



# Site Server Installation and Configuration Guide (Dose Index Registry)

TRIAD Version 4.5.3



American College of Radiology  
1891 Preston White Drive, Reston, VA 20191

# Contents

# 1 Introduction

## 1.1 Purpose

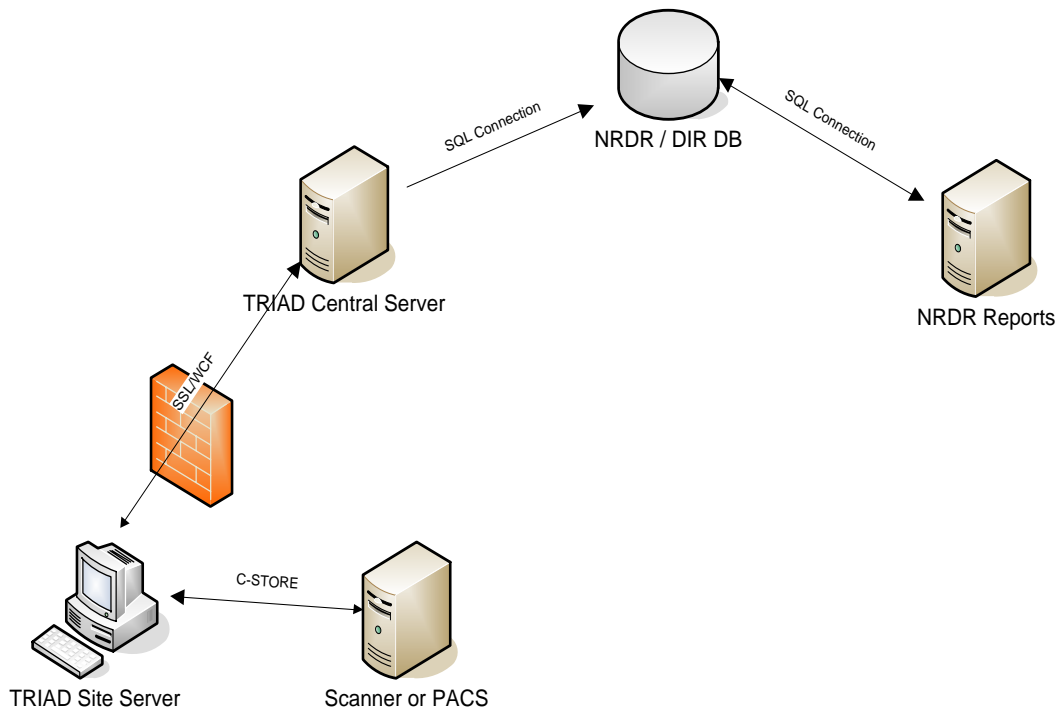
TRIAD enables the collection, de-identification, and transmission of data securely from modality workstations or PACS at one or more facilities to the DIR database. A single TRIAD Site Server can support all Facilities within a NRDR Corporate Account. This document describes the system requirements and steps to install and configure TRIAD Site Server.

## 1.2 Hardware and Software Requirements

#	Items	Remarks
1	<i>Operating System</i>	Windows 10 - 32/64 bit, Windows Server 2012 SP2/R2Enterprise Edition – 32/64 bit
2	<i>CPU &amp; Memory</i>	Intel Core2 Duo or above, Minimum 4GB of memory
4	<i>Hard Disk</i>	The hard disc size depends on the size of images received and stored in TRIAD Site Server. 50 GB minimum and 200 GB recommended.
5	<i>Software</i>	<b>.Net framework 4.5.2</b> (Full version --Client profile and Extend) (After completion, the computer will need to be restarted) <a href="https://www.microsoft.com/en-us/download/details.aspx?id=42642">https://www.microsoft.com/en-us/download/details.aspx?id=42642</a> Microsoft Visual C++ 2012 x86 Redistributable * *Microsoft SQL Server Compact version 4.0 SP1 (*: Provided in the installation package)
7	<i>Internet Connectivity</i>	Access to <a href="https://triad-dir-app.acr.org">https://triad-dir-app.acr.org</a> . Sites that use proxy servers should unblock this URL from their proxy settings.
8	<i>User Permissions on the Computer</i>	An account with administrator rights to the computer is needed for TRIAD Site Server installation. The local account running TRIAD Site Server service should have sufficient privilege for executing service and be able to connect to Central Server through the internet (port 443).

## 1.3 Basic Data Flow Between Facilities and ACR

The Digital Imaging and Communications in Medicine (DICOM) Standard defined the Radiation Dose Structured Report (RDSR) to record and store radiation dose information from imaging scanners and systems. The DICOM RDSR from modalities at participating DIR Facilities are transferred to the local TRIAD Site Server, where they are anonymized before being forwarded to the NRDR-TRIAD Central Server at ACR.



- **Activation and of the TRIAD Site Server**

Any CT scanner or Projection x-ray (Fluoroscopy or Digital Radiography) system from which a facility wishes to send RDSR to the Dose Index Registry must be configured locally in the TRIAD Site Server configuration console using the respective Station Name. Facilities can filter out specific systems from sending data to the registry by not configuring these in the TRIAD Site Server configuration console. RDSRs received from systems that are not configured are stored on the TRIAD Site Server for 14 days, after which they are deleted.

**Note:** It is recommended that configuration information entered be limited to the Station Name. All configuration information for scanners and systems in the Site Server console must match what is in the RDSR for the data to be processed by the TRIAD Site Server.

Imaging modalities can be connected to the TRIAD Site Server using several different configuration paths and several configurations are described below. While sending data directly from the scanner or device to the local TRIAD Site Server is preferred, other configuration paths, i.e., PACS, third-party Radiation Dose Index Monitoring system (RDIMs), are allowed and may be more efficient for managing multiple modalities, scanners, or devices, across DIR Facilities. As you review the options, please be aware that creating and transferring the Radiation Dose Structured Reports (RDSR) to another DICOM node may require service level access and is typically performed by the local service engineer under the guidance of the medical physicist.

- **Direct Connection to the TRIAD Site Server**

The simplest and preferred configuration is to establish a direct DICOM connection between each scanner or system and the local TRIAD Site Server, and then configure each to automatically create and transfer the RDSR to the Site Server after each procedure.

- **Transfer to the TRIAD Site Server through a Radiation Dose Index Monitoring (RDIM) System**

Facilities that have systems already connected to an RDIM may elect to have the RDIM automatically forward RDSR to the TRIAD Site Server (see figure 2).

**Alert:** If choosing this configuration, the RDIM must forward/pass through RDSR without modification.

**Note:** [Consult the list of DIR-certified software partners](#) to see if your vendor is approved to send data using TRIAD on your behalf. Facilities electing this type of configuration are encouraged to contact their RDIM vendor early in the start-up process to ensure proper configuration and avoid potential pitfalls.

- **Transfer to the TRIAD® Site Server from the facility's Picture Archiving and Communication System (PACS)**

Facilities with in-house PACS administrator expertise may elect to configure their PACS to automatically forward all RDSR from specific modalities or Station Names to the TRIAD Site Server. This simplifies DICOM configuration as only a single DICOM destination is needed for each scanner or device. It is also possible for the PACS system to forward only to the TRIAD Site Server or in parallel to the TRIAD Site Server and an RDIM using this architecture.

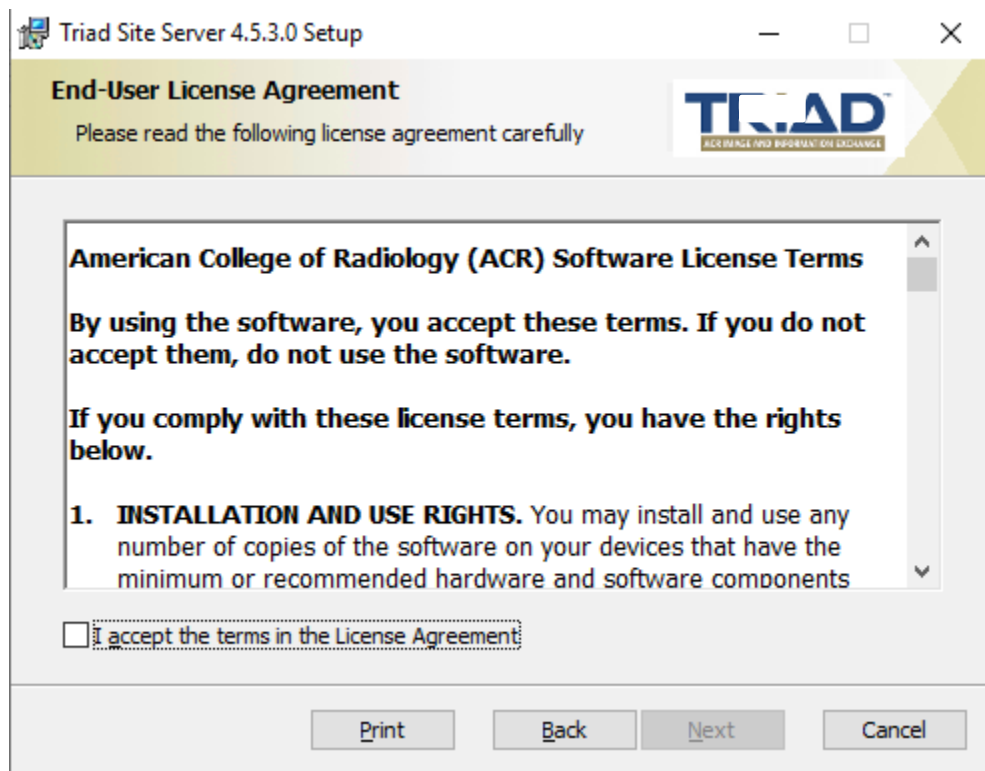
## 2 Installation

### 2.1 Installation Steps

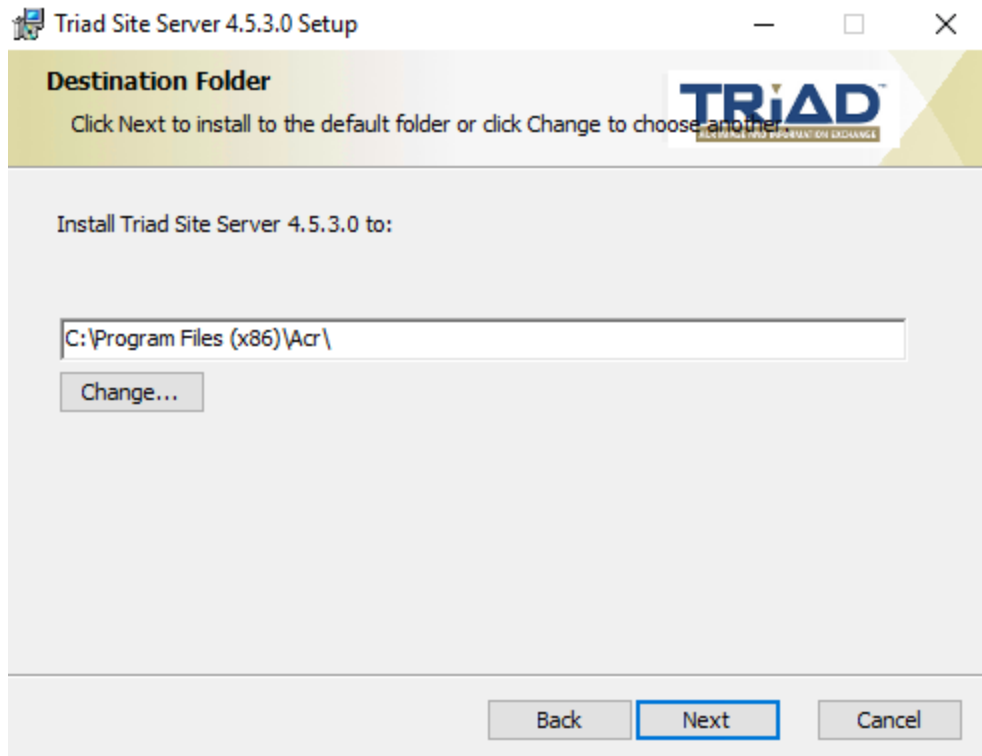
1. If an existing version of Site Server is on the machine, then Window Installer will prompt for the existing version to be removed. See section 5: Un-Installation
2. Verify that the machine meets the system requirements listed above and at <https://triad4.acr.org/dirsiteserver/>
3. Download the Site Server installation zip file from the specified URL (<https://triad4.acr.org/dirsiteserver/>) to a local folder and unzip the file.
4. Start the installation by double clicking on the **setup.exe** file.

SQL Server Compact Edition 4.0	2/17/2021 10:24 AM	File folder	
vcredist_x64_2012	2/17/2021 10:24 AM	File folder	
vcredist_x86_2012	2/17/2021 10:24 AM	File folder	
WindowsInstaller3_1	2/17/2021 10:24 AM	File folder	
setup	1/4/2021 3:23 PM	Application	563 KB
SiteServer	1/4/2021 3:23 PM	Windows Installer ...	42,856 KB

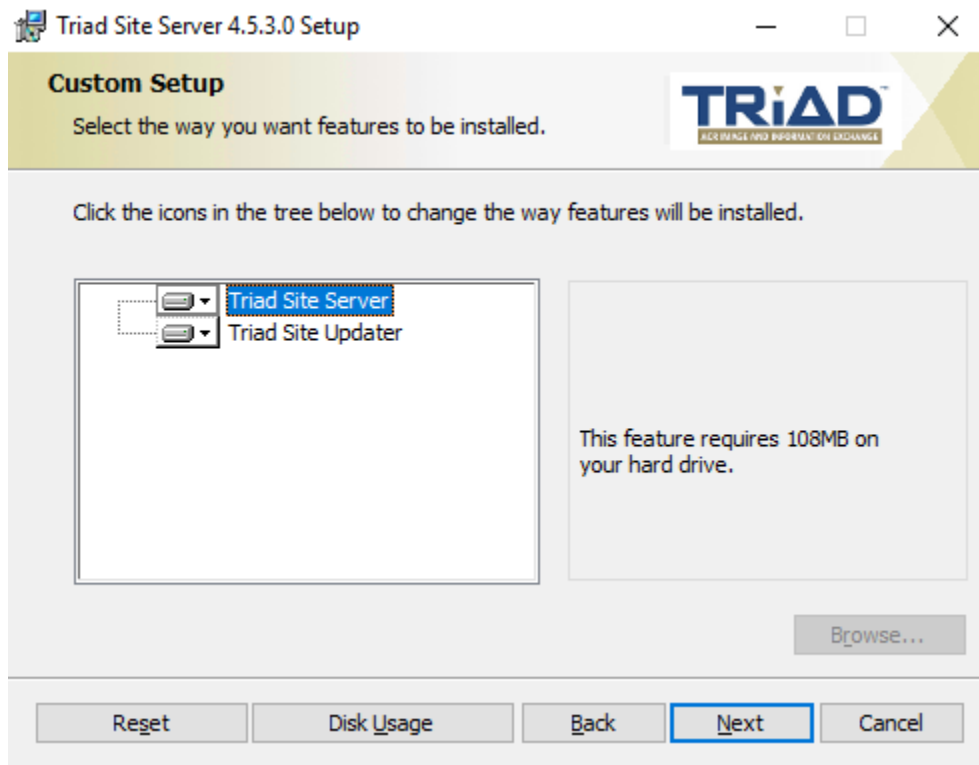
5. The publisher should be “American College of Radiology”. Click “Run” to start installation.
6. Click the “Next” button in each screen to continue the installation steps.
7. Accept the license agreement and click “Next”



8. Change the Site Server application folder if needed. Then click “Next”.



9. Click “Next”.



10. Specify the DICOM port # and leave Site Server DNS Name as the default value and then click “Next”.

Triad Site Server 4.5.3.0

**Server Information**  
Please enter the Central Server information

TRIAD  
RADIOLOGY INFORMATION EXCHANGE

Site Server Client Service Port: 7980

Site Server SCP Port: 104

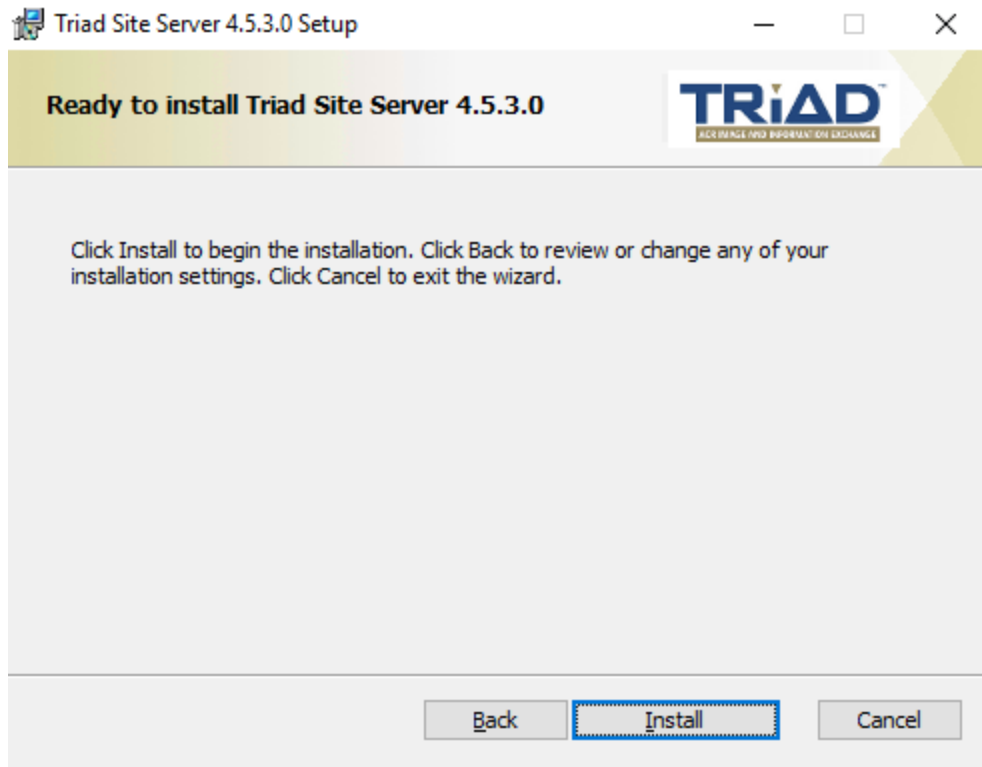
Site Server DNS Name: localhost

Back Next Cancel

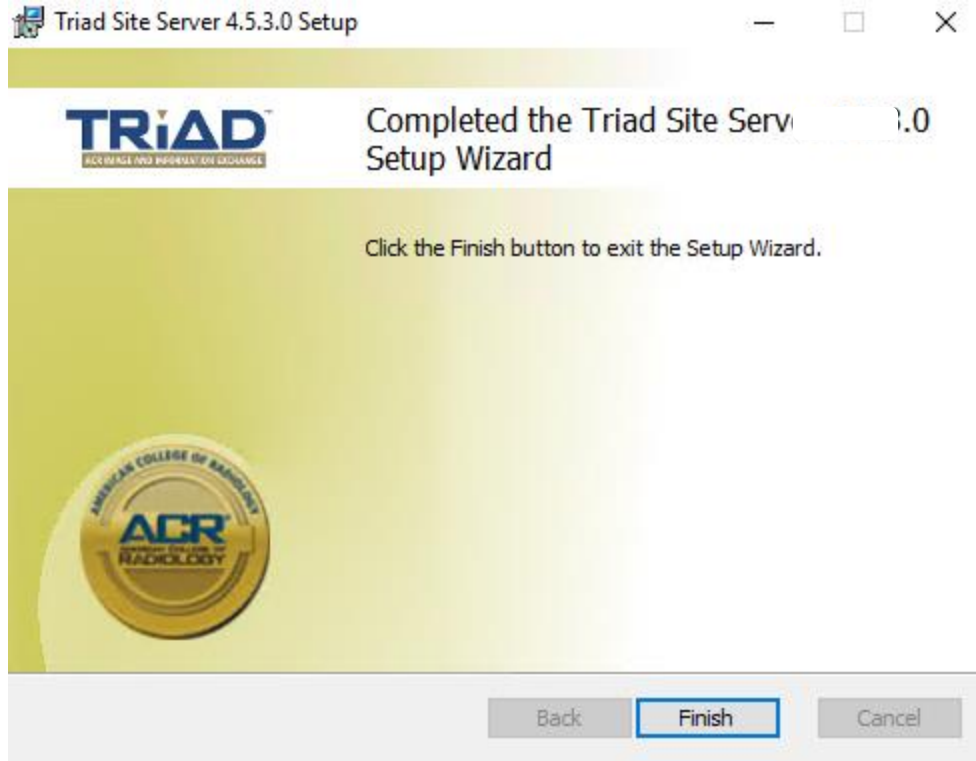
- i) **Site Server Client Service Port:** If this client service port is not used for the Dose Index Registry domain then do not modify. Leave the default value in the field.
- ii) **Site Server SCP Port:** This is the port where the Site Server receives data from external devices such as scanners or PACS – This port can be any free port with a value ranging from 100 to 10000. Do not use 6567, 6568, or 7979. Use the command “**netstat -a**” to list all ports used in the system. The default port # is: 104.
- iii) **Site Server DNS Name:** Do not modify the default value.

11. Click 'Install' to install the application.





12. When the installation has been completed, the following screen is displayed. Click “Finish”.



After successful installation, find the Site Server Console from Windows Start Menu –All Programs→American College of Radiology→Site Server Console 4.5.3.

The Site Server will need to be configured using the Site Server Console before the Site Server Service can be used.

## 3 Activation and Configuration of Site Server

### 3.1 Pre-conditions for configuring the TRIAD Site Server:

Verify the items below before configuring Site Server:

- Site Server runs as a Windows service. Make sure Site Server Service (TriadSiteServerService) is up and running from the Windows Task Manager.
- Ensure that you have proper ACR Login user accounts that have access to National Radiology Data Registry (NRDR).
- You will need to run Site Server Console as local administrator. Make sure you have administrator access to the computer that runs Site Server.

### 3.2 Site Server Console Configuration

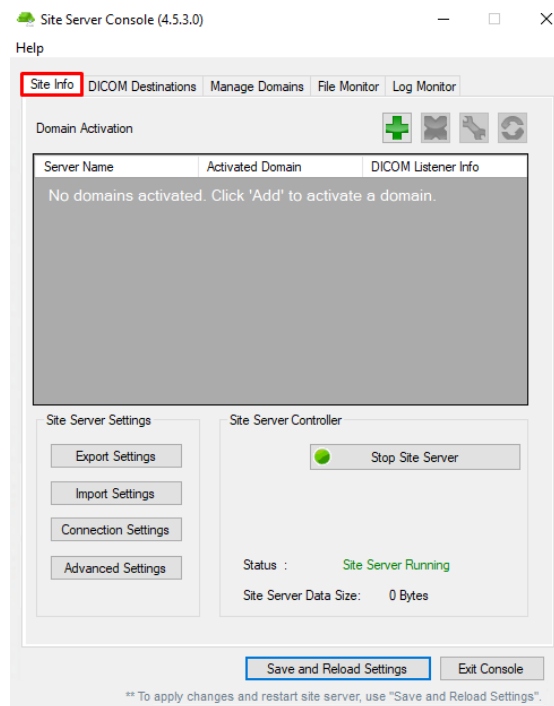
The following are steps for configuring Site Server:

1. Domain activation
2. Configuring and mapping facilities
3. Configuration of AE title, port # and image storage folder
4. Setup the schedule for image forwarding

### 3.2.1 Domain Activation

Invoke the Site Server Console (Use Run as Administrator option) from Windows Start Menu – All Programs->American College of Radiology-> Site Server Console 4.5.3.

The domain is activated from the main Site Server Console window. The domain activation screen can also be accessed by clicking on the “Site Info” tab.



To activate the Site Server for a domain (e.g. Dose Index Registry) perform the following steps.

1. Click the Add button . The following screen will be displayed:



Domain Settings		DICOM Listener Info	
Domain Name	<input type="text" value="Dose Index Registry"/>	AE Title	<input type="text"/>
Central Server *	<input type="text"/>	DICOM SCP Port **	<input type="text" value="104"/>
NRDR Username	<input type="text"/>	Storage Directory **	<input type="text" value="C:\Program Files (x86)\Acr\1"/> <input type="button" value="Browse ..."/>
Password	<input type="password"/>	<input type="button" value="Update"/>	
Display Name	<input type="text"/>	<input type="button" value="Start DICOM Service"/>	
Location Details +	<input type="text"/>	<p>+ These changes will be applied to all domains. You need to restart site server for changes to take effect.</p> <p>* Denotes address of physical location of site server / DNS Name of Central Server</p>	
Phone Number	<input type="text" value="( ) -"/>		
E-Mail	<input type="text"/>		
Confirm E-Mail	<input type="text"/>		
<input type="button" value="Activate Domain"/>		<input type="button" value="Exit"/>	

2. In the pop-up screen, enter the following details.

**Domain Name:** Select “Dose Index Registry” from the drop down list.

**User name:** <User Name in NRDR > Enter the ACR Login e-mail address

**Password:** <Password in NRDR > Enter the ACR Login password

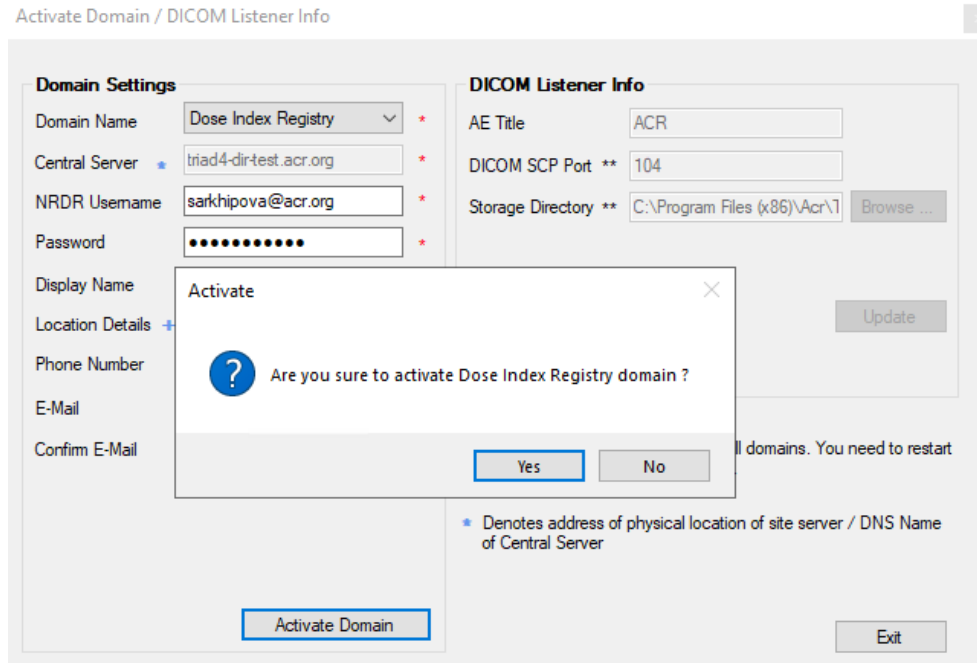
**Display Name:** <Name used to identify your site server>: Enter the NRDR facility ID. If the facility has multiple installations of SS, enter the ID using the format as 100001-1, 100001-2 etc. (if the facility ID is 100001)

**Location details:** < address/ identification details of the physical location >

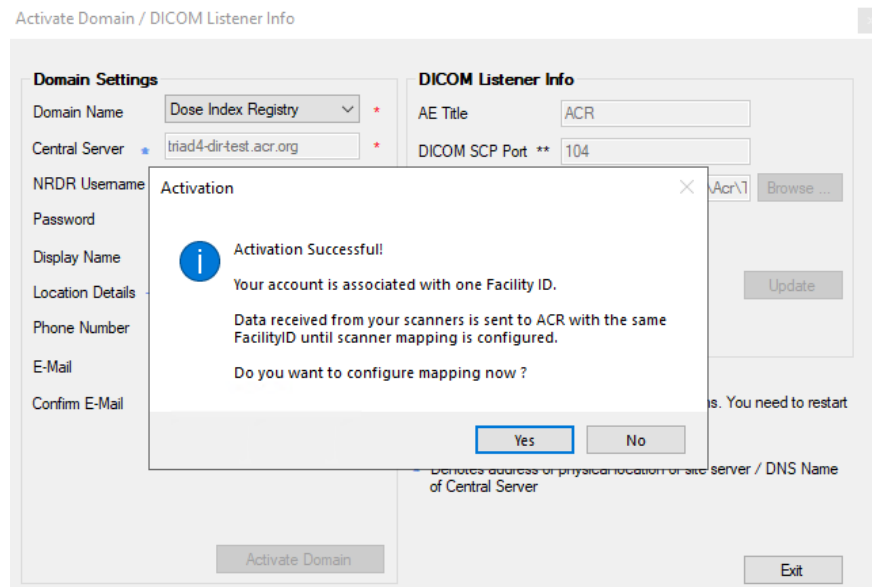
**Phone number:** <Number we can use to contact regarding the SS> e.g.: 120-453-8984

**Email:** <Email address of the user to be notified when the Site Server is down.>

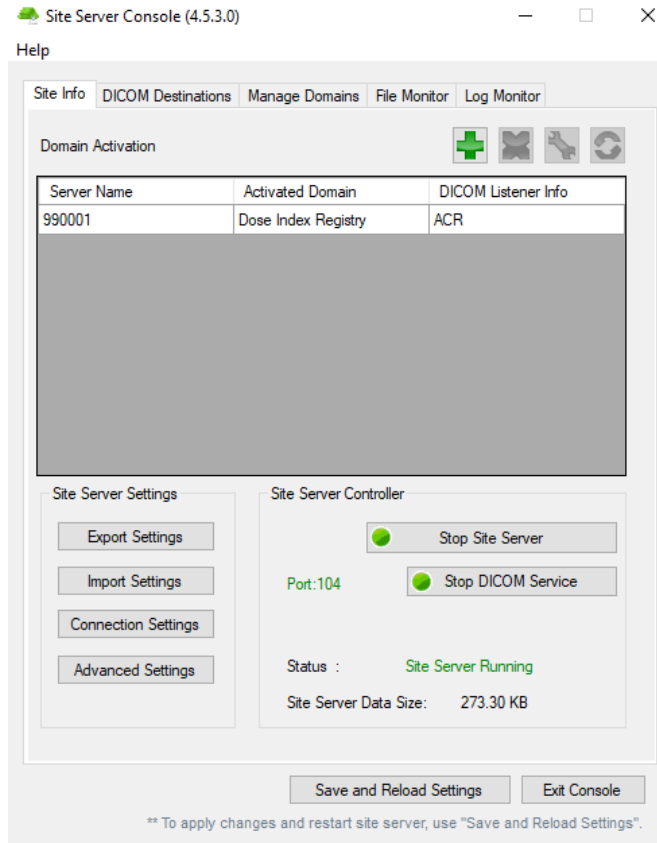
Note: If you do not know your NRDR facility ID and/or password, contact [nrdrsupport@acr.org](mailto:nrdrsupport@acr.org) or call 800-227-5463 ext 3535.



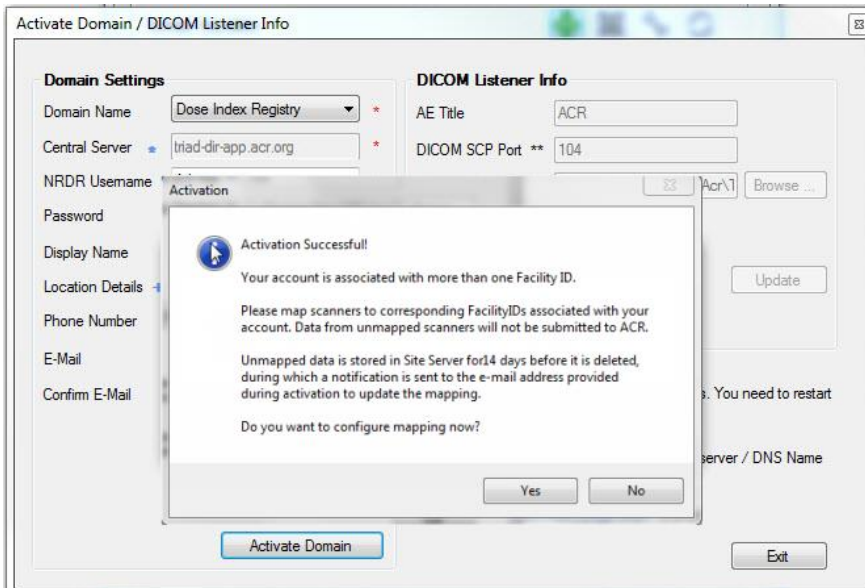
3. If all the entries are in the proper format, then click 'Activate Domain'. If successful, a new window will be displayed with your account and Facility ID association information. If activation failed, an error message will be shown regarding the status of activation. The most common error message will be related to entering a wrong ACR login user name and password for the account with NRDR access



4. Click on "No" since it is a single facility, a new entry will be added to the list as shown in the image below



5. The pop-up below will appear if the domain activation is performed using an account associated with more than one facility ID. Click on “Yes” to add facilities. If you do not configure the facilities and try sending data, the data sent from the facilities will be cached (saved to temporary memory) for 14 days. An email will be sent to the e-mail address configured in the Site Server console asking to configure the facilities. Click on the Unmapped Submissions tab to see details of the unmapped scanners.



The email below is sent to the e-mail address configured in the Site Server console if a scanner is not mapped and the data is still being sent from that scanner to Site Server. This e-mail is sent for the first time when data is received from a scanner. The user has 14 days to configure the scanner mapping on the TRIAD Site Server console. After 14 days, files are deleted from the TRIAD Site Server.

*Dear <Username>,*

*Site Server has detected the following unmapped submission:*

- *Station Name: <DICOM TAG VALUE>*
- *Device Serial Number : <DICOM TAG VALUE>*
- *Institution Name: <DICOM TAG VALUE>*
- *Manufacturer Model: <DICOM TAG VALUE>*

*You have the following unmapped submissions currently on site server:*

<i>#</i>	<i>Station Name</i>	<i>Device Serial Number</i>	<i>Institution Name</i>	<i>Manufacturer Model</i>
<i>1</i>	<i>A</i>	<i>S</i>	<i>S</i>	<i>S</i>
<i>2</i>	<i>A</i>	<i>D</i>	<i>F</i>	<i>F</i>

*There is no association between this Device and an NRDR Facility ID.  
All submissions from this Device will be cached locally on the Site Server and submitted to ACR after corresponding association has been set up.  
Please use Site Server Domain Settings -> 'Scanner-Facility Mapping' to map your devices.*

*Unrecognized data will be automatically removed from the Site Server in 14 days if they are not mapped during this time period.*

*Regards,  
ACR TRIAD Support Team  
703-390-9858 (Select option 1)*

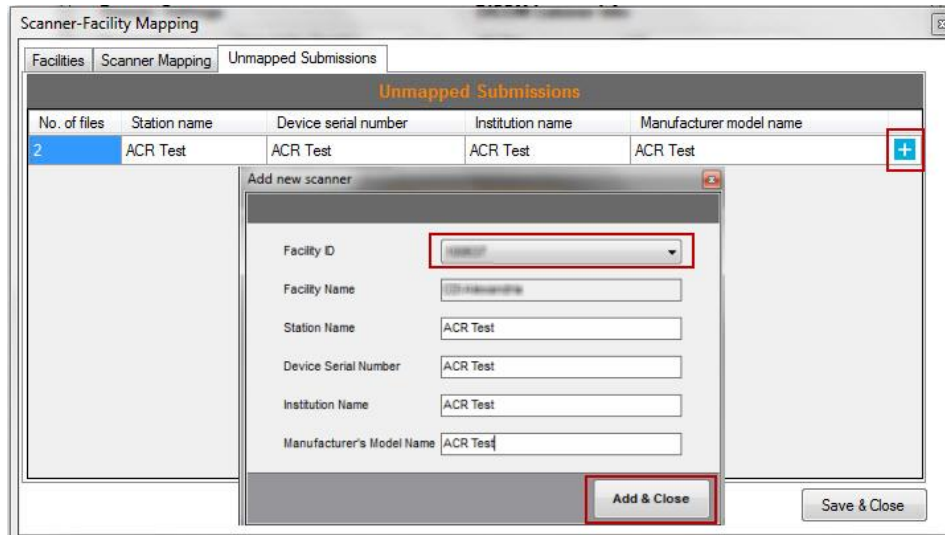
### **3.2.2 Unmapped Submission**

Scanners can be mapped in two ways:

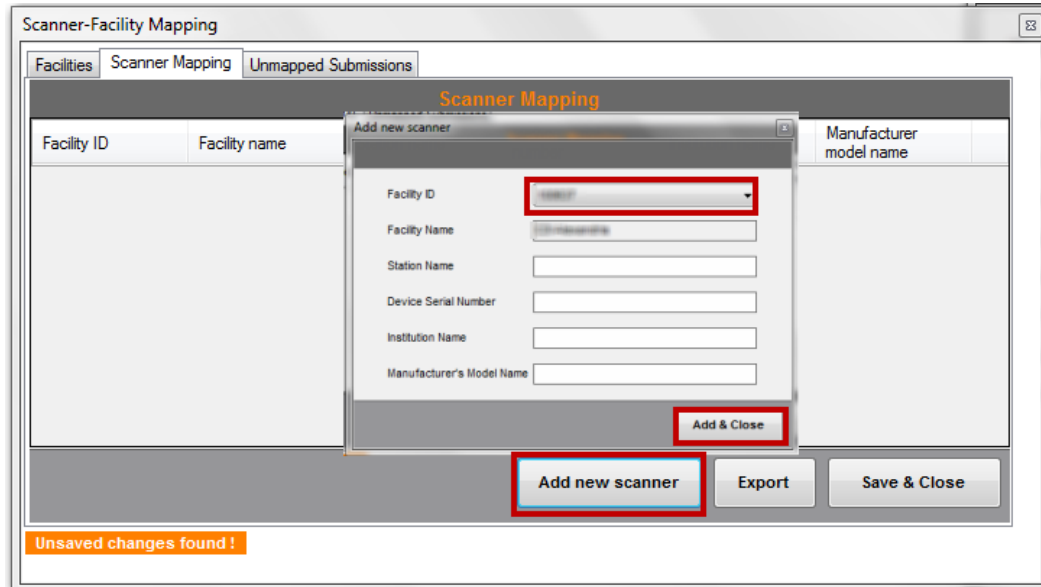
1. Select the “Unmapped submissions” tab in the Scanner-Facility Mapping window and add the unmapped scanners to its respective facility ID



Click on **+** to map the scanner → Select the respective facility ID → Add & Close

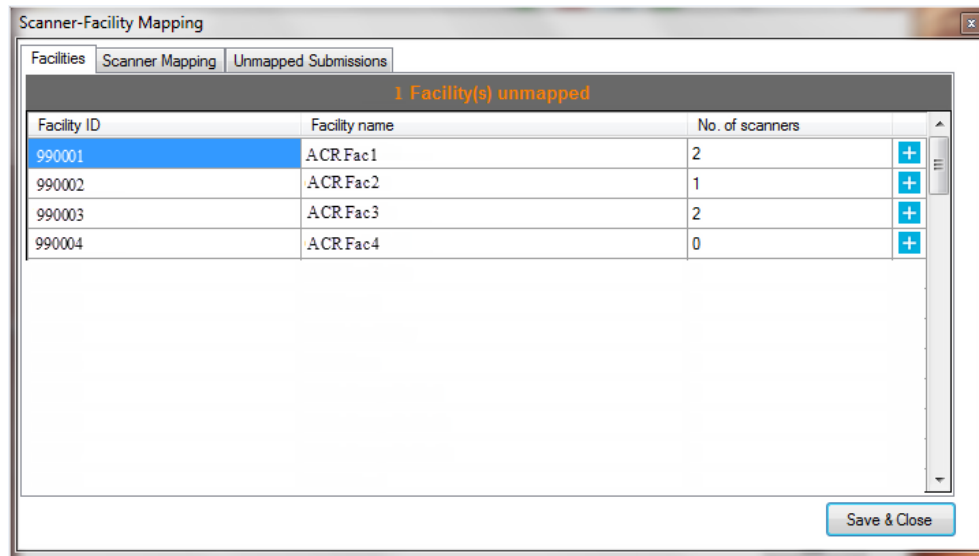


2. Select “Scanner Mapping” tab and click on the “Add new scanner” button. A new pop up window will appear. Select the “facility ID” and fill in the following fields. Click on “Add & Close” when done.




To add additional scanners click on “Add new scanner” and follow the same process.

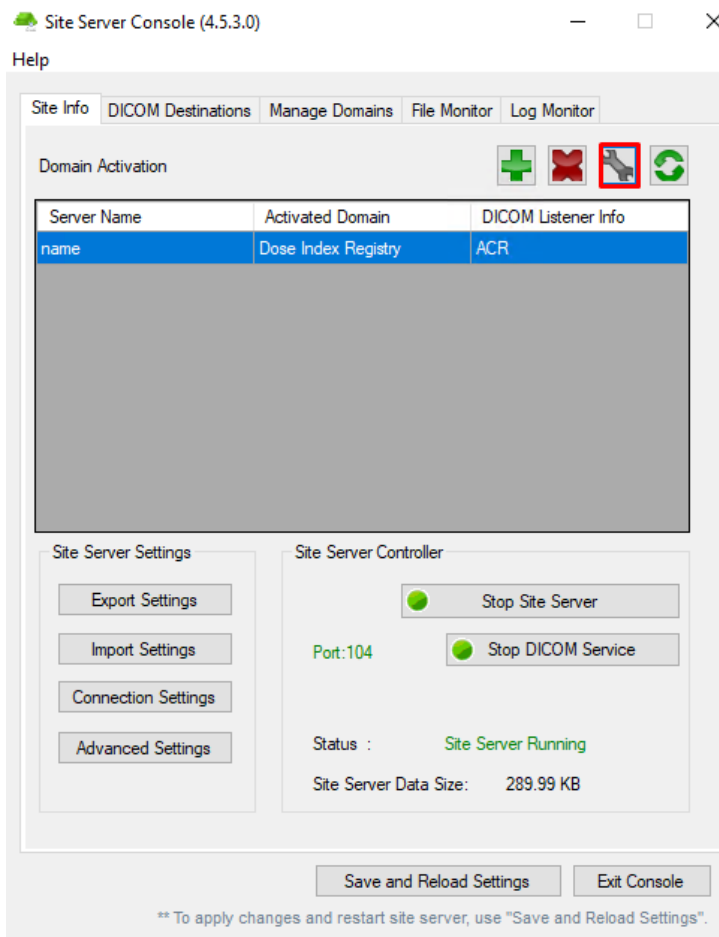
- Facilities tab will display the count for mapped scanners of each facility



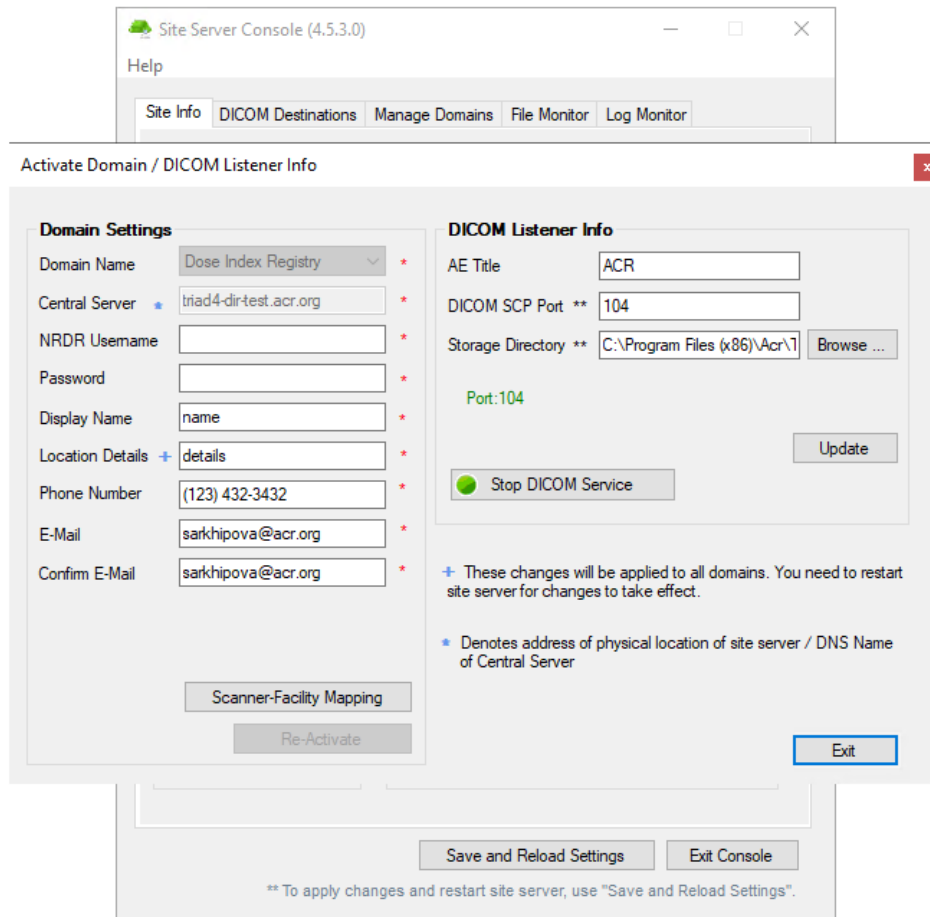
Note: Click “Save & Close” after all the scanners are mapped to its respective facility ID

### 3.2.3 Configuration of Port #, AE Title and Image Storage Folder

1. The default port # is 104 and the default AE title for the TRIAD DIR domain is “ACR”. To change the port #, AE title and/or image storage folder, open the Site Server console and select the “Site Info” tab.
2. Select the Dose Index Registry domain row. Then click the  button.



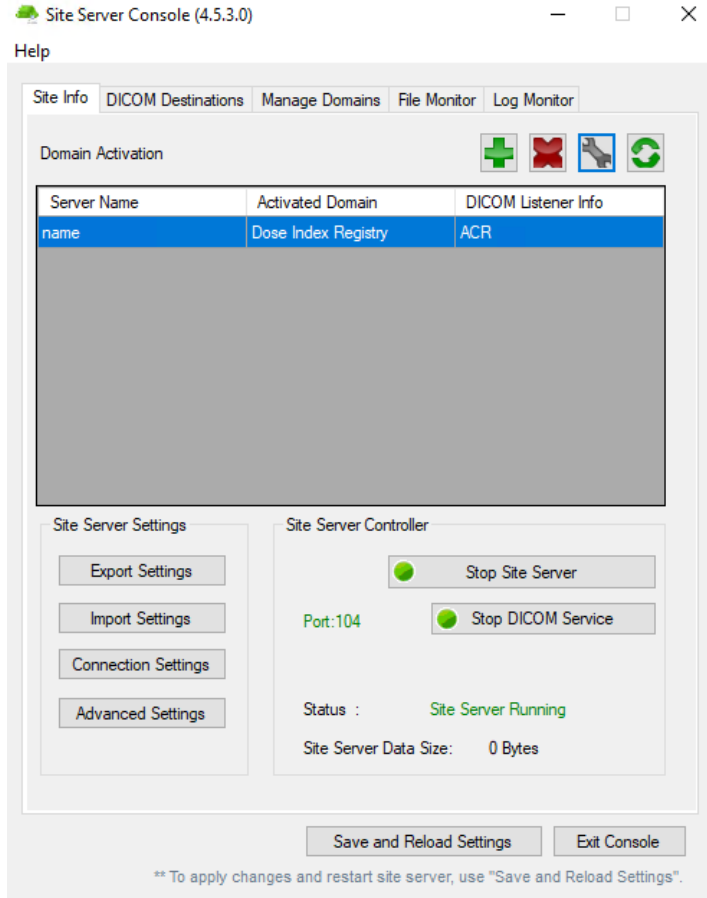
3. In the pop-up screen, make any updates and then click the “Update” button.



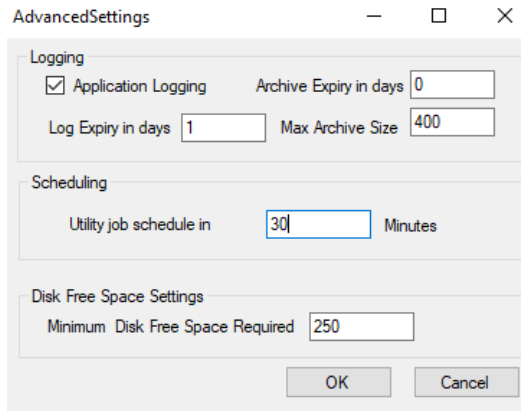
4. Click “Exit” to return to the main screen.

### 3.2.4 Advance Settings:

This feature allows the user to manage the archive folder size and expiry date.



Archive Expiry is the duration of storing the log files within the archive in ‘days’. Maximum Archive Size is the log file storage size in MBs.



## 4 Un-installation

You can uninstall the Site Server by using Windows Control Panel (Programs and Features). The Site Server settings will be cleared during the un-installation.

## 5 SOP Classes Supported

```
<SOPClass UID="1.2.840.10008.5.1.4.1.1.2" Name="CT Image Storage" />  
<SOPClass UID="1.2.840.10008.5.1.4.1.1.2.1" Name="Enhanced CT Image Storage" />  
<SOPClass UID="1.2.840.10008.5.1.4.1.1.88.22" Name="Enhanced SR Storage" />  
<SOPClass UID="1.2.840.10008.1.1" Name="Verification SOP Class" />  
<SOPClass UID="1.2.840.10008.5.1.4.1.1.88.67" Name="X-Ray Radiation Dose SR Storage" />
```

## 6 Contact Information

Please contact ACR if you have questions with the installation and configuration of Site Server at:

**E-mail address: [Triad-support@acr.org](mailto:Triad-support@acr.org)**  
**Phone: 703-390-9858**  
**Hours: 8AM-5PM EST Monday-Friday**