

**BrightSign®**

# INSTALLATION GUIDE

BrightSign Network Enterprise Edition 4.2

# TABLE OF CONTENTS

Introduction	1
What's New in BSNEE 4.2?	1
Minimum Hardware Requirements	1
Recommended Hardware Requirements	2
Minimum Software Requirements	2
Recommended Software Requirements	3
BrightSign Software Requirements	3
Meeting Software Requirements	4
IIS	4
WCF and MSMQ Features	7
MS SQL Server and Microsoft.NET Framework	8
Pre-Installation	9
Mail Server	9
Base Domain Name	9
Persistent Root and Temporary Storage Folders	10
MIME Types for IIS	12
Active Directory	13

Installation	15
1. Prerequisites	15
2. Database Connection	16
3. Mail Server Parameters	17
4. Bindings Configuration	18
5. Storage Setup	19
6. Services Directories	20
7. System Administrator Account	21
7a. LDAP Server Configuration	22
8. Installation	25
Post-Installation	26
Reconfiguring Certificates for “ApplicationService.svc”	26
Configuring Persistent Root and Temporary Storage	26
Verifying a Successful Installation	27
Customizing Notification Emails	27
Troubleshooting	29

# INTRODUCTION

Welcome to the Installation Guide for the BrightSign Network Enterprise Edition. BSNEE gives you a more hands-on method for managing your digital signage, as well as the freedom to sell subscriptions for your own customized digital signage network.

Once you have successfully installed BSNEE, you will have the complete infrastructure to serve and support your own digital signage network. Because BSNEE is a private web application, it can be managed securely within your corporate infrastructure and network.

## What's New in BSNEE 4.2?

The following features and improvements have been implemented since the previous version of BSNEE (4.1):

- **Player Tagging:** You can now add tags to players in the **Current Usage** tab of the WebUI. This allows you to search players on your BSN account using an unlimited number of customizable criteria.
- **New HTML Uploader:** The WebUI no longer requires Microsoft Silverlight to upload files.
  - The upload destination is now determined by the folder currently selected in the **Library** side bar (previously, all files would be placed in the **Incoming** folder automatically).
  - Files are checked by name and hash value when uploaded, and users are given the option of skipping or re-uploading duplicate files.
  - The speed and stability of the uploader has improved.
- **Proxy Bypass:** You can use the **Manage** tab in BrightAuthor to edit Proxy Bypass settings on players (requires BrightAuthor 4.4.0.x or later).

## Minimum Hardware Requirements

- 1.4 GHz or faster Dual Core processor
- 2GB of RAM
- 6GB free hard disk space
- Network connection

**Note:**

- A minimum hardware configuration should be used for testing/evaluation purposes only.
- Device logs should be disabled with a minimum hardware configuration.
- A maximum of 50 networked devices is recommended with this configuration.

## Recommended Hardware Requirements

- 2.2 GHz or faster Quad Core processor (Intel Xeon is preferred)
- 16GB of RAM
- 50GB free hard disk space for Temporary Storage
- 1TB additional free hard disk space for Persistent Storage (high-performance RAID configuration is preferred)
- 1 Gbps network connection

**Note:**

- This hardware configuration is recommended for production use.
- A maximum of 500 networked devices is recommended with this configuration. If you want to increase the maximum amount of networked devices, note the following:
  - A more powerful CPU is required for operations stemming from the SQL server, Device Handlers node, and the Scheduler service.
  - More RAM is required for intensive processing of device logs (when all log types are enabled for every device), the SQL server, and the Scheduler service.
  - More free hard disk space is required for Persistent Storage and device log reports. Intensive operations may also be bottlenecked by the speed of the HDD.

## Minimum Software Requirements

- Windows Server 2008 R2 (x64, with IIS installed)
- MS SQL Server 2008 SP1, including Express edition
- .NET Framework 4.0 or later (4.5 recommended for full IE10/IE11 support)
- X.509 certificate issued for the BSNEE Web Services node (described below) with the following attributes:
  - The “CN” attribute represents the target host (for example, “\*.mydomain.com” or “api.mydomain.com”). The installer uses this value to validate the bindings configuration.
  - The certificate is issued using the [Microsoft RSA/Schannel Cryptographic Provider](#) or the [Microsoft DDS and Diffie-Hellman/Schannel Cryptographic Provider](#).

## Recommended Software Requirements

- Windows Server 2012 R2 (with IIS installed)
- MS SQL Server 2012 SP1 or later, including Express edition
- .NET Framework 4.5 or later
- X.509 certificate issued for the BSNEE Web Services node

**Note:** *The X.509 certificate is required by WS-\* (WS-Security) specifications for message-level encryption in WCF services, as well as transport-level encryption for compliance with the WS-I Basic Profile 1.1, which is used by the BSN API on the Web Services node.*

## BrightSign Software Requirements

- Target BrightAuthor version: **4.4.0.x**
- Minimum required BrightAuthor version: **3.5.0.34**
- Minimum player firmware version:

Device Family	Minimum Firmware
4K242, 4K1042, 4K1142	5.1.16
XD232, XD1032, XD1132	5.1.24
HD222, HD1022	5.1.16
LS322, LS422	5.1.16
XD230, XD1030, XD1230	4.4.44
HD220, HD1020, AU320	4.4.44
HD210(w), HD1010(w), TD1012	3.10.22

# MEETING SOFTWARE REQUIREMENTS

The following software components need to be present before installing BSNEE:

- IIS
- WCF
- MSMQ (Message Queuing) Features
- Microsoft SQL Server 2008 SP1 or higher
- Microsoft .NET Framework 4.0 or higher

If your server already meets these software requirements, please skip to the [Pre-Installation](#) section of this guide. Otherwise, install any or all components that are currently missing.

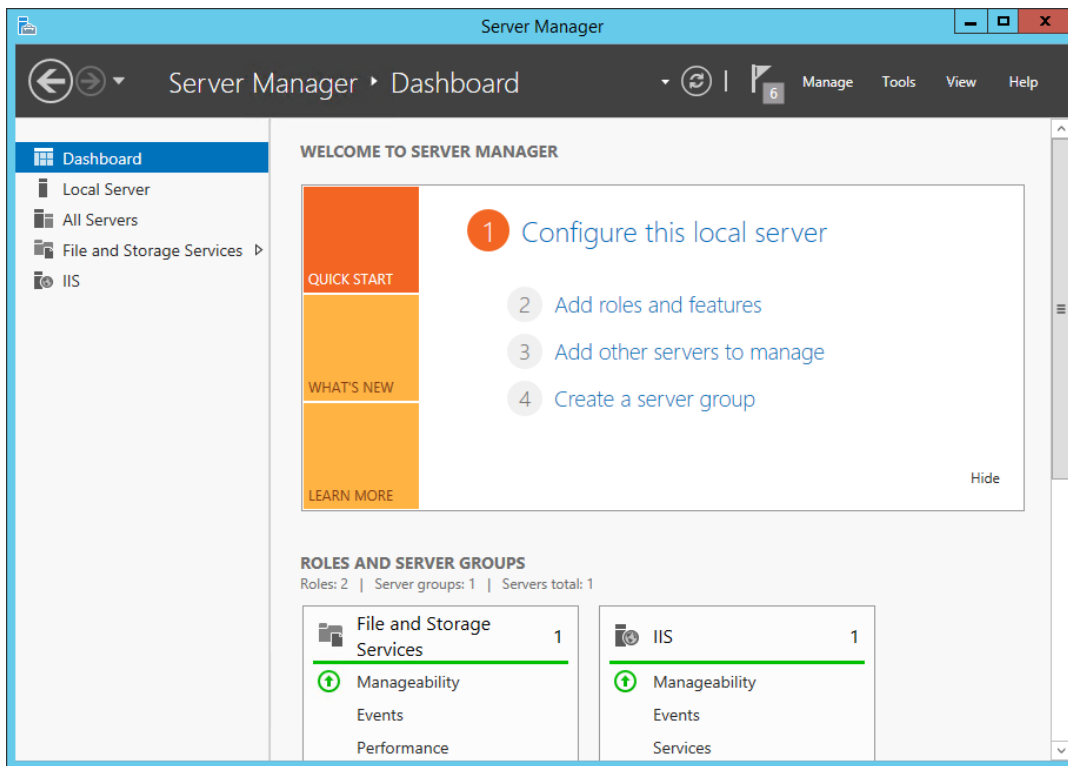
**Note:** *This guide is designed for Windows Server 2012 R2. The installation process for IIS, WCF, and MSMQ may differ if you are using a different Windows Server version. Please consult the Windows Server documentation for more details.*

## IIS

Before installing IIS, make sure you have administrative user rights on the computer you are using. By default, you will not have administrative user rights if you are logged in as a user other than the root administrator, even if you have been added to the Local Administrators group. This is a new security feature since Windows Server 2008, referred to as a “Local User Administrator”.

Once you have administrative user rights, complete the following steps:

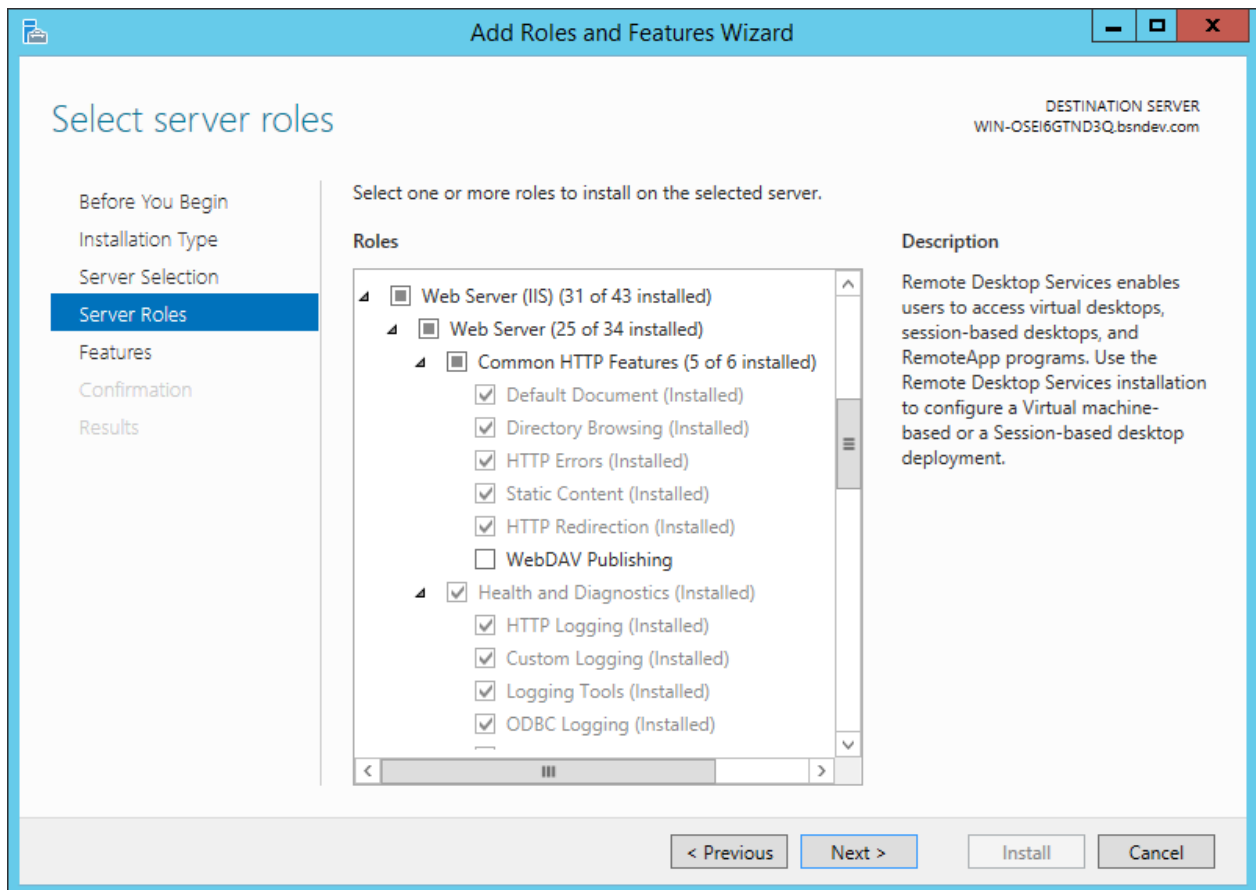
1. In the **Server Manager** window, navigate to the **Manage** menu and select **Add Roles and Features**.
2. The Add Roles and Features Wizard may launch a **Before you Begin** page, which will ask you to verify the following:
  - a. That the administrator account has a strong password.
  - b. That the network settings, such as IP addresses, are configured.
  - c. That the latest security updates from Windows Update are installed.
3. Select **Web Server (IIS)** on the **Select Server Roles** page.
4. Click **Next**. An introductory page will open with links for further information. Click **Next** again.



5. Install the Web Server (IIS) role with the following features:

- Web Server
  - Common HTTP Features
    - Default Document
    - Directory Browsing
    - HTTP Errors
    - Static Content
    - HTTP Redirection
  - Health and Diagnostic Features
    - HTTP Logging
    - Custom Logging
    - Logging Tools
    - ODBC Logging
    - Request Monitor
    - Tracing
  - Performance
    - Static Content Compression
    - Dynamic Content Compression



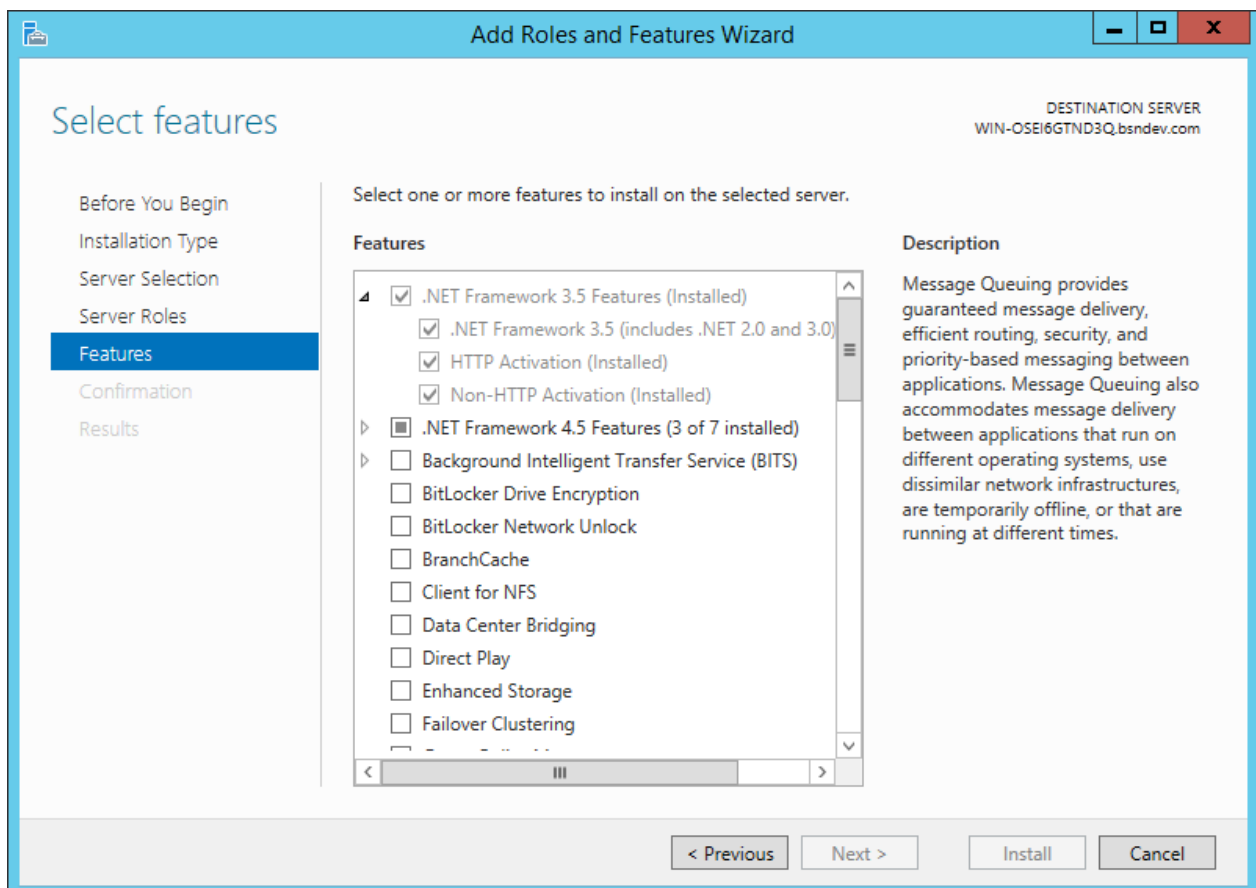


- Security
  - Request Filtering
  - Basic Authentication
  - Client Certificate Mapping Authentication
  - Digest Authentication
  - IIS Client Certificate Mapping Authentication
  - IP and Domain Restrictions
  - URL Authorization
  - Windows Authentication
- Application Development
  - .NET Extensibility 3.5
  - .NET Extensibility 4.5
  - ASP.NET 3.5
  - ASP.NET 4.5
  - ISAPI Extensions
  - ISAPI Filters
- Management Tools
  - IIS Management Console

- IIS 6 Management Compatibility
    - IIS 6 Metabase Compatibility
    - IIS 6 WMI Compatibility
    - IIS 6 Scripting Tools
    - IIS 6 Management Console
  - IIS Management Scripts and Tools
6. Click **Next** when finished.
7. On the confirmation page, click **Install**.

## WCF and MSMQ Features

1. Install the following server features:
  - .NET Framework 3.5 Features
    - .Net Framework 3.5
    - HTTP Activation
    - Non-HTTP Activation
  - .NET Framework 4.5 Features
    - .NET Framework 4.5
    - ASP.NET 4.5



- WCF Services
    - HTTP Activation
  - Message Queuing
    - Message Queuing Services
      - Message Queuing Server
2. Click **Next** when finished.
  3. On the **Confirmation** page, click **Install**.

## MS SQL Server and Microsoft.NET Framework

These applications can be downloaded by visiting the Microsoft website. When installing the MS SQL Server, make sure to configure it for **Mixed Mode Authentication**.

# PRE-INSTALLATION

After installing the required software, you will need to take some preliminary steps before installing BSNEE. Please complete all steps before moving on to the [Installation](#) section.

## Mail Server

A mail server (SMTP) is used to send application notifications such as error logs, new/restored passwords, and user creation notifications. These notifications are sent to end users and administrators. To set up the mail server during installation, you will need to prepare the following parameters:

- **Server Name:** e.g. localhost
- **User Name:** e.g. mailUser
- **Password**

**Note:** *The User Name and Password may be empty if the mail server supports it.*

- **FROM Address:** e.g. [from@mydomain.com](#)
- **Port:** 25 (by default)
- **TLS:** This is disabled by default.

## Base Domain Name

BSNEE requires a Base Domain Name, which will be used to manage the application once it is installed. Four separate strings will be used by different internal services to regulate BSNEE:

- Website
- Device Handlers
- Web Services
- Web Storage

**Note:** *Each service uses its own sub-string to build the complete connection string.*

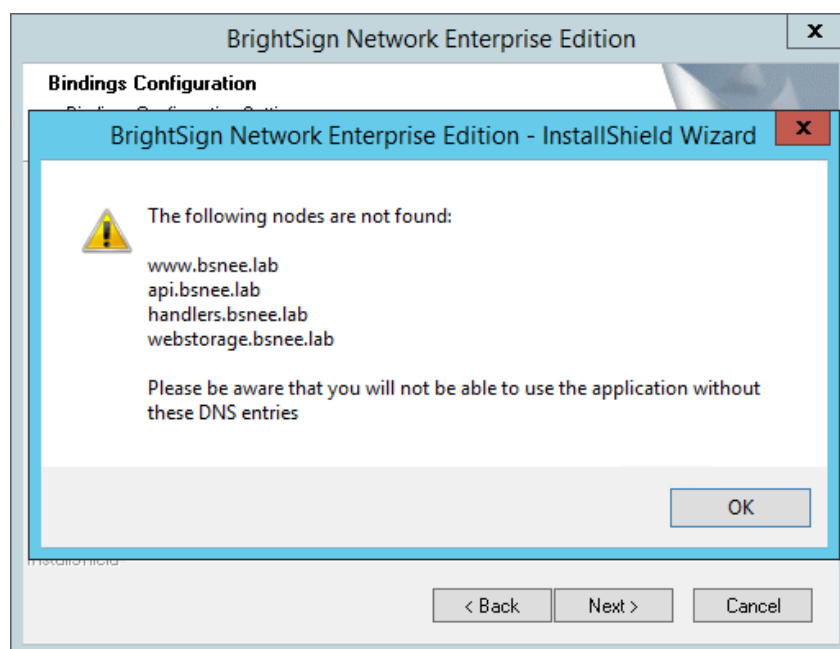
During Step 6 of the installation process, you must enter the Base Domain Name. There are no supported IP addresses, so you must input *only* the domain name. The other strings will be automatically generated using the domain name.

BSNEE will not function properly until all strings are registered in the DNS, pointed to your BSNEE server IP address, and are resolvable by both server and client. You may do this prior to, or immediately after, installation. The example chart below shows which DNS records you need to register. It uses mydomain.com as the BSNEE Base Domain Name and 10.0.0.1 as the IP address for the BSNEE server.

FQDN	Type	Value
mydomain.com.	A	10.0.0.1
www.mydomain.com.	CNAME	mydomain.com.
handlers.mydomain.com.	CNAME	mydomain.com.
api.mydomain.com.	CNAME	mydomain.com.
webstorage.mydomain.com.	CNAME	mydomain.com.
storage.mydomain.com.	CNAME*	mydomain.com.

\*If this server already exists, but doesn't have a corresponding DNS record, use the "A" **Type** instead of "CNAME".

The default sub-domain names for "api", "handlers", and "storage" can be changed during installation. If you attempt to register the strings after installation, you will receive the following error message upon completing [Step 6](#).



## Persistent Root and Temporary Storage Folders

BSNEE requires *persistent storage* and *temporary storage*. You can select the storage location on your hard drive during [Step 5](#) of the installation process. You can either create new *persistent storage* and *temporary storage* folders or configure ones that you already have to match the parameters outlined below.

## Persistent Storage

This serves as a constant space for storing data used by devices. BSNEE can place data on either the local machine server or in a networked shared folder (NAS) within your corporate domain.

**Note:** *BSNEE does not support shared folders with separate workgroups.*

Both locations should have high security standards. In order to use the networked shared folder with BSNEE, you must enable Persistent Storage folder sharing (SMB), expose this folder via HTTP, and make it available via a resolvable URL. If the Persistent Storage is located on the same server, you can create another web site in IIS that points to the physical location of the Persistent Storage folder (described in the [Post-Installation](#) section). You will also need to add the corresponding record to your DNS server.

## Temporary Storage

This storage is used for uploading large files. You should allocate no less than 5 GB for the temporary storage folder and locate the folder on the same server where BSNEE services will be installed.

If you want to configure BSNEE to use persistent storage located on the networked shared folder (NAS), complete the following steps before installing BSNEE:

1. Configure network sharing for BSNEE persistent storage so that it is accessible for BSNEE services.
2. Configure HTTP access for BSNEE persistent storage.

**Note:** *To learn more about configuring network sharing and HTTP access to your persistent storage folders, please refer to your server/NAS documentation.*

Your networked shared folder should have the following permissions (this example uses Windows Server 2008 R2 as the NAS):

### Security Permissions at the File System Level

- DOMAIN\INSTALLATION\_USER (Full Access): “DOMAIN” refers to a domain that the current server is a member of, and “INSTALLATION\_USER” refers to the domain user that you use to install the BSNEE services server.
- DOMAIN\BSNEE\_SERVER (Full Access): This is required for accessing the BSNEE services for file sharing.

- **(optional) AUTHENTICATED USERS (Read):** This is required for the IIS site on the shared server.

### **Security Permissions at the Network Share Level**

- **DOMAIN\INSTALLATION\_USER (Full Access):** "DOMAIN" refers to a domain that the current server is a member of, and "INSTALLATION\_USER" refers to the domain user that you use to install the BSNEE services server.
- **DOMAIN\BSNEE\_SERVER (Full Access):** "BSNEE\_SERVER" refers to the computer object in domain. This is required for accessing the BSNEE servers for file sharing.

**Note:** *Note that the DOMAIN\INSTALLATION\_USER permissions are only temporary requirements for installation, and can be removed after the installation process is completed.*

If you plan to locate persistent storage on the same server used for BSNEE services, you need to manually set up an additional IIS site. You can do this before or after installation, but we recommend completing this task after installation because the installer will create all required folders. See the [Post-Installation](#) steps at the end of this guide for details.

We recommend you do the following during installation:

1. Install BSNEE as a domain user with administrative permissions.
2. Use the “sysadmin” role for MS SQL Server login if you are using Windows authentication for MS SQL Server during installation.
3. Run BSNEE application pools as the Network Service system user.

### **MIME Types for IIS**

When IIS is used as a content server, only registered file formats can pass from the BSNEE Persistent Storage site to the web. By default, the IIS web server may not recognize certain media formats. You may also wish to use some custom extensions. Make sure to register the following special MIME types (in addition to any other desired MIME types) with the persistent storage web server.

**Note:** *Make sure to register special MIME types with the storage web site only. Registering MIME types with other BSNEE sites on the same server (or on the server level itself) may cause conflicts.*

- `.bpf` – text/plain
- `.bsfw` – application/x-file
- `.bsp` – text/plain

- `.brs` – text/plain
- `.vob` – video/mpeg
- `.rok` – application/octet-stream
- `.flac` – audio/flac
- `.bvw` – text/plain

These additional MIME types are required for Windows Server 2008 / 2008 R2 (IIS 7 or 7.5):

- `.mp4` – video/mpeg
- `.ts` – video/mpeg
- `.m2ts` – video/mpeg
- `.ogg` – audio/ogg
- `.woff` – font/x-woff
- `.svg` – image/svg+xml

Once all MIME types are registered and all other preliminary steps are complete, you're ready to install BSNEE.

## Active Directory

**Important:** *Complete this step only if you plan to integrate BSNEE with your LDAP system.*

In order to access the BSNEE Administrator UI after installation, you will need to register two administrator roles with your Active Directory system.

BSNEE parses security group names to retrieve the BSNEE Account and BSNEE Role names. Security group names must be formatted in accordance with the Group Name Template parameter (**BSNEE-`{AccountName}`-`{RoleName}`** by default) set during installation in the [LDAP Server Configuration](#) step. You will first need to create two security groups in Active Directory and then add two users to them:

- `{AccountName}=admin, {RoleName}=System Administrators`: This group corresponds to the System Administrator Role on the "admin" account in BSNEE.  
Example: **BSNEE-admin-System Administrators**
- `{AccountName}=admin, {RoleName}=Order Administrators`: This group corresponds to the Order Administrator Role on the "admin" Account in BSNEE.  
Example: **BSNEE-admin-Order Administrators**

BSNEE has two sets of predefined system Roles:

- Administrative Roles (on 'admin' Account):



- System Administrators
- Order Administrators
- User Roles:
  - Administrators
  - General Managers
  - Network Managers
  - Creators
  - Publishers
  - Viewers

To add more users to BSNEE, you will need to create at least one additional BSNEE Account (being logged into BSNEE as a member of the “admin” Account) and one security group in the Active Directory for Administrators Role. One BSNEE Account can then be used for multiple BSNEE users assigned to different BSNEE Roles on that Account.

BSNEE will automatically import Active Directory users to the BSNEE database when those users first login, and it will continue updating user profiles with changes as they occur on the LDAP server.

### **Additional Information**

- BSNEE does not support nested security groups.
- A single Active Directory user can be a member of only one Role on one Account, but a user may have different Roles on different Accounts.

# INSTALLATION

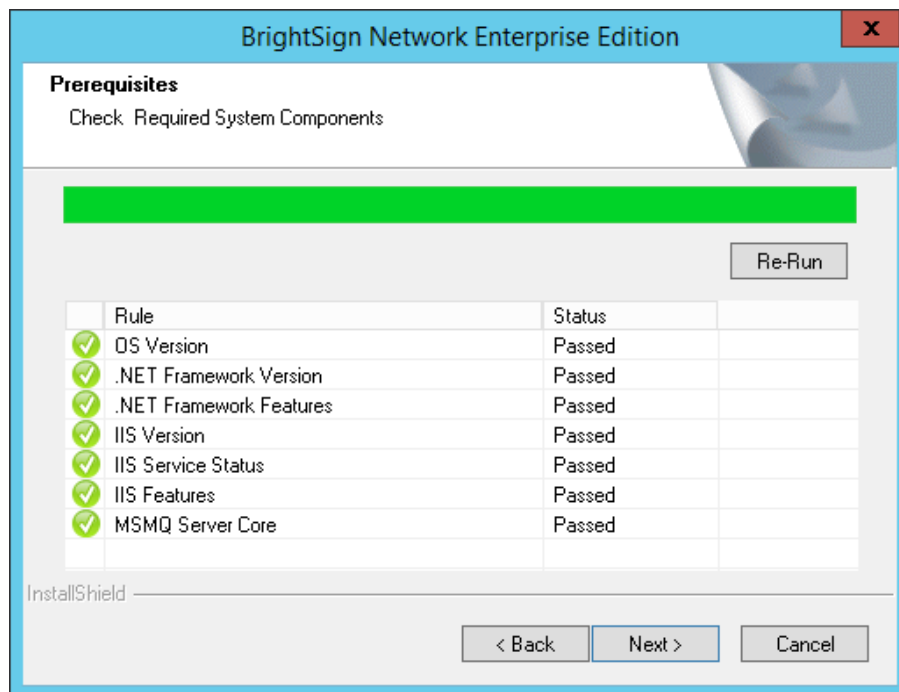
Double-click the Install file to begin. Click **Next** to proceed to the License Agreement page. Read and accept the terms, and click **Next** again.

## 1. Prerequisites

The installer will begin a system check to ensure that the minimum hardware and software requirements have been met. If an error occurs during the checking process, you can click the **Re-Run** button to perform the check again.

The installer will check the following conditions:

- ✓ Operating System version (OS)
- ✓ .NET Framework version (4.0 or later)
- ✓ .NET Framework features
- ✓ WMI services activity status
- ✓ IIS version (7.0 or later)
- ✓ IIS services status
- ✓ IIS components set up status (40 items total)
- ✓ Microsoft Messages Queue set up status



Once the system check is finished, the installer will display a full list of components that are installed or that need to be installed. If an item does not pass the system check (as indicated by the *Failed* status), you can click the item to learn the reason for the failure and instructions for fixing the problem. After installing the missing component(s), click **Re-Run** to check the installation again.

Once all components meet the requirements for installation, you will be able to click the **Next** button to continue.

## 2. Database Connection

Select a database server for BSNEE. You can choose from a list of databases available on the network and PC or create a new database.

Click **Browse** to view a drop-down list of database servers and select the desired server. Alternatively, you can specify the server by typing the name in the text field. Note that an existing database catalog must be set to use the same [Authentication Provider](#) as BSNEE.

Under **Connect Using**, select either the Windows or SQL Server authentication method. You must use a **Login ID** and **Password** if you use SQL Server authentication.

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**Database Server**  
Select a database server and authentication method.

Database server that you are installing to:  
mssqlserver,1433

Optional port number is comma separated. (Ex.: mysqlserver,1433)

Connect using:  
 Windows authentication  
 SQL Server authentication using the Login ID and password below

Login ID:   
Password:

Create New Database  
Name of database catalog:  
BSNEE

InstallShield

< Back 

BSNEE Installation Guide

To use a new database catalog, check the **Create New Database** box. In the **Name of database catalog** field, enter a name for the new database. This name must be different from any other currently available database. Click **Browse** to view available databases and ensure that the new database is unique.

After filling out all the required fields, click the **Next** button to verify the connection. If the verification process fails, a dialog box will appear explaining the error that must be corrected before you can proceed.

### **BSNEE SQL Permissions**

The BSNEE Installer requires elevated permissions on the SQL server to perform the installation:

1. For creating a new database during BSNEE installation:
  - a. The **sysadmin** server role
2. For connecting to an existing database (this option works only if the BSNEE database is in a valid state):
  - a. The **securityadmin** server role
  - b. The **db\_datareader**, **db\_datawriter**, and **db\_ddladmin** role memberships for the BSNEE database

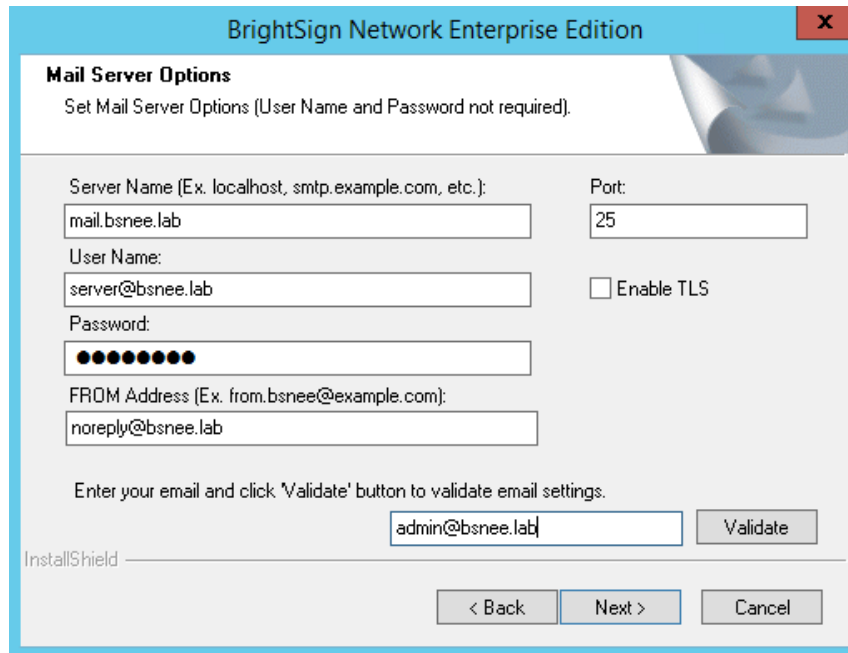
The above permissions are only temporary requirements for installation, and can be removed after the installation process is completed. The BSNEE Installer will create a new SQL user with the SQL Server authentication mode. This user has a limited set of permissions for the BSNEE database:

- CONNECT
- CREATE
- UPDATE
- INSERT
- DELETE
- EXECUTE (for two scalar functions created during installation)

### **3. Mail Server Parameters**

Set the parameters on this page to allow BSNEE to send notifications to account holders. The **Server Name**, **Port**, and **FROM Address** fields are required. However, the **User Name** and **Password** fields may be left blank if the server does not require authentication via Login ID

and password. The TLS parameter is disabled by default, but you may enable it by clicking the **Enable TLS** box.



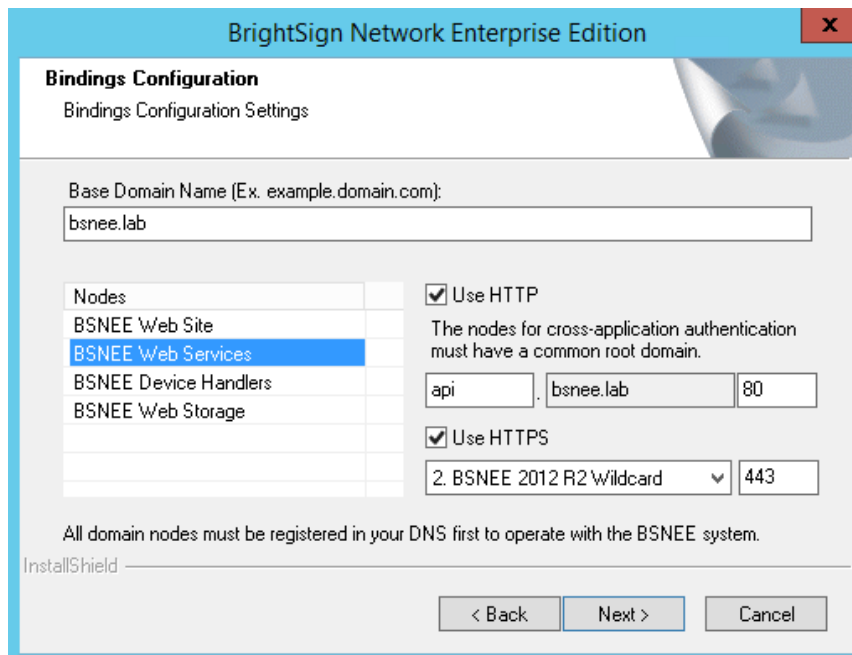
You can validate your mail server settings by entering a target Email address and clicking **Validate**. The installer will send a validation message to the Email address. If validation is successful, the installer will display an informational message. If validation is unsuccessful, the installer will display a generic error message.

#### 4. Bindings Configuration

Enter the common domain name in the **Base Domain Name** text field. The domain names for BSNEE nodes will be automatically generated.

Check the **Use HTTP** and/or **Use HTTPS** boxes if you would like to enable these protocols for the Web Site, Web Services, and Device Handlers nodes.

BSNEE requires an X.509 certificate and HTTPS binding for the Web Services node. This certificate is required by the WS-\* (WS-Security) specifications for message-level encryption in WCF services, as well as transport-level encryption with the WS-I Basic Profile 1.1. Please install a valid certificate and select it for the Web Services node. Make sure the "IIS\_IUSRS" local security group has read access to the certificate's private key.



**Note:** For testing purposes, you may use a self-signed certificate issued for the Web Services binding.

If you have not registered all domains in the DNS, clicking the **Next** button will prompt a standard notification regarding registering all domains in the DNS. You may complete this process after installation, but BSNEE will not function properly until all strings are registered in the DNS.

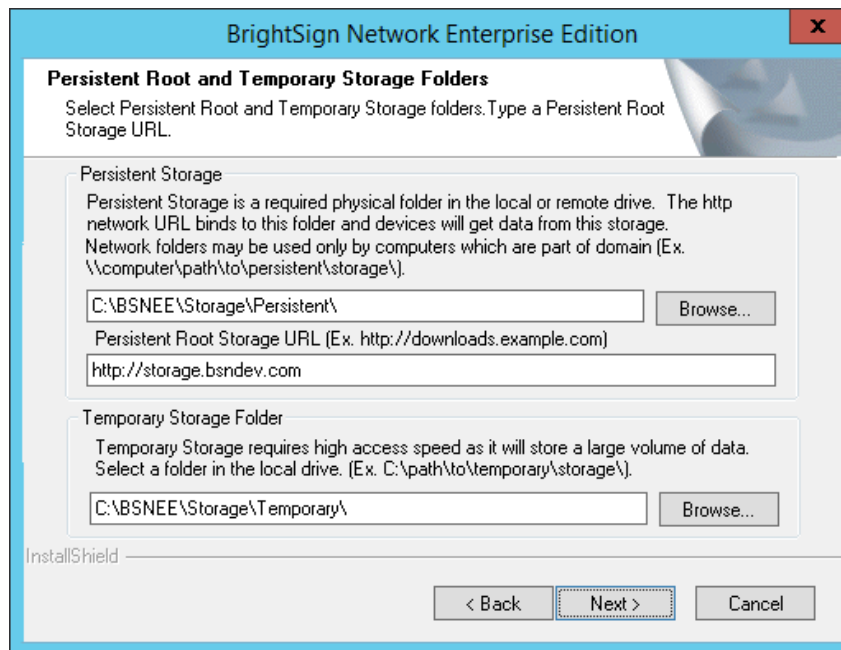
## 5. Storage Setup

Devices use a URL to connect to *persistent storage* on a hard drive and download files. *Temporary storage* is used by the server to upload large files.

### Persistent Storage

First, specify a directory on the hard drive or UNC path that will serve as the constant physical storage space. Click the **Browse** button under **Persistent Storage** and navigate to the desired folder on the hard drive or network.

Once you have selected a storage destination, specify a URL that devices will use to connect to the Persistent Storage HTTP server. Make sure to specify this URL while configuring the Persistent Storage HTTP server as part of the [Post-Installation](#) steps. Enter this URL in the **Persistent Root Storage** field.

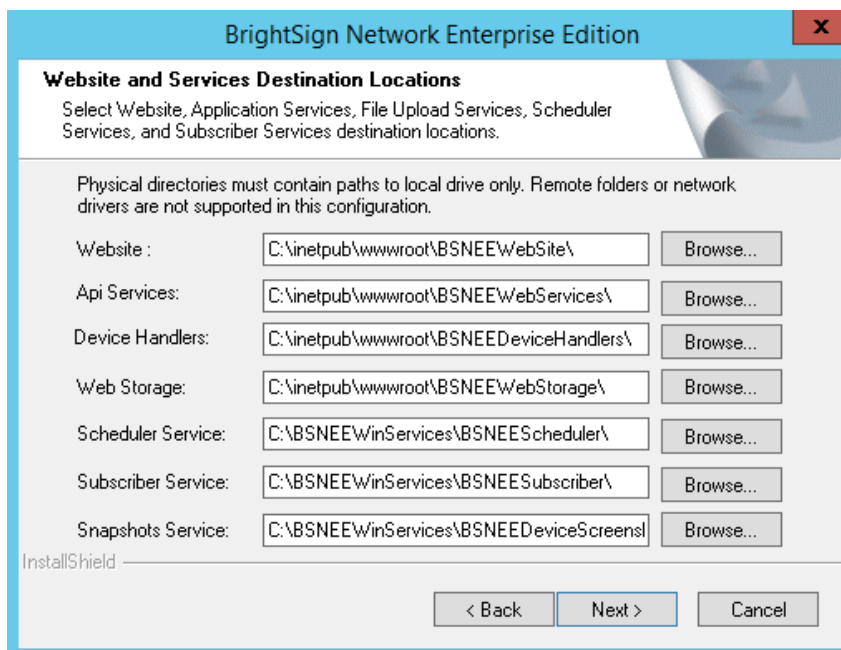


## Temporary Storage

Click the **Browse** button in the **Temporary Storage Folder** section and navigate to the desired folder on the local hard drive. Make sure to allocate no less than 5GB for this folder.

## 6. Services Directories

Specify installation folders for each domain. Click the **Browse** button for each domain to select the desired folder.



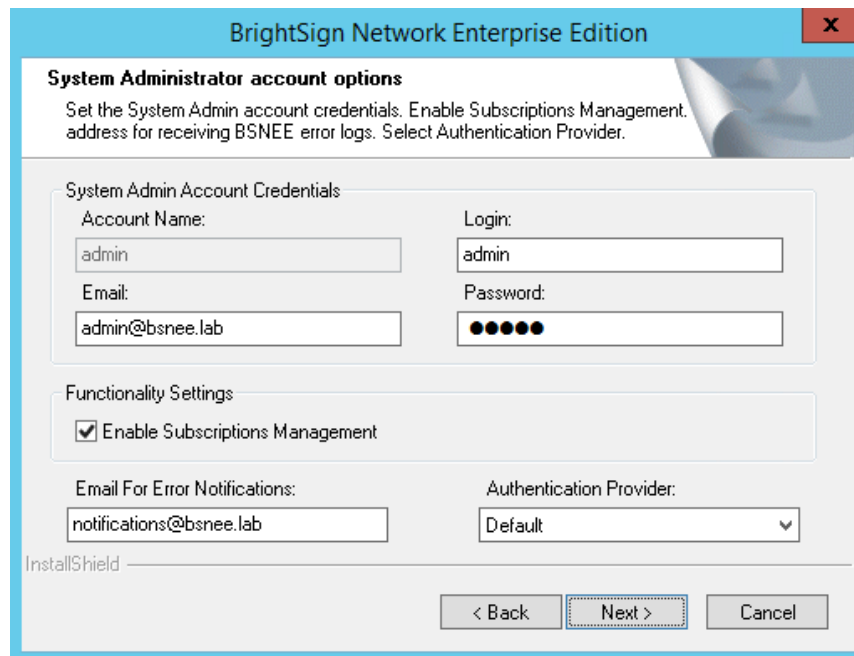
## 7. System Administrator Account

Specify a *Login*, *Email* address, and *Password* for the System Administrator account. This account will be used for administering BSNEE once the installation is complete.

Check the **Enable Subscriptions Management** box to enable the subscription management systems and UI in your BSNEE instance. Leaving this box unchecked will give all devices permanent Grace subscriptions and disable all scheduler and UI functions associated with subscriptions.

In the **Email for the Error Notifications** field, specify the email address that will receive error logs from the system.

All fields on this page are required unless you specify the **Authentication Provider** as **LDAP**. If you do, areas that are not applicable for LDAP mode will be grayed out. None of the fields in this window will be applicable if you selected an existing database during the [Database Connection](#) step.



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**System Administrator account options**

Set the System Admin account credentials. Enable Subscriptions Management. address for receiving BSNEE error logs. Select Authentication Provider.

System Admin Account Credentials

Account Name:  Login:

Email:  Password:

Functionality Settings

Enable Subscriptions Management

Email For Error Notifications:  Authentication Provider:

InstallShield

< Back **Next >** Cancel

### LDAP

If you need to configure the BSNEE account structure to use the Lightweight Directory Access Protocol (LDAP), select **LDAP** under **Authentication Provider**. Clicking **Next** will provide you



with additional parameters for LDAP installation. Please see **Step 7a. LDAP Server Configuration** below for more details.

If you select **LDAP**, make sure that the *Email* address values in this window are the same as the LDAP attribute you use for **RDN** in the following **LDAP Settings** window. Note that in most cases the attribute will not be in the form of an Email address.

## 7a. LDAP Server Configuration

If you selected LDAP as the **Authentication Provider** in the previous step, consult the below information to learn more about setting parameters in the **LDAP Settings** window. If you did not select LDAP as the **Authentication Provider**, move on to Step 8.

**Note:** *Unless otherwise indicated as “optional”, each field below must be specified.*

### Server Configuration

- A. **Server Name:** A common format IP address or domain name of the target LDAP server or gateway. You can also specify a port number after the colon (“:”) delimiter. If you do not specify a port number, port 389 will be used by default.
- B. **User Name (optional):** The username/login of a Windows Account that has read access to the directory. The credentials can be entered either in common format (e.g. “jdoe”) or in LDAP Data Interchange Format (LDIF) (e.g. “uid=jdoe, ou=people, dc=example, dc=org”).

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### LDAP Settings

Set LDAP Server Configuration

Server Configuration

Server Name:  User Name:

Auth. Types:  Password:

Users Configuration

Base DN:  Filter:  RDN:

Groups Configuration

Base DN:  Filter:  RDN:

Users Membership:  Groups Membership:

Groups Name Template (Ex: BSNEE-{AccountName}-{RoleName})

InstallShield

Enable VLV  Enable Sort

- C. **Password (optional)**: The password of the Windows Account specified in the **User Name** field above. This field is only required if a **User Name** is specified.
- D. **Auth Types**: The Authentication Type used in `System.DirectoryServices`. See [this page](#) for more information about some of the Authentication Types.
  - a. Basic
  - b. Anonymous
  - c. Validation
  - d. Read-Only
  - e. Fast Bind
  - f. Secure
  - g. Secure & Read-Only
  - h. Secure & Fast Bind
  - i. Secure & Sealing
  - j. Secure & Signing
  - k. SSL/TLS
  - l. SSL & Anonymous

## User Configuration

- A. **Base DN**: The User Base Distinguished Name. Use this field to specify the LDAP directory under which the users are located. The search will be performed on all levels under the specified directory. However, for performance reasons, we recommend specifying this directory as close to the users directory as possible.
- B. **Filter**: The Users Search Filter that will be used to find the user entries in the directory specified above. You can leave the field as the default `"(objectClass=*)"`, but we recommend creating a more specific filter to improve performance. You can find descriptions and examples of Search Filter syntax at the [Windows Dev Center](#) and the [LEX online manual](#).
- C. **RDN**: The User Relative Distinguished Name. This LDAP attribute uniquely identifies users in a directory and is used for authentication in the BSNEE system. This attribute corresponds to the **Login** field on the BSNEE Sign In page. By default, this field corresponds to the Windows User Login in Active Directory. You could also use the "userPrincipalName" (e.g. "john.doe@domain.com").

## Groups Configuration

- A. **Base DN:** The Groups Base Distinguished Name. Use this field to specify the LDAP directory under which the groups are located. The search will be performed on all levels under the specified directory. However, for performance reasons, we recommend specifying this directory as close to the groups directory as possible.
- B. **Filter:** The Groups Search Filter that will be used to find the group entries in the directory specified above. You can leave the field as the default “(objectClass=\*)”, but we recommend creating a more specific filter to improve performance. You can find descriptions and examples of Search Filter syntax at the [Windows Dev Center](#) and the [LEX online manual](#).
- C. **RDN:** The Group Relative Distinguished Name. This LDAP attribute uniquely identifies groups in a directory. Make sure the value of this attribute corresponds to the format specified in the **Group Names Template** described below. The format should contain the BSNEE Account Name and BSNEE Role Name, which are used in the authentication procedure.
- D. **Users Membership(optional):** The Users Membership Attribute Name. This LDAP attribute contains a list of groups of which the current user is a member. Most LDAP servers store the membership attribute with both the user and group attributes, but there are a few exceptions: We recommend setting this value if your LDAP server supports cross storage of membership attributes because searching a user attribute for its groups results in better performance than searching groups for user membership.
- E. **Groups Membership:** The Groups Membership Attribute Name. This LDAP attribute contains a list of members (users) for a group. This attribute should be present on all LDAP servers
- F. **Groups Name Template:** Use this field to specify how the name format of your LDAP groups will correspond to the names of BSNEE roles. This field should contain “{AccountName}” and “{RoleName}” placeholders, which can be placed anywhere in the string (e.g. “BSNEE-{AccountName}-{RoleName}”).

## Other

- A. **Enable VLV:** Check this box if you would like BSNEE to use the Virtual List View (VLV) extension. Enable this feature only if your LDAP server supports VLV. Most LDAP servers now support VLV, but some might require the administrator to actively enable this feature or install an add-on.

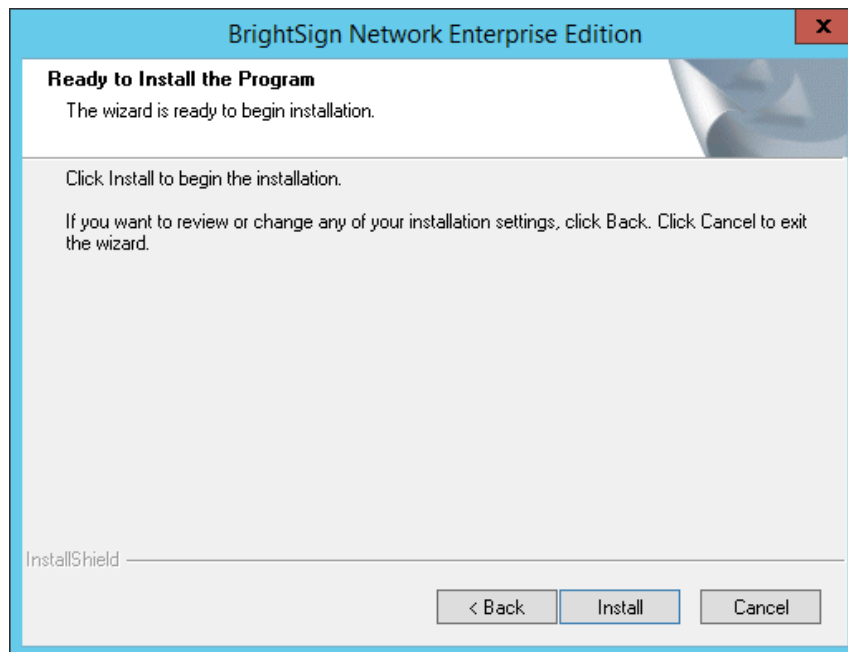
- B. **Enable Sort:** Check this box if you would like BSNEE to use the Server Side Properties Sort extension. You must enable Server Side Properties Sort in order to use VLV, but you can also use this feature without enabling VLV.

### Additional Information

You can make LDAP traffic confidential and secure using the Secure Sockets Layer (SSL) and Transport Layer Security (TLS) technologies. You can enable LDAP over SSL (LDAPS) support for BSNEE by selecting “SSL/TLS” in the **Auth. Types** dropdown menu in the **LDAP Settings** window. See [this page](#) for more information.

## 8. Installation

If all parameters have been specified correctly, the final installation page will appear. Click **Install** to begin the installation process.



# POST-INSTALLATION

## Reconfiguring Certificates for “ApplicationService.svc”

You can follow these steps to reconfigure the certificate for the BSN API:

1. Open the configuration file of the application services for editing. By default, this file is located at  
C:\inetpub\wwwroot\BSNEEWebServices\ApplicationService\v201407\Web.config.
2. Locate the following section in the file: configuration/system.serviceModel/behaviors/serviceBehaviors/behavior[@name='BNM.WebServices.ApplicationServiceBehavior']/serviceCredentials/serviceCertificate
3. Specify the values of the certificate for the following attributes:
  - a. `storeName`: This contains the value `My` by default. You can change the value to another [valid certificate store](#) if needed.
  - b. `findValue`: This contains the Subject Distinguished Name of the certificate by default. You can change the search criteria to another [valid value](#) if needed. You can browse a list of certificates by navigating to **Control Panel > Administrative Tools > Internet Information Services (IIS) Management > Server Certificates**. Double-clicking on a certificate allows you to view it in more detail.

**Example:** `<serviceCertificate storeLocation="LocalMachine" storeName="My" x509FindType="FindBySubjectDistinguishedName" findValue="E=system@example.com CN=*.example.com C=US" />`

4. Set a Service Identity that matches the CN of the certificate. Locate the following section and change the `value` attribute:  
configuration/system.serviceModel/services/service[@name="BSN.WebServices.ApplicationService.v201407.ApplicationService"]/endpoint[binding="wsHttpBinding"]/identity/dns

## Configuring Persistent Root and Temporary Storage

To configure the Persistent Storage for BSNEE, complete the following steps:

1. Set up an additional IIS site (if you don't already have a storage site) with the following parameters:
  - a. A URL specified for persistent storage
  - b. A working directory pointed at the root of the persistent storage folder (consult the IIS documentation for details)

- c. Changed physical-path credentials (this applies only for persistent storage located on another server):
  - i. Click **Connect as...** on the **Add Web Site** dialog.
  - ii. Choose the **Specific user** option and specify the credentials of the [domain user](#) who has full access to the specified physical path of the site.

## Verifying a Successful Installation

Once the installation is complete, you need to create a new BrightSign Network account. You can ensure that BSNEE is installed correctly by adding files to your BSN library using a new account:

1. In a web browser, navigate to the login page using the URL specified during [Step 4](#) of the installation process.
2. Log in using the System Admin credentials you specified in [Step 7](#) of the installation process.
3. Create a new BrightSign Network account. You must provide an **Account Name** and **Account Email**.
  - a. **Non-LDAP mode:** The password for the account will be generated automatically.
  - b. **LDAP mode:** The password for the account will be the same as the LDAP (Active Directory) password for the specified user.
4. Add files to your library using one of the following methods:
  - a. Log in to the BrightSign Network WebUI using your newly created account. Upload one or more image/video/audio files to the Library.
  - b. Open BrightAuthor and log in to the BrightSign Network using your newly created account. Create or open a presentation that has one or more media file. Click the **Upload to Network** button located on the upper-right portion of the screen.
5. In the WebUI, create setup files in the **Device Setup** tab and apply them to a player. Make sure the player connects to your BSNEE implementation and is visible in the **Current Usage** and **Groups** tabs.
6. Publish one or more presentations to the Group containing the player.
7. Ensure the player downloads and plays the presentation successfully.

## Customizing Notification Emails

Once BSNEE is installed, you can customize the notification Emails sent to account administrators and users. You can find Email templates in two locations (note that these are the default locations):

1. **Website:** C:\inetpub\wwwroot\BSNEEWebSite\App\_Data\MailTemplates\en-US

## 2. **Scheduler service:** C:\BSNEEWinServices\BSNEEScheduler

- SC3
- SC4
- SC6
- SC7

The text of the *.xml* template files can be modified as needed, but variable names and tags within the template should not be changed. Also, removing or renaming any template files may cause the system to behave unexpectedly.

# TROUBLESHOOTING

## Devices Not Downloading Presentations with Special Characters

It is possible to upload presentations that contain certain special characters (e.g. "+"), but the Storage server will return a 404 error to devices that attempt to download the presentation.

Use one of the following workarounds to fix this issue:

1. Add the following parameter to the root Web.config file of the BSNEE Storage site, which is hosted on IIS:

```
<system.webServer>
  <security>
    <requestFiltering allowDoubleEscaping="true"/>
  </security>
</system.webServer>
```

2. Use the IIS Manager UI.
  - a. Select the storage site.
  - b. Double-click **Request Filtering** in the IIS group.
  - c. Click the **Edit Feature Settings...** link on the right pane.
  - d. Check **Allow double escaping** and click **OK**.

3. Enter and run the following in the command line:

```
%windir%\system32\inetsrv\appcmd set config "BSNEEStorage" -
section:system.webServer/security/requestfiltering
-allowDoubleEscaping:true
```

**Note:** *Make sure to replace "BSNEEStorage" with the name of your Storage site.*