbu tohoto zařízení, aniž byste si přečetli tento provozní návod a pochopili jeho obsah. • 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.
<p>ADVARSEL (DA)</p>	<ul style="list-style-type: none"> • 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 har været konsulteret og er forstået. • Manglende overholdelse af denne advarsel kan medføre skade på grund af elektrisk, mekanisk eller anden fare for teknikeren, operatøren eller patienten.
<p>WAARSCHUWING (NL)</p>	<ul style="list-style-type: none"> • 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.
<p>WARNING (EN)</p>	<ul style="list-style-type: none"> • 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. • 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 or from mechanical or other hazards.

<p>HOIATUS (ET)</p>	<ul style="list-style-type: none"> • 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.
<p>VAROITUS (FI)</p>	<ul style="list-style-type: none"> • Tämä huolto-ohje on saatavilla vain englanniksi. • Jos asiakkaan huoltohenkilöstö 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 huoltohenkilöstön, laitteiston käyttäjän tai potilaan vahingoittuminen sähköiskun, mekaanisen vian tai muun vaaratilanteen vuoksi.
<p>ATTENTION (FR)</p>	<ul style="list-style-type: none"> • Ce manuel de service n'est disponible qu'en anglais. • 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. • Ne pas tenter d'intervenir sur les équipements tant que le manuel service 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.
<p>WARNUNG (DE)</p>	<ul style="list-style-type: none"> • Diese Serviceanleitung existiert nur in Englischer Sprache. • Falls ein fremder Kundendienst eine andere Sprache benötigt, ist es aufgabe des Kunden für eine Entsprechende Übersetzung zu sorgen. • Versuchen Sie nicht diese Anlage zu warten, ohne diese Serviceanleitung gelesen und verstanden zu haben. • Wird diese Warnung nicht beachtet, so kann es zu Verletzungen des Kundendiensttechnikers, des Bedieners oder des Patienten durch Stromschläge, Mechanische oder Sonstige gefahren kommen.
<p>ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)</p>	<ul style="list-style-type: none"> • Το παρόν εγχειρίδιο σέρβις διατίθεται στα αγγλικά μόνο. • Εάν το άτομο παροχής σέρβις ενός πελάτη απαιτεί το παρόν εγχειρίδιο σε γλώσσα εκτός των αγγλικών, αποτελεί ευθύνη του πελάτη να παρέχει υπηρεσίες μετάφρασης. • Μην επιχειρήσετε την εκτέλεση εργασιών σέρβις στον εξοπλισμό εκτός εάν έχετε συμβουλευτεί και έχετε κατανοήσει το παρόν εγχειρίδιο σέρβις. • 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.

<p>FIGYELMEZTETÉS (HU)</p>	<ul style="list-style-type: none"> • Ezen karbantartási kézikönyv kizárólag angol nyelven érhető el. • Ha a vevő szolgáltatója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése. • Ne próbálja elkezdni 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.
<p>AÐVÖRUN (IS)</p>	<ul style="list-style-type: none"> • Þessi þjónustuhandbók er eingöngu fáanleg á ensku. • Ef að þjónustuveitandi viðskiptamanns þarfnast annas tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu. • Reynið ekki að afgreiða tækið nema að þessi þjónustuhandbók hefur verið skoðuð og skilin. • Brot á sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklings frá raflosti, vélrænu eða öðrum áhættum.
<p>AVVERTENZA (IT)</p>	<ul style="list-style-type: none"> • Il presente manuale di manutenzione è disponibile soltanto in inglese. • Se un addetto alla manutenzione 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 • 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.
<p>警告 (JA)</p>	<ul style="list-style-type: none"> • このサービスマニュアルには英語版しかありません。 • 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。 • 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。 • 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。
<p>경고 (KO)</p>	<ul style="list-style-type: none"> • 본 서비스 지침서는 영어로만 이용하실 수 있습니다 . • 고객의 서비스 제공자가 영어 이외의 언어를 요구할 경우 , 번역 서비스를 제공하는 것은 고객의 책임입니다 . • 본 서비스 지침서를 참고했고 이해하지 않는 한은 해당 장비를 수리하려고 시도하지 마십시오 . • 이 경고에 유의하지 않으면 전기 쇼크 , 기계상의 혹은 다른 위험으로부터 서비스 제공자 , 운영자 혹은 환자에게 위해를 가할 수 있습니다 .

<p>BRDINJUMS (LV)</p>	<ul style="list-style-type: none"> • 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.
<p>ĮSPĖJIMAS (LT)</p>	<ul style="list-style-type: none"> • Šis eksploatavimo vadovas yra prieinamas tik anglų kalba. • Jei kliento paslaugų tiekėjas reikalauja vadovo kita kalba – ne anglų, numatyti vertimo paslaugas yra kliento atsakomybė. • Nemėginkite atlikti įrangos techninės priežiūros, nebent atsižvelgėte į šį eksploatavimo vadovą ir jį supratote. • Jei neatkreipsite dėmesio į šį perspėjimą, galimi sužalojimai dėl elektros šoko, mechaninių ar kitų pavojų paslaugų tiekėjui, operatoriui ar pacientui.
<p>ADVARSEL (NO)</p>	<ul style="list-style-type: none"> • 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.
<p>OSTRZEŻENIE (PL)</p>	<ul style="list-style-type: none"> • Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim. • Jeśli dostawca usług klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta. • Nie próbować serwisować wyposażenia bez zapoznania się i zrozumienia niniejszego podręcznika serwisowego. • Niezastosowanie się do tego ostrzeżenia może spowodować urazy dostawcy usług, operatora lub pacjenta w wyniku porażenia elektrycznego, zagrożenia mechanicznego bądź innego.
<p>ATENÇÃO (PT-BR)</p>	<ul style="list-style-type: none"> • 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 por em perigo a segurança do técnico, operador ou paciente devido a choques elétricos, mecânicos ou outros.

<p>ATENÇÃO (PT-PT)</p>	<ul style="list-style-type: none"> • 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 noutra 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 colocar em perigo a segurança do técnico, do operador ou do paciente devido a choques eléctricos, mecânicos ou outros.
<p>ATENȚIE (RO)</p>	<ul style="list-style-type: none"> • 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 și 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.
<p>ОСТОРОЖНО! (RU)</p>	<ul style="list-style-type: none"> • Данное руководство по обслуживанию предлагается только на английском языке. • Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует самостоятельно обеспечить перевод. • Перед обслуживанием оборудования обязательно обратитесь к данному руководству и поймите изложенные в нем сведения. • Несоблюдение требований данного предупреждения может привести к тому, что специалист по обслуживанию, оператор или пациент получат удар электрическим током, механическую травму или другое повреждение.
<p>UPOZORENJE (SR)</p>	<ul style="list-style-type: none"> • Ovo servisno uputstvo je dostupno samo na engleskom jeziku. • Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilacke usluge. • Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo. • Zanemarivanje ovog upozorenja može dovesti do povređivanja servisera, rukovaoca ili pacijenta usled strujnog udara ili mehanickih i drugih opasnosti.
<p>UPOZORNENIE (SK)</p>	<ul style="list-style-type: none"> • Tento návod na obsluhu je k dispozícii len v angličtine. • Ak zákazníkovi poskytovateľ služieb vyžaduje iný jazyk ako angličtinu, poskytnutie prekladateľských služieb je zodpovednosťou zákazníka. • Nepokúšajte sa o obsluhu zariadenia skôr, ako si neprečítate návod na obsluhu a neporozumiete mu. • Zanedbanie tohto upozornenia môže vyústiť do zranenia poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, do mechanického alebo iného nebezpečenstva.

<p>ATENCIÓN (ES)</p>	<ul style="list-style-type: none"> • Este manual de servicio sólo existe en inglés. • 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. • 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 operador o el paciente sufran lesiones provocadas por causas eléctricas, mecánicas o de otra naturaleza.
<p>VARNING (SV)</p>	<ul style="list-style-type: none"> • 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. • 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.
<p>DIKKAT (TR)</p>	<ul style="list-style-type: none"> • Bu servis kilavuzunun sadece ingilizcesi mevcuttur. • Eğer müşteri teknisyeni bu kilavuzu ingilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer. • Servis kilavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz. • Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.
<p>ПРЕДУПРЕЖДЕНИЕ (BG)</p>	<ul style="list-style-type: none"> • Това упътване за работа е налично само на английски език. • Ако доставчикът на услугата на клиента изиска друг език, задължение на клиента е да осигури превод. • Не използвайте оборудването, преди да сте се консултирали и разбрали упътването за работа. • 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.
<p>警告 (ZH-HK)</p>	<ul style="list-style-type: none"> • 本服務手冊僅提供英文版本。 • 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。 • 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。 • 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。
<p>警告 (ZH-TW)</p>	<ul style="list-style-type: none"> • 本維修手冊僅有英文版。 • 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。 • 請勿試圖維修本設備，除非 您已查閱並瞭解本維修手冊。 • 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。

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

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
- 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
1	10/08/21	Initial release.

Revision History

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Preface

Publication Conventions

Please become familiar with the conventions used within this publication before proceeding.

Section 1.0 Safety & Hazard Information

1.1 Text and Character Representation

Within this publication, different paragraph and character styles have been used to indicate potential hazards. Paragraph prefixes, such as hazard, caution, danger and warning, are used to identify important safety information. Text (Hazard) styles are applied to the paragraph contents that is applicable to each specific safety statement. Words describe the type of potential hazard that may be encountered and are placed immediately before the paragraph it modifies. Safety information will normally include:

- Type of potential hazard
- Nature of potential injury
- Causative condition
- How to avoid or correct the causative condition

EXAMPLES OF HAZARD STATEMENTS USED

A few examples are below. They include paragraph prefixes and modified text styles.

CAUTION
Pinch Points
Loss of Data
Sharp Objects

Caution is used when a hazard exists that can or could cause minor injury to self or others if instructions are ignored. They include for example:

- **Loss of critical patient data**
- **Crush or pinch points**
- **Sharp objects**

DANGER
EXCESSIVE
VOLTAGE
CRUSH
POINT

DANGER IS USED WHEN A HAZARD EXISTS THAT WILL CAUSE SEVERE PERSONAL INJURY OR DEATH IF INSTRUCTIONS ARE IGNORED. THEY CAN INCLUDE:

- **ELECTROCUTION**
- **CRUSHING**
- **RADIATION**

WARNING
ROTATING
EQUIPMENT
BARE WIRES

WARNING IS USED WHEN A HAZARD EXISTS WHICH COULD OR CAN CAUSE SERIOUS PERSONAL INJURY OR DEATH IF INSTRUCTIONS ARE IGNORED. THEY CAN INCLUDE:


- Potential for shock
- Exposed wires
- Failure to Tag and lockout system power could allow for un-command motion.

NOTICE Notice is used when a hazard is present that can cause property damage but has absolutely
Equipment no personal injury risk. They can include:
Damage
Possible

- Disk drive will crash
- Internal mechanical damage, such as to the x-ray tube
- Coasting the rotor through resonance.

It's important that the reader not ignore hazard statements in this document.

1.2 Graphical Representation

Important information will always be preceded by the exclamation point  contained within a triangle, as seen throughout this chapter. In addition to text, several different graphical icons (symbols) may be used to make you aware of specific types of hazards that could possibly cause harm.

ELECTRICAL



LASER



MECHANICAL



HEAT



RADIATION



PINCH



Some others make you aware of specific procedures that should be followed.

AVOID STATIC ELECTRICITY



TAG AND LOCK OUT



WEAR EYE PROTECTION



Section 2.0 Publication Conventions

2.1 General Paragraph and Character Styles

Prefixes are used to highlight important non-safety related information. Paragraph prefixes (such as Purpose, Example, Comment and Note) are used to identify important but non-safety related information. Text styles are also applied to text within each paragraph modified by the specific prefix.

EXAMPLES OF PREFIXES USED FOR GENERAL INFORMATION

Purpose: Introduces and provides meaning as to the information contained within the chapter, section or subsection, such as used at the beginning this chapter for example.

Note: Conveys information that should be considered important to the reader.

Example: Used to make the reader aware that the paragraph(s) that follow are examples of information possibly stated previously.

Comment: Represents "additional" information that may or may not be relevant.

2.2 Page Layout

The diagram illustrates the layout of two pages from a manual. The left page (Page 002) is an even-numbered page, and the right page (Page 003) is an odd-numbered page. Annotations point to various elements:

- Publication Part Number & Revision Number:** Points to the header information on the left page.
- Publication Title:** Points to the header information on the right page.
- Footer Information:** Points to the footer on both pages, which includes the current section and its title on the left page, and the current chapter and its title on the right page.

The current section and its title are always shown in the footer of the left (even) page.

An exclamation point in a triangle is used to indicate important information to the user.

Paragraphs preceded by **Alphanumeric** characters (e.g. numbers) contain information that must be followed in a **specific order**.

The current chapter and its title are always shown in the footer of the right (odd) page.

Paragraphs preceded by a **symbol** (e.g. bullets) contain information that has **no specific order**.

Headers and footers in this publication are designed to allow you to quickly identify your location. The document's part number and revision number appears in every header on every page. Odd

numbered page footers indicate the current chapter, its title, and current page number. Even page footers show the current section and its title, as well current page number.

2.3 Computer Screen Output/Input Character Styles

Within this publication different character styles are used to indicate computer input and output text. Character (input, output, and variable) styles are used and applied to the text within a paragraph so as to indicate directions. Computer screen output and input is also formatted using mono (fixed width) spaced fonts.

Example: Fixed Output This paragraph denotes computer screen fixed output. It's output is fixed from the sense that it does not vary from application to application. It's the most commonly used style used to indicate filenames, paths, and text.

Example: Variable Output *This paragraph denotes computer screen output that is variable. Its output varies from application to application. Variable output is sometimes found placed between greater than and lesser than operators. For example: <variable_ouput>*

Example: Fixed Input **This paragraph denotes fixed input. It's typed input that will not vary from application to application. Fixed text the user is required to supply as input.**

Example: Variable Input ***This paragraph denotes computer input that can vary from application to application. Variable text the user is required to supply as input. Variable input sometimes is placed between greater than and lesser than operators. For example: <variable_input>. In these cases, the (<>) operators are dropped prior to input. Exceptions are noted in the text.***

2.4 Buttons, Switches and Keyboard Inputs (Hard & Soft Keys)

Different character styles are used to indicate actions requiring the reader to press either a hard or soft button, switch, or key. Physical hardware, such as buttons and switches, are called hard keys because they are hard wired or mechanical in nature. A keyboard or on/off switch would be a hard key. Software or computer generated buttons are called soft keys because they are software generated. Software driven menu buttons are an example of such keys. Soft and hard keys are represented differently in this publication.

Example: Hard Keys A power switch **ON/OFF** or a keyboard key like **ENTER** is indicated by applying a character style that uses both over and under-lined bold text that is bold. This is a hard key.

Example: Soft Keys Whereas the computer **MENU** button that you would click with your mouse or touch with your hand uses over and under-lined regular text. This is a soft key.

Chapter 1

Introduction

Section 1.0 System Requirement

OpenOC16 with HP Z8G4 Upgrade Kits are available for the following system configuration:

- Discovery CT590RT/Optima CT580 with TIO Console XW8600 Host Computer
- Discovery CT590RT/Optima CT580 and Discovery RT with NIO Console Z800 Host Computer
- Discovery RT with NIO Console Z840 Host Computer
- Discovery RT with Open Console Z840 Host Computer

Section 2.0 Overview

The upgrade instruction is to guide FE how to upgrade console to Open Console with Z8G4 Host Computer.

If the site need to upgrade from CTT to SUSE, please manually record the following information due to this information is not carried forward by restoring system state.

- PPS Server Info
- All remote Host Network Information
- PNF Information
- AW IP for direct connect
- Option Information Licenses

Section 3.0 Material List

3.1 Console Upgrade Kit for Non-MaxFOV2

Console Upgrade Kit	BCAT#
	B79602DA
RT OpenOC Z8G4 GEHW	B79542DA
TP & SW Std Option for Z8G4 Console	B80062DA
OpenOC with Z8G4 Upgrade Instruction	B79622DA
MaxFOV	B79562DA
OpenOC with Z8G4 Upgrade Collector	B79632DA
Upgrade Kit Label Collector	B79922DA
GSCB	B79942CB

3.2 Console Upgrade Kit for MaxFOV2

Console Upgrade Kit	BCAT#
	B79612DA
RT OpenOC Z8G4 GEHW	B79542DA
TP & SW Std Option for Z8G4 Console	B80062DA
OpenOC with Z8G4 Upgrade Instruction	B79622DA
MaxFOV2	B79572DA
OpenOC with Z8G4 Upgrade Collector	B79632DA
Upgrade Kit Label Collector	B79922DA
GSCB	B79942CB

Section 4.0 Flowchart

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

Figure 1-1 Process Flowchart for TIO Console XW8600 upgrade to OpenOC16 Z8G4

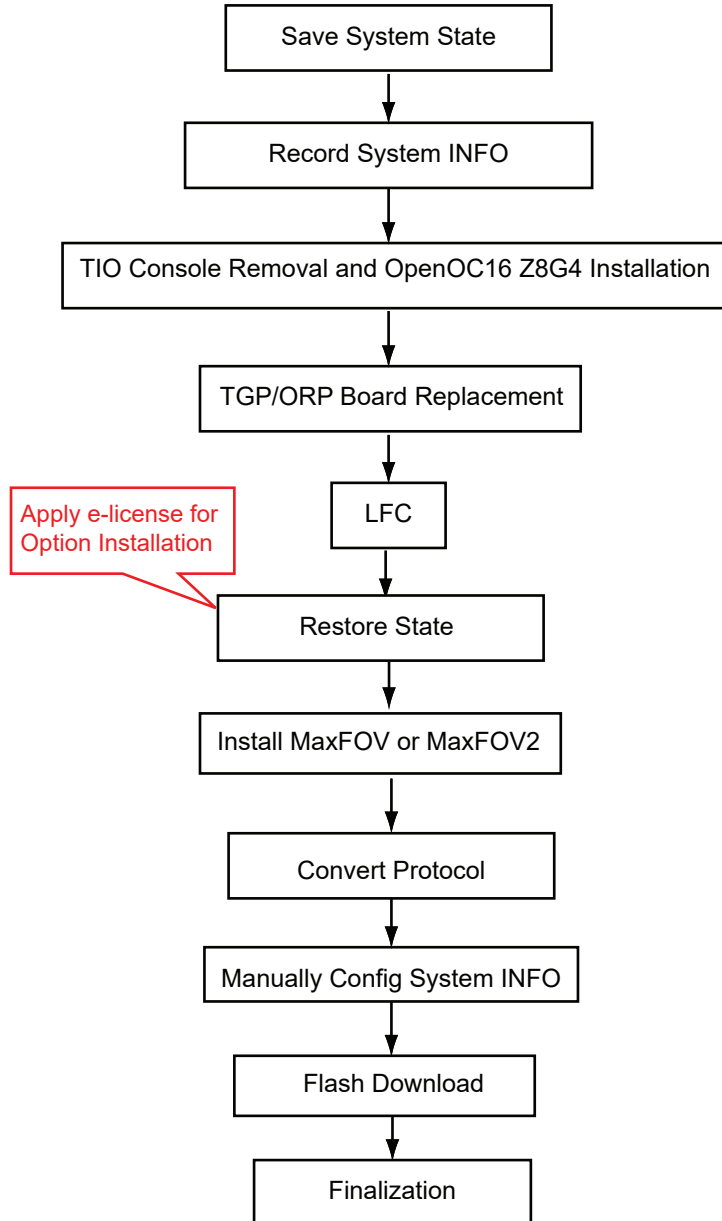


Figure 1-2 Process Flowchart for NIO Console Z800/Z840 upgrade to OpenOC16 Z8G4

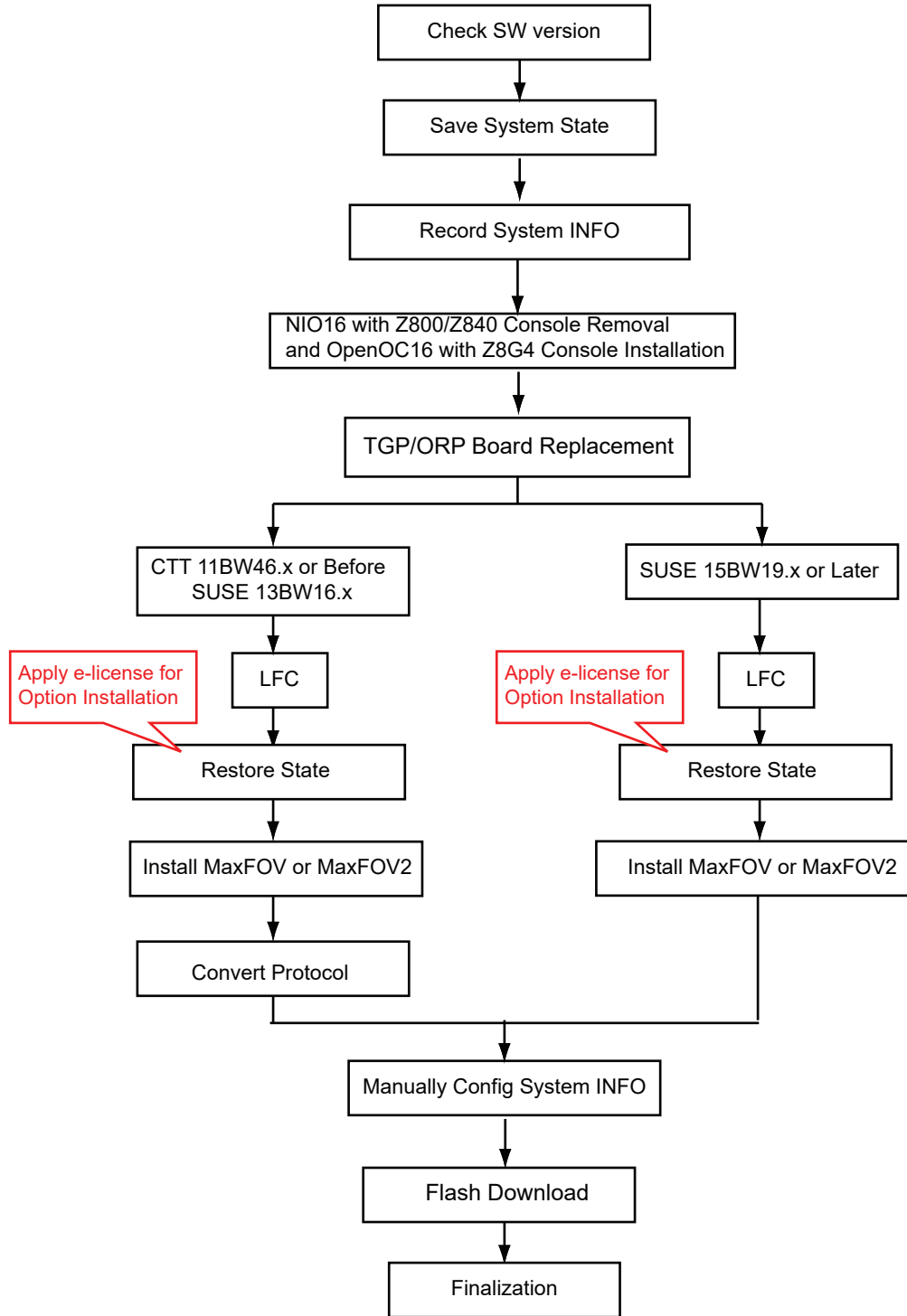
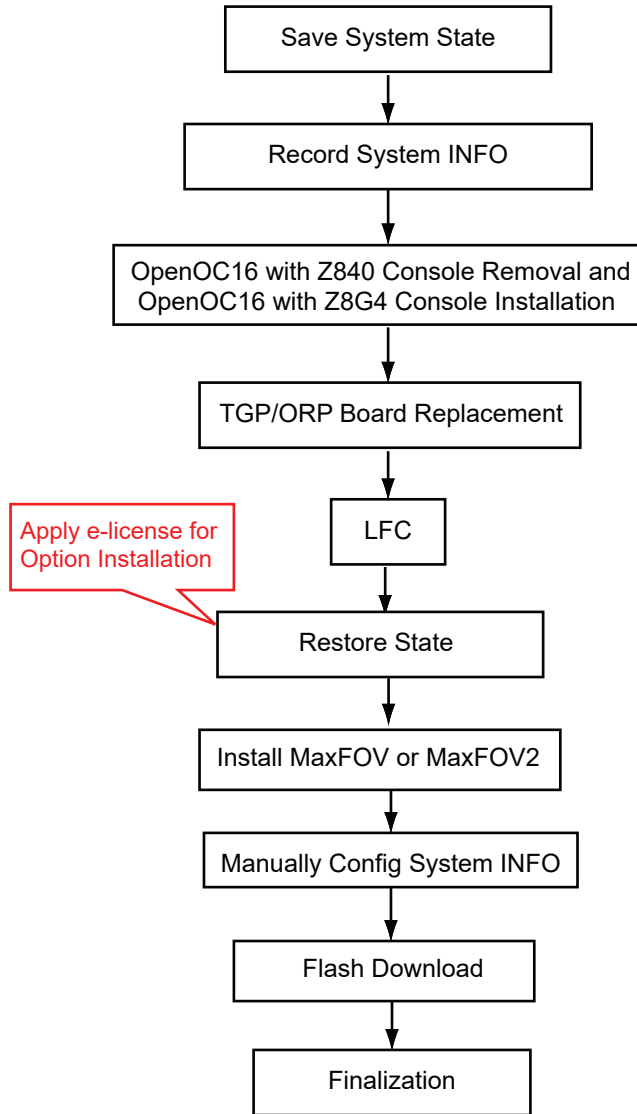


Figure 1-3 Process Flowchart for OpenOC16 Z840 upgrade to OpenOC16 Z8G4



Section 5.0 Upgrade Preparative

5.1 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.) Record Product Name and Software Version.

Table 1-1 listed the upgrade product name with their related software version.

System	Software Version	Console Type	OS Software
Discovery CT590RT/ Optima CT580	11BW46.3	TIO Console with XW8600	CTT Platform
Discovery CT590RT/ Optima CT580	11BW46.3	NIO Console with Z800	CTT Platform
Discovery CT590RT/ Optima CT580	13BW16.x	NIO Console with Z800	SUSE Platform
Discovery RT	15BW19.x	NIO Console with Z800	SUSE Platform
Discovery RT	16BW32.x	NIO Console with Z840	SUSE Platform
Discovery RT	17BW49.x	OpenOC with Z840	SUSE Platform

Table 1-1 Software Version Information

Chapter 2

TIO Console Upgrade to OpenOC with Z8G4

Section 1.0 Preparative

Refer to the latest service methods (5366639-8EN) to understand detailed hardware and software installation procedure.

Section 2.0 Save System State

Before proceeding with Save System State:

- Have a FAT32 Formatted USB media (either Memory Stick or USB External Drive, minimum of 2 GB).

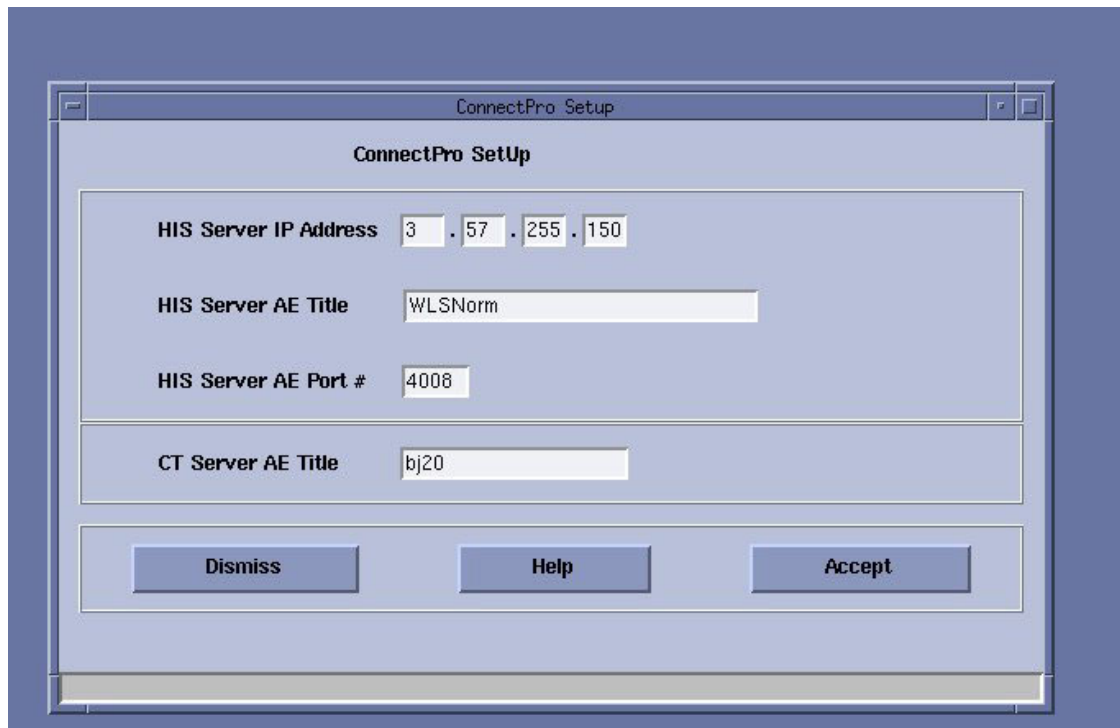
Note: When performing Save/Restore System State, make sure there is **ONLY** one USB storage device plugged in USB ports of Console, otherwise it may result in incorrect data storage.

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

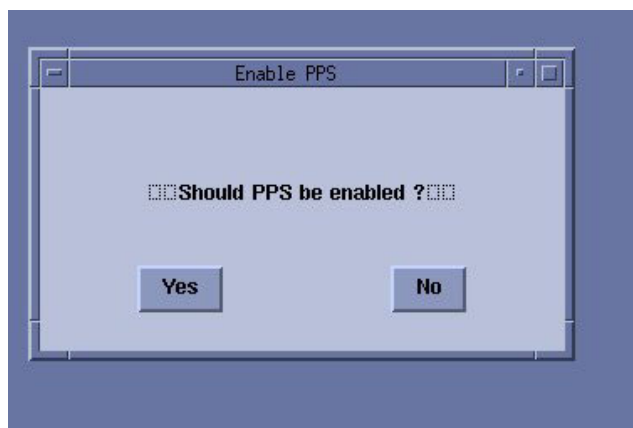
Section 3.0 Record System Information

3.1 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].

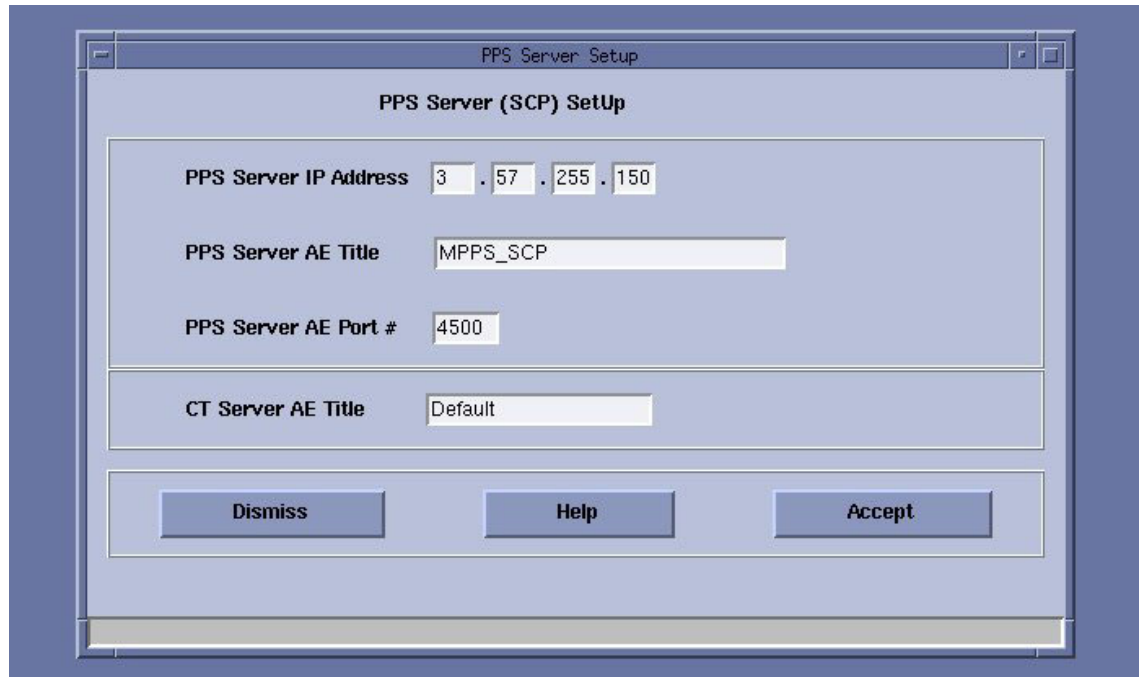


- 3.) "Should PPS be enabled?" is popped up. Select [Yes].



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].

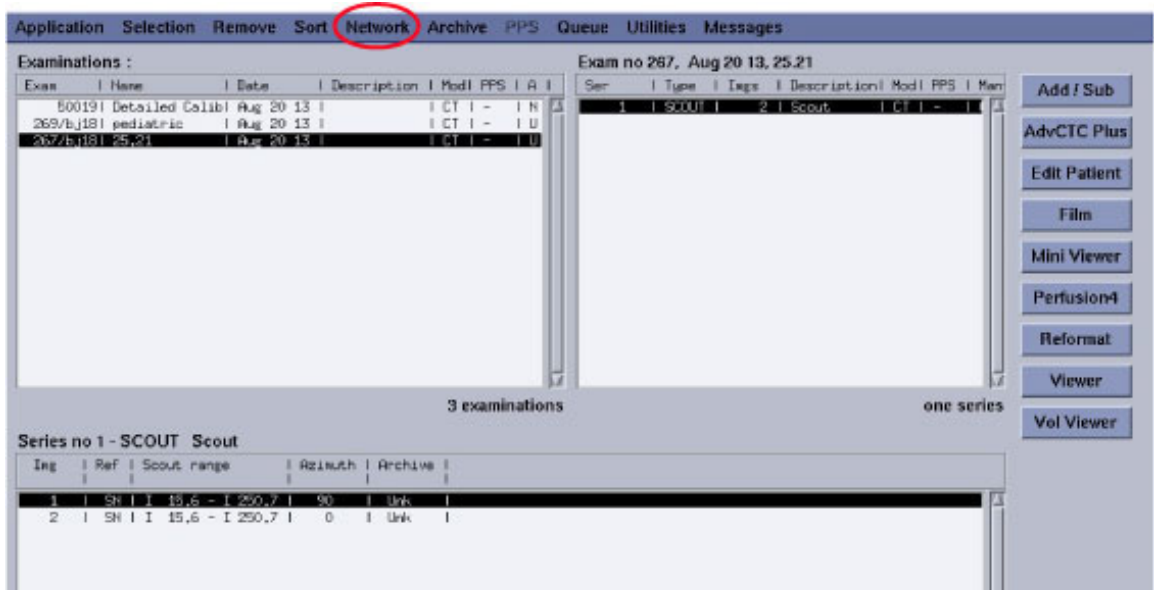


3.2 Record All Remote Host Network Information

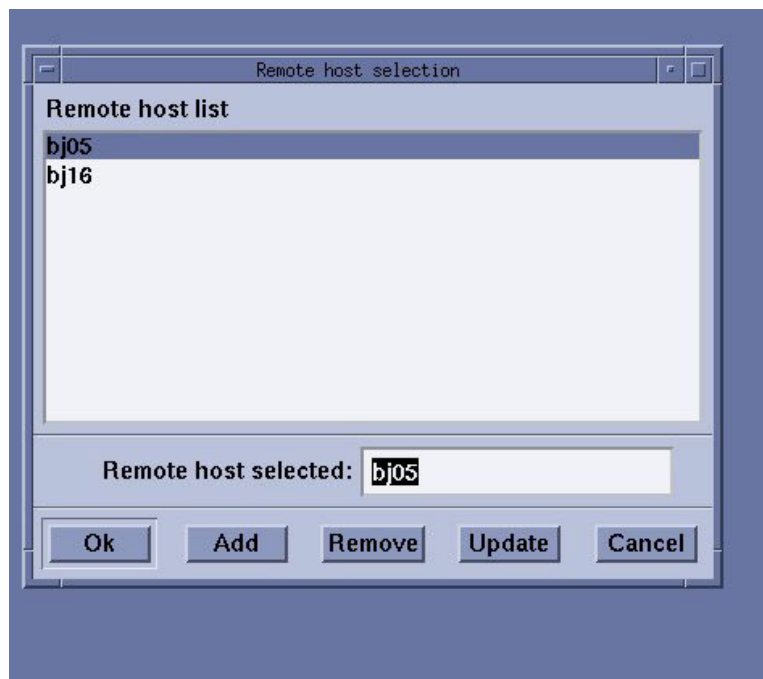
1.) Select [ImageWorks] from the desktop.



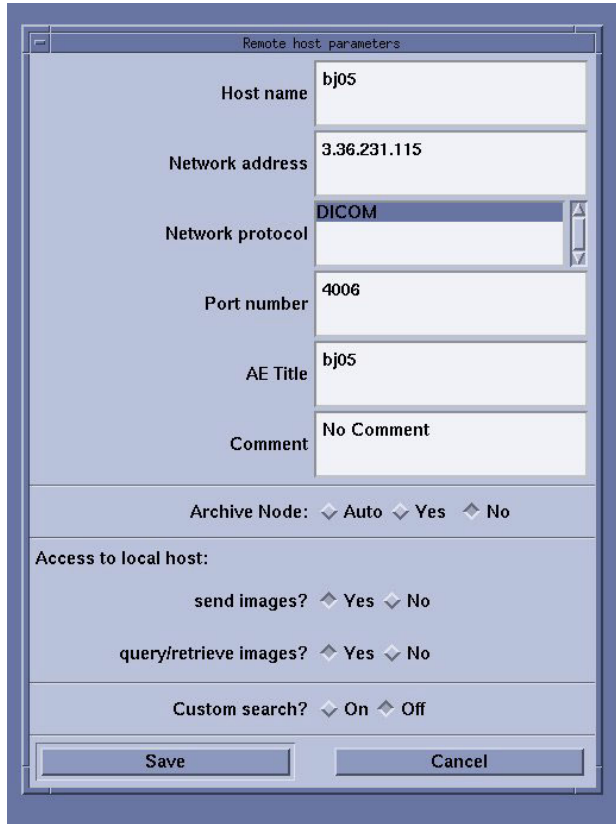
2.) Select [Network]



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

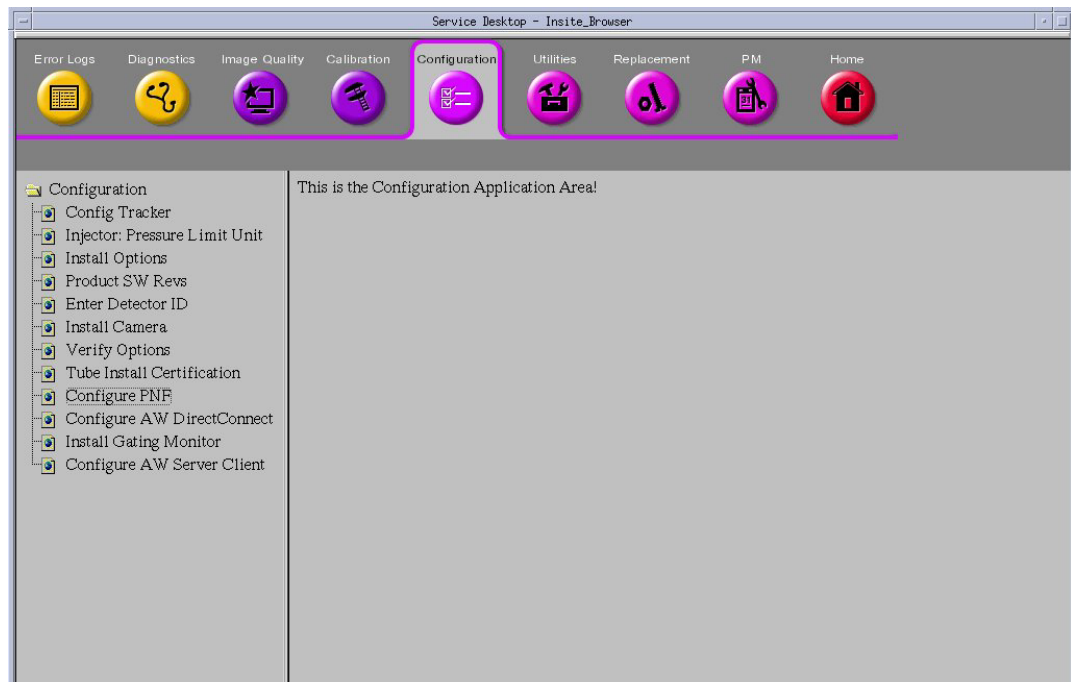


5.) Record the Network information as below.

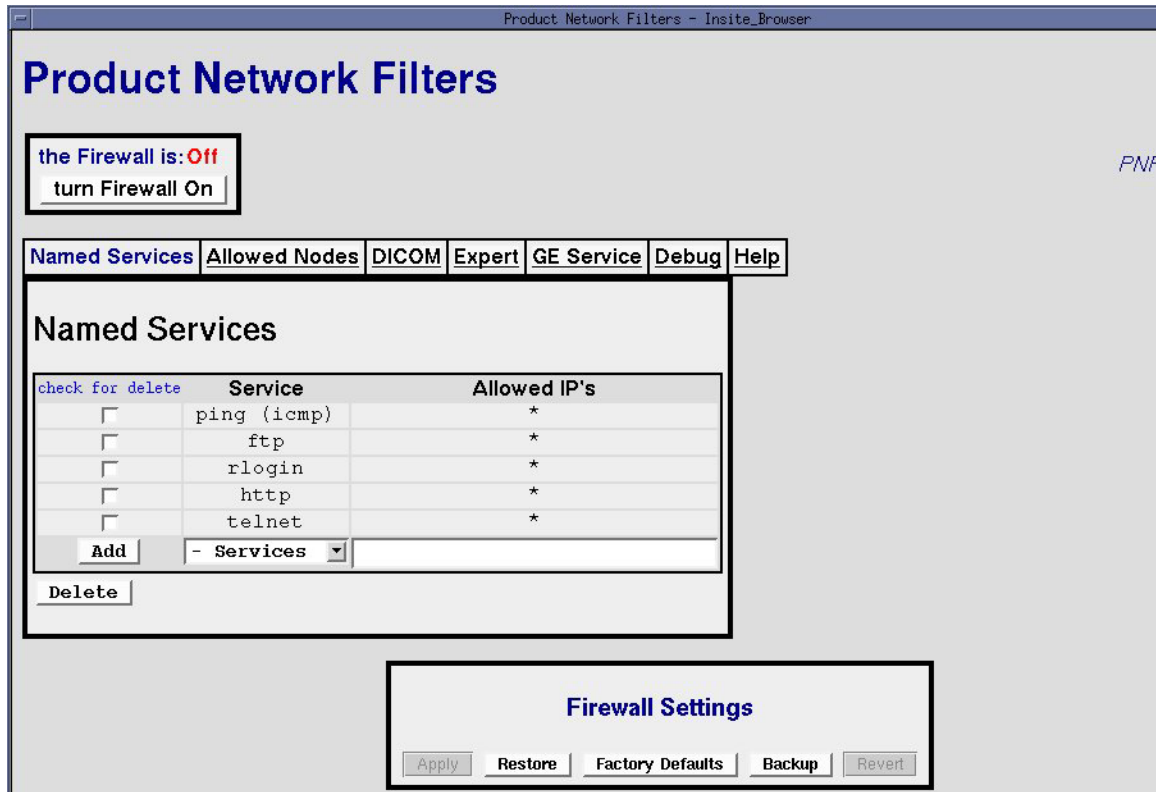


3.3 Record Product Network Filters (PNF) Information

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

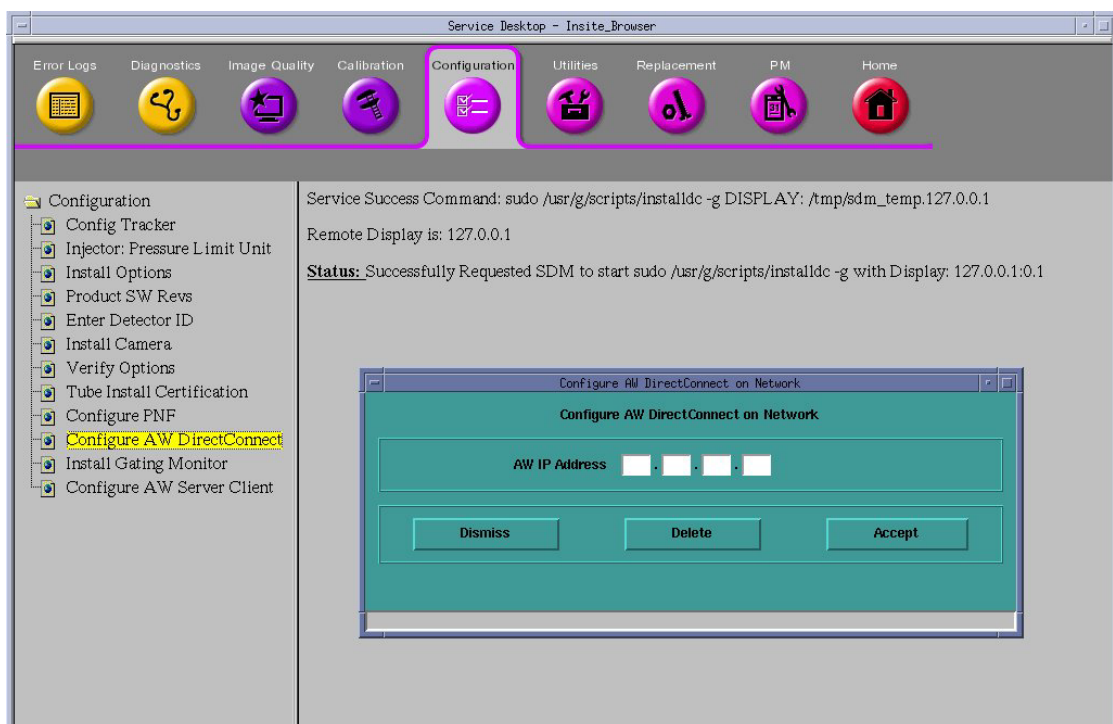


3.) Record PNF information.

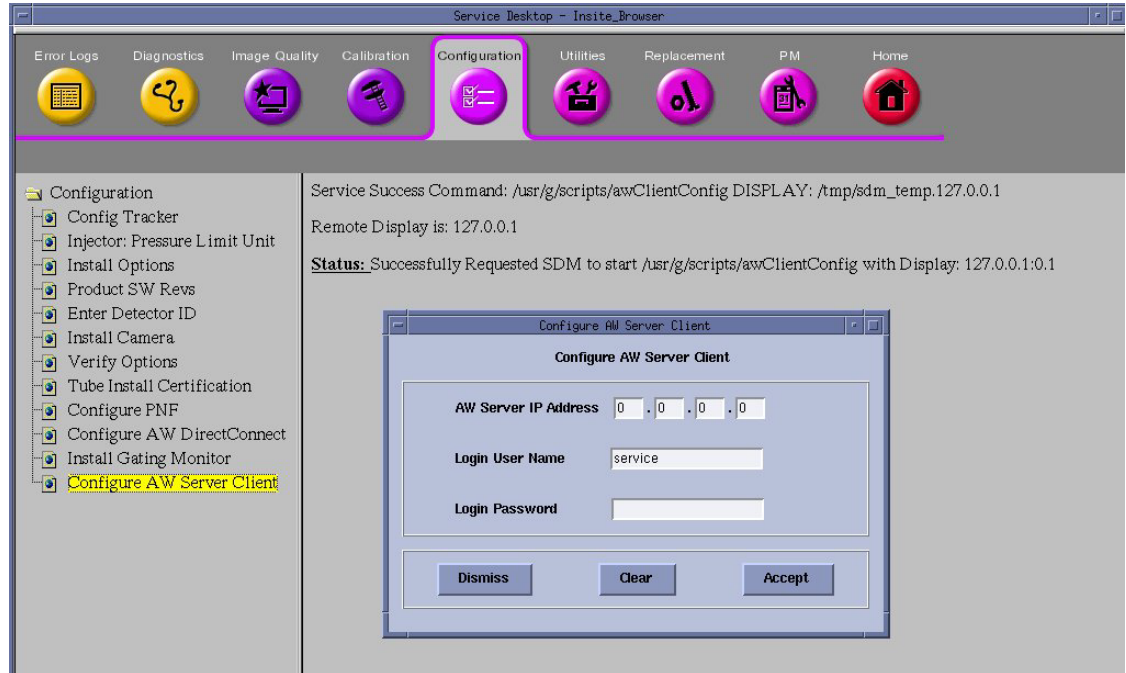


3.4 Record AW IP for Direct Information

- 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



3.5 Record Hardware Information

Record Table/DAS/Console/Gantry Sub type information, these information will be used during the new SW installation procedure when need to select system configuration.

3.6 Record Option Information Licenses

- 1.) Open a Unix Shell, type **swokinstall -p**.
- 2.) Write down all options information and check whether include below 6 options, these six options need apply the new e-licence when system platform upgrade from CTT to SUSE.
 - AutoBone Xpress on OC
 - Advanced Vessel Analysis Xpress on OC
 - Perf 4 Neuro on Xstream OC
 - Perf 4 Multi Organ on Xstream OC
 - Advantage CTC Pro for OC
 - SmartView Multi-Slice

B-CAT	Option Name (Installed in Site)	Flex String (CTT System)	Flex String (SUSE System)
B7870JD	AutoBone Xpress on OC	AutoBone	AutoBone_Xpress
B7870JC	Advanced Vessel Analysis Xpress on OC	AdvVesselAnalysis	AVA_Xpress
B7870HN	Perf 4 Neuro on Xstream OC	CTPerfusion4Neuro	CT_Perfusion_4D_Neuro
B7870HM	Perf 4 Multi Organ on Xstream OC	CTPerfusion4	CT_Perfusion_4D_MultiOrgan

Table 2-1 Compare Flex String Between CTT and SUSE System

B7864KL	Advantage CTC Pro for OC	CTColonoPro	CT_Colono_Pro3D_EC
B7868FM (Smartview 2D)	SmartView Multi-Slice	RealTimeCTFluoro	Enhanced_Real_Time_CT_Fluoro

Table 2-1 Compare Flex String Between CTT and SUSE System

- 3.) Check whether include the following **AW** options installed. After the OC upgrade you will need to install NanoCloud AWS and go to the e-License Tool to gather the new keys. See [Table 2-2](#) is the NanoCloud AWS option list.

Option Name	B-Cat on Z8G4
Nano-Cloud AWS <ul style="list-style-type: none"> • AW Server 3.2 4k (1seat) • DICOM Direct Connect Integration • Volume Viewer • AW Floating License Manager • Preprocessing SW Enabler 	M81601TD
VessellIQ Xpress and AutoBone Xpress	B77121BK
CT Perfusion 4D Neuro	B77021RA
DentaScan on OC	B7540LS

Table 2-2 NanoCloud AWS Option List

3.7 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. Perform the following as the last step before shutting down the console.

- 1.) Reset (Erase) the Image Database on the system. Delete the exams from ImageWork manually.
- 2.) Reset (Erase) the Scan Database on the system. Follow instructions found in the **Service Methods -> Software -> Software Installation Procedure -> System Configuration (Reconfig)**.
 - a.) 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 Recreate Database, select [YES]
 - b.) 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
- 3.) Select **[ACCEPT]** button.

Note: The Reset (Erase) of the Image and Scan Databases will remove PHI information from the system but may not meet local regulations for data removal/deletion. If local regulations require specific data removal/deletion criteria, follow local procedures for PHI removal from system.

- 4.) After completion of System Configuration (reconfig), reboot the system.
 - a.) Select **[OK]** on the Autostart disabled popup message
 - b.) Open a terminal window and type: **st**
 - c.) When the system is booted into Applications mode, select **[IMAGE WORKS]**
 - d.) Confirm that patient image data is not present

Section 4.0 TIO Console Removal and OpenOC16 Z8G4 Installation

4.1 Old TIO 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 Console aside.

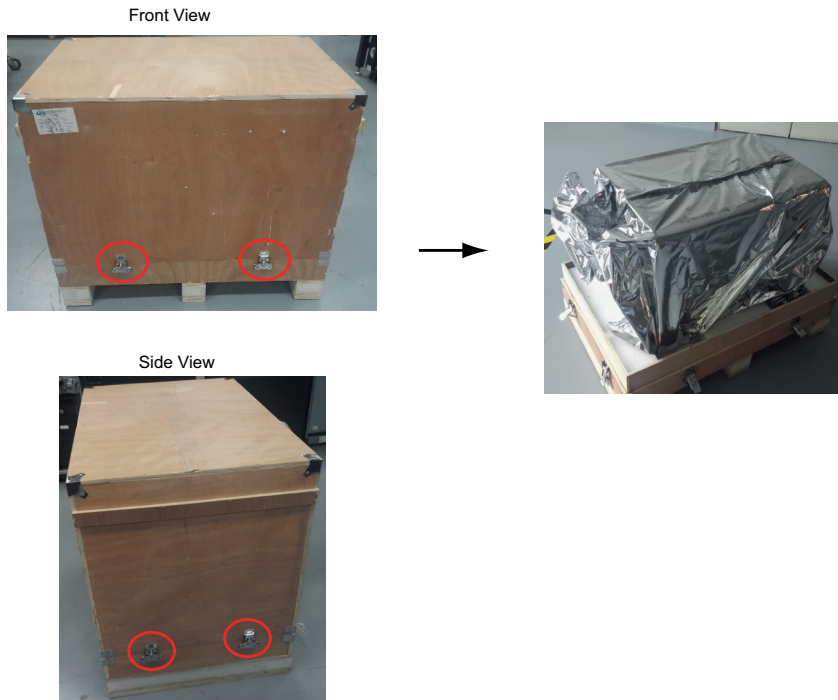
4.2 OpenOC16 with Z8G4 Host Computer Installation

4.2.1 Unpack OpenOC16 with Z8G4 PC

Please read detail about OpenOC16 installation procedure in Service Manuals.

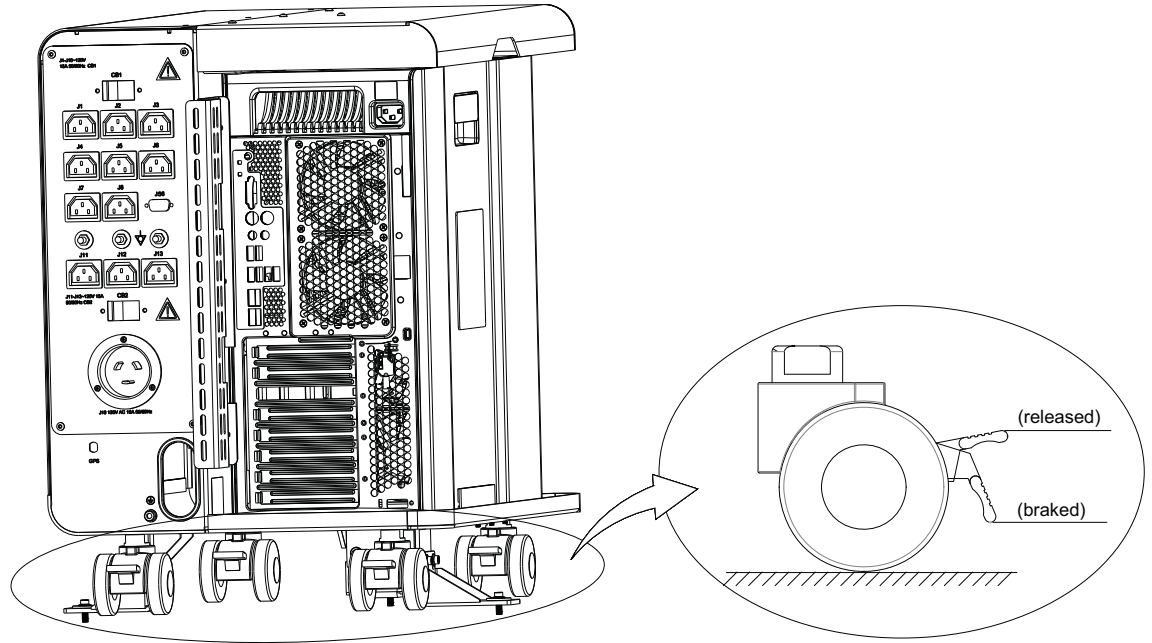
- 1.) Unpack console packaging.
 - a.) Released eight latches and remove the packaging covers.

Figure 2-1 Console Packaging Removal



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

Figure 2-2 Brake



4.2.2 Console Cable Connections

NO.	Description	Long Cable	Short Cable
53	LVAC Power Cable - PDU to Operator Console	2343531	2343531-2
56	Ground, Raceway to Operator Console	2371450-3	2371450-4
101	Signal Cable - Gantry to Operator Console	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Operator Console	2373436-2	2373436-3
103	Data Cable (Fiber Optic) - Gantry to Console	5432019	

Table 2-3 System Cables for OC Connections

Figure 2-3 System Interconnect Diagram (with Z8G4 Host Computer)

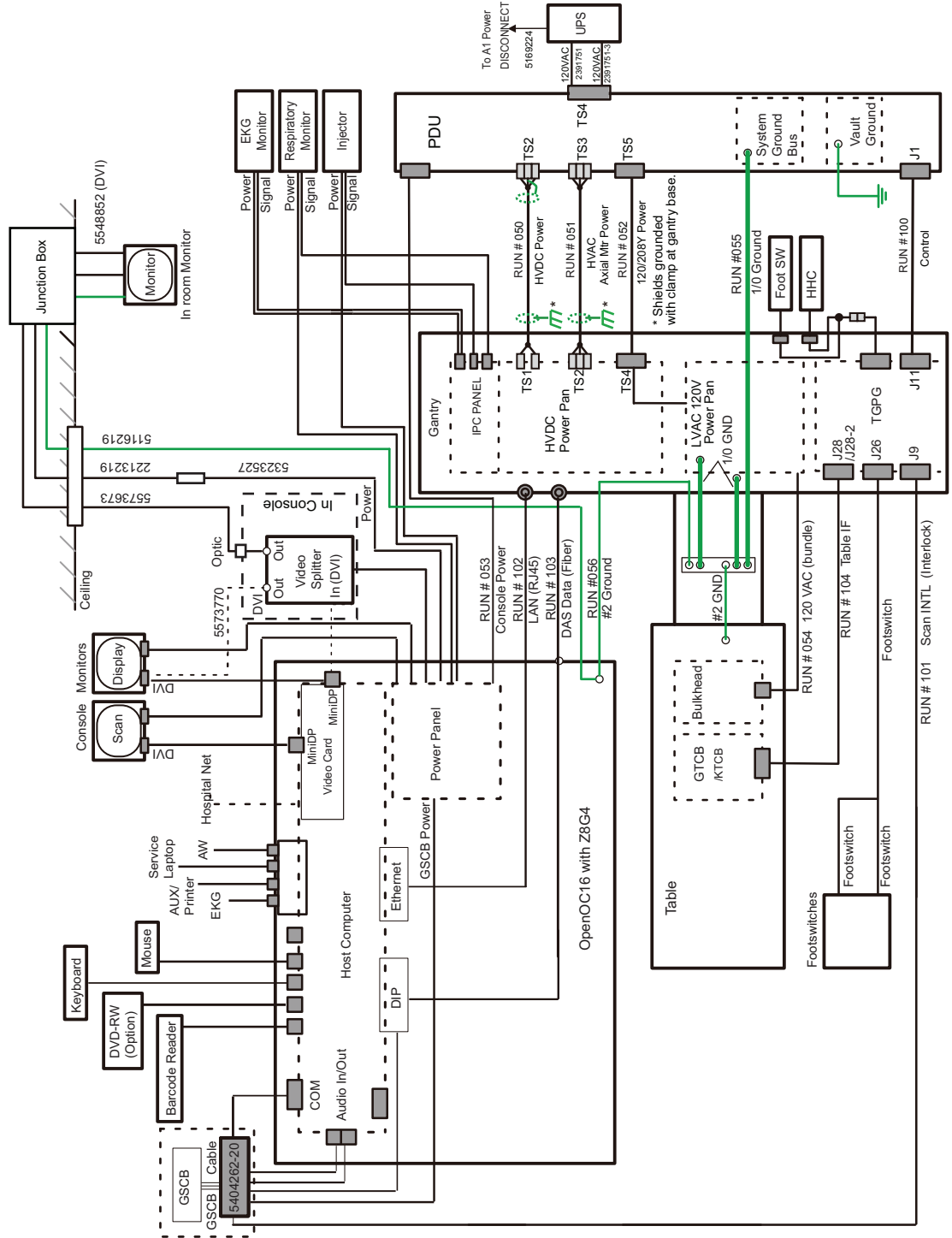
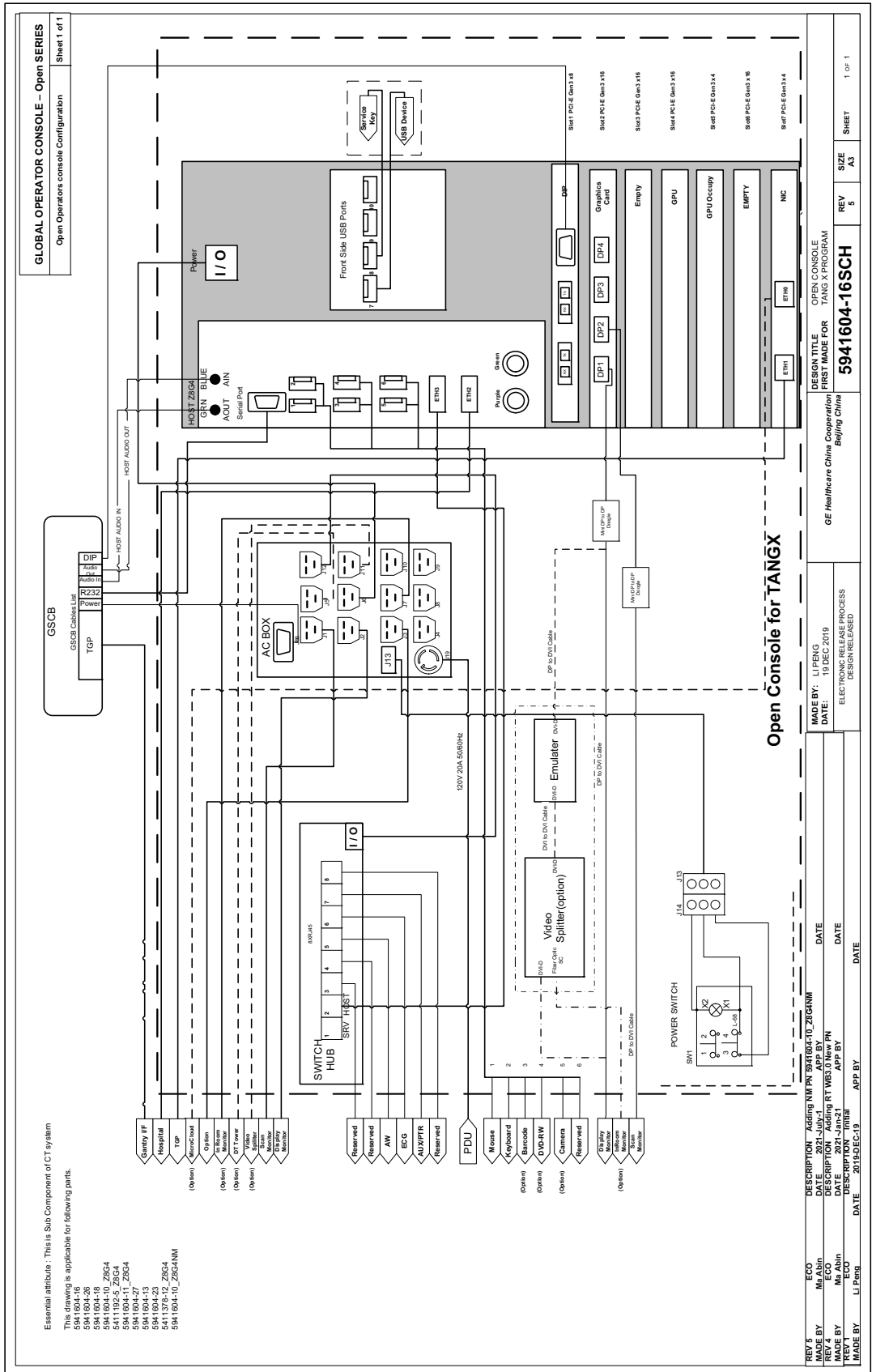


Figure 2-4 OpenOC16 Console Interconnect (with Z8G4)



2 – Upgrade Procedure

Figure 2-5 Z8G4 Host Computer Port Label

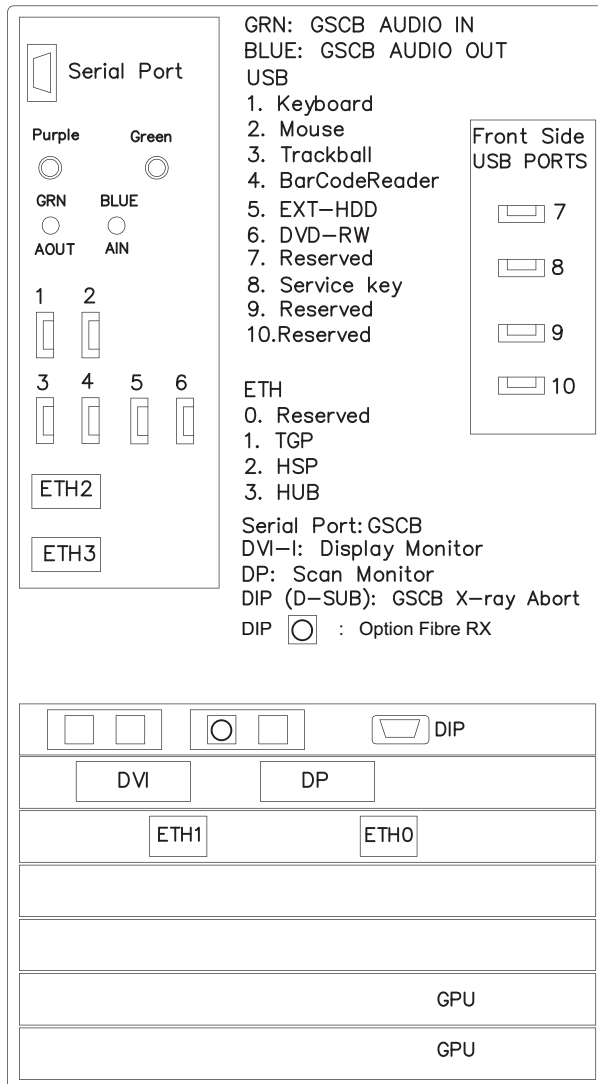


Figure 2-6 OpenOC16 AC Box Assignments

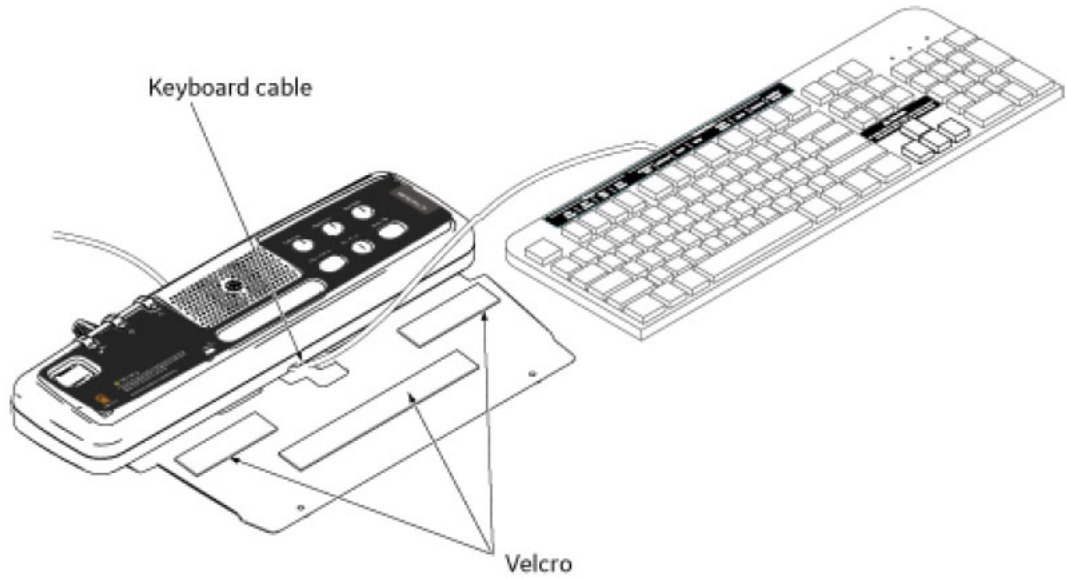


Number	Description
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J7	In-Room Monitor Connection
J11	Video Splitter
J12	Switch Hub
J56	GSCB Power Connection

Table 2-4 AC Box Outlet Assignments

- 1.) Remove the old SCIM from the site, and take out the new GSCB. Install the GSCB to the metal plate by using four screws.
- 2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 2-7 GSCB and Keyboard



3.) Select the local language GSCB film to attach.

Figure 2-8 GSCB Film with Tilt/E-Reset



Note: Verify that none of the buttons get caught and stuck under the overlay. Pay close attention to the prescribed tilt button on systems with the tilt feature.

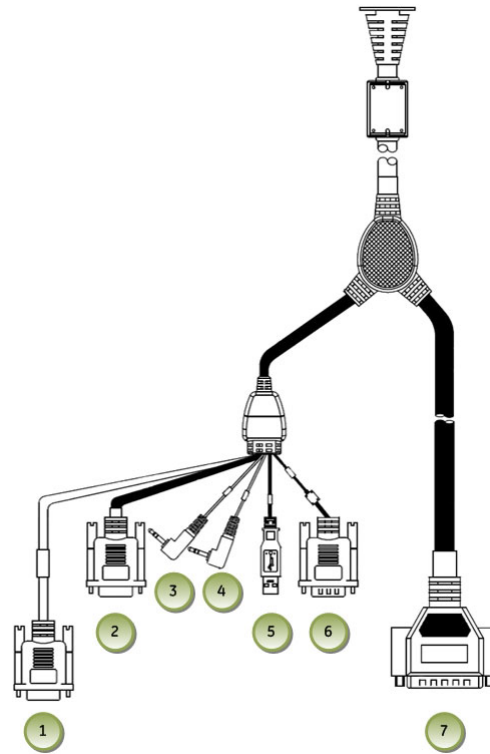
4.) Route and connect keyboard and mouse cables to console. If the length of keyboard and mouse cables is not enough, add the following extension cables (shipped with OC collector).

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Ext Cable (Keyboard)	5431909	3500 mm	1
USB Ext Cable (Mouse)	5458346	3500 mm	1

Table 2-5 Keyboard and Mouse Extension Cables

- 5.) Connect GSCB cable connectors to OpenOC AC Box and Z8G4 Host Computer according to Figure 2-9 and Table 2-6.

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 J56
7	GSCB - Black DB-25 (Male) Connector	TGP Gantry Cable

Table 2-6 GSCB Cables

- 6.) Connect LCD Monitor cable connectors to OpenOC AC Box and Z8G4 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/Image Monitor Video Cable	5408703-2	3000 mm	2
Mini DP - DP Dongle Cable	5795077	250 mm	2

Table 2-7 Monitor Cables for Z840

Note: Connect two Mini DP - DP Dongle cables (5795077) to monitor video cables (5408703-2).

Scan Monitor

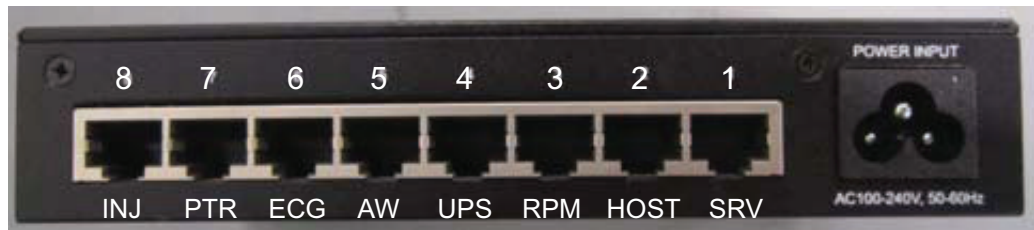
- Video cable from Console Host DP2 to Monitor DVI
- Power cable from Console AC Box J1
- Route through the cable keeper

Image Monitor

- Video cable from Console Host DP1 to Monitor DVI
- Power cable from Console AC Box J2
- Route through the cable keeper

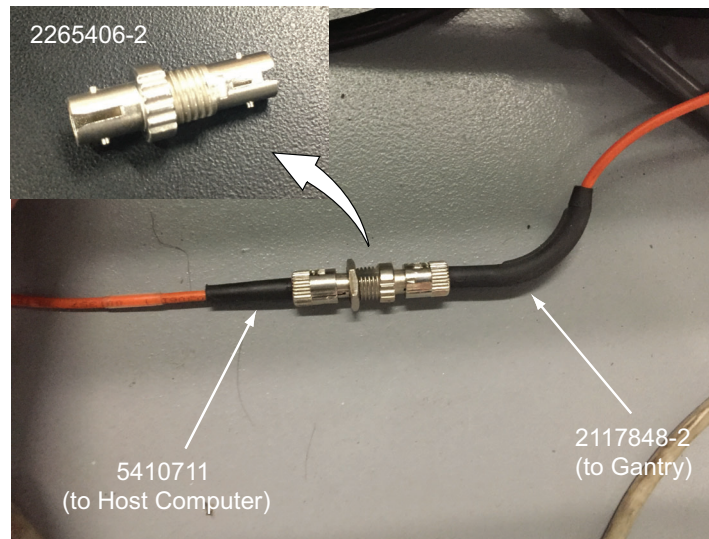
- 7.) Remove OpenOC right side cover and plug cables into Switch Hub on console if request.
- 8.) Connect other cables to Z8G4 Host Computer according to [Figure 2-5](#), then install right side cover of console.

Figure 2-10 Switch Hub Connections



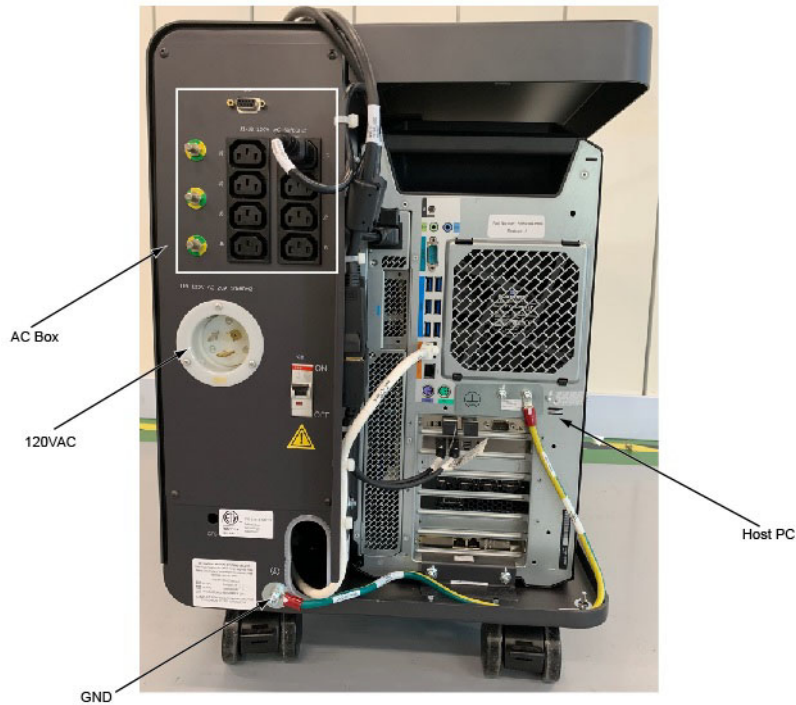
- 9.) Connect the Fiber Optical Cable (5410711) to the Z840 Host Computer, then connect it with the System Fiber Optical Cable.

Figure 2-11 Fiber Optical Cable Connection



10.) Connect the Power Cable and Ground Cable to the OpenOC Panel. (See [Figure 2-12](#))

Figure 2-12 OpenOC Console Rear View with AC BOX



4.2.3 Console Cover Installation

Please refer to the latest **Service Methods -> Replacement -> OpenOC16 -> Console Cover Removal and Installation** to Install console covers.

Section 5.0 TGPG/ORPG Board Replacement

Follow the latest **Service Methods -> Replacement -> Gantry -> ORP and TGP** to replace the old TGP-ORP boards. TGPG board (5406518-3) and ORPG board (5796592-2) are included in console upgrade kit (B79632DA), do not order replacement board.

Section 6.0 Load From Cold Procedure

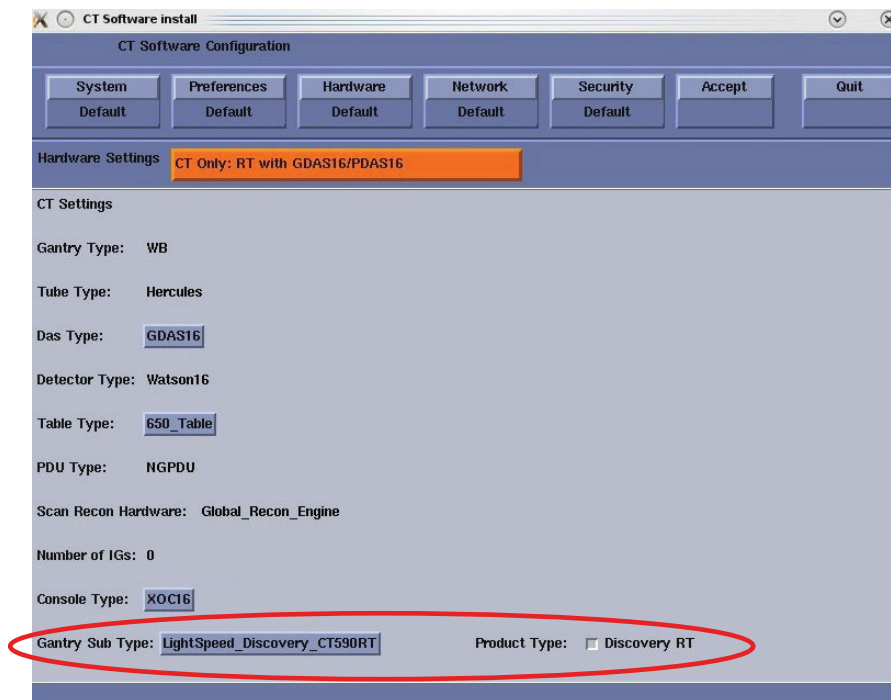
6.1 LFC Procedure

Detail LFC procedure refer to [Appendix A, Load From Cold Procedure](#).

Check and select the correct subsystem type in CT Software Configuration -> Hardware after loading system INFO.

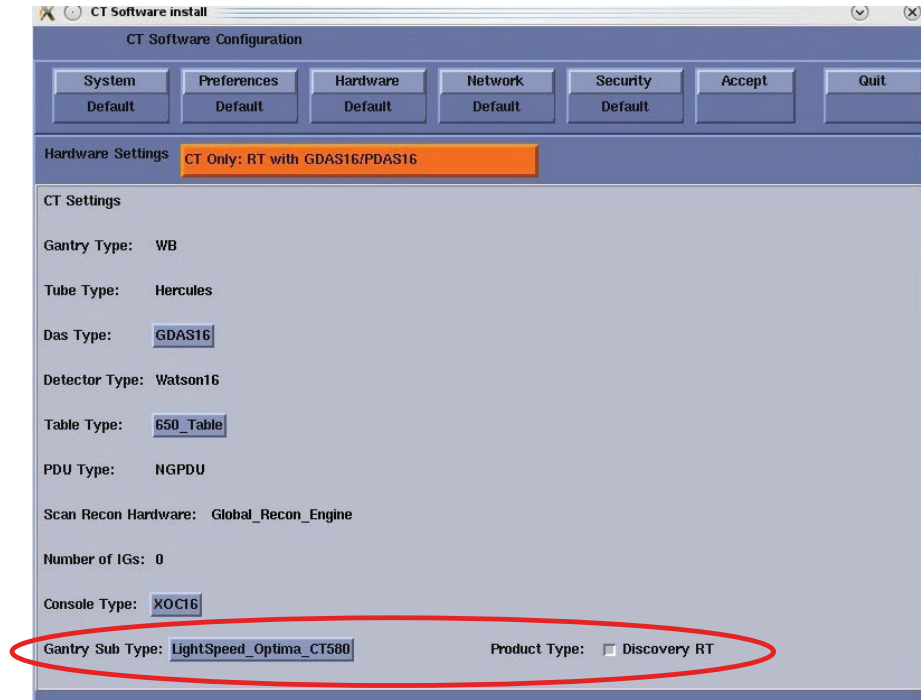
- 1.) Select the correct **DAS Type**.
- 2.) Select the correct **Table Type**.
- 3.) Select the **Console Type** to **XOC16**.
- 4.) Check and select the correct **Gantry Sub Type**.
 - **For Discovery CT590 RT:** MUST toggle Product Type - Discovery RT [OFF] and select "LightSpeed_Discovery_CT590RT" as Gantry Sub Type

Figure 2-13 Hardware Configuration Window (Discovery CT590 RT)



- **For Optima CT580:** MUST toggle Product Type - Discovery RT [OFF] and select "LightSpeed_Optima_CT580" as Gantry Sub Type.

Figure 2-14 Hardware Configuration Window (Optima CT580)

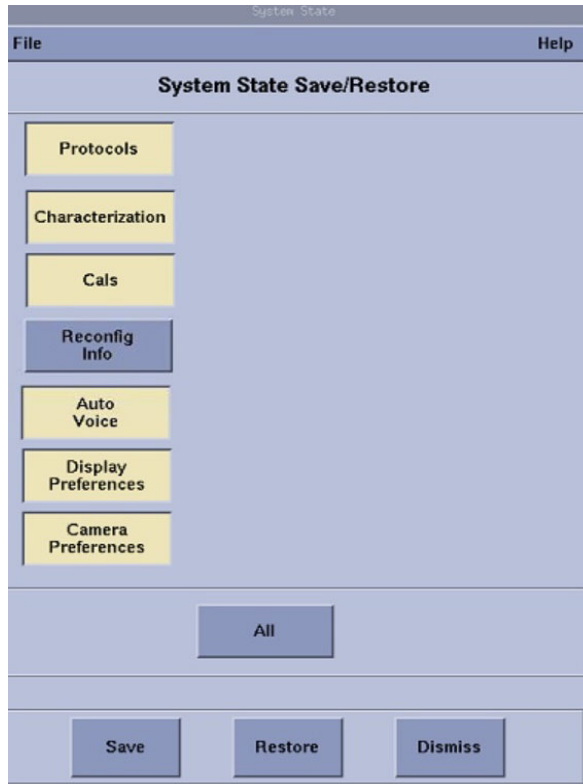


6.2 Restore System State

- 1.) Insert a previously saved System State USB Media in the USB ports.
- 2.) Wait until the USB Media is ready
- 3.) Select the [Service] icon to access the CSD (Common Service Desktop).
- 4.) Select: [Utilities].
- 5.) Select [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).

Figure 2-15 System State Save/Restore



- 8.) Select [Restore]. The Restore System State box appears.
- 9.) Select [Yes]. Verify that the "Restore" of System State was successful. If not, restore the System State again. A message at the end of the System State Log window should display: Restore System State Completed Successfully.

Note: Please ignore any SwOption Error information during restoring the System State

- 10.) When completed, select [Cancel].

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

- 11.) Select [Yes] when the Scan Hardware Reset pop-up appears.
- 12.) When completed, select [Dismiss].
- 13.) Remove USB Media from USB port and place in a safe location.
- 14.) Reboot the Operators Console by selecting [Shutdown] Desktop, then select [Restart] in the Attention Window.
- 15.) Verify Restore System State
 - a.) Visually verify that the system has the correct configuration and preference settings by opening a Terminal Window.
 - b.) Execute script "reconfig" and manual reset system info.

6.3 Install Options

- 1.) Install the required options recorded in 3.6, [Record Option Information Licenses](#) (except AW options) through e-license website (<http://eLicense.gehealthcare.com/eLicense/>).

Note: If the customer purchased ASiR option, please un-install Neuro 3D Filter option before installing.

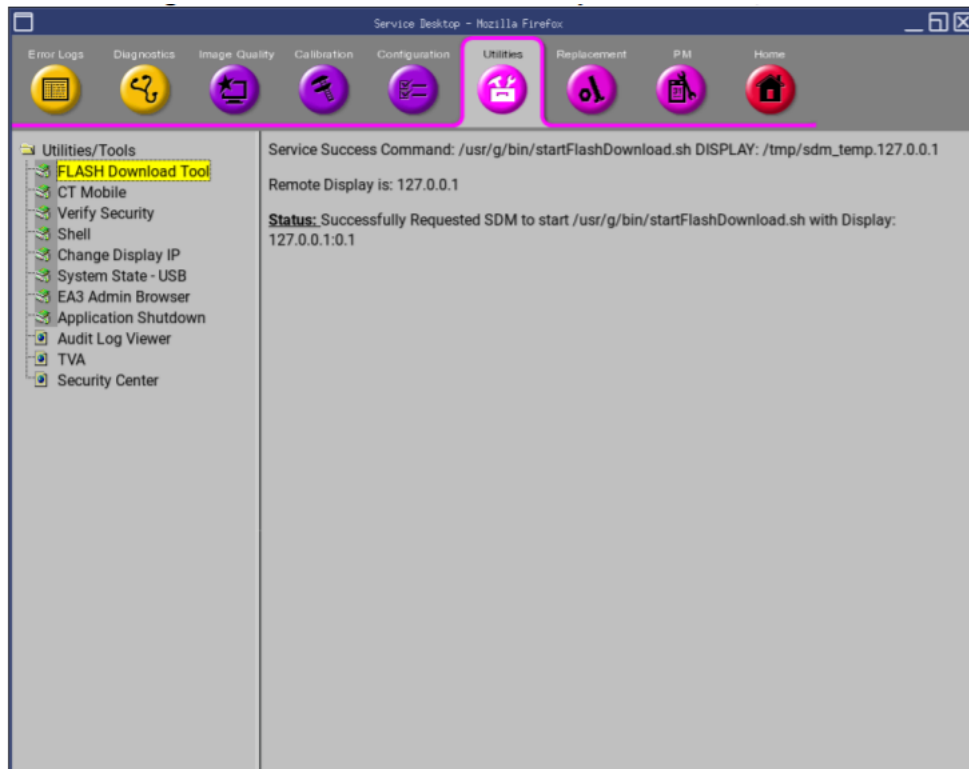
- 2.) Install MaxFOV or MaxFOV2 option.
- 3.) AW options recorded in 3.6, [Record Option Information Licenses](#), step 3.
 - a.) Run the script to remove the old option button which be restored in 6.2, [Restore System State](#).
Type: **remove_aw_apps_on_console**
 - b.) Follow NanoCloud AWS Installation procedure to install the NanoCloud AWS option, please find DOC2507368 from SIMS Content Viewer.

6.4 Flash Download

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

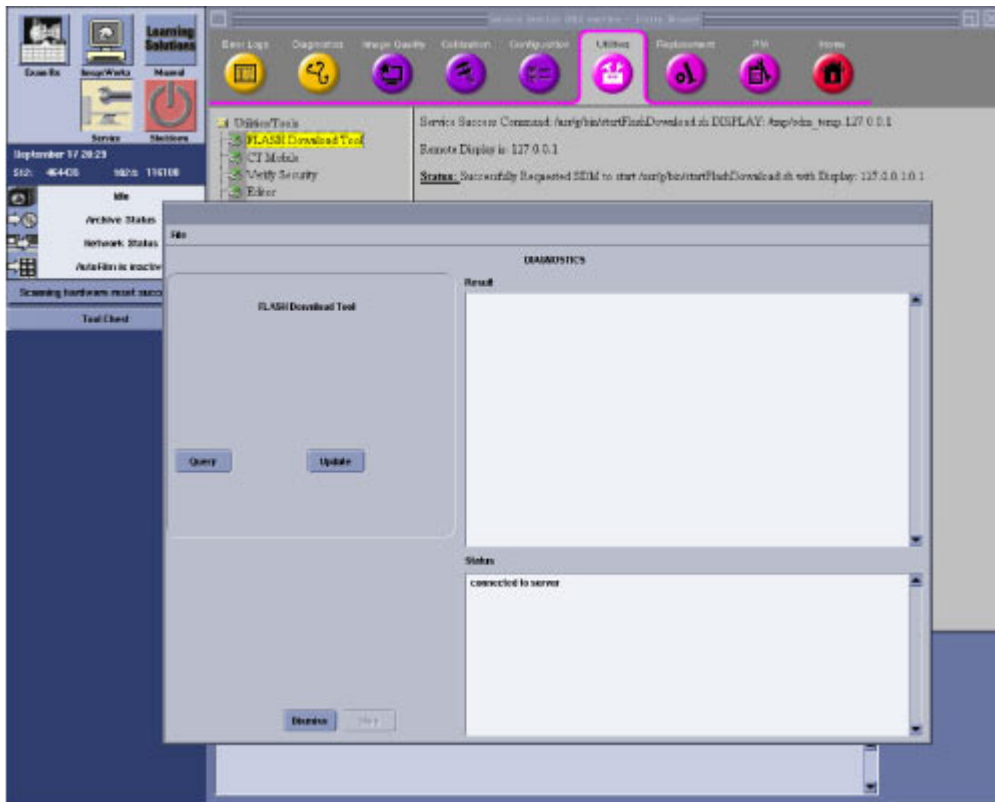
- 1.) Perform the Flash Download Utility found on the Common Service Desktop - Utilities Tab, select [Flash Download].

Figure 2-16 Flash Download Tool



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

Figure 17 Flash Download Windows



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

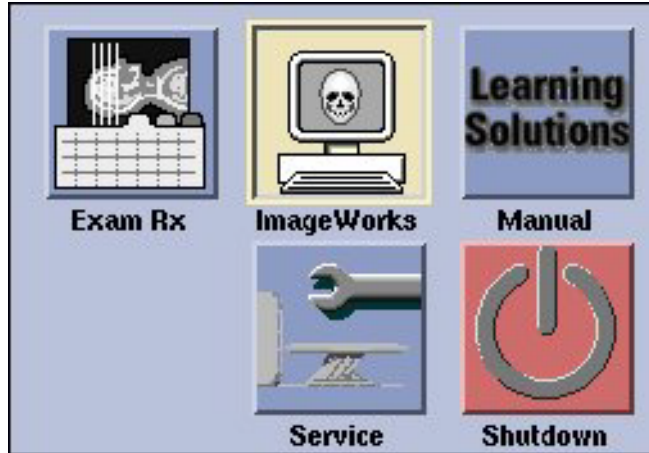
6.5 Convert Protocol

- 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.

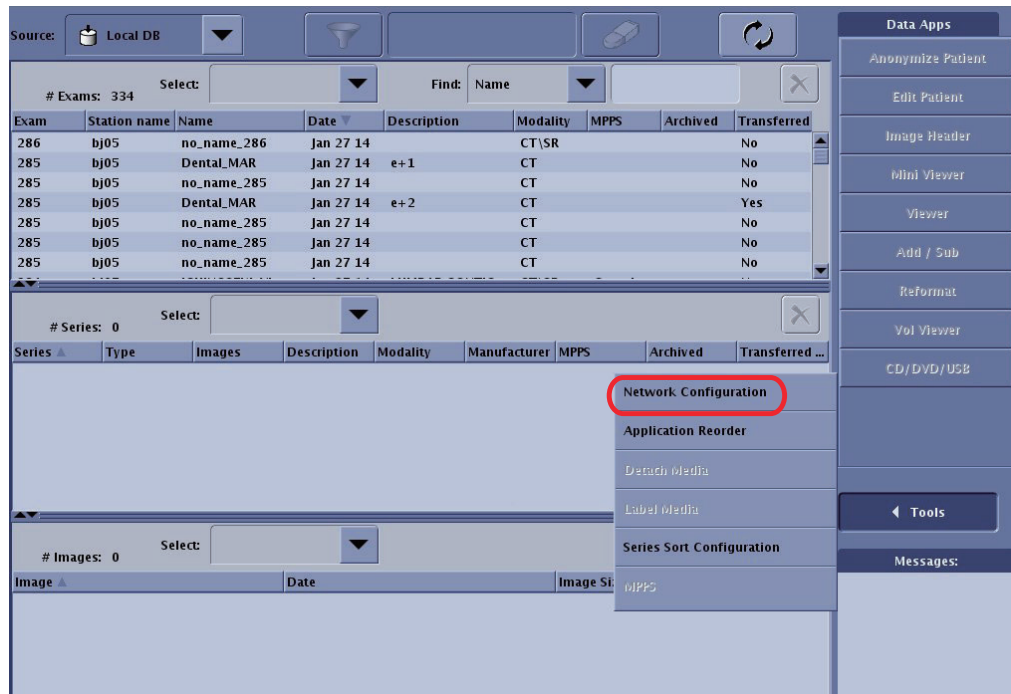
Note: After finishing the user protocol convert, make sure every protocol can be opened by protocol management and save the current system state to another new media.

6.6 Configure System Information on SUSE

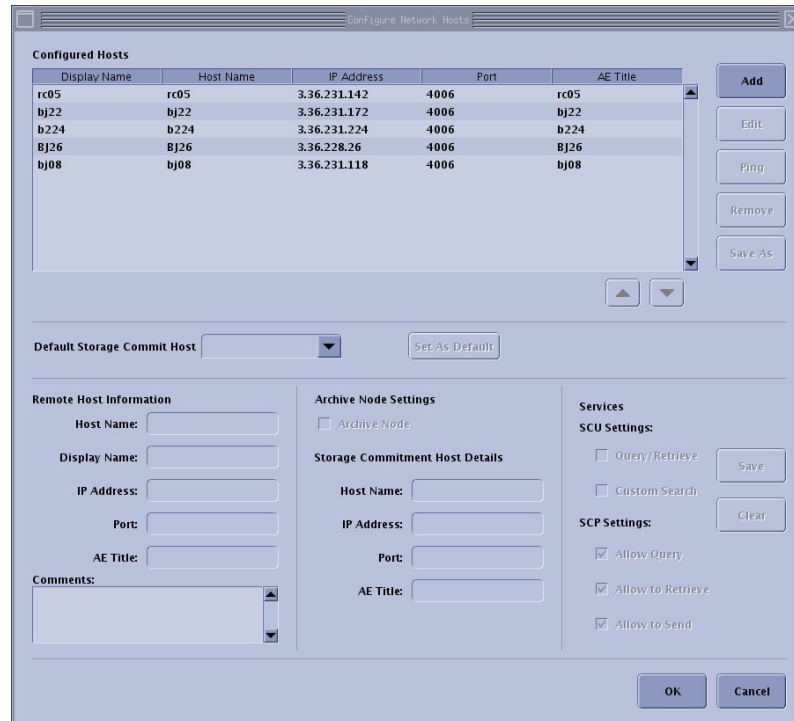
- 1.) Configure PPS server information. Please refer to [3.1, Record PPS Server Information](#)
- 2.) Configure all remote network information
 - a.) Select [ImageWorks] from the desktop.



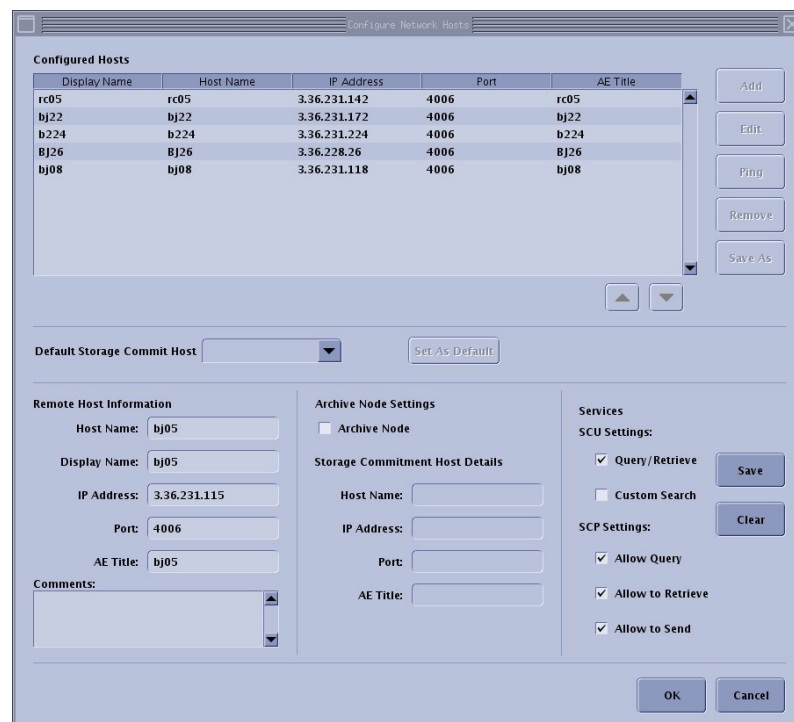
- b.) Select in sequence: Tools-> Network Configuration



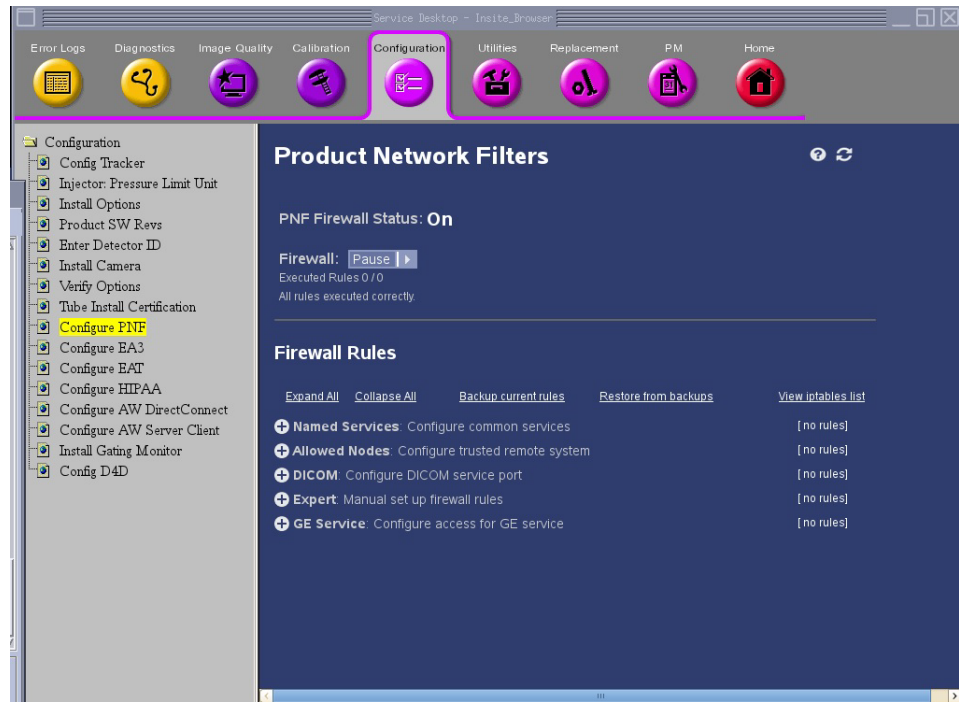
- c.) Select [Add]



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 [3.4, Record AW IP for Direct Information](#).

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Chapter 3

NIO Console with Z800/Z840 Upgrade to OpenOC with Z8G4

Section 1.0 Preparative

Refer to the latest service methods (5366639-8EN) to understand detailed hardware and software installation procedure.

Section 2.0 System Config Checking

- 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.) Check system configuration:

```
{ctuser@hostname} check_config
```
- 3.) Record Product Name and Software Version.

Section 3.0 Save System State

Before proceeding with Save System State:

- Have a FAT32 Formatted USB media (either Memory Stick or USB External Drive, minimum of 2 GB).

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

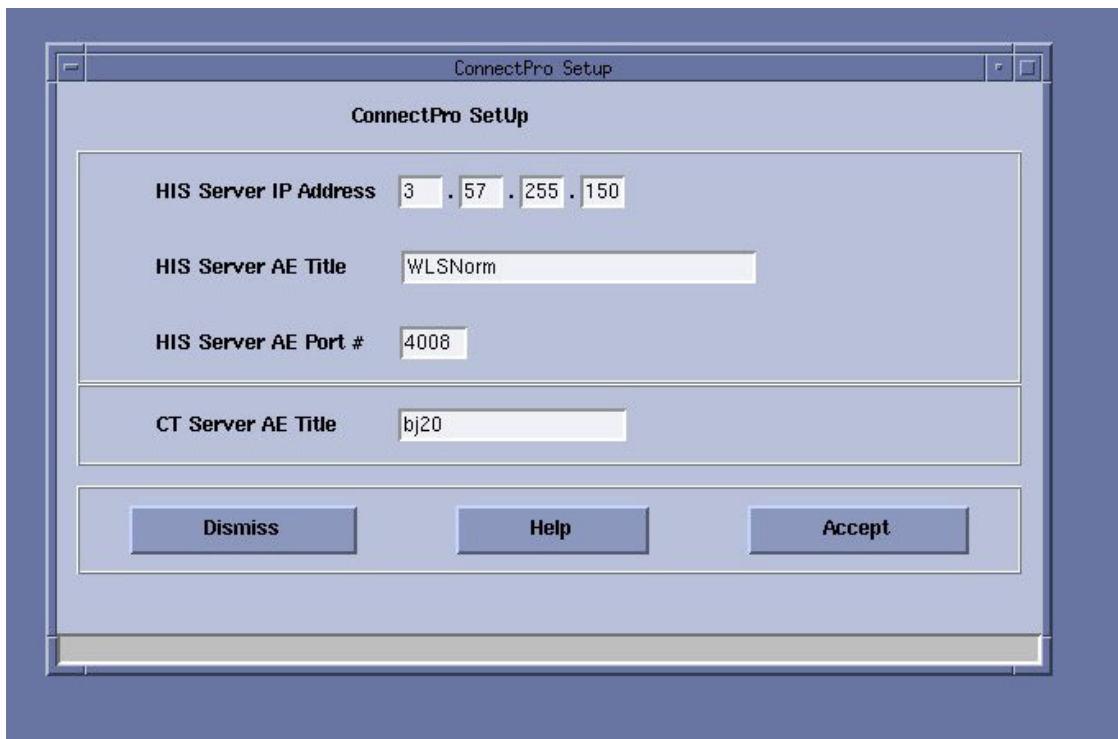
- 1.) Insert the System State USB media in any of the console's USB ports.
- 2.) Select [Service Desktop]-> [Utilities].
- 3.) Select [System State - USB] for USB media. The System State Save/Restore screen appears.
- 4.) Select [All] to select all the calcs, characterization, etc.
- 5.) Select [Save].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

Section 4.0 Record System Information

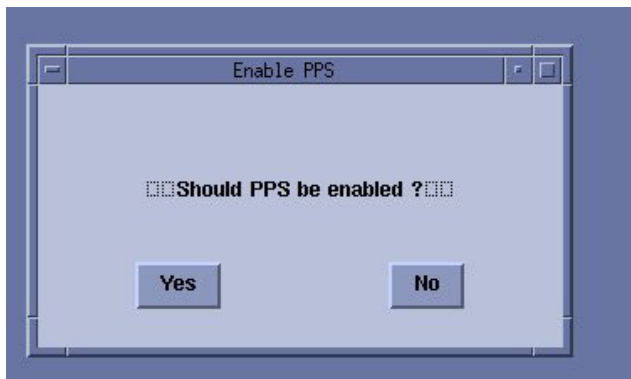
- If the software version checked in [Section 2.0, System Config Checking](#) is CTT 11BW46.x or before, go ahead the following steps.
- If the software version checked in [Section 2.0, System Config Checking](#) is SUSE 13BW16.x or later, skip this section and go to the next section: [Section 5.0, NIO Console Z800/Z840 Removal and OpenOC16 Z8G4 Installation](#)

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].

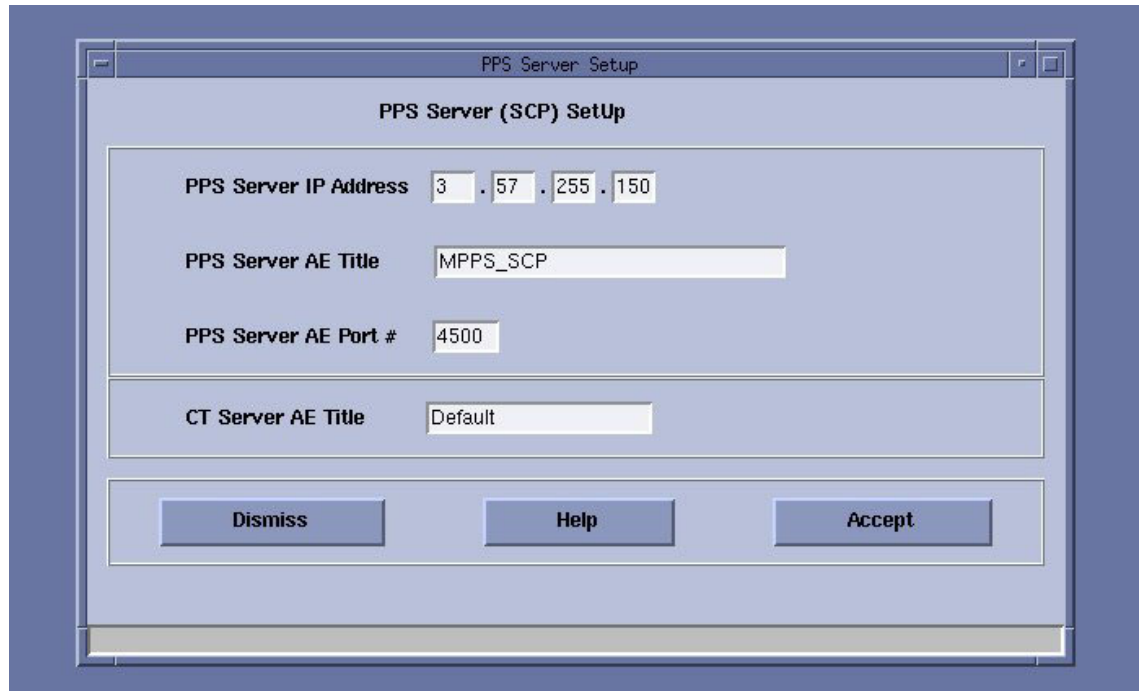


- 3.) "Should PPS be enabled?" is popped up. Select [Yes].



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].

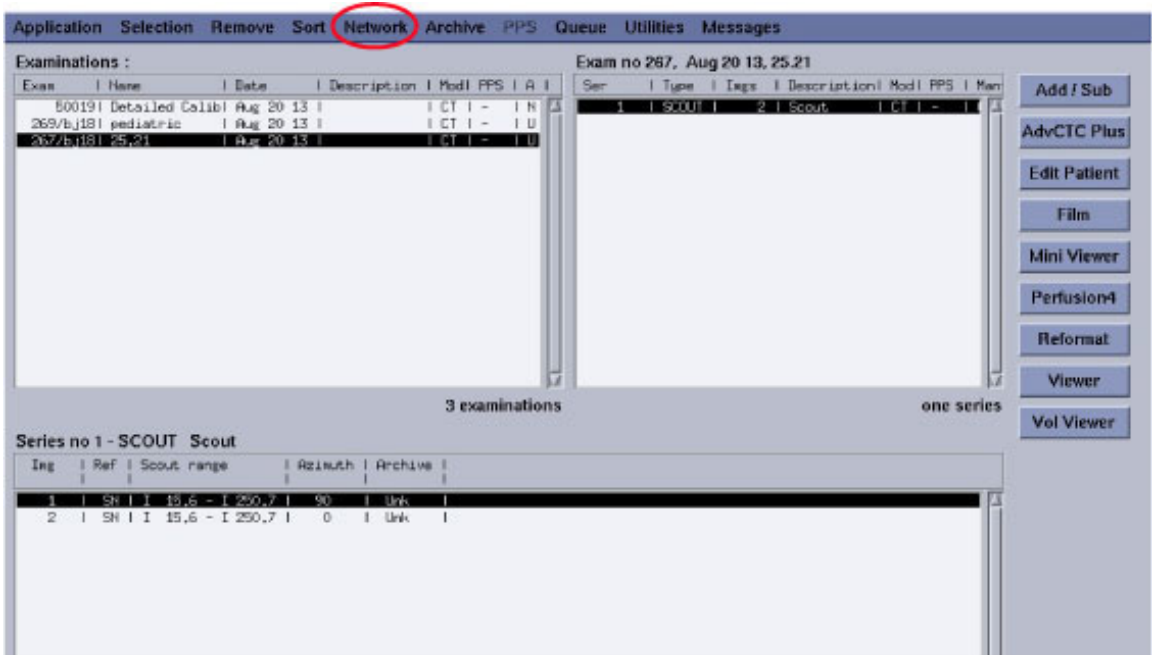


4.2 Record All Remote Host Network Information

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

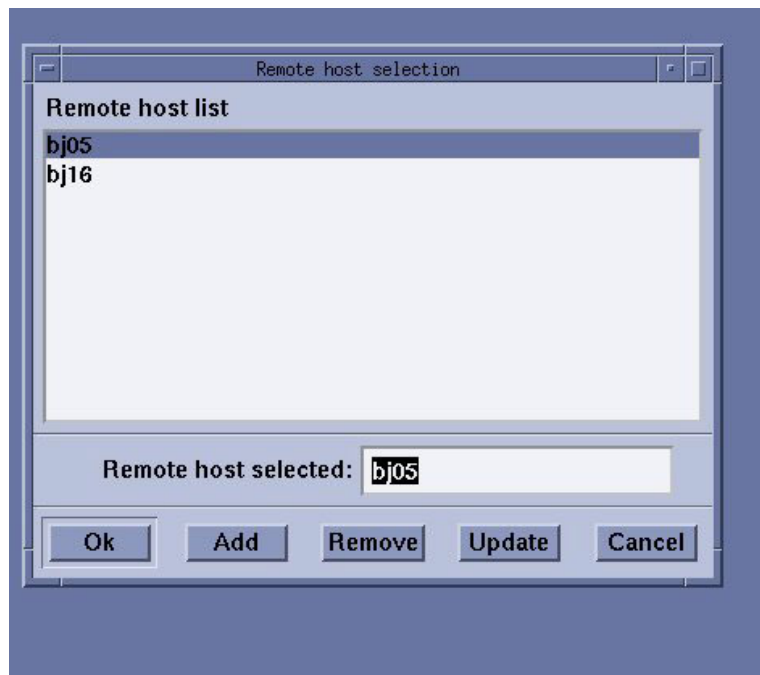


2.) Select [Network]

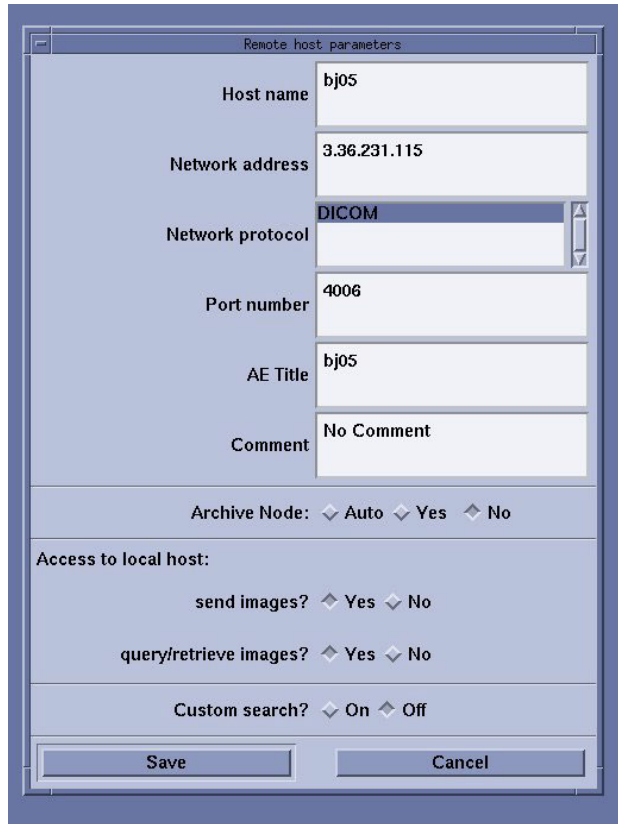


3.) Click [Select remote host] on the Network list menu

4.) Select Remote host from the Remote host list, then click [update].

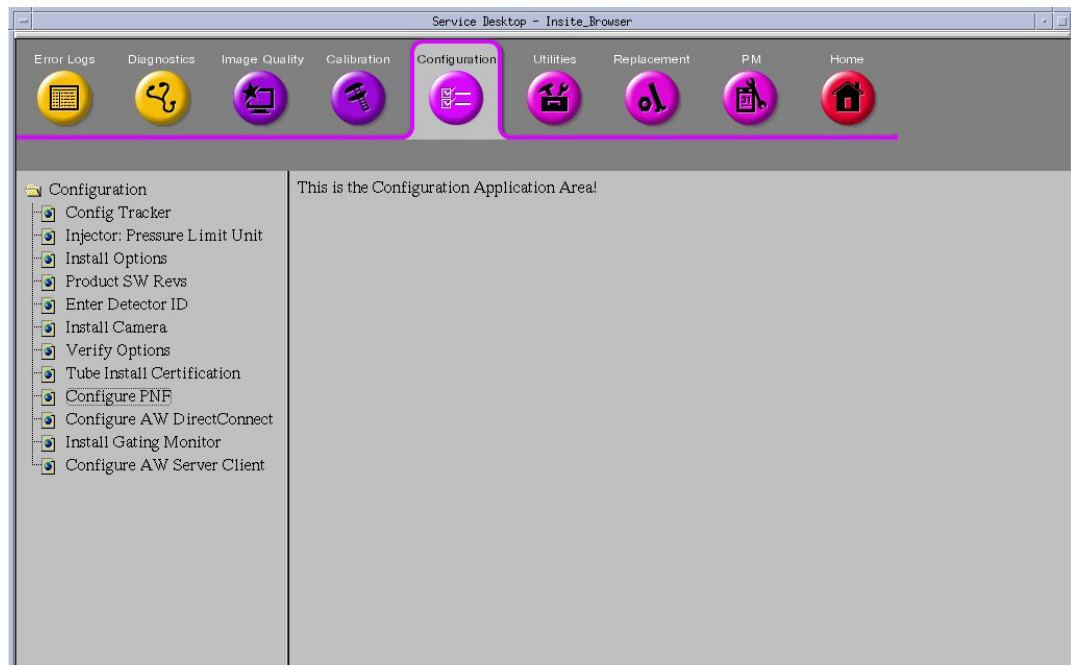


5.) Record the Network information as below.

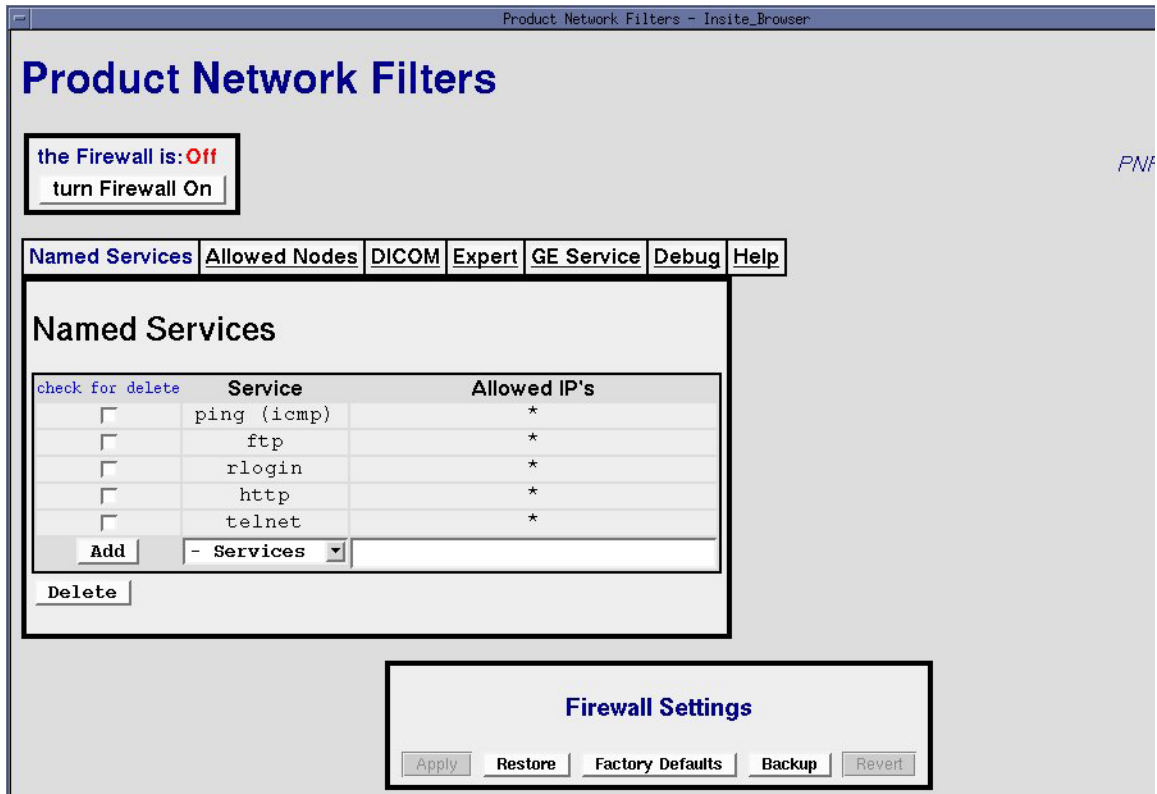


4.3 Record Product Network Filters (PNF) Information

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

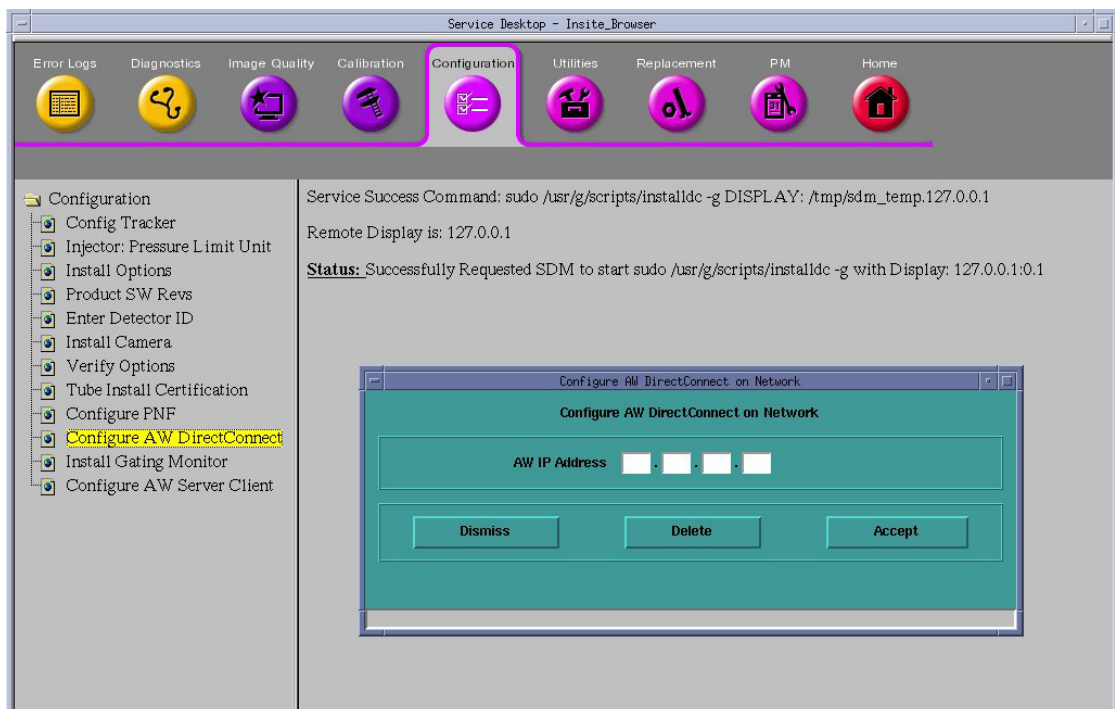


3.) Record PNF information.

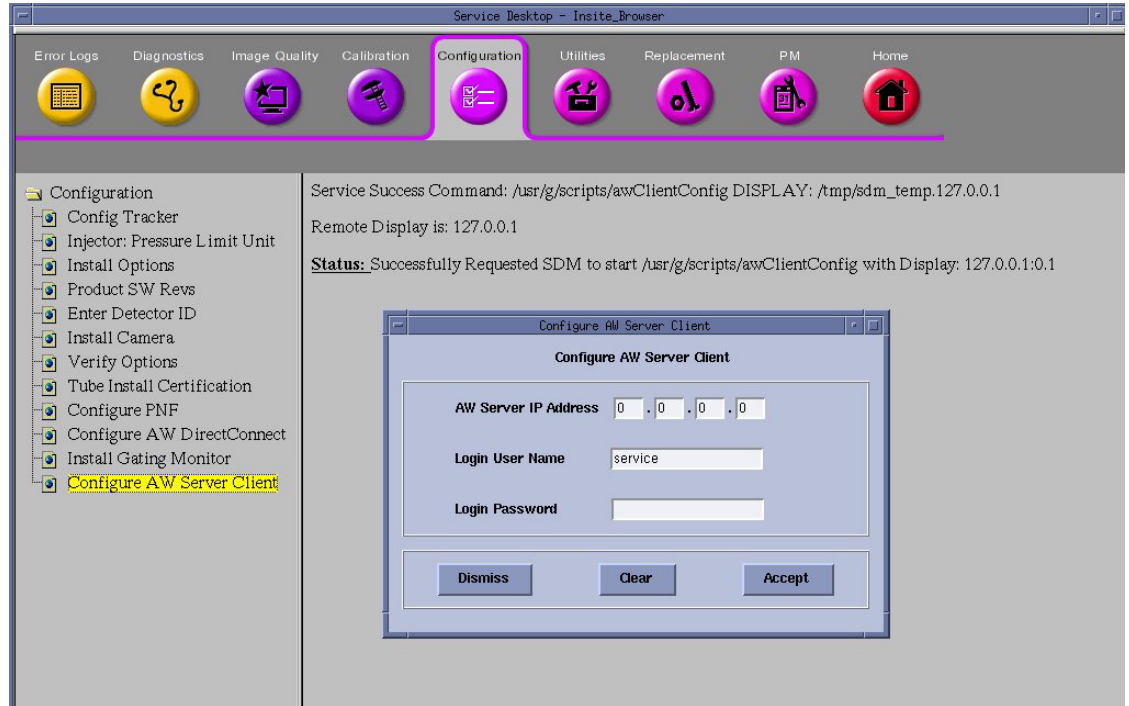


4.4 Record AW IP for Direct Information

- 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 Hardware Information

Record Table/DAS/Console/Gantry Sub type information, these information will be used during the new SW installation procedure when need to select system configuration.

4.6 Record Option Information Licenses

- 1.) Open a Unix Shell, type **swokinstall -p**.
- 2.) Write down all options information and check whether include below 6 options, these six options need apply the new e-licence when system platform upgrade from CTT to SUSE.
 - AutoBone Xpress on OC
 - Advanced Vessel Analysis Xpress on OC
 - Perf 4 Neuro on Xstream OC
 - Perf 4 Multi Organ on Xstream OC
 - Advantage CTC Pro for OC
 - SmartView Multi-Slice

B-CAT	Option Name (Installed in Site)	Flex String (CTT System)	Flex String (SUSE System)
B7870JD	AutoBone Xpress on OC	AutoBone	AutoBone_Xpress
B7870JC	Advanced Vessel Analysis Xpress on OC	AdvVesselAnalysis	AVA_Xpress
B7870HN	Perf 4 Neuro on Xstream OC	CTPerfusion4Neuro	CT_Perfusion_4D_Neuro
B7870HM	Perf 4 Multi Organ on Xstream OC	CTPerfusion4	CT_Perfusion_4D_MultiOrgan

Table 3-1 Compare Flex String Between CTT and SUSE System

B7864KL	Advantage CTC Pro for OC	CTColonoPro	CT_Colono_Pro3D_EC
B7868FM (Smartview 2D)	SmartView Multi-Slice	RealTimeCTFluoro	Enhanced_Real_Time_CT_Fluoro

Table 3-1 Compare Flex String Between CTT and SUSE System

- 3.) Check whether include the following **AW** options installed. After the OC upgrade you will need to install NanoCloud AWS and go to the e-License Tool to gather the new keys. See [Table 3-2](#) is the NanoCloud AWS option list.

Option Name	B-Cat on Z8G4
Nano-Cloud AWS <ul style="list-style-type: none"> • AW Server 3.2 4k (1seat) • DICOM Direct Connect Integration • Volume Viewer • AW Floating License Manager • Preprocessing SW Enabler 	M81601TD
VessellIQ Xpress and AutoBone Xpress	B77121BK
CT Perfusion 4D Neuro	B77021RA
DentaScan on OC	B7540LS

Table 3-2 NanoCloud AWS Option List

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. Perform the following as the last step before shutting down the console.

- 1.) Reset (Erase) the Image Database on the system. Delete the exams from ImageWork manually.
- 2.) Reset (Erase) the Scan Database on the system. Follow instructions found in the **Service Methods -> Software -> Software Installation Procedure -> System Configuration (Reconfig)**.
 - a.) 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 Recreate Database, select [YES]
 - b.) 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
- 3.) Select **[ACCEPT]** button.

Note: The Reset (Erase) of the Image and Scan Databases will remove PHI information from the system but may not meet local regulations for data removal/deletion. If local regulations require specific data removal/deletion criteria, follow local procedures for PHI removal from system.

- 4.) After completion of System Configuration (reconfig), reboot the system.
 - a.) Select **[OK]** on the Autostart disabled popup message
 - b.) Open a terminal window and type: **st**
 - c.) When the system is booted into Applications mode, select **[IMAGE WORKS]**
 - d.) Confirm that patient image data is not present

Section 5.0 NIO Console Z800/Z840 Removal and OpenOC16 Z8G4 Installation

5.1 Old NIO Console (Z800/Z840) 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 Console aside.

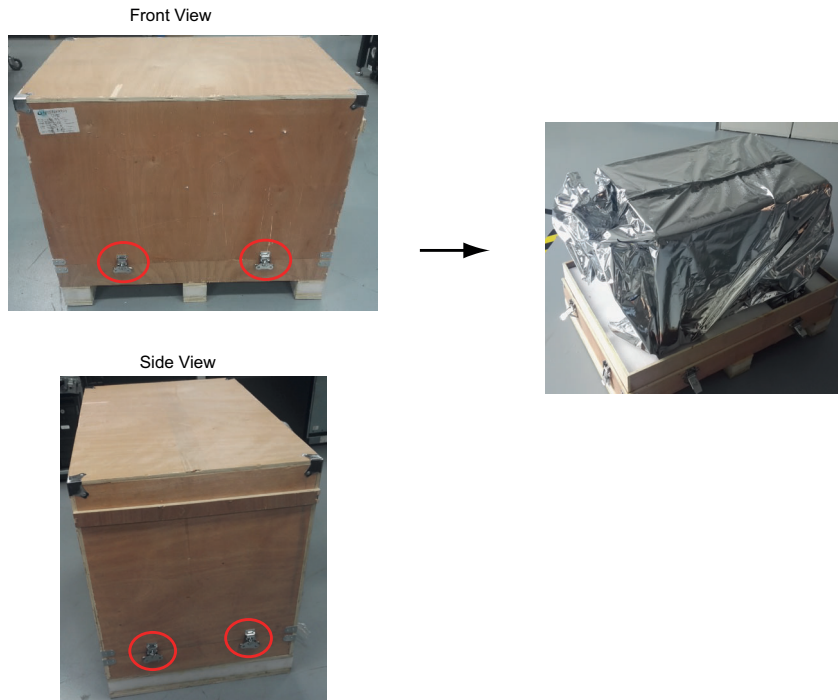
5.2 OpenOC16 with Z8G4 Host Computer Installation

5.2.1 Unpack OpenOC16 with Z8G4 PC

Please read detail about OpenOC16 installation procedure in Service Manuals.

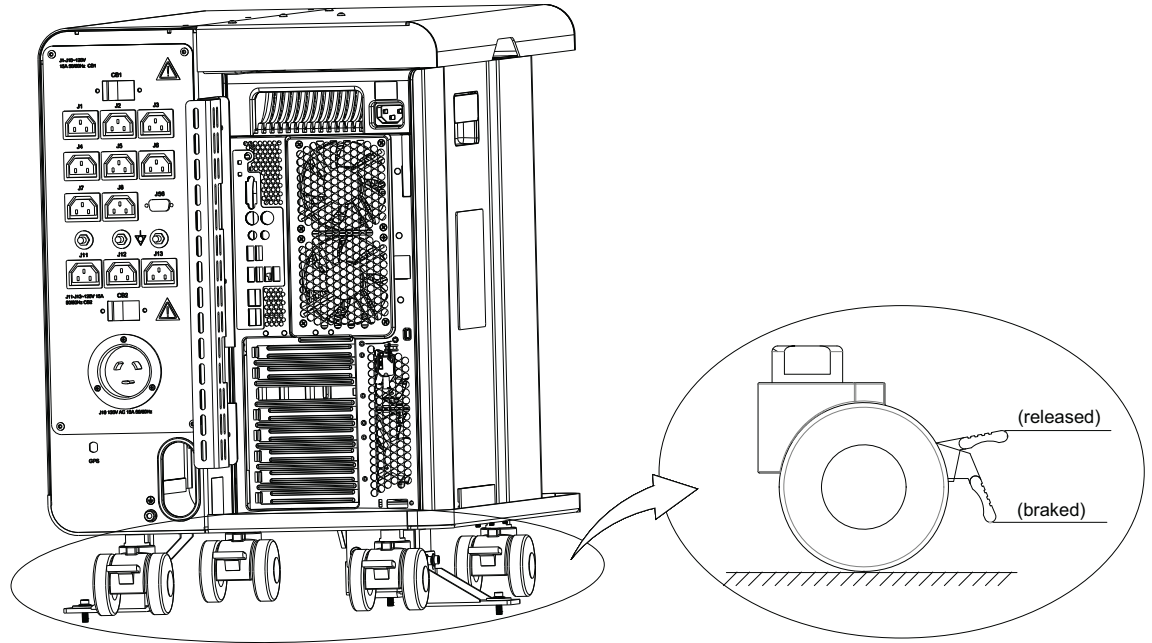
- 1.) Unpack console packaging.
 - a.) Released eight latches and remove the packaging covers.

Figure 3-1 Console Packaging Removal



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

Figure 3-2 Brake



5.2.2 Console Cable Connections

NO.	Description	Long Cable	Short Cable
53	LVAC Power Cable - PDU to Operator Console	2343531	2343531-2
56	Ground, Raceway to Operator Console	2371450-3	2371450-4
101	Signal Cable - Gantry to Operator Console	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Operator Console	2373436-2	2373436-3
103	Data Cable (Fiber Optic) - Gantry to Console	5432019	

Table 3-3 System Cables for OC Connections

Figure 3-3 System Interconnect Diagram (with Z8G4 Host Computer)

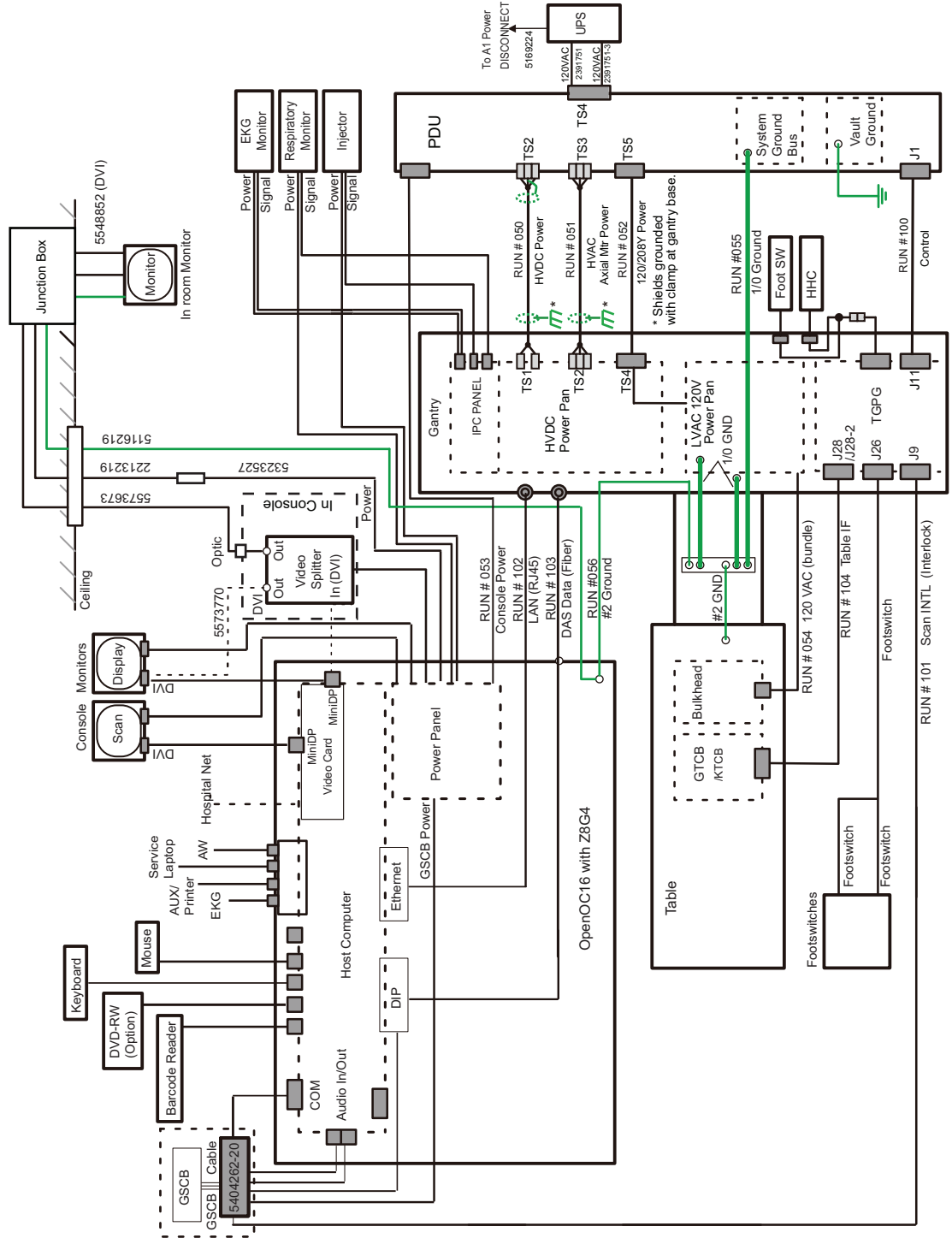
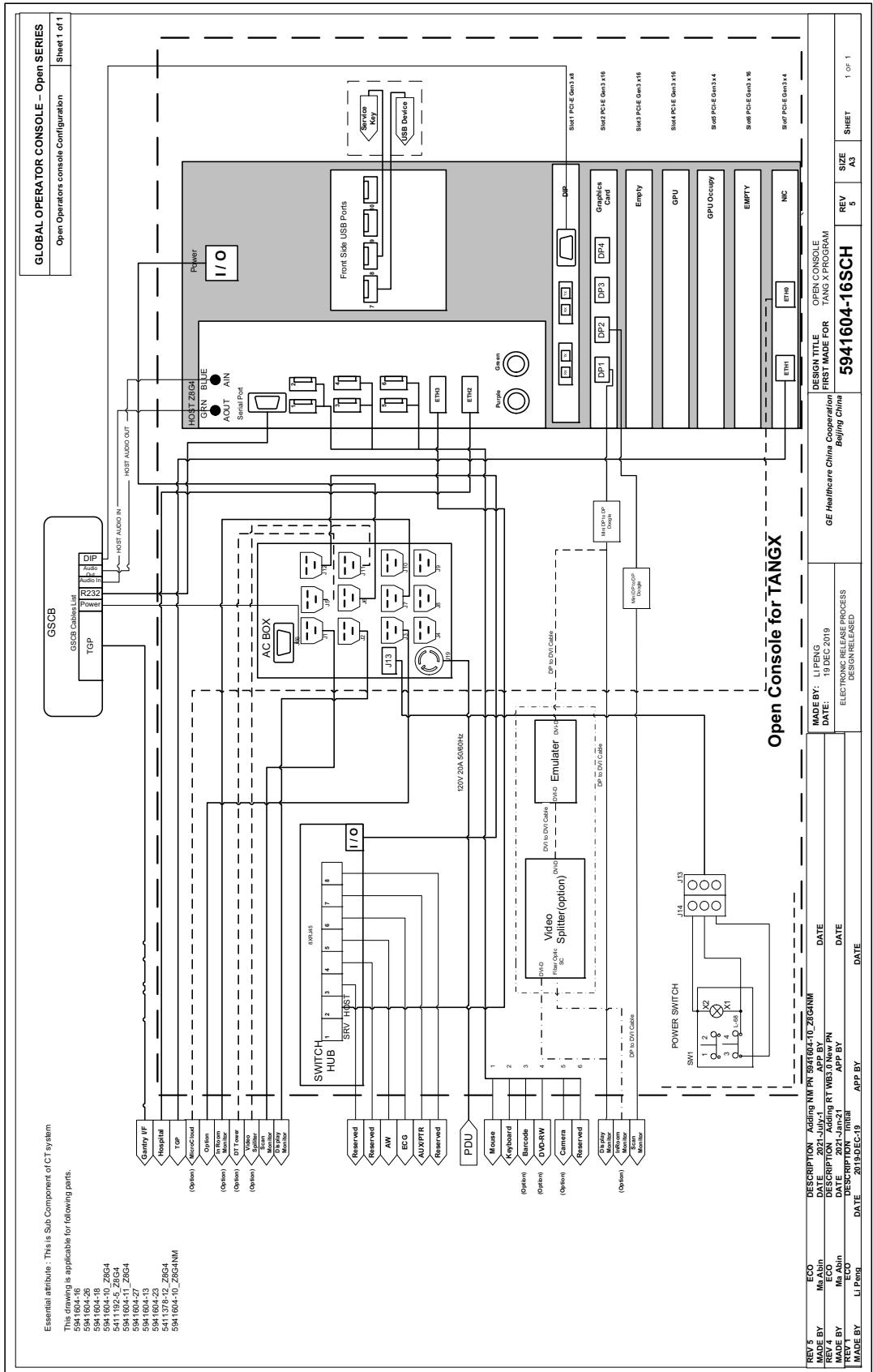


Figure 3-4 OpenOC16 Console Interconnect (with Z8G4)



3 – Upgrade Procedure

Figure 3-5 Z8G4 Host Computer Port Label

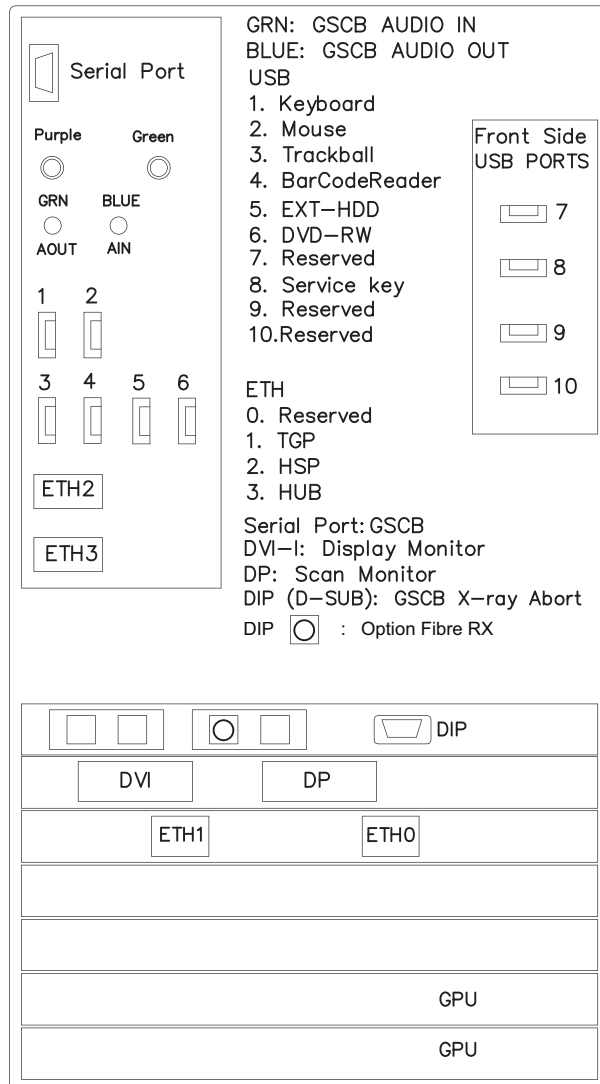


Figure 3-6 OpenOC16 AC Box Assignments

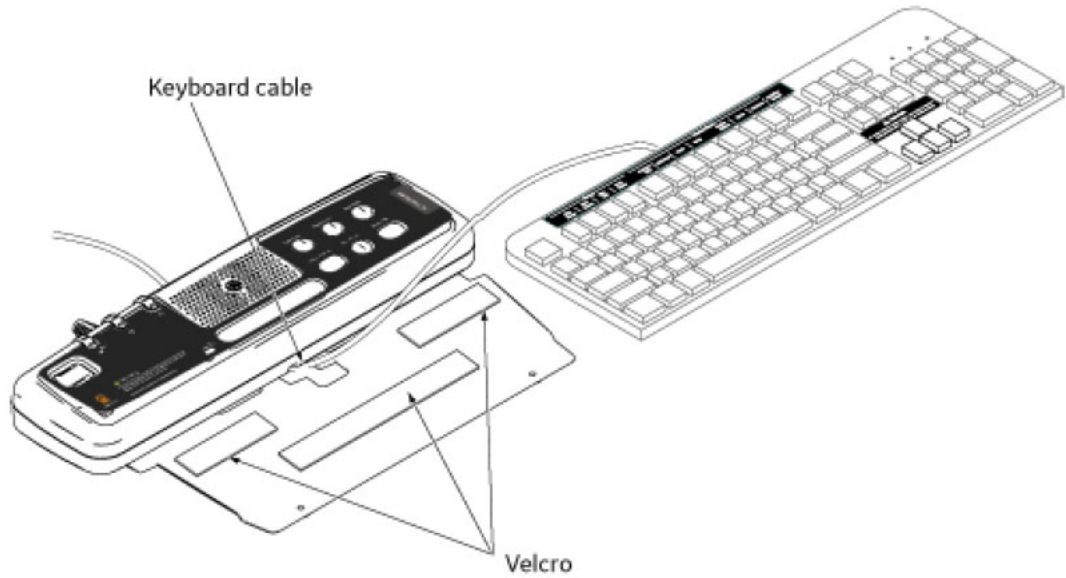


Number	Description
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J7	In-Room Monitor Connection
J11	Video Splitter
J12	Switch Hub
J56	GSCB Power Connection

Table 3-4 AC Box Outlet Assignments

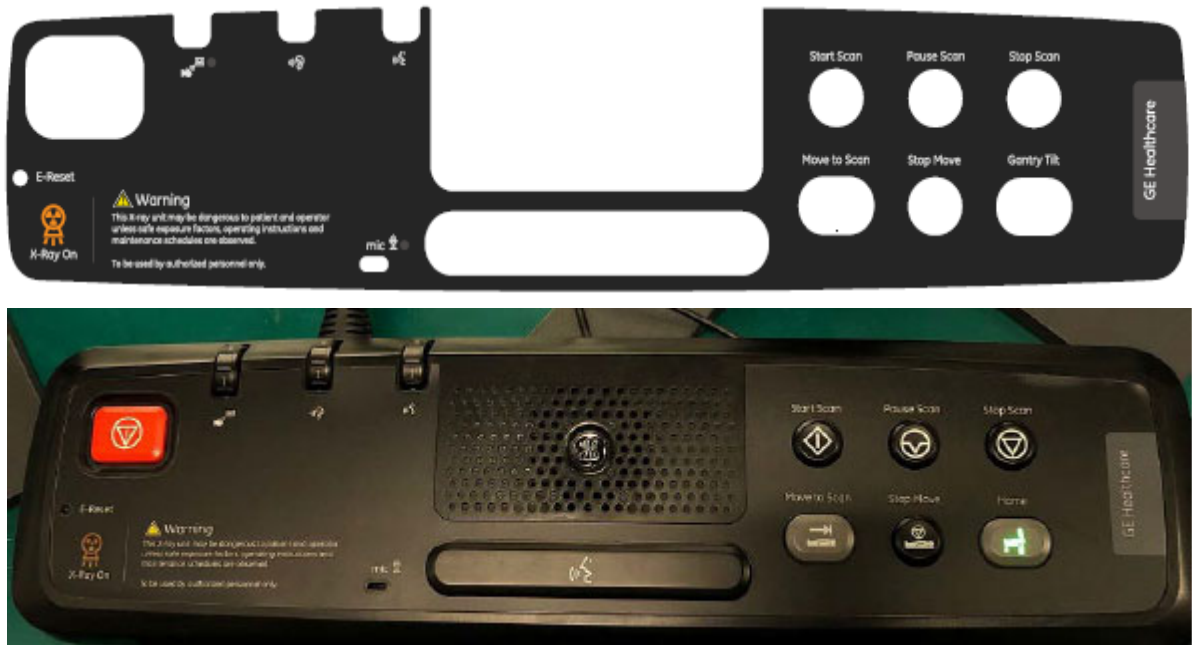
- 1.) Remove the old SCIM/GSCB from the site, and take out the new GSCB. Install the GSCB to the metal plate by using four screws.
- 2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 3-7 GSCB and Keyboard



3.) Select the local language GSCB film to attach.

Figure 3-8 GSCB Film with Tilt/E-Reset



Note: Verify that none of the buttons get caught and stuck under the overlay.
 Pay close attention to the prescribed tilt button on systems with the tilt feature.

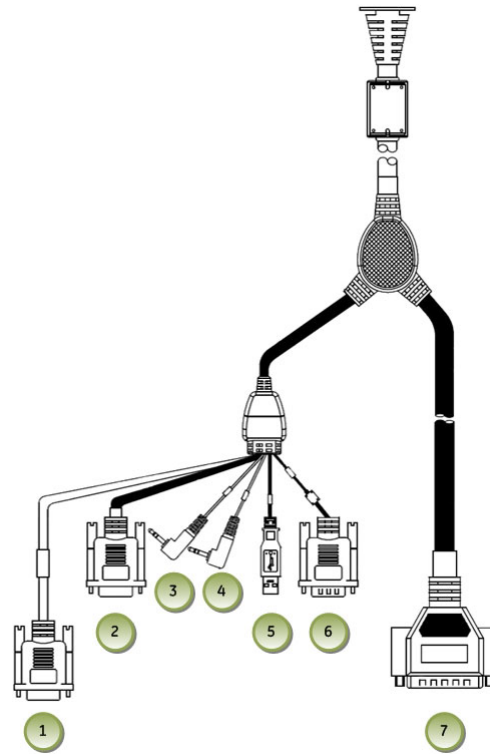
4.) Route and connect keyboard and mouse cables to console.
 If the length of keyboard and mouse cables is not enough, add the following extension cables (shipped with OC collector).

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Ext Cable (Keyboard)	5431909	3500 mm	1
USB Ext Cable (Mouse)	5458346	3500 mm	1

Table 3-5 Keyboard and Mouse Extension Cables

- 5.) Connect GSCB cable connectors to OpenOC AC Box and Z8G4 Host Computer according to Figure 3-9 and Table 3-6.

Figure 3-9 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 J56
7	GSCB - Black DB-25 (Male) Connector TGP Gantry Cable

Table 3-6 GSCB Cables

- 6.) Connect LCD Monitor cable connectors to OpenOC AC Box and Z8G4 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/Image Monitor Video Cable	5408703-2	3000 mm	2
Mini DP - DP Dongle Cable	5795077	250 mm	2

Table 3-7 Monitor Cables for Z840

Note: Connect two Mini DP - DP Dongle cables (5795077) to monitor video cables (5408703-2).

Scan Monitor

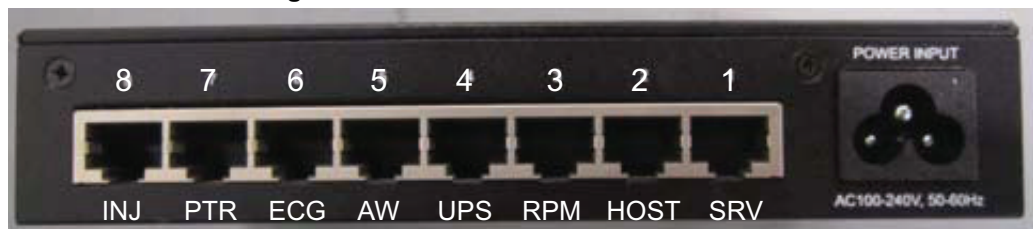
- Video cable from Console Host DP2 to Monitor DVI
- Power cable from Console AC Box J1
- Route through the cable keeper

Image Monitor

- Video cable from Console Host DP1 to Monitor DVI
- Power cable from Console AC Box J2
- Route through the cable keeper

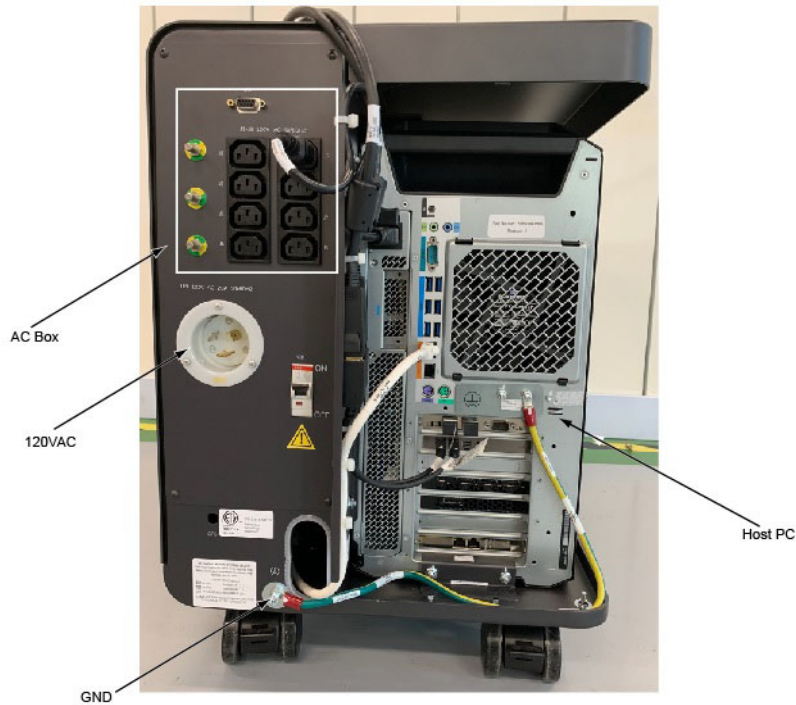
- 7.) Remove OpenOC right side cover and plug cables into Switch Hub on console if request.
- 8.) Connect other cables to Z8G4 Host Computer according to [Figure 3-5](#), then install right side cover of console.

Figure 3-10 Switch Hub Connections



9.) Connect the Power Cable and Ground Cable to the OpenOC Panel. (See [Figure 3-11](#))

Figure 3-11 OpenOC Console Rear View with AC BOX



5.2.3 Console Cover Installation

Please refer to the latest **Service Methods -> Replacement -> OpenOC16 -> Console Cover Removal and Installation** to Install console covers.

Section 6.0 TGPG/ORPG Board Replacement

Follow the latest **Service Methods -> Replacement -> Gantry -> ORP and TGP** to replace the old TGP-ORP boards. TGPG board (5406518-3) and ORPG board (5796592-2) are included in console upgrade kit (B79632DA), do not order replacement board.

Section 7.0 Load From Cold Procedure

- If the software version checked in [Section 2.0, System Config Checking](#) is CTT 11BW46.x or before, go ahead the following steps.
- If the software version checked in [Section 2.0, System Config Checking](#) is SUSE 13BW16.x, go ahead the following steps.
- If the software version checked in [Section 2.0, System Config Checking](#) is SUSE 15BW19.x or later, directly restore system state by following [7.2, Restore System State](#).

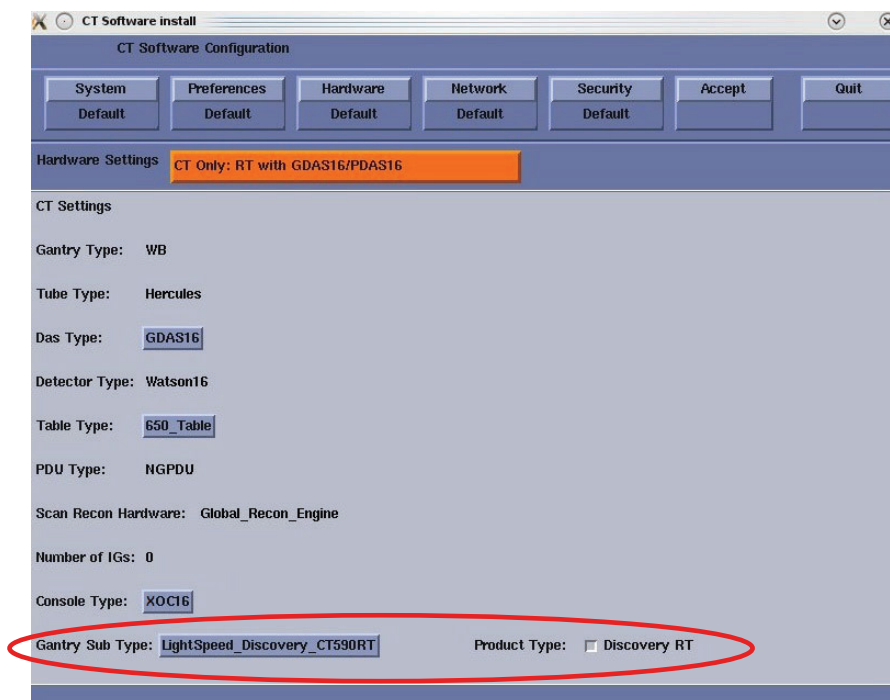
7.1 LFC Procedure

Detail LFC procedure refer to [Appendix A, Load From Cold Procedure](#).

Check and select the correct subsystem type in CT Software Configuration -> Hardware after loading system INFO.

- 1.) Select the correct **DAS Type**.
 - 2.) Select the correct **Table Type**.
 - 3.) Select the **Console Type** to **XOC16**.
 - 4.) Check and select the correct **Gantry Sub Type**.
- **For Discovery CT590 RT:** MUST toggle Product Type - Discovery RT [OFF] and select "LightSpeed_Discovery_CT590RT" as Gantry Sub Type

Figure 3-12 Hardware Configuration Window (Discovery CT590 RT)



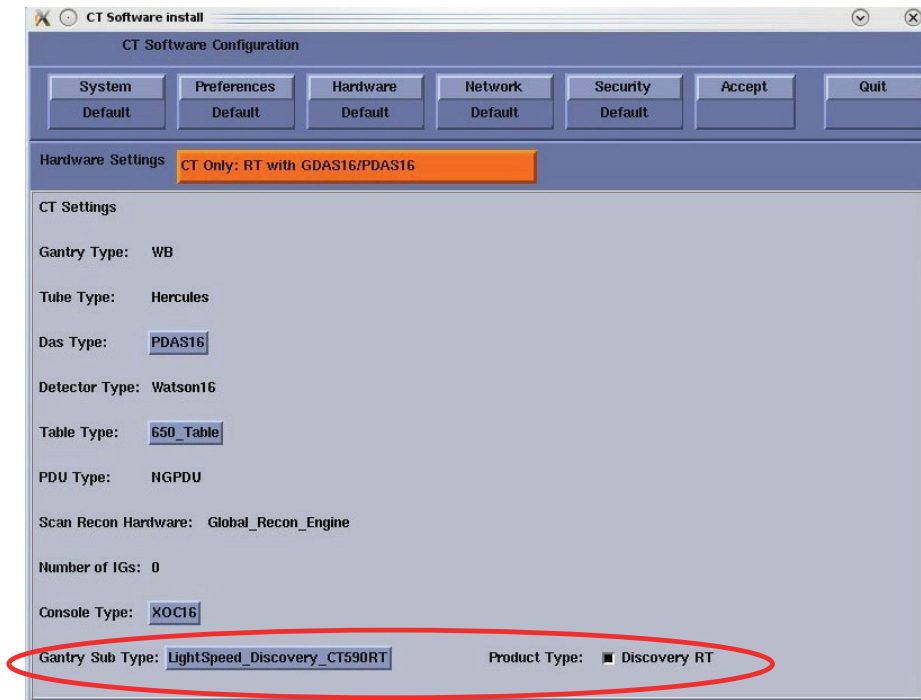
- **For Optima CT580:** MUST toggle Product Type - Discovery RT [OFF] and select "LightSpeed_Optima_CT580" as Gantry Sub Type.

Figure 3-13 Hardware Configuration Window (Optima CT580)



- **For Discovery RT:** MUST toggle Product Type - Discovery RT [ON] and select "LightSpeed_Discovery_CT590RT" as Gantry Sub Type.

Figure 3-14 Hardware Configuration Window (Discovery RT)

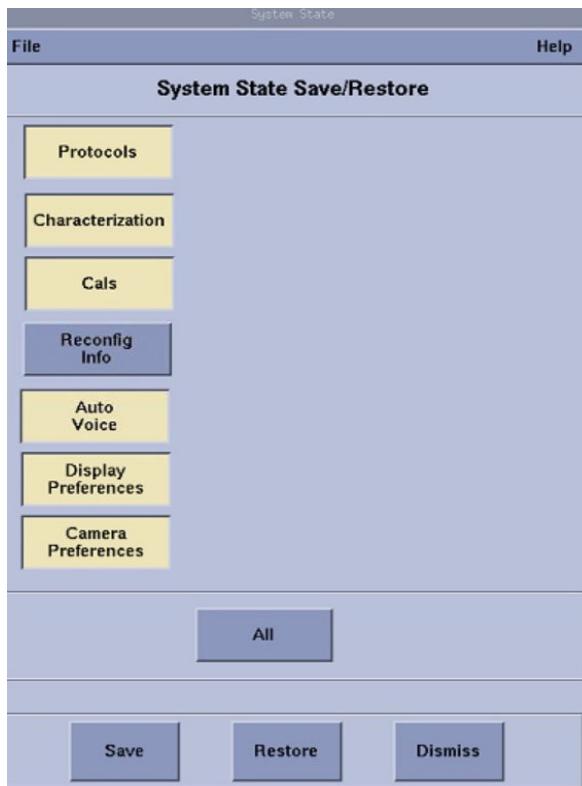


7.2 Restore System State

- 1.) Insert a previously saved System State USB Media in the USB ports.
- 2.) Wait until the USB Media is ready
- 3.) Select the [Service] icon to access the CSD (Common Service Desktop).
- 4.) Select: [Utilities].
- 5.) Select [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).

Figure 3-15 System State Save/Restore



- 8.) Select [Restore]. The Restore System State box appears.
- 9.) Select [Yes]. Verify that the "Restore" of System State was successful. If not, restore the System State again. A message at the end of the System State Log window should display: Restore System State Completed Successfully.

Note: Please ignore any SwOption Error information during restoring the System State

- 10.) When completed, select [Cancel].

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

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

15.) Verify Restore System State

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

7.3 Install Options

- 1.) Install the required options recorded in 4.6, [Record Option Information Licenses](#) (except AW options) through e-license website (<http://eLicense.gehealthcare.com/eLicense/>).

Note: If the customer purchased ASiR option, please un-install Neuro 3D Filter option before installing.

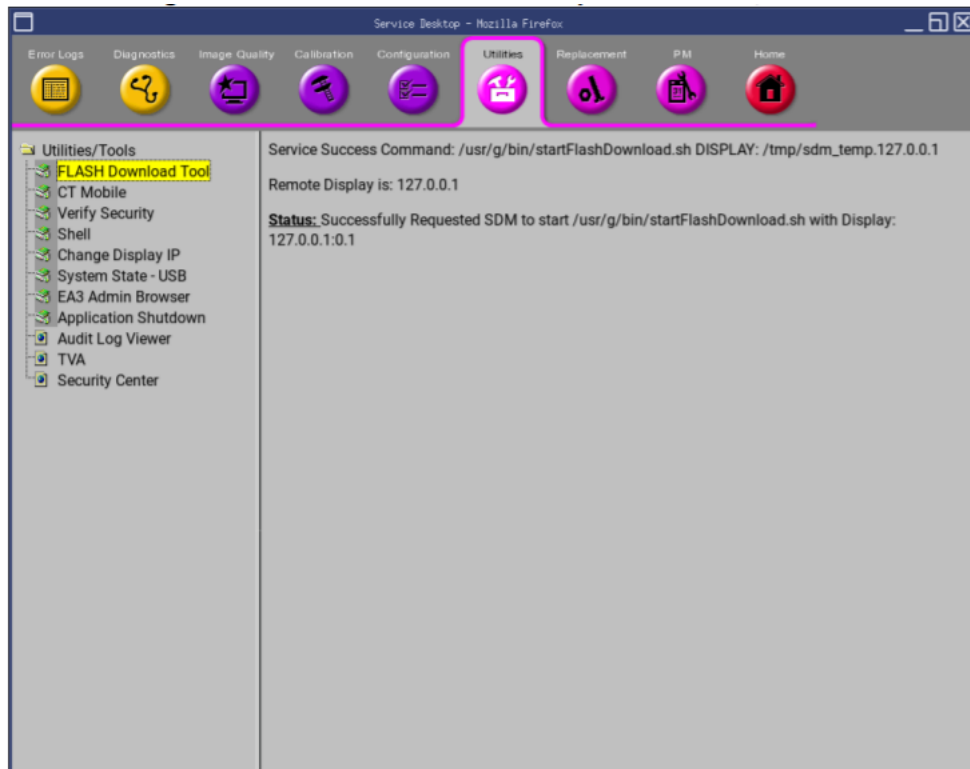
- 2.) Install MaxFOV or MaxFOV2 option.
- 3.) AW options recorded in 4.6, [Record Option Information Licenses](#), step 3.
 - a.) Run the script to remove the old option button which be restored in 7.2, [Restore System State](#).
Type: **remove_aw_apps_on_console**
 - b.) Follow NanoCloud AWS Installation procedure to install the NanoCloud AWS option, please find DOC2507368 from SIMS Content Viewer.

7.4 Flash Download

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

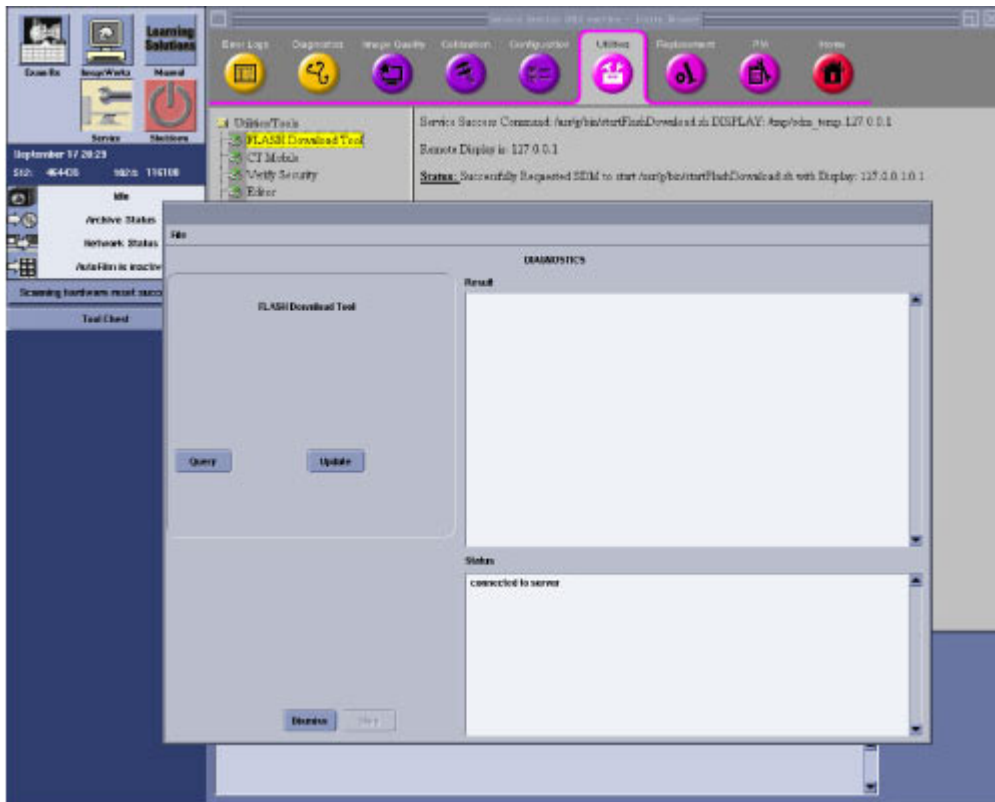
- 1.) Perform the Flash Download Utility found on the Common Service Desktop - Utilities Tab, select [Flash Download].

Figure 3-16 Flash Download Tool



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

Figure 17 Flash Download Windows



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

7.5 Convert Protocol

- If the software version checked in [Section 2.0, System Config Checking](#) is CTT 11BW46.x or before, go ahead the following steps.
 - If the software version checked in [Section 2.0, System Config Checking](#) is SUSE 13BW16.x, go ahead the following steps.
 - If the software version checked in [Section 2.0, System Config Checking](#) is SUSE 15BW19.x or later, directly skip to [Section 7.0, Finalization](#)
- 1.) Open a Unix Shell, type:
{ctuser@hostname} **su -**
Passwrod: **#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.

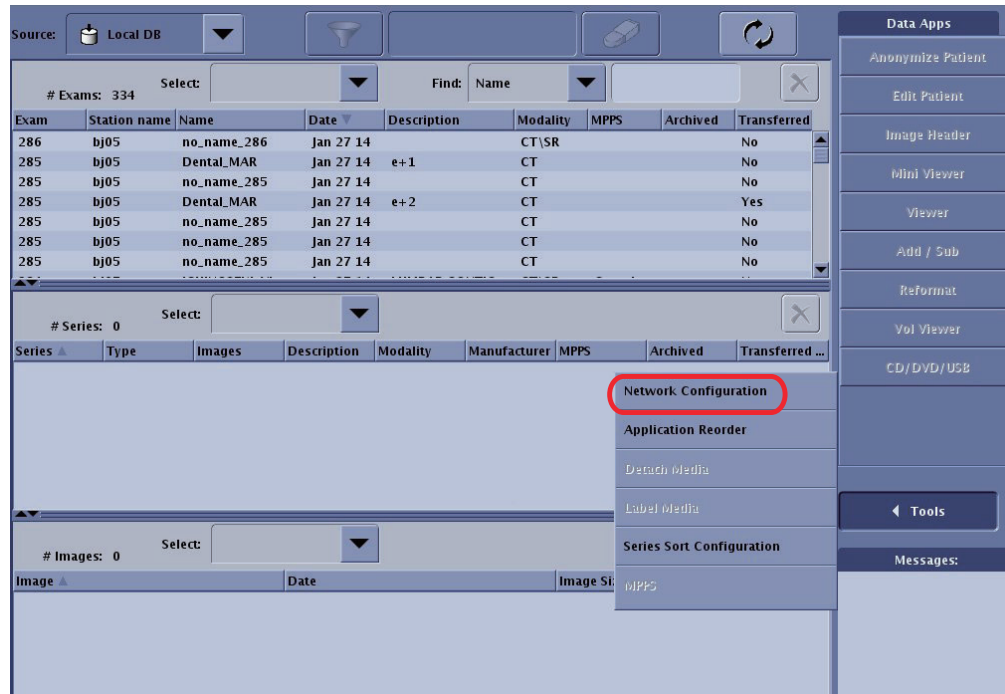
Note: After finishing the user protocol convert, make sure every protocol can be opened by protocol management and save the current system state to another new media.

7.6 Configure System Information on SUSE

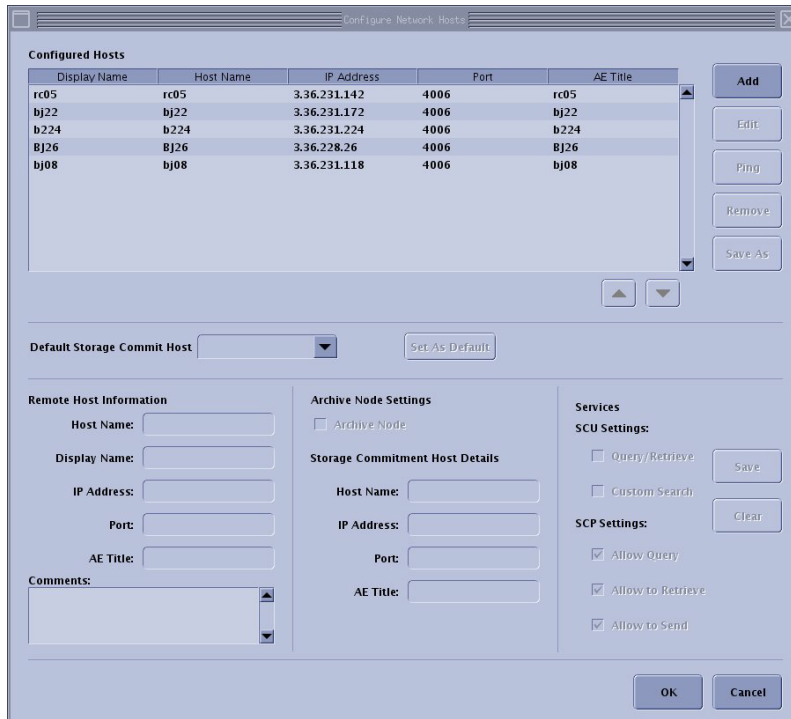
- If the software version checked in [Section 2.0, System Config Checking](#) is CTT 11BW46.x or before, go ahead the following steps.
 - If the software version checked in [Section 2.0, System Config Checking](#) is SUSE 13BW16.x or later, skip this section and go to [Chapter 5, Finalization](#).
- 1.) Configure PPS server information. Please refer to [4.1, Record PPS Server Information](#)
 - 2.) Configure all remote network information
 - a.) Select [ImageWorks] from the desktop.



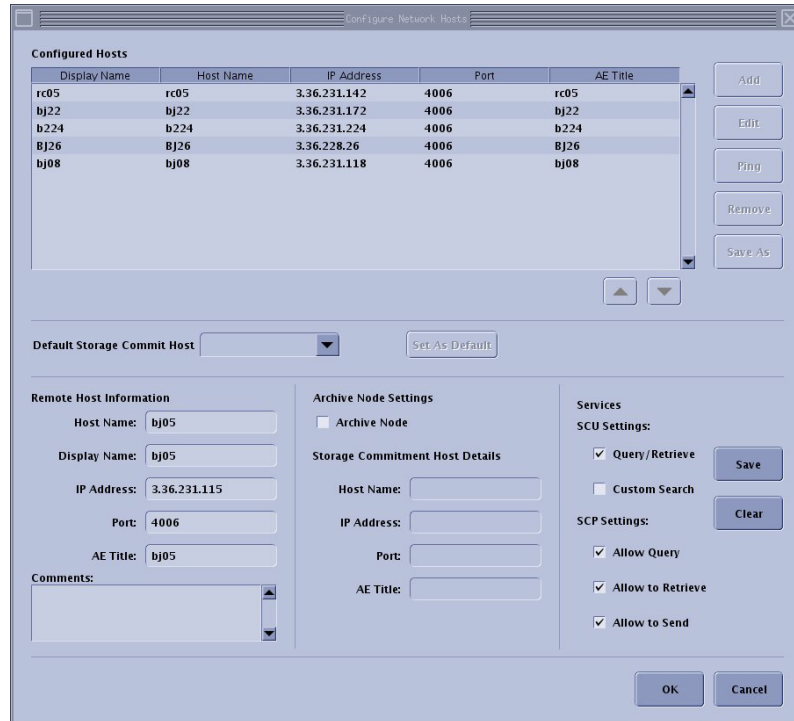
b.) Select in sequence: Tools -> Network Configuration



c.) Select [Add]

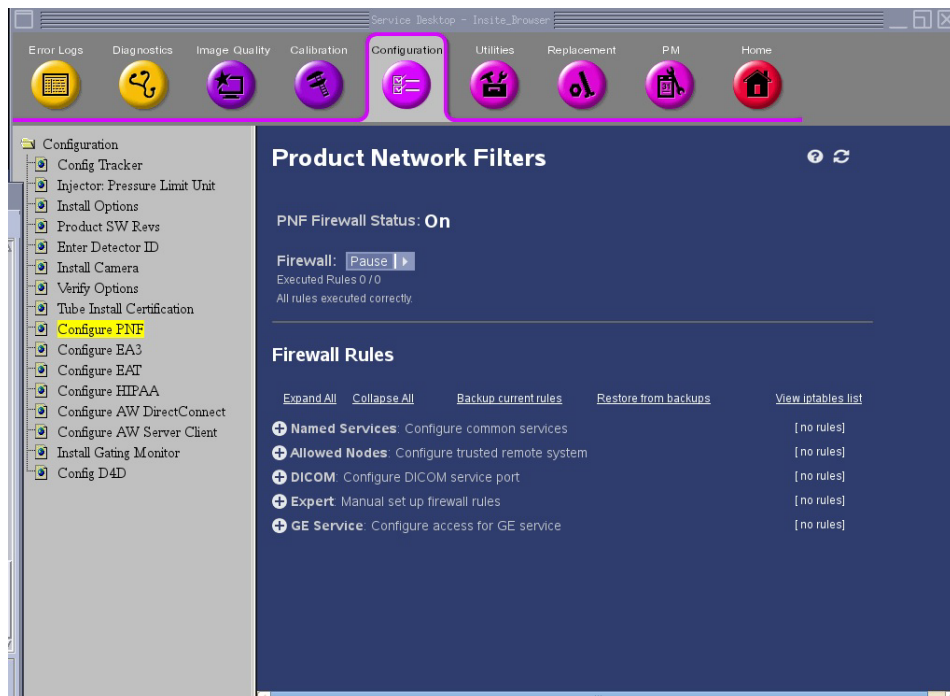


d.) Input the Host Name then press [Enter].



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, Record AW IP for Direct Information.

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Chapter 4

OpenOC with Z840 Upgrade to OpenOC with Z8G4

Section 1.0 Preparative

Refer to the latest service methods (5366639-8EN) to understand detailed hardware and software installation procedure.

Section 2.0 Save System State

Before proceeding with Save System State:

- Have a FAT32 Formatted USB media (either Memory Stick or USB External Drive, minimum of 2 GB).

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

- 1.) Insert the System State USB media in any of the console's USB ports.
- 2.) Select [Service Desktop]-> [Utilities].
- 3.) Select [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 USB is ready, select [Yes].
- 7.) When completed select [Dismiss].
- 8.) Remove System State USB media from USB port.

Section 3.0 Record System Information

3.1 Record Option Information Licenses

- 1.) Open a Unix Shell, type **swokinstall -p**.
- 2.) Write down all options information and check whether include the following **AW** options installed. After the OC upgrade you will need to install NanoCloud AWS and go to the e-License Tool to gather the new keys. See [Table 4-1](#) is the NanoCloud AWS option list.

Option Name	B-Cat on Z8G4
-------------	---------------

Table 4-1 NanoCloud AWS Option List

Nano-Cloud AWS <ul style="list-style-type: none"> • AW Server 3.2 4k (1seat) • DICOM Direct Connect Integration • Volume Viewer • AW Floating License Manager • Preprocessing SW Enabler 	M81601TD
VessellQ Xpress and AutoBone Xpress	B77121BK
CT Perfusion 4D Neuro	B77021RA
DentaScan on OC	B7540LS

Table 4-1 NanoCloud AWS Option List

3.2 Record Hardware Information

Record Table/DAS/Console/Gantry Sub type information, these information will be used during the new SW installation procedure when need to select system configuration.

3.3 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. Perform the following as the last step before shutting down the console.

- 1.) Reset (Erase) the Image Database on the system. Delete the exams from ImageWork manually.
 - 2.) Reset (Erase) the Scan Database on the system. Follow instructions found in the **Service Methods -> Software -> Software Installation Procedure -> System Configuration (Reconfig)**.
 - a.) 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 Recreate Database, select [YES]
 - b.) 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
 - 3.) Select **[ACCEPT]** button.
- Note: The Reset (Erase) of the Image and Scan Databases will remove PHI information from the system but may not meet local regulations for data removal/deletion. If local regulations require specific data removal/deletion criteria, follow local procedures for PHI removal from system.
- 4.) After completion of System Configuration (reconfig), reboot the system.
 - a.) Select **[OK]** on the Autostart disabled popup message
 - b.) Open a terminal window and type: **st**
 - c.) When the system is booted into Applications mode, select **[IMAGE WORKS]**
 - d.) Confirm that patient image data is not present

Section 4.0 OpenOC16 Z840 Removal and OpenOC16 Z8G4 Installation

4.1 Old OpenOC16 Z840 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 Console aside.

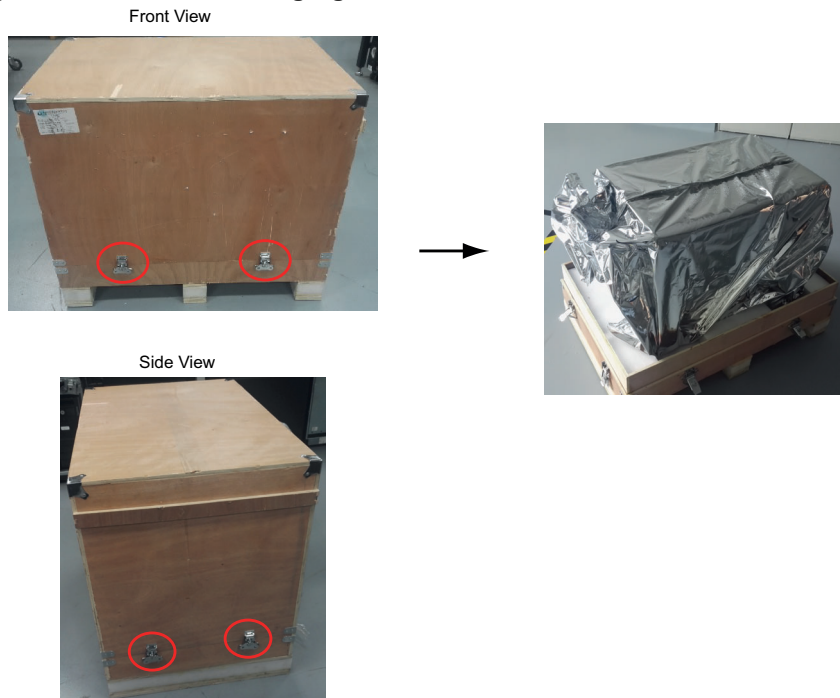
4.2 OpenOC16 Z8G4 Installation

4.2.1 Unpack OpenOC16 with Z8G4 PC

Please read detail about OpenOC16 installation procedure in Service Manuals.

- 1.) Unpack console packaging.
 - a.) Released eight latches and remove the packaging covers.

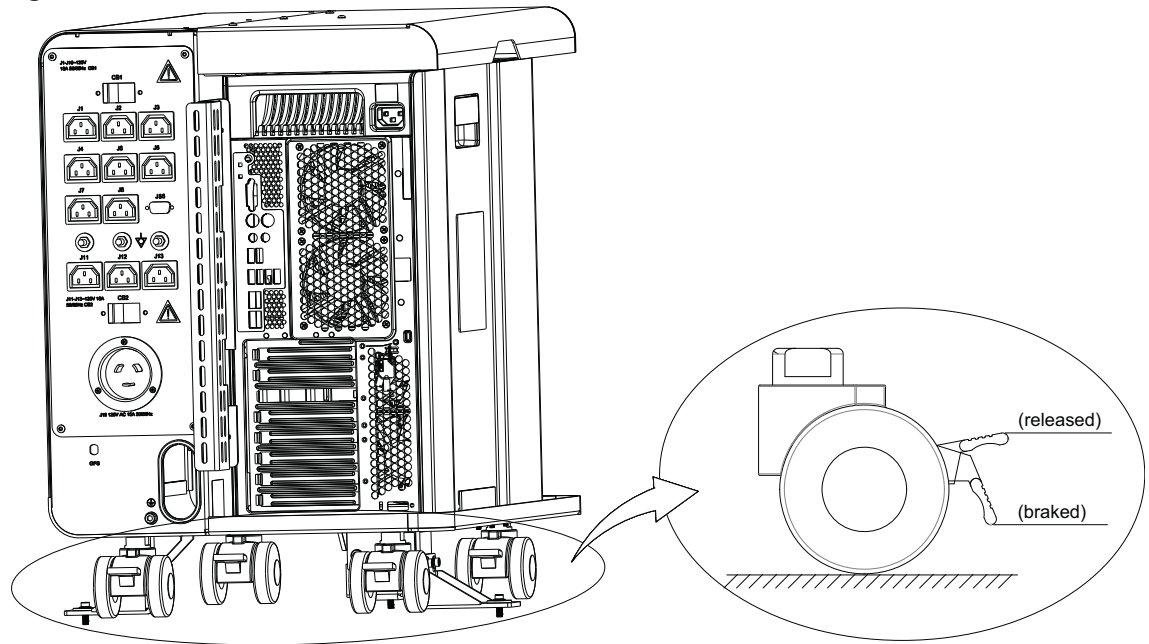
Figure 4-1 Console Packaging Removal



- b.) Remove all packaging and discard per local requirement

- 2.) Move console to installation location.
- 3.) Adjust console position, and then pedal four brakes to prevent console from sliding.

Figure 4-2 Brake



4.2.2 Console Cable Connections

NO.	Description	Long Cable	Short Cable
53	LVAC Power Cable - PDU to Operator Console	2343531	2343531-2
56	Ground, Raceway to Operator Console	2371450-3	2371450-4
101	Signal Cable - Gantry to Operator Console	5419981	5419981-2
102	Signal Cable (Ethernet) - Gantry to Operator Console	2373436-2	2373436-3
103	Data Cable (Fiber Optic) - Gantry to Console	5432019	

Table 4-2 System Cables for OC Connections

Figure 4-5 Z8G4 Host Computer Port Label

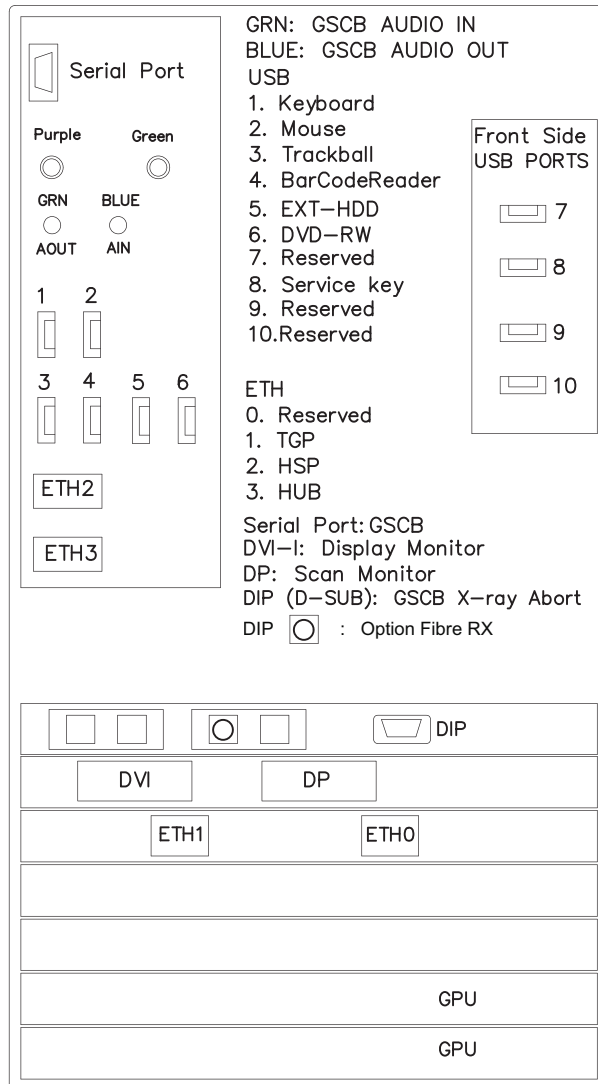


Figure 4-6 OpenOC16 AC Box Assignments

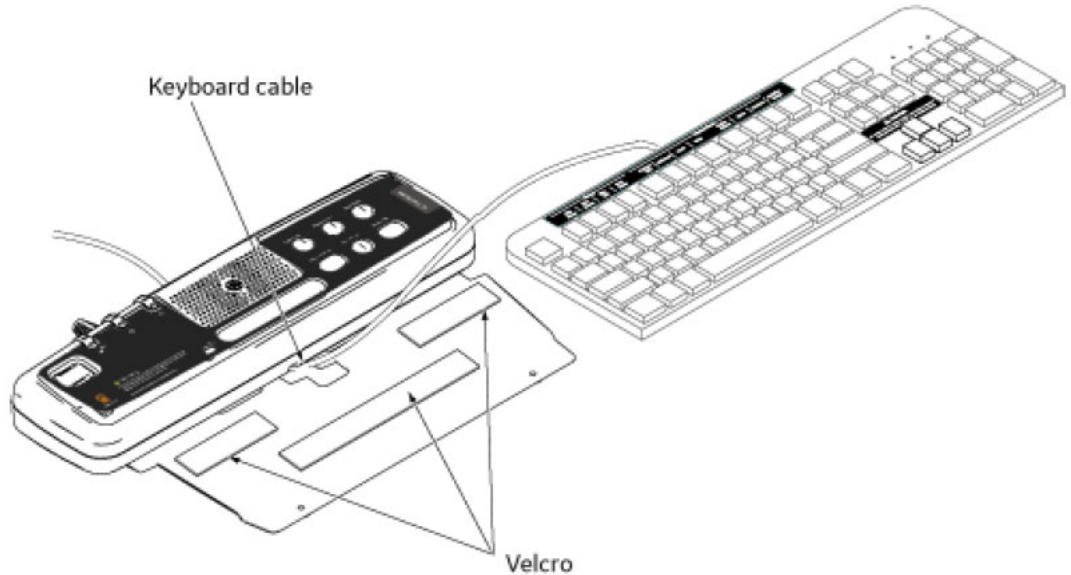


Number	Description
J1	Scan Monitor Power Connection
J2	Display Monitor Power Connection
J7	In-Room Monitor Connection
J11	Video Splitter
J12	Switch Hub
J56	GSCB Power Connection

Table 4-3 AC Box Outlet Assignments

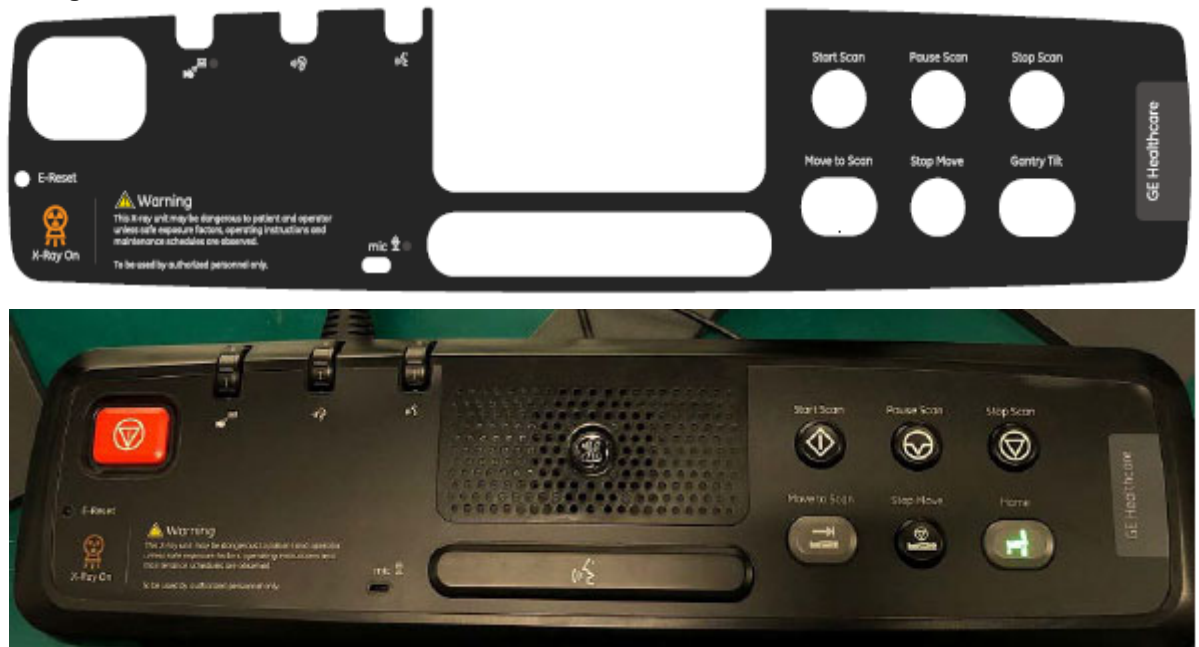
- 1.) Remove the old GSCB from the site, and take out the new GSCB. Install the GSCB to the metal plate by using four screws.
- 2.) Route the keyboard cable under the GSCB and attach the keyboard to the GSCB metal plate with velcro strip and fit snugly against the GSCB.

Figure 4-7 GSCB and Keyboard



3.) Select the local language GSCB film to attach.

Figure 4-8 GSCB Film with Tilt/E-Reset



Note: Verify that none of the buttons get caught and stuck under the overlay. Pay close attention to the prescribed tilt button on systems with the tilt feature.

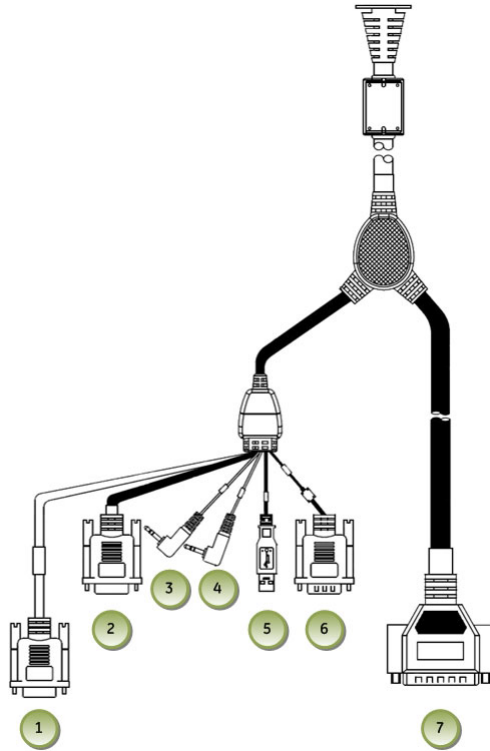
4.) Route and connect keyboard and mouse cables to console.
 If the length of keyboard and mouse cables is not enough, add the following extension cables (shipped with OC collector).

DESCRIPTION	PART NUMBER	CABLE LENGTH	QTY
USB Ext Cable (Keyboard)	5431909	3500 mm	1
USB Ext Cable (Mouse)	5458346	3500 mm	1

Table 4-4 Keyboard and Mouse Extension Cables

5.) Connect GSCB cable connectors to OpenOC AC Box and Z8G4 Host Computer according to Figure 4-9 and Table 4-5.

Figure 4-9 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 J56
7	GSCB - Black DB-25 (Male) Connector TGP Gantry Cable

Table 4-5 GSCB Cables

6.) Connect LCD Monitor cable connectors to OpenOC AC Box and Z8G4 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/Image Monitor Video Cable	5408703-2	3000 mm	2
Mini DP - DP Dongle Cable	5795077	250 mm	2

Table 4-6 Monitor Cables for Z840

Note: Connect two Mini DP - DP Dongle cables (5795077) to monitor video cables (5408703-2).

Scan Monitor

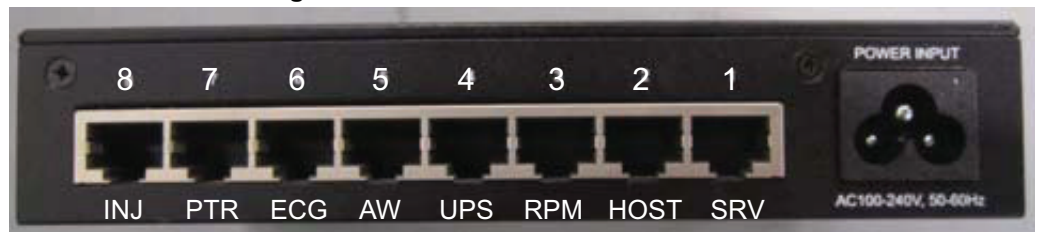
- Video cable from Console Host DP2 to Monitor DVI
- Power cable from Console AC Box J1
- Route through the cable keeper

Image Monitor

- Video cable from Console Host DP1 to Monitor DVI
- Power cable from Console AC Box J2
- Route through the cable keeper

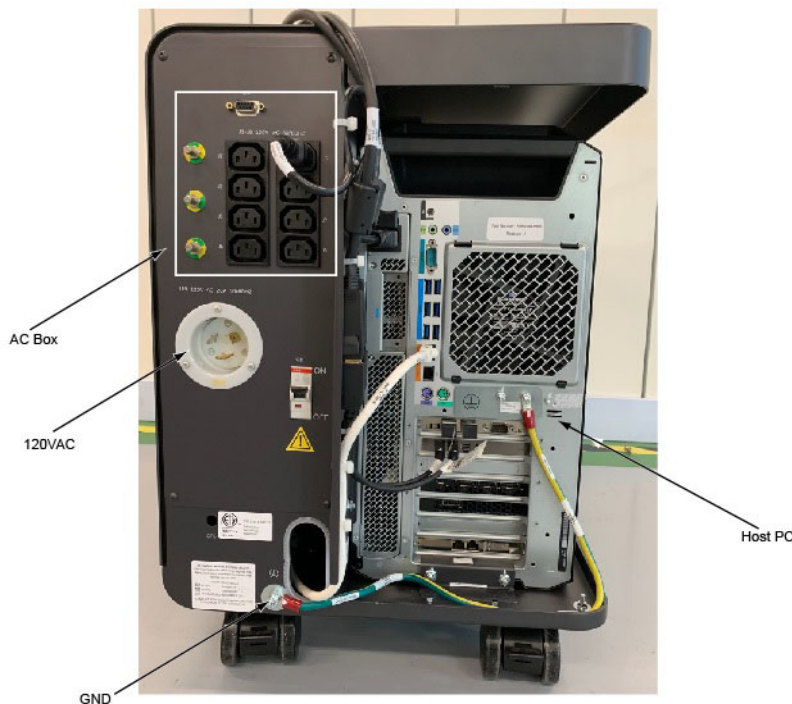
- 7.) Remove OpenOC right side cover and plug cables into Switch Hub on console if request.
- 8.) Connect other cables to Z8G4 Host Computer according to [Figure 4-5](#), then install right side cover of console.

Figure 4-10 Switch Hub Connections



- 9.) Connect the Power Cable and Ground Cable to the OpenOC Panel. (See [Figure 4-11](#))

Figure 4-11 OpenOC Console Rear View with AC BOX



4.2.3 Console Cover Installation

Please refer to the latest **Service Methods -> Replacement -> OpenOC16 -> Console Cover Removal and Installation** to Install console covers.

Section 5.0 TGPG/ORPG Board Replacement

Follow the latest **Service Methods -> Replacement -> Gantry -> ORP and TGP** to replace the old TGP-ORP boards. TGPG board (5406518-3) and ORPG board (5796592-2) are included in console upgrade kit (B79632DA), do not order replacement board.

Section 6.0 Load From Cold Procedure

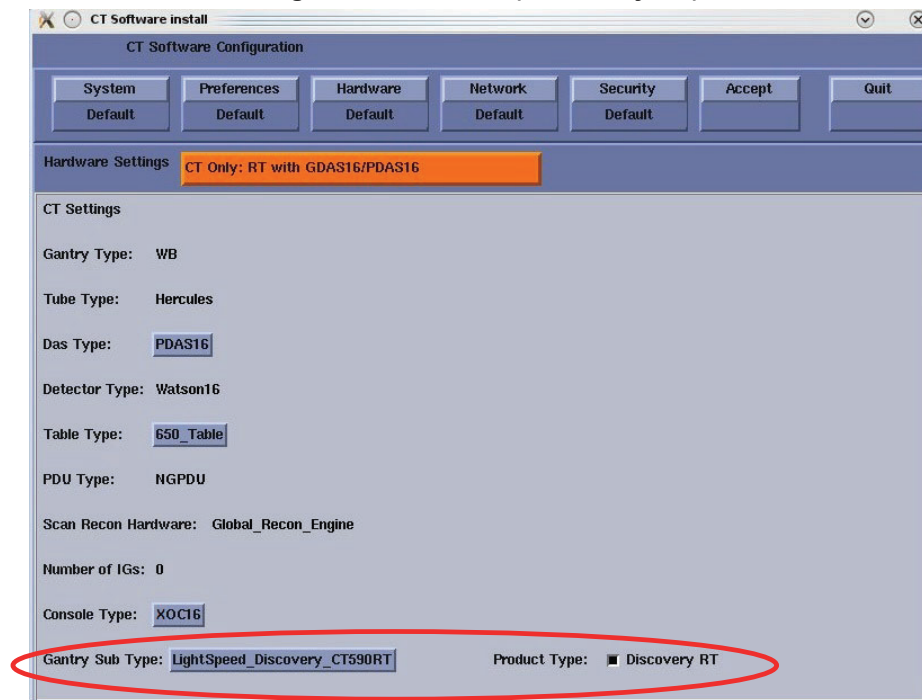
6.1 LFC Procedure

Detail LFC procedure refer to [Appendix A, Load From Cold Procedure](#).

Check and select the correct subsystem type in CT Software Configuration -> Hardware after loading system INFO.

- 1.) Select the correct **DAS Type**.
- 2.) Select the correct **Table Type**.
- 3.) Select the **Console Type** to **XOC16**.
- 4.) Check and select the correct **Gantry Sub Type**.
 - **For Discovery RT:** MUST toggle Product Type - Discovery RT [ON] and select "LightSpeed_Discovery_CT590RT" as Gantry Sub Type.

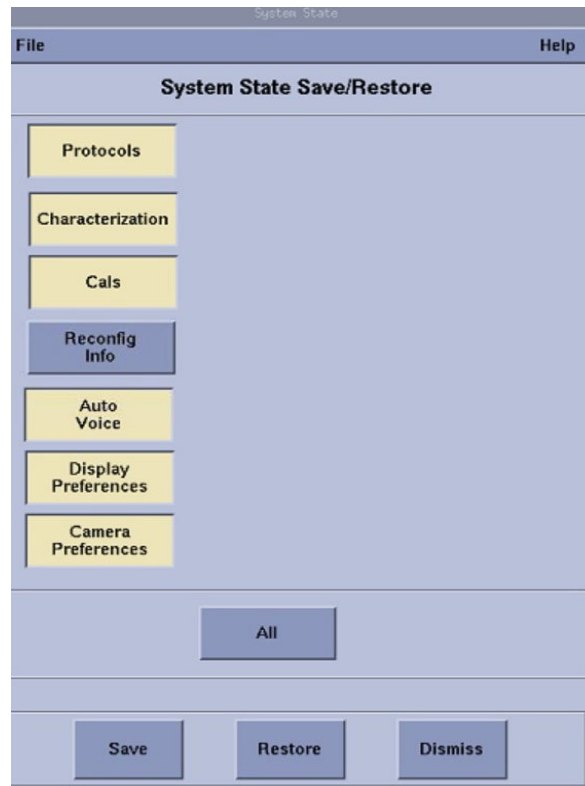
Figure 4-12 Hardware Configuration Window (Discovery RT)



6.2 Restore System State

- 1.) Insert a previously saved System State USB Media in the USB ports
- 2.) Wait until the USB Media is ready.
- 3.) Select the [Service] icon to access the CSD (Common Service Desktop).
- 4.) Select: [Utilities].
- 5.) Select [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]. Verify that the "Restore" of System State was successful. If not, restore the System State again. A message at the end of the System State Log window should display: Restore System State Completed Successfully.

Note: Please ignore any SwOption Error information during restoring the System State

- 10.) When completed, select [Cancel].

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

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

15.) Verify Restore System State

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

6.3 Install Options

- 1.) Install the required options recorded in [Section 3.0, Record System Information](#) (except AW options) through e-license website (<http://eLicense.gehealthcare.com/eLicense/>).

Note: If the customer purchased ASiR option, please un-install Neuro 3D Filter option before installing.

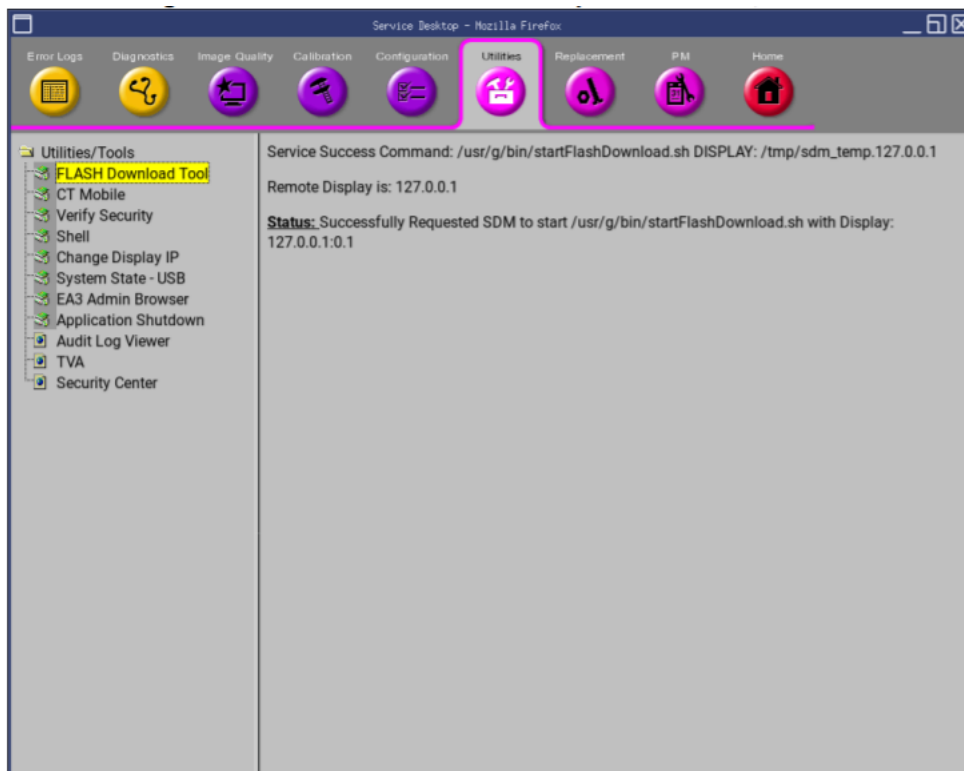
- 2.) Install MaxFOV or MaxFOV2 option.
- 3.) AW options recorded in [Section 3.0, Record System Information](#), step 3.
 - a.) Run the script to remove the old option button which be restored in [6.2, Restore System State](#).
Type: **remove_aw_apps_on_console**
 - b.) Follow NanoCloud AWS Installation procedure to install the NanoCloud AWS option, please find DOC2507368 from SIMS Content Viewer.

6.4 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 4-13 Flash Download Tool



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

Figure 14 Flash Download Windows



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

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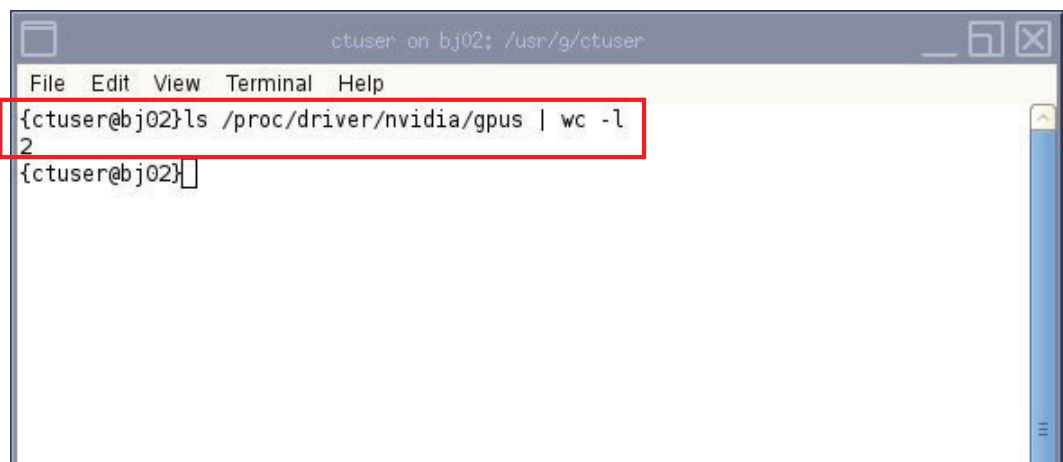
Chapter 5

Finalization

Section 1.0 Check GPU Card

1.1 Check GPU Card State

Open a shell, then type: ***ls /proc/driver/nvidia/gpus | wc -l***



```
ctuser on bj02: /usr/g/ctuser
File Edit View Terminal Help
{ctuser@bj02}ls /proc/driver/nvidia/gpus | wc -l
2
{ctuser@bj02}]
```

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

1.2 Check GPU Card ECC State

- 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):

```
Terminal
File Edit View Search Terminal Help
[root@ct99 ~]# nvidia-smi
Thu May 7 09:36:03 2020

+-----+-----+-----+-----+-----+
| NVIDIA-SMI 418.56      Driver Version: 418.56      CUDA Version: 10.1      |
+-----+-----+-----+-----+-----+
| 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 RTX 5000      Off          | 00000000:15:00:0 Off |          0          |
| 34%   31C   P8      9W / 230W | 17MiB / 15077MiB |    0%      Default  |
+-----+-----+-----+-----+-----+
|  1   Quadro P620         Off          | 00000000:2D:00:0 On  |          N/A         |
| 34%   38C   P8     N/A /  N/A  | 138MiB / 1999MiB |    0%      Default  |
+-----+-----+-----+-----+-----+

Processes:
GPU      PID    Type  Process name                      GPU Memory Usage
+-----+-----+-----+-----+-----+
|  0      4966    G    /usr/bin/Xorg_recon                9MiB
|  0      11373   G    /usr/g/recon/bin64/image_generation 6MiB
|  1      3631    G    /usr/bin/Xorg                      135MiB
+-----+-----+-----+-----+-----+
```

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

```
Terminal
File Edit View Search Terminal Help
[root@ct99 ~]# nvidia-smi
Thu May 7 09:57:10 2020

+-----+-----+-----+-----+-----+
| NVIDIA-SMI 418.56      Driver Version: 418.56      CUDA Version: 10.1      |
+-----+-----+-----+-----+-----+
| 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 RTX 5000      Off          | 00000000:15:00:0 Off |          Off         |
| 34%   33C   P8     10W / 230W | 17MiB / 16095MiB |    0%      Default  |
+-----+-----+-----+-----+-----+
|  1   Quadro P620         Off          | 00000000:2D:00:0 On  |          N/A         |
| 34%   46C   P8     N/A /  N/A  | 138MiB / 1999MiB |    0%      Default  |
+-----+-----+-----+-----+-----+

Processes:
GPU      PID    Type  Process name                      GPU Memory Usage
+-----+-----+-----+-----+-----+
|  0      4900    G    /usr/bin/Xorg_recon                9MiB
|  0     10046   G    /usr/g/recon/bin64/image_generation 6MiB
|  1      3585    G    /usr/bin/Xorg                      135MiB
+-----+-----+-----+-----+-----+
```

- 6.) How to turn ECC back on:
 - a.) Type: **nvidia-smi -g 0 --ecc-config=1** [ENTER]
 - b.) A message will show that ECC is enable and a reboot is required:

```
[root@ct99 ~]# nvidia-smi -g 0 --ecc-config=1
Enabled ECC support for GPU 00000000:15:00.0.
All done.
Reboot required.
[root@ct99 ~]#
```

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

Section 2.0 System Checking

Perform *Quality Assurance Test* of Functional Checks on Service Methods, make sure all of them pass.

Section 3.0 Save System State

Save the new system state after system function is normal.

Section 4.0 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.

Section 5.0 Old Console Disposal

The old console has components that are needed to cover FRU shortages, so please **RETURN** the de-installed console to 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.
- 3.) Transporter ships the de-installed console to:
 - **For AM**
Return Ship to:
GEHC Defective/Scrap Returns
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

HARVEST Upgrade	
Upgrade Name	<input type="text"/>
Country	<input type="text"/>
System ID	<input type="text"/>
Order/SO	<input type="text"/>
FSE SSO	<input type="text"/>
Ship to Address	
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**
 - **Site in Brazil**
Av. Dr. Marcos Penteado de Ulhoa Rodrigues, 690-Galpão 8A Pq.Jubran Cep-06460-040
Barueri-SP Phone: +55 (11) 3206-733
 - **Site in Argentina**
OCASA Soluciones Logísticas Echeverría 1262/64 C1428DQN – C. A. de Buenos Aires
(54 11) 4785-8585

Appendix: LFC Procedure (21BW19.20)

Prerequisites

Table 1. Personnel requirements			
Required persons	Preliminary requirements	Procedure	Finalization
1	Not Applicable	2 hours	Not Applicable

Table 2. Tools and test equipment				
Item	Quantity	Effectivity	Part number	Manufacturer
1	Not Applicable	-	-	-

Table 3. Consumables				
Item	Quantity	Effectivity	Part number	Manufacturer
USB Media	1	-	-	-

Table 4. Required conditions		
Condition	Reference	Effectivity
All hardware components of the system must be functional.	-	-
A valid and current system state backup is required. System state is already configured for site specific configuration and preferences. If system state backup media is missing or not current, some or all of the following must be performed: (1.) A manual configuration using information contained on the system configuration data sheet completed at installation time. (2.) Software options licenses will need to be manually reloaded. (3.) System calibrations will need to be performed.	-	-
Only trained service personnel should service the GE CT Scanner.	-	-

Overview

Last Revised:	August 13, 2021
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The following procedure describes and illustrates the system software loading process commonly referred to as the Load From Cold (LFC). It is important to follow the steps listed below in order.

NOTE: For those who are familiar with the LFC process, a quick-reference guide is also included. This quick guide contains a flow chart with the abbreviated software load process for those experienced with loading software on this series of consoles. Inexperienced persons should not use the LFC Quick Guide procedure because assumptions are made that the individual already knows how to perform key processes such as *System State Save Restore*, *Options Loading* and *System Configuration*. See LFC Quick Guide.

Applicable System Type	OS and App SW (P/N)	APP Rev	OS Rev
Discovery RT	5879080	21BW19.20	GEHC-CT-OS- DOC2579116R1-2018R12

1 Software Deliverable for OpenOC16 Console

Procedure

1. Operating System, Version GEHC-SLES-12-SP2

SLES = SUSE Linux Enterprise Server

2. CT Applications Software

2 Pre-LFC Checks and Information Gathering

Procedure



○ **CAUTION**

- POTENTIAL FOR LOSS OF PATIENT DATA.
- This procedure will overwrite existing data.
- Before performing this procedure, ensure that the Archive and Network Queues are empty of patient data. If they are not, DO NOT proceed until it can be verified that all patient data has been archived.



○ **NOTICE**

- After each reboot during the software install process, an 'Unrecognized X-Ray Tube' message will be displayed (as shown in [Tube Install Certification Tool - Screens](#)), until the tube identity has been selected and 'Flash Download' has also been performed. The same "unrecognized x-ray tube" message will also be displayed on the CSD Homepage, until the ID and flash download are done.

2. Confirm that a current system state backup media is on site. If unsure of the status of the system state, execute [System State Save Restore](#) procedure found in the software chapter of this manual. Save a system state backup to USB media.



○ **NOTICE**

- Do NOT switch screens or run other programs while saving System State. Otherwise the GUI may “hang” while trying to close, and the System State will need to be saved again.



○ **NOTICE**

- When performing Save/Restore System State, check to ensure there is no two or more USB storage devices (SSA Key or other mobile storage devices) plugged in Console/Tower at the same time which may result in incorrect data storage.

3 Information Capture

3.1 Common Information Capture

Procedure

1. Record Autovoice Volume control settings (**ALT-F3** by Toolchest, upper right corner).
2. Write down all of the system INFO information on the reconfig screens, including the network information (use the appropriate information sheet, found in [Console Information Sheets](#))
3. Verify and record specific system hardware configuration.
 - a. Open a shell and type the following:

```
{ctuser@hostname} cat /usr/g/config/INFO
```

- b. Record screen information in [Console Information Sheets](#)

For an example output, see [Example Config/INFO Output](#)

4. If the console has Connect Pro installed, write down the information when you run installhisris so it can be entered on the new console when installing the Connect Pro option.
5. Close the Service Desktop window in the upper left corner of the screen.

3.2 Information Capture for Option Installation

Procedure

1. Open a Unix Shell and type the following:
 - a. {ctuser@hostname} **su -**
 - b. Password:
 - c. [root@hostname] **ls -l ~ctuser/ves/.hesMode**

NOTE: There are no spaces in the phrase ~ctuser/ves/.hesMode.

2. Examine the results.
 - a. If the results are similar to:

```
-rw-r--r-- 1 ctuser users 0 Apr 3 12:43
```

```
/usr/g/ctuser/ves/.hesMode
```

Then HES (Hard Exam Split) mode is configured.

- b. If the results show 'No such file or directory', then VES (Virtual Exam Split) mode is configured.
3. Record Exam Split Mode (Hard or Virtual). This info will be used during the LFC Options Installation.
4. Close the Unix Shell

3.3 Save JEDI Runtime Parameters

Procedure

1. Save the Jedi Runtime parameters.
2. Detail procedure, refer to **Software-> HV Subsystem Utilities->[JEDI Generator Tool](#)** for how to save them.

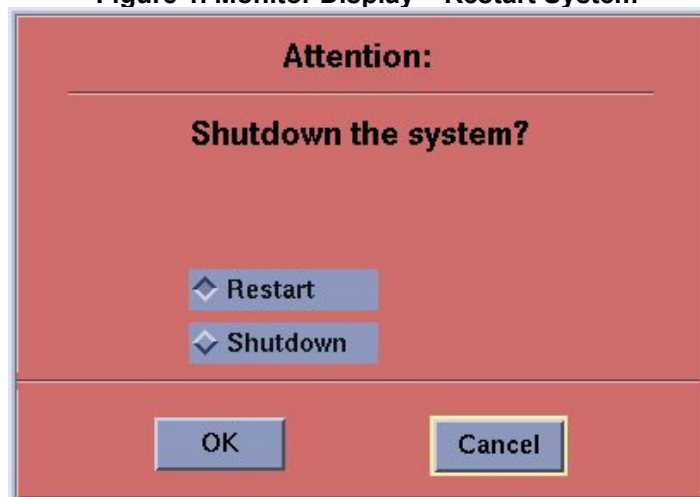
4 Operating Software (OS) Load

NOTE: Takes 20 minutes approximately to complete OS installation.

Procedure

1. Insert the USB disk into the host computer most left USB drive in front panel.
2. Shutdown and re-power the operator console:
 - a. If application is up:
 - i. Shut down the application.
 - ii. Select **Restart** then **OK** to restart the system.

Figure 1. Monitor Display – Restart System



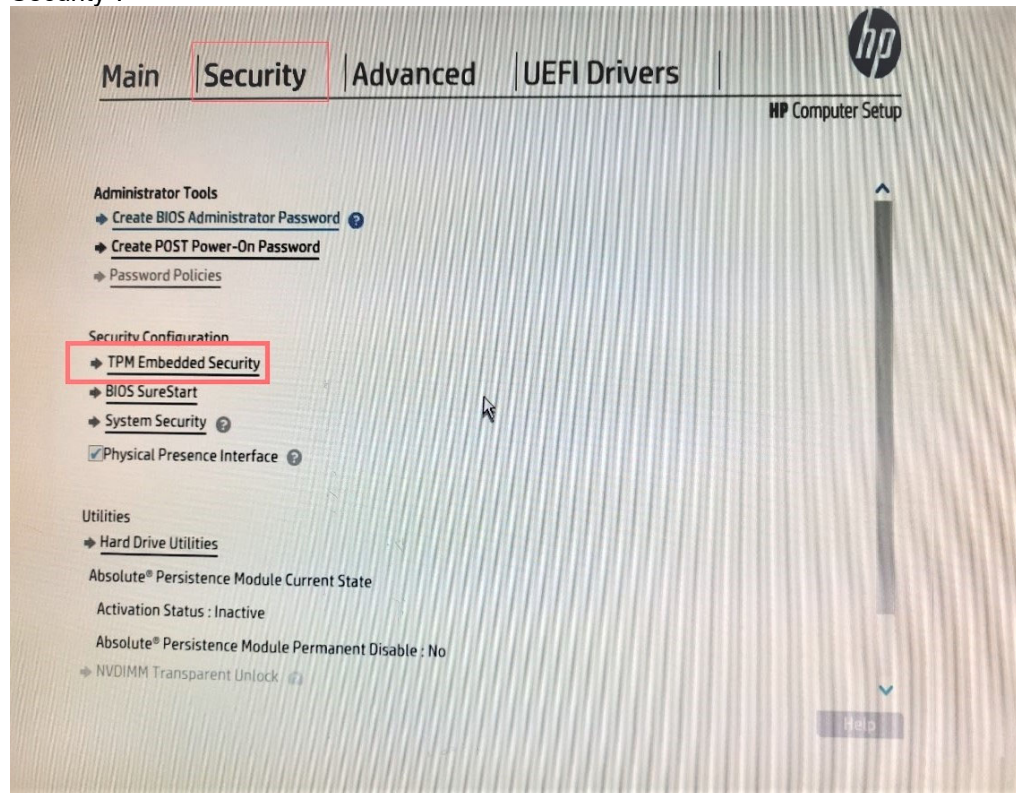
- b. If application is down, open a shell and type:
 - i. `{ctuser@hostname} reboot`

- ii. The operator console monitor will display a System halted message when it is acceptable to power OFF the operator console.
- iii. Power OFF the operator console at the front panel switch.
- iv. Wait 30 seconds to allow the disk drive to settle; then power ON the operator console at the front panel switch.
- v. Press F10 to enter into Setup menu during system bootup
- vi. Refer to **TPM activation procedure** to clear TPM with '**on next boot**'

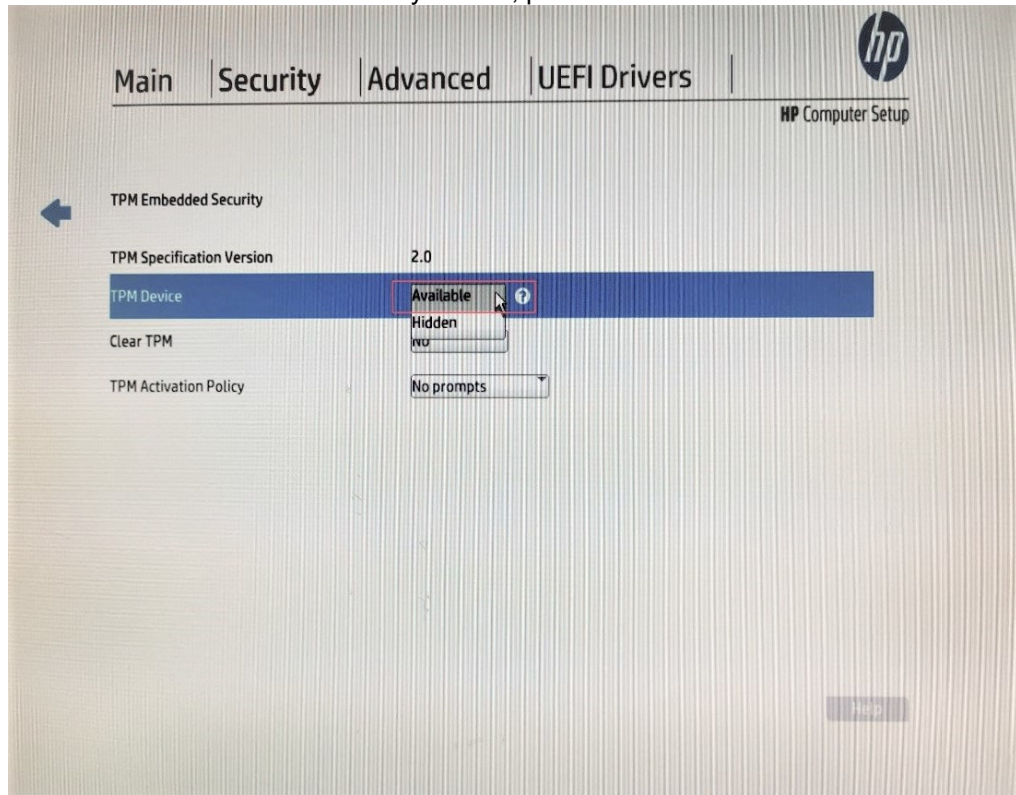
3. BIOS TPM Setup

NOTE: When performing TPM activation, must follow the regulation of respective country.

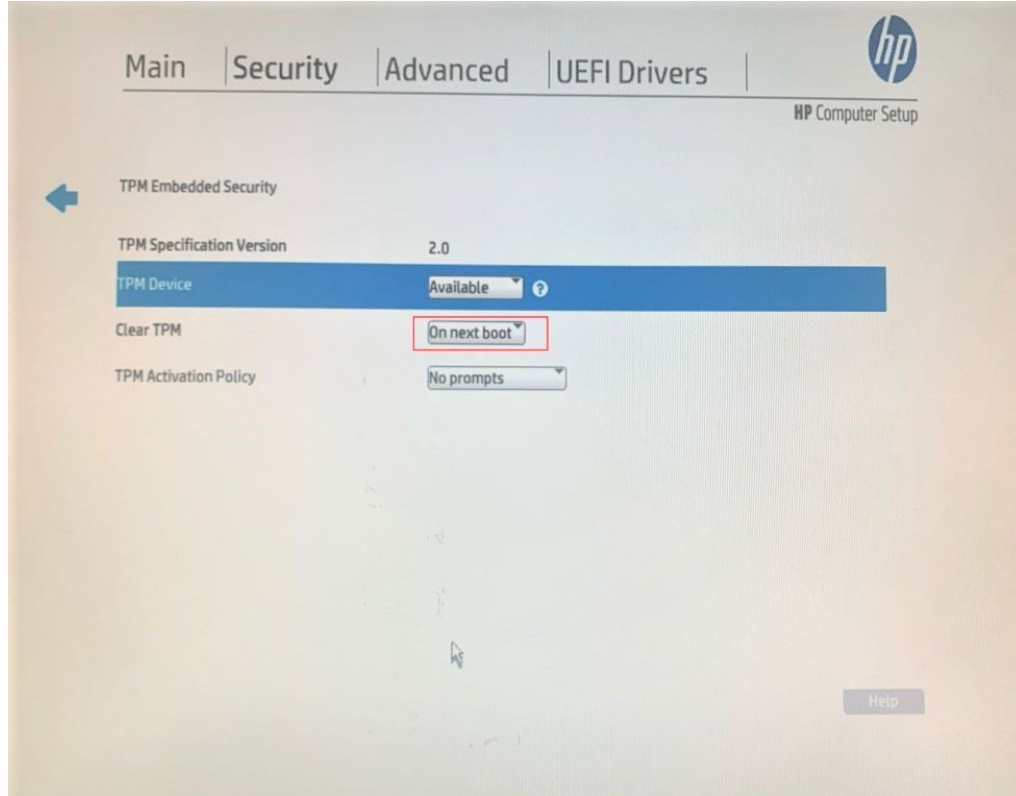
- a. When booting up, press F10 to enter BIOS, select "Security", click "TPM Embedded Security".



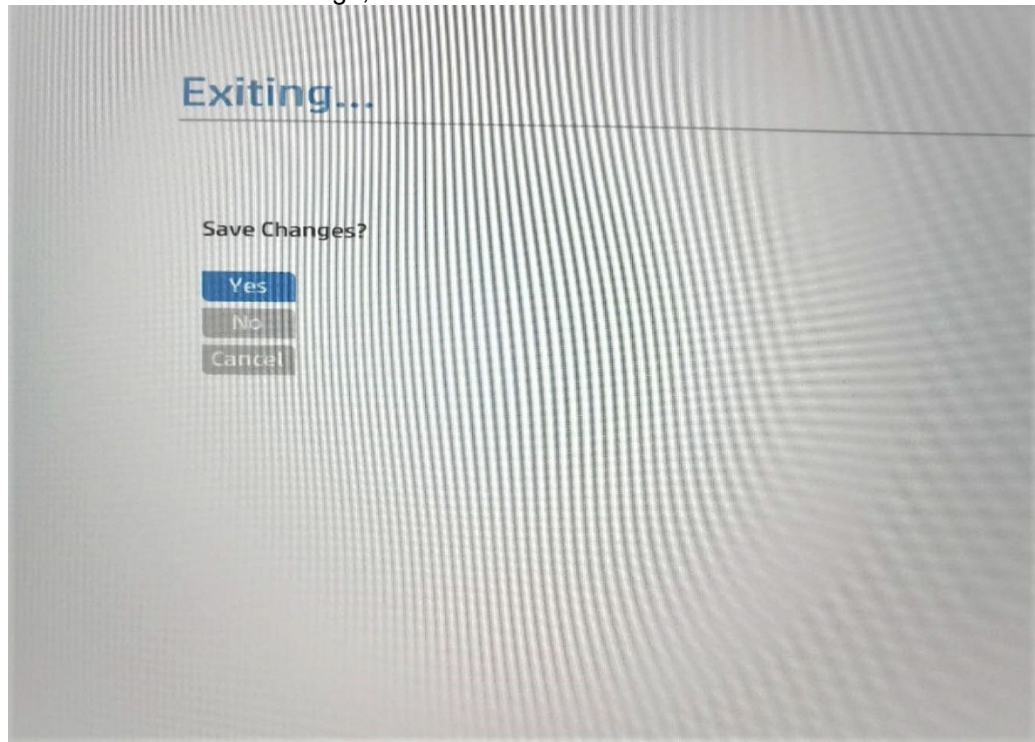
- b. "TPM Device" status is "Hidden" by default, please select "Available" in the menu.



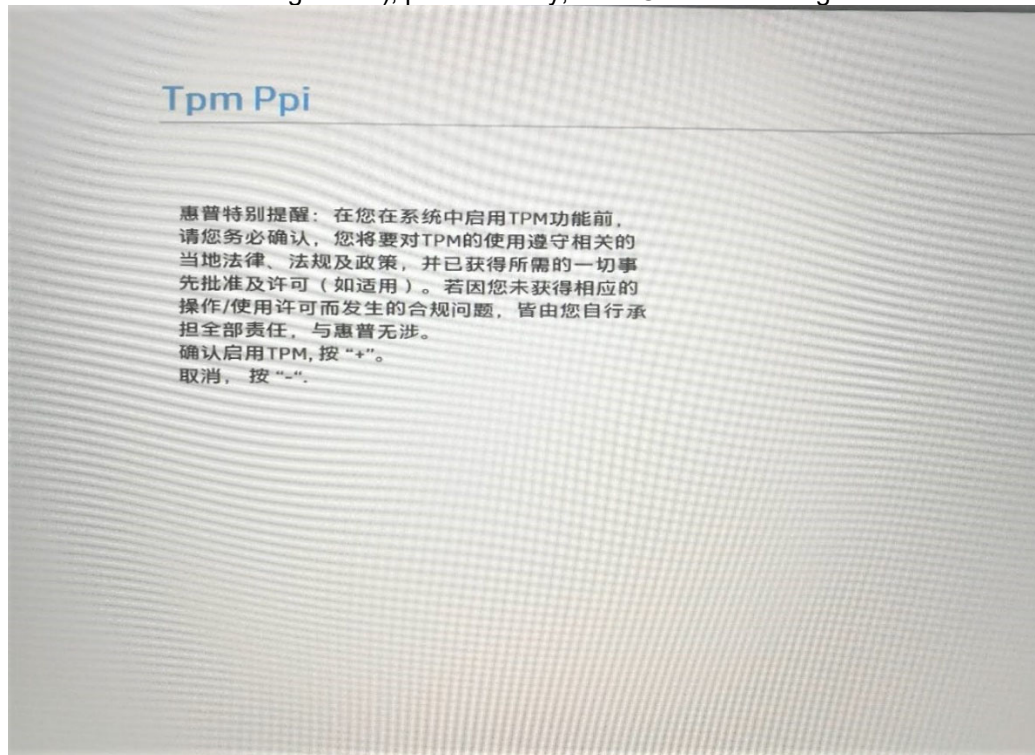
- c. Select "On next boot" in the menu of "Clear TPM".



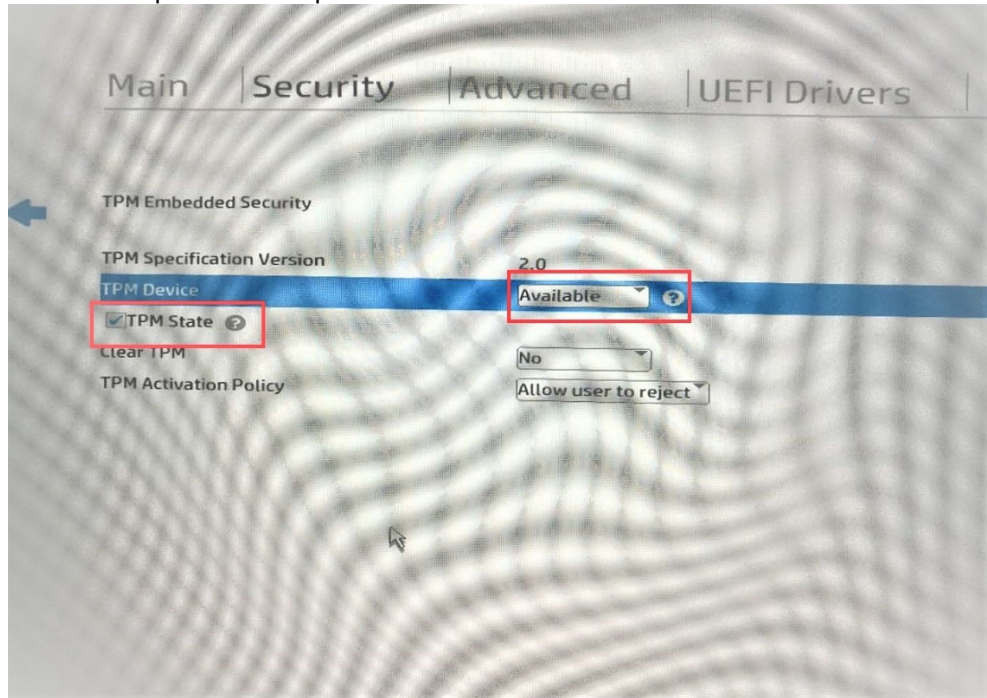
- d. Press F10 to save the change, select "Yes".



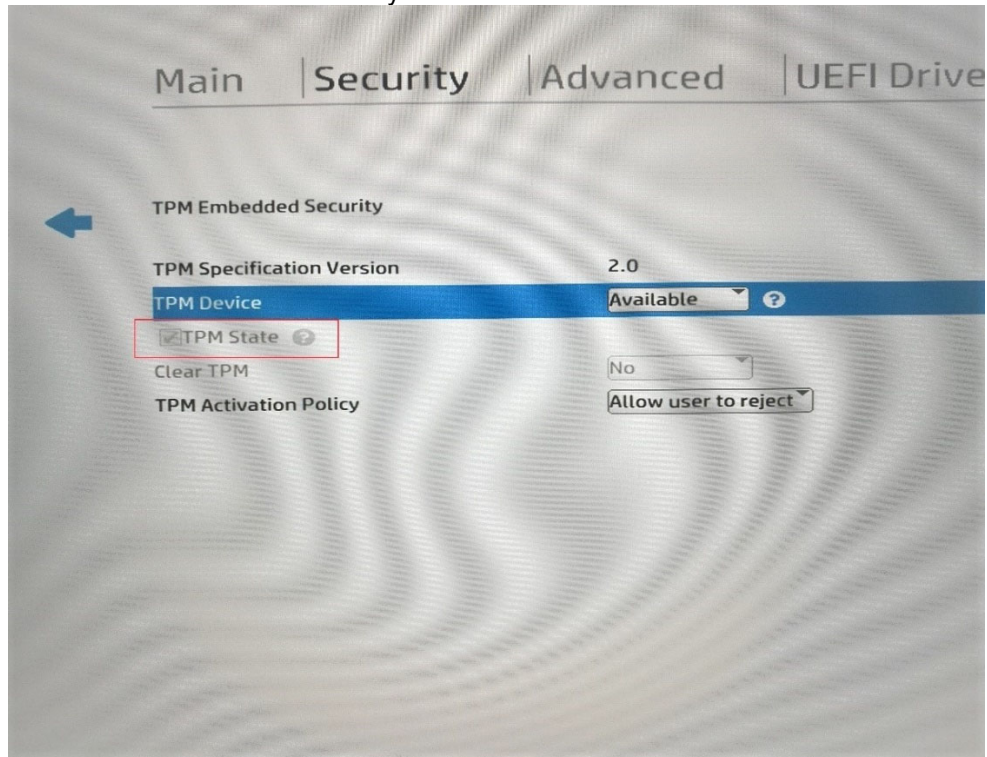
- e. The PC will re-boot and pop up the notification as below (the same as the message of RTF card about TPM regulation), press "+" key, the PC will re-boot again.



- f. After the PC re-start, press F10 to enter BIOS, select "Security", click "TPM Embedded Security", check the status of TPM Device, which will show "Available", and "TPM State" has been ticked. In this page, press F10 to save the change, select "Yes". Re-boot the PC and complete the setup.

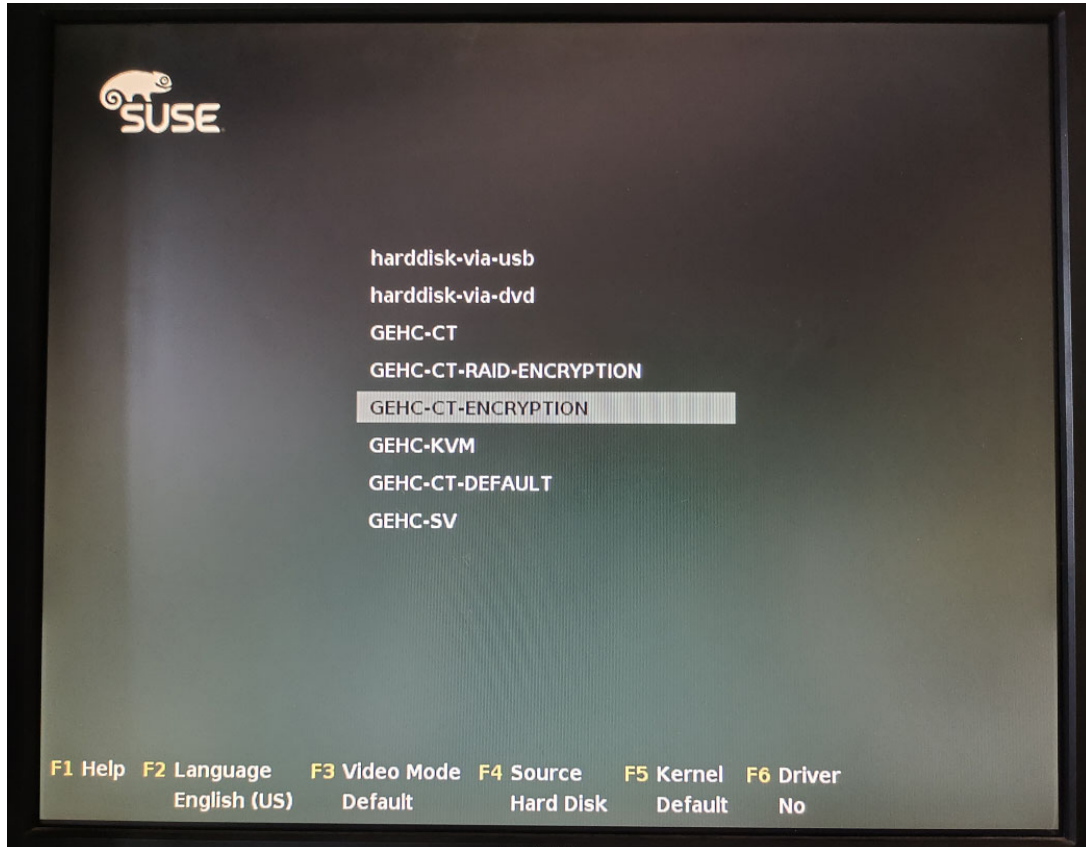


NOTE: If the TPM State is ticked, but not available for modification (color in gray), then TPM is not activated successfully.



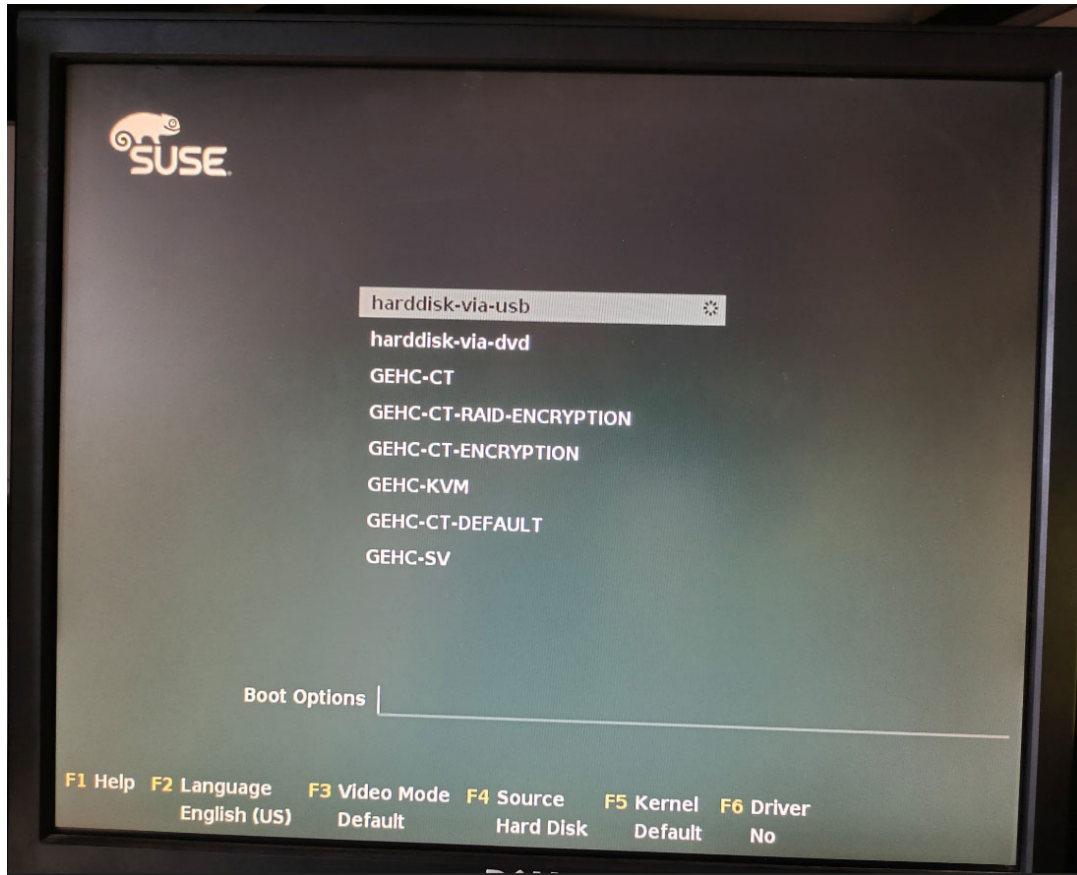
4. As the computer restarts, the installation interface appears, use the up/down arrows to select **GEHC-CT-ENCRYPTION** and enter.

Figure 2. Monitor Display – Installation Prompt



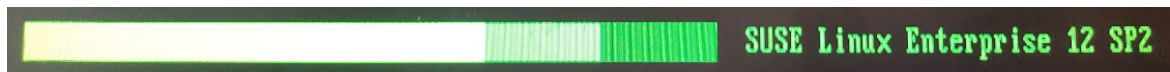
5. System starts Base Installation procedure.
6. The computer restarts after about 15 minutes, the installation interface appears again, select **Boot from harddisk-via-usb** and enter.

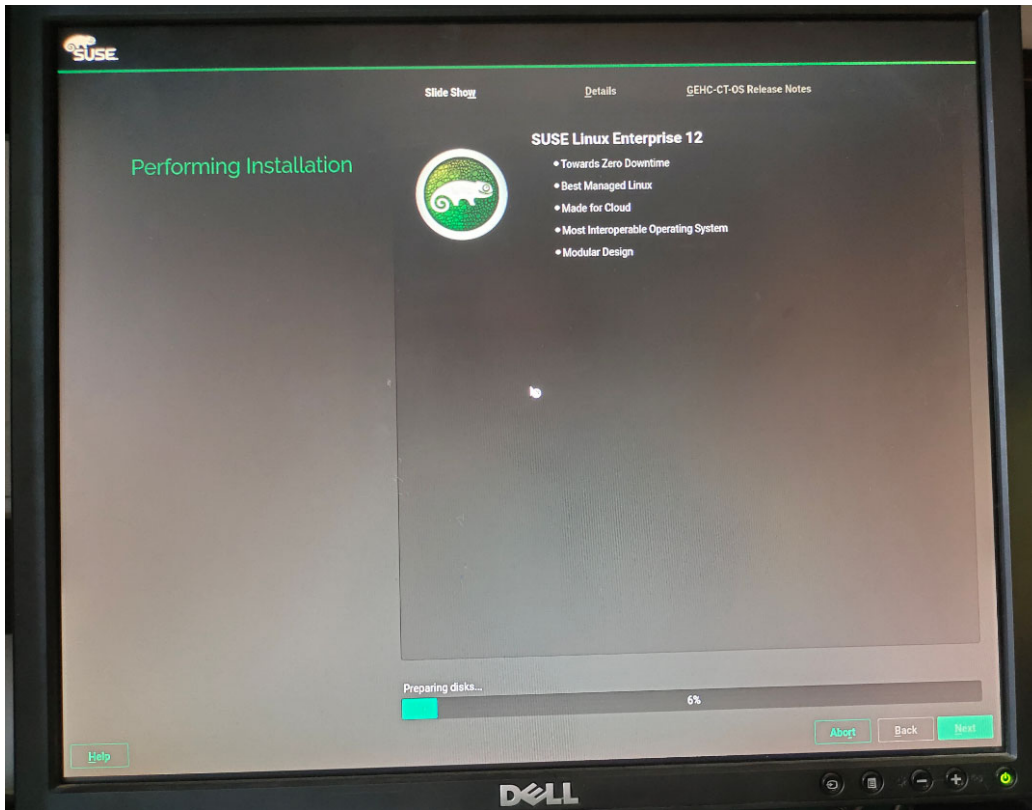
Figure 3. Monitor Display – Boot Prompt



7. System starts Configuration procedure, includes: System Configuration and Clean Up.

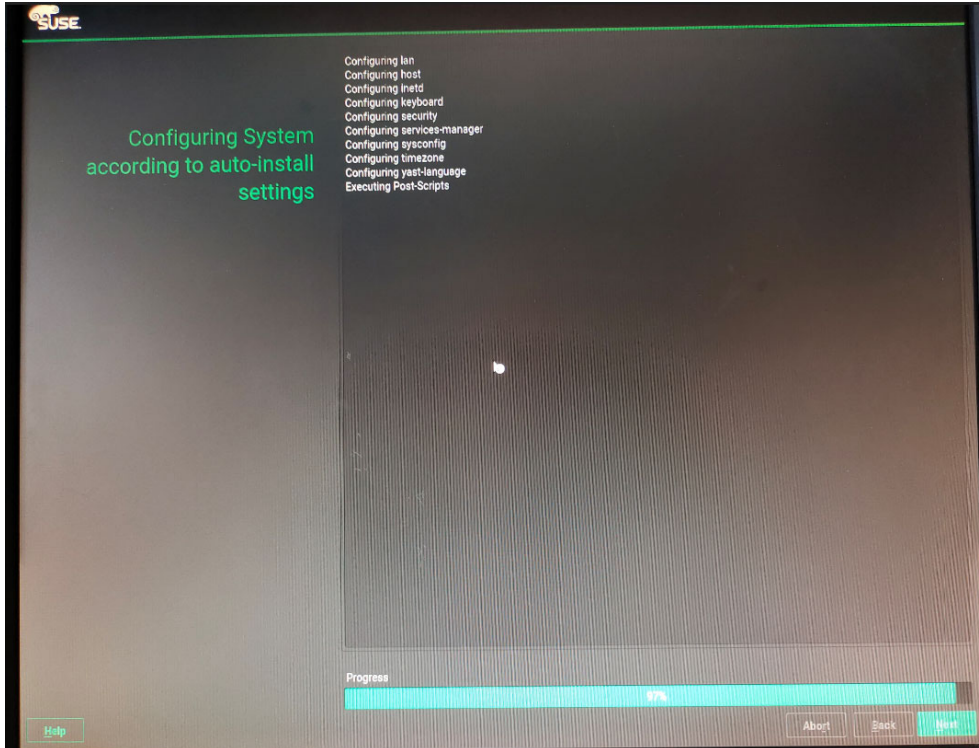
Figure 4. Monitor Display – System Configuration and installation





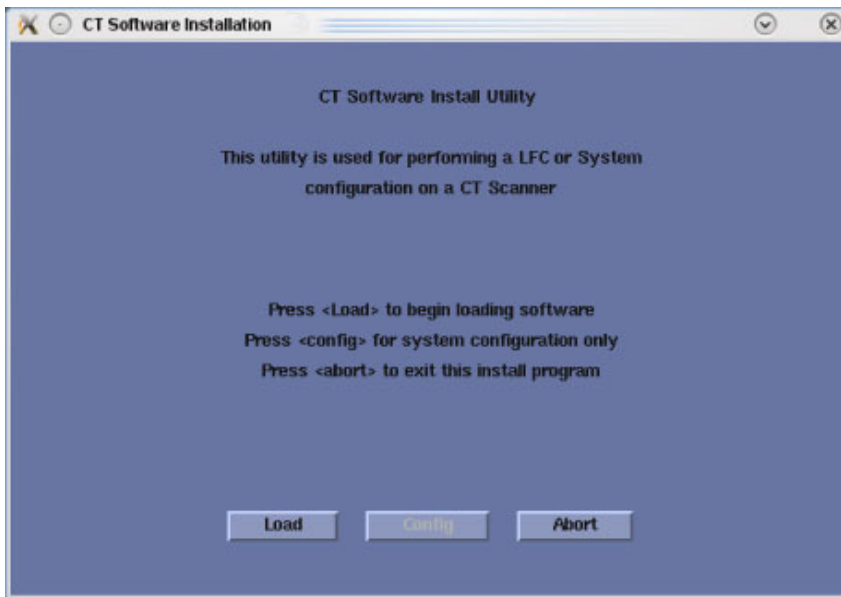
8. After the OS is loaded and **Boot from harddisk-via-usb**, system will do auto-install settings

Figure 5. Monitor Display – System auto-install settings



9. the system automatically restarts to load and install CT Application by select 'haddisk-via-usb' again and then Start CT Software Installation.

Figure 6. Monitor Display – CT Software Installation



Note: Don't remove the USB disk during OS and APP installation process.

5 Applications Software (APPS) Load

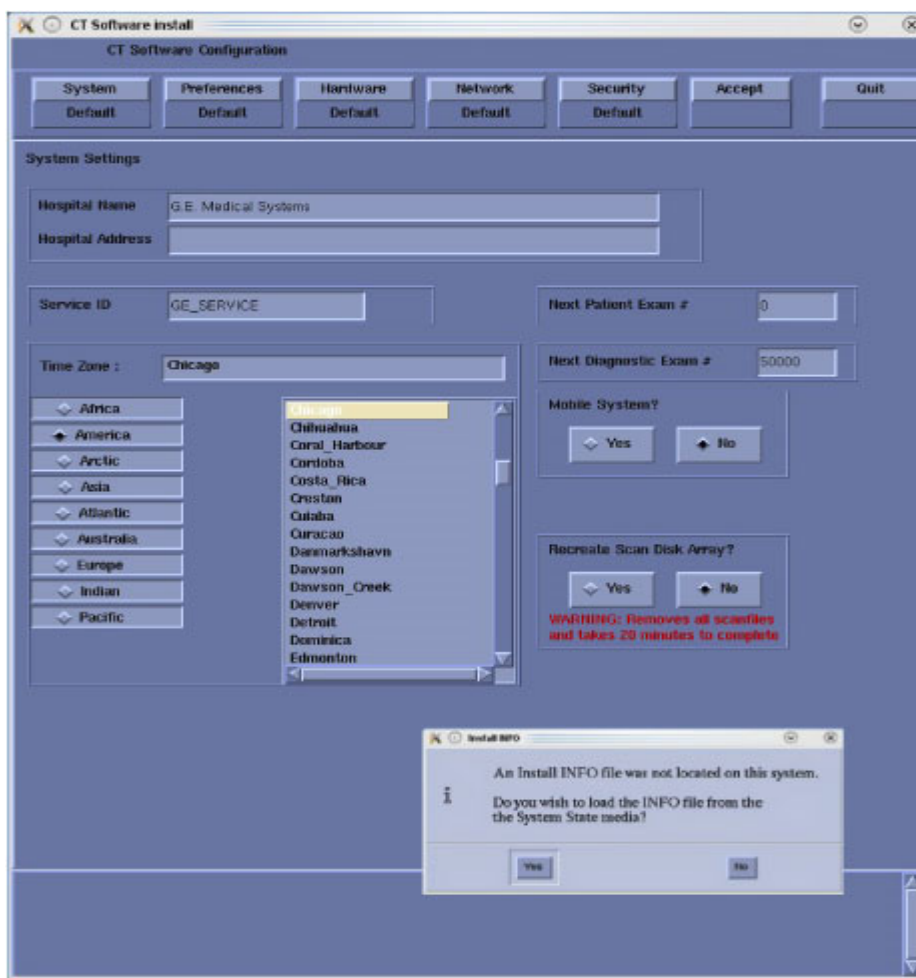
NOTE: Takes 40 minutes approximately to complete application installation.

Procedure

1. Select **Load** in the CT Software Installation window.
2. A prompt message appears asking if you wish to load the INFO file from the system state backup media.(it is only happen once time at the beginning of Application installation)

Select **Yes**.

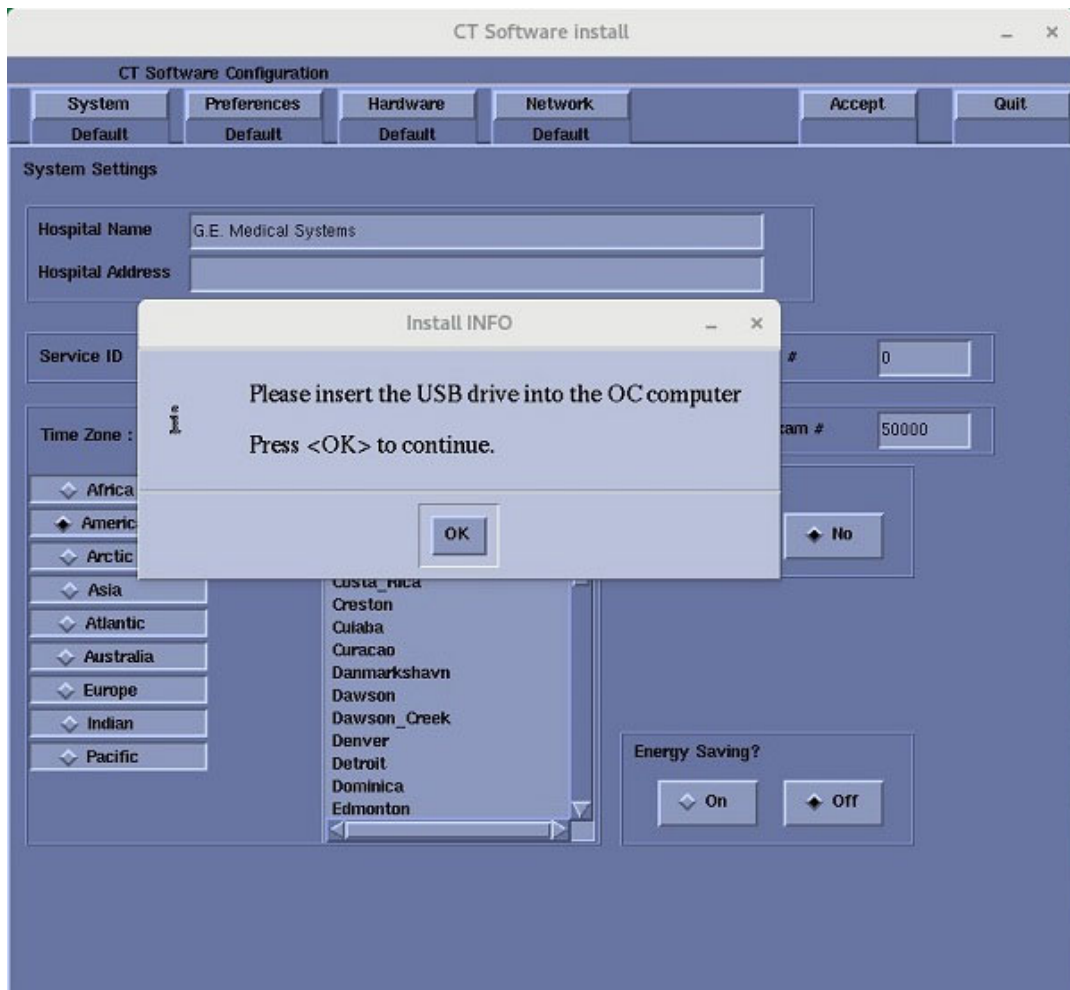
Figure 7. Install INFO Window



NOTE: If a valid and current system state backup media is not available, select **No** and manually configure the Hardware Tab to define system and console type in accordance with the procedure [Manual Configuring System INFO](#).

3. System state (Install INFO) media type decision window will appear

Figure 8. System State Media Type Window



4. Insert the system state backup media USB.

NOTE:

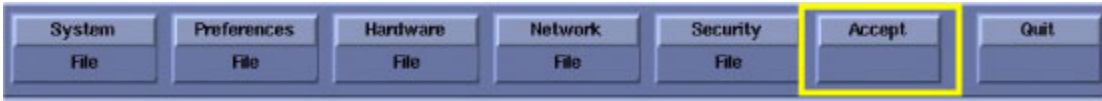
USB media can be inserted in any of the USB ports located on the console. Recommend using the service USB port located next to the console's power switch.

Select **OK**.

5. The Install INFO on the system state backup media will be read and if a valid system state backup has been inserted, CT Software Configuration window will become active.

Select **Accept**.

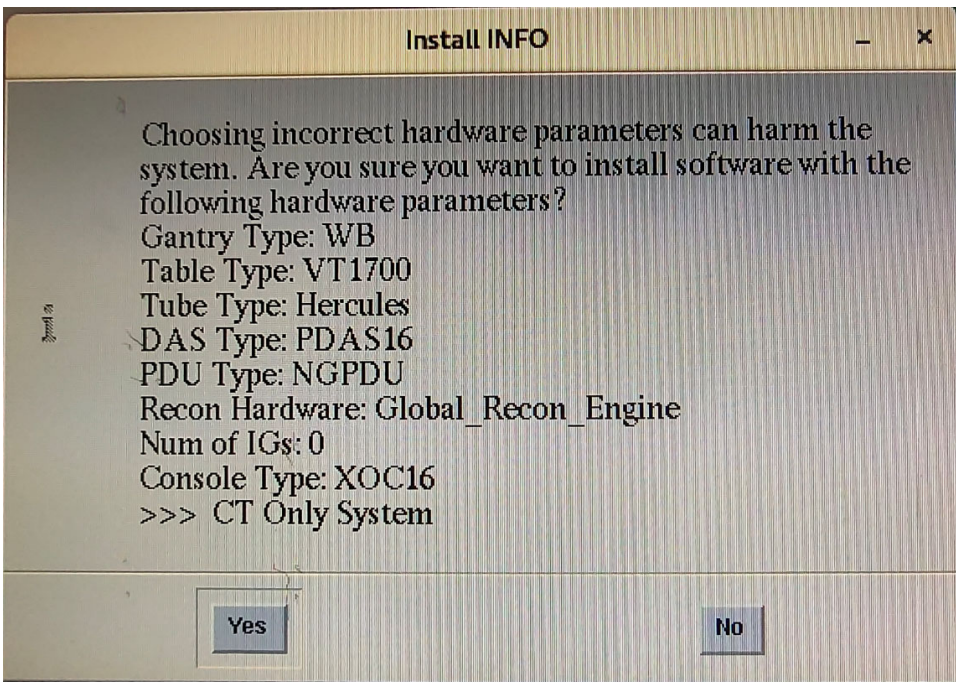
Figure 9. Install INFO - Accept Button



6. The Install INFO on the system state backup media will be read and a confirmation window will appear.

Select **Yes**.

Figure 10. Install INFO - Confirm Window



NOTE:

The Install INFO detail in illustration will differ depending on system type. Verify that the Install INFO detail is correct for the system before selecting [YES].

If the information is not correct, select the [NO] button. This returns you to the **Hardware** screen. Select the **Hardware Parameters Selection** button and select the correct system configuration from the displayed list. Select the **Accept** button again, following by the **YES** button on the Install INFO pop-up to accept the new hardware configuration.

For WB3.0, the Console Type must be 'XOC16'

7. System Install INFO will be now used to create the CT application load routine. Do not remove the APPs Disk until completed.

8. The following pop-up message appears:

“Please make sure the CT Application SW is in the drive - the system will be rebooted.”

No action is required for this pop-up. The system will automatically reboot after approximately 10 seconds if the **OK** button is not selected.

9. The APPs is loaded after about 17 minutes, then system will automatically reboot.
10. After the host computer reboots, the 2-monitor display comes up and a pop-up window will appear in scan monitor.

Figure 11. CT Software Auto-Start Disabled Pop-Up Windows



Click **OK** to close window.

NOTE:

Remove APPS disk from Host Computer.

Remove system state backup media for either DVD-RAM drive of tower or USB port.

6 Confirm Host PC Software

Procedure

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 to see software and hardware config information:

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

21BW19.x. <hardware revision info here>

Example: 21BW19.12.WB_H_P16_G_HPT

3. Confirm that the swhwinfo results match the software revision shown on the applications disk.
 - o If the revision match, continue with this procedure.
 - o If the revision do NOT match, reload the software.

7 Set Time and Date

Procedure

1. Open a unix shell and log in as root:
 - o {ctuser@hostname} **su -**
 - o Password: **#bigguy**
2. Set date and time. Type the following:

```
{root@hostname}# setdate Enter to be prompted through the individual entries. Where:
```

Note: Type "q" to quit anytime. Enter to proceed:

Note: TO BE ACCURATE, this tool will prompt you to enter the "Second". Watch your clock or PC carefully to enter the proper value, and hit [Enter] at the right second to set the accurate time.
Enter to proceed:

Enter the current Year (1980-2030) [2010]:

Enter the current Month (1-12) [04]:

Enter the current Day (1-30) [14]:

Enter the current Hour (Military Time) (0-23) [18]: 15

Enter the current Minute (0-59) [13]: 18

Enter the current Second (0-59) [00]: 10

Updating the time on the OC, Please Wait...

3. Upon completing either of the above commands, the user will receive the following responses:

Current OC date : Fri Apr 14 16:14:05 CDT 2010

```
{root@hostname}#
```

setdate completed with NO ERRORS.

4. Type: {root@hostname}# **reboot**

5. Turn OFF the Operator Console power at the front switch.
6. Wait ten (10) seconds, then turn ON the Operator Console power at the front switch.

8 Password Change Process

When CT Application starts up, it pops up the window for password change. The start-up process will be waiting here until all passwords are changed.

Set new password for each User [root] [ctuser] [insite].

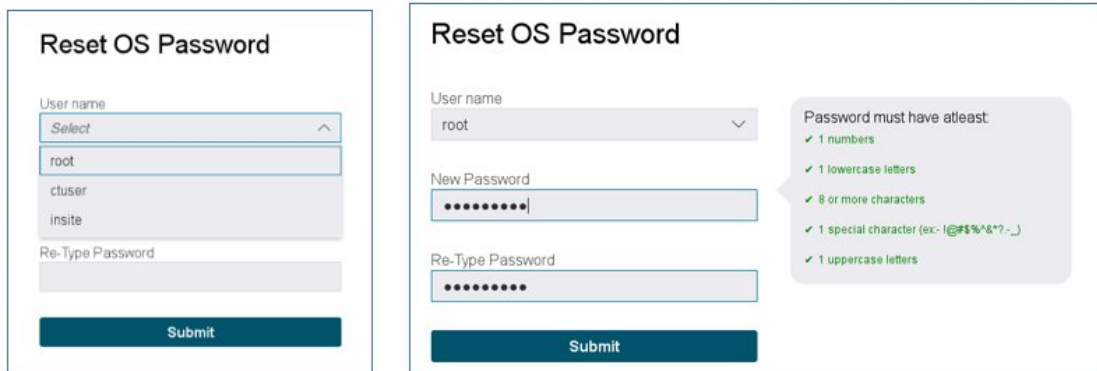
The password must have the followings at least.

- 1 numbers
- 1 lowercase letters
- 8 or more characters
- 1 special characters (ex. !@#%&*?_)
- 1 uppercase letters

Procedure

1. Change the passwords for each User [root] [ctuser] [insite].

Figure 12. Change OS password screen

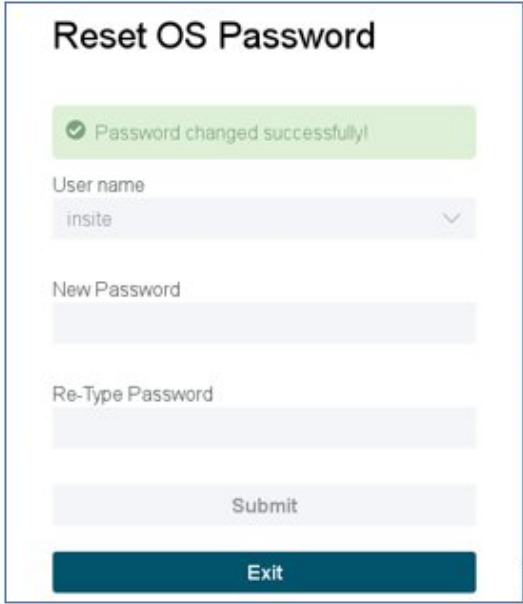


2. Record new passwords. If the new password is lost, LFC must be done again.

User name	Password
root	
ctuser	
insite	

3. After setting the password for [insite], click the **Exit** button. The Application software starts up automatically.

Figure 13. Exit Reset OS Password screen



Reset OS Password

✔ Password changed successfully!

User name
insite

New Password

Re-Type Password

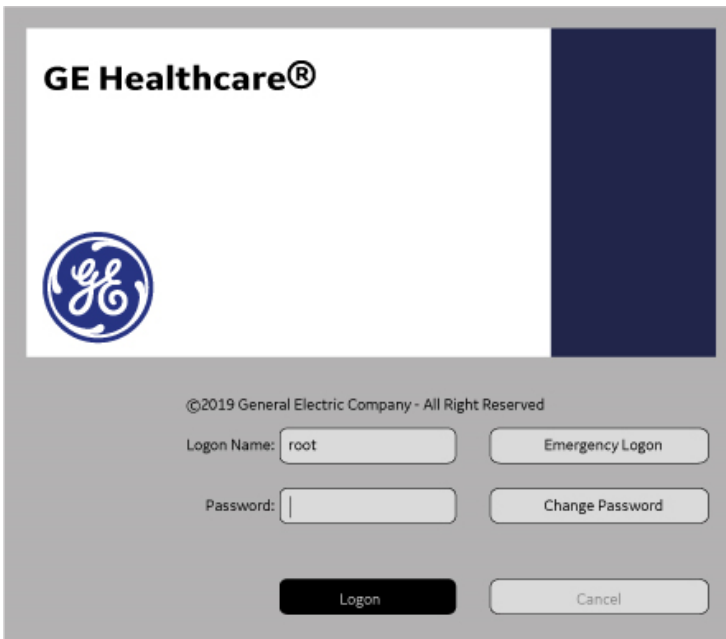
Submit

Exit

4. Enter root password and Login to the following windows.

NOTE: Use default root user password at this time because the password is in EA3 setting.

Figure 14. Login Screen



GE Healthcare®

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Logon Name: root Emergency Logon


Password: Change Password

Logon Cancel

5. The Change Expired Password screen appears. Enter old password as default root password and new password as same as set in previous step. Then click OK.

Figure 15. Changing Password 1

Change Expired Password

 Your password has expired. Please enter and confirm a new password to complete logon.

Your password must have a minimum length of 8 characters and maximum length of 63 characters. Do not include a palindrome or logon name.

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Logon Name:

Old Password:

New Password:


Confirm New Password:

6. Make sure that the message **[You have successfully changed your password]** in the displayed window.

NOTE: After that, new root user password must be used for login.

Figure 16. Changing Password 2

Logon

 You have successfully changed your password.

Please enter your new password and click the Logon button to continue.

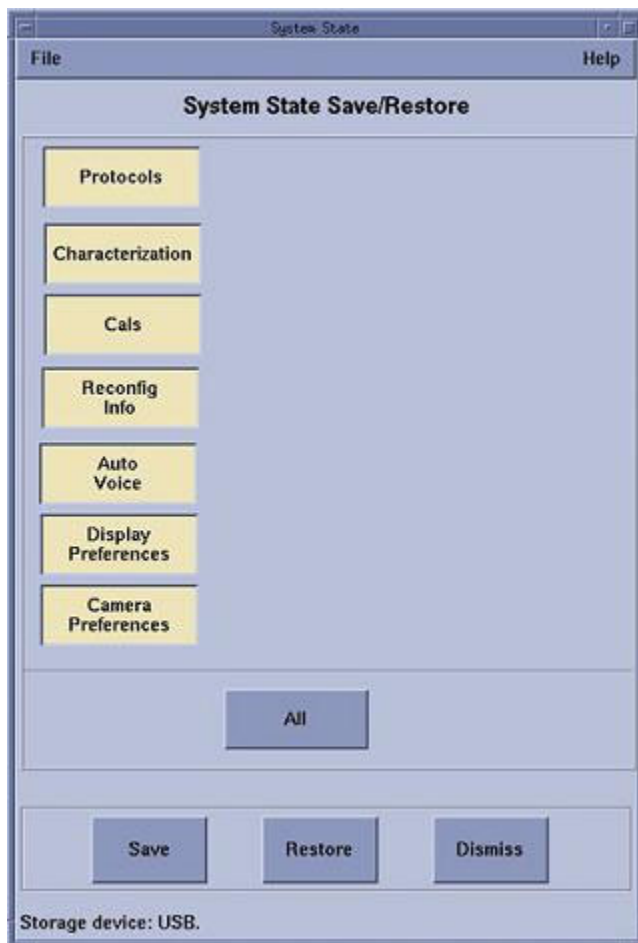
9 Restore System State (Approximately 10 minutes)

NOTE: If previously installed, all Options will be restored during the Restore System State.

Procedure

1. Insert a previously saved USB Flash Drive into the Host Computer.
2. Select **System State - USB** (see [Figure 1](#)) and select **All** then press **Restore** (see [Figure 20](#)) in the opening window.

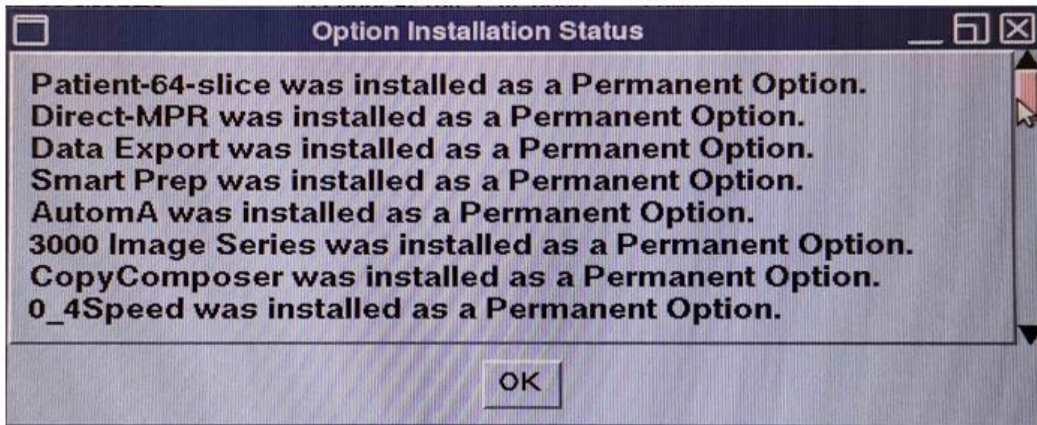
Figure 17. Restore System State Window



3. Click **Yes** in the Restore System State window to start the restore process.
4. A shell window will open and the System Stated will be restored. A pop-up window will appear reminding that options have been installed.

Click **OK** to close window.

Figure 18. Option Installation Status



NOTE: If the options can not be restored and need to be installed by new license(s), find the procedure in Software → Software Installation Procedures → [Install Software Options by eLicense](#).

10 Startup Application Software

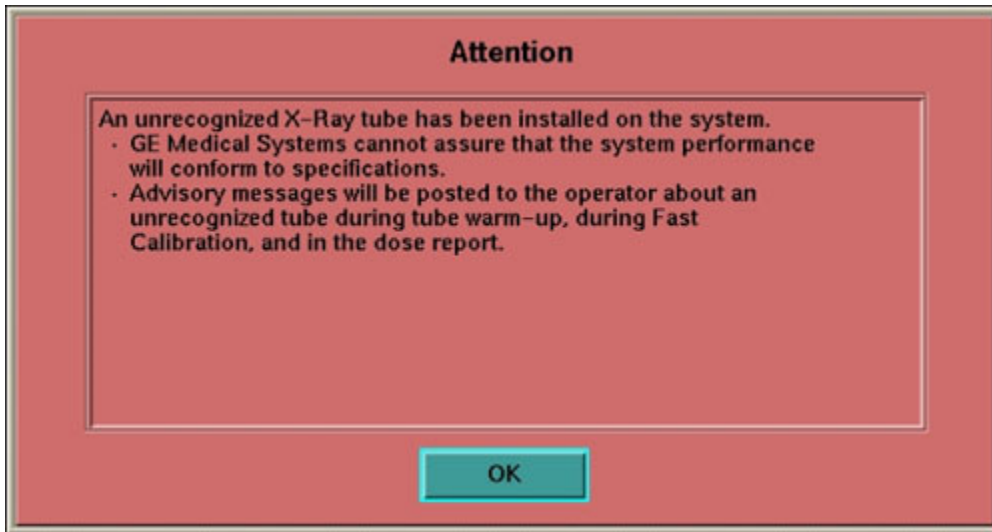
Procedure

1. Open a unix shell and type the {ctuser@hostname}**startup**
2. Application will be started up automatically.
3. A pink pop-up Attention Message appears: OC initializing. Please wait....

NOTE: If a message concerning incorrect DAS configuration is encountered, review the Error Log for the Card List issue. Select from the following two methods to alleviate this issue: Flash Download Update or Power OFF the Axial Drive and HVDC at the Gantry service panel - turn OFF DAS Power for 1 minute - turn DAS Power back ON - turn Axial Drive and HVDC at the Gantry service panel back ON - Flash Download Update - verify error message has disappeared. If error message reappears then troubleshoot the DAS/DCB.

4. Select **OK** for other pink message boxes that appear throughout the reboot process.

After each reboot during the software load process, an 'Unrecognized X-Ray Tube' message will be displayed (as shown below) until the tube identity has been selected (later in this procedure) and 'Flash Download' has also been performed.



5. If any Recon Selftest Failures are encountered, review the error log. Make certain to note the errors for troubleshooting after the LFC.

11 Load Service Pack Software

Procedure

NOTE: Before install any Service Pack or Patch, please confirm that the Service pack/patch version matches the Application Software version.

NOTE: If Service Pack questions arise, contact Local GE Service.

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:

4. Check which Service Pack is installed, type {root@hostname}**#swhwinfo**.
5. Insert the Service Pack USB into drive in the host.

NOTE: Service Pack will include any new service pack and all previous released service packs that are still applicable. Load all of the Service Packs included in the latest Service Pack in sequence.

6. Perform the following steps to install the Service Pack USB:
 - a. Type the following install script:

```
[root@ hostname ]# patch_install -usb
```

Any Service Packs on the Service Pack will be listed. Before installation of each pack, the window will wait for user's confirmation as follows:

I will install update Service Pack Name, is this ok ? [y/n]

- b. Input **y** to install this pack or **n** to cancel installation of this pack.
- c. After installing the Service Pack, type **patch_status** 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
```

- d. Type:[root@hostname]##reboot

NOTE: A reboot is always required after a pack is installed. Additional processes may be required for installing certain Service Pack media. Refer to the instructions sent with the Service Pack.

12 Install Software Options



• NOTICE

- For Perfusion and Denta Scan: If you loaded software in a language other than English, please reconfig, changing the language to English, to load these two options. Otherwise, the LFC procedure may fail.



• NOTICE

- Options must be loaded before Protocols.

NOTE:

If performing a Load From Cold (LFC) for the first time and software option licenses plus site-specific configuration has not been saved to system state, software options will need to be loaded manually.

- Follow the procedures in this section to install the options manually.

OR

- Software options licenses will be loaded during restore system state.

Procedure

1. Insert the Options USB in the drive.

NOTE: (For GE Healthcare Employees Only) If you do not have the options USB, then you can use the eLicense feature. Follow this link to the eLicense

Page: <http://elicense.gehealthcare.com/elicense/>.

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 (see illustration, below). Select the mechanism through which you want to install option keys.



6. Select **Permanent**. A Select Device window opens (see illustration, below). Select the mechanism through which you want to install the permanent option keys.



7. Select the **MEDIA** button and insert the options USB. Available options appear on the software options screen.
8. Perform option installations if applicable.

NOTE: The order of installation is critical.

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.

13 Tube Identification Procedure



○ **NOTICE**

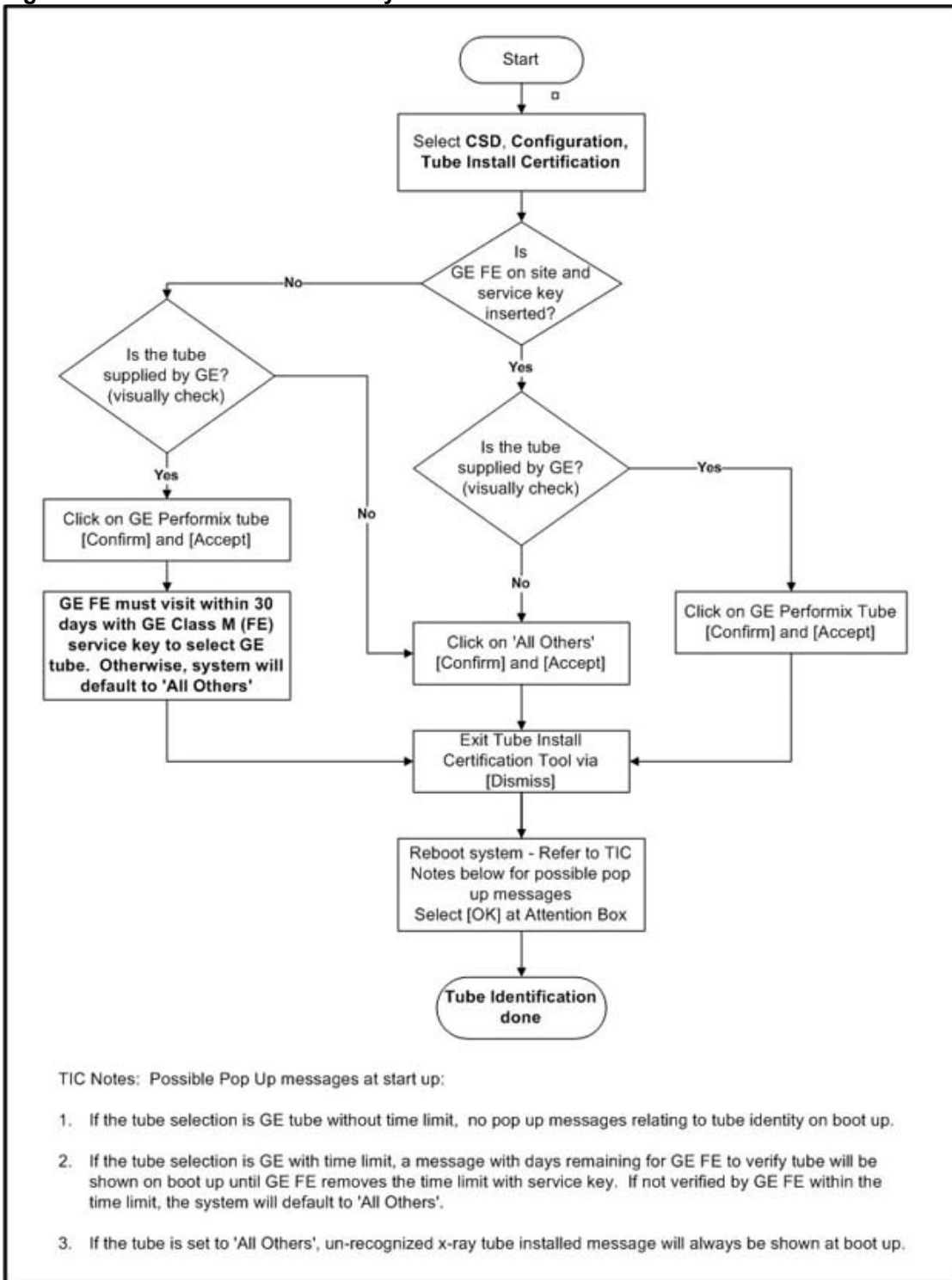
- **(For Scanners with GE Tubes)** If the software is installed by a non-GE person or the GE field engineer does not have a service key, a GE Field Engineer is required On-Site within 30 days, to perform the verification portion of this procedure. This verification cannot be done by non-GE employees. If a GE Service employee is not currently on site, please contact your GE Healthcare representative to arrange a visit. This section is absolutely critical to perform. Failure to do so will result in nuisance pop-ups to the customer, tube performance may decrease and certain scanner features may not be usable. **Follow the procedure shown in the Flowchart below.**

1. Verification that a tube is a GE Healthcare tube (called “GE Tube” in the TIC tool) can be done by visually checking the Manufacturer Name, which can be found on the tube rating plate.
 - If you are installing a GE brand tube, click [**GE Medial System Tube**]
 - If rating plate does not identify the tube as a GE brand tube, click [**ALL OTHERS**]

NOTE: Some Advanced features may be disabled and pop-up warnings will be activated.

NOTE: Do not double-click the Tube Certification Tool. This will cause more than one tool window to be displayed; one with message ‘service key information not available’. If this happens, close the window and try again. If this happens more than once, reboot system and try again.

Figure 19. Selection of Tube Identify



Flowchart Note:

Possible pop-up messages at start-up:

- If the tube selection is GE tube without time limit, no pop-up messages relating to tube identity on boot up.
- If the tube selection is GE with time limit, a message with days remaining for GE FE to verify tube will be shown on boot up until GE FE removes the time limit with service key. If not verified by GE FE within the time limit, the system will default to 'All Others'.
- If the tube is set to 'All Others', unrecognized x-ray tube installed message will always be shown at boot up.

Please refer to [Tube Install Certification](#) for examples of the screens displayed by the Tube Install Certification Tool.

2. When completed, continue with Flash Download.

13 Flash Download

Procedure

1. Perform the Flash Download Utility found on the Common Service Desktop – Utilities Tab, select **Flash Download**.

Figure 20. Common Service Desktop – Utilities Tab, Flash Download



NOTE: The Flash Download takes 5 - 30 minutes, depending on which subsystems need firmware updating.

2. When the Flash Download Window opens,

Select **Update**.

Figure 21. Flash Download Window



3. Once the Gantry Hardware Flash Downloads successfully, select **Dismiss**.
4. Close the common service desktop.
5. Reconnect the Hospital Network cable at the rear of the operator console that was disconnected at the beginning of the LFC.
6. Select **Shutdown** icon on the desktop and restart the system.

14 Final Save System State

Procedure

1. Perform the [System State Save Restore](#) procedure and save a system state backup to USB media.



○ **NOTICE**

- When performing Save/Restore System State, check to ensure there is no two or more USB storage devices (SSA Key or other mobile storage devices) plugged in Console/Tower at the same time which may result in incorrect data storage.

2. Save the system state backup media in a safe and secure location for future service activity.

15 Finalization

Procedure

1. If applicable, install any service pack updates related to this release.

NOTE: Follow service pack load instructions supplied with the service pack software.

2. Refer to System Scanning Tests in the Functional Checks chapter of this manual to confirm proper operation.
3. Reinstall the console front cover.

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