

## iBed® Server v2.5

### Installation/Configuration Manual






**REF** 5212

Connected Hospital®





# Symbols

	General warning
	Caution
	Manufacturer
	Direct current
	Alternating current



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# Warning/Caution/Note Definition

The words **WARNING**, **CAUTION**, and **NOTE** carry special meanings and should be carefully reviewed.

## **WARNING**

Alerts the reader about a situation which, if not avoided, could result in death or serious injury. It may also describe potential serious adverse reactions and safety hazards.

## **CAUTION**

Alerts the reader of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or damage to the product or other property. This includes special care necessary for the safe and effective use of the device and the care necessary to avoid damage to a device that may occur as a result of use or misuse.

**Note** - Provides special information to make maintenance easier or important instructions clearer.

# Summary of safety precautions

Always read and strictly follow the warnings and cautions listed on this page. Service only by qualified personnel.

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## CAUTION

- Before proceeding with this installation, make sure that a previous version of the **iBed** Server application is not currently installed on the target system. If a previous version was installed, uninstall the software. If you attempt to install the application on a system where a previous version was installed, the installer behavior may be unpredictable.
  - Before proceeding with this installation, make sure that a previous version of the **iBed** Wireless configuration tool application is not currently installed on the target system. If a previous version was installed, uninstall the software. If you attempt to install the application on a system where a previous version was installed, the installer behavior may be unpredictable.
-

# Introduction

This manual assists you with the operation or maintenance of your Stryker product. Read this manual before operating or maintaining this product. Set methods and procedures to educate and train your staff on the safe operation or maintenance of this product.

**Note** - Stryker continually seeks advancements in product design and quality. This manual contains the most current product information available at the time of printing. There may be minor discrepancies between your product and this manual. If you have any questions, contact Stryker Customer Service or Technical Support at 1-800-327-0770.

## Indications for use

The intended use for the **iBed®** Wireless (with **iBed** Awareness) is to assist clinical staff to monitor bed parameters on specific Stryker beds. The desired bed parameters are set by operators at the bedside. The **iBed** Wireless software is only intended for use with specifically enabled Stryker beds that have been verified and validated with the **iBed** Wireless software, and is not intended to provide bed status information for non-Stryker beds. The **iBed** Wireless software is not intended to communicate any patient status information, nor to permanently store any type of data. The **iBed** Wireless with **iBed** Awareness System is not intended to provide automated treatment decisions or as a substitute for professional healthcare judgment. The **iBed** Wireless with **iBed** Awareness System is not a replacement or substitute for vital signs monitoring or alert equipment. All patient medical diagnosis and treatment are to be performed under direct supervision and oversight of an appropriate healthcare professional.

## iBed Server software

The included **iBed** Server installation CD (5212-501-001) contains the software required for the **iBed** Server installation.

**Note** - Before uninstalling the application, copy the following files to the **Public Documents** folder. The files will import to the new application. Using the **iBed** Server Tool, configure the Master Device List and the Locator Associations.

Install directory\Stryker\iBedServerApplication\Data

BBIDList.xml

DeviceURLs.xml

DeviceBBIDLocationAssociation.xml

HospitalLocationList.xml

*Stryker disclaims all responsibility for information transmitted off of its devices.*

## System requirements and recommendations

### Note

- If minimum system requirements are not met, system performance will be impacted.
- Apply relevant software patches annually.

### Hardware:

Minimum requirements for the **iBed** Server hardware is dependent on the number of beds connected to the system.

#### 1 - 300 connected beds:

- 2.x GHz processor or higher with a total of 4 cores
- Memory: 8 GB RAM
- Hard Drive: 150 GB

#### 301 - 600 connected beds:

- 2.x GHz processor or higher with a total of 8 cores
- Memory: 16 GB RAM



- Hard Drive: 150 GB

#### **601 - 800 connected beds:**

- 2.x GHz processor or higher with a total of 16 cores
- Memory: 32 GB RAM
- Hard Drive: 150 GB

#### **801 - 1,000 connected beds:**

- 2.x GHz processor or higher with a total of 24 cores
- Memory: 32 GB RAM
- Hard Drive: 150 GB

#### **1,001 - 1,300 connected beds:**

- 2.x GHz processor or higher with a total of 32 cores
- Memory: 64 GB RAM
- Hard Drive: 150 GB

#### **Note**

- For systems that have over 1,300 connected beds, add a core for every 50 additional beds.
- Two server environments are recommended for the **iBed** Wireless System: TEST and PROD
- The **iBed** Wireless System is supported in either physical or virtual environments.

#### **Software:**

##### **Windows Server 2012 R2 / 2016**

- Add Roles
  - Web Server (IIS) (Installed)
  - Roles Services
    - Application development
      - ASP.NET 3.5 (Installed)
      - ASP.NET 4.5 (or higher) (Installed)
      - ASP (Installed)
    - Management tools
      - IIS Management Console (Installed)
- Features
  - .NET Framework 3.5 features (Installed)
  - .NET Framework 4.5 (or higher) features (Installed)
  - Telnet Client
    - WCF Services
      - HTTP Activation
- All current Microsoft High Priority Updates (Installed) and optional update for .NET Framework 4.5 (or higher)

Additional configuration or setup may be required depending on equipment and other variables. If you have difficulties during installation, setup, configuration, or while attempting to establish a connection between the **iBed** Server and Stryker wireless clients, contact Stryker Technical Support at 1-800-327-0770.

## Device connection requirements

**Note** - You are required to use the DNS naming convention for each Stryker device if the devices can travel to multiple sub-nets.

- DHCP connections using a reserved IP address for each device via its MAC address
- Static connections using static IP address for each device via its MAC address
- DNS naming convention using each device host name that is hard-coded to the device (Host name example = SYK-82453f21f0c2 [SYK device MAC address])

## Contact information

Contact Stryker Customer Service or Technical Support at: 1-800-327-0770.

Stryker Medical  
3800 E. Centre Avenue  
Portage, MI 49002  
USA

E-mail: [medicaliBedWirelessSupport@stryker.com](mailto:medicaliBedWirelessSupport@stryker.com)

# Installation

## Server configuration

### Windows Server 2012

1. In the **Server Manager** navigate to the Dashboard.
2. Click on the **Add roles and features** link (Figure 1).

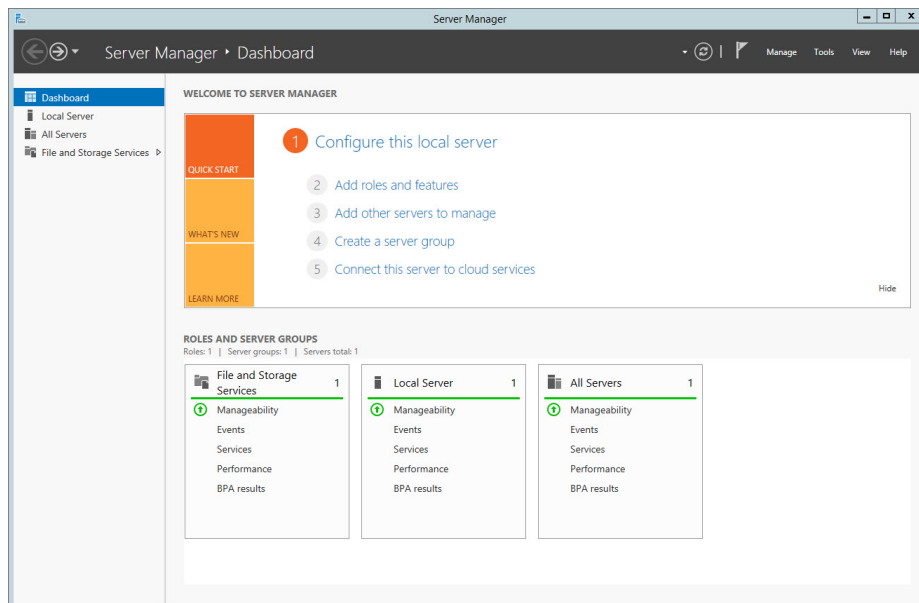


Figure 1 – Add roles and features

3. Click the **Next** button in the **Add Roles and Features Wizard** (Figure 2).

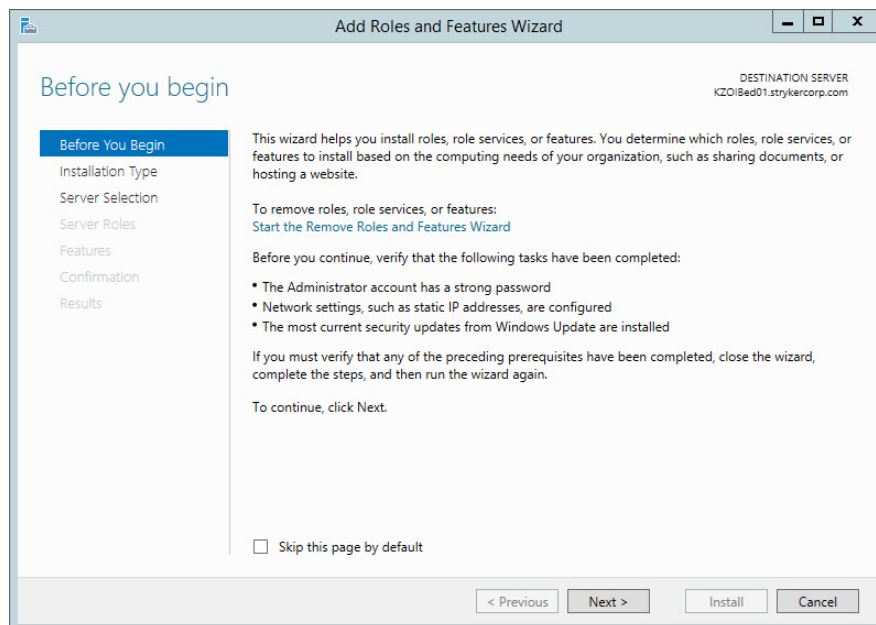


Figure 2 – Add Roles and Features Wizard

4. In the **Installation Type** step, select the **Role-based or feature-based installation** if not already selected and click **Next** (Figure 3).

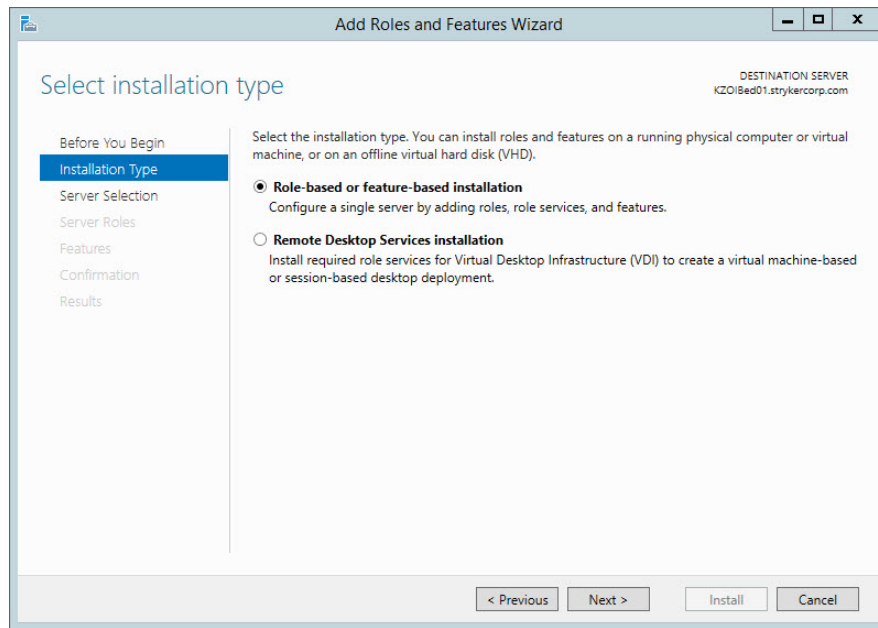


Figure 3 – Installation Type

5. In the **Server Selection** step, click **Select a server from the server pool** and make sure that the server is correct in the **Server Pool** box and click **Next** (Figure 4).

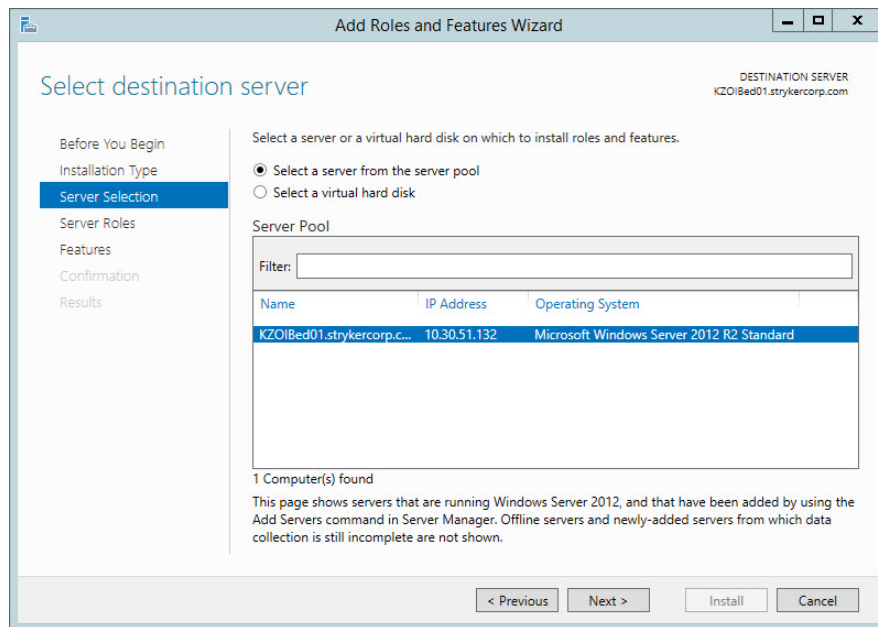
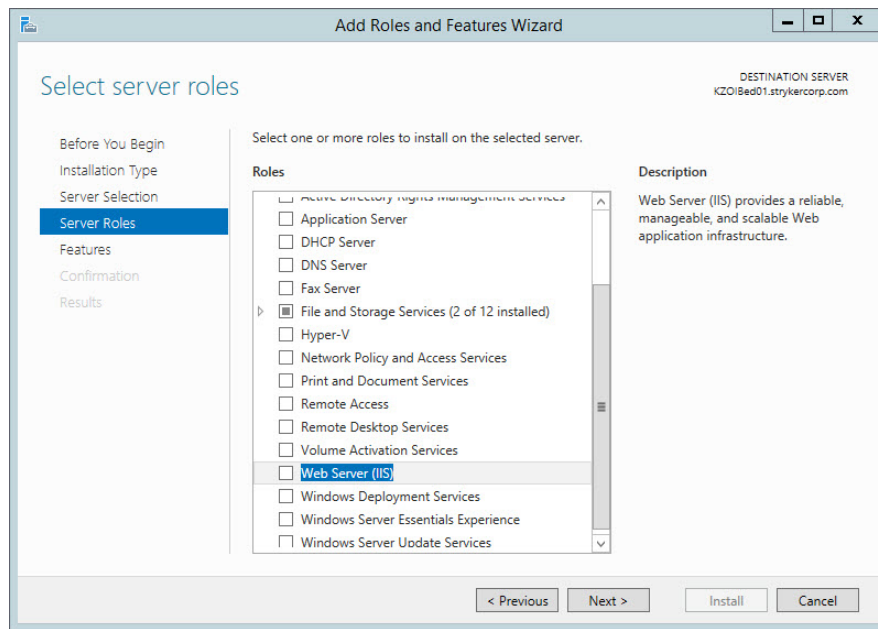


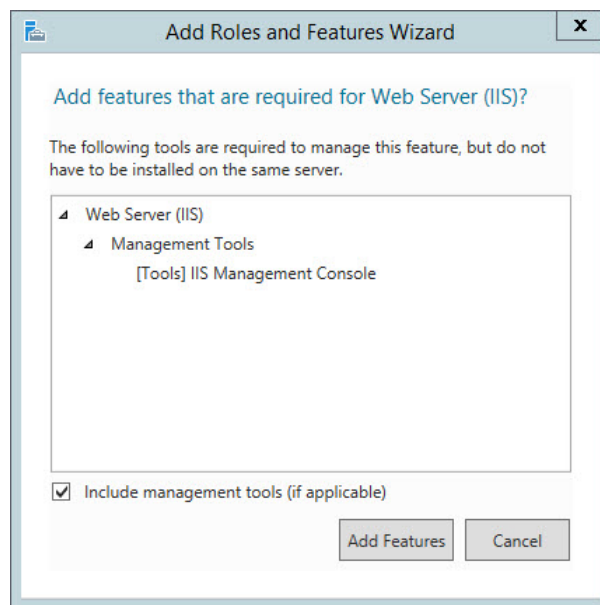
Figure 4 – Server Selection

6. In the **Server Roles** step, scroll through the options in the **Roles** box and select **Web Server (IIS)** (Figure 5).



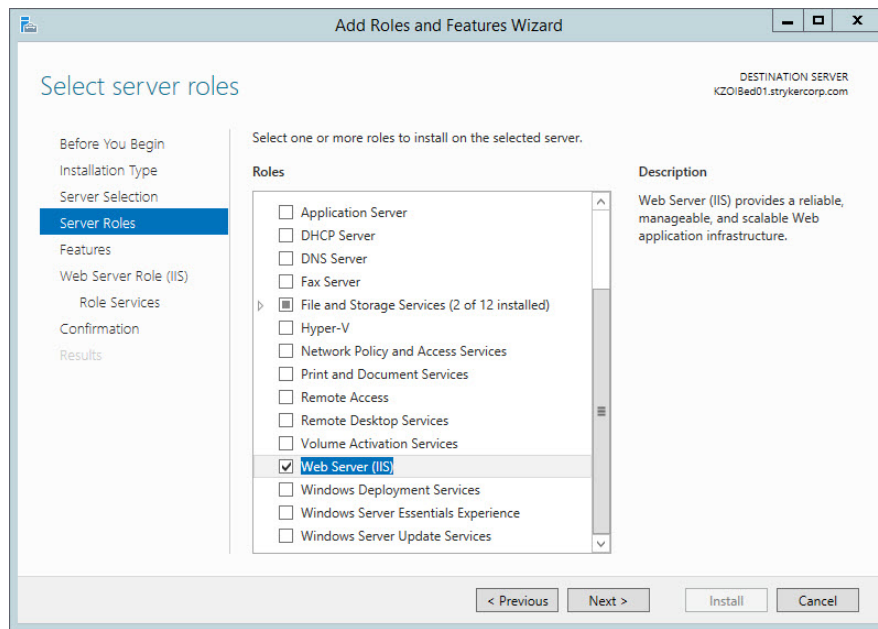
**Figure 5 – Web Server (IIS)**

7. In the pop-up, **Add features that are required for Web Server (IIS)**, click the **Add Features** button (Figure 6).



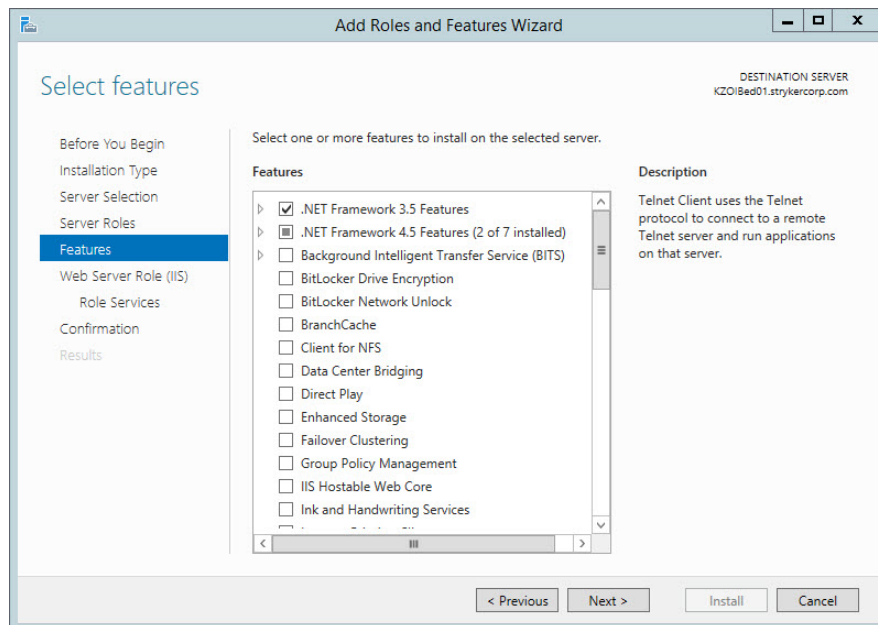
**Figure 6 – Add Features**

8. In the **Server Roles** step, click the **Next** button (Figure 7).



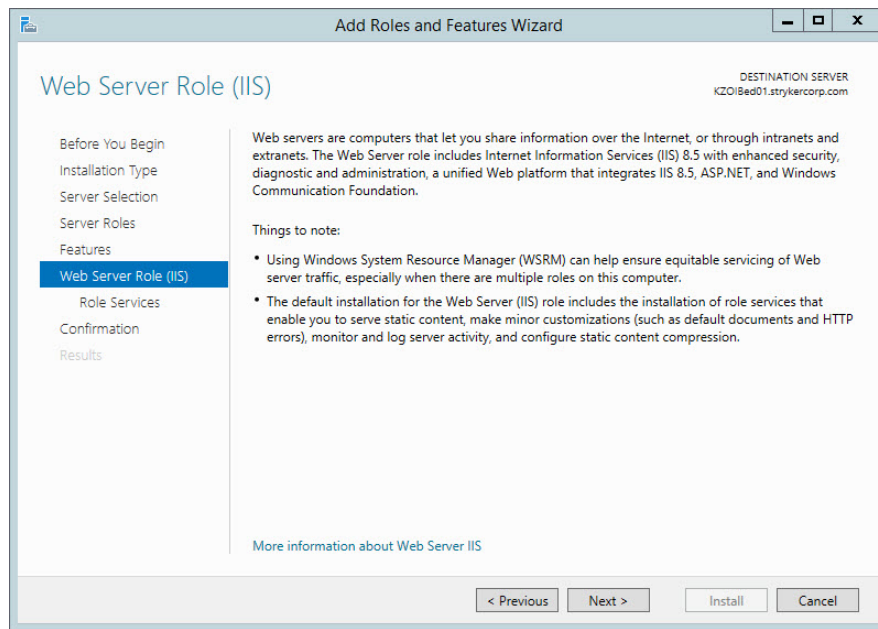
**Figure 7 – Server confirmation**

9. In the **Features** step, select **.NET Framework 3.5 Features**, **.NET Framework 4.5 Features**, and **Telnet Client** in the **Features** box (Figure 8).



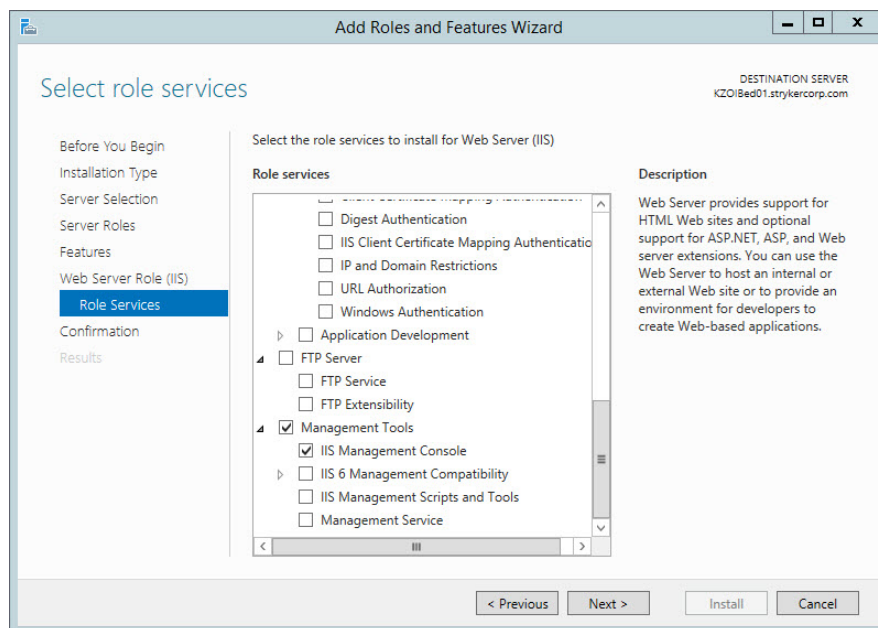
**Figure 8 – Features selection**

10. In the **Web Server Role (IIS)** step, click the **Next** button (Figure 9).



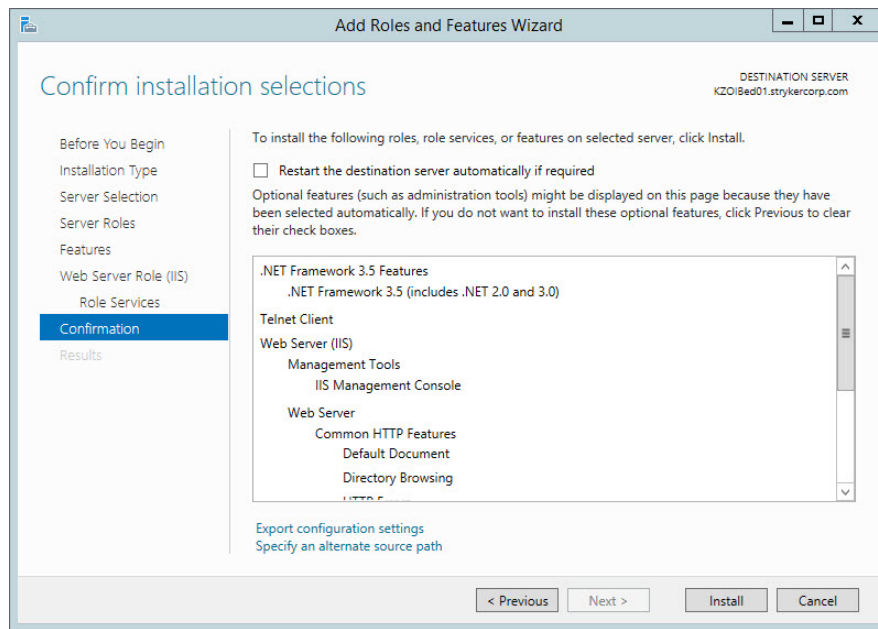
**Figure 9 – Web Server Role (IIS)**

11. In the **Role Services** step, click the **Next** button (Figure 10).



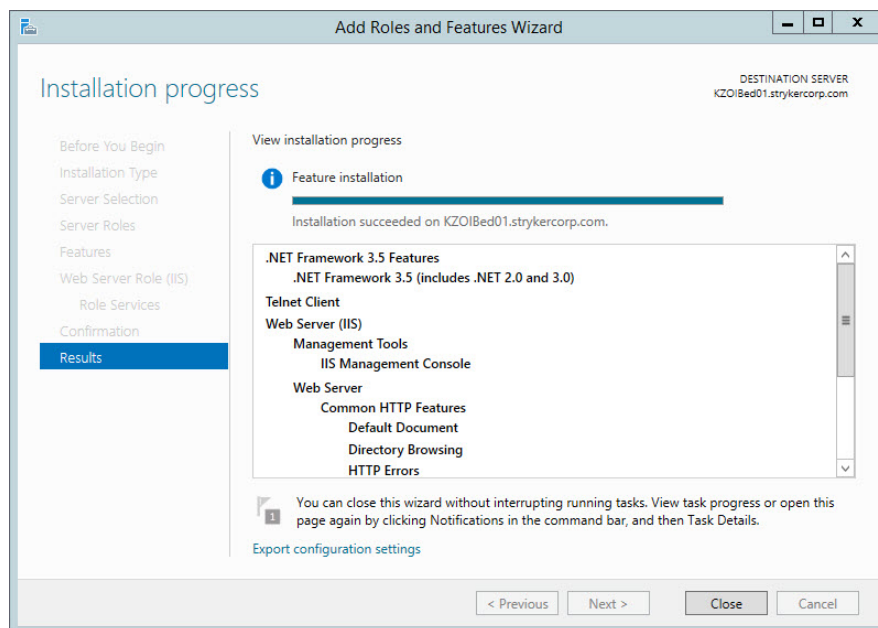
**Figure 10 – Role Services**

12. In the **Confirmation** step, click the **Install** button to start the installation of the role and features (Figure 11).



**Figure 11 – Install confirmation**

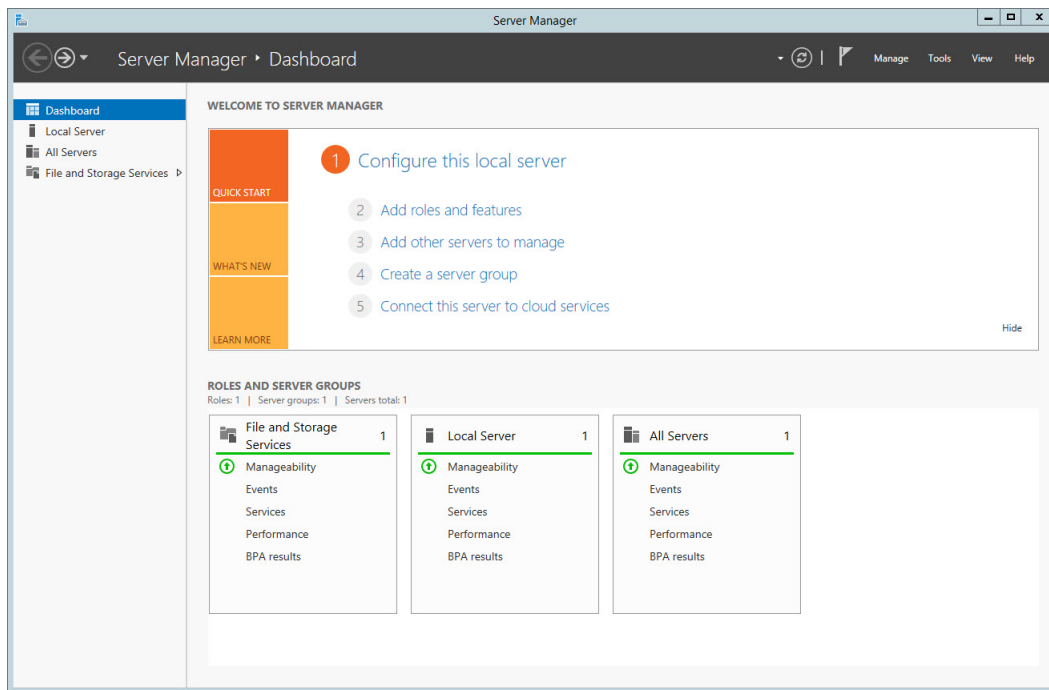
13. When the installation is finished, click the **Close** button (Figure 12).



**Figure 12 – Completed installation**

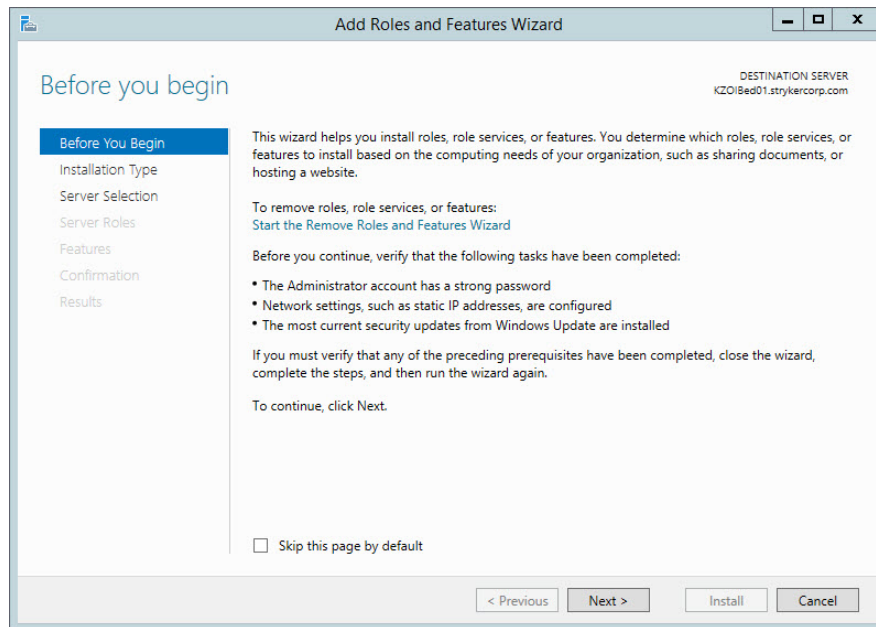


14. Click on the **Add roles and features** link (Figure 13).



**Figure 13 – Add roles and features**

15. Click the **Next** button in the **Add Roles and Features Wizard** (Figure 14).



**Figure 14 – Add Roles and Features Wizard**

16. In the **Installation Type** step, select the **Role-based or feature-based installation** and click **Next** (Figure 15).

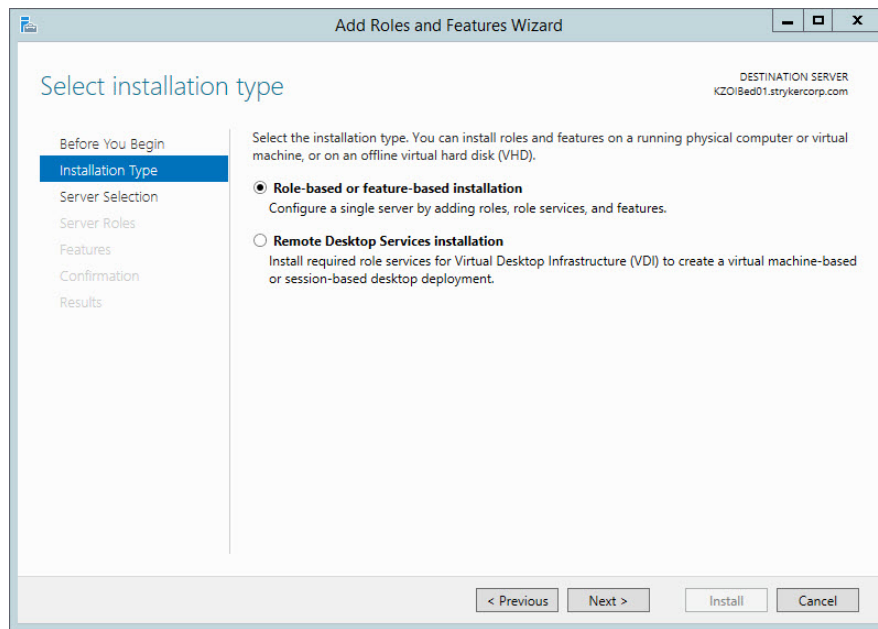


Figure 15 – Installation Type

17. In the **Server Selection** step, click **Select a server from the server pool** and verify that the server is correct in the **Server Pool** box and click **Next** (Figure 16).

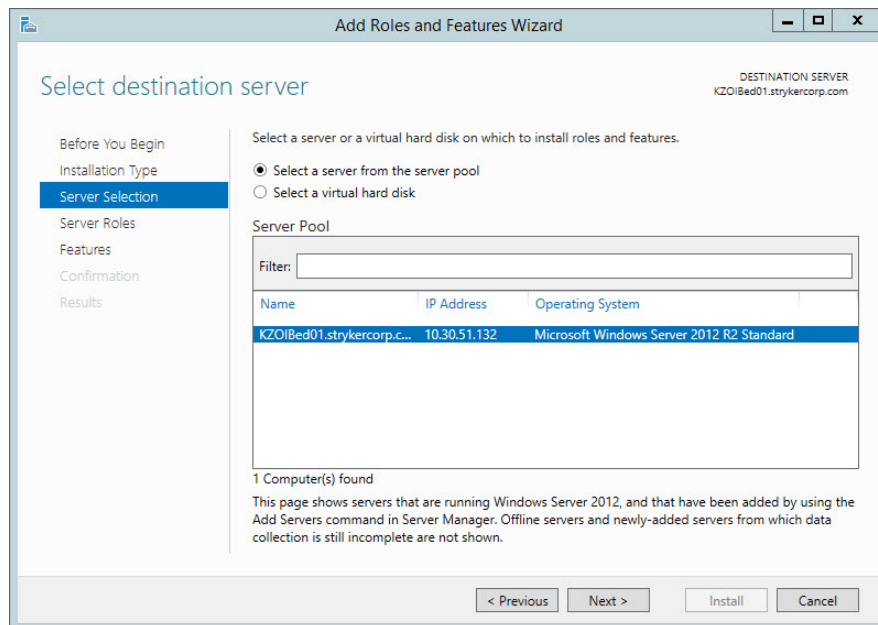


Figure 16 – Server Selection

18. In the **Server Roles** step in the **Roles** box, expand the **Web Server (IIS)** heading, **Web Server** heading, and then **Application Development**. Select **ASP.NET 3.5** and **ASP.NET 4.5** and click **Next** (Figure 17).

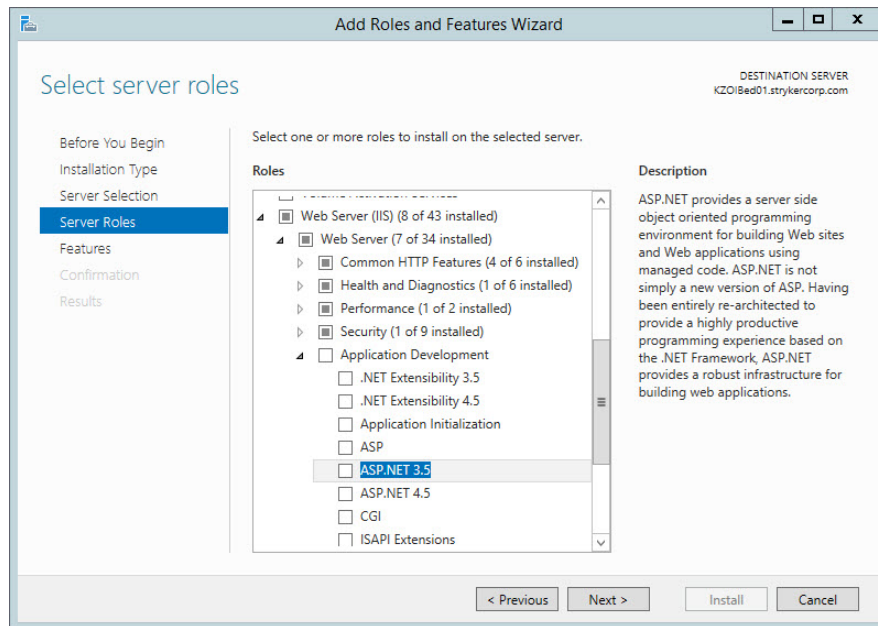


Figure 17 – Server Roles

19. In the pop-up window, click **Add Features** (Figure 18).

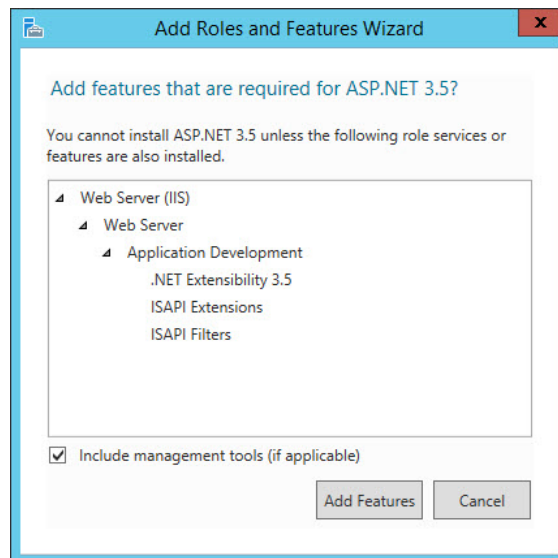
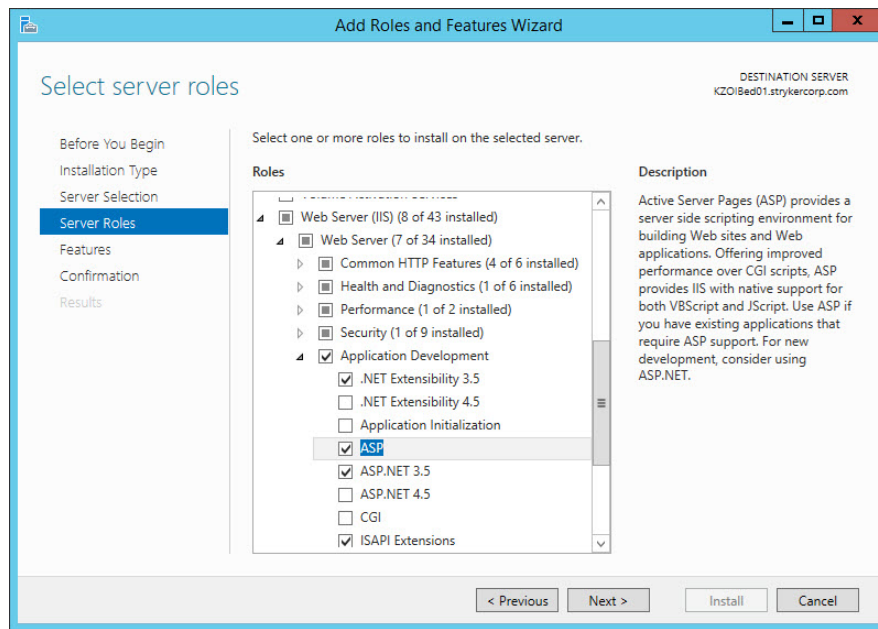


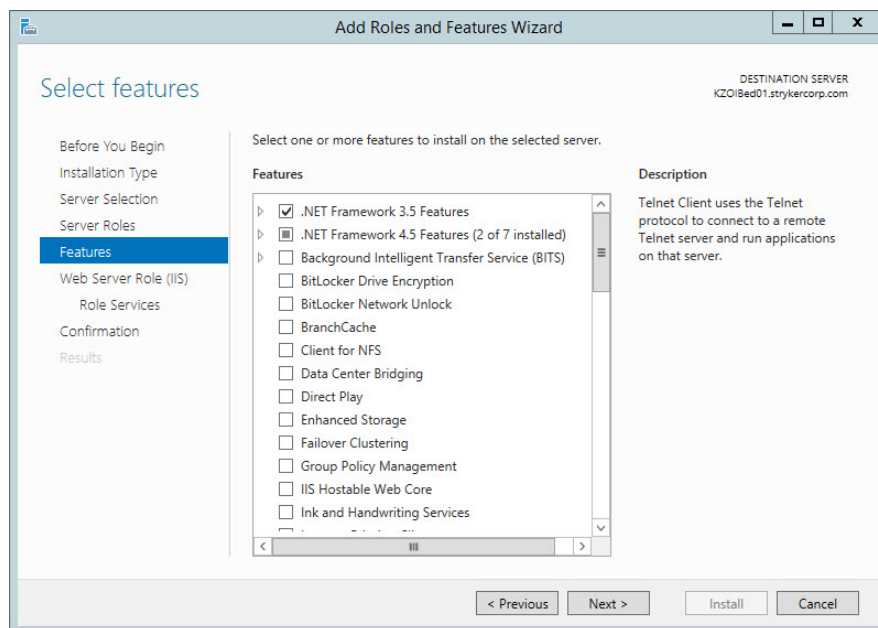
Figure 18 – Add Features

20. In the **Server Roles** step, select **ASP** and click **Next** (Figure 19).



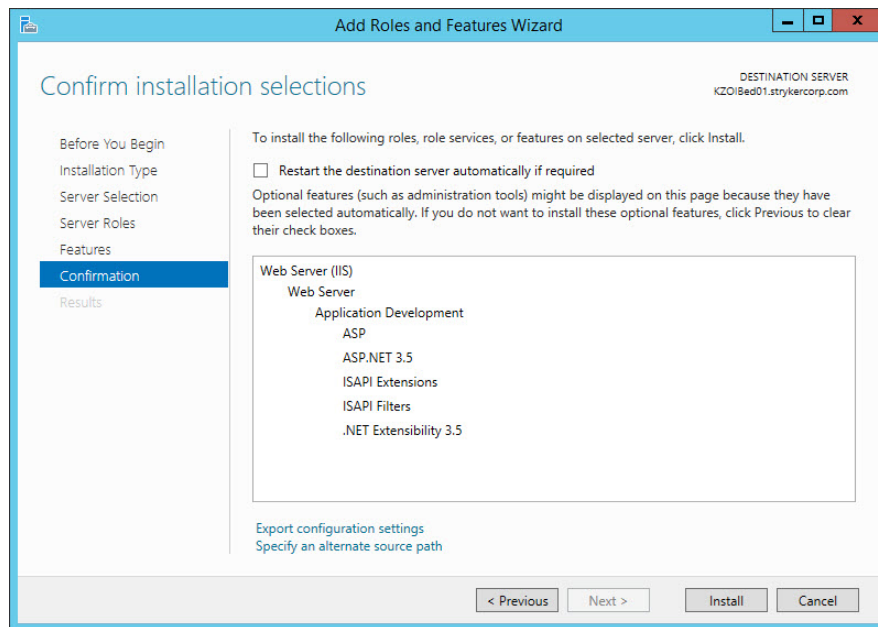
**Figure 19 – ASP**

21. In the **Features** step, click **Next** (Figure 20).



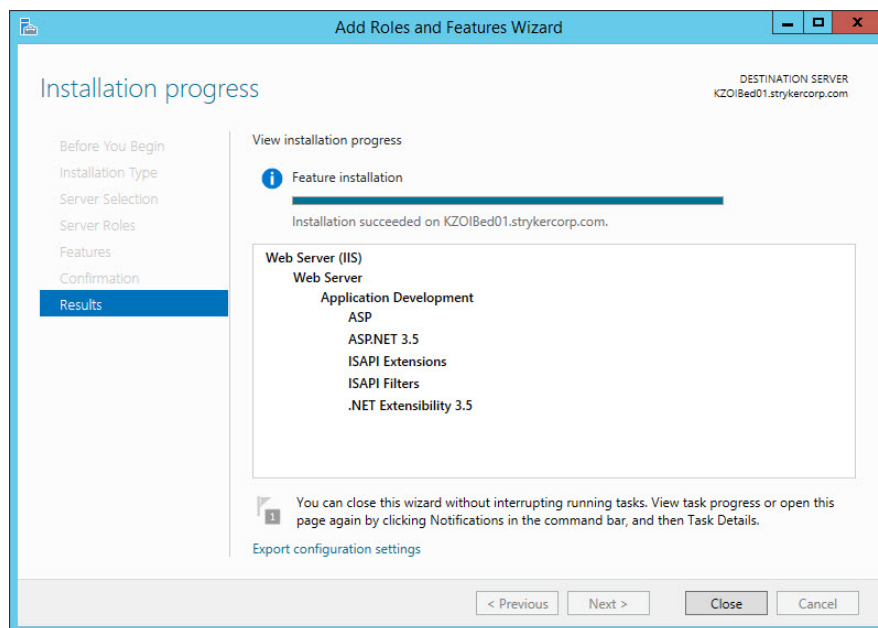
**Figure 20 – Features selection**

22. In the **Confirm installation selections** step, click **Install** (Figure 21).



**Figure 21 – Confirm installation**

23. When installation is complete, click the **Close** button (Figure 22).



**Figure 22 – Installation complete**

24. Restart the server.

25. Run **Windows Update** to look for any important and optional updates and install them. Restart the server if required.

## Windows Server 2016

1. In the **Server Manager** navigate to the Dashboard.

2. Click on the **Add roles and features** link (Figure 23).

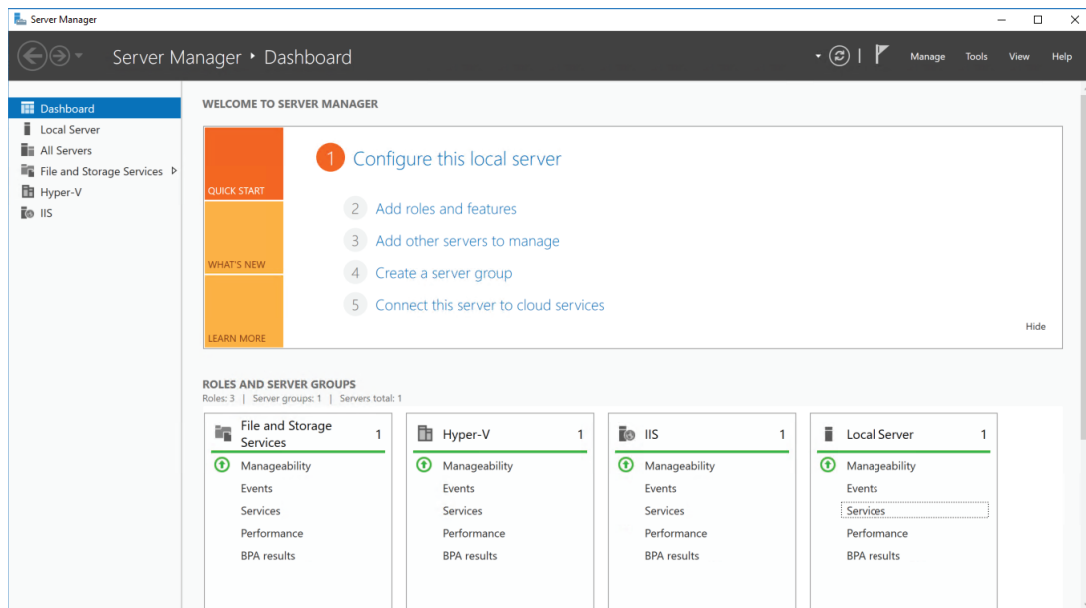


Figure 23 – Add roles and features

3. Click the **Next** button in the **Add Roles and Features Wizard** (Figure 24).

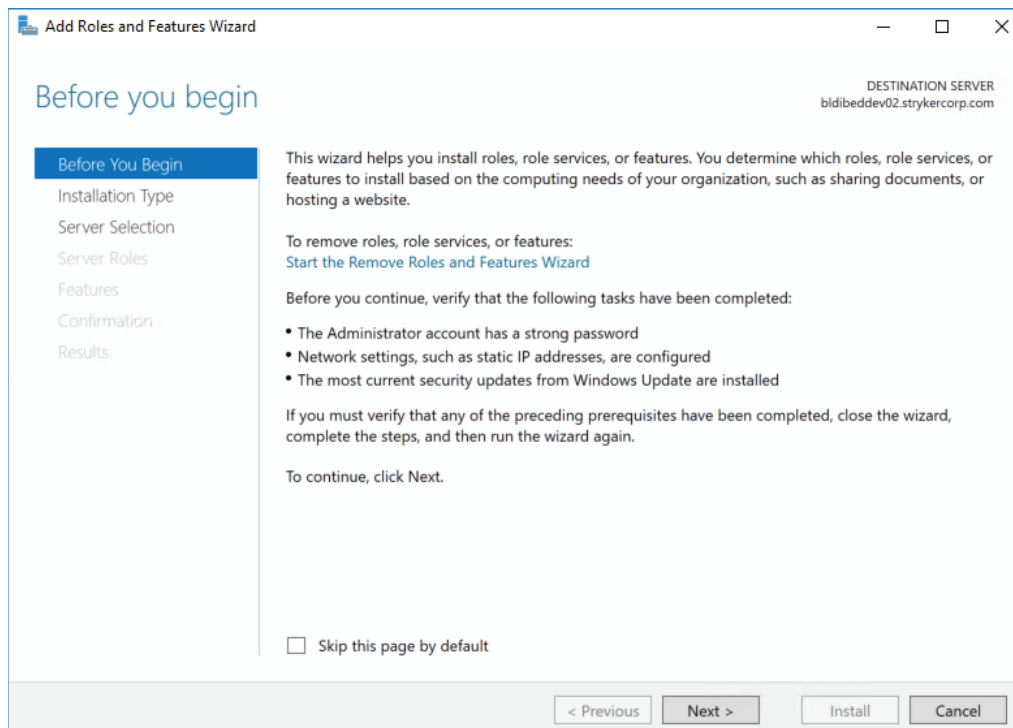


Figure 24 – Add Roles and Features Wizard

4. In the **Installation Type** step, select the **Role-based or feature-based installation** if not already selected and click **Next** (Figure 25).

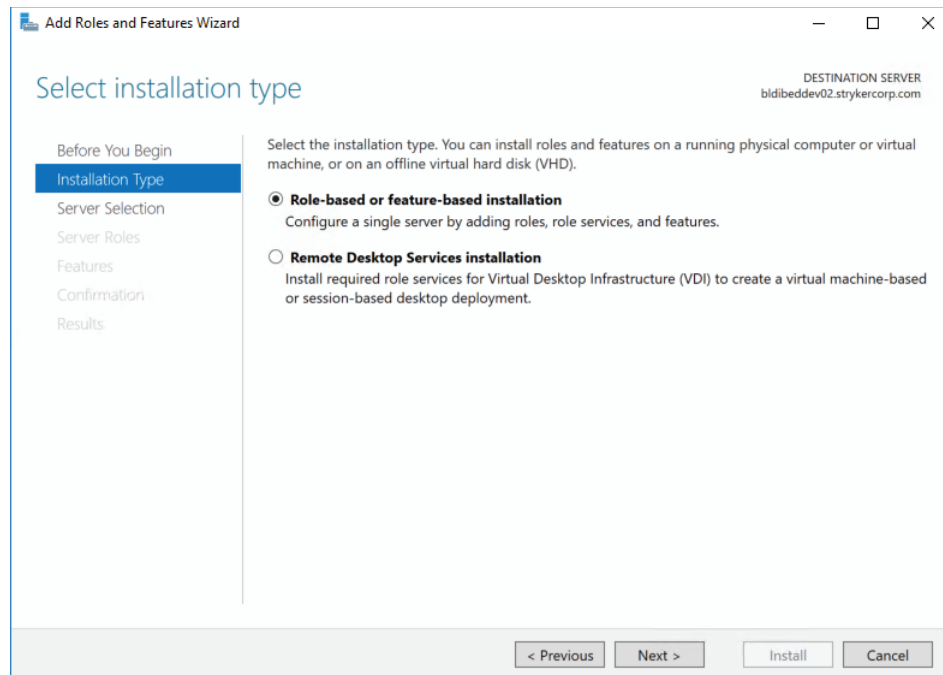


Figure 25 – Installation Type

5. In the **Server Selection** step, click **Select a server from the server pool** and make sure that the server is correct in the **Server Pool** box and click **Next** (Figure 26).

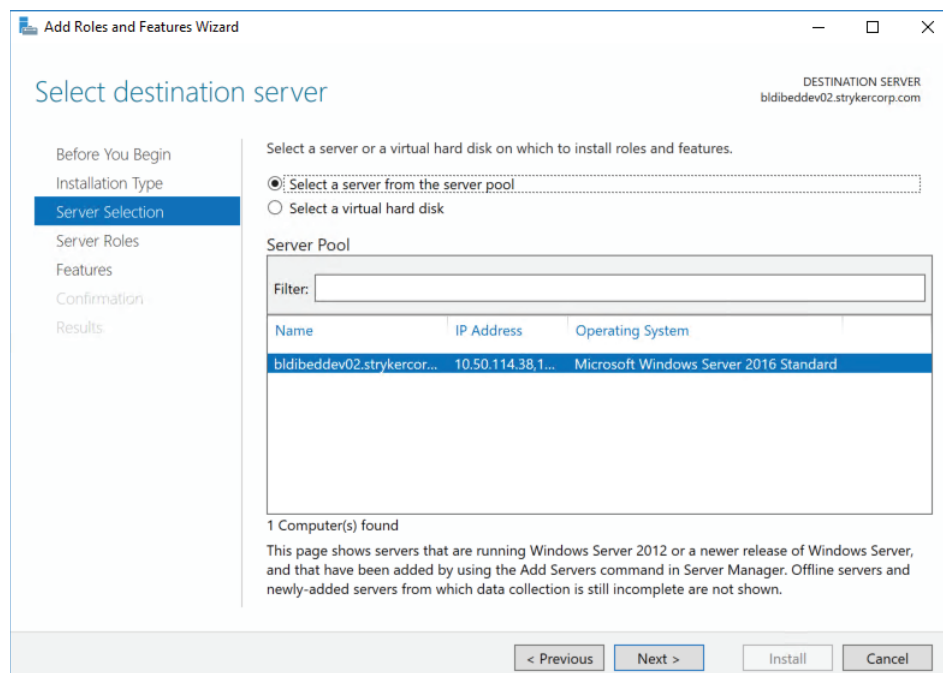
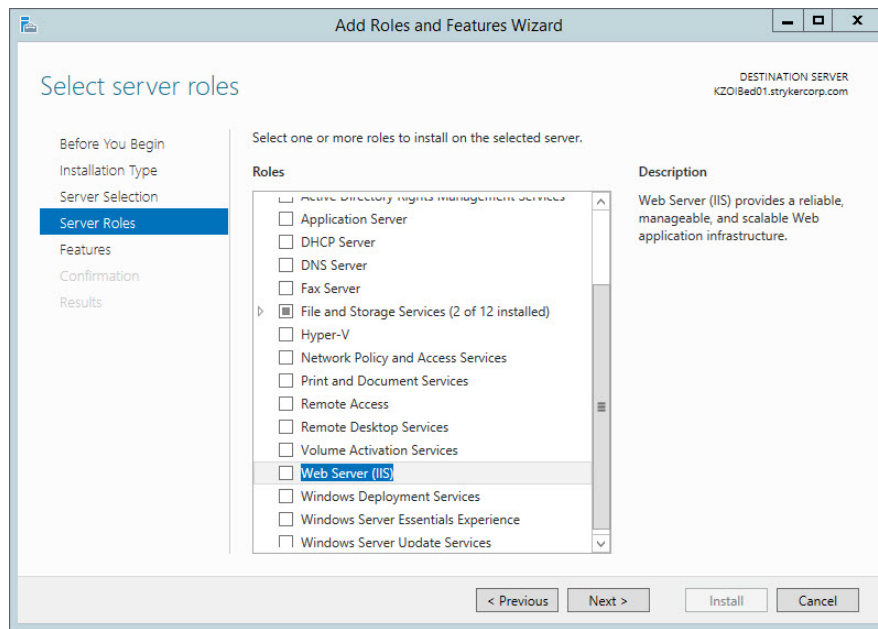


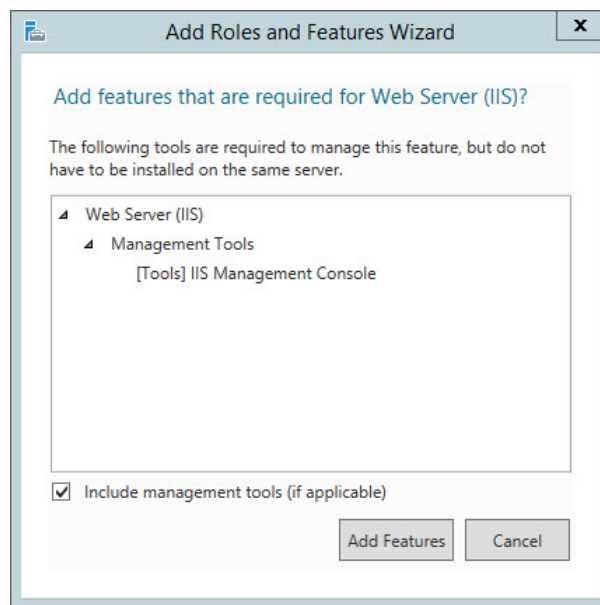
Figure 26 – Server Selection

6. In the **Server Roles** step, scroll through the options in the **Roles** box and select **Web Server (IIS)** (Figure 27).



**Figure 27 – Web Server (IIS)**

7. In the pop-up, **Add features that are required for Web Server (IIS)**, click the **Add Features** button (Figure 28).



**Figure 28 – Add Features**



8. In the **Server Roles** step, click the **Next** button (Figure 29).

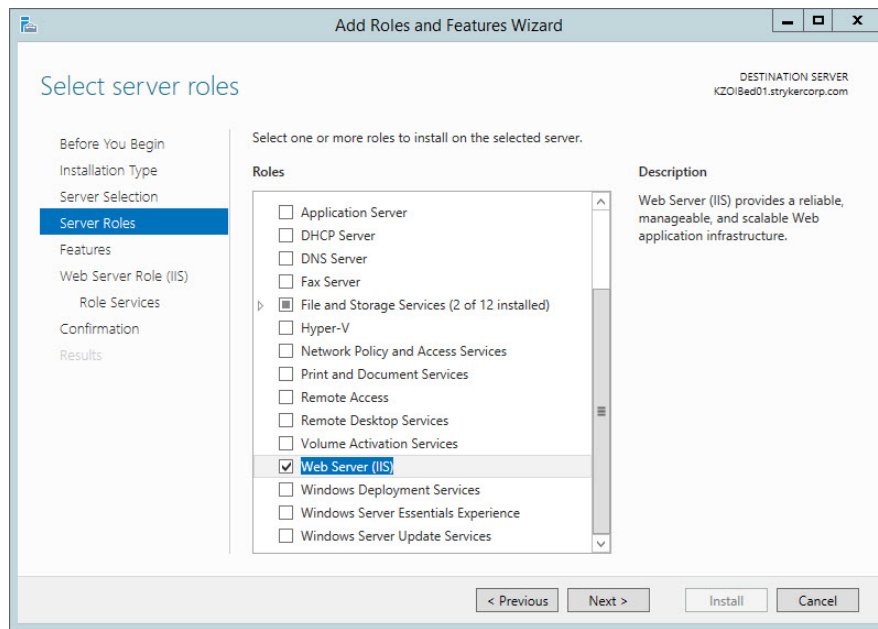


Figure 29 – Server confirmation

9. In the **Features** step, select **.NET Framework 3.5 Features**, **.NET Framework 4.5 Features**, and **Telnet Client** in the **Features** box (Figure 30).

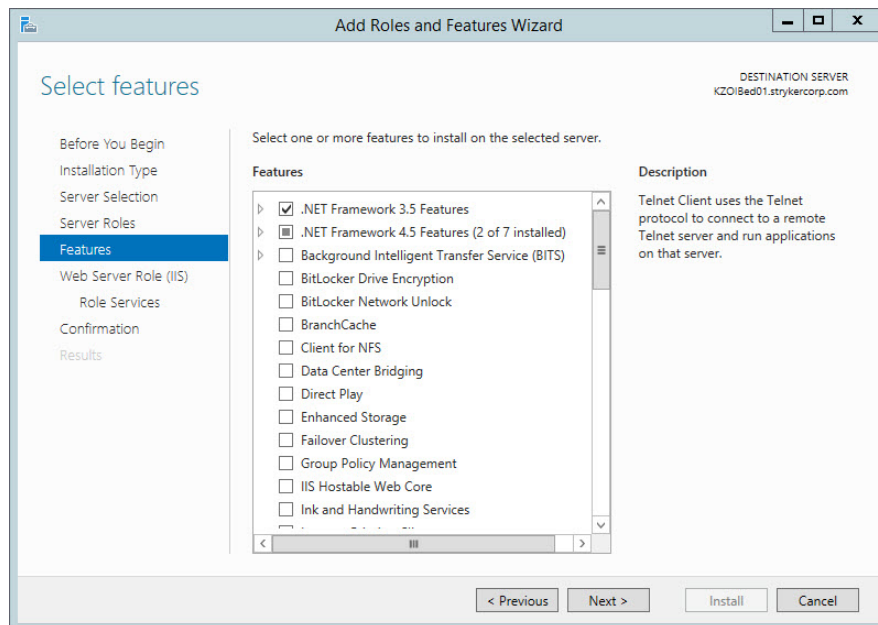


Figure 30 – Features selection

10. In the **Web Server Role (IIS)** step, click the **Next** button (Figure 31).

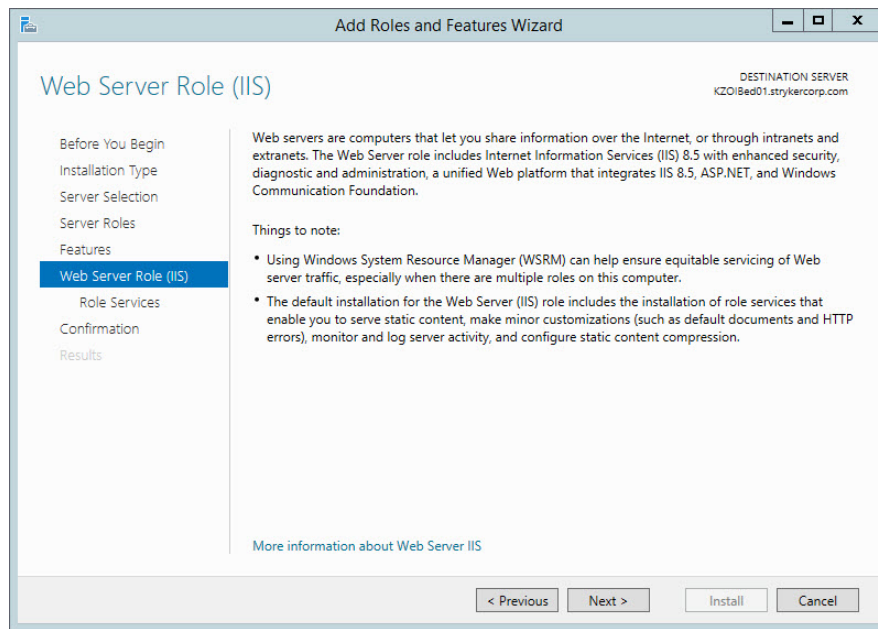


Figure 31 – Web Server Role (IIS)

11. In the **Role Services** step, click the **Next** button (Figure 32).

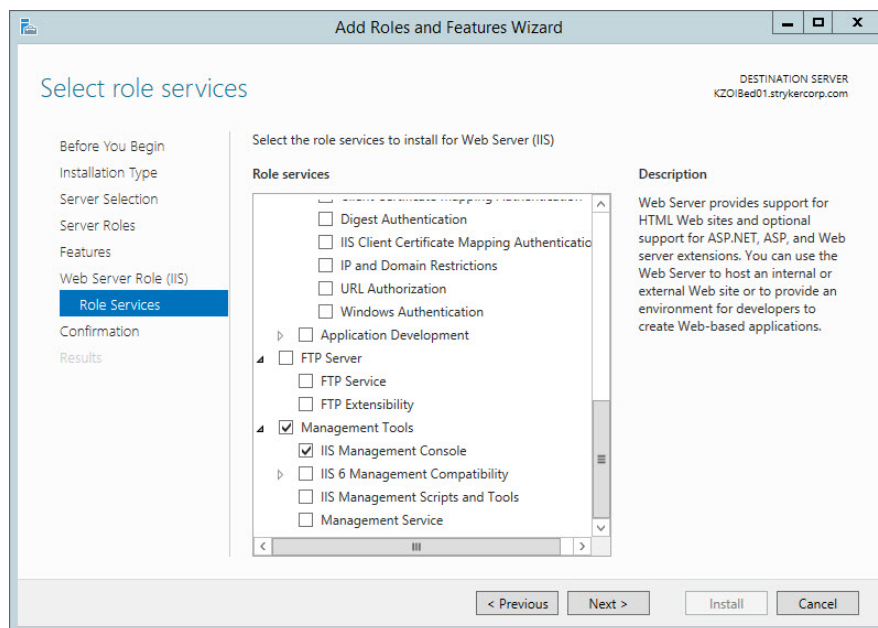
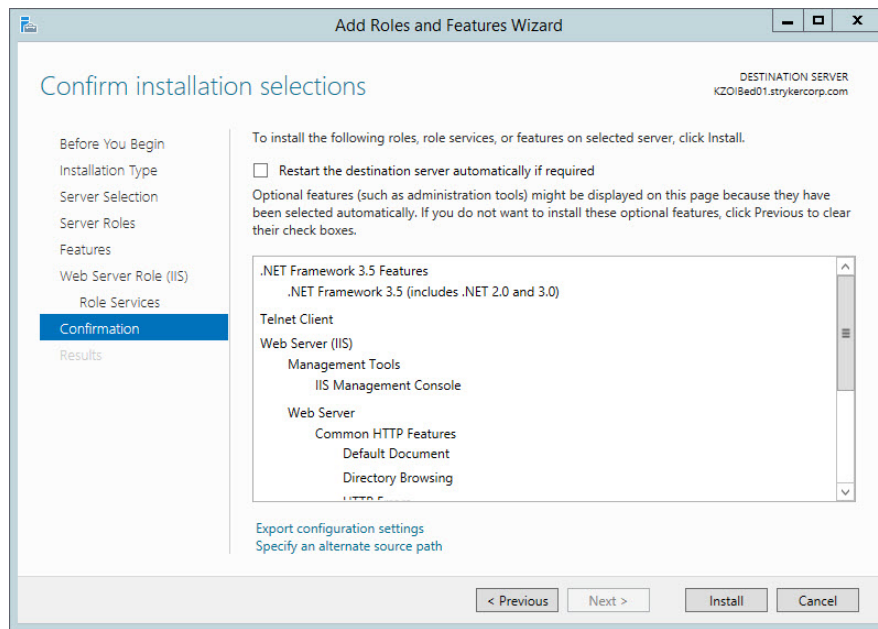


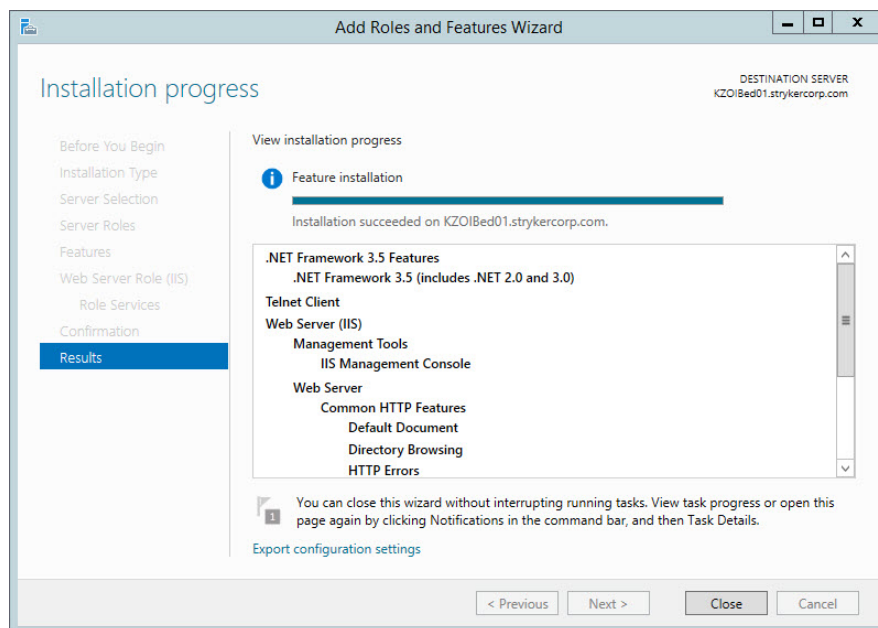
Figure 32 – Role Services

12. In the **Confirmation** step, click the **Install** button to start the installation of the role and features (Figure 33).



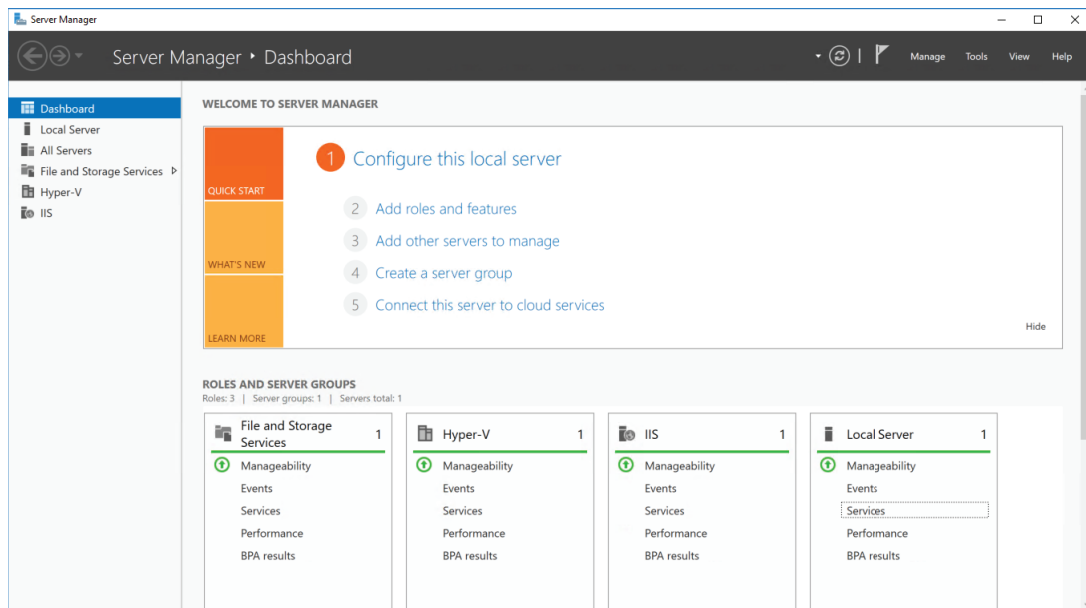
**Figure 33 – Install confirmation**

13. When the installation is finished, click the **Close** button (Figure 34).



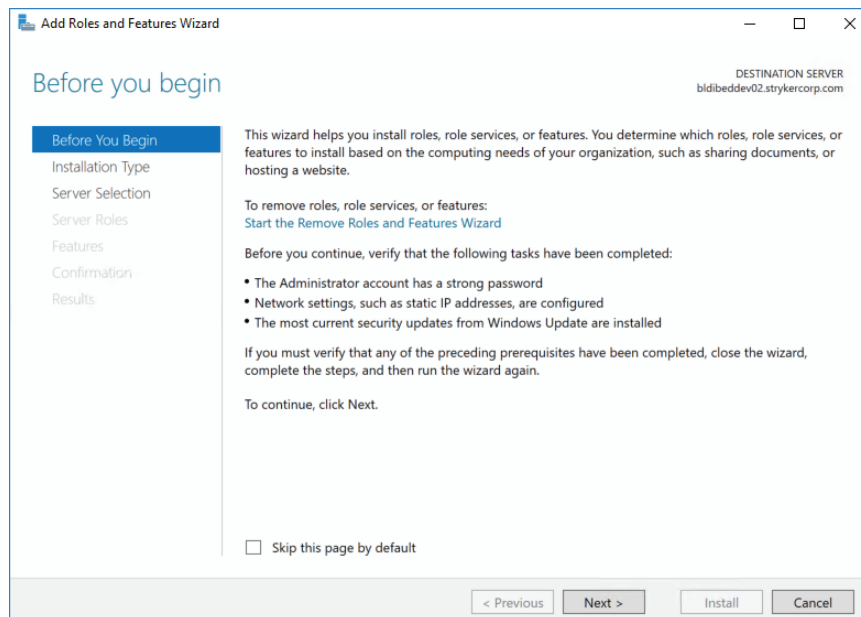
**Figure 34 – Completed installation**

14. Click on the **Add roles and features** link (Figure 35).



**Figure 35 – Add roles and features**

15. Click the **Next** button in the **Add Roles and Features Wizard** (Figure 36).



**Figure 36 – Add Roles and Features Wizard**

16. In the **Installation Type** step, select the **Role-based or feature-based installation** and click **Next** (Figure 37).

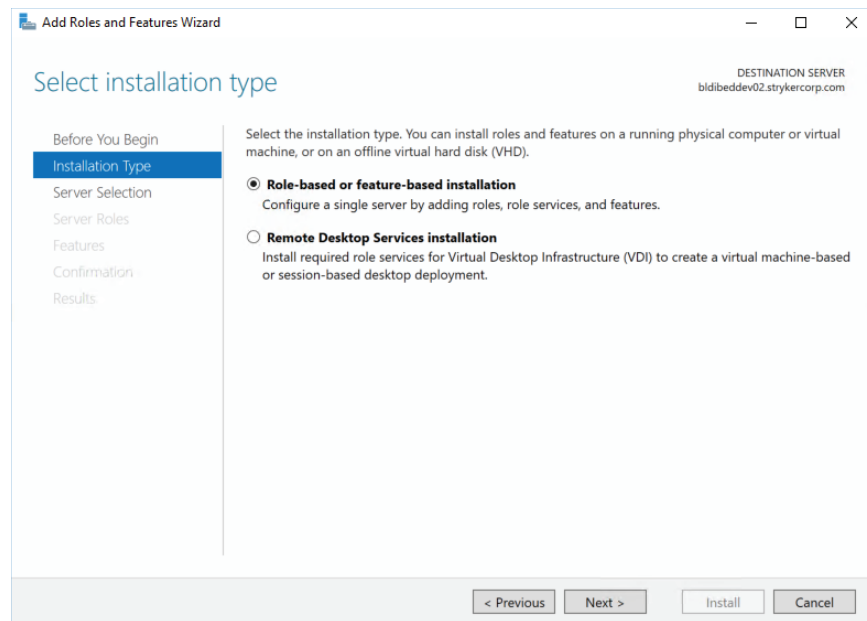


Figure 37 – Installation Type

17. In the **Server Selection** step, click **Select a server from the server pool** and verify that the server is correct in the **Server Pool** box and click **Next** (Figure 38).

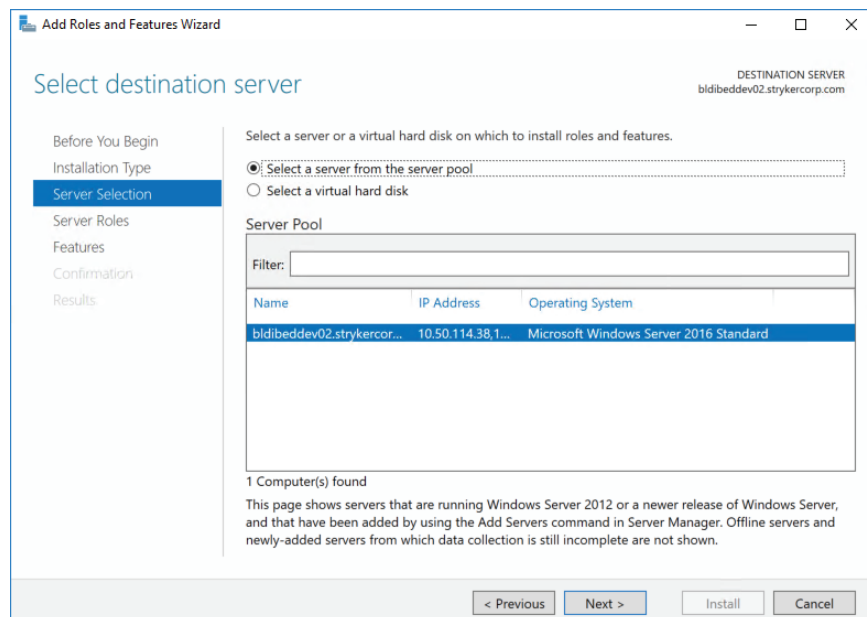


Figure 38 – Server Selection

18. In the **Server Roles** step in the **Roles** box, expand the **Web Server (IIS)** heading, **Web Server** heading, and then **Application Development**. Select **ASP.NET 3.5** and **ASP.NET 4.5** and click **Next** (Figure 39).

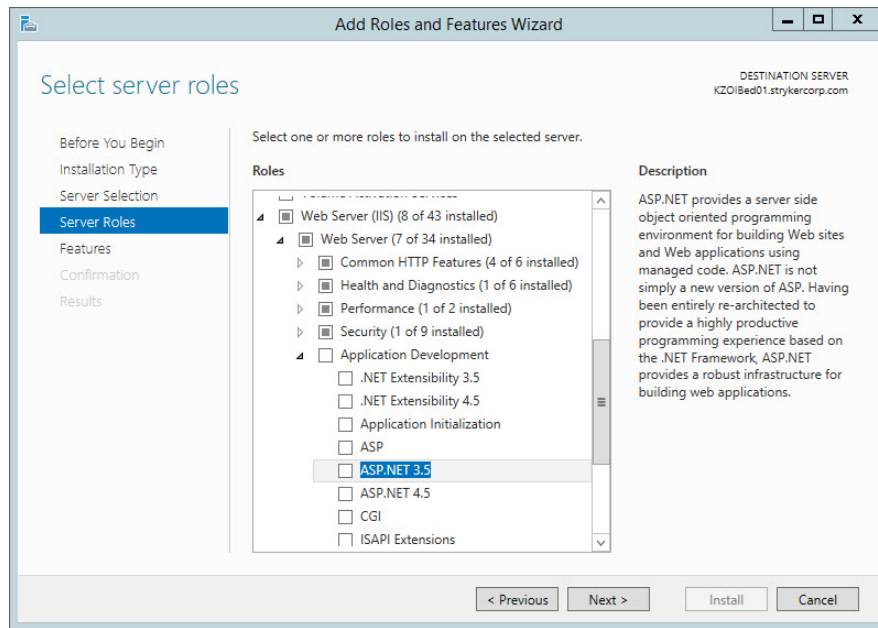


Figure 39 – Server Roles

19. In the pop-up window, click **Add Features** (Figure 40).

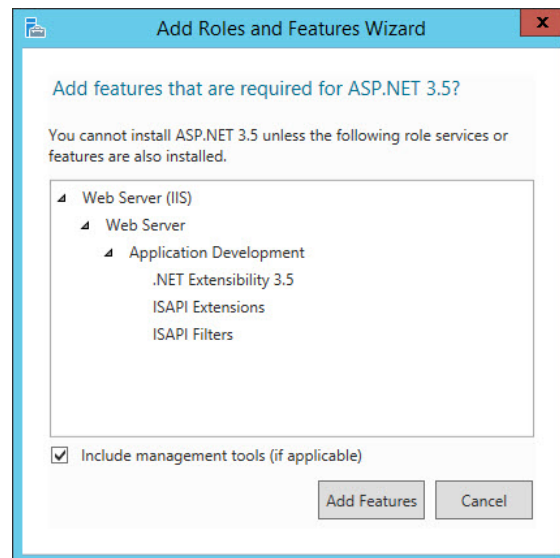
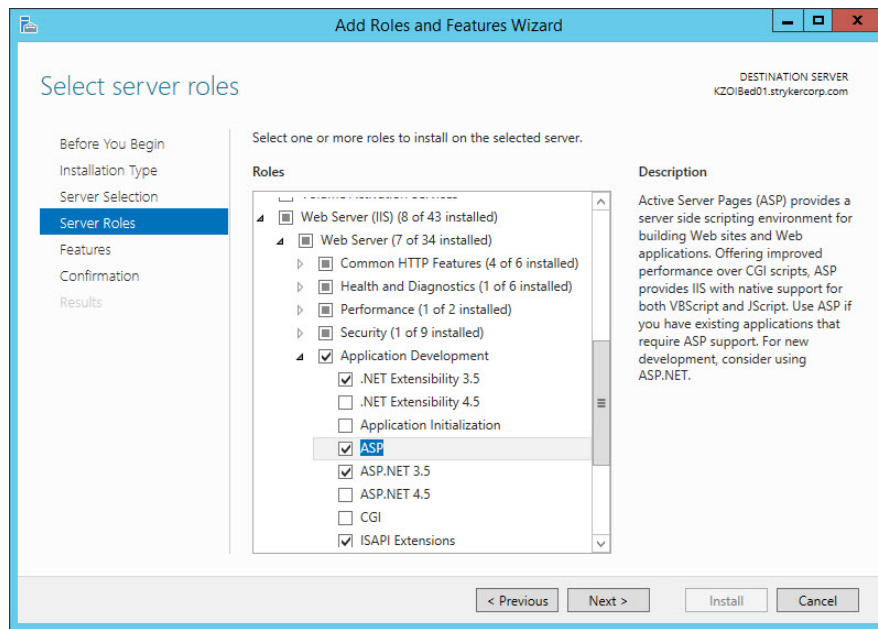


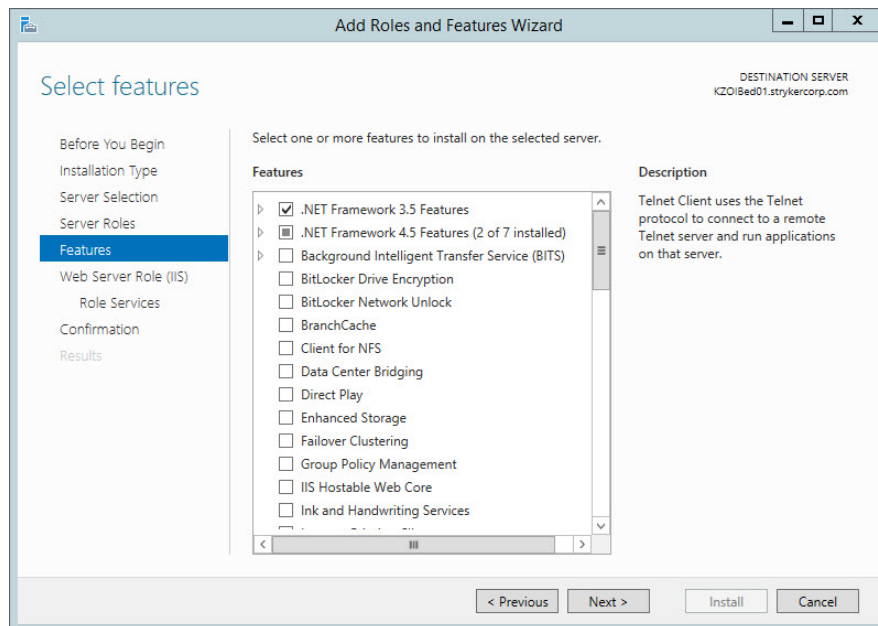
Figure 40 – Add Features

20. In the **Server Roles** step, select **ASP** and click **Next** (Figure 41).



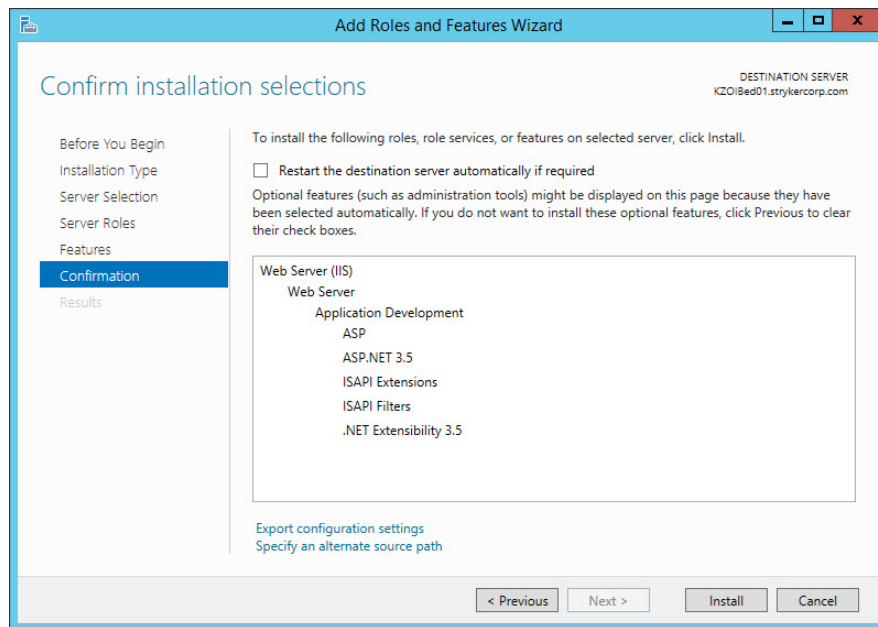
**Figure 41 – ASP**

21. In the **Features** step, click **Next** (Figure 42).



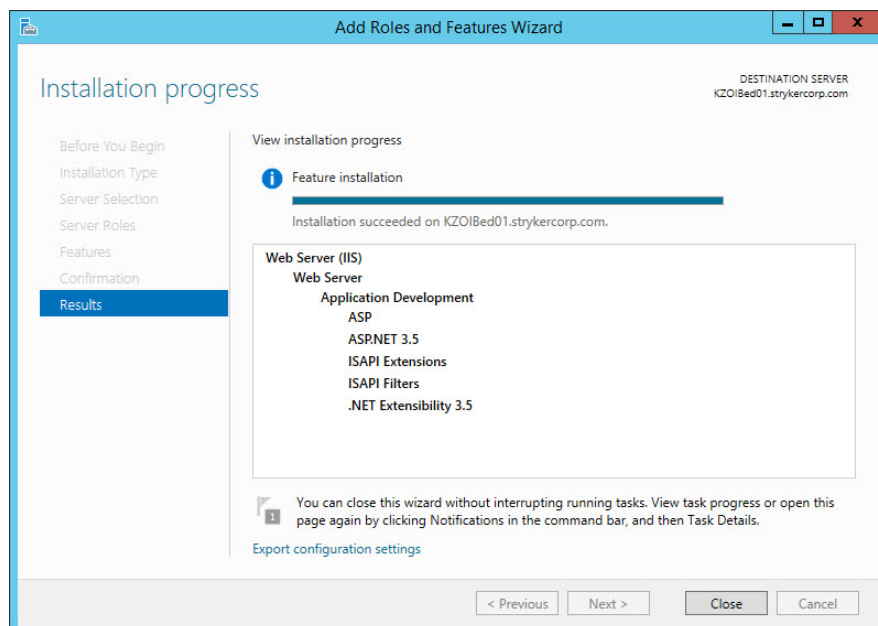
**Figure 42 – Features selection**

22. In the **Confirm installation selections** step, click **Install** (Figure 43).



**Figure 43 – Confirm installation**

23. When installation is complete, click the **Close** button (Figure 44).



**Figure 44 – Installation complete**

24. Restart the server.

25. Run **Windows Update** to look for any important and optional updates and install them. Restart the server if required.

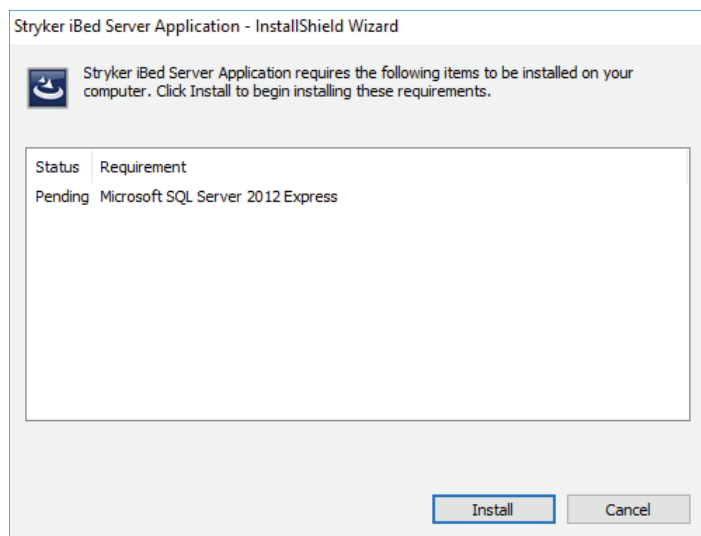


## iBed Server application

**CAUTION** - Before proceeding with this installation, make sure that a previous version of the **iBed** Server application is not currently installed on the target system. If a previous version was installed, uninstall the software. If you attempt to install the application on a system where a previous version was installed, the installer behavior may be unpredictable.

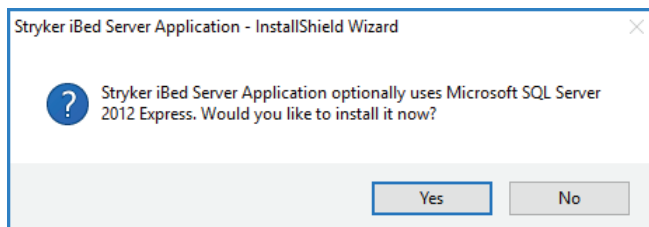
1. Begin the **iBed** Server Application installation by right clicking the **5212-502-001 Server Application Setup.exe** file and select **Run as Administrator**.
2. If Microsoft SQL Server 2012 Express is not already installed, the **InstallShield Wizard requirements** window will open. Click the **Install** button (Figure 45).

**Note** - If Microsoft SQL Server 2012 Express is already installed, go to step 11.



**Figure 45 – Microsoft SQL service**

3. Click the **Yes** button in the confirmation pop-up to start the SQL Server installation (Figure 46).



**Figure 46 – SQL confirmation**

4. Select **I accept the license terms box** and then click the **Next** button (Figure 47).

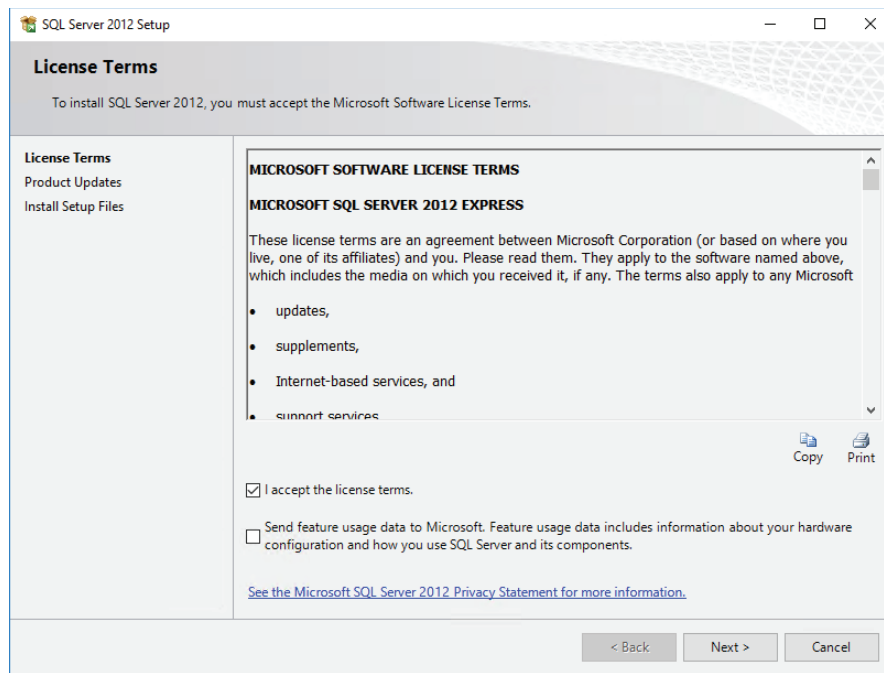


Figure 47 – SQL license

5. In the **Feature Selection** step, leave the **Features** selection at the defaults. If the **Shared feature directory** does not default to **C:\Program Files**, browse or create the new destination location for the installation and then click **Next** (Figure 48).

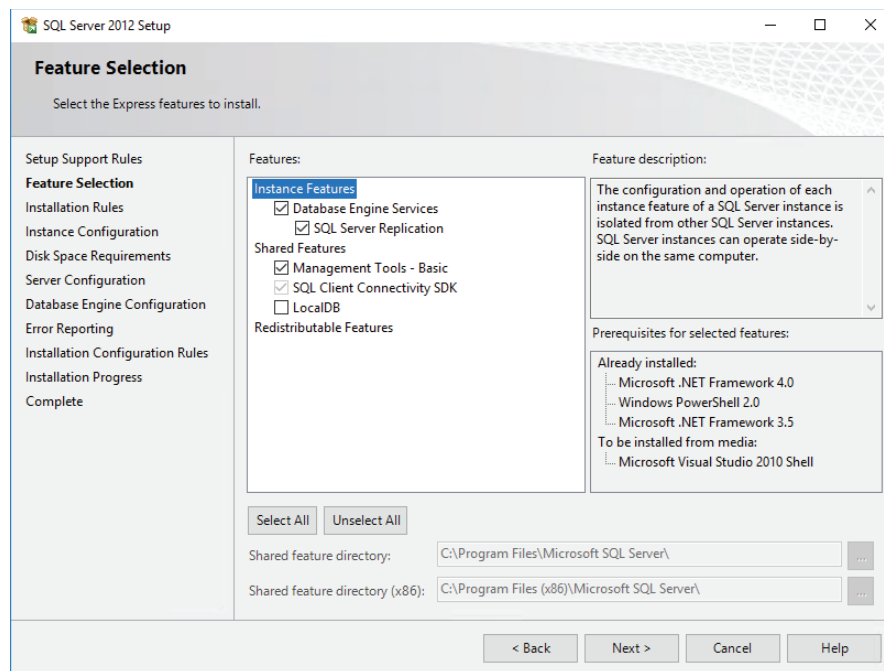


Figure 48 – SQL features

6. In the **Instance Configuration** step, click **Next** (Figure 49).

The screenshot shows the 'Instance Configuration' window of the SQL Server 2012 Setup. The left sidebar lists the installation steps, with 'Instance Configuration' currently selected. The main area contains the following fields and options:

- Default instance:** ☐
- Named instance:** ☒ SQLEXPRESS
- Instance ID:** SQL2012
- Instance root directory:** C:\Program Files\Microsoft SQL Server\
- SQL Server directory:** C:\Program Files\Microsoft SQL Server\MSSQL11.SQLEXPRESS\
- Installed instances:** A table with columns: Instance Name, Instance ID, Features, Edition, Version.

At the bottom, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

Figure 49 – Instance Configuration

7. In the **Server Configuration** step, click **Next** (Figure 50).

The screenshot shows the 'Server Configuration' window of the SQL Server 2012 Setup. The left sidebar lists the installation steps, with 'Server Configuration' currently selected. The main area contains the following elements:

- Service Accounts** tab is active.
- Text: Microsoft recommends that you use a separate account for each SQL Server service.
- Table with columns: Service, Account Name, Password, Startup Type.

Service	Account Name	Password	Startup Type
SQL Server Database Engine	NT AUTHORITY\NETWORK...		Automatic
SQL Server Browser	NT AUTHORITY\LOCAL ...		Automatic

At the bottom, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

Figure 50 – Server Configuration

8. In the **Database Engine Configuration** step, click **Next** (Figure 51).

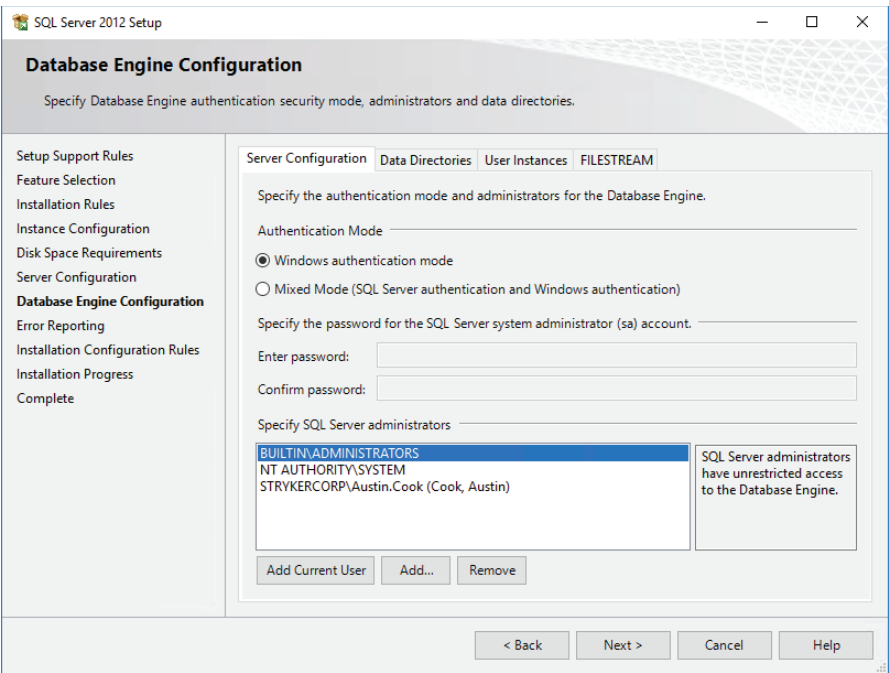


Figure 51 – Database Engine Configuration

9. In the **Error Reporting** step, click **Next** to start the SQL Server 2012 install process (Figure 52).

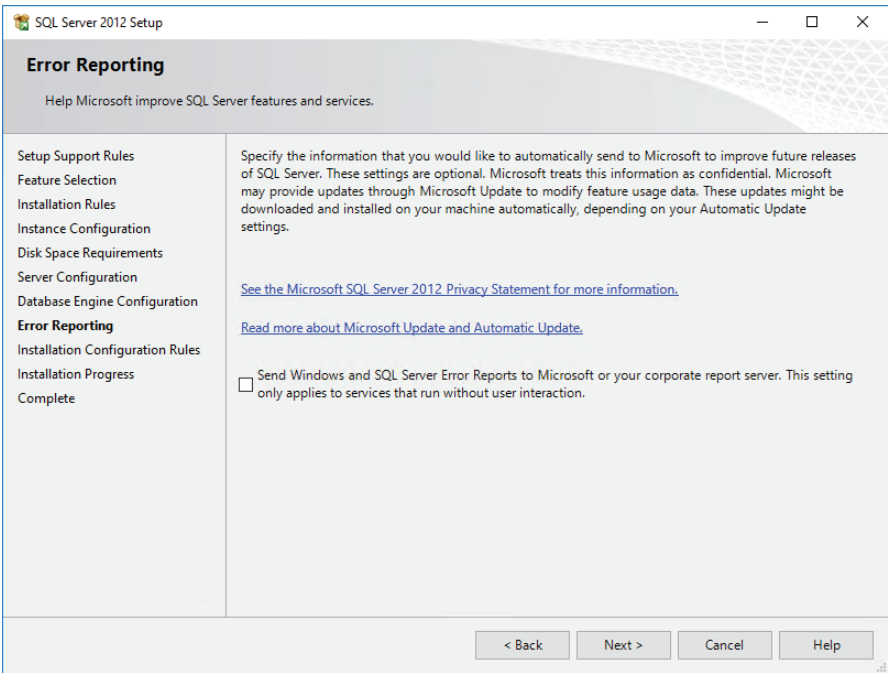


Figure 52 – Error Reporting

10. When installation is complete, click **Close** in the **Complete** window which will start the **iBed Server Application** installation (Figure 53).

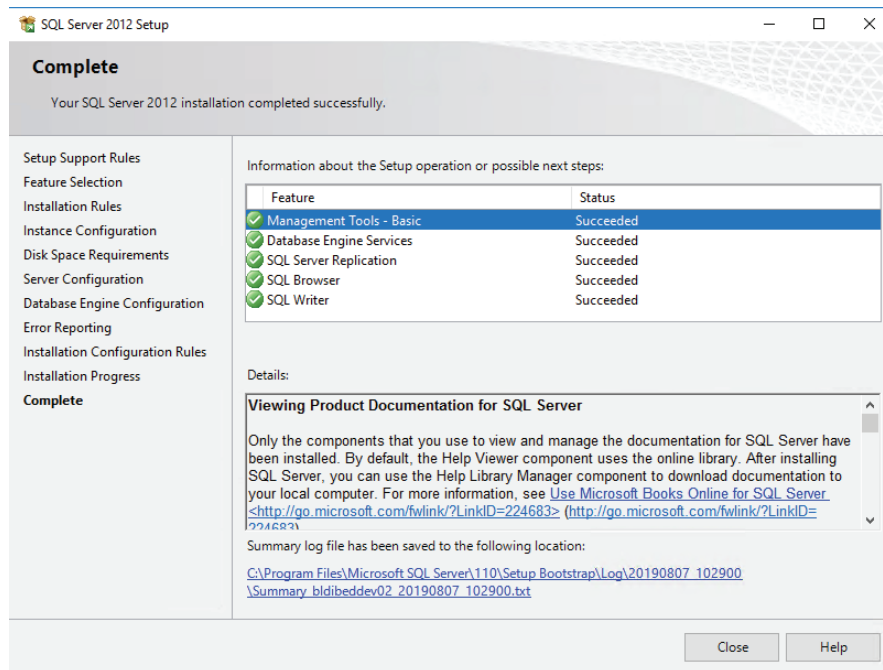


Figure 53 – SQL server install complete

11. In the **InstallShield Wizard** window, click **Next** (Figure 54).

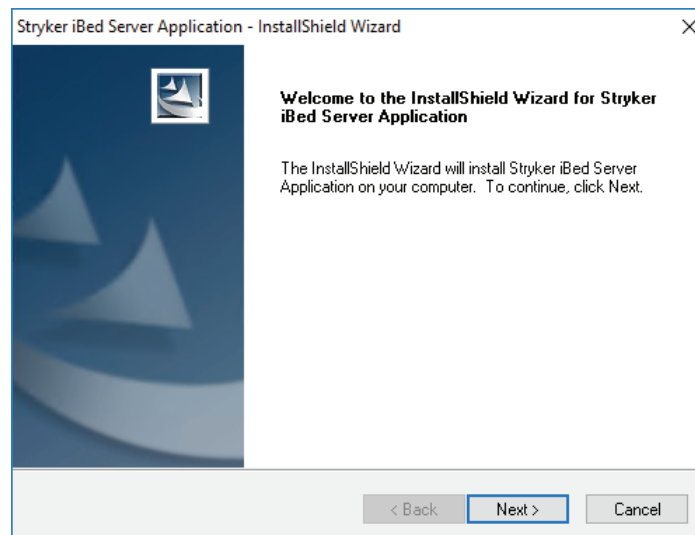


Figure 54 – InstallShield Wizard

12. In the **iBed Server Application** system configuration window, enter the sites information and click **Next** (Figure 55).

The screenshot shows the 'iBed Server Application - InstallShield Wizard' window. It contains four text input fields with the following labels: 'Please Enter the IP address for SEWSI:', 'Please Enter the SMTP Host Address:', 'TO Email address for Error Reporting:', and 'FROM Email address for Error Reporting:'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a blue border. The 'InstallShield' logo is visible in the bottom left corner.

**Figure 55 – Application configuration**

13. The **Choose Destination Location** screen will appear (Figure 56).

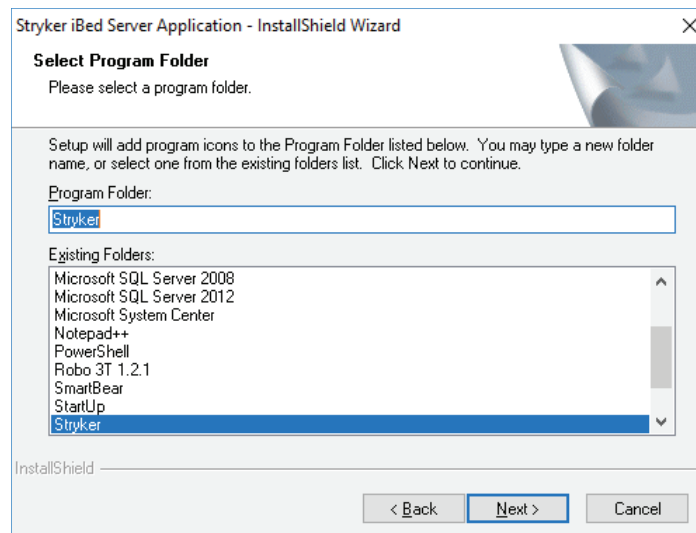
- a. If using the default location, click **Next**.
- b. If using a different location, click **Change** and then **Next** to confirm.

The screenshot shows the 'Stryker iBed Server Application - InstallShield Wizard' window with the 'Choose Destination Location' screen. The title bar says 'Stryker iBed Server Application - InstallShield Wizard'. Below the title bar, it says 'Choose Destination Location' and 'Select folder where setup will install files.' There is a folder icon next to the text 'Install Stryker iBed Server Application to: C:\Program Files\Stryker\iBed Server Application\' and a 'Change...' button to its right. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a blue border. The 'InstallShield' logo is visible in the bottom left corner.

**Figure 56 – Choose Destination Location**

14. The **Select Program Folder** screen will appear (Figure 57).

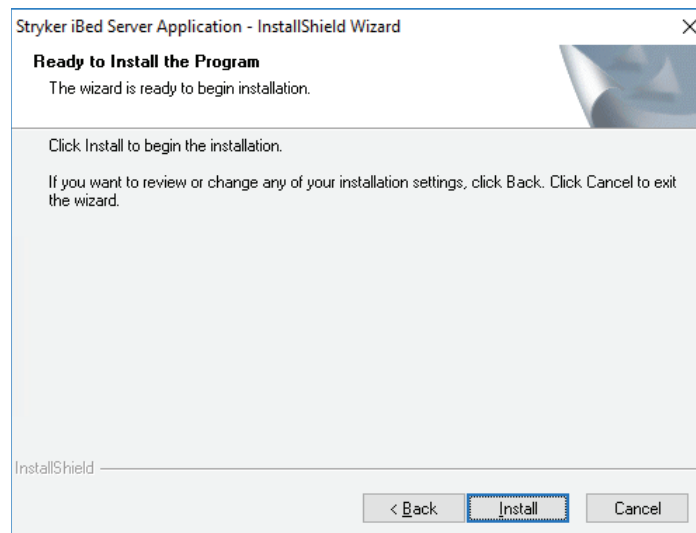
- a. If using the default folder, click **Next**.
- b. If using a different folder, create a different folder name and click **Next**.



**Figure 57 – Select Program Folder**

15. Click **Install** to begin the installation (Figure 58).

**Note** - To return to the **Select Program Folder**, click **Back**.



**Figure 58 – Install iBed Server**

16. Click **Finish** to exit the **InstallShield Wizard** (Figure 59).

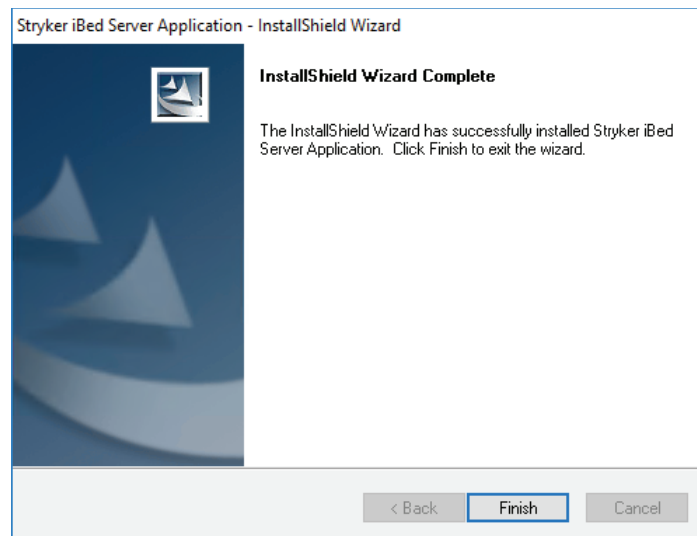


Figure 59 – Finish

## iBed Server Tools

1. Begin the **iBed Server Tools** installation by right clicking the **5212-502-001 Server Tools Setup.exe** file and select **Run as Administrator**.
2. The **Choose Destination Location** screen will appear (Figure 60).
  - a. If using the default location, click **Next**.
  - b. If using a different location, click **Change** and then **Next** to confirm.

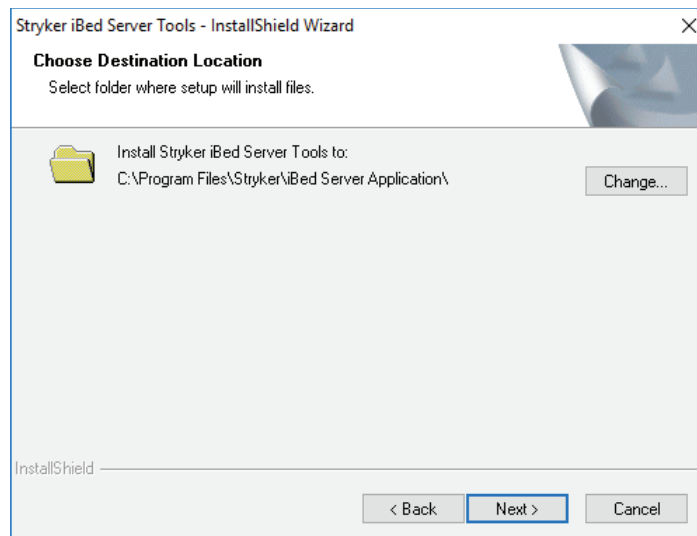


Figure 60 – Choose Destination Location

3. Click **Finish** to exit the **InstallShield Wizard** (Figure 61).



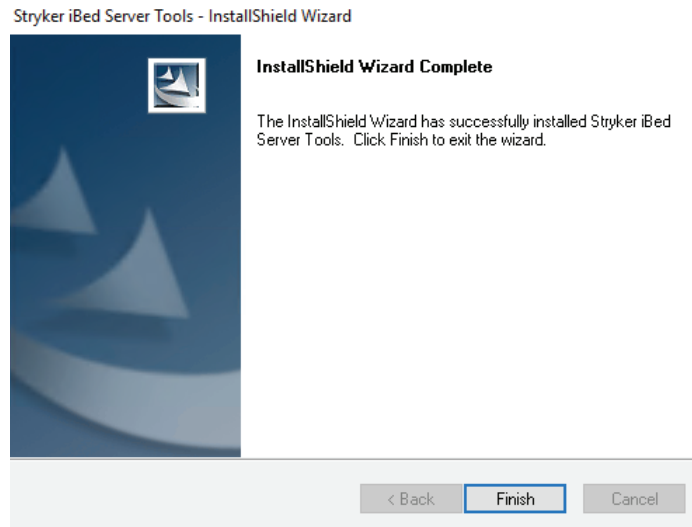


Figure 61 – Finish

## iBed Wireless Configuration Tool

**CAUTION** - Before proceeding with this installation, make sure that a previous version of the **iBed** Wireless configuration tool application is not currently installed on the target system. If a previous version was installed, uninstall the software. If you attempt to install the application on a system where a previous version was installed, the installer behavior may be unpredictable.

1. Run the **iBed** Wireless Configuration Tool by double-clicking the **5212-503-001 iBed Wireless configuration tool Setup.exe** file on the source location.
2. In the **InstallShield Wizard** screen, click **Next** (Figure 62).

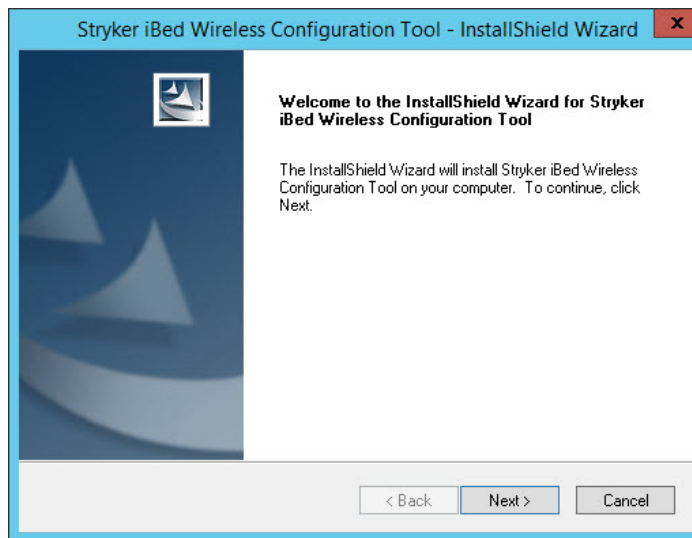
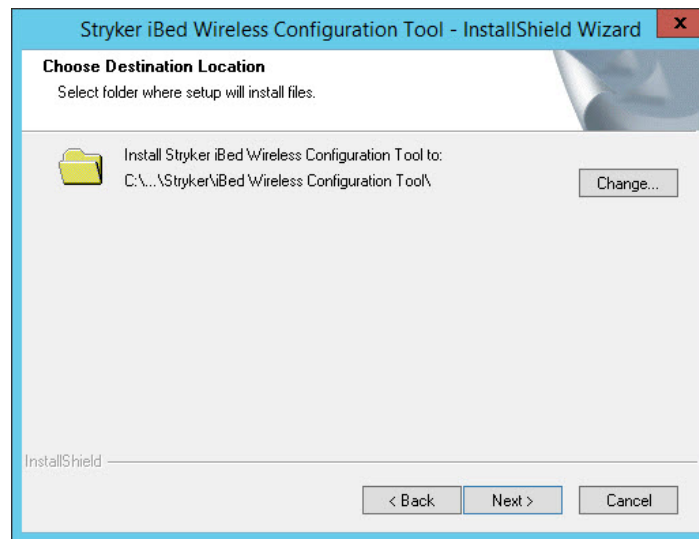


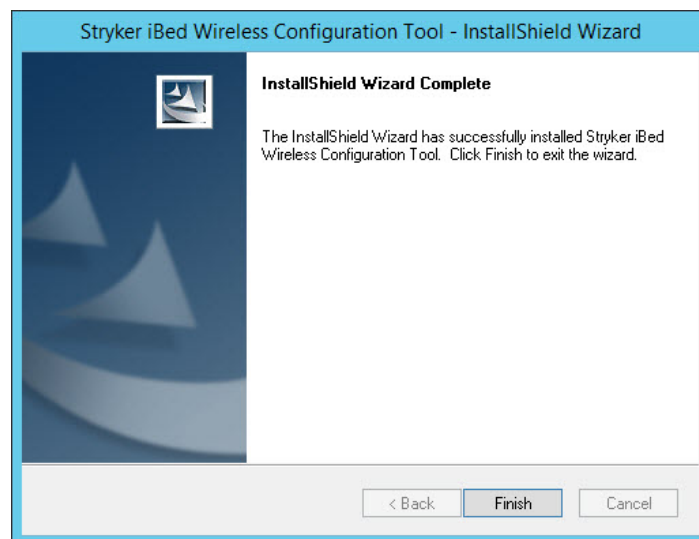
Figure 62 – InstallShield Wizard

3. The **Choose Destination Location** screen will appear (Figure 63).
  - a. If using the default location, click **Next**.
  - b. If using a different location, click **Change** and then **Next** to confirm.



**Figure 63 – Choose Destination Location**

4. Click **Finish** to exit the **InstallShield Wizard** (Figure 64).



**Figure 64 – Finish**


## Editing Windows configuration

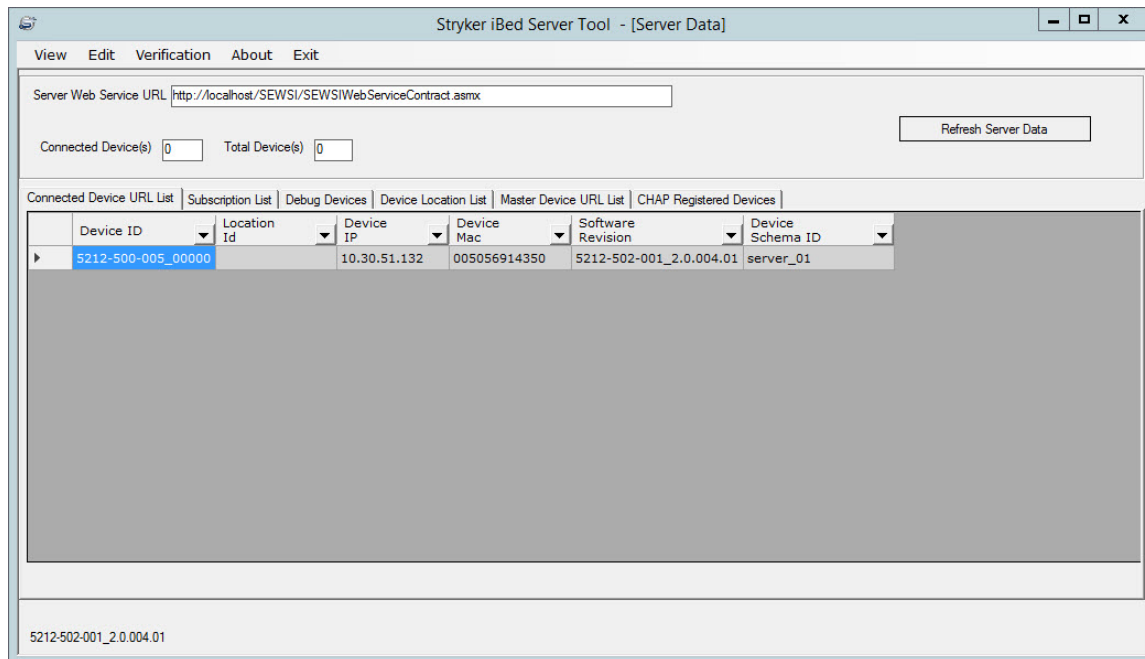
1. Browse to the machine.config file.
  - C:\Windows\Microsoft.NET\Framework\v2.0.50727\CONFIG\ machine.config (32 bit)
  - C:\Windows\Microsoft.NET\Framework64\v2.0.50727\CONFIG\ machine.config (64 bit)
2. To edit the previous file to increase the thread count for the .NET Framework, replace `<processModel autoConfig=`  
`"false" with <processModel autoConfig="false" maxWorkerThreads="1000" maxIoThreads="1000" minWorkerThreads=`  
`"50" minIoThreads="50"/>`.

3. Browse to: **C:\Program Files (x86)\Stryker\iBed Server Application\HB\SEWSI.HeartBeatWindowsService.exe.config**.
4. To increase the available ports (TCP connections):
  - a. Execute using a command prompt: `netsh int ipv4 set dynamicport tcp start=1025 num=64510`

## Verify iBed Server

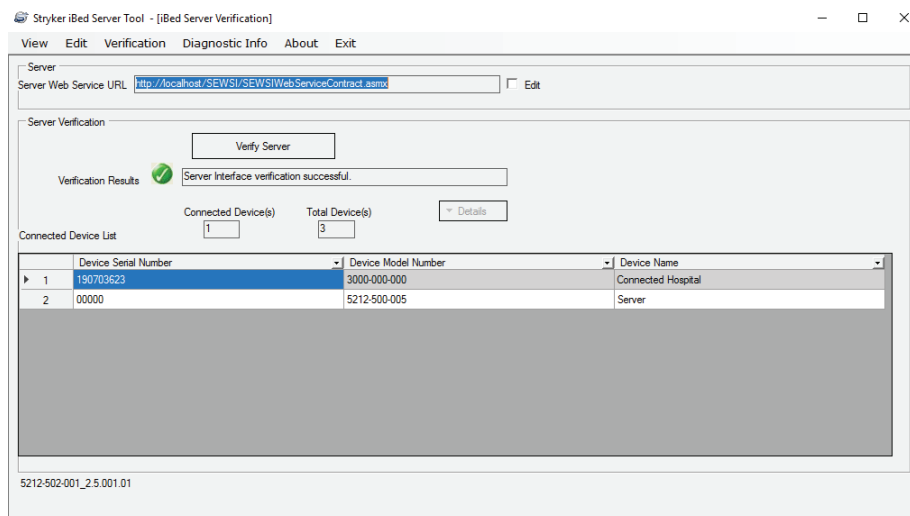
To verify **iBed** Server:

1. Open the **Stryker iBed Server Tool** by either double-clicking the **iBed** Server Tools Suite shortcut  located on your desktop, or by clicking **Start > All Programs > Stryker > iBed Server Tools** (Figure 65).



**Figure 65 – Stryker iBed Server Tool**

2. Click **Verification>Server** in the task bar.
3. In the **iBed Server Verification** window, click **Verify Server** (Figure 66).



**Figure 66 – Verify iBed Server**


- a. If the server interface verification is successful, the system returns a green check (Figure 66).
- b. If the server interface verification is unsuccessful, the system returns a red X.

**Note** - Before you continue installing **iBed** Server, you must resolve this error. To resolve the error, return to the beginning of the installation process and make sure that all steps were executed properly. For further troubleshooting details, see *Troubleshooting* (page 56).

4. Proceed to *Adding devices (clients) to the Master Device List* (page 41).

# Setup

## Adding devices (clients) to the Master Device List

1. Open the **iBed Server Tool** by either double-clicking the **iBed Server Tools Suite** shortcut  located on your desktop, or by clicking **Start > All Programs > Stryker > iBed Server Tools > iBed Server Tools**.
2. In the **iBed Server Tool** window, click **Edit>Master Device List** (Figure 67).

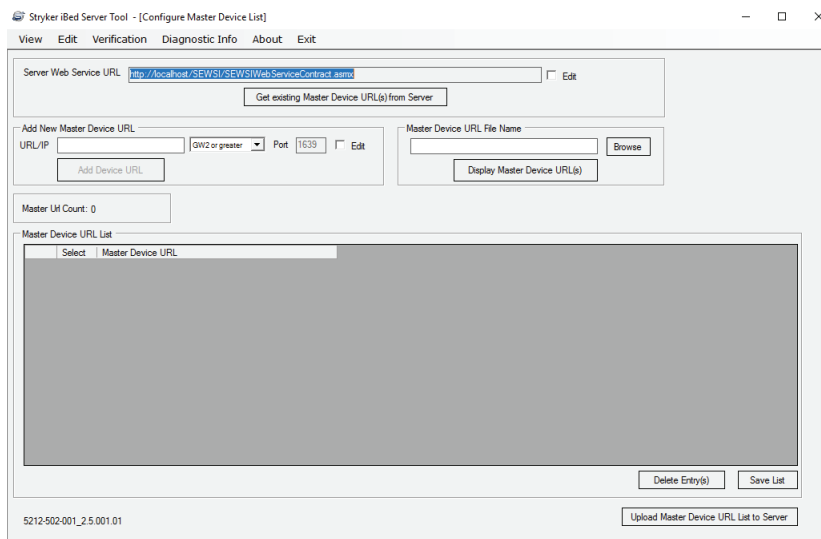


Figure 67 – Edit Master Device List

3. In the **Add New Device URL** box, type in the URL of the device and then click **Add Device URL** (example: <http://10.32.56.101:1639> or <http://syk-84253f2356a.stryker.com:1639>) (Figure 68).

**Note** - Make sure to enter the web extension **http://** and the Stryker communication port **:1639** to the IP or DNS name for each device (client).

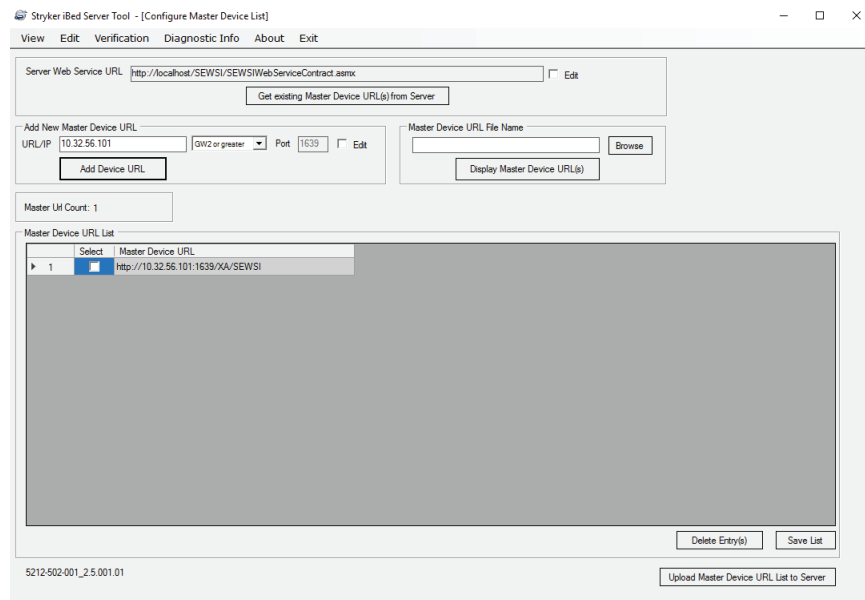


Figure 68 – Add Device URL

4. Repeat step 3 until all new devices have been added.
5. Once all new devices are in the list, click the **Select All** box of the **Master Device URL List** and then click the **Upload Master Device URL List to the Server** button (Figure 69).

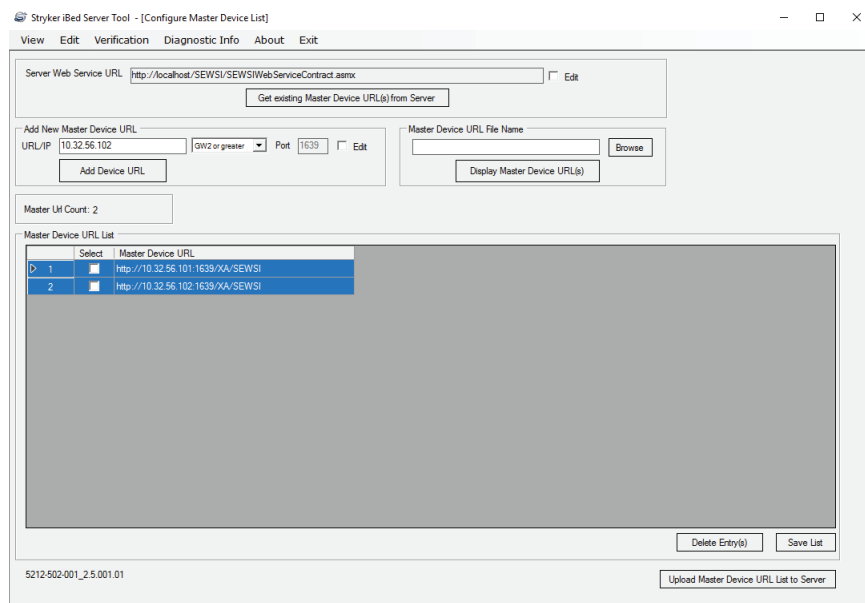



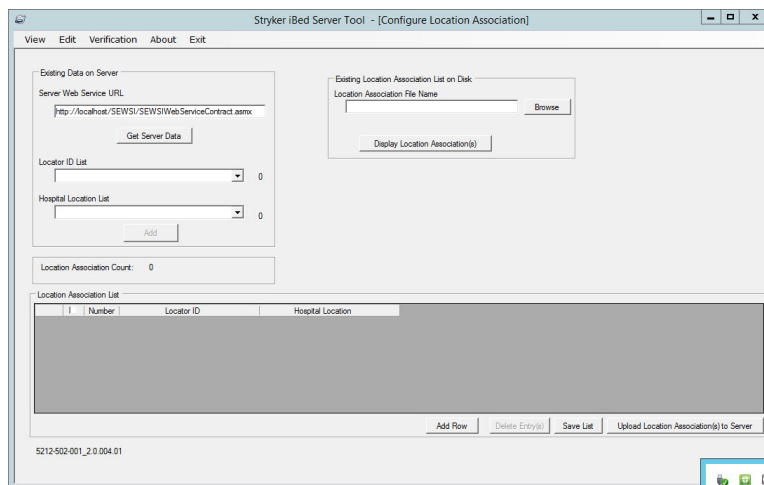
Figure 69 – Master Device URL List

6. Click the **OK** button in the **Alert** window confirming that the **Master Device URL List** was uploaded to the server.
7. To make sure that the **Master Device URL List** uploaded, go to the **iBed Server Tool** window and click **View>iBed Server**.

**Note** - Allow time for synchronization before you make sure that the **Master Device URL List** was uploaded.

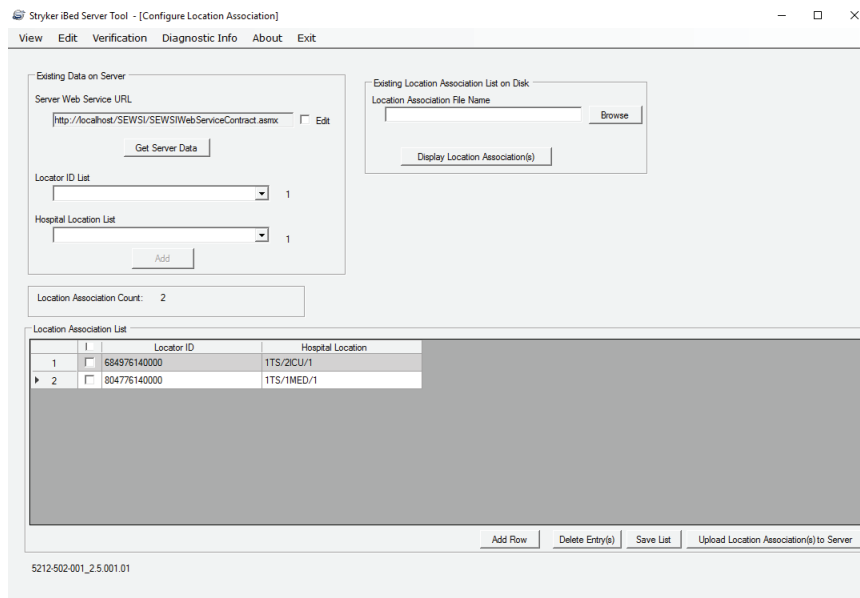
## Adding iBed Locator IDs and hospital locations

1. Open the **iBed Server Tool** by either double-clicking the **iBed Server Tools Suite** shortcut  located on your desktop, or by clicking **Start > All Programs > Stryker > iBed Server Tools > iBed Server Tools**.
2. In the **iBed Server Tool** window, click **Edit>Location Association** (Figure 70).



**Figure 70 – Location Association**

3. In the **Location Association List** box, click in the **Locator ID** box and type the ID from the Locator (Figure 71).



**Figure 71 – Add Location Association**

4. In the **Location Association List** box, click in the **Hospital Location** box and type the Hospital Location (Figure 71).
- Note** - The Hospital Location is normally formatted using the location HL7 alias name.
5. To add another association, click the **Add Row** button (Figure 71).
  6. Repeat steps 3 and 4 until all new Locator IDs and Hospital Locations have been entered.
  7. Once all new location associations have been made, click the upper left **Select All** box of the Location Association List, and then click **Upload Location Association(s) to Server** (Figure 72).

5212-502-001\_2.5.001.01

**Figure 72 – Upload Location Association**

8. Click the **OK** button in the **Alert** window to confirm that the Locator ID List, Hospital Location List, and Location Association List have been successfully uploaded to the server.
9. To verify in the **iBed Server Tool** window, click **View>iBed Server**.

**Note** - Allow time for synchronization before you make sure that the Master Device URL List was uploaded.

## Adding an additional Stryker interface

### Smart Equipment Management (SEM)

**Note** - If the facility has an existing LIFENET account, navigate to **Account Definition** and check the **Smart Equipment Management** box under **Features**.

#### Creating a LIFENET® account

**Note** - Make sure that the facility does not have a pre-existing LIFENET account. If they do not, continue to step 1.

1. In an internet browser window, go to <https://www.lifenetsystems.com/> to reach the LIFENET website.
2. Click on the **Account** tab and click **Accounts** in the drop down list (Figure 73).

**Figure 73 – LIFENET create account**

3. To create a new account, click **Add Account** (Figure 74).



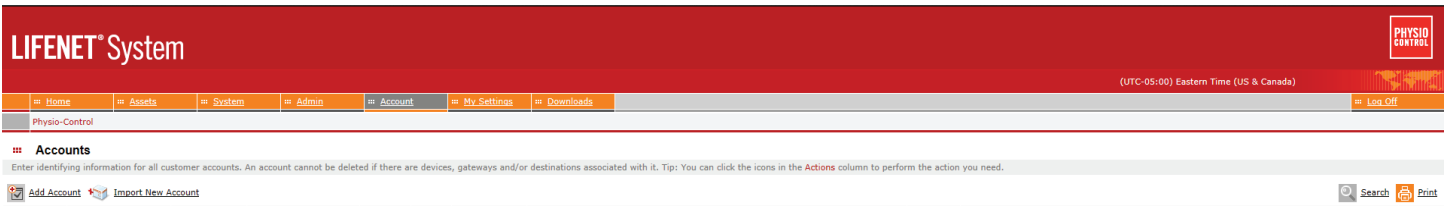


Figure 74 – Add Account

4. Submit information for all of the required fields:

a. Add Account (Figure 75)

Figure 75 – Add Account

b. Account Address (Figure 76)

Figure 76 – Account Address

c. Account Definition (Figure 77)

**Note** - Make sure that you select the following: LIFENET, Live, Hospital, Expiration Date, Smart Equipment Management, and Other Devices

**Account Definition**

**Warning:** Features that are crossed out do not have regulatory approval in this country.

Product: \* LIFENET LIFELINKcentral

Product Family: \* LIFENET Customer Service

Account Type: \* Live

Customer Type: \* ☐ None ☒ Hospital ☐ EMS

Expiration Date: \* Thu 1/17/2019

Subscriptions: None [Add subscription](#)

Features:

Features		
<input type="checkbox"/> Patient Data Transmission	<input type="checkbox"/> Patient Data Download	<input type="checkbox"/> Asset Data Download
<input type="checkbox"/> E-mail Adapter	<input type="checkbox"/> OnePush	<input type="checkbox"/> CODE-STAT
<input type="checkbox"/> Software and Setup Options Management	<input type="checkbox"/> Default Setup Options Profiles	<input type="checkbox"/> AED Locator
<input type="checkbox"/> Access Points	<input checked="" type="checkbox"/> Smart Equipment Management	

Devices:

Devices		
<input type="checkbox"/> CodeManagement Module	<input type="checkbox"/> LIFEPAK 10	<input type="checkbox"/> LIFEPAK 11
<input type="checkbox"/> LIFEPAK 12	<input type="checkbox"/> LIFEPAK 15	<input type="checkbox"/> LIFEPAK 20
<input type="checkbox"/> LIFEPAK 20e	<input type="checkbox"/> LIFEPAK 500	<input type="checkbox"/> LIFEPAK 1000
<input type="checkbox"/> LIFEPAK CR Plus	<input type="checkbox"/> LIFEPAK CR2	<input type="checkbox"/> LIFEPAK Express
<input type="checkbox"/> LIFEPAK Q5	<input type="checkbox"/> LIFEPAK T5	<input type="checkbox"/> LUCAS 3
<input type="checkbox"/> M-PAK	<input type="checkbox"/> ReadyLink 12-Lead ECG	<input checked="" type="checkbox"/> Other Devices

Applications:

Application	Count	Subscription Expiration Date	Configuration
<input type="checkbox"/> LIFEPAK Printer	<input type="checkbox"/> Unlimited		
<input type="checkbox"/> Wi-Fi Configuration Tool	<input checked="" type="checkbox"/> Unlimited		

Figure 77 – Account Definition

d. Account Configuration

**Note** - This step can be skipped.

e. Account Administrator (Figure 78)

**Account Administrator**

First Name: \*

Last Name: \*

Middle Name:

Job Responsibility: \* None

Phone: \*

Priority	Type	Phone Number
Primary Phone	<span>Work Phone</span>	<input type="text"/>
Secondary Phones		
No Records Found		
<a href="#">Add a phone number</a>		

E-Mail: \*

Priority	Type	E-Mail Address
Primary E-Mail Address	<span>Work E-Mail</span>	<input type="text"/>
Secondary E-Mail Addresses		
No Records Found		
<a href="#">Add an e-mail address</a>		

Language: \* English / English

Account Administrator Time Zone: \* (UTC-12:00) International Date Line West

Logon Name: \*

Figure 78 – Account Administrator

f. Notes

**Note** - This step can be skipped.

- Click **Done** which will prompt an email to be sent to the newly created Account Administrator. This email will contain a link to the SEM home page and a temporary password that needs to be changed before installing the SEM Device Data Manager (Figure 79).

User name:

Password:

[Forgot your password?](#)

Version 1.1.0

Figure 79 – SEM home page

### Installing the Stryker SEM Device Data Manager

1. Upload the Stryker SEM Device Data Manager install file (5212-504-001) onto the Stryker server where the *iBed* Server Application is installed.
2. Begin the Stryker SEM Device Data Manager installation by right clicking the **5212-504-001 Device Data Manager** file and select **Run as Administrator**.
3. In the **Stryker SEM Device Data Manager - InstallShield Wizard** window, click **Next** (Figure 80).

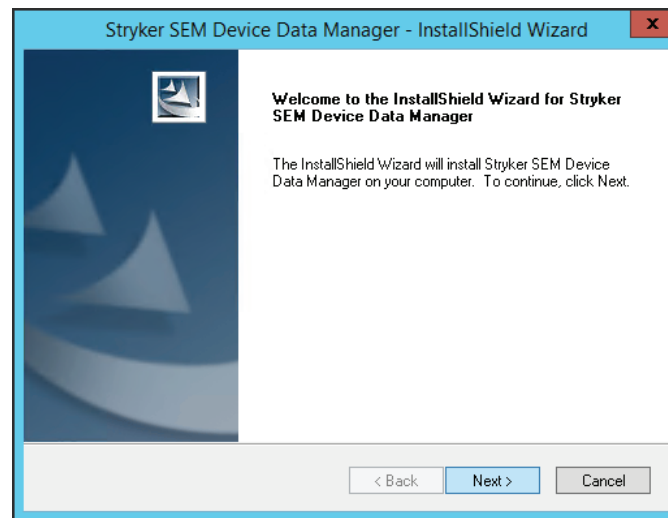


Figure 80 – InstallShield Wizard

4. In the **Stryker SEM Device Data Manager - InstallShield Wizard** window, enter the following values and click **Next** (Figure 81).
  - *iServer* IP address: IP address of the machine where the *iServer* is installed
  - Hospital name: Name of the hospital
  - Agent Serial Number: Enter the MAC address of the server machine where the SEM Device Data Manager is installed
  - **LIFENET** UserName - Username that is used to register Device Data Manager with **LIFENET**
  - **LIFENET** Password - Password that is used to register Device Data Manager with **LIFENET**
  - **LIFENET** URL - The URL for registering the Device Data Manager installed at the hospital with **LIFENET**

**Note** - The **LIFENET** user name and password are located in the email sent to the Account Administrator in *Creating a LIFENET® account* (page 44).

The screenshot shows the 'Stryker SEM Device Data Manager - InstallShield Wizard' window. It contains several input fields with the following values:

Field Name	Value
iServer IP Address	
Hospital Name/Description	
Agent SerialNumber	
LifeNet UserName	
LifeNet Password	
LifeNet URL	https://api.procareconnect.stryker.c

At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'InstallShield' logo is visible in the bottom left corner.

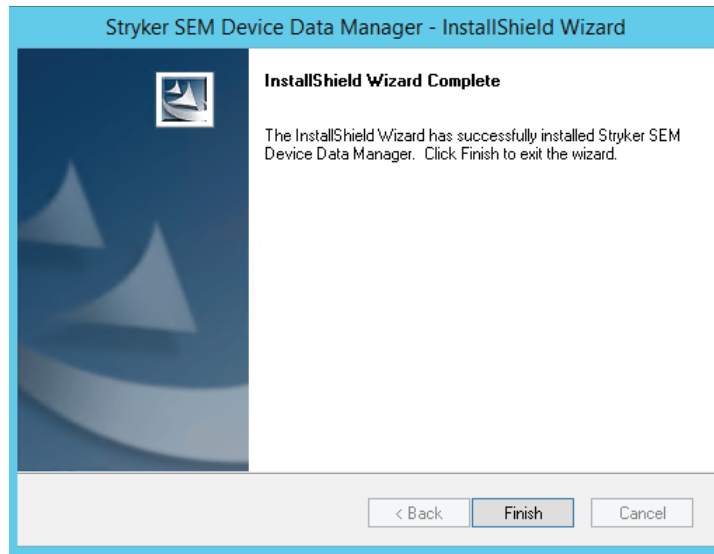
**Figure 81 – Field values**

5. In the **Choose Destination Location** step, click **Next** to install the SEM Device Data Manager files to the default location or click **Change** to select a different destination folder (Figure 82).

The screenshot shows the 'Stryker SEM Device Data Manager - InstallShield Wizard' window in the 'Choose Destination Location' step. The text 'Select folder where setup will install files.' is displayed. Below this, a folder icon is shown next to the text 'Install Stryker SEM Device Data Manager to:'. The default path is 'C:\...\Stryker\Stryker.DeviceDataManager\'. A 'Change...' button is located to the right of the path. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'InstallShield' logo is visible in the bottom left corner.

**Figure 82 – Choose Destination Location**

6. Click **Finish** to close the **Stryker SEM Device Data Manager - InstallShield Wizard** window (Figure 83).



**Figure 83 – InstallShield Wizard Complete**

#### **Verifying the Stryker SEM Device Data Manager is installed**

1. In Windows, click **Start**.
2. Enter **run** in the search box.
3. In the run window, enter **inetmgr**.
4. Expand **Connections** in the left panel.
5. Under **Sites** navigate to and click **DeviceDataManager** (Figure 84).

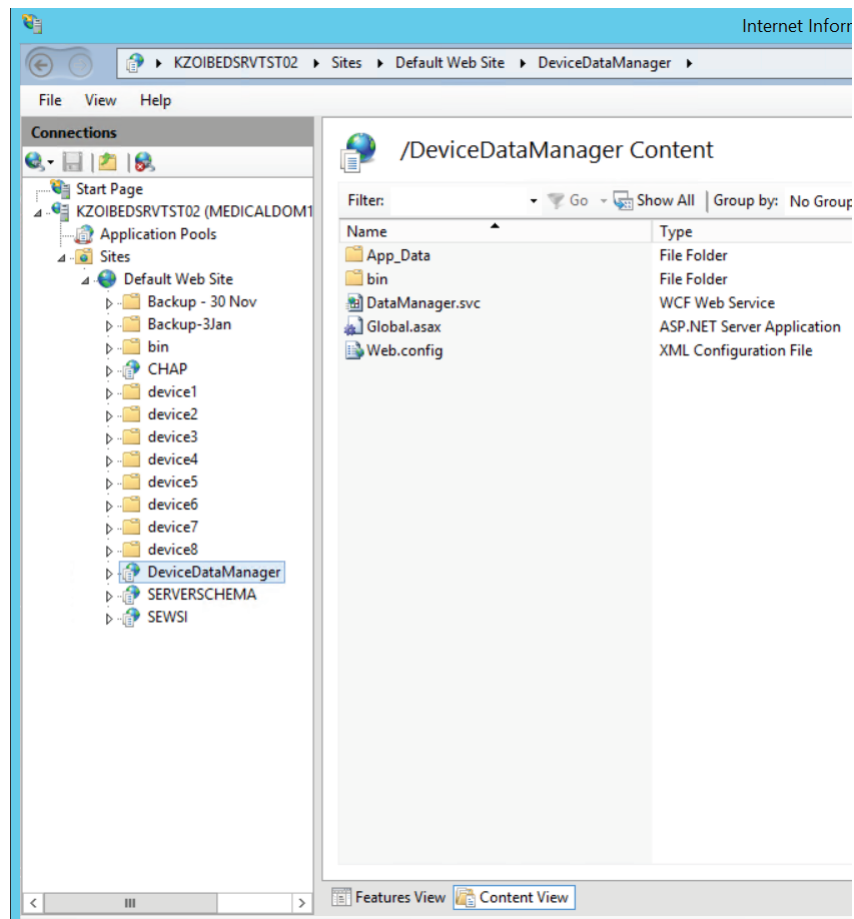


Figure 84 – DeviceDataManager

6. Right click on **DataManager.svc** and click **Browse**.
7. A browser window should open to the Data Manager Service web page.

## Adding a third-party interface

### Integrating Rauland Responder® 5

**Note** - This installation to be performed by Stryker personnel only.

To integrate **Rauland Responder 5**, follow the installation steps found in SD-180 available from the Stryker quality system.

# Configuring the wireless router (Stryker device configuration)

**Note** - *iBed* Server 1.0 wireless clients only authenticate with TKIP encryption and *iBed* Server 2.0 wireless clients only authenticate with AES encryption. Below is an example of configuring a LINKSYS N600 E2500 router.

To configure the wireless router for Stryker devices:

1. Enter the router's admin menu to configure the router for use.
2. In the **Setup/Basic Setup** tab, verify the router is set for DHCP (Figure 85).

The screenshot displays the Linksys E2500 Basic Setup page. The top navigation bar includes 'Setup', 'Wireless', 'Security', 'Storage', 'Access Policy', 'Applications & Gaming', 'Administration', and 'Status'. The 'Setup' tab is active, and the 'Basic Setup' sub-tab is selected. The left sidebar shows a tree view with 'Language', 'Internet Setup', 'Network Setup', 'Time Settings', and 'Reboot'. The main content area is titled 'Internet Setup' and shows 'Automatic Configuration - DHCP' selected. The 'DHCP Server' is set to 'Enabled'. The 'Start IP Address' is 192.168.1.100, and the 'Maximum Number of Users' is 100. The 'IP Address Range' is 192.168.1.100 to 199. The 'Client Lease Time' is 0 minutes. The 'Static DNS' and 'WINS' fields are empty. The 'Time Zone' is set to '(GMT-05:00) Eastern Time (USA & Canada)'. The 'Automatically adjust clock for daylight saving changes' checkbox is checked. The 'Reboot' button is visible at the bottom left. The 'Save Settings' and 'Cancel Changes' buttons are at the bottom right.

Figure 85 – Basic Setup

3. In the **Wireless/Basic Wireless Settings** tab, configure the 2.4 GHz and 5 GHz Wireless Settings so they match Figure 86.

The screenshot shows the Linksys E2500 Basic Wireless Settings page. The top navigation bar includes 'Setup', 'Wireless', 'Security', 'Storage', 'Access Policy', 'Applications & Gaming', 'Administration', and 'Status'. The 'Wireless' tab is selected, and the 'Basic Wireless Settings' sub-tab is active. The page is titled 'LINKSYS™' and 'Firmware Version: 3.0.00'. The 'Wireless' section is highlighted in the left sidebar. The main content area shows the 'Manual' configuration option selected. The 5 GHz Wireless Settings are configured with Network Mode: Mixed, Network Name (SSID): syk\_med\_install, Channel Width: Auto (20 MHz or 40 MHz), Channel: Auto (DFS), and SSID Broadcast: Enabled. The 2.4 GHz Wireless Settings are configured with Network Mode: Wireless-B/G Only, Network Name (SSID): syk\_med\_install, Channel Width: 20 MHz Only, Channel: Auto, and SSID Broadcast: Enabled. The 'Save Settings' and 'Cancel Changes' buttons are at the bottom right.

Figure 86 – Basic Wireless Settings

4. In the **Wireless/Wireless Security** tab, configure the 2.4 GHz and 5 GHz Wireless Security Settings so they match Figure 87.

The screenshot shows the Linksys E2500 Wireless Security page. The top navigation bar includes 'Setup', 'Wireless', 'Security', 'Storage', 'Access Policy', 'Applications & Gaming', 'Administration', and 'Status'. The 'Wireless' tab is selected, and the 'Wireless Security' sub-tab is active. The page is titled 'LINKSYS™' and 'Firmware Version: 3.0.00'. The 'Wireless' section is highlighted in the left sidebar. The main content area shows the '5 GHz Wireless Security' settings with Security Mode: WPA2 Personal and Passphrase: Stryk3r1#TWxP. The '2.4 GHz Wireless Security' settings are also configured with Security Mode: WPA2/WPA Mixed Mode and Passphrase: Stryk3r1#TWxP. The 'Save Settings' and 'Cancel Changes' buttons are at the bottom right.

Figure 87 – Wireless Security

5. Click the **Save Settings** button.



# Configuring wireless network connection settings

Applies to Gateway 1 (3002 **Secure®** II, 3002 / 3005 **S3®**), Gateway 2 (3002 / 3005 **S3**), and Gateway 3 (2131 / 2141 **InTouch®**).

**Note** - You must have a laptop and a router configured for Stryker defaults.

1. Plug in the router configured for Stryker defaults (*Configuring the wireless router (Stryker device configuration)* (page 51)).
2. Plug the power cord of the bed into the wall outlet and make sure that the wireless option is turned on.
3. Connect the laptop to the syk\_med\_install SSID which the configured router is broadcasting.
4. Open the **iBed Wireless Configuration Tool**.
5. On the bed, enter the **Connectivity Info** menu by accessing the service menu on the footboard (see the appropriate product maintenance manual).
6. Scroll down to the IP address which the router provided for the bed.
7. Enter the bed IP address in the **Wireless Device URL/IP** box (Figure 88).

**Figure 88 – Wireless Device URL**

8. Click the **Get Wireless Device Configuration** button. This will retrieve the bed wireless default settings and connect to the bed, which is shown in the left column of the tool.
9. Click the **OK** button of the retrieval confirmation.
10. Enter the facility network information and make sure that you fill in all of the appropriate blanks in the right column of the tool.
11. Select the **Radio Mode** for the facility requirements.
12. Click the **Upload Configuration to Device** button.

**Note** - If the radio does not connect, make sure that you check the settings entered into the column on the right. If they are incorrect, the radio will need to be reset to defaults and then repeat the configuration process.

# Resetting the wireless module to factory default settings (Med-Surg bed)

## Tools required:

- Large paper clip

## Procedure:

1. Raise the product to its highest position.
2. Using a large paper clip, insert it into the reset hole (A) on the bottom side of the wireless module (B) (Figure 89).
3. Hold the large paper clip inside the reset hole for five seconds.

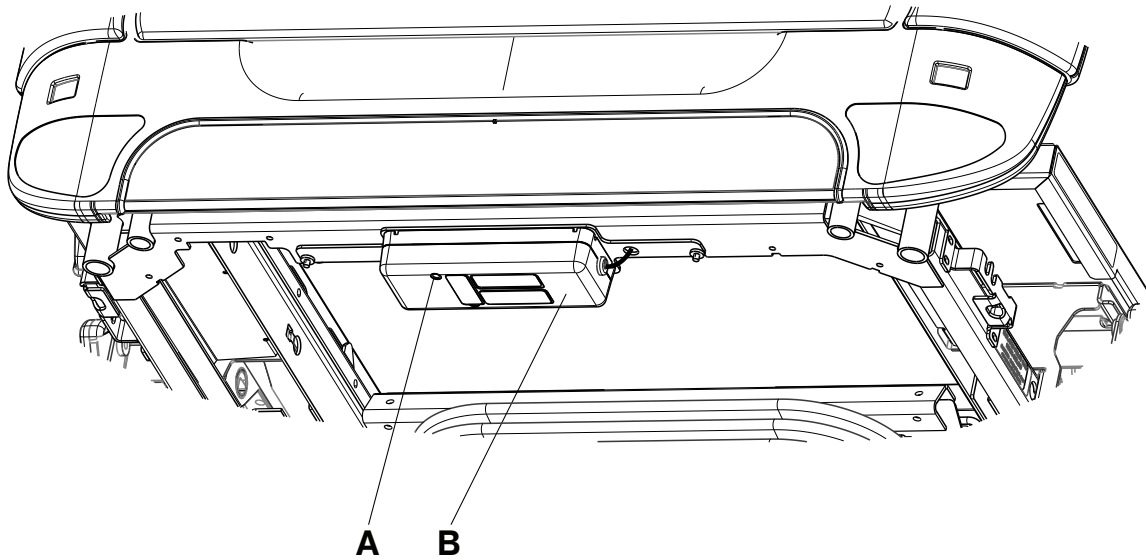


Figure 89 – Wireless module

# Resetting the wireless module to factory default settings (Model FL27 InTouch)

**Note** - For InTouch 2.1-4.0, follow all of the steps below. For InTouch 5.0 or higher, see step 1 to reset Wi-Fi.

## Tools required:

- Appropriate FL27 InTouch maintenance manual

## Procedure:

1. Use the appropriate FL27 InTouch maintenance manual to access the **Configuration** menu (For InTouch 2.1-4.0 see Figure 90. For InTouch 5.0 or higher, see Figure 92).
2. Tap **Wi-Fi Configuration** (A) (Figure 90).
3. Tap the **Advanced** tab (B) (Figure 91).
4. Tap **Reset** (C) (Figure 91).
5. Tap **Save**.

### InTouch 2.1 - 4.0

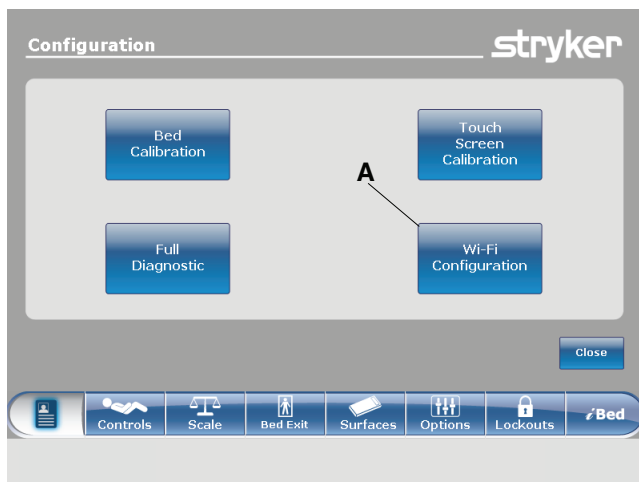


Figure 90 – InTouch Configuration Menu

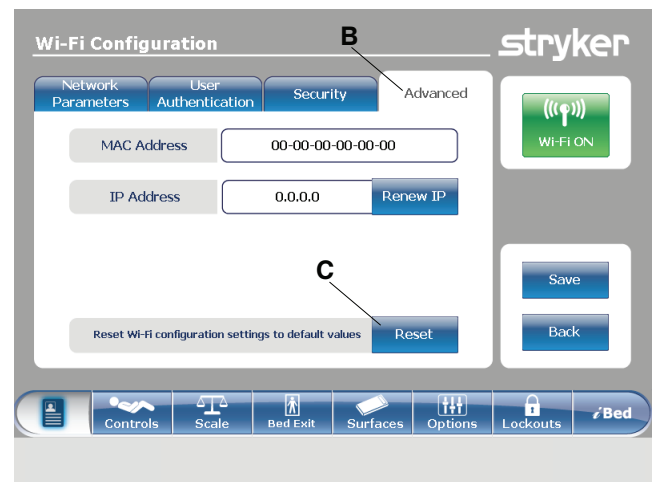


Figure 91 – InTouch Wi-Fi Configuration menu

### InTouch 5.0 or higher

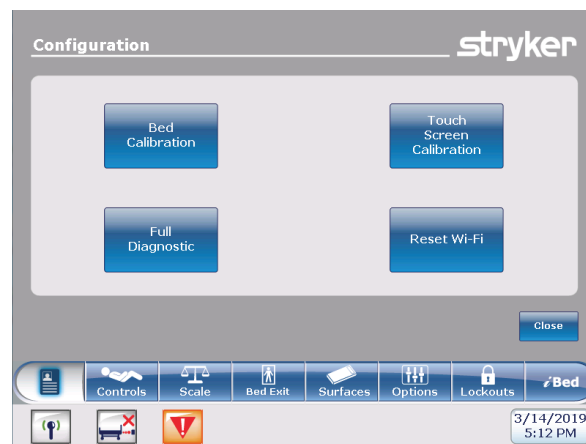


Figure 92 – InTouch Wi-Fi Reset

# Troubleshooting

## Basic

Problem	Possible cause	Solution
Cannot verify the <b>iBed</b> Server Tool	The Web Service URL is incorrect.	<p>Make sure the URL in the Web Service URL box is correct.</p> <ol style="list-style-type: none"><li>1. If the URL is incorrect, enter the following URL into the Web Service URL box (<i>Verify iBed Server</i> (page 39)): <b>http://localhost/SEWSI/SEWSIWebServiceContract.asmx</b>.</li><li>2. Click <b>Verify Server</b>.</li></ol>
	The Heartbeat service is not active.	<ol style="list-style-type: none"><li>1. Make sure that the Heartbeat service is running.<ol style="list-style-type: none"><li>1.1. If the Heartbeat service has not started, start the service, restart the server, and then reverify the <b>iBed</b> Server application.</li></ol></li></ol>
	The IIS Manager does not have all of the required Default Web Sites.	<ol style="list-style-type: none"><li>1. Make sure that the IIS Manager has all of the required Default Web Sites.<ol style="list-style-type: none"><li>1.1. Go to <b>Internet Information Services (IIS) Manager</b>.</li><li>1.2. Navigate to <b>Web Sites &gt; Default Web Site</b> to verify that the three web sites are listed: CHAP / SERVERSCHEMA / SEWSI.</li><li>1.3. If the Default Web Site is not listed, reinstall the <b>iBed</b> Server application.</li></ol></li></ol>

Problem	Possible cause	Solution
Cannot see the device in the <b>iBed</b> Server application	The MAC address does not have the bed's IP address or DNS name.	<ol style="list-style-type: none"> <li>1. If the troubleshooting steps in the appropriate bed maintenance manual were followed: <ol style="list-style-type: none"> <li>1.1. Use the MAC address from the bed and verify with IT what wireless module's IP address or DNS name is.</li> <li>1.2. Ping the wireless module from the server machine using the Command Prompt (ping <b>IP address or DNS name</b> :1639).</li> <li>1.3. Press <b>Enter</b>. <ol style="list-style-type: none"> <li>1.3.1. If you receive four (4) responses, then the bed is on the wireless network.</li> <li>1.3.2. If you receive no response, check the wireless module on the bed.</li> </ol> </li> </ol> </li> </ol>
Problem	Possible cause	Solution
Cannot see a device in the Server Tools under the Device Location List, but the device shows under the connected device URL List	The device was not added to the device list.	<ol style="list-style-type: none"> <li>1. Using the server tool, select <b>Verify Device Directly</b>.</li> <li>2. Click <b>Get Existing Device(s)</b>, and then select the device in question.</li> <li>3. Add it to the <b>Device List</b>.</li> <li>4. In the <b>Device List</b>, select the device, and then click <b>Verify Device(s)</b>.</li> <li>5. Check the <b>Connection Status</b> once it responds. <ol style="list-style-type: none"> <li>5.1. If there is a response, the device is communicating properly on the wireless network.</li> </ol> </li> </ol>

Problem	Possible cause	Solution
	The serial number in the CPU and the serial number on the bed specification label do not match.	<ul style="list-style-type: none"> <li>Identify the bed serial number that is stored in the CPU. It should match the serial number on the serial label on the bed.</li> </ul> <p><b>Note</b> - If there are two matching serial numbers in the device list, the server will only recognize the first device that logs on to the server.</p> <ul style="list-style-type: none"> <li>To find the bed's serial number, put the bed into the Bed Configuration mode and navigate to <b>Serial Number &gt; Current SN</b> to verify the serial number.</li> <li>If the serial number does not match, go to the <b>Edit SN</b> menu to edit the serial number, and then save.</li> </ul>
Problem	Possible cause	Solution
Cannot see a location	The Locator ID was entered incorrectly.	<ol style="list-style-type: none"> <li>Using the <b>iBed</b> Locator Association Tool, select <b>View Current Location Associations</b>.</li> <li>Click <b>Get Location Associations</b> from server.</li> <li>Look through the <b>Hospital Location</b> and verify the Locator ID.</li> </ol> <p><b>Note</b> - The Locator ID is alphanumeric and case sensitive. You must use lower case to enter the Locator ID letters, or the server will not recognize the locator.</p> <ol style="list-style-type: none"> <li>3.1. If the Locator ID is incorrect, use the <b>Update</b> function to update the error.</li> <li>3.2. If the Locator ID is missing, see <i>Adding iBed Locator IDs and hospital locations</i> (page 43).</li> </ol>

Problem	Possible cause	Solution
Third party does not receive bed status information		<ol style="list-style-type: none"> <li>1. Make sure the SEWSI <b>web.config</b> file has the correct Web URL.. <ol style="list-style-type: none"> <li>1.1. Navigate to the directory where the <b>iBed</b> Server Tool is installed. <ol style="list-style-type: none"> <li>1.1.1. Navigate to the SEWSI folder and open the <b>web.config</b> file.</li> <li>1.1.2. Find the line which contains <b>ServerURL=</b> <ol style="list-style-type: none"> <li>1) Make sure the local host was replaced with the IP of the server</li> </ol> </li> </ol> </li> </ol> <p><b>Note</b> - This cannot be a DNS name.</p> </li> <li>2. Make sure <b>Port 80</b> is not blocked. <ol style="list-style-type: none"> <li>2.1. <b>Port 80</b> needs to be open between the Stryker server and products (bi-directional), and the Stryker server and any third-party servers (bi-directional) (<b>LINK HERE</b>).</li> <li>2.2. If <b>Port 80</b> is blocked, work with IT to open the port.</li> </ol> </li> <li>3. Search SEWSI logs to make sure there are no communication failures. Find messages generated for the third-party (<b>LINK HERE</b>)</li> </ol>

## Advanced

### Connectivity issues (total device counts)

View total device counts to identify drops.

- Navigate to the directory where iBed Server Tools is installed and open the LOGS folder.
  1. Find **StrykerMainenanceService\_logfile.txt**.
  2. Highlight several of the **StrykerMainenanceService\_logfile.txt** files during the time when there may have been an outage.
    - a. Right click and select **Edit with Notepad++**.
  3. In **Notepad++** press **Ctrl+F** to open a find window.
    - a. Search for the below string and select **Find in All Opened Documents**.

**Note** - [Total Connected Devices Count excluding server =

- b. The **Find Result** pane in **Notepad++** will populate with the lines of the selected log files (Figure 93).

The screenshot shows the 'Find Results' pane in Notepad++ with the search criteria '[Total Connected Devices Count excluding server = 327]'. It displays 43107 hits across 4 files. The first file, 'D:\iBed Server Tool\LOGS\StrykerMaintenanceService\_logFile.txt.3', contains 12060 hits. The results are listed as follows:

Line	Timestamp	Level	ID	Message
Line 15:	[2018-07-13 23:10:11,857]	[INFO]	[5504]	[Total Connected Devices Count excluding server = 327] []
Line 40:	[2018-07-13 23:10:16,861]	[INFO]	[3756]	[Total Connected Devices Count excluding server = 327] []
Line 54:	[2018-07-13 23:10:21,865]	[INFO]	[3128]	[Total Connected Devices Count excluding server = 327] []
Line 76:	[2018-07-13 23:10:26,874]	[INFO]	[1276]	[Total Connected Devices Count excluding server = 327] []
Line 77:	[2018-07-13 23:10:31,886]	[INFO]	[1800]	[Total Connected Devices Count excluding server = 327] []
Line 78:	[2018-07-13 23:10:36,902]	[INFO]	[4992]	[Total Connected Devices Count excluding server = 327] []
Line 79:	[2018-07-13 23:10:41,906]	[INFO]	[5688]	[Total Connected Devices Count excluding server = 327] []
Line 80:	[2018-07-13 23:10:46,914]	[INFO]	[2804]	[Total Connected Devices Count excluding server = 327] []

Figure 93 – Total device counts

- c. Review the list until you locate the drop in the number of connected devices and the duration of time the devices were offline.

Work with the local IT department to investigate.

## Third party communication issues

Search SEWSI log files for third party messages.

1. Open the **iBed Server Tool**.

2. Navigate to the subscription list tab.

**Note** - When you search for messages from a product, make sure that you use the correct Device ID.

3. Copy the subscription ID for a device which is going to the correct third party.

- a. Verify subscriber URL to find messages to a specific third party.

4. Navigate to the directory where **iBed Server Tool** is installed.

- a. Open the **LOGS** folder.

- b. Find **SEWSI\_logfile.txt**.

5. To search for messages in a specific timeframe, highlight multiple **SEWSI\_logfile.txt** in that range based on the date modified in Windows Explorer.

- a. Right click the highlighted files and select **Edit with Notepad++**.

6. Press **Ctrl+F** to open a find window.

- a. Paste the **Subscription ID** copied in step 3.

- b. Select **Find in all opened documents**.

- c. The Find result pane will open with all messages containing the **Subscriber ID**.

7. Click the XML message from the Find pane to open the file to that line.

- a. XML messages will start in format **<?xml version="1.0" encoding=utf-8"?>**.

**Note** - Example message with the payload XML data highlighted: **<?xml version="1.0" encoding="utf-8"?><soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"><soap:Body><ReceiveSubscriptionRequest xmlns="http://SEWSI.ServiceContracts/2008/09"><SubscriberID>C3000-000-000\_180415201155204742</SubscriberID><PayloadXML>&lt;device id="3000-000-000\_180415201"&gt;&lt;BedHeightIn&gt;27&lt;/BedHeightIn&gt;&lt;LastLoggedWeightLb&gt;102.900009&lt;/LastLoggedWeightLb&gt;&lt;BedExitAlarming&gt;false&lt;/BedExitAlarming&gt;&lt;/device&gt;</PayloadXML><TimeStamp>2018-07-16T11:59:14.3410647-04:00</TimeStamp></ReceiveSubscriptionRequest></soap:Body></soap:Envelope>** []



## Device not connecting to server

Search for duplicate serial numbers (devices newer than GW1).

1. Open the **iBed Server Tool**.
2. Navigate to the **Client Diagnostic Info** tab.
3. Click the far left blank cell of the header to highlight the entire table.
  - a. Copy and paste the data in **Microsoft Excel**.
4. Highlight the **Client ID** column.
5. In the **Home** tab of the ribbon, click **Conditional Formatting**.
  - a. Highlight **Cells Rules - Duplicate Values**.
  - b. Click **OK** to highlight duplicates in red.
  - c. Highlight the row above where the data was pasted, click the **Data** tab, and select **Filter**.

Any cells highlighted (except **Network Exception / Timeouts**) are duplicate serial numbers which need to be resolved.

## Connectivity issues to one / multiple devices

Not receiving specific bed status over port 80.

- Verify communication from devices to the server with SOAP UI.

**Note** - Requires Stryker supplied project file.

1. Open **SOAP UI**.
2. In the **Projects** pane, expand the **SEWSI** folder.
3. Click **Connectivity Mock** to open **Connectivity Mock** window (Figure 94).

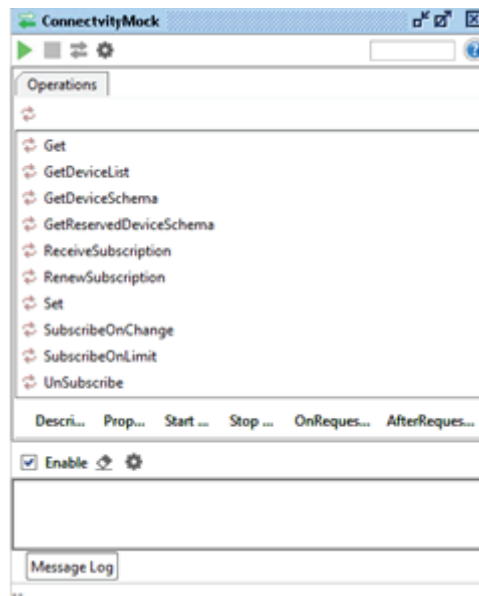


Figure 94 – Connectivity Mock

4. Click the gear icon to edit settings for Mock Third Party.
  - a. Modify host URL to the IP address of the server where SOAP UI is running (Figure 95).

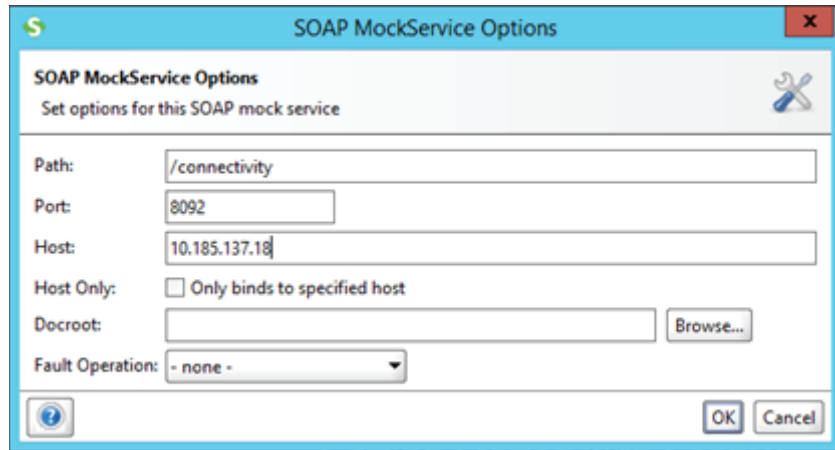


Figure 95 – SOAP UI

- b. Click **OK** to save.
5. Click the green **Play** icon to start the Mock Third Party Service.
6. Click the green arrows to open the service webpage to verify.
  - a. Copy the URL of the webpage to the clipboard
7. In the Projects Pane, expand **SEWSIWebServiceContract**.
  - a. Expand **SubscribeOnChange**.
  - b. Double click **VTF - Sub 3 (72 hour)**.
  - c. Modify the Subscriber URL with the URL from step 3.3.1 (Figure 96).

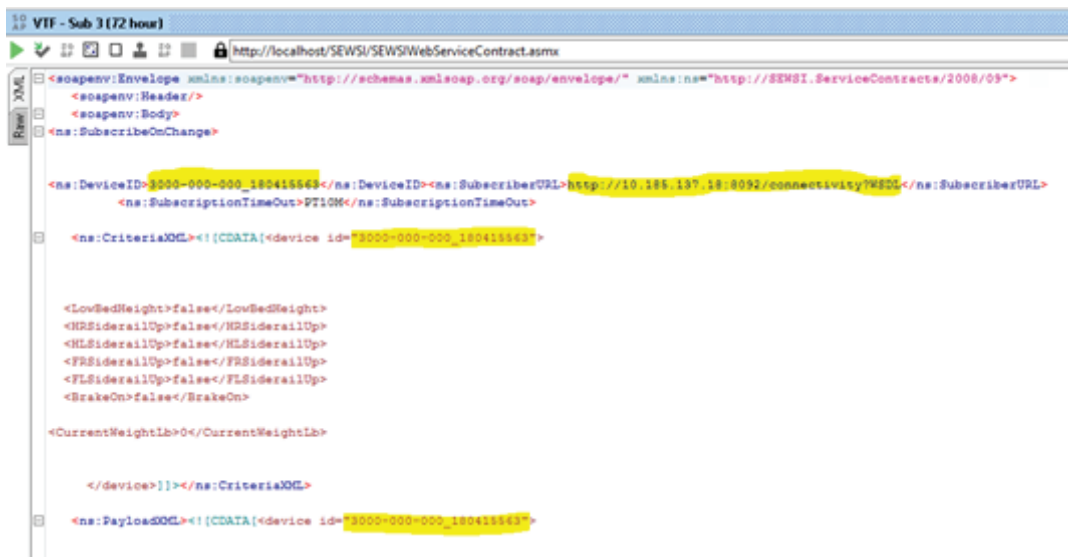


Figure 96 – VTF - Sub 3 (72 hour)

- d. Change the Device ID to the Device ID being searched for (Figure 96).
  - e. Click the Play icon in **VTF - Sub 3 (72 hour)** window.

8. In the **ConnectivityMock** window, you will begin to see messages appear in the message log if the ports are open and the server is able to communicate with the device (Figure 97).

**Note** - If messages do not populate, port 80 may be closed or the **WebServiceURL** in the **SEWSI web.config** file may be incorrect.

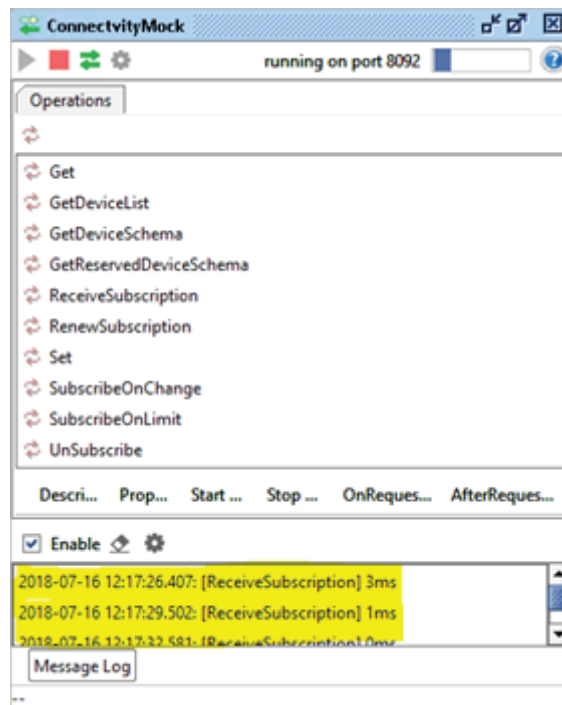


Figure 97 – Message Log

9. Double click a message to view the XML generated (Figure 98).

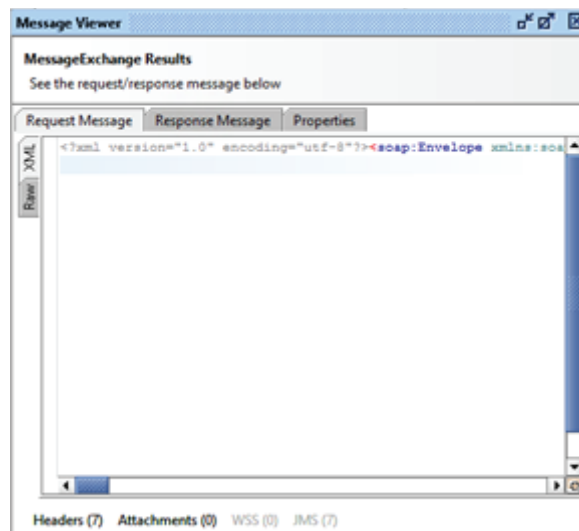


Figure 98 – Message Viewer

## Cannot communicate with device (verify ports are open)

Verify communication with device over port using TELNET.

1. Open a **command** prompt.

2. Enter the command **telnet <IPAddress> <Port>**, where **IP Address** is the address of the device and **Port** is the port number for verification (Figure 99).

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\svc_ca_stryker>telnet 10.159.159.91 1639_
```

Figure 99 – Command prompt

- A blank box with a blinking cursor indicates that the port is open.
- **Connecting to** indicates that the port is closed or the device is offline (Figure 100).

```
C:\Users\svc_ca_stryker>telnet 10.159.159.91 20000
Connecting To 10.159.159.91..._
```

Figure 100 – Connecting

**Note** - Only use TELNET for a device that is online and pingable.

## Cannot communicate with device (DNS only)

Verify Hostname with NSLOOKUP

1. Open a **command** prompt.
2. Enter the command **nslookup <IPAddress>** where **IP Address** is the address of the device for **DNS entry** verification.
  - A reply with the **hostname** and **IP address** indicates success (Figure 101).

**Note** - The first line is the **DNS** server name and IP address. The second line is the device hostname/IP.

```
C:\Users\svc_ca_stryker>nslookup 10.159.159.91
Server:    int-gtm-cdc.nyumc.org
Address:   10.185.98.100

Name:      syk-84253f3ef34e.wireless.nyumc.org
Address:   10.159.159.91

C:\Users\svc_ca_stryker>_
```

Figure 101 – DNS success

- A reply that states <DNSServerName> can't find <IPAddress> indicates failure (Figure 102).

```
C:\Users\svc_ca_stryker>nslookup 10.159.159.200
Server:  int-gtm-cdc.nyumc.org
Address:  10.185.98.100

*** int-gtm-cdc.nyumc.org can't find 10.159.159.200: Non-existent domain
C:\Users\svc_ca_stryker>_
```

Figure 102 – DNS failure

3. To verify a reverse lookup, enter the command **nslookup <hostname>** where the **hostname** is the device you are verifying DNS entry for.

**Note** - The server reply should be the same as seen in step 2.

## Smart Equipment Management (option) troubleshooting

1. To verify **Device Data Manager Utility**:

- In Windows, click **Start**.
- Enter **StrykerDeviceDataManagerRegistration** in the search box.
- Make sure that the **StrykerDeviceDataManagerRegistration** utility is displayed in the search results.

2. To verify in **iBed Server Tool**:

- Locate the machine where the Stryker **iBed Server** application is installed and open the **iBed Server Tool**.
- Click the **Subscription List** tab and make sure that the **Device ID** and **Subscription ID** columns are populated.
- Make sure that the server has a general subscription and each device has both a general and alarm subscription (Figure 103).

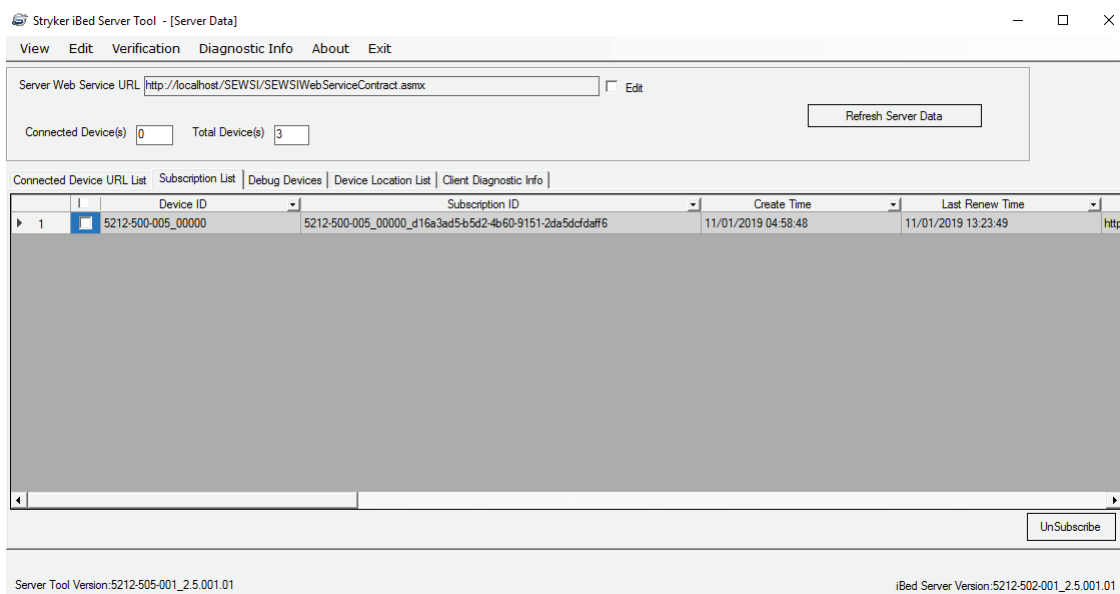


Figure 103 – General subscription

- Make sure that the **Subscriber URL** column displays the same URL shown in the **Web.config** file of the Device Data Manager (Figure 104 and Figure 105).

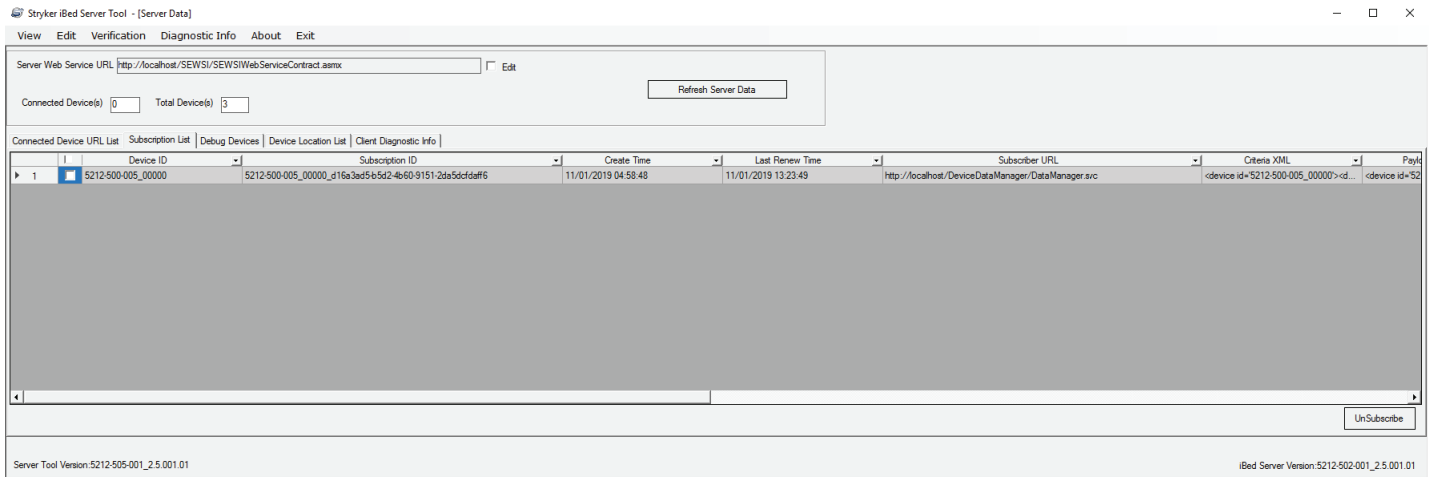


Figure 104 – Subscription List

```
appSettings>
<add key="SEWSI_URL" value="http://10.117.40.238/SEWSI/SEWSIWebServiceContract.asmx"></add>
<add key="CHAP_URL" value="http://10.117.40.238/CHAP/CHAPWebServiceContract.asmx"></add>
<add key="SUBSCRIBERURL" value="http://10.117.40.238/DeviceDataManager/DataManager.svc"></add>
<add key="IsServerIP" value="10.117.40.238"></add>
<add key="IsLifenet" value="true"></add>
<add key="LifenetRegistrationUrl" value="https://api-ng-dev.physio-labs.com/bedagents/?api-version=1.0"></add>
<add key="LifenetAgentUrl" value="/bedagents/{0}?api-version=1.0"></add>
<add key="LifenetBedUrl" value="/beds/{0}?api-version=1.0"></add>
<add key="LifeNetUserName" value="Test"></add>
```

Figure 105 – Web.config file

### 3. To verify server data in the Device Data Manager log file:

- Search for string "DeviceID=<SerialNumber> JsonContent=" in the log file (Figure 106)

**Note** - Replace <SerialNumber> with serial number in the Web.config file.

```
[2017-11-23 11:51:07.955] [DEBUG] [19364] [Entering function LifenetDataManager::UploadDataToCloud] []
[2017-11-23 11:51:07.994] [INFO] [19364] [In LifenetDataManager DeviceID = 1234567890 JsonContent=
{"GatewaySerial": "1234567890", "GatewayModel": "5212-500-005_00000", "IPAddress": "10.50.113.78", "SoftwareVersion": "1.0.0.2", "Description": "TestHospital", "TotalDevices": 6}]
[2017-11-23 11:51:07.970] [DEBUG] [19364] [Leaving function LifenetDataManager::ParseSubscribedDataStream] []
```

Figure 106 – Example: DeviceID = 1234567890 JsonContent=

- Search for string "Data Uploaded for Server successfully!" in the log file (Figure 107)

```
1 [2017-05-22 13:33:07.487] [INFO] [3624] [No change detected in server data returning] []
2 [2017-05-22 13:33:07.503] [INFO] [15340] [Data Upload Response for deviceID = :3000-000-000_DeviceS11Pal43 content = ] []
3 [2017-05-22 13:33:07.503] [INFO] [15340] [Data Uploaded successfully for DeviceID = 3000-000-000_DeviceS11Pal43] []
4 [2017-05-22 13:33:07.518] [INFO] [16072] [Data Upload Response for deviceID = :247703F4B422 content = ] []
5 [2017-05-22 13:33:07.518] [INFO] [16072] [Data Uploaded for Server successfully!] [
6 [2017-05-22 13:33:07.612] [INFO] [16072] [Starting request processing for SubscriptionID = C3000-000-000_DeviceS11Pal78_201705221317313380] []
7 [2017-05-22 13:33:07.737] [INFO] [15340] [Data Upload Response for deviceID = :3000-000-000_DeviceS11Pal138 content = ] []
8 [2017-05-22 13:33:07.737] [INFO] [15340] [Data Uploaded successfully for DeviceID = 3000-000-000_DeviceS11Pal138] []
9 [2017-05-22 13:33:07.737] [INFO] [16072] [Time taken for deserialization (ms) = 0] []
0 [2017-05-22 13:33:07.752] [INFO] [6156] [DeviceID = 3000-000-000_DeviceS11Pal78 JsonContent=
```

Figure 107 – Data uploaded in log file

4. To verify connected devices in the log file:

- Search for string “DeviceID = <deviceID> JsonContent=” in the log file (Figure 108)

**Note** - Replace <deviceID> with device ID of the connected device.

```
[2017-12-05 14:13:26,222] [INFO] [10152] [In LifenetDataManager DeviceID = 3000-000-000_DeviceS1 JsonContent= {"ActiveDeviceError":true,"ActiveDeviceErrorInformation":"load cell error","DeviceErrorLog1":"FR LoadCell Error","DeviceErrorLog2":"FRSR Switch Error","DeviceErrorLog3":"HRSR Switch Error","DeviceErrorLog4":"FLSR Switch Error","DeviceErrorLog5":"FLSR Switch Error","DeviceErrorLog6":"FLSR Switch Error","DeviceErrorLog7":"FRSR Switch Error","DeviceErrorLog8":"FRSR Switch Error","DeviceErrorLog9":"FR LoadCell Error","DeviceErrorLog10":"FR LoadCell Error","IPAddress":"172.156.10.11","MACAddress":"pqrst","NetworkAddress":"http://localhost/device1/service.asmx/Interface","SoftwareVersion":"1.0","PatientPresent":false,"RSSI":"20","LowBedHeight":false,"HRSiderailUp":true,"HLSiderailUp":true,"FRSiderailUp":true,"FLSiderailUp":true,"BrakeOn":true,"BedExitArmed":false,"LBSArmed":false,"BedExitAlarming":false,"LBSAlarming":false,"BrakeAlarming":false,"Online":true,"ConnectionUptime":1564.4642602,"SerialNumber":"3000-000-000_DeviceS1","Model":"Med-Surg"}] []
```

**Figure 108 – Example: DeviceID = 3000-000-000\_DeviceS1 JsonContent=**

- Search for string “Data Uploaded successfully for DeviceID = <deviceID>” in the log file (Figure 109)

**Note** - Replace <deviceID> with device ID of the connected device.

```
[2017-12-05 13:47:56,425] [INFO] [12688] [Connection to Lifenet established successfully. Data uploaded successfully for d
[2017-12-05 13:47:56,425] [DEBUG] [12688] [Leaving function LifenetDataManager::UploadDataToCloud] []
[2017-12-05 13:47:56,425] [INFO] [12688] [Device data successfully uploaded for 3000-000-000_DeviceS1 in Lifenet] []
[2017-12-05 13:47:56,425] [DEBUG] [12688] [Leaving function LifenetDeviceStatusManager::UploadDeviceData] []
[2017-12-05 13:47:56,425] [DEBUG] [12688] [Leaving function LifenetDeviceStatusManager::ProcessData] []
[2017-12-05 13:47:56,425] [INFO] [12688] [Connection to Lifenet established successfully. Data Uploaded successfully for d
```

**Figure 109 – Example: Data Uploaded successfully for 3000-000-000\_DeviceS1 in LIFENET**

## Email alerts

The following email alerts may be generated by the iBed server application.

Email info	Scenario
<b>Email Subject:</b> Stryker iBed Server Alert  <b>Email Body:</b> 2015-04-20 00:24:59,298 [2964] ERROR Stryker.IServer. BusinessLogic.SEWSI.RuleManager. EMailToAdminForLowBatteryStatus - SEND EMAIL: Stryker room locator f5d5b2130000 in room 205 has a low battery. Currently connected to device ID 3000-000-000_ 130316141.	Low Battery Status is true for the BBID mapped with a location
<b>Email Subject:</b> Stryker iBed Server Alert  <b>Email Body:</b> 2015-04-20 00:35:51,784 [2328] ERROR Stryker.IServer. BusinessLogic.SEWSI.RuleManager. EMailToAdminForLowBatteryStatus - SEND EMAIL: Stryker room locator f5d5b2130000 is not in the location list and has a low battery, update the location and association lists as required. Currently connected to device ID 3000- 000-000_130316141.	Low Battery Status is true for a BBID which is not mapped to any room or the BBID is missing

Email info	Scenario
<p><b>Email Subject:</b> Stryker iBed Server Alert</p> <p><b>Email Body:</b> 2015-04-20 00:45:22,254 [2328] ERROR Stryker.IServer.BusinessLogic.SEWSI.RuleManager. EmailToAdminForMissingBBID - SEND EMAIL: Stryker room locator f5d5b2130000 is not in the location list and does not have an association to a room, update or create the location association as required. Currently connected to device ID 3000-000-000_130316141.</p>	<p>BBID is sent in the subscription payload but it is not present in the "BBIDList.xml" file</p>
<p><b>Email Subject:</b> Stryker iBed Server Alert</p> <p><b>Email Body:</b> 2015-04-20 00:48:02,395 [2328] ERROR Stryker.IServer.BusinessLogic.SEWSI.RuleManager. EmailToAdminForMissingBBID - SEND EMAIL: Stryker room locator f5d5b2130000 is in the location list but is not associated to a room, update the location association as required. Currently connected to device ID 3000-000-000_130316141.</p>	<p>BBID is sent in payload and it is present in "BBIDList.xml" file but not present in "DeviceBBIdLocationAssciation.xml" file</p>
<p><b>Email Subject:</b> Stryker iBed Server Alert</p> <p><b>Email Body:</b> 2015-04-20 00:50:52,536 [2328] ERROR Stryker.IServer.BusinessLogic.SEWSI.RuleManager. EmailToAdminForMissingBBID - SEND EMAIL: Stryker room locator f5d5b2130000 is in the location list but is associated to an undefined room, update the location association as required. Currently connected to device ID 3000-000-000_130316141.</p>	<p>BBID is sent in payload and it is present in "BBIDList.xml" file and in "DeviceBBIdLocationAssciation.xml" file but location for that BBID is missing in "DeviceBBIdLocationAssciation.xml" file</p>
<p><b>Email Subject :</b> <b>Stryker iBed Server Urgent Alert</b></p> <p><b>Email Body:</b> <b>Application Health Check Failed at Step 1 -&gt; iBedServer is unable to access the database. Please restart the MS-SQL database. After restart, if the message continues, please contact Stryker support.</b></p>	<p>When DB is down</p>
<p><b>Email Subject:</b> <b>Stryker iBed Server Urgent Alert</b></p> <p><b>Email Body:</b> <b>Application Health Check Failed at Step 2 -&gt; The MS-SQL database is corrupt. Following Tables are missing in Database -&gt;DeviceConnectionInfoList. Please contact Stryker support to rebuild.Application Health Check Failed at Step 3 -&gt; iBedServer is unable to access SEWSI. Please restart the World Wide Web Publishing Service and StrykerSEWSIHeartbeatservice. After restart, if the message continues, please contact Stryker support.</b></p>	<p>DeviceConnectionInfoList table doesn't exist</p>



Email info	Scenario
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Application Health Check Failed at Step 2 -&gt; The MS-SQL database is corrupt.Following Tables are missing in Database -&gt;MasterSubscriptionInfo. Please contact Stryker support to rebuild.</p>	MasterSubscriptionInfo table doesn't exist
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Application Health Check Failed at Step 2 -&gt; The MS-SQL database is corrupt.Following Logins are missing in Database -&gt;NT AUTHORITY\LOCAL SERVICE. Please contact Stryker support to rebuild.</p>	LOCAL SERVICE doesn't exist
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Application Health Check Failed at Step 2 -&gt; The MS-SQL database is corrupt.Following Logins are missing in Database -&gt;NT AUTHORITY\NETWORK SERVICE. Please contact Stryker support to rebuild.</p> <p>Application Health Check Failed at Step 3 -&gt; iBedServer is unable to access SEWSI. Please restart the World Wide Web Publishing Service and StrykerSEWSIHeartbeatservice. After restart, if the message continues, please contact Stryker support.</p>	NETWORK SERVICE doesn't exist
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Application Health Check Failed at Step 3 -&gt; iBedServer is unable to access SEWSI. Please restart the World Wide Web Publishing Service and StrykerSEWSIHeartbeatservice. After restart, if the message continues, please contact Stryker support.</p> <p>Application Health Check Failed at Step 4 -&gt; StrykerSEWSIHeartbeatservice is not running. Please restart StrykerSEWSIHeartbeatservice. After restart, if the message continues, please contact Stryker support.</p>	Both SEWSI and HB services are down

Email info	Scenario
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Application Health Check Failed at Step 2 -&gt; The MS-SQL database is corrupt. Following Tables are missing in Database -&gt; MasterSubscriptionInfo . Please contact Stryker support to rebuild.</p> <p>Application Health Check Failed at Step 3 -&gt; iBedServer is unable to access SEWSI. Please restart the World Wide Web Publishing Service and StrykerSEWSIHeartbeatService. After restart, if the message continues, please contact Stryker support.</p> <p>Application Health Check Failed at Step 4 -&gt; StrykerSEWSIHeartbeatService is not running. Please restart StrykerSEWSIHeartbeatService. After restart, if the message continues, please contact Stryker support.</p>	Both SEWSI and HB services are down and MasterSubscriptionInfo table doesn't exist
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Application Health Check Failed at Step 3 -&gt; iBedServer is unable to access SEWSI. Please restart the World Wide Web Publishing Service and StrykerSEWSIHeartbeatService. After restart, if the message continues, please contact Stryker support.</p> <p>Application Health Check Failed at Step 4 -&gt; StrykerSEWSIHeartbeatService is not running. Please restart StrykerSEWSIHeartbeatService. After restart, if the message continues, please contact Stryker support.</p>	HB is down
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> iBed Server is unable to communicate with Stryker clients. Please check the server/network configuration. If the message continues, please contact Stryker Technical Support.</p>	No devices are detected

Email info	Scenario
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> Total number of clients connected to iBed Server has gone below &lt;configured threshold&gt;. Please check the server/network configuration. If the message continues, please contact Stryker Technical Support.</p>	<p>Number of connected devices drops below the configured threshold value</p>
<p><b>Email Subject:</b> Stryker iBed Server Urgent Alert</p> <p><b>Email Body:</b> The following errors with Third Party Communication has been recorded in last 1 hour. &lt;Error&gt;</p>	<p>Error with third party</p>



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