

MUSE™ Cardiology Information System

CCG Master-Patient Index Server Configuration

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Publication Information

The information in this manual applies only to the MUSE System Version 8.0. It does not apply to earlier product versions. Due to continuing product innovation, specifications in this manual are subject to change without notice.

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The document part number and revision are at the bottom of each page. The revision identifies the document's update level. The revision history of this document is summarized in the following table.

Revision	Date	Comments
A	25 February 2014	Customer release.

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Service Manual Language Information

WARNING (EN)	<p>This service manual is available in English only.</p> <ul style="list-style-type: none">• 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, mechanical or other hazards.
ПРЕДУПРЕЖДЕНИЕ (BG)	<p>Това упътване за работа е налично само на английски език.</p> <ul style="list-style-type: none">• 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.
警告 ZH-CN	<p>本维修手册仅提供英文版本。</p> <ul style="list-style-type: none">• 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。
警告 (ZH-TW)	<p>本維修手冊只提供英文版。</p> <ul style="list-style-type: none">• 如果客戶的維修人員有英語以外的其他語言版本需求，則由該客戶負責提供翻譯服務。• 除非您已詳閱本維修手冊並了解其內容，否則切勿嘗試對本設備進行維修。• 不重視本警告可能導致維修人員、操作人員或病患因電擊、機械因素或其他因素而受到傷害。

Service Manual Language Information (cont'd.)

UPOZORENJE (HR)	<p>Ove upute za servisiranje dostupne su samo na engleskom jeziku.</p> <ul style="list-style-type: none"> • Ukoliko korisnički servis zahtijeva neki drugi jezik, korisnikova je odgovornost osigurati odgovarajući prijevod. • Nemojte pokušavati servisirati opremu ukoliko niste konzultirali i razumjeli ove upute. • Nepoštivanje ovog upozorenja može rezultirati ozljedama servisnog osoblja, korisnika ili pacijenta prouzročenim električnim udarom te mehaničkim ili nekim drugim opasnostima.
VAROVÁNÍ (CS)	<p>Tento provozní návod existuje pouze v anglickém jazyce.</p> <ul style="list-style-type: none"> • 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 varování může dojít k poranění pracovníka prodejního servisu, obslužného personálu nebo pacientů vlivem elektrického proudu, respektive vlivem mechanických či jiných rizik.
ADVARSEL (DA)	<p>Denne servicemanual findes kun på engelsk.</p> <ul style="list-style-type: none"> • 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 tekniker, operatøren eller patienten.
WAARSCHUWING (NL)	<p>Deze service manual is alleen in het Engels verkrijgbaar.</p> <ul style="list-style-type: none"> • Indien het onderhoudspersoneel een andere taal nodig heeft, dan is de klant verantwoordelijk voor de vertaling ervan. • Probeer de apparatuur niet te onderhouden voordat deze service manual geraadpleegd en begrepen is. • Indien deze waarschuwing niet wordt opgevolgd, zou het onderhoudspersoneel, de gebruiker of een patiënt gewond kunnen raken als gevolg van een elektrische schok, mechanische of andere gevaren.
HOIATUS (ET)	<p>Käesolev teenindusjuhend on saadaval ainult inglise keeles.</p> <ul style="list-style-type: none"> • 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.
VAROITUS (FI)	<p>Tämä huolto-ohje on saatavilla vain englanniksi.</p> <ul style="list-style-type: none"> • 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.

Service Manual Language Information (cont'd.)

ATTENTION (FR)	<p>Ce manuel technique n'est disponible qu'en anglais.</p> <ul style="list-style-type: none"> • Si un service technique client souhaite obtenir ce manuel dans une autre langue que l'anglais, il devra prendre en charge la traduction et la responsabilité du contenu. • Ne pas tenter d'intervenir sur les équipements tant que le manuel technique 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.
WARNUNG (DE)	<p>Diese Serviceanleitung ist nur in englischer Sprache verfügbar.</p> <ul style="list-style-type: none"> • Falls der Kundendienst eine andere Sprache benötigt, muss er für eine entsprechende Übersetzung sorgen. • Keine Wartung durchführen, ohne diese Serviceanleitung gelesen und verstanden zu haben. • Bei Zuwiderhandlung kann es zu Verletzungen des Kundendiensttechnikers, des Anwenders oder des Patienten durch Stromschläge, mechanische oder sonstige Gefahren kommen.
ΠΡΟΕΙΔΟΠΟΙΗΣΗ (EL)	<p>Το παρόν εγχειρίδιο σέρβις διατίθεται στα αγγλικά μόνο.</p> <ul style="list-style-type: none"> • 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 δεν λάβετε υπόψη την προειδοποίηση αυτή, ενδέχεται να προκληθεί τραυματισμός στο άτομο παροχής σέρβις, στο χειριστή ή στον ασθενή από ηλεκτροπληξία, μηχανικούς ή άλλους κινδύνους.
FIGYELMEZTETÉS (HU)	<p>Ez a szerviz kézikönyv kizárólag angol nyelven érhető el.</p> <ul style="list-style-type: none"> • Ha a vevő szerviz ellátója angoltól eltérő nyelvre tart igényt, akkor a vevő felelőssége a fordítás elkészítése. • Ne próbálja elkezdni használni a berendezést, amíg a szerviz kézikönyvben leírtakat nem értelmezték és értették meg. • Ezen figyelmeztetés figyelmen kívül hagyása a szerviz ellátó, a működtető vagy a páciens áramütés, mechanikai vagy egyéb veszélyhelyzet miatti sérülését eredményezheti.
ADVÖRUN (IS)	<p>Þessi þjónustuhandbók er eingöngu fáanleg á ensku.</p> <ul style="list-style-type: none"> • Ef að þjónustuveitandi viðskiptamanns þarfnast annars tungumáls en ensku, er það skylda viðskiptamanns að skaffa tungumálþjónustu. • Reynið ekki að afgreiða tækið nema þessi þjónustuhandbók hefur verið skoðuð og skilin. • Brot á að sinna þessari aðvörun getur leitt til meiðsla á þjónustuveitanda, stjórnanda eða sjúklingi frá raflosti, vélrænum eða öðrum áhættum.
PERINGATAN (ID)	<p>Manual servis ini hanya tersedia dalam bahasa Inggris.</p> <ul style="list-style-type: none"> • Jika penyedia jasa servis pelanggan memerlukan bahasa lain selain dari Bahasa Inggris, merupakan tanggung jawab dari penyedia jasa servis tersebut untuk menyediakan terjemahannya. • Jangan mencoba melakukan servis terhadap perlengkapan kecuali telah membaca dan memahami manual servis ini. • Mengabaikan peringatan ini bisa mengakibatkan cedera pada penyedia servis, operator, atau pasien, karena terkena kejut listrik, bahaya mekanis atau bahaya lainnya.

Service Manual Language Information (cont'd.)

AVVERTENZA (IT)	<p>Il presente manuale di manutenzione è disponibile soltanto in Inglese.</p> <ul style="list-style-type: none"> 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.
警告 (JA)	<p>このサービスマニュアルは英語版しかありません。</p> <ul style="list-style-type: none"> 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、十分に理解をした上で装置のサービスを行ってください。 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。
경고 (KO)	<p>본 서비스 지침서는 영어로만 이용하실 수 있습니다.</p> <ul style="list-style-type: none"> 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 위험을 가할 수 있습니다.
BRĪDINĀJUMS (LV)	<p>Šī apkalpotāju rokasgrāmata ir pieejama tikai angļu valodā.</p> <ul style="list-style-type: none"> Ja apkalpošanas sniedzējam nepieciešama informācija citā, nevis angļu, valodā, klienta pienākums ir nodrošināt tās tulkošanu. Neveiciet aprīkojuma apkopi, neizlasot un nesaprotot apkalpotāju rokasgrāmatu. Šī brīdinājuma neievērošana var radīt elektriskās strāvas trieciena, mehānisku vai citu risku izraisītu traumu apkopes sniedzējam, operatoram vai pacientam.
ĮSPĖJIMAS (LT)	<p>Šis eksploataavimo vadovas yra prieinamas tik anglų kalba.</p> <ul style="list-style-type: none"> 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 eksploataavimo vadovą ir jį supratote. Jei neatkreipsite dėmesio į šį perspėjimą, galimi sužalojimai dėl elektros šoko, mechaninių ar kitų paslaugų tiekėjui, operatoriui ar pacientui.
ADVARSEL (NO)	<p>Denne servicehåndboken finnes bare på engelsk.</p> <ul style="list-style-type: none"> 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.

Service Manual Language Information (cont'd.)

OSTRZEŻENIE (PL)	<p>Niniejszy podręcznik serwisowy dostępny jest jedynie w języku angielskim.</p> <ul style="list-style-type: none"> • Jeśli dostawca usług klienta wymaga języka innego niż angielski, zapewnienie usługi tłumaczenia jest obowiązkiem klienta. • Nie należy 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.
AVISO (PT-BR)	<p>Este manual de assistência técnica só se encontra disponível em inglês.</p> <ul style="list-style-type: none"> • Se o serviço de assistência técnica do cliente não for GE, e precisar de outro idioma, será 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.
AVISO (PT-PT)	<p>Este manual técnico só se encontra disponível em inglês.</p> <ul style="list-style-type: none"> • Se a assistência técnica do cliente 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 técnico. • O não cumprimento deste aviso pode provocar lesões ao técnico, ao utilizador ou ao paciente devido a choques eléctricos, mecânicos ou outros.
AVERTISMENT (RO)	<p>Acest manual de service este disponibil numai în limba engleză.</p> <ul style="list-style-type: none"> • 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 depănatorului, operatorului sau pacientului în urma pericolelor de electrocutare, mecanice sau de altă natură.
ПРЕДУПРЕЖДЕНИЕ (RU)	<p>Настоящее руководство по обслуживанию предлагается только на английском языке.</p> <ul style="list-style-type: none"> • Если сервисному персоналу клиента необходимо руководство не на английском, а на каком-то другом языке, клиенту следует обеспечить перевод самостоятельно. • Прежде чем приступать к обслуживанию оборудования, обязательно обратитесь к настоящему руководству и внимательно изучите изложенные в нем сведения. • Несоблюдение требований данного предупреждения может привести к тому, что специалисты по обслуживанию, операторы или пациенты получат удар электрическим током, механическую травму или другое повреждение.
UPOZORENJE (SR)	<p>Ovo servisno uputstvo je dostupno samo na engleskom jeziku.</p> <ul style="list-style-type: none"> • Ako klijentov serviser zahteva neki drugi jezik, klijent je dužan da obezbedi prevodilačke usluge. • Ne pokušavajte da opravite uređaj ako niste pročitali i razumeli ovo servisno uputstvo. • Zanemarivanje ovog upozorenja može dovesti do povređivanja serviser, rukovaoca ili pacijenta usled strujnog udara, ili mehaničkih i drugih opasnosti.

Service Manual Language Information (cont'd.)

VAROVANIE (SK)	<p>Tento návod na obsluhu je k dispozícii len v angličtine.</p> <ul style="list-style-type: none"> • 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 varovania môže vyústiť do zranenia poskytovateľa služieb, obsluhujúcej osoby alebo pacienta elektrickým prúdom, mechanickým alebo iným nebezpečenstvom.
OPOZORILO (SL)	<p>Ta servisni priročnik je na voljo samo v angleškem jeziku.</p> <ul style="list-style-type: none"> • 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.
ADVERTENCIA (ES)	<p>Este manual de servicio sólo existe en inglés.</p> <ul style="list-style-type: none"> • 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.
VARNING (SV)	<p>Den här servicehandboken finns bara tillgänglig på engelska.</p> <ul style="list-style-type: none"> • 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.
UYARI (TR)	<p>Bu servis kılavuzunun sadece İngilizcesi mevcuttur.</p> <ul style="list-style-type: none"> • Eğer müşteri teknisyeni bu kılavuzu İngilizce dışında bir başka lisandan talep ederse, bunu tercüme ettirmek müşteriye düşer. • Servis kılavuzunu okuyup anlamadan ekipmanlara müdahale etmeyiniz. • Bu uyarıya uyulmaması, elektrik, mekanik veya diğer tehlikelerden dolayı teknisyen, operatör veya hastanın yaralanmasına yol açabilir.

Service Manual Language Information (cont'd.)

<p>ЗАСТЕРЕЖЕННЯ (UK)</p>	<p>Дане керівництво з сервісного обслуговування постачається виключно англійською мовою.</p> <ul style="list-style-type: none"> • Якщо сервісний інженер потребує керівництво іншою мовою, користувач зобов'язаний забезпечити послуги перекладача. • Не намагайтеся здійснювати технічне обслуговування даного обладнання, якщо ви не читали, або не зрозуміли інформацію, надану в керівництві з сервісного обслуговування. • Недотримання цього застереження може призвести до травмування сервісного інженера, користувача даного обладнання або пацієнта внаслідок електричного шоку, механічного ушкодження або з інших причин невірної обслуговування обладнання.
<p>CẢNH BÁO (VI)</p>	<p>Tài Liệu Hướng Dẫn Sửa Chữa chỉ có bản tiếng Anh.</p> <ul style="list-style-type: none"> • Nếu các đơn vị cung cấp dịch vụ cho khách hàng yêu cầu một ngôn ngữ nào khác tiếng Anh, thì khách hàng sẽ có trách nhiệm cung cấp các dịch vụ dịch thuật. • Không được sửa chữa thiết bị trừ khi đã tham khảo và hiểu Tài liệu Hướng dẫn Sửa chữa. • Không tuân thủ những cảnh báo này có thể dẫn đến các tổn thương cho người thực hiện sửa chữa, người vận hành hay bệnh nhân, do sốc điện, các rủi ro về cơ khí hay các rủi ro khác.

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1

Introduction

This chapter provides general information required for the proper use of the system and this manual. Familiarize yourself with this information before using the system.

Manual Information

This section provides information for the correct use of this manual.

Keep this manual with the equipment at all times and periodically review it. You should request training assistance from GE Healthcare, if needed.

Intended Audience

This manual is intended for use by GE Healthcare Field Service Engineers.

Manual Purpose

This manual provides the information needed to install and configure the Cloverleaf Application Adapter - Web Services (CAA-WS). This manual also provides information on troubleshooting.

Document Conventions

This manual uses the following conventions.

Typographical Conventions

Convention	Description
Bold Text	Indicates keys on the keyboard, text to enter, or hardware items such as buttons or switches on the equipment.
<i>Italicized-Bold Text</i>	Indicates software terms that identify menu items, buttons or options in various windows.
CTRL+ESC	Indicates a keyboard operation. A plus (+) sign between the names of two keys indicates that while holding the first key, you should press and release the second key. For example, Press CTRL+ESC means to press and hold the CTRL key and then press and release the ESC key.

Convention	Description
<space>	Indicates that you must press the spacebar. When instructions are given for typing a precise text string with one or more spaces, the point where you must press the spacebar is indicated as <space>. This ensures that the correct number of spaces is inserted in the correct positions within the literal text string. The purpose of the < > brackets is to distinguish the command from the literal text within the string.
Enter	Indicates that you must press the Enter or Return key on the keyboard. Do not type Enter .
>	<p>The greater than symbol, or right angle bracket, is a concise method to indicate a sequence of menu selections.</p> <p>For example, the statement "From the main menu, select System > Setup > Options to open the Option Activation window" replaces the following:</p> <ol style="list-style-type: none"> 1. From the main menu, select System to open the System menu. 2. From the System menu, select Setup to open the Setup menu. 3. From the Setup menu, select Options to open the Option Activation window.

Illustrations

All illustrations in the manual are provided as examples only. Depending on system configuration, screens in the manual may differ from the screens on your system.

All patient names and data are fictitious. Any similarity to actual persons is coincidental.

Notes

Notes provide application tips or additional information that, while useful, are not essential to the correct operation of the system. They are called out from the body text through a flag word and indentation, as follows:

NOTE:

The tip or additional information is indented below the **NOTE** flag word.

Related Documents

For a complete list of related manuals, refer to the *Related Manuals* appendix in the *MUSE Cardiology Information Systems Service Manual*.

Additional Assistance

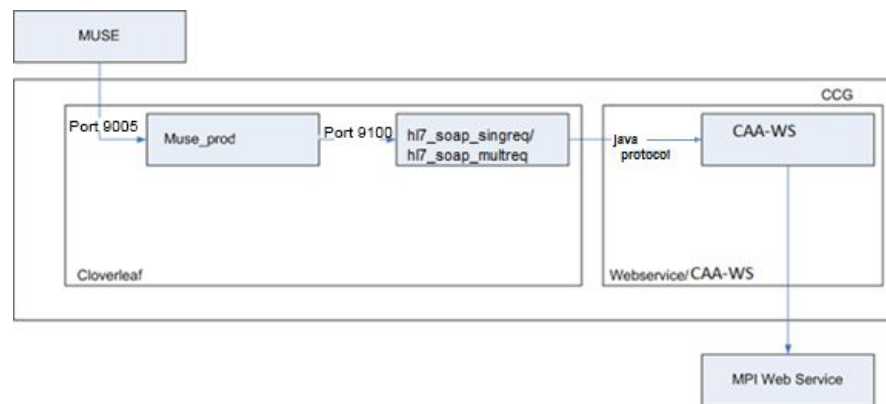
GE Healthcare maintains a trained staff of application and technical experts to answer questions and respond to issues and problems that may arise during the installation, maintenance, and use of this system.

Contact your local GE Healthcare representative to request additional assistance.

Interface Overview

The Master-Patient Index (MPI) interface is composed of three components.

- Cloverleaf Application Adapter-Web Services (CAA-WS, the CCG web services) – Used to establish a secure connection to the MPI server and handles authentication .
- **hl7_soap_singreq/hl7_soap_multreq** Cloverleaf Site – Used to translate between HL7 message formats and the Web Service's SOAP message format.
- **muse_prod** Cloverleaf Site – The standard MUSE CCG site used to interface with the Hospital Information Systems (HIS).



From the MUSE standpoint, the ADT Query path is the same as when the MUSE is connected to a HIS (via a CCG). The MUSE system sends a standard **QRY^Q01** ADT Query message to the CCG's Cloverleaf MUSE site.

The Cloverleaf MUSE site then forwards the message to the **hl7_soap_singreq** or **hl7_soap_multreq** site (also in Cloverleaf), which saves the MUSE Site ID of the outgoing request and translates the **QRY^Q01 HL7** message into a SOAP message appropriate for the MPI web server.

After the query message is converted to a SOAP message, the message is ready for the MPI web server. The message negotiates web site security protocols, such as https, and user authentication. CAA-WS completes these operations .

When the web site replies to the query, the response is returned to CAA-WS, which forwards the response to the Cloverleaf **hl7_soap_singreq** or **hl7_soap_multreq** site.

The Cloverleaf **hl7_soap_singreq** or **hl7_soap_multreq** site converts the response from the SOAP format into an **HL7 ADT^A19** message. After converting the response message into an HL7 message, the **hl7_soap_singreq** or **hl7_soap_multreq** site reattaches the MUSE Site ID to the message, and sends the A19 message to the MUSE site. The MUSE site returns the response to the MUSE system as if it were a response from a HIS.

2

Connecting the MUSE System to a Master-Patient Index Server (MPI)

NOTE:

Throughout this procedure you will notice some items are labeled with four X's (XXXX). Replace these X's with a string that appropriately identifies the target MPI site.

The configuration of MPI support (CCG CAA-WS: Cloverleaf Application Adaptor Web Services) requires the following:

- A text editor, such as MS Notepad or Notepad++. Do not use MS-Wordpad or MS-Word.
- A validating XML editor (optional).

Complete the following tasks to install and configure a CCG system with CAA-WS.

1. Install a CCG system with Cloverleaf Application Adaptor Web Services (CAA-WS). See [“Installing CCG, MUSE Sites, and HL7 to Soap Template Cloverleaf Site” on page 16.](#)
2. Install the MUSE sites. See [“Installing CCG, MUSE Sites, and HL7 to Soap Template Cloverleaf Site” on page 16.](#)
3. Install the HL7 to the soap template Cloverleaf site. See [“Installing CCG, MUSE Sites, and HL7 to Soap Template Cloverleaf Site” on page 16.](#)
4. Create SSL security certificates (required only if https is used to access the web service). See [“Creating an SSL Security Certificate” on page 17.](#)
5. Configure CAA-WS. See [“Configuring Cloverleaf Application Adaptor Web Services \(CAA-WS\)” on page 20.](#)
6. Import schema documents specific to the MPI web site into Cloverleaf. See [“Importing an XML Schema into Cloverleaf” on page 25.](#)
7. Configure Cloverleaf outbound translation of HL7 to SOAP request message. See [“Creating a Request Translation File” on page 30.](#)
8. Configure Cloverleaf inbound translation of SOAP response message to HL7. See [Appendix “Creating a Request Translation File” on page 30.](#)
9. Connect the MUSE site to the **hl7_soap_singreq** or **hl7_soap_multreq** site. See [“Connecting the MUSE Site to the hl7_soap_singreq Site” on page 36.](#)
10. Finalize the configuration. See [“Finalizing the Configuration” on page 44.](#)
11. Perform cleanup. See [“Performing Cleanup” on page 44.](#)

Installation and Configuration Procedures

Use the following procedures to install and configure the CCG, MUSE, Cloverleaf sites, and creating an SSL Security Certificate.

Installing CCG, MUSE Sites, and HL7 to Soap Template Cloverleaf Site

Use the following procedure to install the CCG, MUSE sites, and HL7 to Soap template Cloverleaf site.

1. Install the CCG following the instructions in the *MUSE Cardiology Information System Installation Guide*.
Autostart and Scheduling configuration are performed after the MPI interface is created and configured.
2. After installing the CCG, copy the standard **MUSE-CCG Interface** zip files from the **CCG Sites** directory on the MUSE V8 System Application DVD to **c:\gehc-it\ccg\extras\interfaces** on the CCG server.
3. In the **CCG Sites** directory of the MUSE CCG CD, copy one of the following files to **c:\gehc-it\ccg\extras\interfaces** on the CCG server:
 - If more than one request has to be sent to the Web Service to request for patient information, locate and copy **hl7_soap_multreq.zip**.
 - If only one request has to be sent to the Web Service to request for patient information, locate and copy **hl7_soap_singreq.zip**.

NOTE:

The default sites **hl7_soap_multreq** and **hl7_soap_singreq** include XML, XSD and OCM files which are to be used as samples and will require you to customize them for the customer. Refer to section [“Creating a New SOAP Client” on page 21](#) for generating new XML files. Refer to section [“Generating XSD Files” on page 27](#) for creating the required XSD files. OCM files are generated when the XSD files are compiled.

4. Install the MUSE interfaces as required by the site following the procedures documented in the *MUSE Cardiology Information Systems Devices and Interfaces Manual*.

NOTE:

Only the **muse_prod site (muse_prod.zip)** is required by the MPI interface.

5. Install the **HL7-to-soap** site that you copied in step 3.

NOTE:

This document assumes that the **hl7_soap_singreq** site is installed. If the **hl7_soap_multreq** site is installed, you can follow the same instructions as for the **hl7_soap_singreq** site.

6. In *hl7-soap-singreq/tclprocs/http_query.tcl* and *hl7-soap-multreq/tclprocs/http_query.tcl*, procedure *ExtractTokenAndRequestFindPatient*, has hard-coded details specific to the MPI server you are using.

Update the following fields as appropriate for the customer site.

- **set UserName "webservice"**
- **set FriendlyName "WSGeApp"**
- **set SystemCode "GApp"**
- **set SystemLocation "SG033827"**

NOTE:

The *Savehl7fields.tcl* has a delay configured to prevent a race condition between two ADT query requests. Configure the delay as appropriate for the customer site so that any two requests are processed one after the other but as soon as possible. The delay configured is in milliseconds. In the example below its configured as 10,000 milliseconds

Use the following information to configure the delay. If the *patientID.txt* file exists, it indicates that a request is being processed and you will need to wait until it is done.

```
if { [file exists "patientID.txt"] } {
#echo "inside IF loop"
after
10000
}
```

NOTE:

There is a known issue with the *Savehl7fields.tcl* in the *hl7-soap-singreq* template which will be fixed in a subsequent release. In this template the code uses a "while" block when it should have used an "If" block as the code snippet shown above. A work around is to change the "while" to "if" or the entire section of code writing the Patient ID to a file and reading from it can be removed from this template.

7. Appropriate error handling needs to be added to the *tclproc* parsing the response from the MPI Server.
- Error handling is required in both cases: when *TPS translation* is used or when the *Clover Leaf XLATE* is used.
8. The Source in the default alerts of all the templates will need to be modified accordingly if the CCG / Cloverleaf install directory is not on drive C. The default alert file for a site is located at *CL_INSTALL_DIR\integrator\[SITENAME]\Alerts*.
9. If the connection to the services uses a Secure Socklet Level (SSL) connection, proceed to the next section ["Creating an SSL Security Certificate"](#).
- If the connection to the services does not use SSL, proceed to ["Configuring Cloverleaf Application Adaptor Web Services \(CAA-WS\)"](#) on page 20.

Creating an SSL Security Certificate

If the connection to the service uses a Secure Socket Level (SSL) connection such as https, you need to perform the following procedure to create a keystore that allows CAA-WS to establish a secure connection to the Web Service.

If there is no SSL connection, skip this section and proceed to “[Configuring Cloverleaf Application Adaptor Web Services \(CAA-WS\)](#)” on page 20.

1. Obtain the security certificate for the Web Services where patient data is obtained. The following procedure is for Internet Explorer 8. The procedure for other browsers may be similar.
 - a. Using Internet Explorer 8, navigate to the web address of the service. The following error page is displayed: **Certificate Error: Navigation Blocked**.
 - b. Click on the following link: **Continue to this website (not recommended)**. The following message is displayed: **Page cannot be found HTTP: 404 error**. Next to the URL drop-down field, the following message is displayed: **Certificate Error**.
 - c. Click **Certificate Error**.
 - d. Click **View Certificates**.
 - e. Under **Certificate Details**, select **Copy to File...**
 - f. When the **Certificate Export Wizard** opens, click **Next** and select **DER encoded binary**.
 - g. Click **Next** and navigate to a temporary directory.
 - h. Name the file **XXXXCertificate.cer**, replacing the **XXXX** with a name appropriate to the MPI site.
 - i. Click **Save**.
 - j. Click **Next > Finish** to complete the security certificate export.
2. Copy the security certificate to a temporary directory on the CCG Server.
3. Open a command window and change to the directory where you saved your file.
4. In the command window, type the following command to create a keystore:
C:\gehc-it\jre\bin\keytool -importcert -file XXXXCertificate.cer -storepass P P P P P P -trustcacerts -storetype JKS -keystore XXXXKey.keystore
 The keystore contains the certificate using the java key tool command replacing **P P P P P P** with the password you are using to protect the keystore.
NOTE:
 The password needs to be a minimum of six characters long. Remember the password because it is required when editing the CAA-WS CCG configuration file.
5. When the key tool runs, a dialog box asks if you trust the certificate; click **YES**.
6. Copy the keystore file, **XXXXKey.keystore**, to the **C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_multreq** or **C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_singreq** directory on the CCG Server.
7. Proceed to the next section “[Converting a Certificate from P12 to JKS](#)”.

Converting a Certificate from P12 to JKS

Use the following procedure to convert a security certificate from P12 to JKS. The assumption is that you already have the certificate test.p12 of type PKCS12 and you are converting it to test.JKS of type JKS.

1. First, you will need to determine the value to enter for **-srcalias**.
 Open a command window and type the following:

```
keytool -v -list -keystore test.p12 -storepass
<MyPassWord> -storetype PKCS12
```

NOTE:

For the variable <MyPassword> use the password for the **test.p12 certificate**.

The results are dependent on the language of the operating system, the following is an example from a Swedish operating system:

```
Keystore-typ: PKCS12
Keystore-leverantör: SunJSSE

Din keystore innehåller en 1 post
Aliasnamn: rs ekg prod
Skapat den: 2014-feb-21
Posttyp: PrivateKeyEntry
```

In the example the value for `-srcalias` is **rs ekg prod**.

This command will also list the information of the **Certificate Authority** and the certificate(s) used. This information will be useful for subsequent steps (especially step 6) where you will have to obtain the required certificates.

See [Appendix B "View Trusted Certificates" on page 61](#) for the information on using the Microsoft Management Console **mmc.exe** to view the trusted certificates installed on your machine.

2. To create the JKS from the P12 file, run the following command in the command prompt:

```
keytool -importkeystore -srckeystore test.p12
-destkeystore test.jks -srcstoretype PKCS12
-deststoretype JKS -srcstorepass <password of P12>
-deststorepass <password of JKS> -srcalias <P12 alias>
-destalias <JKS alias> -srckeypass <P12 store password>
-destkeypass <JKS store password>
```

3. Confirm that the JKS was created successfully by running the following command:

```
keytool -v -list -keystore test.jks -storetype jks
```

4. Enter the password when prompted.

The console lists the content of the JKS file.

5. Create a text file called **certificate.pem** in any text editor.

All the public certificates need to be in a single file. These include root, intermediate, and CA certificates. Since P12 is a Windows-based certificate, all certificates must be available.

6. Download or obtain all possible certificates from the client.

7. Download and install Open SSL from the following location:
<http://gnuwin32.sourceforge.net/packages/openssl.htm>.
8. Open each available certificate, one-by-one, in any text editor.
The certificates (.cer/.crt file) should be Base 64 encoded so that you can use them in the **PEM** file you created earlier. A Base 64 encoded certificate looks like the following sample:

```
-----BEGIN CERTIFICATE-----
MIIFazCCA1OgAwIBAgIRAIC/
GIYrVi9G9NoHXInik9EwDQYJKoZIhvcNAQEFBQAw
.
HDFQu+mEswKUJrN/
ug2rIThaKdqkwe9iVDI9yAZD6aF8P2WRO9q7IYgbAs4/F7Q=
-----END CERTIFICATE-----
```

 - If the content is in this format, copy and paste it into the **certificate.pem** file.

NOTE:
You need to copy all of the content and tags between the **Begin Certificate** and **End Certificate** tags.

 - If the content is not in this format, you need to convert it into Base 64 using **Open SSL**, which you downloaded and installed earlier. Use the following command for each non-Base 64 encoded certificate:

```
openssl x509 -in xyz.crt -inform der -outform pem -out abc.pem
```
9. Open the newly created **PEM** file and its content should be similar to the example in step 8.
10. Copy and paste the content into the **certificate.pem** file.
11. Use the following command to import all of the certificates to the JKS file.

```
keytool -import -keystore test.jks -alias muse-client-cert -file certificate.pem
```

 - a. Type the **keystore** password when prompted.
 - b. Type **yes** when prompted if you trust this certificate.
12. To confirm that the certificates imported successfully with JKS, run the following command:

```
keytool -v -list -keystore test.jks -storetype jks
```
13. Proceed to the next section “Configuring Cloverleaf Application Adaptor Web Services (CAA-WS)”.

Configuring Cloverleaf Application Adaptor Web Services (CAA-WS)

Use the following procedures to configure the CAA-WS.

Creating a New SOAP Client

Use the following procedure to create a new SOAP client.

1. At the C: drive, open the folder at **C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_multreq\javadriv\hl7_adt_soap_multreq** or **C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_singreq\javadriv\hl7_adt_soap_singreq** file and rename CCG-CAAWS-config.xml with a different name so that it is saved as a backup file to refer to later.

2. Open the **WS Configurator** tool.

Double-click the jar file from a file browser or run **java -jar WSConfigurator.jar** from the command line after changing the directory to where **WSConfigurator.jar** is located.

This is found at **integrator/CAA/ws/tool/WSConfigurator.jar**.

The **Logical View** window opens.

3. Select **Client > New SOAP Client**.



The **Add SOAP Client** window opens:



4. Enter the **WSDL URL**.
 - Using a WSDL at an HTTP address can be unstable if the WSDL becomes unavailable, causing the Client service to fail to start.
 - It is recommended that you save a copy of a WSDL to the local hard drive and access it from there.

In the following example, the following WSDL is entered into **WSDL URL**:
<http://soap.amaqmzon.com/schemas2/AmazonWebServices.wsdl>.



5. Click **Load WSDL**.

The **Service** field is populated from the WSDL. Since there is only one entry, the system automatically selects it.

Selecting a **Service** populates the **Port** field. Since there is only one port in the example, it is autoselected.

6. Use the **Address** field for any address overrides.

In the example, the **Address** field is empty because the address in the **WSDL URL** field is correct.

If the server implements a widely available WSDL based on a standard where the address is generic, use the **Address** field to override it with the address of the server with which this system is interacting.

7. Select the **Service Mode** > **MESSAGE** (by default the **Service Mode** is set to **PAYLOAD**).

- **MESSAGE**

- Indicates the system user is sending and receiving the entire SOAP Envelope.
- This allows greater flexibility, but is also more complicated and error prone.

- **PAYLOAD**

- This tells the system to send and receive only the contents of the SOAP Body element and that CXF takes care of the SOAP Envelope/Header.
- Use PAYLOAD mode unless there is information in the SOAP Header that the system needs to send, which CXF does not already handle.

8. Click **OK**.

9. Make sure the check box next to **Message Logging Enabled** is **not** selected to prevent the large logs messages.

10. Select **SOAPACTION** for **Cloverleaf TrxID Determination**.

11. Click **File > Save As**.
The **Save** window opens.
12. Save the configuration file in the folder **C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_singreq\javadriver\hl7_adt_soap_singreq** as **CCG-CAAWS-config.xml**. The javadriver will look for the configuration xml in this location .

NOTE:

If using a different name, remember to change the name configured in the threads that communicate with CAA-WS. See the next section, [“Configuring XML in the hl7_soap_singreq Site”](#).

Configuring XML in the hl7_soap_singreq Site

1. Open Cloverleaf IDE.
2. Make sure you are at the **hl7_soap_singreq** or **hl7_soap_multreq** site.
3. Click on one of the java threads that communicate with CAA-WS.
4. At the **Properties** tab, click the **Properties** button.

The **Java Driver Protocol Properties** window opens.

Java Driver Protocol Properties

Type: ☒ Class ☐ Application

Class:

Methods

	Name	Argument
<input type="checkbox"/>	doInit	
<input checked="" type="checkbox"/>	doStart	CCG-CAAWS-Config.xml
<input checked="" type="checkbox"/>	doStop	
<input type="checkbox"/>	doTimeEvent	
<input checked="" type="checkbox"/>	doMsg	
<input type="checkbox"/>	doNotify	
<input type="checkbox"/>	isWriteOk	

Message Queues

☐ Enable message queues

Maximum Available Memory: MB ☒ Report error when a message without key arrives

Time Method(doTimeEvent) Options

Interval: ☐ Use advanced scheduling

☐ Sleep seconds after JVM starts

☐ Skip JVM shutdown hooks when the thread exits

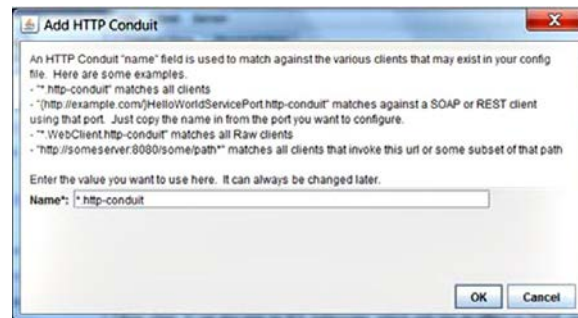
5. Make sure the **doStart** method is selected and type the name of the configuration xml file in the **Argument** field.
6. Select **Skip JVM shutdown hooks when the thread exits**.
7. Click **OK**.

Adding an HTTP Conduit to the Configuration File

If the Web Service requires SSL (for example, if it is an https connection), then you need to configure **HTTP-conduit** in the xml configuration file. An **HTTP Conduit** is created with the helper dialog.

1. Open the WS Configurator tool and open the CCG-CAAWS-config.xml file.
2. Click **Client > New HTTP Conduit**.

The **Add HTTP Conduit** window opens.



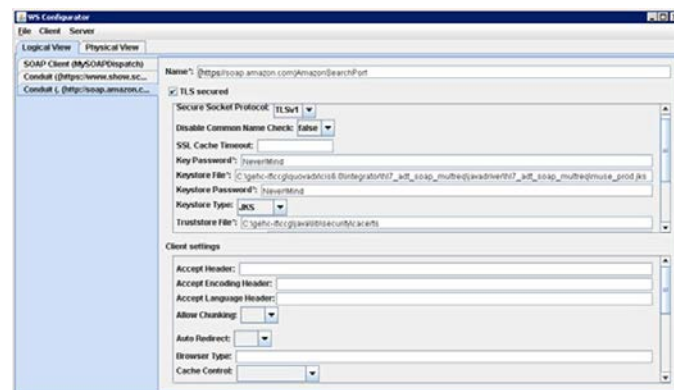
3. In the **Name** field, type the **Portname**.
The **portname** from the **SOAP Client** tab can be used.

NOTE:

The **portname** should end with **.http-conduit**.

4. Click **OK**.

The **Add HTTP Conduit** window closes and a new tab for **http conduit** is added in the **Logical View** and **Physical View**.



5. Use the information in the following table to complete the fields on the window.

HTTP Conduit

Field	Value
TLS Secured	Select the check box.
Secure Socket Protocol	Select TLSv1 .
Disable Common Name Check	Select False .

HTTP Conduit (cont'd.)

Field	Value
SSL Cache Timeout	Leave blank.
Key Password	Enter the Certificate Password.
Keystore File, Password, Type	Enter the information in each field, appropriate for your system. See “Creating an SSL Security Certificate” on page 17 for values for keystore fields.
Truststore File	Enter the information appropriate for your system. See “Creating an SSL Security Certificate” on page 17 for values for truststore fields.

NOTE:

Leave all of the fields in the **Client Settings** field blank.

NOTE:

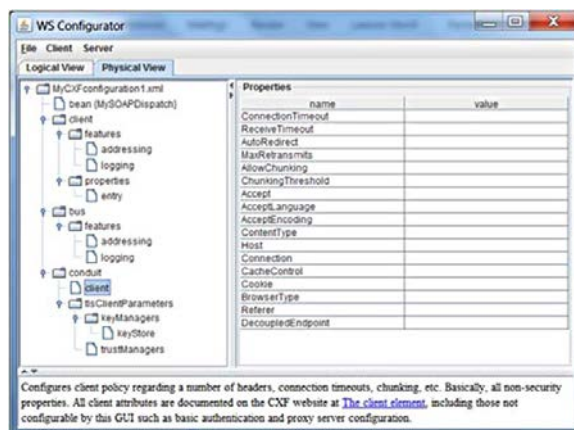
If the **Keystore** is stored in the **exec/process/[SiteName]** directory, then the entire path to the certificate is not required in the **Keystore File** and **Truststore File** fields.

6. Select **File > Save**.
7. Open the XML configuration file in a text editor and ensure that the **http conduit** section was added.

The **HTTP Conduit** can apply its settings to one or more Clients, or only to specific URLs within a single Client.

The **HTTP Conduit** has children, such as Client, which configure TLS for those same matched requests.

Review the **Help** section for a list of all Client properties.



Importing an XML Schema into Cloverleaf


Before the CCG is able to send or receive an XML message, such as the SOAP messages used by an MPI web service, Cloverleaf requires a schema document that describes the format of the XML message.

Creating an XML Package in Cloverleaf

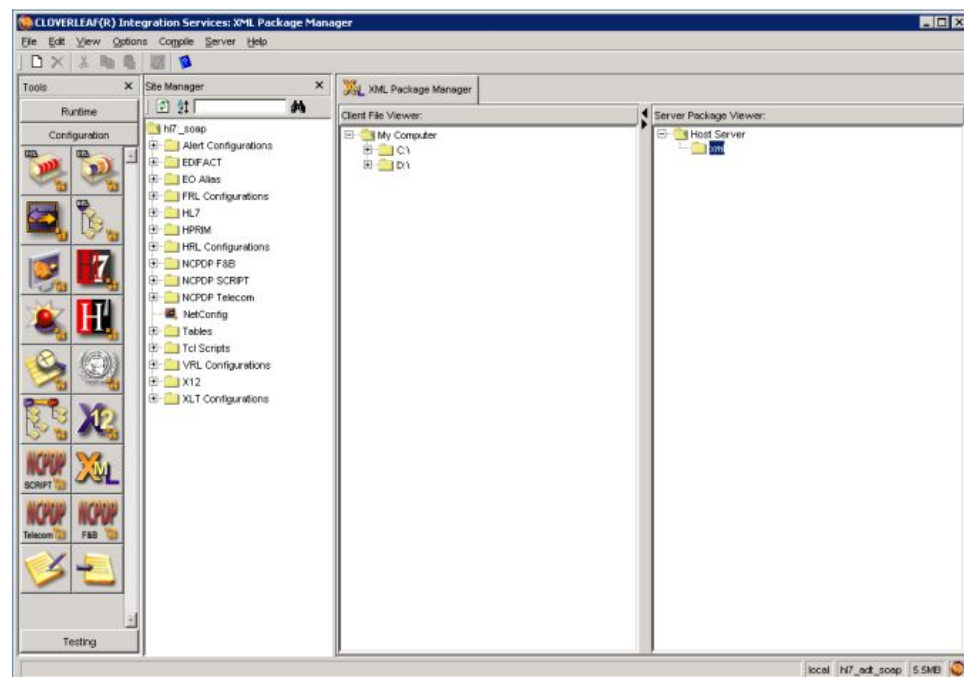
NOTE:

If using the XML package folder **MPI_Schema** shipped with the **hl7_soap_multreq/** **hl7_soap_singreq** then this section can be skipped. The **MPI_Schema** shipped with the template is for reference. It can be backed up with a different name and the following steps can be used to create a new XML Package **MPI_Schema**.

Use the following procedure to create an XML package in Cloverleaf.

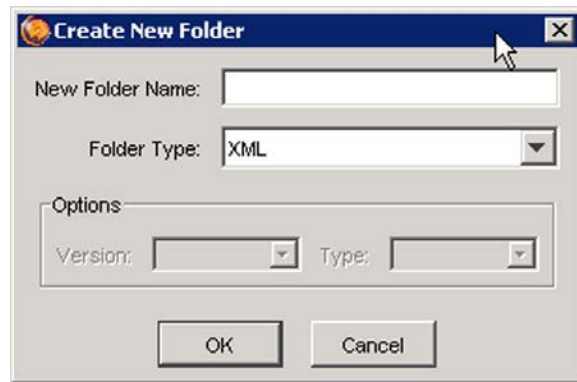
1. On the CCG server, start the **Cloverleaf IDE**.
2. On the **Tools** pane, on the left side of the screen, click **Configuration** to expand the **Configuration** tool bar.
3. Click the **XML** icon .

The **CLOVERLEAF(R) Integration Services: XML Package Manager** window opens.

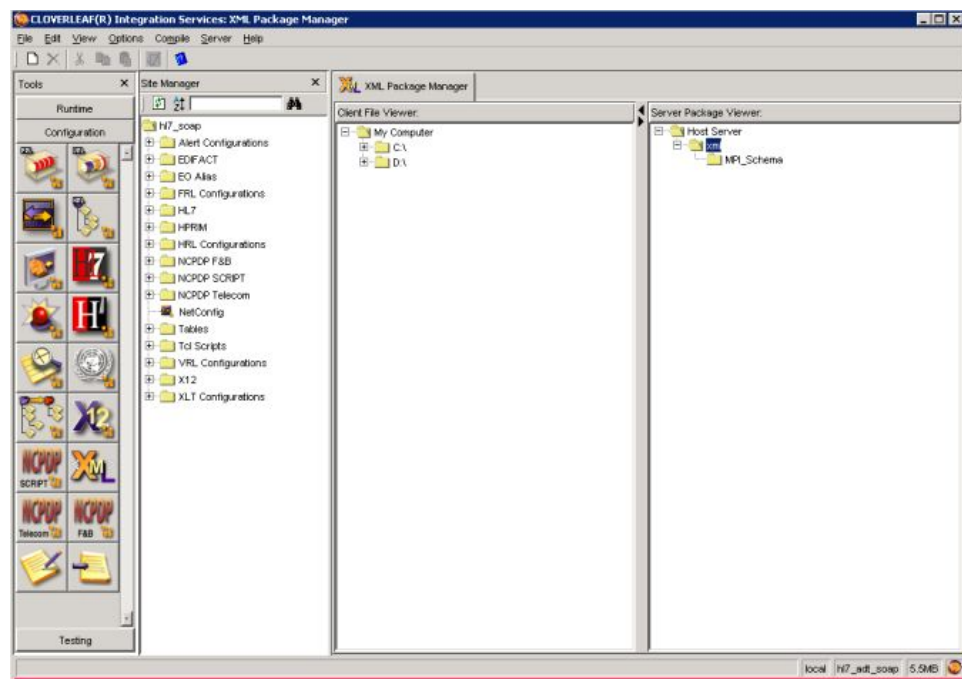


4. On the **Server Package Viewer** pane, highlight and right-click on the **xml** folder.

5. Select **New Package/Folder**.
The **Create a New Folder** window opens.



6. In the **New Folder Name** field, enter **MPI_Schema**.
7. In the **Folder Type** field, verify that **XML** is selected.
If XML is not selected, use the drop-down list to select it.
8. Click **OK**.
9. To view the **MPI_Schema** xml folder, you may need to expand the **Host Server > xml** folders.



Generating XSD Files

Use the following procedures and information to generate XSD files.

Why Generate XSD Files?

When you access a web service from the system, use the WSDL that describes the web service the system is attempting to access. This creates an XSD file that describes the messages you want to send back and forth.

You can compile the XSD file in a system XML package for creating transformations between the SOAP messages sent to and from the web service, and whatever target message format you use internally to process the request.

The XSD WSDL tool reads the WSDL, generates the XSD files for input and output messages to the service, and compiles the newly-generated XSD files.

Before You Run the XSD WSDL Tool

The following tasks must be completed before running the XSD WSDL tool to generate and compile XSD files:

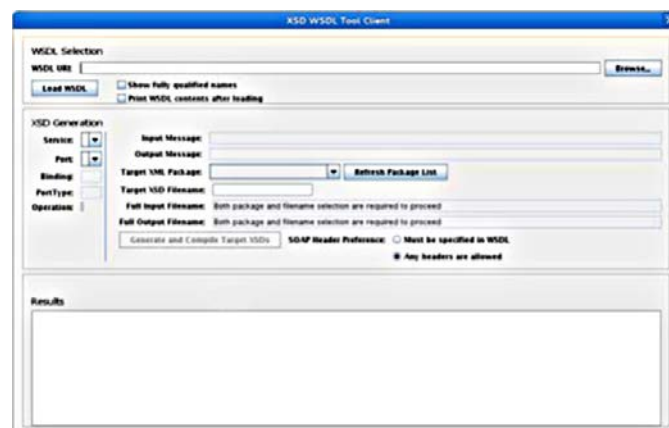
- Both the system and CAA-WS must be installed properly.
- There must be an XML package directory.
See [“Importing an XML Schema into Cloverleaf” on page 25](#).
- A command window must be open to the following directory:
CCG_INSTALL_DIR\quovadx\cis6.0\integrator\CAA\ws\tool\xsdWsdToolClient.
- In the command window, run **setroot**.
- In the command window, run **setsite hl7_soap_singreq** or **hl7_soap_multreq**.

Running the XSD WSDL Tool

Use the following procedure to run the XSD WSDL tool to generate and compile XSD files.

1. After setting the root and the site as referenced in [“Before You Run the XSD WSDL Tool” on page 28](#), in the command window run the following batch file command to start the tool: **xsdWsdToolClientGUI.bat**.

The interface opens and all entries are blank with the **WSDL URI** field selected.



2. Enter the **URI** to the WSDL you want to use.
3. Select one of the following check boxes:
 - **Show fully qualified names**

The names from the WSDL that have a namespace associated with them are printed with the namespace prefixed before the name.

- **Print WSDL contents after loading**
Prints the WSDL text contents after loading.

4. Click **Load WSDL**.

The program attempts to read the WSDL from the location specified.

- If it cannot find the WSDL, an error prints in the **Results** section.
- If it finds the WSDL and can parse it, the **Service** drop-down field populates with the list of services in the WSDL.

5. Select the appropriate **Service** from the list.

NOTE:

If there is only one choice in the drop-down list, it is automatically selected.

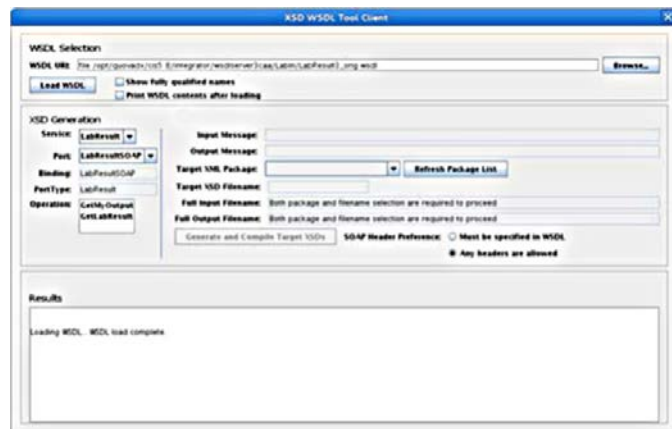
The **Port** list populates.

6. Select the appropriate **Port**.

The **Binding** and **PortType** fields display the name of the Binding and PortType associated with the chosen port from the WSDL.

7. Select the **Operation** to invoke it.

The **Input Message** and **Output Message** are populated with the names of the messages for this operation.



8. Select the **Target XML Package**.

This is the XML package in your site where you want to generate and compile the XSDs.

9. Enter the **Target XSD Filename**.

The **Full Input Filename** and **Full Output Filename** fields display the full path names of the resulting XSD files that are generated.

10. Click **Generate and Compile Target XSDs**.

This takes the selected settings, pulls the relevant information from the WSDL, and creates two XSD files: **Input** and **Output**.

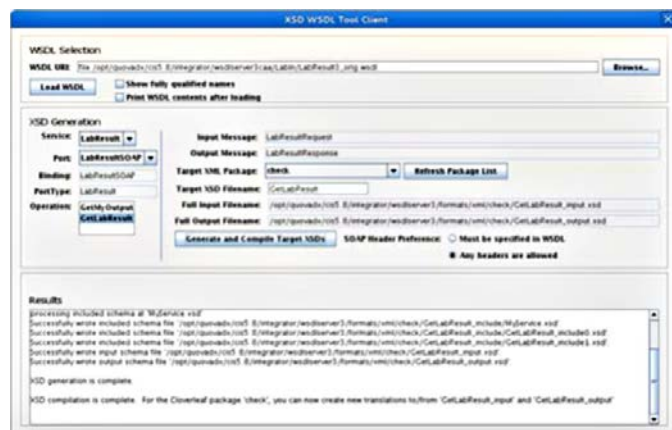
These files have SOAP envelopes around the content chosen so transformations in the system can generate the entire SOAP envelope to send to a web service and parse the response SOAP envelope.

The system compiles the XSDs into OCM files, which are what the system uses directly to allow translation in the given XML structure.

- If the generation or compilation fail, an exception message displays a description of the problem.
- If the generation and compilation succeed, the result looks similar to the following screen, confirming that the XSD generation and compilation were successful.

NOTE:

The .OCM files and the .XSD files are generated by the tool at the following location: **<C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_singreq\formats\xml\MPI_Schema>**




Creating a Request Translation File

NOTE:

It has been observed that **Clover Leaf XLATE** doesn't always work with customer provided **XSD**. **TPS translation** will be required if this does not work.

The mapping of HL7 and XML fields is dependent upon the customer site. This procedure is a general guideline describing how to create a request translation file. The ITPS team may need to be involved in creating a request translation file to properly map the fields.

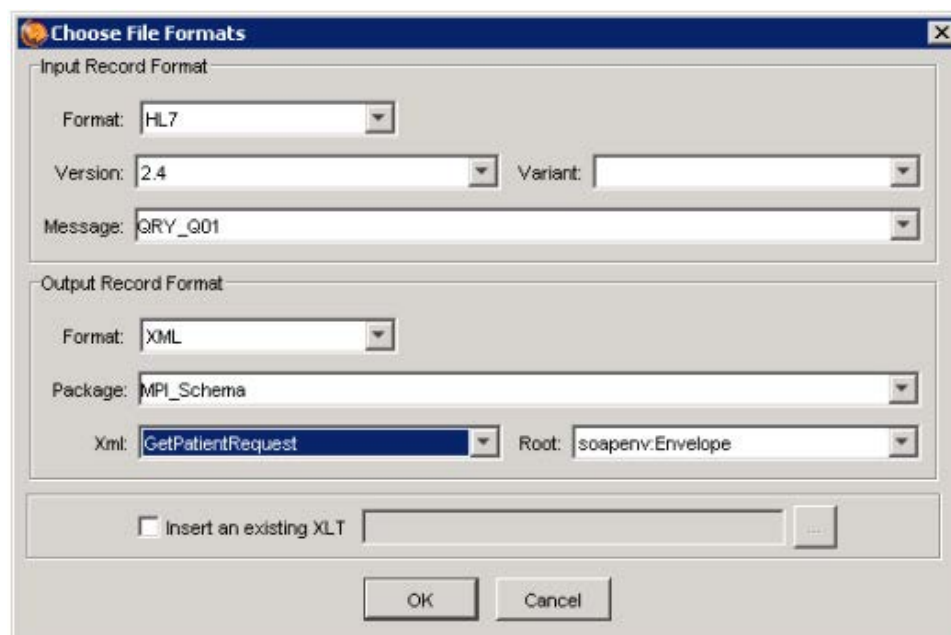
1. On the CCG server, start the Cloverleaf IDE.
2. On the **Tools** pane, click **Configuration** to expand the **Configuration** tool bar.
3. Click the **Translation Configurator** icon .

The **CLOVERLEAF®Integration Services: Translation Configurator** window opens.

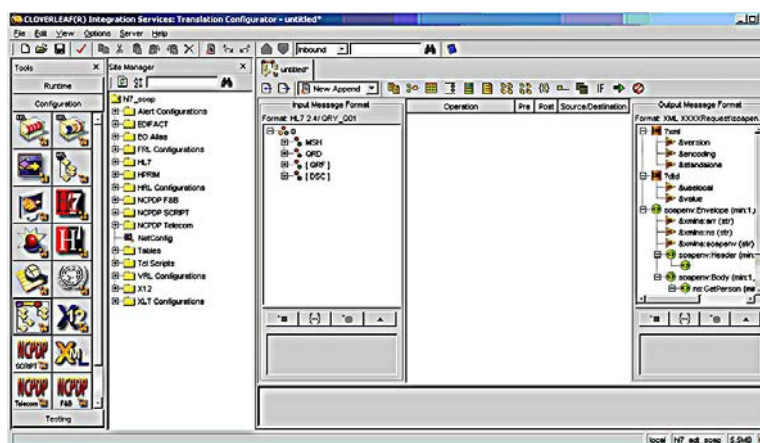
4. Press **Ctrl +N** to create a new translation file.
The **Choose File Formats** window opens.

5. Select the following for **Input Record Format**:
- **Format = HL7**
 - **Version = 2.4**
 - **Message = QRY_Q01**
6. Select the following for the **Output Record Format**:
- **Format = XML**
 - **Package = MPI_Schema**
 - **XML = [name of the XML schema]**
 - **Root = [name of SOAP Envelope entity]**

The completed dialog box should look similar to the following screen:



7. Click **OK**.



8. Map the HL7 fields to the appropriate XML fields.

For example, map the **QRD - Who Subject Filter - ID Number** (which is the Patient ID) to the request field that is to contain the Patient ID number). Work with the ITPS team to complete this step.

9. The XML message requires you to define a number of constants.

As a minimum, you need to define the **xml version**, **xml encoding** and **soap envelope namespace (xmlns)** fields. Work with the ITPS team to complete this step.

Constants are entered by preceding the constant value with an equals sign (=).

For example, use the following values or XML version and encoding:


- Version **=1.0**.
- Encoding **=UTF-8**.

You may obtain the constants needed for the *soapenv:Envelope xmlns* fields from the *XXXXRequest.xml* file.

10. After the appropriate fields (including the *soapenv:Envelope* fields) are mapped, save the file as *Q01_to_XXXXRequest.xlt*.

Creating a Response Translation File

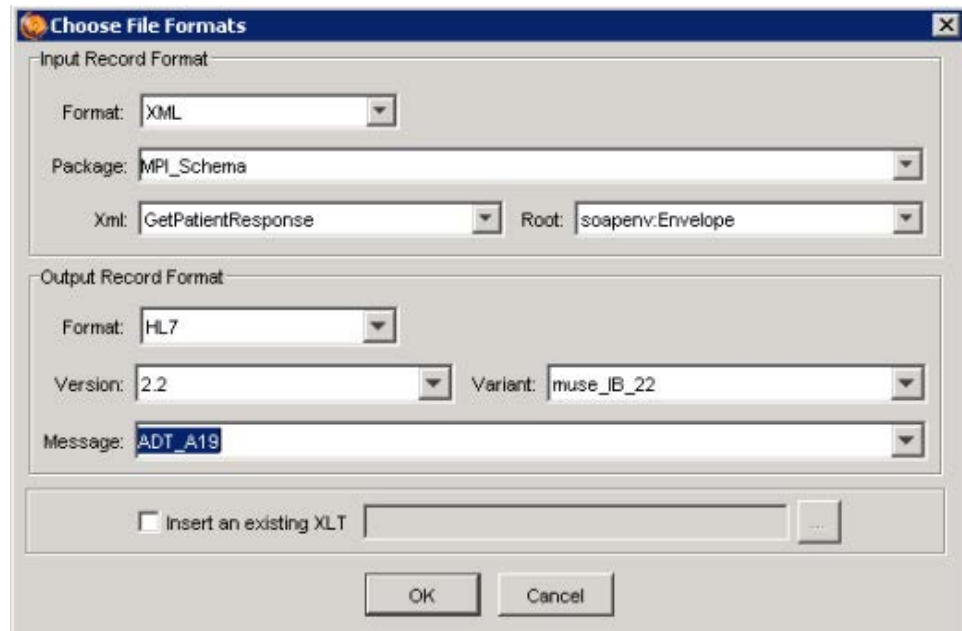
The mapping of HL7 and XML fields is dependent upon the customer site. This procedure is a general guideline of how to create a response translation file. The ITPS team may need to assist in creating a response translation file to properly map the fields.

1. On the CCG server, start the **Cloverleaf IDE**.
2. On the **Tools** pane, click **Configuration** to expand the **Configuration** tool bar.
3. Click the **Translation Configurator** icon .

The **CLOVERLEAF® Integration Services: Translation Configurator** window opens.

4. Press **Ctrl + N** to create a new translation file.

The **Choose File Formats** window opens.




5. To create an **Input Record Format** select the following values for each field:
 - **Format** = *XML*
 - **Package** = *MPI_Schema*
 - **XML** = *[name of XML schema]*
 - **Root** = *[name of SOAP Envelope entity]*

6. Select the following for the **Output Record Format**.
 - **Format** = **HL7**
 - **Version** = **2.2**
 - **Variant** = **muse_IB_22**
 - **Message** = **ADT_A19**
7. Click **OK**.
8. Map the XML fields to the appropriate HL7 fields.
 This step is customer-specific and varies from customer to customer. Work with the ITPS team to complete this step.
 As a minimum, the following **ADT_A19** fields must be mapped:
 - **AA** mapped to **MSA.#1** (Acknowledgement code)
 - **Patient ID** to **PID.#3** (Internal ID)
 - **Visit number** (or PID if visit number is not available) to **PV1** (Visit Number)

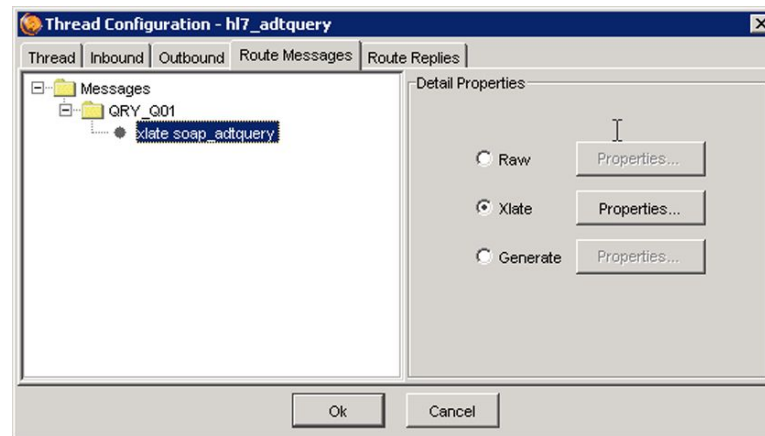
NOTE:
 Where there is a patient found error, the translation logic building the **ADT_A19** message should leave the PID blank so that the **hl7_soap_singreq** site's restore **A19SiteID.tcl** script can apply the proper MSA error coding.
9. When all of the required fields are mapped, save the file as **XXXXResponse_to_A19.xlt**.

Configuring Cloverleaf Translation Routes

Use the following procedure to configure the Cloverleaf translation routes.

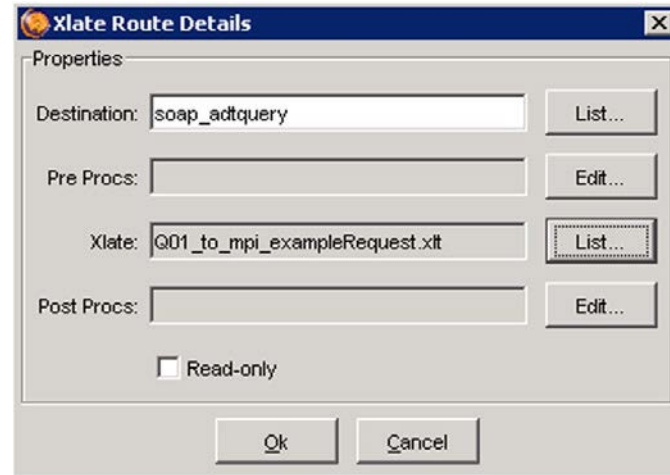
1. On the CCG server, start the **Cloverleaf IDE**.
2. On the **Tools** pane, click **Configuration** to expand the **Configuration** tool bar.
3. Select the **Network Configurator** icon .
 The **Netconfig** tab opens.

4. Right-click on the **hl7_adtquery** thread and select **Thread Properties**.
The **Thread Configuration – hl7_adtquery** window opens.



5. Select the **Route Messages** tab.
6. In the **QRY_Q01** route folder, select **soap_adtquery**.
7. Double-click on the **QRY_Q01** folder and highlight **soap_adtquery**.
8. Select **Xlate** and click **Properties**.

The **Xlate Route Details** window opens.



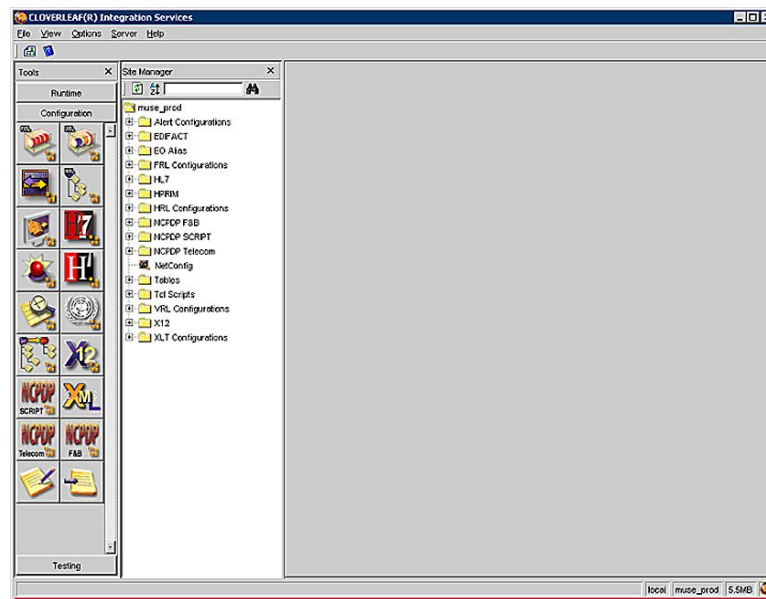
9. Next to the **Xlate:** field, click the **List** button.
10. Select the **Q01_to_XXXXRequest.xlt** file and click **Apply**.
11. Click **OK**.
12. Click **OK** to close the **Thread Configuration** window.
If a **Create Directory** window opens, click **Yes**.
13. Right-click on the **soap_adtquery** thread and select **Thread Properties**.
The **Thread Configuration** window opens.
14. Select the **Route Replies** tab.
15. Select **Xlate** and click **Properties**.

16. Next to the **Destination** field, click the **List** button.
17. Select **hl7_adtquery** from the list.
18. Next to the **Xlate** field, click the **List** button.
19. Select the **XXXXResponse_to_A19.xlt** file.
The **Xlate Route Details** window opens.
20. Click **OK**.
21. Click **OK** to close the **Thread Configuration** window.
22. Press **Ctrl +S** to save the **NetConfig**.
23. Save the current CCG view by selecting **View >Save Views**.

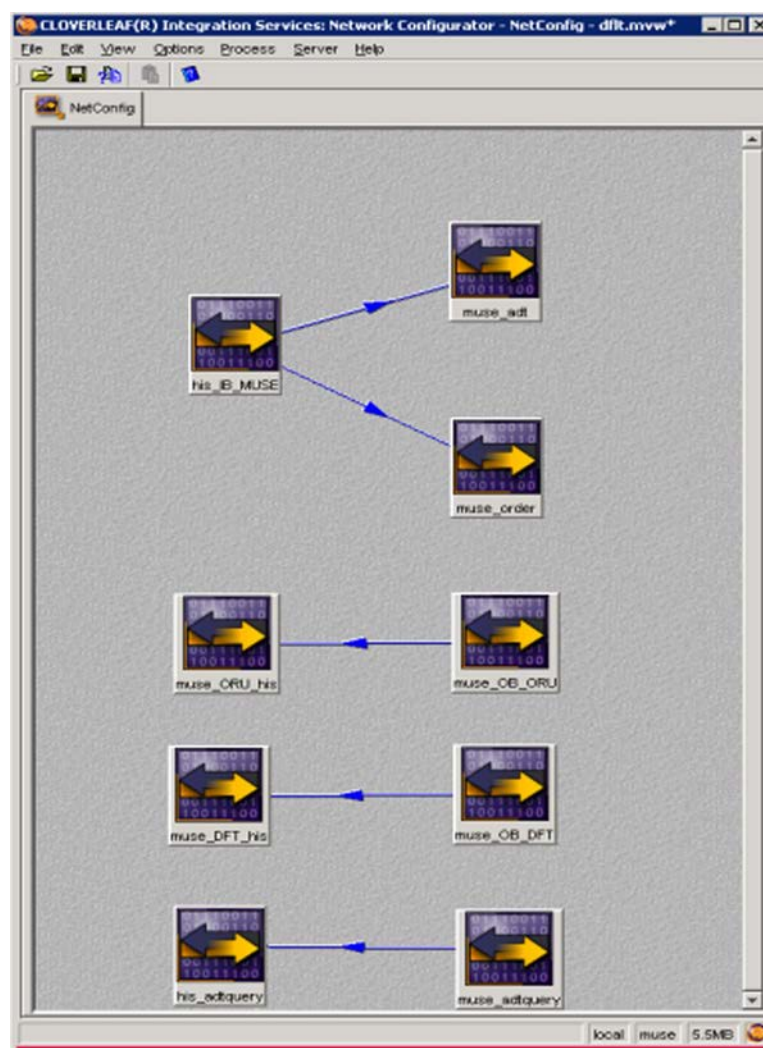
Connecting the MUSE Site to the hl7_soap_singreq Site

Use the following procedure to change Cloverleaf sites and connect the MUSE site to the **hl7_soap_singreq** site.

1. On the **CLOVERLEAF(R)...** window, select **Server > Change**.
If a warning message is displayed, click **Yes**.
The **CLOVERLEAF(R) Integration Services** window opens.



2. Select the **muse_prod** site and click **Apply**.
The **Netconfig** tab opens with a standard MUSE site displayed in the window.



3. To connect the MUSE ADT Query feature to the MUSE prod site's ***muse_adtquery*** thread, as if the MUSE system were interacting with a HIS, follow the instructions in the *MUSE Cardiology Information System Installation Guide*.

4. Configure the properties of *muse_adtquery* to change **Encoding** to **binary** for all countries which use special characters like Germany, Sweden, Denmark and so on.

The default value is **UTF-8**.



The screenshot shows the 'Thread' properties dialog box for the 'muse_adtquery' thread. The 'Thread Name' is 'muse_adtquery'. The 'Bitmap' is 'hielogo'. The 'Process Name' is 'adtquery'. The 'Group Names' field is empty. The 'EO Config' field is empty. The 'Protocol' is 'PROTOCOL:pdI-tcpip'. The 'Encoding' is 'binary'. The 'Inter-Site Routing Port' field is empty. There are buttons for 'List...', 'Properties...', and 'Select...'. The 'XML Encoding' checkbox is unchecked. The dialog box has tabs for 'Properties', 'Inbound', 'Outbound', 'Route Messages', 'Route Replies', 'Notes', and 'View'.

5. In place of a HIS, attach the *muse_prod* site's *his_adtquery* to the *hl7_soap_singreq* site.

To attach the sites, set the *his_adtquery* thread's protocol properties **Host** to **local host** and **Port** to **9100** as shown in the following screen:

The screenshot shows the 'PDL TCP/IP Protocol Properties' dialog box. It contains the following sections and controls:


- PDL Options:** A text field labeled 'PDL:' containing 'mip_tcp.pdl' and a 'List...' button.
- TCP/IP Options:**
 - Type:** Three radio buttons: 'Client' (selected), 'Server', and 'Multi-Server'. A 'Configure...' button is next to 'Multi-Server'.
 - Host:** A text field containing 'localhost' and a 'List...' button.
 - Port:** A text field containing '9100' and a 'List...' button.
 - Host Name or IP Address:** An empty text field and a 'List...' button.
 - SSL:** An unchecked checkbox and a 'Configure...' button.
- Data Options:** Two unchecked checkboxes: 'Close after write' and 'Use DRIVERCTL control'.
- Auto-Reconnect Options:** A checked checkbox 'Auto-reconnect' and a 'Reopen time:' field containing '5'.
- Start-up procedures:** An empty text field and an 'Edit...' button.
- Buttons:** 'Ok' and 'Cancel' buttons at the bottom.

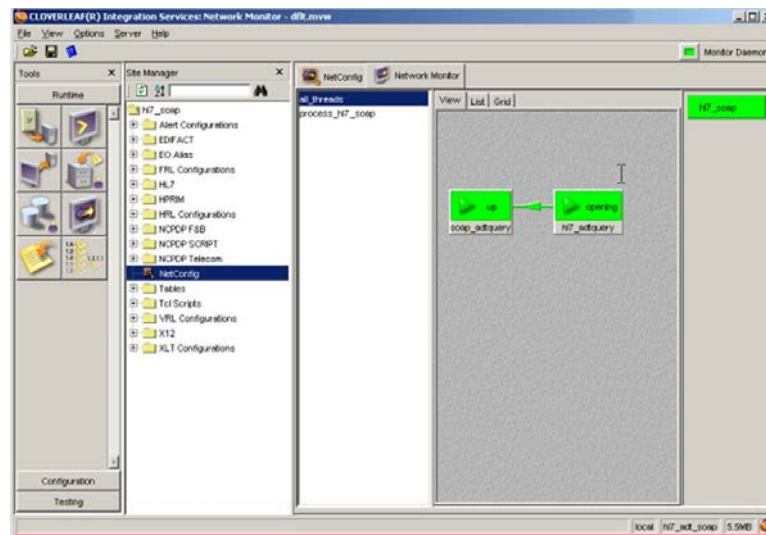
6. Click **OK** to close the *PDL TCP/IP Protocol Properties* window.
7. Select **View > Save Views** to save the present CCG view.

Confirming CAA-WS and Cloverleaf Configuration

Confirm that the *Infor Cloverleaf® Integration Services 6.0* service is running.

1. On the **CCG IDE** Cloverleaf menu bar, change Cloverleaf sites by selecting **Server > Change**.
If a warning is displayed, click **Yes**.
2. Select the *hl7_soap_singreq* server and click **Apply**.
3. On the **Tools** menu, select **Runtime** to expand the **Runtime** tool bar.

4. Click the **Network Monitor** icon .
The **Network Monitor** tab opens.
5. Right-click on the button with the name of your process and select **Control** > **Startup** to start the process.
In the following sample screen, it is the **hl7_soap_singreq** button.



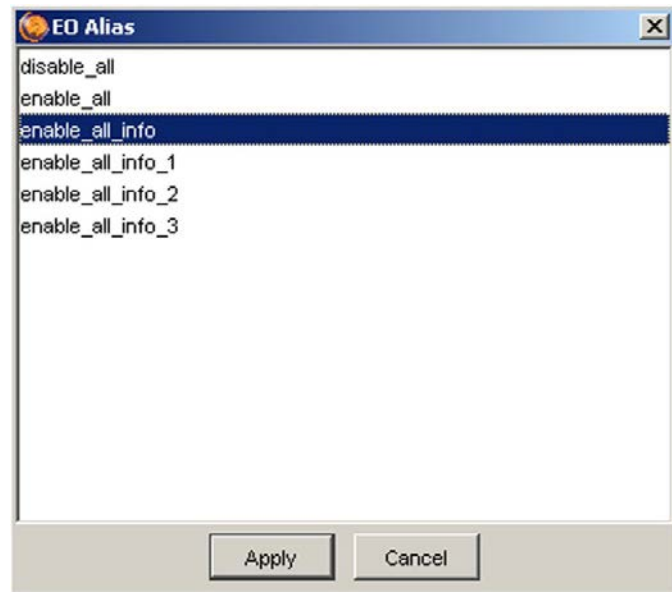
6. Confirm that the processes and threads displayed change from red to green, and that the threads display the status of either **Opening** or **Up**.
7. Right-click again on the green **hl7_soap_singreq** button and select **Control** > **Full**.

The **Process 'hl7_soap' Cont...** window opens.



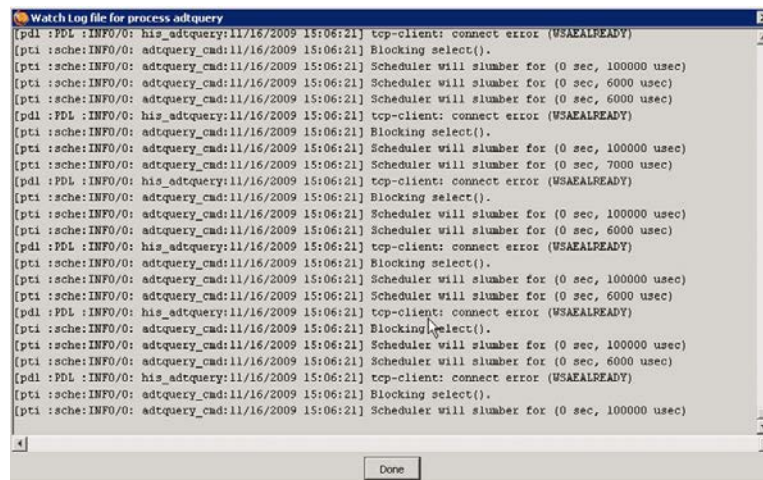
8. Click **EO config** to change the Cloverleaf process logging level.
The **EO Config** window opens.

9. Click **List....**
A dialog box opens.
10. Select **enable_all_info** and click **Apply**.
The **EO Alias** window opens.



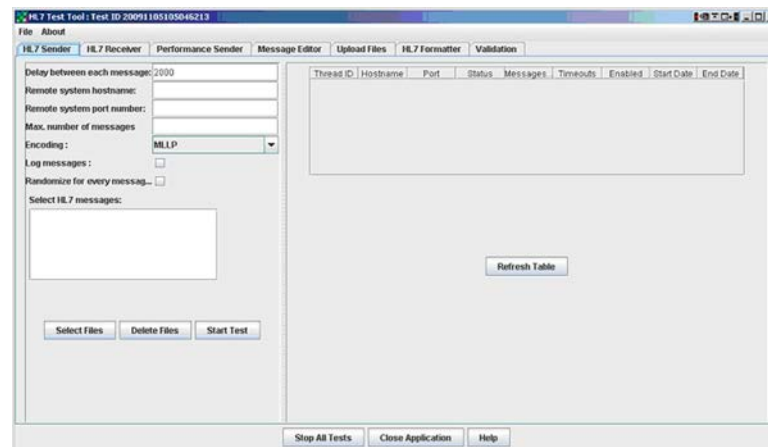
11. Select **enable_all_info** and click **Apply**.
The **EO Config** window opens.
12. Click **OK** to close the **EO Config** window.
13. Do not close the **Full Control** window.
Click the **watch output** button.

The **Watch Log file for process adtquery** window opens containing log messages.



If there is a problem with the testing, view this log to troubleshoot the issue.



14. On the MUSE CCG CD, locate the **HL7TestTool.zip** file and extract the contents of the zip file into your temporary directory.
The result should be an **HL7TestTool** directory containing HL7 test tool files.
15. On the MUSE CCG CD, locate the **QRY_Q01.hl7** file and copy the file to your **My Documents** directory.
16. Navigate to the **HL7TestTool\bin** directory.
17. Locate and edit the **launchpad.bat** file.
Edit the file by adding the JVM path of the CCG (**c:\gehc-it\jvm\bin**) to the java command.
18. Save the **launchpad.bat** file.
19. Open an **Explorer** window.
20. Navigate and open the folder that contains the **launchpad.bat** file.
21. Double-click the **launchpad.bat** file.
The **HL7 Test Tool:...** window opens.

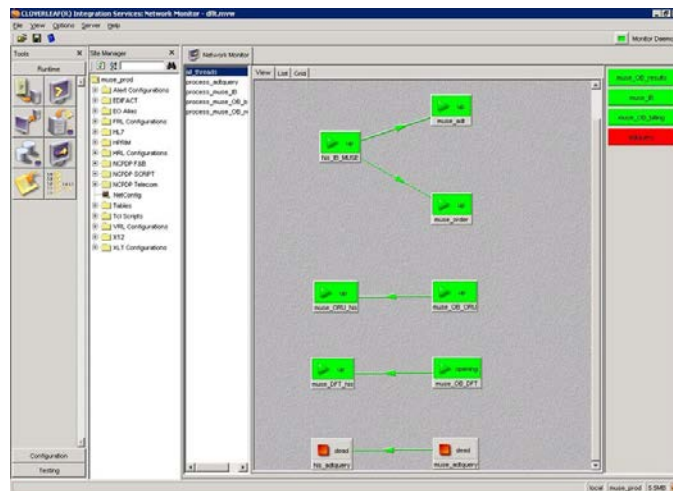


22. Select the **Message Editor** tab.
23. In the **Remote System hostname** field, enter the computer name of the CCG Server.
24. In the **Port Number** field, enter **9100**.
25. Click **Select HL7 File**, select the **QRY_Q01.hl7** file that is in your **My Documents** folder, and click **Open**.
26. Click **Send**.

If the HL7Test tool is issuing a connection error, you may have already activated the **muse_adtquery** thread in the Cloverleaf **muse_prod** site . Complete the following steps:

1. Shut down the **muse_adtquery** thread.
 2. Return to the **hl7_soap_singreq** site.
 3. Select **Network Monitor**.
 4. Reopen the **watch output** window.
27. On the Cloverleaf menu bar of the Cloverleaf IDE, change sites by selecting **Server >change**.

28. Select the ***muse*** site.
29. Click on the ***Network Monitor*** icon .
The ***CLOVERLEAF(R) Integration Services: Network Monitor...*** window opens.
30. Ensure that the ***muse_adtquery*** thread is not running by confirming that it is red.
If the thread is running, stop the thread:
 1. Right-click on the ***adtquery*** button.
 2. Select ***Control > Shutdown***.
31. Confirm that an A19 message with expected data is displayed in the response window.
This is a version 2.2 HL7 message.
If that message is not displayed do the following steps:
 1. Examine the Cloverleaf log window for error messages.
 2. Correct the errors before continuing with this procedure.
32. On the Cloverleaf menu bar, change Cloverleaf sites by selecting ***Server > Change***.
If a warning window opens, select ***Yes***.
33. Select the ***muse_prod*** site and click ***Apply***.
34. Click the ***Network Monitor*** icon .
The ***CLOVERLEAF(R) Integration Services: Network Monitor...*** window opens.



35. Start the **adtquery** process:
 - a. Right-click on the **adtquery** process button.
 - b. Select **Control >Startup**.
36. Confirm that the **adtquery** processes and thread turn from red to green, and that the threads display a status of either **Opening** or **Up**.

37. In the HL7 Test tool, make sure that the **Message Editor** tab is selected.
 - a. In the **Remote System hostname**, enter the computer name of the CCG Server.
 - b. In the **Port Number** field, enter the port the **muse_adtquery** uses (the default is 9005).
38. Click **Select HL7 File**.
39. Select the **QRY_Q01.hl7** file in your **My Documents** folder, and click **Open**.
40. Click **Send**.
41. Confirm that an A19 message displays the expected data in the response window.

The message should be a version 2.4 HL7 message.

Finalizing the Configuration

Use the following procedure to finalize the configuration.

1. Follow the instructions in the *MUSE Cardiology Information System Installation Guide* to configure CCG Autostart.

Remember to add the **hl7_soap_singreq** site to the autostart script.
2. Add the **hl7_soap_singreq** site to the **SmatCycle**.

Performing Cleanup

Once the system is operating smoothly, you may archive or delete the temporary files you created.

Troubleshooting

Use this section to resolve common problems you may encounter during the configuration of the CCG MPI server. If your problem is not listed in the following table, contact the ITPS team or the online center.

Common Problems

Following is a list of common problems and their solutions.

Symptom	Probable Cause	Solution
<p>No response, and the log for the process displays an error message similar to the following:</p> <pre>[xpm :xlt :WARN/ 0:adtquery_soaper_xlate:06/ 04/2009 14:35:18] Message encode warnings: Error generated during parsing. - Not enough elements to match content model : '(soap:Header,soap:Body)' for element 'soap:Envelope' - Line 1, Col 367</pre>	<p>There are XML fields that are not being defined in the Q01_to_XXXXRequest.xlt translation file.</p>	<p>Review the translation file for missing constants or mappings.</p>
<p>Site processes do not start.</p>		<p>Use the following procedure to reset Cloverleaf.</p> <ol style="list-style-type: none"> 1. Switch to the site which has this problem using the Server > Change option in the QDX IDE. 2. On the Runtime tab, click the Shell window to open up a command prompt window. 3. Enter the following commands to stop the Monitor Daemon and reinitialize the database: <pre>hcienginestop -p process_name hcisitectl -K hcidbinit -AC</pre> 4. Use the following commands to restart the hcimonitor and the Lock Manager: <pre>hcisitectl -S hciengineerun -p process_name</pre>

Symptom	Probable Cause	Solution
No response, and the log for the process displays an error message similar to: <i>restoreMuseA19SiteID: Invalid Patient ID...Squelch Response... Check the error database</i>	The error message indicates the ADT^A19 message does not contain a patient ID number that matches the original request. This may be a PID mapping issue.	
Monitor/Process does not start after a system crash.		<p>Use the following procedure to fix Cloverleaf:</p> <ol style="list-style-type: none"> 1. Change to the site that has this problem using the Server > change option in the QDX IDE. 2. In the Runtime tab, click on the Shell window to open up a command prompt window. 3. Enter the following command to stop the Monitor Daemon: hcisitectl -K. 4. Change the directory to the exec folder and delete the shared memory file monitorShmemFile. 5. Use the following command to restart the hcimonitor and the Lock Manager: hcisitectl -S



Support Material

Opening the WS Configurator Interface

Use the following procedure to open the interface.

1. To open the interface, double-click the jar file from a file browser or run ***java -jar WSConfigurator.jar*** from the command line. This is found at ***integrator/CAA/ws/tools/WSConfigurator.jar***.

The program picks the default directory in which to read and save files by looking at your environment variables and choosing the file that is present as the default:

- ***\$HCISITEDIR***
- ***\$CL_INSTALL_DIR***

If neither of these files are present, the program looks for the home directory.

2. In the ***Logical View***, open an existing configuration file (***File > Open***), or start a new configuration file.

Creating a New Client Configuration File

Start a new client configuration by adding Client logical objects.

1. Open the **WebServices (WS) Configurator**.
2. Select the **Client** tab.

A menu is displayed.



3. Use the menu to select the appropriate Client objects for your system.

Creating a New Server Configuration File

Start a new server configuration by adding new server objects.

1. Open the **WS Configurator**.
2. Select the **Server** tab.

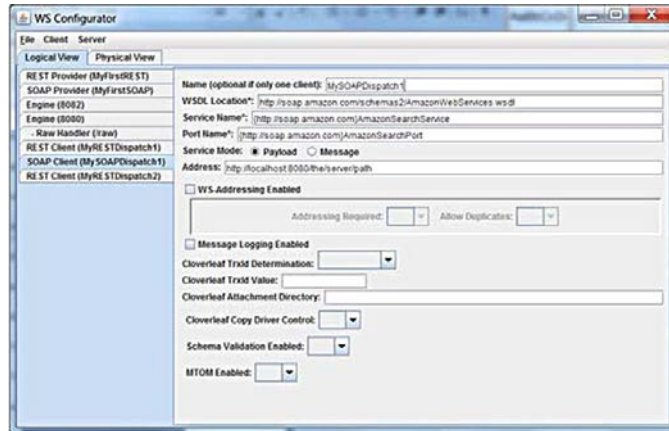
A menu is displayed.



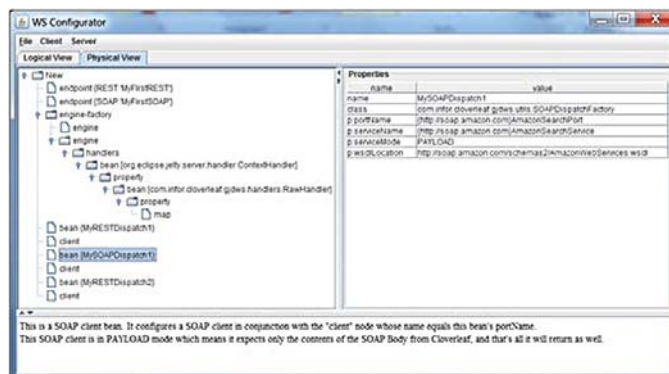
3. Use the menu to select the appropriate Server objects for your system.

Using the Logical and Physical Views

After adding client and server objects, the **Logical View** looks similar to the following screen:



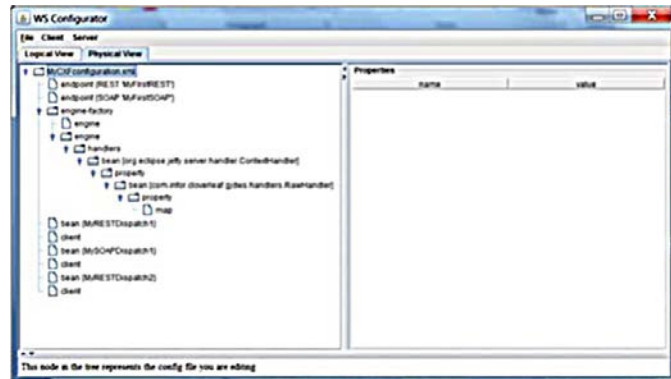
The **Physical View** looks similar to the following screen:



Physical View Panels

Panel	Description
Left panel	A tree view displaying the structure of the XML document that you are building.
Right panel	The properties of any element that is selected on the left panel.
Bottom panel	Context-sensitive help that displays help for the last time selected on either side panel.

After you save the configuration file, the name is displayed in the root node of the **Physical View**.



NOTE:

From this point on, you can open the configuration file and continue editing it using either view, or you can toggle between the two views at any time.

Editing a File

If the Client is deployed to another device, the WSDL must be available at the same absolute path or it needs to be a relative path. Relative paths begin from the Java Driver thread's working directory.

For example, when the site has the working directory listed as WS under the site:

- If the WSDL is in that directory, set **p:wSDLLocation** to the filename of the WSDL.
- If it is in a subdirectory (for example **wSDLs**), set the location to a relative path (for example **wSDLs/myWSDL.wsdl**).

When the site is deployed on another server, it uses the relative path within the site instead of an absolute path that might not exist on that device.

NOTE:

This is not a problem for WSDLs at an HTTP URL, assuming the same URL is available from both devices.

To edit the existing configuration XML from the **hl7_soap_singreq** site, open the xml file from the path **C:\gehc-it\ccg\quovadx\cis6.0\integrator\hl7_soap_singreq\javadriver\hl7_adt_soap_singreq** using the WS Configurator.

Using the Logical and Physical View

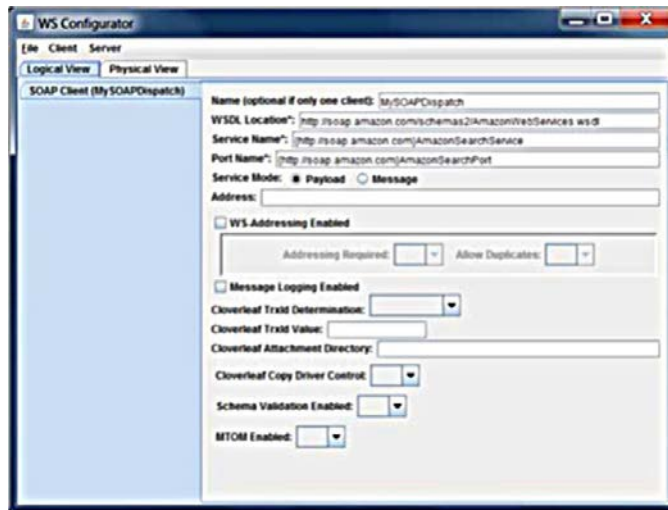
There are two views that you can use to set up a configuration. The difference between the **Physical View** and **Logical View** highlights the complexity of the XML structure in the configuration file.

- **Logical View**

The properties of the Client are displayed on the right pane. Use this view to enter or select the properties.

You do not need knowledge of the actual XML elements to set up a configuration using this view.

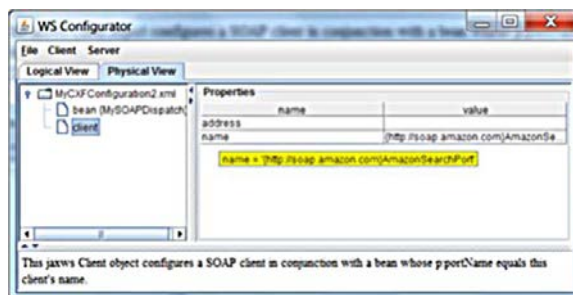
Hovering over a property opens a tooltip explaining the property. This provides an easier view with which to work.



- **Physical View**

This view provides detailed descriptions of the XML elements and their meaning, and displays what you can expect from the equivalent XML and the operations that you can perform in that view.

Use this view as a learning tool to display how the actions taken on the **Logical View** translate into the actual XML structure.



In this example, two elements were created (XML elements from the XML file the WS Configurator generates):

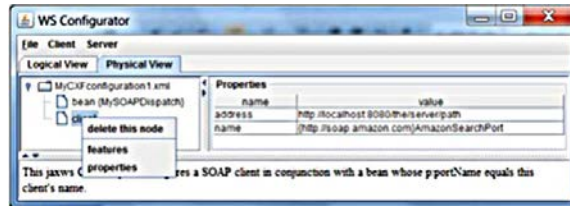
- *bean*
- *jaxws client*

NOTE:

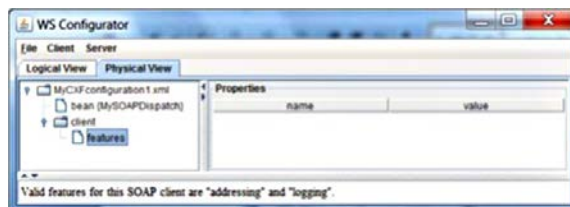
Some elements have properties that are displayed in the right panel when that element is selected on the tree. These properties are attributes in the XML file the WS Configurator generates.

Creating and Deleting Elements

The right-click menu is where you delete an element and add child elements. Right-clicking a Client element displays its available choices.



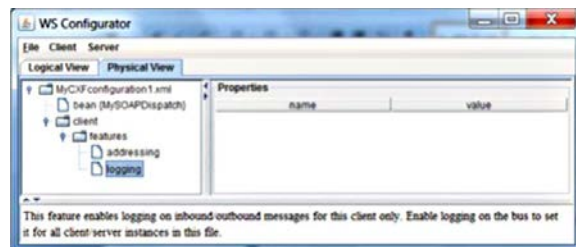
Selecting features creates an empty features element, as displayed in the following screen:



At the bottom of the window, the context-sensitive help displays the features available for this type of Client.

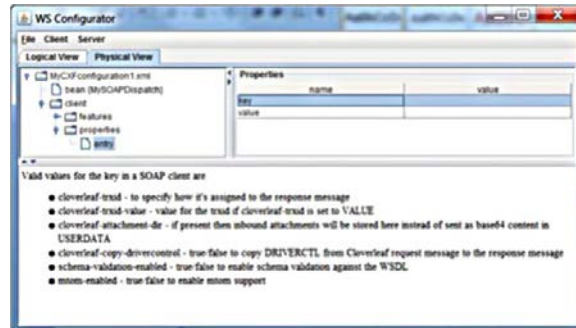
The SOAP Client supports WS-Addressing, which sends WS-Addressing headers having appropriate values based on the WSDL and the message being sent, as well as a logging feature that logs inbound and outbound messages.

1. To add features, select the features element.
2. Right-click the items you want to create.



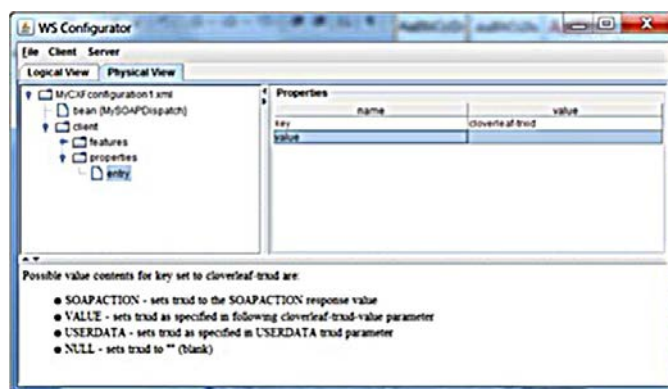
Using the Properties Child

A properties child element can exist under Client elements. This has a array of entry elements under it that change the behavior of the Client in a number of ways.



When you select the **key** property of the **entry**, the **Help** information at the bottom of the window provides a list of suggested values:

- **Cloverleaf**
Values starting with **cloverleaf-** affect how the Client interacts with the system.
- **CXF**
Other values come from CXF and modify CXF behavior. The system only lists currently known ones.
You can enter other values found in the CXF documentation or code, even though the interface does not mention them.
- **Known values**
Entering one of the know values and clicking the **value** property displays the context-sensitive help for that **key**.
In the following screen, the valid values are displayed to set for the **cloverleaf-trxid** property in order to control the txID from the message in the system.



Creating a New SOAP Server

Use the following procedure to create a new SOAP Server (Provider).

1. On the **WS Configurator** window, select **Server > New SOAP Server**.



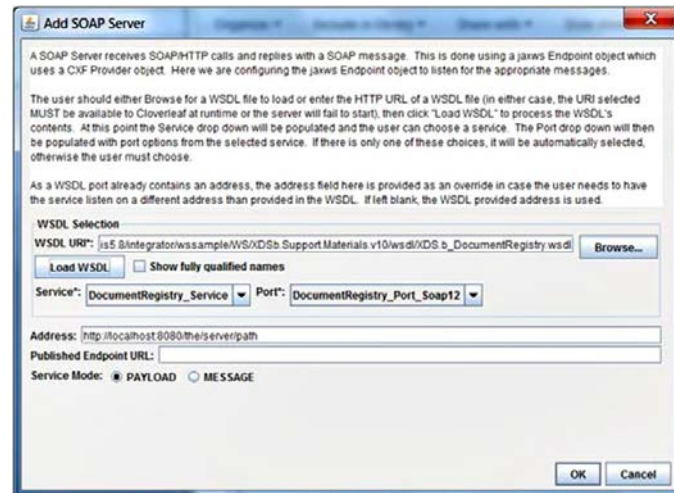
The **Add SOAP Server** window opens:



The help information at the top of the window explains the general flow.

2. In the **WSDL URI** field, enter the WSDL and any referenced XSD files within the working directory for the Java driver thread (or a subdirectory of it) and reference it with a relative path.

For example, a **WSDL XDS.b_DocumentRegistry.wsdl** is in the **WS/XDSb.Support.Materias.v10/wsdl** directory, where WS is the working directory.



If this service is deployed to another device and that same exact path does not exist, the service cannot find the WSDL and fails to start.

3. Click **Browse** to locate the directory where WSDL is present.
4. Click the **Load WSDL** button to load the **WSDL** file.

The **Service** field is populated from the WSDL after it is loaded. If there is only one entry, the interface automatically selects it.

The **Port** field is populated after selecting the **Service**. If there is only one port using this service, it is auto-selected.

The **Address** field is for address overrides. You may leave this field blank.

5. **Published Address** is an optional field for populating the address in the generated WSDL when a Client adds **?wsdl** to the service address.

For example, a service resides on a device within a company's firewall named **amagin42**, but the outside world is routed into this device using the DNS name **cloud.amazing.com**. If the service is at **http://amazing42/mysevice**, you can reach the WSDL within the network by calling **http://amazing42/mysevice?wsdl**. This generates a WSDL with the service address as expected: **http://amazing42/mysevice**.

This works for internal testing, but when the outside world calls it at **http://cllud.amazing.com/mysevice?wsdl**, a public service address other than **http://amazing42/mysevice** needs to be returned or their Clients fail without address overrides.

In this case, enter **http://cloud.amazing.com/myservice** in the **Published Address** field. The returned WSDL now has the correct service address to calling users.

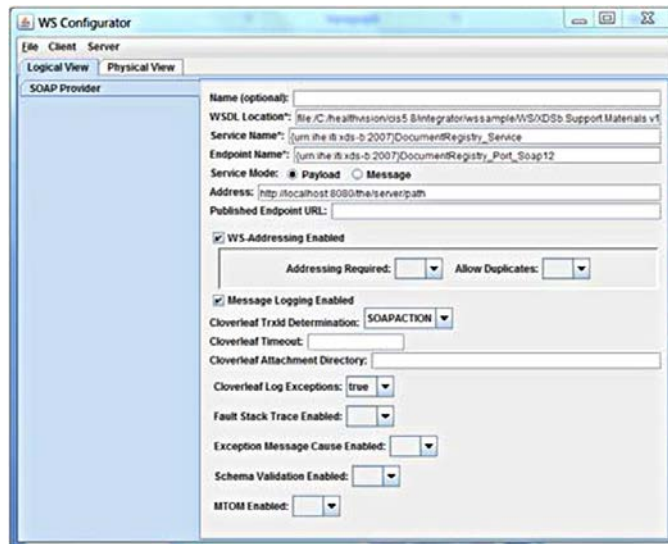
6. For **Service Mode** information, see step 7 in “Creating a New SOAP Client” on page 21.

Using the Logical and Physical Views

The following information describes the **Logical View** and **Physical View** in the SOAP Server.

- **Logical View**

The properties of this server are found on the right panel where you can enter or select them from a drop-down list. Hovering over a property opens the tooltip that explains the property.



- **Physical View**

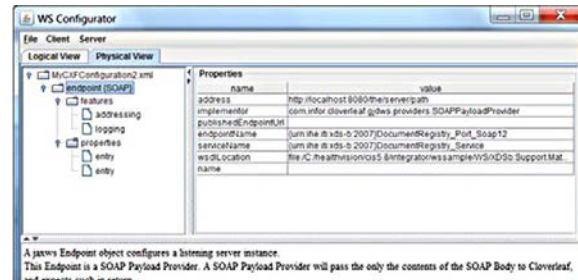
NOTE:

The following screen display what you could see from the equivalent **Physical View** and the various operations performed on that view, with detail descriptions of many of the XML elements and their meaning.

This difference between the **Physical View** and **Logical View** highlights the complexity of the XML structure in the configuration file and why the **Logical View** provides a better view.

Endpoint Element

The **Physical View** has one endpoint element, unlike a Client, which has a paired **bean** element.

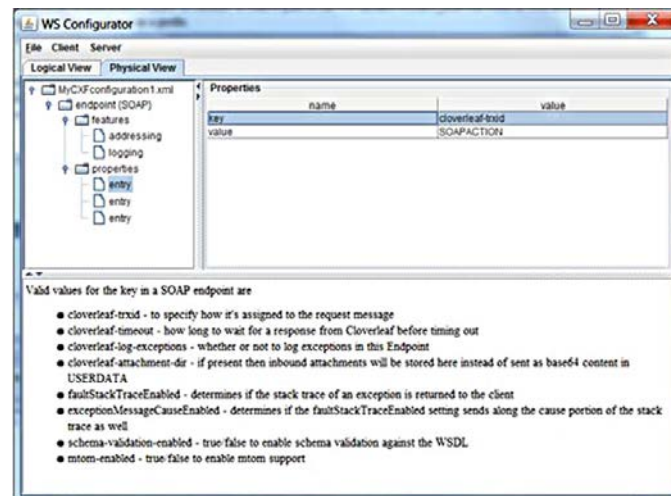


Similar to the Client element, the Endpoint element can have features and properties children, corresponding to the fields selected or set in the **Logical View**.

To see the context-sensitive help, which is a list of allowable keys:

1. Select an entry in the left panel, and in the **Properties** panel, click **key**.
2. Click **value** to see the allowable values for that key.

Similar to the Client, the **cloverleaf-** named items are specific to working with the system, and the rest are **CXF** generic values.





View Trusted Certificates

View Certificates in the Trusted Root Certification Authorities

Information is provided for using the Microsoft Management Console (**mmc.exe**) to view the trusted certificates installed on your machine.

1. Click **Start**, in the **Start Search**, type **mmc**, and then press **Enter**.
The User Account Control window may open asking if you want allow changes, click **Yes**.
Microsoft Management **Console** will open.
2. Click **File > Add/Remove Snap-in**.
The **Add or Remove Snap-ins** window opens.
3. In **Available snap-ins**, click **Certificates**, and then click **Add >**.
The **Certificates snap-in** window opens.
4. In **This snap-in will always manage certificates for:**, select **Computer account**, and click **Next**.
The **Select Computer** window opens.
5. Select **Local computer** and click **Finish**.
6. If you have no more **snap-ins** to add to the console, click **OK**.
7. In the console tree, double-click **Certificates**.
8. Click the **Trusted Root Certification Authorities store > Certificates** to view all the trusted root certificates on the machine.

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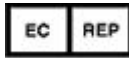
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