



BlackBerry AtHoc

Installation and Configuration Guide

7.9

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Getting started

BlackBerry AtHoc Networked Crisis Communication is a commercial off-the-shelf (COTS) solution that turns an existing IP network into a comprehensive emergency mass notification system. It is an easily customizable system, which is why military, government, and commercial organizations use BlackBerry AtHoc to provide physical security, force protection, and personnel accountability for their workforce.

BlackBerry AtHoc customers are able to effectively leverage notifications to ensure that critical information reaches the right audiences in a timely manner.

This guide describes the configuration options for the BlackBerry AtHoc product, specifies the installation requirements, and details the installation procedure. This information is provided in the following chapters:

- System components and configuration
- BlackBerry AtHoc server requirements
- Install BlackBerry AtHoc
- Upgrade BlackBerry AtHoc
- Post installation or upgrade configuration
- Advanced server configuration
- Verify BlackBerry AtHoc is operational

How to use this guide

Read the overview of BlackBerry AtHoc components and configuration in [Main modules, BlackBerry AtHoc physical configuration](#), and [Support for products, processes, procedures, and protocols](#).

Verify that your database and application servers meet the platform requirements specified in the *BlackBerry AtHoc Capacity Planning Guidelines*.

- To install a new instance, follow the instructions in [Install BlackBerry AtHoc](#) and [Postinstallation or upgrade configuration](#).
- To upgrading an existing installation, follow the instructions in [Upgrade BlackBerry AtHoc](#) and [Postinstallation or upgrade configuration](#).

For more information about advanced topics, including migrating a pre-installed server, configuring IIS processor affinity, increasing the maximum file upload size, and other topics, see [Advanced server configuration](#).

System overview

BlackBerry AtHoc Networked Crisis Communication is a flexible, commercial software solution for enterprise-class, subscription-based mass communication. The BlackBerry AtHoc system consists of the following basic elements that are illustrated in Figure 1, BlackBerry AtHoc System Elements.

- AtHoc server
- Operators (administrators and publishers)
- AtHoc desktop app

AtHoc server

The AtHoc server does the following:

- Provides central application functionality, a Web-based user interface for user subscription, delivery preferences, and system administration.


- Enables message routing to targeted users through its delivery engine depending on user-delivery settings and preferences. The Store-and-Forward capability saves alerts for desktop delivery when a user is offline and delivers them once a user's presence is detected, provided the alert is still alive.
- Schedules recurring alerts for the purposes of performing tests or issuing repeated reminder messages.
- Enables target alerts across multiple systems through cross-systems setup. Alert cascading is also available.
- Provides response tracking, reporting, and archiving features. Extensive audit reports detail operator actions within the system and can help pinpoint the sources of security violations. Real-time aggregated alert delivery and response summary reports are available in a graphical view (bar, graph, or pie charts).
- Stores alerts history for each user automatically.
- Includes APIs and integration modules to alert delivery and dissemination systems such as Telephony Alerting Systems (TAS), SMS aggregators, and wide area speaker array (Giant Voice) systems.
- Integrates with external user directories such as LDAP or Active Directory for user synchronization and import, and end-user authentication.
- Enables windows authentication for BlackBerry AtHoc by adding a new Logon in SQL Server for the domain account and makes the new Logon the owner of all AtHoc databases.
- Provides APIs for integration with external systems and an Agent Platform that enables monitoring of external information sources and generating alerts according to subscription rules.

Operators (administrators and publishers)

Operators serve the following functions in BlackBerry AtHoc:

- Operators are users who can manage the BlackBerry AtHoc system, initiate alerts to be disseminated, and track and report alert publishing information.
- Operators can have multiple roles depending on their assigned tasks and responsibilities. For example, they can be publishers or administrators.
- Operators use a rich web-based interface to perform management and administration activities as defined by their permissions.

AtHoc desktop app

The AtHoc Desktop App appears as a small purple globe  in the end user's system tray. The AtHoc Desktop App serves the following functions in the BlackBerry AtHoc system:

- When new alert content is published, the AtHoc Desktop App displays an audio/visual notification as a desktop popup.
- Users can dismiss the desktop popup, choose a response option (when sent), and click a link to obtain additional information about the emergency condition.
- Additional delivery devices include: web delivery, email, mobile devices, phones, pagers, TTY/TDD devices, SMS, Giant voice, LMR, and instant messaging.
- The BlackBerry AtHoc Desktop App can be installed on a Windows or macOS client.

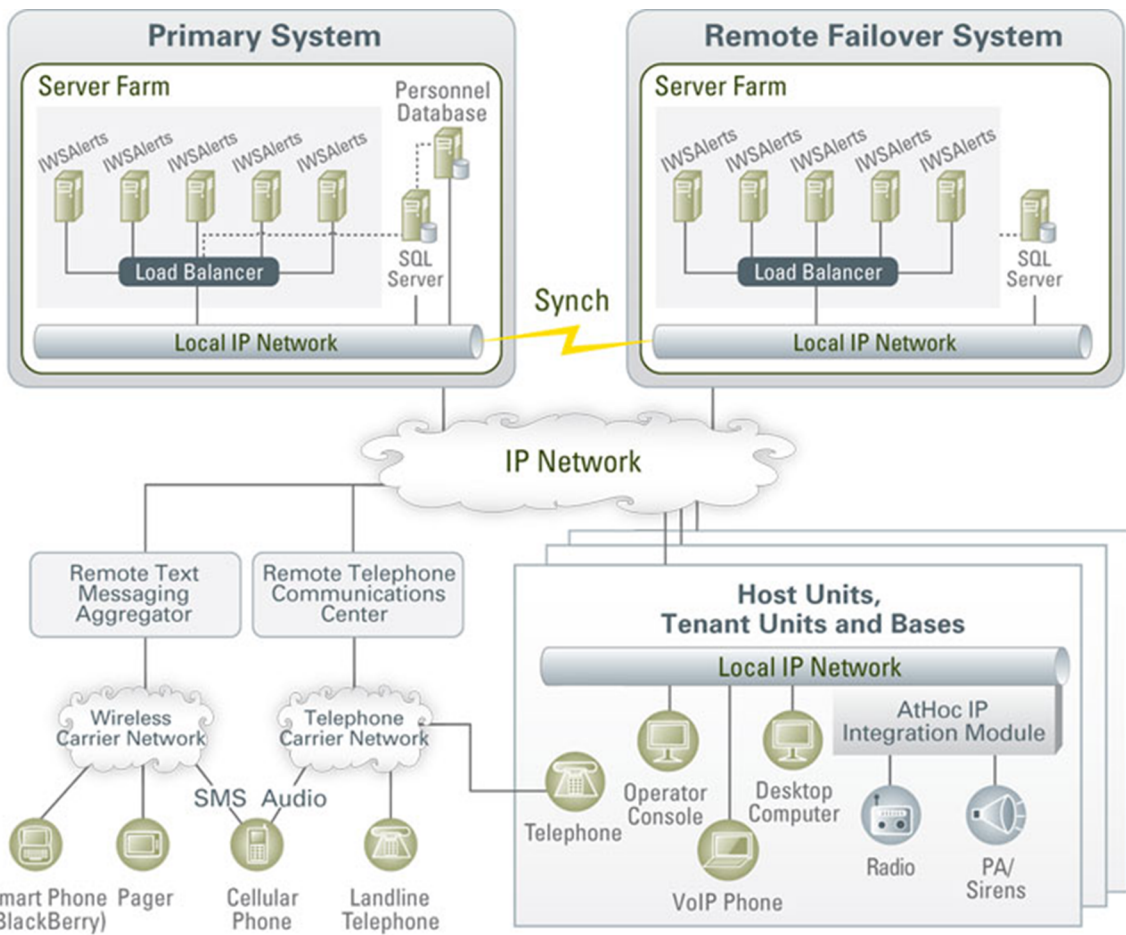


Figure 1: BlackBerry AtHoc system elements

Note: The available BlackBerry AtHoc features and functionality depend on the licensed BlackBerry AtHoc edition. If you have questions, contact your BlackBerry AtHoc account manager.

System components and configuration

Main modules

The BlackBerry AtHoc platform is composed of two types of server components:

- *Database server* The database server is based on Microsoft SQL Server.
- *Application server (one or more servers)*: The application server acts as a web-based application server that provides all user-related interactions. The application server also runs the BlackBerry AtHoc services, which are responsible for scheduling events, providing notification delivery, and running background batch processes used for integration with external applications and content sources.

The database and application servers interact with the AtHoc Desktop App, Web browsers, and various delivery gateways such as telephony and SMS. Additionally, the servers provide integration points with enterprise application suites, such as LDAP, Active Directory, HR, and your organization's portals.

In cases where redundancy is needed, a BlackBerry AtHoc disaster recovery solution can be implemented so that notification capabilities can be transferred to an alternate site if the primary BlackBerry AtHoc platform becomes unreachable.

BlackBerry AtHoc physical configuration

Although all server components can be installed on the same server, BlackBerry AtHoc recommends installing each server on different servers. More specifically, the database server is located on one server, and each application server is installed on another server.

Database server

The database server can be installed in a clustered database configuration, providing hot failover between the database servers.

Application servers

It is easy and safe to add and remove machines to and from the web farm without affecting the end-user experience.

The web farm provides HTTP/HTTPS service to the web browsers and the AtHoc Desktop App.

IWS Services is a website that runs web applications under IIS. The services schedule jobs (such as processing alerts and importing users), poll PSS, and track and report alert responses. Each application runs in its own application pool and the load can be configured on each application server, based on the anticipated load.

You can set up a disaster recovery site in an active-passive configuration to support continuous operation in cases of a primary site failure.

Application servers and common system resources

The application servers use common system resources that include the following:

- Database server: Application servers must be able to connect to the database server. The connection string is stored in the registry of each application server.
- Microsoft Message Queuing (MSMQ): BlackBerry AtHoc uses MSMQ to queue jobs and events. MSMQ is configured on each application server.

The following graphic illustrates the BlackBerry AtHoc physical configuration in a typical redundant setup for a single site.

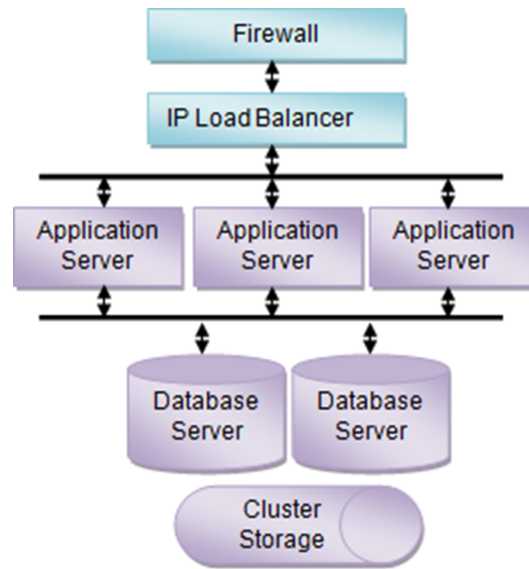


Figure 2: BlackBerry AtHoc physical configuration in a redundant setup (single site)

Support for products, processes, procedures, and protocols

The following third-party components are used to support the BlackBerry AtHoc implementation:

- Backups
- System maintenance and operation monitoring
- Connectivity
- Delivery gateways

Backups

Backups refer to the following:

- Database backup products and processes
- Application server backup products and processes

System maintenance and operation monitoring

System operation monitoring systems include examples such as the following:

- OpenView
- Tivoli

Connectivity

Connectivity refers to the following items:

- **Local connectivity:** Local connectivity provides the connection between the local computers that BlackBerry AtHoc is installed on. Specifically, it is connectivity between the application server (or servers) and the database machine (or machines).
- **Serving HTTP or HTTPS:** The application servers provide HTTP or HTTPS service to Web browsers and the AtHoc Desktop App. For HTTPS configuration, a Web PKI certificate must be installed on the Web servers.

- **Accessing external HTTP or HTTPS sources:** External HTTP or HTTPS sources are used for integration with external applications and data sources used by the application server IWS Services. This connectivity can be configured through a proxy (an authenticating proxy is not supported). If an external telephony calling service is used, Web connectivity from the application servers to the calling service must be established.
- **A firewall:** To protect the BlackBerry AtHoc platform.

IPv6 support

The BlackBerry AtHoc Networked Crisis Communication suite is compatible with IPv6 networks. Both servers and clients can operate in an IPv6-only infrastructure as well as in a hybrid IPv4/IPv6 environment.

Delivery gateway

- AtHoc Cloud Delivery Service East and AtHoc Cloud Delivery Service West are available out of the box and can deliver alerts through telephony, SMS, and email.
- OEM Cloud Delivery Service (East) and OEM Cloud Delivery Service (West) are available out of the box and can deliver alerts through email.

BlackBerry AtHoc account requirements

You can use a non-system account for the AtHoc application pool identities.

Required group policies

The following account policies and their values are the defaults on Windows Server before any changes due to Security Technical Implementation Guide (STIG) or Group Policy Object (GPO). Any service account that is used to replace the AtHoc application pool identities or IIS_IUSRS must be a user or group member of the policies as shown in the table.

Policy	Values
Adjust memory quotas for a process	AtHoc application pools
Create global objects	SERVICE
Generate security audits	AtHoc application pools
Impersonate a client after authentication	IIS_IUSRS SERVICE
Log on as a service	AtHoc application pools SERVICE
Replace a process level token	AtHoc application pools

Install BlackBerry AtHoc

Requirements: Application server installation

See the *BlackBerry AtHoc Capacity Planning Guidelines* for the hardware and software requirements for installing and upgrading BlackBerry AtHoc.

The following components must be preinstalled:

- Valid certificate if using SSL
- [Windows components](#)
- [Web server role services](#)
- [Installation permissions](#)

Windows components

Component	Notes
Operating system	Windows Server 2016 (64-bit) or Windows Server 2012 (64-bit)
Windows PowerShell	Windows PowerShell 5.1 Note: Windows Server 2016 includes Windows PowerShell 5.1 by default. If you are using Windows Server 2012 R2, upgrade PowerShell to version 5.1.
Web Server (IIS) Role	—
Message Queuing Feature	This is also called MSMQ
.Net Framework v. 4.7	If an earlier version is installed, upgrade to version 4.7. If a later version is installed, uninstall it and then install version 4.7. For Windows Server 2012R2 (64 bit), install the HTTP Activation feature under both .NET Framework 3.5 Features and .NET Framework 4.5 Features. Note: Although the .Net Framework version is 4.7, the feature shows as .NET Framework 4.5 Features in Windows Server 2012
dotnet-hosting-2.1.7-win	If you have a version lower than 2.1.7, and you want new security fixes, you can install version 3.1.22 which has been tested and certified.
ASP.NET 2.0 AJAX Extensions 1.0	—
ASP.NET MVC 4.0	—

Component	Notes
SQL Server BCP Utility	<p>This is a command-line utility used to import geographic shape data into the NGGEO database. It is used during database upgrade only.</p> <p>Note: If BCP is not available, the installation will continue but NGGEO will be empty, and you will need to run the data import manually. See Postinstallation or upgrade configuration for details.</p>
Required Microsoft SQL Server System CLR Types: <ul style="list-style-type: none"> • "Microsoft System CLR Types for Microsoft SQL Server 2012" from the Microsoft SQL Server 2012 Feature Pack • "Microsoft System CLR Types for Microsoft SQL Server 2014" from Microsoft SQL Server 2014 Feature Pack • "Microsoft System CLR Types for Microsoft SQL Server 2016" from the Microsoft SQL Server 2016 Feature Pack 	These are required if the application server is not installed on the same server as the database server.
Microsoft ODBC Driver 11 for SQL Server	If the version installed is lower than 2014.120.5543.11, upgrade to this version using the <code>msodbcsql.msi</code> file available under the Prereqs folder.
Microsoft SQL Server Native Client 11.0	If the version installed is lower than 2011.110.6518.00, upgrade to this version using the <code>sqlncli.msi</code> file available under Prereqs folder.

Web server role services

Note: While adding role services, allow the installation of supporting Role Services when prompted.

Section	Role service	Notes
Common HTTP Features		
	Default Document	—
	Directory Browsing	—
	HTTP Errors	—
	Static Content	—
Health and Diagnostics		
	HTTP Logging	Optional. Useful if there is a need to troubleshoot.

Section	Role service	Notes
	Request Monitor	—
	Tracing	Optional. Useful if there is a need to troubleshoot.
Performance		
	Static Content Compression	—
	Dynamic Content Compression	—
Security		
	Request Filtering	—
	Basic Authentication	—
	Windows Authentication	For a domain that has “logon as a service” rights.
Application Development		
	.NET Extensibility 3.5 (Installed)	—
	.NET Extensibility 4.5 (Installed)	For Windows Server 2012.
	.NET Extensibility 4.6 (Installed)	For Windows Server 2016.
	Application Initialization	—
	ASP	—
	ASP.NET 3.5 (Installed)	—
	ASP.NET 4.5 (Installed)	For Windows Server 2012.
	ASP.NET 4.6 (Installed)	For Windows Server 2016.
	ISAPI Extensions	—
	ISAPI Filters	—
Management Tools		
	IIS Management Console	—
	IIS Management Scripts and Tools	—

Installation permissions

The logon account for installing AtHoc should have the following permissions:

- Copy files and folders.
- Register DLLs and .NET Assemblies.
- Write registry keys.
- Configure IIS (Internet Information Services).

Set the server locale to US English

If you switch the locale of the server's operating system to anything other than US English, errors appear in the event log when you publish an alert and receive tracking information.

1. In the Control Panel, click **Clock, Language, and Region**.
2. Click **Region**.
3. On the Formats tab, in the Format drop-down list, select **English (United States)**.
4. On the Location tab, in the Home location list, select **United States**.
5. On the Administrative tab, click **Change system locale** and select English (United States).
6. Restart the system.

Configure HTTPS/SSL

You should set up an HTTPS / SSL certificate on all application servers before installing BlackBerry AtHoc.

1. Open the **Internet Services Manager**.
2. Go to the **Properties** for the web site under consideration.
3. Click the **Directory Security** tab.
4. Click **Server Certificate**.
5. Follow the instructions to create a new certificate.
6. When you are done, provide a file name for storing the certificate request.
7. Send the file to the appropriate certification authority.

Important: You must specify a proper Common Name when you request the certificate. The Common Name must be the host name that will be used by your users to access the BlackBerry AtHoc system. For example, if your users will use **https://alerts.company.com**, you must use **alerts.company.com** as the Common Name. In a web farm configuration, the Common Name must be the name of the virtual web farm.

Obtain a certificate from a certification authority (CA)

There are commercial certification authorities such as VeriSign or Thawte that can provide a certificate that is recognized by common browsers. In large organizations, there is usually an organizational certification authority that can provide the required certificate.

1. Open the **Internet Services Manager**.
2. Select the web site.
3. In the menu, click **Bindings**.
4. Click **Add**.
5. In the **Add Site Binding** dialog box, in the **Type** list, select **https**. If required, make changes to **IP Address and Port** and select the SSL certificate.
6. Click **OK**.
7. On the **Site Bindings** screen, select **http binding** and click **Remove**.
8. Accept the prompt and close the Site Bindings screen.

To require SSL Communication (if desired) (IIS 7 and newer), complete the following steps:

1. Open the **Internet Services Manager**.
2. Select **SSL Settings** for the Web site under consideration.
3. Click the **Require SSL** option.

4. Click **Apply**.

Database server configuration

Database administration tools

The SQL Server Management Studio and the SQL Server Configuration Manager should be installed. These are options in the SQL Server installer.

Supported Operating Systems and SQL versions

The following components are the recommended platform configuration for a database server:

- Windows Server 2016 (64-bit) and Windows Server 2012 R2 (64-bit).
- Standard or Enterprise Edition of Microsoft SQL Server 2016, Microsoft SQL Server 2014 SP2 (without MEMOPT) or Microsoft SQL Server 2012 SP3.

Microsoft SQL Server settings

Follow these steps for any edition of Microsoft SQL Server:

1. Ensure that the TCP/IP protocol is enabled. This setting is available in the Microsoft SQL Server Configuration Manager.
2. Enable the database instance to accept both local and remote connections. This setting is available on the Connections page in the properties for the Microsoft SQL Server instance.
3. The Microsoft SQL Server Browser service is required if you have installed a database instance and the TCP port is dynamic. Turn on the service in Service Manager. Ensure that the Microsoft SQL Server Browser service is started in Windows Services manager and that it has the same Startup type as the Microsoft SQL Server (MSSQLSERVER) service.
4. New installation of the BlackBerry AtHoc database and some operations such as archiving require that the Microsoft SQL Server service account has permission to create files in directories that it does not have permission to write to by default. For example, when you install the database to the default location, C:\Program Files (x86)\AtHocENS\Database, the service account must have permission to create files there. Ensure that the Microsoft SQL Server service account has permission to write to these locations, or change it to Local System account. You can find the Microsoft SQL Server service account in the Windows Services manager.
5. Enable Microsoft SQL Server updates by MSI. To ensure that the MSI can reconfigure the system during installation (to prevent an “Ad hoc update to system catalogs is not supported” error), run the following SQL under DB Master before a new installation or upgrade:

```
sp_configure 'allow updates', 0;  
reconfigure;
```

The BlackBerry AtHoc installer creates databases and sets up the ngad user account and AtHoc server role. The ngad user account is created as a member of the AtHoc server role. Database access is granted to the AtHoc server role instead of giving direct access to the ngad database. If a database restore is performed manually and the ngad user account is missing, you can run the SQL stored procedure ATH_CREATE_USERS in the msdb database to create it. You might need to grant ngad permission to some stored procedures as well. Contact BlackBerry AtHoc customer support for information about using this stored procedure.

Login requirements

An SA or DBA login to the database with a server or domain account is required. Local administrators and domain administrators are not automatically added to the Microsoft SQL Server sysadmin Group.

TempDB (system) database configuration

- Ensure that there are four data files. Each file should have an initial size of 1GB and a maximum size set to Unrestricted.
- Ensure that there is one log file. The log file should have an initial size of 512 MB and a maximum size set to 2 GB.
- Set Update Statistics: True in Database properties.
- At least 8 GB must be available on the storage array to allow for the TempDB to grow as needed by SQL Server.

The number of Data files and log files is the same regardless of the number of CPU's.

Create a Windows Server firewall exclusion rule

If the Windows Server firewall is turned on, you must create a firewall inbound exclusion rule or turn off the firewall.

1. Open **Server Manager**.
2. Select **Windows Firewall with Advanced Security** under Configuration.
3. Click **Inbound Rules** in the working area.
4. Click **New Rule**.
5. Select **Port** for the rule type.
6. Enter the port number. The default port is 1433 unless you are using an instance. If you are using an instance, find the port using Configuration Manager.
7. Select **Allow Connection**.
8. Click **Apply to all**.
9. Provide a name for the rule (for example, SQL Server Connection). Click **Finish**.

Clustered database configuration

The BlackBerry AtHoc database server can be installed in a single database configuration or in a clustered failover configuration. The database can be installed in a shared environment where the database serves other applications as well.

Clustered database support provides higher availability in case a database server crashes, with automatic failover to the other database server, and failback when the primary database server is back online. BlackBerry AtHoc considers the database server as a single database resource. For exact database configuration and setup in a clustered environment, see the relevant Windows Server 2016, or 2012 R2 (64 bit) clustering support and the database configuration and setup for failover (it is specific to the database release).

Installing BlackBerry AtHoc on a clustered database server configuration is different from a regular installation. Consult with the BlackBerry AtHoc Professional Services team if you are using a clustered database environment.

For detailed configuration steps, see [Install BlackBerry AtHoc on a clustered database](#).

Install the database server

During a new installation, run the AtHoc Installer (MSI) on the database server. The MSI supports both Microsoft SQL Server authentication and Windows authentication connections to SQL Server. A Windows authentication connection requires the user's machine or domain login to have a login in Microsoft SQL Server, and that login must be a sysadmin.

The database server must be installed first when you install separate application and database servers. When installing both application and database servers on the same server (a "combo install"), they can be installed at the same time.

1. To start the installation, open an elevated command prompt, navigate to the folder with the .bat file, type the .bat file name, and press Enter to run it. The .bat file name follows the naming convention "BlackBerry_AtHoc_7.9.x.x_build.bat."

Tip: The .bat file distributed with the MSI generates a log file of the installer actions. The log file, ATHOC_yyyy_mm_dd_hh_mm_AM|PM.log, is created in the root of the C: directory.

2. To open an elevated command prompt, locate cmd.exe in the program search, right-click on cmd.exe and choose **Run as Administrator**. If the **User Account Control** window appears, click **Yes** to run the Windows Command Prompt as Administrator.
3. On the **Welcome** screen, click **Next**.
4. Accept the Software License Agreement, and click **Next**.
5. Choose the **Database Server** check box, and click **Next**.
6. Enter the server name of the database server and the instance name, if any, select the Authentication Mode, and provide the credentials, if required.
7. To set up the password for the ngad database user, supply your own values or use the default values. Click **Next**.
8. To specify the folders to install the BlackBerry AtHoc components in, click the associated **Change** button to specify the Microsoft SQL Server data folder and the Database archiving folder that you want. Optionally, click **Next** to accept the default locations for both folders.
9. Click **Install** to begin the installation or click **Back** to change the installation settings.
10. When the installation completes, click **Finish** to exit the Setup Wizard.
11. Continue with the installation of the application server or servers, as described in [Install BlackBerry AtHoc on a clustered database](#).

Install BlackBerry AtHoc on a clustered database

To install on a clustered database or 64-bit Microsoft SQL Server platform, complete the following steps:

Note: Contact BlackBerry AtHoc customer support to obtain the SQL scripts required for this procedure.

1. Set up a staging database server running Microsoft SQL Server.
2. Proceed with the installation of the database server on the staging database server, as described in [Install the database server](#).
3. After the database server installation is complete, back up the new AtHoc databases on the staging server, and then move the backups from the staging server to the production database server.
4. Restore the databases on the production database server using the Enterprise Manager or by running the stored procedure dbo.RestoreATPUB from the msdb database. Use the SQL script provided by BlackBerry AtHoc customer support to create the stored procedure.
5. Recreate AtHoc database users by running the stored procedure dbo.ATH_CREATE_USERS from the msdb database. Use the SQL script provided by BlackBerry AtHoc customer support to create the stored procedure.
6. Continue with the installation of the application server, as described in [Install the application server](#).

Install the application server

When you install a standalone application server (where the database is on a separate server), the installer prompts for the BlackBerry AtHoc database server to connect to. The AtHoc installer creates a trusted connection to the database, which uses the current user's domain account. The account must have a sysadmin login in the SQL Server.

If a trusted connection cannot be used, you can specify an account for the AtHoc installer to use by appending the following parameters to the msiexe command line in the .bat file:

- IS_SQLSERVER_AUTHENTICATION=1

- IS_SQLSERVER_USERNAME=sa_account_name
 - IS_SQLSERVER_PASSWORD=sa_account_password
1. To start the installation by opening an elevated command prompt, navigate to the folder with the .bat file, type the .bat file name, and press Enter to run it. The .bat file name follows the naming convention "BlackBerry_AtHoc_7.9.x.x_build.bat."
- Tip:** The .bat file distributed with the MSI generates a log file of the installer actions. The log file, ATHOC_yyyy_mm_dd_hh_mm_AM|PM.log, is created in the root of C:.
2. To open an elevated command prompt, locate cmd.exe in the program search, then right-click on cmd.exe and choose **Run as Administrator**. If the **User Account Control** window appears, click **Yes** to run the Windows Command Prompt as Administrator.
 3. On the **Welcome** screen, click **Next**.
 4. Accept the Software License Agreement. Click **Next**.
 5. Choose the **Application Server** check box. Click **Next**.
 6. If using a named instance, manually enter the server name or IP and instance name.
 7. Click **Test Connection**. The AtHoc Test Connection script tests the connection through the ngad account and the SQL databases and it tests a trusted connection that does not include the user ID and password.
 8. Specify the application server home folder to install the BlackBerry AtHoc components. Click **Change** to browse to the location that you want, or click **Next** to accept the default location.
 9. Enter the system URL to access BlackBerry AtHoc Click **Next**. Use a fully qualified URL.
 10. Specify the IIS configuration type:
 - The type of setup: Choose **Enterprise Setup** for a regular configuration.
 - The Web Site Settings for the BlackBerry AtHoc web application installation: Use the default web site or choose a new Web site that you want and provide the associated details.
 11. Click **Install** to begin the database server installation or click **Back** to change the installation settings.
 12. View the onscreen progress bar to gauge the status of the installation.
 13. When the installation completes, click **Finish** to exit the Setup Wizard.

Required file system permissions

The following rights are needed for User and IUSR access to AtHoc folders:

Folder	Accounts	Rights	Set by MSI
<%AtHocENS%>\ServerObjects\uploadStage	Users	Modify	Y
<%AtHocENS%>\CommonSiteData\AthocData \Upload	Users	Modify	Y
<%AtHocENS%>\wwwroot\client\Content \charttmpfolder	IUSR Users	Modify	Y
<%AtHocENS%>\wwwroot\D911Server\tempMedia	IUSR Users	Modify	Y

Upgrade BlackBerry AtHoc

This chapter describes how to upgrade an existing installation of BlackBerry AtHoc.

See the *BlackBerry AtHoc Capacity Planning Guidelines* for the hardware requirements for installing and upgrading BlackBerry AtHoc.

Upgrade preparation

This section describes the steps that you need to complete before you upgrade to the new release.

Note: Before you perform an upgrade, make sure that BlackBerry AtHoc and any modules are fully functional. After the upgrade, verify that BlackBerry AtHoc and any modules are working.

Supported upgrade paths

The following table describes the upgrade paths that are supported for this release.

Installed version	Upgrade
7.6	7.9
7.8	7.9

Database server preparation

Complete the following preparation tasks to upgrade the database server.

All versions preparation steps

Required unless indicated.

Backup critical data

Backup databases, archive alerts, and clean up old alerts and diagnostic logs that are no longer needed.

Databases

- Stop any replication or failover activities with Double Take software, or with operating system-level replication.
- To avoid overwriting critical data, save the database backups on a different drive than the drive that the AtHocENS folder and the SQL Server files are located on.
- Name the backup files with the correct database names. Using the correct names helps you to recover the correct files during a failure. For example, name the backup file for the ngaddata database as `ngaddata_upgrade_7312013.bak`.
- Ensure that TempDB, in SQL Server, has enough space before the upgrade. The upgrade will fail if it runs out of space. To learn about TempDB requirements, see [TempDB \(system\) database configuration](#).

Alerts and user data

- To reduce upgrade time, reduce the size of the database and the Diagnostics log.
 - Purge old or unneeded alerts to decrease the database size. For example, if you need to save alerts for one year, purge alerts older than a year to reduce the database size. Use the System Archive Task in each organization to purge the alerts.
 - Purge the Diagnostic log by exporting or archiving the Diagnostic log data and then clear the log.

Application server preparation

The following sections describe actions that you need to take to prepare to upgrade the application servers.

The following pre-installed Windows components may need to be upgraded:

Component	Notes
Microsoft ODBC Driver 11 for SQL Server	If the version installed is earlier than 2014.120.5543.11, upgrade to this version using the <code>msodbcsql.msi</code> file available under the Prereqs folder.
Microsoft SQL Server Native Client 11.0	If the version installed is earlier than 2011.110.6518.00, upgrade to this version using the <code>sqlncli.msi</code> file available under Prereqs folder.
.Net Framework v. 4.7	<p>If an earlier version is installed, upgrade to version 4.7. If a later version is installed, uninstall it and then install version 4.7.</p> <p>For Windows Server 2012R2 (64 bit), install the HTTP Activation feature under both .NET Framework 3.5 Features and .NET Framework 4.5 Features.</p> <p>Note: Although the .Net Framework version is 4.7, the feature shows as .NET Framework 4.5 Features in Windows Server 2012.</p>
dotnet-hosting-2.1.7-win	If you have a version earlier than 2.1.7, you must install version 2.1.7 or 2.2.2. This version coexists with other versions and is needed by the BlackBerry AtHoc web API.

Stop services

Stop IIS. Set World Wide Web Publishing Service to Manual.

In a multiple application server environment, repeat the above step on each application server.

Back up custom code

Back up custom code if it exists.

Back up duplicated device configurations

If you duplicated any devices, save the XML files for the duplicated devices that are in the following directories to a temporary directory:

- \AtHocENS\ServerObjects\utils\AddOnModules\Packages
- \AtHocENS\ServerObjects\utils\AddOnModules\IIM\Enable

Important: After you complete the upgrade, copy the files back to these folders.

Application server upgrade

During an upgrade, run the AtHoc installer (MSI) on the application server. The MSI uses a Windows authentication connection to SQL Server. Your server or domain login must have a login in SQL Server, and that login must be a sysadmin. See the note below if Windows authentication is not possible and you must use SQL Server authentication.

Note: If a trusted connection cannot be used, you can specify a specific account for the AtHoc Installer to use during the upgrade by appending the following parameters to the msixexec command line in the .bat file:

- IS_SQLSERVER_AUTHENTICATION=1
- IS_SQLSERVER_USERNAME=sa_account_name
- IS_SQLSERVER_PASSWORD=sa_account_password

Note: If you update the application and database servers on separate servers, you must run the AtHoc Installer (MSI) once on each application server. After all application servers have been upgraded, run the installer again on one of the application servers.

Note: You must upgrade all application servers before you upgrade the database server.

1. Open an elevated command prompt, navigate to the folder with the .bat file, type the .bat file name, and press **Enter** to run it. The .bat file name follows the naming convention "BlackBerry_AtHoc_7.9.x.x_build.bat."

Tip: The .bat file distributed with the MSI generates a log file of the installer actions. The log file, ATHOC_YYYY_MM_DD_HH_MM_AM|PM.log, is created in the root of C:.

2. To open an elevated command prompt, locate cmd.exe in the program search, right-click on cmd.exe, and choose **Run as Administrator**. If the **User Account Control** window appears, click **Yes** to run the Windows Command Prompt as Administrator.)"
3. In the **Welcome** screen, click **Next**.
4. Accept the Software License Agreement. Click **Next**.
5. Agree to the upgrade prompt.
6. Select the **Application Server** check box. Click **Next**.
7. If any prerequisites are missing, the installer will display a message that lists them. Click **OK** on the message to stop the upgrade. Install the prerequisites and run the MSI again.

For detailed information about the prerequisites, see [Requirements: Application server installation](#).

8. Click **Install**.

Database server upgrade

1. After all application servers are upgraded, run the MSI again on one of the application servers to upgrade the database server. Click **Modify** on the first screen.
2. Select the **Database Server** check box. Click **Next**.
3. Click **Install** and follow the prompts in the setup wizard.

Postinstallation or upgrade configuration

This chapter describes component configurations that are performed after BlackBerry AtHoc is installed. There is no recommended order to the sections in this chapter.

Set antivirus file exclusions for database log and tempDB files

Real-time antivirus scanning at the file level can occasionally cause abnormal system behavior, like high CPU utilization.

You should exclude the following items from real-time scanning:

- The `ffmpeg.exe` file
- The IIS Temporary Compressed Files folder located at: `%SystemDrive%\inetpub\temp\IIS Temporary Compressed Files`
- The SQL MDF database and the LDF log files.

IIS postinstallation checklist

After you install BlackBerry AtHoc, verify the following settings in IIS.

Note: In multiple application server environments, you must manually restart IIS on each application server after all application servers and the database have been upgraded.

Application pool configuration tables

The installation configures application pools using the settings described in the following sections. The configurations of the application pools are described in the following tables:

- [Table 1: Application pool configuration](#)
- [Table 2: Application Pool - Web application associations for the AtHoc website - Enterprise configuration](#)
- [Table 3: AtHoc services application pool configuration](#)
- [Table 4: Application pools - web application association for AtHoc services web site](#)

Table 1: Application pool configuration

Table 1a: General, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
General					
.NET framework version	No Managed code	v4.0	v4.0	v4.0	v4.0
Enable 32-bit applications	True	True	True	False	True

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
General					
Managed pipeline mode	Integrated	Classic	Classic	Integrated	Clasic
Queue length	65535	1000	65535	65535	65535
Start automatically	AlwaysRunning	AlwaysRunning	AlwaysRunning	AlwaysRunning	AlwaysRunning

Table 1a: General, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
General			
.NET framework version	v4.0	v4.0	v4.0
Enable 32-bit applications	True	True	True
Managed pipeline mode	Integrated	Classic	Classic
Queue length	65535	65535	1000
Start automatically	AlwaysRunning	AlwaysRunning	AlwaysRunning

Table 1a: General, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
General			
.NET framework version	v4.0	v4.0	v4.0
Enable 32-bit applications	True	True	True
Managed pipeline mode	Integrated	Integrated	Integrated
Queue length	65535	1000	65535
Start automatically	AlwaysRunning	AlwaysRunning	AlwaysRunning

Table 1b: CPU, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
CPU					
Limit	0	0	0	0	0
Limit action	NoAction	NoAction	NoAction	NoAction	NoAction
Limit interval (minutes)	5	5	5	5	5
Processor affinity enabled	False	False	False	False	False
Processor affinity mask	4294967295	4294967295	4294967295	4294967295	4294967295

Table 1b: CPU, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
CPU			
Limit	0	0	0
Limit action	NoAction	NoAction	NoAction
Limit interval (minutes)	5	5	5
Processor affinity enabled	False	False	False
Processor affinity mask	4294967295	4294967295	4294967295

Table 1b: CPU, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
CPU			
Limit	30	0	0
Limit action	Throttle	NoAction	NoAction
Limit interval (minutes)	5	5	5

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
CPU			
Processor affinity enabled	False	False	False
Processor affinity mask	4294967295	4294967295	4294967295

Table 1c: Process model, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Process model					
Identity (ApplicationPoolIdentity)	—	—	—	—	—
Idle time-out (minutes)	0	0	0	0	0
Load user profile	True	True	True	True	True
Maximum worker processes	1	1	1	2	2
Ping enabled	True	True	True	True	True
Ping maximum response time (seconds)	90	90	90	90	90
Ping period (seconds)	30	30	30	30	30
Shutdown time limit (seconds)	90	90	90	90	90
Startup time limit (seconds)	90	90	90	90	90

Table 1c: Process model, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
Process model			
Identity (ApplicationPoolIdentity)	–	–	–
Idle time-out (minutes)	0	0	0
Load user profile	True	True	True
Maximum worker processes	1	1	1
Ping enabled	True	True	True
Ping maximum response time (seconds)	90	90	90
Ping period (seconds)	30	30	30
Shutdown time limit (seconds)	90	90	90
Startup time limit (seconds)	90	90	90

Table 1c: Process model, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Process model			
Identity (ApplicationPoolIdentity)	–	–	–
Idle time-out (minutes)	0	0	0
Load user profile	True	True	True
Maximum worker processes	2	1	1
Ping enabled	True	True	True
Ping maximum response time (seconds)	90	90	90
Ping period (seconds)	30	30	30

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Process model			
Shutdown time limit (seconds)	90	90	90
Startup time limit (seconds)	90	90	90

Table 1d: Process Orphaning, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Process orphaning					
Enabled	False	False	False	False	False
Executable	—	—	—	—	—
Executable parameters	—	—	—	—	—

Table 1d: Process orphaning, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
Process orphaning			
Enabled	False	False	False
Executable	—	—	—
Executable parameters	—	—	—

Table 1d: Process orphaning, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Process orphaning			
Enabled	False	False	False
Executable	—	—	—
Executable parameters	—	—	—

Table 1e: Rapid-fail protection, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Rapid-fail protection					
"Service Unavailable" response type	HttpLevel	HttpLevel	HttpLevel	HttpLevel	HttpLevel
Enabled	False	False	False	False	False
Failure Interval (minutes)	5	5	5	5	5
Max Failures	5	5	5	5	5
Shutdown Executable	—	—	—	—	—
Shutdown Executable Parameters	—	—	—	—	—

Table 1e, Rapid-fail protection, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
Rapid-fail protection			
"Service Unavailable" response type	HttpLevel	HttpLevel	HttpLevel
Enabled	False	False	False
Failure interval (minutes)	5	5	5
Max failures	5	5	5
Shutdown executable	—	—	—
Shutdown executable parameters	—	—	—

Table 1e, Rapid-fail protection, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Rapid-fail protection			
"Service Unavailable" response type	HttpLevel	HttpLevel	HttpLevel
Enabled	False	False	False
Failure interval (minutes)	5	5	5
Max failures	5	5	5
Shutdown executable	—	—	—
Shutdown executable parameters	—	—	—

Table 1f: Recycling, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Recycling					
Disable overlapped recycle	False	False	False	False	False
Disable recycling for configuration change	False	False	False	False	False

Table 1f: Recycling, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
Recycling			
Disable overlapped recycle	False	False	False
Disable recycling for configuration change	False	False	False

Table 1f: Recycling, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Recycling			
Disable overlapped recycle	False	False	False
Disable recycling for configuration change	False	False	False

Table 1g: Generate recycle event log entry, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Generate recycle event log entry					
Application pool configuration changed	False	False	False	False	False
Isapi reported unhealthy	False	False	False	False	False
Manual recycle	False	False	False	False	False
Private memory limit exceeded	True	True	True	True	True
Regular time interval	True	True	True	True	True
Request limit exceeded	False	False	False	False	False
Specific time	False	False	False	False	False
Virtual memory limit exceeded	True	True	True	True	True
Private memory limit (KB)	1800000	1800000	1800000	1800000	1800000

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Generate recycle event log entry					
Regular time interval (minutes)	0	0	0	0	0
Request limit	0	0	0	0	0

Table 1g: Generate Recycle Event Log Entry, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
Generate recycle event log entry			
Application pool configuration changed	False	False	False
Isapi reported unhealthy	False	False	False
Manual recycle	False	False	False
Private memory limit exceeded	True	True	True
Regular time interval	True	True	True
Request limit exceeded	False	False	False
Specific time	False	False	False
Virtual memory limit exceeded	True	True	True
Private memory limit (KB)	1800000	1800000	1800000
Regular time interval (minutes)	0	0	0
Request limit	0	0	0

Table 1g: Generate Recycle Event Log Entry, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Generate recycle event log entry			
Application pool configuration changed	False	False	False
Isapi reported unhealthy	False	False	False
Manual recycle	False	False	False
Private memory limit exceeded	True	True	True
Regular time interval	True	True	True
Request limit exceeded	False	False	False
Specific time	False	False	False
Virtual memory limit exceeded	True	True	True
Private memory limit (KB)	1800000	1800000	1800000
Regular time interval (minutes)	0	0	0
Request limit	0	0	0

Table 1h: Specific times, part 1

	AtHoc auth services .NET core pool	AtHoc D911 pool	AtHoc default pool	AtHoc desktop integrated pool	AtHoc desktop pool
Specific times					
[0]	01:38:00	01:33:00	01:34:00	01:34:00	01:36:00
Virtual memory limit (KB)	0	0	0	0	0

Table 1h: Specific times, part 2

	AtHoc IWS pool	AtHoc management system pool	AtHoc SDK pool
Specific times			
[0]	01:36:00	01:33:00	01:35:00
Virtual Memory Limit (KB)	0	0	0

Table 1h: Specific times, part 3

	AtHoc Self Service pool	AtHoc web API pool	AtHoc web API v2 .NET core pool
Specific times			
[0]	01:33:00	01:35:00	01:38:00
Virtual Memory Limit (KB)	0	0	0

Table 2: Application Pool - Web application associations for the AtHoc website - Enterprise configuration

Web application	Associated application pool
api\ v1	AtHoc WebAPI pool
api\ v2	AtHoc WebAPI v2 .NET core pool
ast	AtHoc default pool
athoc-cdn	AtHoc IWS pool
athoc-iws	AtHoc IWS pool
AuthServices\ Auth	AtHoc auth services .NET core pool
CascadeAlertAgent	AtHoc default pool
client	AtHoc management system pool
config	AtHoc desktop integrated pool
csi	AtHoc desktop integrated pool
D911Server	AtHoc D911 pool
Data	AtHoc default pool
DataExport	AtHoc default pool

Web application	Associated application pool
EasyConnect	AtHoc default pool
EmailResponse	AtHoc self service
Graphics	AtHoc default pool
Monitor	AtHoc default pool
Redirector	AtHoc default pool
SelfService	AtHoc Self Service pool
sdk	AtHoc SDK pool
sps	AtHoc desktop integrated pool
sso	AtHoc default pool
Syndication	AtHoc Syndication pool
TwitterConfig	AtHoc default pool
wis	AtHoc desktop pool

Table 3: AtHoc services application pool configuration

Table 3: AtHoc services application pool configuration, part 1

	AtHoc alert coordinator pool	AtHoc delivery coordinator pool	AtHoc tracking processor pool	AtHoc regular scheduler pool	AtHoc advanced scheduler pool
General					
.NET framework version	v4.6.1	v4.6.1	v4.6.1	v4.6.1	v4.6.1
Enable 32-bit applications	True	True	True	True	True
Managed pipeline mode	Integrated	Integrated	Integrated	Integrated	Integrated
Queue length	1000	1000	1000	1000	1000
Start automatically	AlwaysRunning	AlwaysRunning	AlwaysRunning	AlwaysRunning	AlwaysRunning
CPU					

	AtHoc alert coordinator pool	AtHoc delivery coordinator pool	AtHoc tracking processor pool	AtHoc regular scheduler pool	AtHoc advanced scheduler pool
Limit	0	0	0	0	0
Limit action	NoAction	NoAction	NoAction	NoAction	NoAction
Limit interval (minutes)	5	5	5	5	5
Processor affinity enabled	False	False	False	False	False
Processor affinity mask	4294967295	4294967295	4294967295	4294967295	4294967295
Process model					
Identity ¹	–	–	–	–	–
Idle time-out (minutes)	0	0	0	0	0
Load user profile	True	True	True	True	True
Maximum worker processes	1	1	1	1	1
Ping enabled	True	True	True	True	True
Ping maximum response time (seconds)	90	90	90	90	90
Ping period (seconds)	30	30	30	30	30
Shutdown time limit (seconds)	90	90	90	90	90
Startup time limit (seconds)	90	90	90	90	90
Process orphaning					
Enabled	False	False	False	False	False
Executable	–	–	–	–	–

	AtHoc alert coordinator pool	AtHoc delivery coordinator pool	AtHoc tracking processor pool	AtHoc regular scheduler pool	AtHoc advanced scheduler pool
Executable parameters	–	–	–	–	–
Rapid-fail protection					
"Service Unavailable" response type	HttpLevel	HttpLevel	HttpLevel	HttpLevel	HttpLevel
Enabled	False	False	False	False	False
Failure interval (minutes)	5	5	5	5	5
Max failures	5	5	5	5	5
Shutdown executable	–	–	–	–	–
Shutdown executable parameters	–	–	–	–	–
Recycling					
Disable overlapped recycle	True	True	True	True	True
Disable recycling for configuration change	False	False	False	False	False
Generate recycle event log entry					
Application pool configuration changed	False	False	False	False	False
Isapi reported unhealthy	False	False	False	False	False
Manual recycle	False	False	False	False	False
Private memory limit exceeded	True	True	True	True	True

	AtHoc alert coordinator pool	AtHoc delivery coordinator pool	AtHoc tracking processor pool	AtHoc regular scheduler pool	AtHoc advanced scheduler pool
Regular time interval	True	True	True	True	True
Request limit exceeded	False	False	False	False	False
Specific time	False	False	False	False	False
Virtual memory limit exceeded	True	True	True	True	True
Private memory limit (KB)	800000	800000	800000	800000	800000
Regular time interval (minutes)	0	0	0	0	0
Request limit	0	0	0	0	0
Specific times					
[0]	04:30:00	04:30:00	04:30:00	04:30:00	04:30:00
Virtual memory limit (KB)	0	0	0	0	0

¹ ApplicationPoolIdentity

Table 3: AtHoc services application pool configuration, part 2

	AtHoc PSS polling agent pool	AtHoc tracking summary coordinator pool	AtHoc batch coordinator pool	AtHoc user termination coordinator pool
General				
.NET framework version	v4.6.1	v4.6.1	v4.6.1	v4.6.1
Enable 32-bit applications	True	True	True	True
Managed pipeline mode	Integrated	Integrated	Integrated	Integrated
Queue length	1000	1000	1000	1000

	AtHoc PSS polling agent pool	AtHoc tracking summary coordinator pool	AtHoc batch coordinator pool	AtHoc user termination coordinator pool
Start automatically	AlwaysRunning	AlwaysRunning	AlwaysRunning	AlwaysRunning
CPU				
Limit	0	0	0	0
Limit action	NoAction	NoAction	NoAction	NoAction
Limit interval (minutes)	5	5	5	5
Processor affinity Enabled	False	False	False	False
Processor affinity mask	4294967295	4294967295	4294967295	4294967295
Process model				
Identity ¹	–	–	–	–
Idle time-out (minutes)	0	0	0	0
Load user profile	True	True	True	True
Maximum worker processes	1	1	1	1
Ping enabled	True	True	True	True
Ping maximum response time (seconds)	90	90	90	90
Ping period (seconds)	30	30	30	30
Shutdown time limit (seconds)	90	90	90	90
Startup time limit (seconds)	90	90	90	90
Process orphaning				
Enabled	False	False	False	False

	AtHoc PSS polling agent pool	AtHoc tracking summary coordinator pool	AtHoc batch coordinator pool	AtHoc user termination coordinator pool
Executable	–	–	–	–
Executable parameters	–	–	–	–
Rapid-fail protection				
"Service Unavailable" response type	HttpLevel	HttpLevel	HttpLevel	HttpLevel
Enabled	False	False	False	False
Failure interval (minutes)	5	5	5	5
Max failures	5	5	5	5
Shutdown executable	–	–	–	–
Shutdown executable Parameters	–	–	–	–
Recycling				
Disable overlapped recycle	True	True	True	True
Disable recycling for configuration change	False	False	False	False
Generate recycle event log entry				
Application pool configuration changed	False	False	False	False
Isapi reported unhealthy	False	False	False	False
Manual recycle	False	False	False	False
Private memory limit Exceeded	True	True	True	True

	AtHoc PSS polling agent pool	AtHoc tracking summary coordinator pool	AtHoc batch coordinator pool	AtHoc user termination coordinator pool
Regular time interval	True	True	True	True
Request limit exceeded	False	False	False	False
Specific time	False	False	False	False
Virtual memory limit exceeded	True	True	True	True
Private memory limit (KB)	800000	800000	800000	800000
Regular time interval (minutes)	0	0	0	0
Request limit	0	0	0	0
Specific times				
[0]	04:30:00	04:30:00	04:30:00	04:30:00
Virtual memory limit (KB)	0	0	0	0

Table 4: Application pools - web application association for AtHoc services web site

Web application	Associated application pool
Advanced scheduler	AtHoc advanced scheduler pool
Alert coordinator	AtHoc alert coordinator pool
Batch coordinator	AtHoc batch coordinator pool
Delivery coordinator	AtHoc delivery coordinator pool
PSS polling agent	AtHoc PSS polling agent pool
Regular scheduler	AtHoc regular scheduler pool
Tracking processor	AtHoc tracking processor pool
Tracking summary coordinator	AtHoc tracking summary coordinator pool

IIS handler mappings

The following handler mappings are required:

Handler name	Path	Description
asp.net	*	AtHoc Wildcard Script Map
ASPClassic	*.asp	Handler for classic ASP
AXD-ISAPI-4.0_32bit	*.axd	web site administration requests handler
cshtml-ISAPI-4.0_32bit	*.cshtml	Required by MVC
HttpRemotingHandlerFactory-rem-ISAPI-4.0_32bit	*.rem	Web service handler
HttpRemotingHandlerFactory-soap-ISAPI-4.0_32bit	*.soap	Web service handler
MvcScriptMap	*.mvc	Required by MVC
OPTIONSVerbHandler	*	URL-less page handler
PageHandlerFactory-ISAPI-2.0	*.aspx	ASP.NET v.2 page handler
PageHandlerFactory-ISAPI-4.0_32bit	*.aspx	ASP.NET v.4 page handler
SecurityCertificate	*.cer	processes SSL certificates
SimpleHandlerFactory-ISAPI-2.0	*.ashx	Generic Web handler.
SimpleHandlerFactory-ISAPI-4.0_32bit	*.ashx	Generic Web handler.
svc-ISAPI-4.0_32bit	*.svc	Web service handler
TRACEVerbHandler	*	URL-less page handler
WebServiceHandlerFactory-ISAPI-2.0	*.asmx	Web service handler
WebServiceHandlerFactory-ISAPI-4.0_32bit	*.asmx	Web service handler
StaticFile	*	URL-less page handler

Verification checklist

Use the following check list to ensure that all of the following items exist and are configured as described.

✓	Item	Description
	ISAPI and CGI extensions	IIS 7: ISAPI and CGI Restrictions should have Active Server Pages and ASP.NET v4.0 (32-bit) in the Allowed category.
	Default web site	Ensure the default web site points to the <AtHocENS \wwwroot> folder.
	Virtual directories	<p>The AtHoc website must contain the following virtual directories:</p> <ul style="list-style-type: none"> • Data: Points to <AtHocENS>\CommonSiteData \AtHocData • Graphics: Points to <AtHocENS>\CommonSiteData \Graphics

✓	Item	Description
	Web applications	<p>The AtHoc website must contain the following Web applications:</p> <ul style="list-style-type: none"> • api <ul style="list-style-type: none"> • v1 • v2 • ast • athoc-cdn • athoc-iws • AuthServices <ul style="list-style-type: none"> • Auth • CascadeAlertAgent • client • config • csi • D911Server • Data • DataExport • EasyConnect • EmailResponse • errorpages • Graphics • gw • help • icons • images • include • monitor • redirector • sdk • selfservice • sps • sso • syndication • temp • twitterconfig • user • wis
	ASP.NET version	All Web applications must point to the ASP.Net 4.0 version.IIS 7: this is set in the Basic or Advanced settings of each Application Pool.

✓	Item	Description
	Application pools	<p>The following Application Pools are created during the application server installation and must be present:</p> <ul style="list-style-type: none"> • DefaultAppPool • AtHoc Advanced Scheduler Pool • AtHoc Alert Coordinator Pool • AtHoc Auth Services .Net Core pool • AtHoc Batch Coordinator Pool • AtHoc D911 Pool • AtHoc Default Pool • AtHoc Delivery Coordinator Pool • AtHoc Desktop Integrated Pool • AtHoc Desktop Pool • AtHoc IWS Pool • AtHoc Management System Pool • AtHoc PSS Polling Agent Pool • AtHoc Regular Scheduler Pool • AtHoc SDK Pool • AtHoc Self Service Pool • AtHoc Syndication Pool • AtHoc Tracking Processor Pool • AtHoc Tracking Summary Coordinator Pool • AtHoc User Termination Coordinator Pool • AtHoc WebAPI Pool • AtHoc WebAPI v2 .Net Core Pool
	Integrated Weather Alerts	Verify that the internal routing from the application server to the domain name (https://api.weather.gov/alerts/active) is functioning correctly over HTTP.
	MIME types	<p>Verify that the following MIME types exist:</p> <ul style="list-style-type: none"> • .mp4, video/mp4 • .webm, video/webm • .woff, application/x-wor
	AtHoc services	<ul style="list-style-type: none"> • Advanced Scheduler • Alert Coordinator • Batch Coordinator • Delivery coordinator • PSS Polling Agent • Regular Scheduler • Tracking Processor • Tracking Summary Coordinator • User Termination Coordinator

✓	Item	Description
	Response headers	<p>There are six response headers for Default Web Site:</p> <ul style="list-style-type: none"> • Content-Security-Policy, Value: default-src https: data: 'unsafe-inline' 'unsafe-eval' • Strict-Transport-Security, Value: max-age=31536000; includeSubDomains; Preload • X-Content-Type-Options, Value: nosniff • X-Xss-Protection, Value: 1;mode=block • X-Frame-Options, Value: SAMEORIGIN • X-Powered-By, Value: AtHoc Inc.

(Optional) Enable message termination

Message Termination is disabled by default. To enable Message Termination, run the post-upgrade script located in the "PostUpgrade" folder packaged with the MSI.

(Optional) Enable and enforce the TLS 1.2 protocol

BlackBerry AtHoc release 7.9 is fully TLS 1.2 compliant. If needed, TLS 1.2 can be enabled and enforced for inbound and outbound network connections on both the application and database servers.

Application server changes

Microsoft ODBC Driver 11 for Microsoft SQL Server and Microsoft SQL Server Native Client 11.0 are already part of prerequisite software required to upgrade to BlackBerry AtHoc version 7.9. Make sure these required software updates are installed before upgrading to version 7.9.

After TLS 1.2 is enabled and enforced for inbound and outbound network connections on all AtHoc application servers involved, complete the following tasks on each application server:

1. Copy the registry script `AtHoc_AppServer_Win2012_TLS1.2.reg` (for Windows Server 2012) or `AtHoc_AppServer_Win2016_TLS1.2.reg` (for Windows Server 2016) available under the `PostUpgrade\TLS1.2` folder to a local folder on the application server and double click to run it. It is important that the correct registry script based on AtHoc application server OS version (Microsoft Server 2012 or 2016) is run, to make necessary registry entries only after enabling and enforcing TLS 1.2 on the application server.
2. Reboot the application server.

Database server changes

Microsoft SQL Server 2016 supports TLS 1.2 out-of-the-box and no further update is needed. If you have Microsoft SQL Server 2012 or 2014 installed, go to the following URL to install and update your software to support TLS 1.2:

<https://support.microsoft.com/en-us/help/3135244/tls-1-2-support-for-microsoft-sql-server>

Verify the database connection encryption state. Run the following SQL as a system administrator to view the SQL connections state. The `encrypt_option` column should display TRUE for all records:

```
select encrypt_option, count(*) FROM sys.dm_exec_connections group by
encrypt_option
go
```

```
SELECT * FROM sys.dm_exec_connections order by connect_time desc
go
```

(Optional) Configure the application server for Windows authentication

1. Add a new Logon SQL Server for the domain account and make the new logon the owner of all AtHoc databases.
2. Modify all AtHoc application pools and the IUSR logon account to use the new logon.
3. Modify the anonymous user identity to use the new logon.
4. Change the OleDbConnectionString. Change "User Id=ngad;Password=@THOC123;" to "Integrated Security=SSPI;".

For more information, see [Configure AtHoc database operations to use Windows authentication](#) in the "Advanced Server configuration" section.

(Optional) Configure client certificates on the application server

These steps are required if client certificates are intended to be used with the BlackBerry AtHoc system.

Configure Client Certificates on each application server so that they can make secure outbound requests to the database server.

To install and configure the client certificate, complete the following steps.

Note: These steps assume that you already have a certificate with a private key.

1. Log in to the application server.
2. Copy the client certificate to the file system.
3. Open Microsoft Management Console (MMC).
 - a. From the Start menu, find MMC.
 - b. Right click and select **Run as administrator**. The console opens.
4. Add the certificate snap-in.
 - a. Click **File** and click **Add/Remove Snap-in...**
 - b. Click **Certificates** and click **Add**.

The Certificate snap-ins dialog opens.
 - c. Select **Computer account** and click **Next**.
 - d. Select **Local Computer**.
 - e. Click **Finish** and click **OK**.
5. Import the client certificate.
 - a. Copy the certificate file to the application server.
 - b. Open MMC and navigate to **Certificates > Personal**.
 - c. Right-click **Personal** and select **Import**.
 - d. Complete the import wizard.

Note: Wizard notes

- The certificate that you import must be have a private key and be of the file type .PFX or .P12.
- Store the certificate in the Personal store.

6. Verify that the client certificate has a private key by opening the certificate. On the **General** tab, look for the following note following the **Valid from** field: You have a private key that corresponds to this certificate.
7. Repeat this process for each application server.

When you configure the AtHoc Services application pool accounts, ensure that the account has access to the client certificate.

When you configure IIS, ensure that the web service has access to the client certificate.

(Optional) Set the SSL client certificate

In installations that require SSL client certificates on the application servers, such as smart card support, IIS folders must be set to **Require** client certificates instead of accepting client certificates.

Note: Indications that this setting has not been made include: desktop pop-ups display one or more security prompts, the Weather Alerting Module is not functional, and integration with external systems that use the AtHoc SDK APIs do not work.

To set the preference for client certificates, complete the following steps:

1. Open the **Internet Information Services Manager**.
2. Expand **Sites**, then expand Default Web Site or the named site. Select a Web application and open SSL Settings.
3. Select the **Ignore**, **Accept**, or **Require** radio button under client certificates. Use the recommendations for each folder, provided in the table that follows these steps.
4. Click **Apply**.

The following table provides a reference for client certificate settings for Department of Defense, Federal Government, and any other customers that use smart cards or soft certificates for client authentication to web servers.

Application or virtual directory	SSL client certificates
Aspnet_client	Require
api	Ignore
ast	Require
athoc-cdn	Require
athoc-iws	Require
AuthConfig	Ignore
CascadeAlertAgent	Require
client ¹	Require
config ²	Ignore if you have desktop clients deployed. Require if not.
csi ²	Ignore if you have desktop clients deployed. Require if not.

Application or virtual directory	SSL client certificates
D911Server	Require
Data	Require
DataExport	Require
Default Web Site	Require
EasyConnect	Require
EmailResponse	Require
Help	Require
Graphics ²	Ignore if you have desktop clients deployed. Require if not.
Gw	Require
Icons	Require
Images	Require
Include	Require
Integrated Weather Alerts ³	Require
mas	Accept
monitor	Ignore if your web server monitoring solution will not work with client certificates. Require if it does.
Redirector	Require
sdk	Ignore if your custom code integration does not support client certificates. Require if it does.
SelfService	Require
Self Service/AuthWin	Require
sps ²	Ignore if you have desktop clients deployed. Require if not.
Sso	Require
Syndication	Require if your IIM devices have client certificates installed, or If no IIM devices are deployed. Ignore if not.

Application or virtual directory	SSL client certificates
TwitterConfig	Require
User	Require
wis	Require

1. BlackBerry AtHoc health monitors do not currently support client certificate authentication. Setting the `client` Web directory to “Require Client Certificates” might cause the BlackBerry AtHoc management system health monitor to falsely show that the system is down. BlackBerry AtHoc recommends disabling this monitor in this configuration.
2. If `config`, `csi`, `Graphics`, and `sps` are set to “Require Client Certificates” and you have desktop clients deployed, one of two things can happen:
 - Users experience periodic prompts for client certificate pin authentication.
 - The SSL stack on the IIS web server becomes overwhelmed with SSL renegotiation issues. This condition looks like your Web server is under a denial of service attack, with page loads becoming slower and eventually timing out with errors.
3. Make sure the Symantec/Verisign certificate chain for the target system is properly represented in the Windows Certificate Manager.

(Optional) Install certificates for cloud delivery services

Certificates to access cloud delivery services such as TAS, email, and SMS are automatically installed as part of the BlackBerry AtHoc installation.

If you need to reinstall these certificates, complete the following steps for each BlackBerry AtHoc application server:

1. Go to the following URL: <https://www.digicert.com/digicert-root-certificates.htm>
2. Locate and download the following certificate files to the application server and rename the extension to `.CER`:
 - DigiCert
 - DigiCert SHA2 Secure Server CA
3. Open the Windows **Start** menu and in the search field, type `mmc.exe`. The Microsoft Management Center (MMC) opens.
4. Click **File > Add/Remove Snap-in**.
5. Click **Certificates**, click **Add**. The Certificate snap-ins dialog opens.
6. Select **Computer account** and click **Next**.
7. Select **Local computer**.
8. Click **Finish** and click **OK**.
9. To import the certificate, copy the certificate file to the application server.
10. Open **MMC** and navigate to **Trusted Root Certificate Authorities > Certificates**.
11. Right-click **Certificates** and click **All Tasks > Import**. The Certificate Import Wizard opens.
12. Click **Next** and click **Browse**.
13. Navigate to where you saved the certificates.
14. Before the **File name** field, in the **File type** drop-down list, select **All Files (*.*)**.
15. Select a certificate and click **Open**.
16. Click **Next** twice, and click **Finish**.

17.Restart IIS.

(Optional) Configure new access card formats for operator auto-login

BlackBerry AtHoc supports several types of log-in configurations. Operators can manually login using a username and password, a personal identification verification (PIV) card, or a Common Access Card (CAC) card.

The following list displays the high-level steps to configure operator authentication using CAC or PIV cards:

1. Gather information from the customer to determine what type of PIV or CAC card will be used by operators. If the card type is not supported, contact BlackBerry AtHoc customer support.
2. Configure BlackBerry AtHoc security settings.
3. Restart IIS.

Gather information from the customer

If the organization using an access card requires a format not supported by BlackBerry AtHoc, you need to request support. Gather 5 to 10 samples of the customer client certificate strings and the variable name in the HTTP header from the organization that stores the certificate string. Provide BlackBerry AtHoc with the examples.

For example:

```
Subject: DC=edu, DC=athoc, O=internal, OU=people,  
OID.0.9.2342.19200300.100.1.1=jsmith@athoc.com, CN=Jane Smith <mapping  
identifier>  
Subject: DC=edu, DC=athoc, O=internal, OU=people,  
OID.0.9.2342.19200300.100.1.1=jdoe@athoc.com, CN=John Doe <mapping identifier>  
(affiliate)
```


BlackBerry AtHoc creates a primary and an alternate regular expression (regex) that allows users to log in with their PIV or CAC cards. The expression extracts the MID from the certificate string. It then compares the MID with values in the database to determine the user identity and logs the user in automatically.

BlackBerry AtHoc provides an SQL UPDATE script to run. This script updates the GLB_CONFIG_TAB so that operators can log in with their access cards.

Update BlackBerry AtHoc management system security policy

To change the automatic login for the BlackBerry AtHoc management system, update the Security Policy settings.

Note: You must be in the system setup organization (3) to update this setting.

1. Log in to the BlackBerry AtHoc management system as an administrator.
2. Click .
3. In the **System Setup** section, click **Security Policy**. The Security Policy window opens.
4. In the **Smart Card Authentication** section, select the Smart Card Login **Enabled** option.
5. Save your changes.
6. Log out and attempt to log back in using a smart card.

(Optional) Update the application server registry for smart card login

For smart card login, update the registry on the application server to enable users to select a CAC certificate.

To add a value to the SCHANNEL registry key, complete the following steps:

1. From the Windows Start menu, type `regedit`.

2. Navigate to the following node `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL`
3. Right-click the **SCHANNEL** node and click **New**.
4. Click **DWORD (32-bit) Value**. The new value is created.
5. Enter the name of the new value: `ClientAuthTrustMode`
6. You must enter the value when the name field becomes available for editing because you cannot change the name later.
7. Double-click on the new value and enter the following value in the field. Data: 2
8. Click **OK** to save the values.

(Optional) Enable FIPS on each application server

Federal Information Processing Standards (FIPS) requires an HTTPS environment.

1. Set the following key to 1:

`HKLM\SYSTEM\CurrentControlSet\Control\Lsa\FipsAlgorithmPolicy`

Note: If the key is set to 0, then FIPS is disabled.

2. Restart the server to apply the change.

(Optional) Archive and MAS export service account requirements

Note: This task is required only for new installations that use Archive and MAS export.

In order for the System Archive and MAS Export functions to work, the AtHoc services application pool identities need a domain service account with **sysadmin** access on SQL Server. A viable alternative is the built-in Local System account, however, additional configuration on SQL is required.

Add all application servers' `domain\computer$` account as a new login to SQL Server and grant it the server role of `sysadmin`.

The backup folder path must also exist on the Microsoft SQL Server and the application pool identities must have write access to that folder. The backup folder path is defined in the System Setup (3) organization under System Settings.

If you use a client certificate for this server, ensure that the account has permission to access that client certificate. For more information, see [\(Optional\) Configure client certificates on the application server](#).

To set up a service account for AtHoc services applications pools, complete the following steps:

1. Stop the AtHoc services (application pools) in IIS.
 - AtHoc Regular Scheduler Pool
 - AtHoc Alert Coordinator Pool
 - AtHoc PSS Polling Agent Pool
 - AtHoc Tracking Processor Pool
 - AtHoc Delivery Coordinator Pool
 - AtHoc Advanced Scheduler Pool
 - AtHoc Tracking Summary Coordinator Pool
 - AtHoc Batch Coordinator Pool
 - AtHoc User Termination Coordinator Pool
2. For each application pool, complete the following steps:

- a. Select the application pool, and open **Advanced Settings**.
- b. Under Process Model, edit **Identity**.
- c. Choose **Custom Account** and enter a username and password.
- d. Restart the application pool.

Configure .NET framework to use a web proxy

1. Open Notepad as administrator and open the following file:

```
C:\Windows\Microsoft.NET\Framework\v4.0.30319\config\machine.config
```

2. Search for <system.net>. If <system.net> is not found, add the following text as the second line from the end (</configuration>) and substitute the proxy address as appropriate for the environment:

```
<system.net>
  <defaultProxy>
    <proxy autoDetect="false" bypassonlocal="true"
    proxyaddress="http://proxy_host:8080" />
  </defaultProxy>
</system.net>
```

3. Save and close the file.
4. Open Notepad as an administrator and open the following file:

```
C:\Windows\Microsoft.NET\Framework\v4.0.30319\config\web.config
```

5. Search for <system.net>. If <system.net> is not found, add the following text as the second line from the end (</configuration>) and substitute the proxy address as appropriate for the environment:

```
<system.net>
  <defaultProxy>
    <proxy autoDetect="false" bypassonlocal="true"
    proxyaddress="http://proxy_host:8080" />
  </defaultProxy>
</system.net>
```

6. Save and close the file.
7. Open up a command prompt as administrator and run the following command, substituting the proxy address as appropriate for the environment:

```
C:\Windows\syswow64\netsh.exe winhttp set proxy http://proxy_host:8080 bypass-
list="*.customernetwork.com"
```

Note: The bypass-list argument is optional, but it can be used to allow BlackBerry AtHoc to poll itself (health monitors) without going through the proxy.

8. Execute the following command to verify the proxy setting:

```
C:\Windows\syswow64\netsh.exe winhttp show proxy
```

9. Issue the following commands to restart the BlackBerry AtHoc application:

```
iisreset /stop
iisreset /start
```

(Optional) Restore the XML files for duplicated devices

If you backed up duplicated device XML files, restore the XML files to the following directories from the temporary directory:

```
\AtHocENS\ServerObjects\utils\AddOnModules\Packages  
\AtHocENS\ServerObjects\utils\AddOnModules\IIM\Enable
```

(Optional) Set up error pages for Self Service throttling

Self Service is implemented as a separate application which runs in its own application pool. In a production environment, the Self Service application shares CPU resources with other applications like the operator management system. To ensure that alerting is not negatively affected by the Self Service application during heavy loads to the Self Service application, the AtHoc Self Service application pool that Self Service runs under will be throttled so that it uses only 30% of the available CPU at any time. This ensures that BlackBerry AtHoc alerts can always be published, even during heavy loads to Self Service. One impact of this change is that during heavy loads in Self Service, you might encounter some slowness in the Self Service application.

Starting with release 6.1.8.90, the throttling changes are applied automatically by the installer during new installation and upgrade.

External error pages for Self Service throttling

When the AtHoc Self Service application is throttled to use only 30% of CPU, it is likely that IIS will display errors with a status code of “503” or “500” when the system is under heavy load and unable to handle requests. If these errors occur, IIS displays a default error page that does not contain a lot of useful information for users.

These errors are usually not customizable at the IIS level on the same server, as documented by Microsoft. BlackBerry AtHoc provides friendly messages in static pages that can be used in place of the default error pages, provided that the BlackBerry AtHoc system is deployed behind a proxy server or load balancer that supports error message customization. You can configure these load balancers or proxy servers to trap these errors and redirect to the friendlier messages instead. The error pages are available on the application server at the following path: AtHocENS\wwwroot\errorpages.

You can take the **errorpages** folder and host it on any web server that is capable of serving HTML, CSS, and Javascript pages.

Note: The server where you host your error pages should be different than the AtHoc server where you are running the AtHoc applications.

To host the folder, administrators copy the folder and make it publicly available from their web server. For example, if you hosted these pages directly under the root folder of the web server, the error pages can then be accessed using the following URL, where <domainnameofserver> refers to the actual domain name of the server:

Error page	Error page URL	Message
500 – Internal Server Error	https://<domainnameofserver>/errorpages/index.html?code=500	The server encountered an unexpected condition which prevented it from fulfilling the request. Try to access the page again. If this doesn't work, wait a few minutes, restart your browser, and then try again.

Error page	Error page URL	Message
503 – Service Unavailable	https://<domainnameofserver>/errorpages/index.html?code=503	The server is unable to load the page you are requesting. This could be because increased traffic is overwhelming the server. Wait a few minutes and then try again.

After these pages are hosted on a different server than the AtHoc server, you can configure the individual proxy server or load balancers to redirect to the static hosted pages based on the error that IIS returns to the client.

Note: Because the configuration process varies depending on the type of load balancer or proxy server being used, the configuration process is not documented here.

(Optional) Set up error pages for Self Service throttling

Self Service is implemented as a separate application which runs in its own application pool. In a production environment, the Self Service application shares CPU resources with other applications like the operator management system. To ensure that alerting is not negatively affected by the Self Service application during heavy loads to the Self Service application, the AtHoc Self Service application pool that Self Service runs under will be throttled so that it uses only 30% of the available CPU at any time. This ensures that BlackBerry AtHoc alerts can always be published, even during heavy loads to Self Service. One impact of this change is that during heavy loads in Self Service, you might encounter some slowness in the Self Service application.

Starting with release 6.1.8.90, the throttling changes are applied automatically by the installer during new installation and upgrade.

Advanced server configuration

The following topics describe advanced server configuration tasks.

Migrate a preinstalled server

In some cases, BlackBerry AtHoc provides a customer with a preinstalled server. In other cases, there is a need to move an installed server to another domain.

Stop services

Stop IIS.

Application server changes

1. Uninstall and reinstall MSMQ.
2. Update the connection string in the registry of all application servers.
3. Update the <Server=Server Name> parameter in the following keys:

```
HKEY_LOCAL_MACHINE\Software\AtHocServer\OleDbConnectionString
```

Start IIS

To perform management system changes, under the **Administration > Parameters > Configuration Options** tab, update the following:

- Time zone
- Homepage URL

Migrate to an enterprise hierarchy

After you upgrade to this release, you can migrate to a BlackBerry AtHoc enterprise. The enterprise provides system-wide alerting and content management for all organizations on your system.

During the upgrade, standard out-of-the-box attributes and alert folders are migrated to System Setup (3) from all other organizations and are now inherited by all other organizations from System Setup. Following the upgrade, run the Enterprise Migrator tool to organize the hierarchy structure and promote user attributes and alert folders.

Plan the enterprise hierarchy

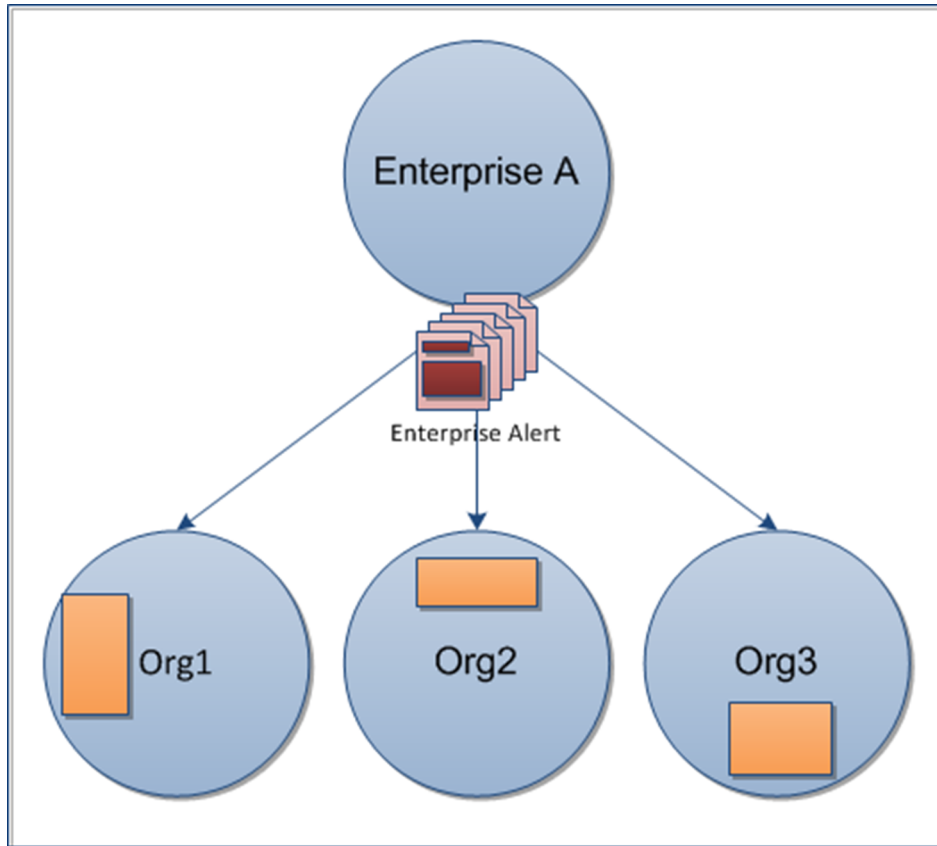
Important: Plan your hierarchy before you use the tool. After you save your changes you cannot change the hierarchy.

The Enterprise Migrator tool displays the organizations currently in your BlackBerry AtHoc system. By default, new organizations that are created in the system are listed under the System Setup node. These are standalone enterprise organizations. They can be used as either an enterprise organization or moved under an enterprise to become a suborganization.

In an AtHoc enterprise, there are three levels:

- The top level is System Setup. The System Administrator role manages the system by logging into the System Setup organization. User attributes and alert folders can be created here, which all organizations in the system inherit.

- The next level is Enterprise. There can be multiple enterprise organizations associated with System Setup. The enterprise administrator manages the enterprise organization and suborganizations. The administrator can create enterprise-level attributes and folders for the enterprise organization that is inherited by its children.



- The third level is suborganization (or member organization). Each enterprise organization can have a unlimited number of suborganizations. The organization administrator manages the local organization only. The administrator can create organization-level attributes and folders for the local organization. A suborganization has peers, but no children.

Using the migration tool, you will choose one organization that acts as the Enterprise organization, and the rest that are members (suborganization). System Setup is the default and top-level organization. An enterprise organization inherits from System Setup and a suborganization inherits from the enterprise organization.

- Typically, content is managed at the Enterprise level because it provides one place to control the content and send alerts to all users in suborganizations. The suborganization level contains content specific to a subset of the Enterprise, customized for a particular organization.
- The Enterprise Migrator tool migrates existing operators that have an Enterprise Administrator role in a suborganization to Organization Administrator. Other operator permissions remain unchanged.
- When you move an organization into the Enterprise, the connect relationships and user accounts remain unchanged for the organization.

Important: Enterprise hierarchy uses inheritance for user attributes and alert folders. Content created at the system level can be seen by Enterprise and suborganizations, but not edited. Content created at the suborganization level cannot be seen at the Enterprise or system levels.

Best practices

- Rename user attributes with the name "Organization". BlackBerry AtHoc provides an enterprise user attribute with this name.

- Plan the promotion of attributes and alert folders:
 - Using enterprise attributes and alert folders is a good way to enforce consistency.
 - If more than one organization uses the same user attribute, the attribute should be promoted to the enterprise level.
 - If organizations use different values for the same user attribute, all values are promoted to the enterprise level.
 - Think about situations in which you need to alert the entire enterprise. What attributes do you need to target all users in an alert? These attributes should be promoted to the enterprise level.
 - Attributes that are for only one suborganizations should stay at the suborganization level.
- Create end users and operators for suborganizations at the suborganization level, not the Enterprise level.
- You can see all users from suborganizations from the enterprise organization so there is no reason to create any users at this level aside from Enterprise operators (operators that need to send alerts more than one suborganization).
- Create a new enterprise organization rather than reuse a headquarters organization if there are existing users. Move the headquarters organization under the enterprise level.

Run the Enterprise Migrator

The Enterprise Migrator tool is provided with the installation package. You can use this tool to specify the relationship between parent and child organizations.

1. Log in to the BlackBerry AtHoc server and change to the following directory:
2. Locate the following executable file: `EAMigrator`.

```
..\AtHocENS\ServerObjects\Tools
```

3. Right-click the file and select **Run as Administrator**.
4. The Enterprise Migrator opens.

Migrate organizations to the enterprise

Run the Enterprise Migration tool to create or modify an enterprise hierarchy, and to promote attributes and alert folders from suborganizations to the enterprise or system level.

1. Plan your hierarchy before you use the tool. After you save your changes you cannot change them.
2. The list of organizations shows all standalone organizations, except for basic organizations. If an organization is missing, it likely has an incorrect database type.
3. In the first column of the Enterprise Migrator, drag and drop any organization under another organization to specify the enterprise and suborganization levels.
4. Verify your structure before you save your changes. After your changes are saved, they cannot be undone..
5. Click **Save Structure** to save the changes.

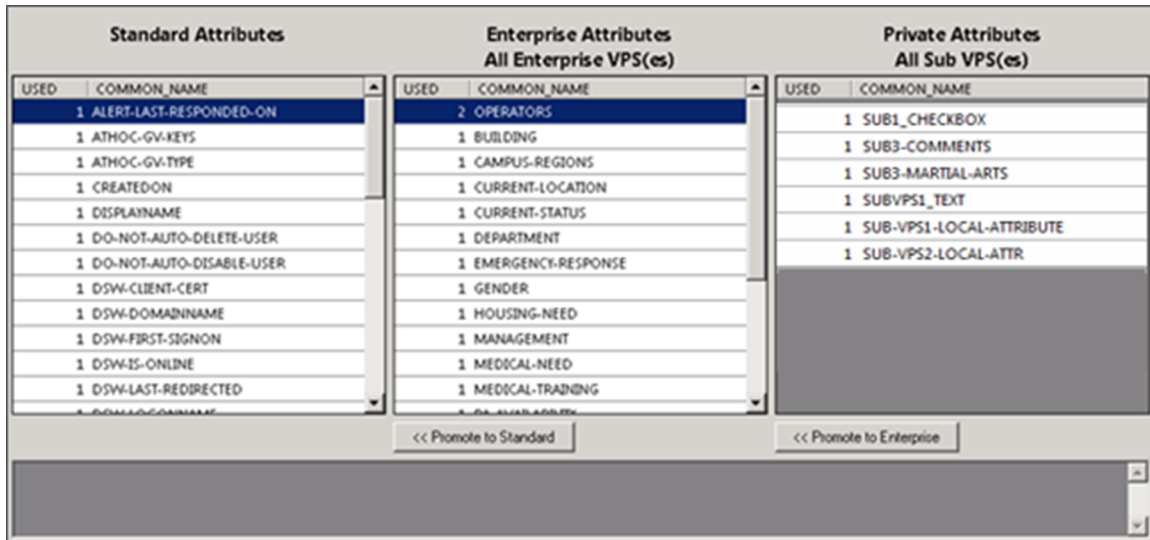
Promote custom attributes and alert folders

During migration, you specify at which level the custom attributes and alert folders are defined: at the system, the enterprise, or the suborganization. If just a small group of users in a suborganization needs access to an attribute, it should be handled locally. However, for most user attributes or alert folders, the system or enterprise level is the typical location.

To promote custom attributes, complete the following steps:

1. Open the Enterprise Migrator tool and click **User Attributes**.
2. Determine how many instances there are of an attribute at the suborganization and enterprise organization level and promote if it seems efficient. If you promote an attribute to the enterprise level, it is promoted from all the suborganizations within that enterprise.

3. Verify that you want to promote the attributes. You cannot undo this step.



4. Select the attribute name and click **Promote to Enterprise** or **Promote to System** to move them up to a higher level.

Promote an attribute from suborganization to Enterprise if the entire enterprise needs to use the attribute. Keep the attribute at sub-organization if you want to restrict access to that organization. For example, promote a general attribute like `DepartmentName` to enterprise because each employee needs to be grouped in a department. Alternatively, keep an attribute like `SoftballTeam` at the suborganization because its members have joined a lunchtime league.

5. Click **Alert Folders**.

6. Select an alert folder type to promote, and click **Promote to Enterprise** or **Promote to System** based on what types of alerts certain personnel should see.

For example, promote an alert folder like `FireDrills` from suborganization to Enterprise if the entire enterprise needs to receive alerts from that alert folder. Keep the alert folder like `ExecutiveSafety` at suborganization if you want to restrict access to operators and users that have a need to know.

7. Save your changes.

You have completed the reorganization.

What's next?

Grant roles to the enterprise administrator for access to the suborganizations.

1. Restart IIS after you have made the structure or content changes.
2. Log in to the enterprise organization as an administrator.
3. Create a user and grant this user the Enterprise Administrator role.
4. Change to each sub-organization and grant the same user the Organization Administrator role.

Duplicate organizations across systems

Use the Organization Duplicator to make a copy of an organization on another server to set up a failover system, or to migrate to a new server. This tool is located on the application server.

Prerequisites:

- Two configured organizations on different database servers:

- **Source server:** The server location of the organization to be duplicated
- **Target server:** The server location where the organization is to be duplicated
- The source server should have configured users, alert templates, map layers, and other objects

Objects that are not duplicated:

- Global health monitors
- AtHoc Connect organizations
- Incoming alerts
- Sent alerts
- User accounts
- Distribution lists (static only)

For detailed information about what is duplicated, see the "Organization Duplicator Object Management" section of this guide.

1. Log in to the application server for the source system and navigate to the following directory:

`AtHocENS/ServerObjects/Tools/VPSDuplicator`

2. Run the Organization Duplicator tool as an administrator.
3. Provide the source and target server information:

- Source:
 - Database server: The source application server name. For example:
`DBSourceServer.mynetwork.com`
 - Username and Password of the ngad database.
- Target:
 - Database server: The target application server name. For example:
`DBTargetServer.mynetwork.com`
 - Username and Password of the ngad database.

4. Click **Connect** to establish a connection and view the organizations that can be duplicated.
5. Select the organizations to be duplicated. The Status column indicates whether the organization is ready to copy.
6. Do one of the following:
 - Click **Copy to Target** to copy the organizations to a new system.
 - Click **New on Source** to create a new organization on the source system.
 - Click **Duplicate on Source** to copy an organization on the same system.

The message log indicates whether the duplication was successful.

Create organizations on the source server

You can also use the Organization Duplicator to create organizations on the source server.

1. Click **New on Source**.
2. Enter the organization name and organization code (around 5 characters).
3. Select the type of organization.
4. Click **OK**.
5. You cannot select an organization administrator using the tool. The message log shows whether the new organization has been created.

Duplicate organizations on the source server

You can also use the Organization Duplicator to duplicate organizations on the source server.

1. Click **Duplicate on Source**.
2. Enter the organization name and the number of copies of the organization that should be created.
3. If you select a value higher than 1, organizations are created with the following string appended to the name: "Copy 0001".
4. Click **OK**.

The message log shows whether the duplicated organizations have been created.

Note: After duplicating the organization, verify operator permissions to the new organization.

- Use the System Administration role to do initial set up. To access the Users menu, use Advanced Operator Manager to assign your user account the Organization Administrator role.
- **Distribution List permissions:** Ensure that users with accounts in a different organization have distribution list permission in the new organization. Use Advanced Operator Manager to provide access distribution lists.
- **Basic Organization roles:** If operators from other organizations need permission for a Basic organization, use Advanced Operator Manager to configure permissions. Grant either the "Admin" or the "Operator" roles. If you choose other roles, you might get unexpected results.

Configure AtHoc database operations to use Windows authentication

Run the configuration script on each application server so that AtHoc database operations use Windows authentication. This script ensures a trusted connection from the application server to connect to database server. All AtHoc applications need to run under a Windows domain account.

1. From the application server, open a command prompt and run as administrator.
2. Navigate to the following directory: <%AtHocENS%>\ServerObjects\Tools\
3. Run the following script, using 32-bit version of cscript: setWindowsAuth.vbs <%DomainName%> <%Domain AccountName%> <%DomainAccountPassword%>

Where:

DomainName	The Windows domain name of the application server
Domain Account Name	Name of the Windows domain account
DomainAccountPassword	Password of the Windows domain account

The script makes the following updates:

- Creates a Windows domain account as a login and a new "AtHoc" database server role in the SQL server. The Windows domain account is created as a member of AtHoc server role.

Database access is granted to the AtHoc server role instead of giving direct access to the Windows domain account. This login is given ownership to all AtHoc databases.

If for any reason a database restore is performed manually and the Windows domain account user account is missing, it can be created by running the ATH_CREATE_USERS SQL stored procedure in the msdb database. To return to SQL authentication by using ngad login, use the ATH_CREATE_USERS stored procedure.

Contact BlackBerry AtHoc Support for information about using this stored procedure.

- Updates the connection string for BlackBerry AtHoc to use a trusted connection.

- Modifies all AtHoc application pool identities in IIS to use the new domain account.
- Modifies the Anonymous account in IIS from IUSR to the new domain account.

Configure IIS processor affinity

On multi-CPU servers, application pools can be configured to establish affinity between worker processes and an individual processor to more efficiently use CPU caches. This configuration also isolates applications such that if one application causes a CPU to stop responding, other CPU's continue to function normally. Processor affinity is used in conjunction with the processor affinity mask setting to specify CPUs.

1. Create a .vbs file named affinity.vbs, copy the following data, and save it in your temp folder.

```
set appPoolObj=GetObject("IIS://localhost/W3svc/AppPools/DefaultAppPool")
' Set the properties. Enable processor affinity for processors 0,1,2,3:
appPoolObj.Put "SMPAffinitized", TRUE
appPoolObj.Put "SMPProcessorAffinityMask", &HFF
' Save the property changes in the metabase:
appPoolObj.SetInfo
WScript.Echo "After: " & appPoolObj.SMPAffinitized & ", " &
appPoolObj.SMPProcessorAffinityMask
```

2. Change the value of **SMPProcessorAffinityMask** in `affinity.vbs` to reflect the number of cores available.

The value for `SMPProcessorAffinityMask` must be entered as hexadecimal.

3. Complete any of the following tasks:

Task	Steps
Specify specific cores to use.	<p>Create the value as binary (each core is represented by 1 bit) and then transformed into a hexadecimal. The easiest way to do this is to use a Windows scientific calculator.</p> <p>For example, eight cores in binary would be represented as 11111111.</p>
Specify to use only the first four cores. For example, all cores in the same chip for a quad-core)	Select 00001111 or 11110000 (if dual-quad.)
Specify to use every other core.	<ol style="list-style-type: none"> Enter 10101010 (or 01010101) in a Windows scientific calculator in binary data (Bin) and click Hex to see the equivalent value in hexadecimal (&AA or &55). Stop IIS and run the <code>affinity.vbs</code> file in a command prompt. (<code>cscript affinity.vbs</code>) <p>You should see the mask change to the correct decimal value for the hexadecimal value that was used. If you are not sure what the decimal value should be, check the Windows calculator.</p> <ol style="list-style-type: none"> Reset the IIS. Open the Performance Monitor (<code>perfmon</code>) performance tab to verify that the correct core combination is used.

Increase the IIS file size upload limit

When uploading files, IIS may return an HTTP 500 error because the maximum file size limit has been exceeded. For example, this can occur when uploading very large .csv or audio files.

1. In IIS Manager, click on the **client** web application.
2. Double-click the ASP feature icon.
3. Expand the Limits Properties.
4. Change the value of the Maximum Requesting Entity Body Limit.

This entry specifies the maximum number of bytes allowed in the entity body of an ASP request.

Note: The MSI sets this to 20480000 (20 Mb). If audio files larger than that will need to be uploaded, this value needs to be increased.

Database recovery setting

If the recovery model for the SQL databases are set to Full, the transaction log files must be backed up before they become full. Otherwise, all operations on the database will stop and the system will freeze. It is very important to understand the backup strategy for the site and configure these settings carefully. Consult with your database administrator before you make any changes to the recovery model.

Note: The default setting for recovery is **Simple**.

IIS 8.5 Security Technology Implementation Guide

The following sections describe the server and application tasks that you need to complete to achieve IIS 8.5 STIG compliance in your BlackBerry AtHoc system.

Server STIG

This section describes the tasks you need to complete to ensure your servers comply with the IIS 8.5 STIG.

IISW-SV-000103: Enable log file and Event Tracing windows

Both the log file and Event Tracing for Windows (ETW) for the IIS 8.5 web server must be enabled.

To check compliance with IISW-SV-000103, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the IIS 8.5 server name.
3. Click the **Logging** icon.
4. Under **Log Event Destination**, verify that the **Both log file and ETW event** option is selected.

If the **Log file only** option is selected, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the IIS 8.5 server name.
3. Click the **Logging** icon.
4. Under **Log Event Destination**, select the **Both log file and ETW event** option.
5. In the Actions pane, click **Apply**.

IISW-SV-000107: Sufficient web server log records for location of web server events

The IIS 8.5 web server must produce log records that contain sufficient information to establish where IIS 8.5 web server events occurred.

To check compliance with IISW-SV-000107, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Format**, select **W3C**.
5. Click **Select Fields**.
6. Verify that the **Service Name** and **Protocol Version** fields are selected.

If the **Service Name** and **Protocol Version** fields are not checked, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the IIS 8.5 web server name.
3. Click the **Logging** icon.
4. Under **Format**, select **W3C**.
5. Select the **Service Name** and **Protocol Version** fields.
6. Click **OK**.

7. In the Actions pane, click **Apply**.

IISW-SV-000108: Sufficient web server log records for source of web server events

The IIS 8.5 web server must produce log records that contain sufficient information to establish the source of IIS 8.5 web server events.

To check compliance with IISW-SV-000108, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Format**, select **W3C**.
5. Click **Select Fields**.
6. Verify that **Server Name** and **Host** are checked.

If the **Server Name** and **Host** fields are not checked, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Format**, select **W3C**.
5. Select the **Server Name** and **Host** fields.
6. Click **OK**.
7. In the Actions pane, click **Apply**.

IISW-SV-000110: Sufficient web server log records to establish the outcome of web server events

The IIS 8.5 web server must produce log records that contain sufficient information to establish the outcome (success or failure) of IIS 8.5 web server events.

To check compliance with IISW-SV-000110, complete the following steps:

1. Open the IIS 8.5 web server IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Log File**, verify that **Format:** is set to **W3C**.
5. Click **Fields**.
6. Under **Custom Fields**, verify that the following fields are configured:
 - Request Header >> Connection
 - Request Header >> Warning

If any of these fields are not configured, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 web server IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Verify that **Format:** under **Log File** is set to **W3C**.
5. Click **Fields**.
6. Select the following custom fields:
 - Request Header >> Connection

- Request Header >> Warning
7. Click **OK**.
 8. In the Actions pane, click **Apply**.

IISW-SV-000111: Sufficient web server log records to establish identity

The IIS 8.5 web server must produce log records that contain sufficient information to establish the identity of any user, subject, or process associated with an event.

To check compliance with IISW-SV-000111, complete the following steps:

1. Open the IIS 8.5 web server IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Log File**, verify that the format is set to **W3C**.
5. Click **Fields**.
6. Under **Standard Fields**, verify that **User Agent**, **User Name**, and **Referrer** are selected.
7. Under **Custom Fields**, verify that the following fields are selected:
 - Request Header >> User-Agent
 - Request Header >> Authorization
 - Response Header >> Content-Type

If any of these fields are not selected, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 web server IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Log File**, verify that the format is set to **W3C**.
5. Select **Fields**.
6. Under **Standard Fields**, select **User Agent**, **User Name**, and **Referrer**.
7. Under **Custom Fields**, select the following fields:
 - Request Header >> User-Agent
 - Request Header >> Authorization
 - Response Header >> Content-Type
8. Click **OK**.
9. Under Actions, click **Apply**.

IISW-SV-000112: Web server must use Event Tracing for Windows logging option

The IIS 8.5 web server must use the Event Tracing for Windows (ETW) logging option.

To check compliance with IISW-SV-000112, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Verify that the **W3C** format is selected for **Log File**.
5. Verify that the **Both log file and ETW event** log event destination option is selected.

If the **W3C** or the **Both log file and ETW event** options are not selected, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. For the Log File, select **W3C** from the **Format** list.
5. For Log Event Destination, select the **Both log file and ETW event** option.
6. In the Actions pane, click **Apply**.

IISW-SV-000120: Samples, examples, and tutorials must be removed from production server

All IIS 8.5 web server sample code, example applications, and tutorials must be removed from a production IIS 8.5 server.

To check compliance with IISW-SV-000120, complete the following steps:

1. Navigate to the **inetpub** folder.
2. Check for any executable sample code, example applications, or tutorials that are not explicitly used by a production website.
3. Navigate to the **Program Files\Common Files\System\msadc** folder.
4. Check for any executable sample code, example applications, or tutorials that are not explicitly used by a production website.
5. Navigate to the **Program Files (x86)\Common Files\System\msadc** folder.
6. Check for any executable sample code, example applications, or tutorials that are not explicitly used by a production website.

If any of the folders or sub folders above contain any executable sample code, example applications, or tutorials that are not explicitly used by a production website, your server is not compliant.

If your server is not compliant, remove any executable sample code, example applications, or tutorials that are not explicitly used by a production website.

IISW-SV-000124: Web server must have MIMEs that invoke OS shell programs disabled

The IIS 8.5 web server must have Multipurpose Internet Mail Extensions (MIMEs) that invoke OS shell programs disabled.

To check compliance with IISW-SV-000124, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **MIME Types** icon.
4. From the **Group by** list, select **Content Type**.
5. Click **Select Fields**.
6. Under **Application**, verify that the following MIME types for OS shell program extensions have been removed from the list of extensions:
 - .exe
 - .dll
 - .com
 - .bat
 - .csh

If any of these OS shell MIME types are configured, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.

3. Under **IIS**, double-click the **MIME Types** icon.
4. Select **Content Type** from the **Group by:** list.
5. Under **Application**, remove the following MIME types for OS shell program extensions from the list of extensions:
 - .exe
 - .dll
 - .com
 - .bat
 - .csh
6. In the Actions pane, click **Apply**.

IISW-SV-000146: Web server must not impede ability to write log record content to an audit log

The IIS 8.5 web server must not impede the ability to write specified log record content to an audit log server.

To check compliance with IISW-SV-000146, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Log Event Destination**, verify that the **Both log file and ETW event** option is selected.

If the **Both log file and ETW event** option is not selected, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Under **IIS**, double-click the **Logging** icon.
4. Select the **Both log file and ETW event** option.
5. In the Actions pane, click **Apply**.

IISW-SV-000153: Web server must maintain the confidentiality of controlled information during transmission

An IIS 8.5 web server must maintain the confidentiality of controlled information during transmission through the use of an approved TLS version.

To check compliance with IISW-SV-000153, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Access an administrator command prompt.
4. Type **regedit<enter>** to access the registry of the server.
5. Navigate to the following registry paths:

- HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\TLS 1.1\Server
- HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\TLS 1.1\Server

6. Verify that **DisabledByDefault** has a REG_DWORD value of **0**.

7. Navigate to the following registry paths:

- HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\TLS 1.0\Server

- HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\SSL 2.0\Server
- HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\SSL 3.0\Server

8. Verify that **DisabledByDefault** has a REG_DWORD value of **1**.

If any of the listed registry paths do not exist or are configured with the incorrect value, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 web server name.
3. Access an administrator command prompt.
4. Type **regedit<enter>** to access the registry of the server.
5. Navigate to the following registry paths:
 - HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\TLS 1.1\Server
 - HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\TLS 1.1\Server
6. Set the **DisabledByDefault** REG_DWORD value to **0**.
7. Navigate to the following registry paths:
 - HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\TLS 1.0\Server
 - HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\SSL 2.0\Server
 - HKLM\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols\SSL 3.0\Server
8. Set the **DisabledByDefault** REG_DWORD value to **1**.

IISW-SV-000154: Web server must maintain the confidentiality of controlled information during transmission

The IIS 8.5 web server must maintain the confidentiality of controlled information during transmission through the use of an approved TLS version.

To check compliance with IISW-SV-000154, complete the following steps:

1. Review the web server documentation.
2. Review the web server deployed configuration.
3. Determine which version of TLS is being used.

If the TLS version is not an approved version according to NIST SP 800-52 or to the non-FIPS-approved enabled algorithms, your server is not compliant.

If your server is not compliant, complete the following steps:

1. Configure the web server to use an approved TLS version according to NIST SP 800-52.
2. Disable any non-approved TLS versions.

Application STIG

This section describes the tasks you need to complete to ensure your application complies with the IIS 8.5 STIG.

IISW-SI-000206: Enable log file and Event Tracing windows

Both the log file and Event Tracing for Windows (ETW) for each IIS 8.5 website must be enabled.

To check compliance with IISW-SI-000206, complete the following steps for each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 Manager.
2. Click the website name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Log Event Destination**, verify that the **Both log file and ETW event** option is selected.

If the **Both log file and ETW event** option is not selected, your application is not compliant.

If your application is not compliant, complete the following steps:

1. Open the IIS 8.5 Manager.
2. Click the website name.
3. Under **IIS**, double-click the **Logging** icon.
4. Under **Log Event Destination**, select the **Both log file and ETW event** option.
5. In the Actions pane, click **Apply**.

IISW-SI-000209: Sufficient website log records to establish identity

The IIS 8.5 web site must produce log records containing sufficient information to establish the identity of any user, subject, or process associated with an event.

To check compliance with IISW-SI-000209, complete the following steps on each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 web server IIS 8.5 Manager.
2. Under **IIS**, double-click the **Logging** icon.
3. Under **Log File**, verify that the **Format:** field is configured to **W3C**.
4. Click **Fields**.
5. Under **Standard Fields**, verify that the **User Agent**, **User Name**, and **Referrer** fields are selected.
6. Under **Custom Fields**, verify that the following fields are selected:
 - Server Variable >> HTTP_USER_AGENT
 - Request Header >> User-Agent
 - Request Header >> Authorization
 - Response Header >> Content-Type

If any of the above fields are not selected, your application is not compliant.

If your application is not compliant, complete the following steps on each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 web server IIS 8.5 Manager.
2. Under **IIS**, double-click the **Logging** icon.
3. Under Log File, set the **Format:** field to **W3C**.
4. Click **Fields**.
5. Under **Standard Fields**, select the **User Agent**, **User Name**, and **Referrer** fields.
6. Under **Custom Fields**, select the following fields:
 - Server Variable >> HTTP_USER_AGENT
 - Request Header >> User-Agent
 - Request Header >> Authorization
 - Response Header >> Content-Type

7. Click **OK**.
8. In the Actions pane, click **Apply**.

IISW-SI-000210: Sufficient website log records to establish identity

The IIS 8.5 web site must produce log records containing sufficient information to establish the identity of any user, subject, or process associated with an event.

To check compliance with IISW-SI-000210, complete the following steps on each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 web server IIS 8.5 Manager.
2. Under **IIS**, double-click the **Logging** icon.
3. Under **Log File**, verify that the **Format:** field is configured to **W3C**.
4. Click **Fields**.
5. Under **Standard Fields**, verify that the **User Agent**, **User Name**, and **Referrer** fields are selected.
6. Under **Custom Fields**, verify that the following fields are selected:
 - Server Variable >> HTTP_USER_AGENT
 - Request Header >> User-Agent
 - Request Header >> Authorization
 - Response Header >> Content-Type

If any of the above fields are not selected, your application is not compliant.

If your application is not compliant, complete the following steps on each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 web server IIS 8.5 Manager.
2. Under **IIS**, double-click the **Logging** icon.
3. Click the **Logging** icon.
4. Under **Log File**, set the **Format:** field to **W3C**.
5. Click **Fields**.
6. Under **Standard Fields**, select the **User Agent**, **User Name**, and **Referrer** fields.
7. Under **Custom Fields**, select the following fields:
 - Server Variable >> HTTP_USER_AGENT
 - Request Header >> User-Agent
 - Request Header >> Authorization
 - Response Header >> Content-Type
8. Click **OK**.
9. In the Actions pane, click **Apply**.

IISW-SI-000211: Website must use Event Tracing for Windows logging option

The IIS 8.5 web server must use the Event Tracing for Windows (ETW) option.

To check compliance with IISW-SV-000211, complete the following steps for each website hosted on the IIS 8.5 web server.

1. Open the IIS 8.5 IIS Manager.
2. Select the website to review.
3. In the **IIS** section, double-click the **Logging** icon.
4. Verify that the **W3C** format is selected for **Log File**.
5. Verify that the **Both log file and ETW event** log event destination option is selected.

If the **W3C** or the **Both log file and ETW event** options are not selected, your application is not compliant.

If your application is not compliant, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Select the website to update.
3. In the **IIS** section, double-click the **Logging** icon.
4. For the Log File, select **W3C** from the **Format** list.
5. For Log Event Destination, select the **Both log file and ETW event** option.
6. In the Actions pane, click **Apply**.

IISW-SI-000214: Website must have MIMEs that invoke OS shell programs disabled

The IIS 8.5 website must have Multipurpose Internet Mail Extensions (MIMEs) that invoke OS shell programs disabled.

To check compliance with IISW-SI-000214, complete the following steps on each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 website.
3. Under **IIS**, double-click the **MIME Types** icon.
4. From the **Group by** list, select **Content Type**.
5. Click **Select Fields**.
6. Under **Application**, verify that the following MIME types for OS shell program extensions have been removed from the list of extensions:
 - .exe
 - .dll
 - .com
 - .bat
 - .csh

If any of these OS shell MIME types are configured, your application is not compliant.

If your application is not compliant, complete the following steps:

1. Open the IIS 8.5 IIS Manager.
2. Click the IIS 8.5 website.
3. Under **IIS**, double-click the **MIME Types** icon.
4. Select **Content Type** from the **Group by** list.
5. Under **Application**, remove the following MIME types for OS shell program extensions from the list of extensions:
 - .exe
 - .dll
 - .com
 - .bat
 - .csh
6. In the Actions pane, click **Apply**.

IISW-SI-000228: Non-ASCII characters in URLs must be prohibited

Non-ASCII characters in URLs must be prohibited by any IIS 8.5 website.

To check compliance with IISW-SI-000228, complete the following steps:

1. Open the IIS 8.5 Manager.

2. Click website name.
3. Double-click the **Request Filtering** icon.
4. In the Actions pane, click **Edit Feature Settings**.
5. Verify that the **Allow high-bit characters** check box is not selected.

If the **Allow high-bit characters** check box is selected, your application is not compliant.

Note: If the website has operational reasons to set **Allow high-bit characters**, this vulnerability can be documented locally by the ISSM/ISSO.

If your application is not compliant, complete the following steps for each site hosted on the IIS 8.5 web server:

1. Open the IIS 8.5 Manager.
2. Click the website name.
3. Double-click the **Request Filtering** icon.
4. In the Actions pane, click **Edit Feature Settings**.
5. Deselect the **Allow high-bit characters** check box.


Verifying BlackBerry AtHoc is operational

After you complete a new install or upgrade of BlackBerry AtHoc, a thorough test of functionality should be performed to ensure that the system operates properly. This chapter presents a set of test procedures that cover the most important system functions.

Basic BlackBerry AtHoc test procedures

The following tables provides detailed instructions on the basic BlackBerry AtHoc test procedures.


Log in

✓	Description	Expected result
	Open a browser, and navigate to the Management System application. To do this, navigate to the <AtHoc-ENS-URL>. For example, <code>https://alerts.company.com</code> (if SSL is used).	The login page displays.
	Log in as an administrator.	The BlackBerry AtHoc management system home page displays.
	In the navigation bar, click  .	—

Connect a client



✓	Description	Expected result
	Install a desktop software client, as described in the <i>BlackBerry AtHoc Desktop App Installation and Administration Guide</i> .	The desktop software is installed on the user's computer and the user appears in the User manager.

Custom attributes

✓	Description	Expected result
	Open the BlackBerry AtHoc management system. In the navigation bar, click  .	—
	Click the User Attributes link in the Users section and click New .	—
	Create a multi-select picklist attribute whose Attribute Name is Test .	—
	Assign two pick-list values to the Test attribute: T1 and T2 .	—

✓	Description	Expected result
	Click Save to create the pick list attribute.	A pick list attribute named Test is created.
	Create a number attribute named ID .	A number attribute named ID is created.
	Create a text attribute named Comments .	A text attribute named Comments is created.
	Select the pick list attribute named Test and click Delete .	The Test attribute is deleted.

Hierarchy editing

✓	Description	Expected result
	In the navigation bar, click  .	The Settings page opens.
	From the Settings screen, in the Users section, click User Attributes .	The User Attributes screen opens.
	On the User Attributes screen, select the attribute that is of the Type Path .	The Organizational Hierarchy settings page opens.
	In the Values section, add or delete a node.	—
	Click Save .	A Success message is displayed.
	In the navigation bar, click  .	The Settings page opens.
	From the Settings screen, in the Users section, click Distribution List Folders .	The Distribution List Folders screen opens.
	On the Distribution List Folders screen, add or delete a node.	—
	Click Save .	A success message is displayed.

Distribution lists

✓	Description	Expected result
	In the navigation bar, click the Users menu. Click Distribution Lists .	—
	Create a static list named Stat1 and add your user ID as a member.	The Members field displays 1.
	Create a dynamic list named Dyn1 and add a criteria that includes your user ID in the results.	—

Import or export users

✓	Description	Expected result
	In the navigation bar, click the Users > Users .	—
	Click More Actions > Import > Users .	—
	Download a template .csv file. An Excel spreadsheet opens and must (if new install) contain only the selected User ID.	Note: Excel must be installed on your computer. If you do not have Excel, use Notepad to view the .csv file content. The file must contain all static lists, custom attributes, and devices.
	Fill all of the required fields.	—
	Save the file under the name <code>test.csv</code> .	—
	Return to the management system and continue from the Import User File screen.	—
	Select the import .csv file: <ol style="list-style-type: none"> 1. Click Browse. 2. In the file selection dialog, navigate to and select the <code>test.csv</code> file. 3. Right-click and select Open with to confirm the selection of the file. 4. Click Open. 5. Click Import. 	The Import User Progress window displays and all users must be successfully processed. The Last import field must display the correct date and time of the import.
	Click Download Log and in the File Download dialog, select Open .	An Excel spreadsheet opens and displays all the users from the .csv file. The AtHoc Import Result column contains the value <i>OK</i> and each user has a unique user ID.
	Compare the Users list with the Import .csv file. To open the .csv file: <ol style="list-style-type: none"> 1. From the Users page, select click More Actions > Import > Users. 2. Click Browse and open the import .csv file. 	An Excel spreadsheet opens and contains the current user and the users that were imported.
	In the navigation bar, click Users > Users .	All qualified users display in the table.
	Spot check users to verify that the correct details have been imported.	The details pane at the bottom of the screen displays the correct information for the selected end user.

Alert templates

✓	Description	Expected result
	In the navigation bar, click Alert > Alert Templates .	The Alert Templates list opens.
	Click New .	The New Alert Template screen opens.
	Create an alert template named SC1 .	—
	For the new template: <ul style="list-style-type: none"> • Select Available for Quick Publish. • Add the title and body. • Add a response option. • Target one or more users. • Select delivery to the following device: Desktop popup. • Check spelling. 	—
	Save the alert template.	An alert template named SC1 is created.

Alert publishing

✓	Description	Expected result
	In the navigation bar, click Alert > New Alert .	—
	Publish an alert template: <ol style="list-style-type: none"> 1. Select the SC1 alert template and click Edit Alert. 2. In the Targeting section, click View List. 3. Click Review and Publish. 4. Click Publish. 	All qualified users are targeted. The Sent Alerts list displays the published alert with a Live status. If the status is still Scheduled, wait 15 seconds and re-select Sent Alerts to refresh the display. The status must be live in no more than 15 seconds from template activation.
	Wait up to two minutes for the alert to arrive on the users desktop. After you receive the pop-up, click Acknowledge and Close .	The desktop pop-up displays and audio alert plays (if speakers are connected and audio is enabled). Upon acknowledgment, the pop-up must disappear.


Self Service

✓	Description	Expected result
	<p>From the users computer, right-click the AtHoc desktop software system tray icon and select Access Self Service.</p> <p>For Mac users, left-click to open the status item menu.</p> <p>Note: The Safari browser is launched for any service selected from the status item menu.</p>	<p>A new browser window displays the Self Service Inbox which contains the just published alert (but only if the user authentication is set to Auto\Windows authentication).</p>
	<p>Navigate through the other Self Service tabs and verify that the displayed information is correct.</p>	<p>The published alert appears in the list with a Live status.</p>

Alert tracking reports

✓	Description	Expected result
	<p>In the Navigation bar, click Alert > Sent Alerts.</p>	<p>The published alert appears in the list with a Live status.</p>
	<p>Hover the pointer over the published alert. The tool tip displays the title body and responses. Click the alert to open the details.</p>	<p>You can see the Delivery Summary, which lists the number of targeted users, the number of Sent to users, and the number of users who acknowledged the alert.</p> <p>You can also see a drop-down list of detail reports.</p>
	<p>Click Export > Export Full Report. Note that you must have Excel 2003 or higher installed on your computer to open the report.</p>	<p>You are asked to open the .csv file. The Detailed Alert tracking report must open and display the alert details and track information.</p> <p>You can see the users who received and acknowledged the alert.</p>

Audio files

✓	Description	Expected result
	<p>In the navigation bar, click .</p>	<p>—</p>
	<p>Click New.</p>	<p>—</p>
	<p>Enter an audio name and upload a .wav file that is larger than 1 MB but not more than 2 MB.</p>	<p>Note: You can record a .wav file using the Windows Sound Recorder (Start / Programs / Accessories / Entertainment / Sound Recorder). A voice recording of 30 seconds must be 1 MB. After you record a voice, save it using File / Save As.</p>

✓	Description	Expected result
	After selecting the file to be uploaded, click Save .	# Return to Audio Files.

Error logs

✓	Description	Expected result
	Check the Windows application event log and the AtHocEventViewer on the application server.	You must not see any unexplained errors in the log.

Extended BlackBerry AtHoc test procedures

✓	Description	Expected result
	Perform detailed end user search.	
	Publish an alert targeted to a static list.	
	Publish an alert targeted to a dynamic list.	
	Publish an alert with different device preference options.	
	Create an operator with a user base.	
	Create, enable, disable, delete an alert folder.	
	Manually create a new user and assign a custom attribute.	
	End a published alert.	
	Check navigation.	

Appendix A: Troubleshooting

Error code: None
Message: The installation stops because the following prerequisites are missing on the server. Install these components first: <i><List of Missing Prerequisites></i>
Cause: The listed prerequisites are not installed.
Resolution: Install the missing prerequisites.

Error code: None
Message: Error connecting to the database. Check that the database server is up and that the Microsoft SQL Server services is running, then click OK to try again. Click Cancel to exit.
Cause: If this message appears after receiving a success with the Test Connection button, the application server installation is likely on a different domain than the installation for the database server (the MSI connects using Windows authentication).
Resolution: Run the MSI with the <code>msiexec</code> command, and pass in the following parameters to specify a sys admin account: IS_SQLSERVER_AUTHENTICATION=1 IS_SQLSERVER_USERNAME=sa IS_SQLSERVER_PASSWORD=the_password

Error code: None
Message: ActiveX component can't create object: 'Scripting.FileSystemObject' MSI fails when attempting to run a VBScript custom action.
Cause: One or both of the following issues: <ul style="list-style-type: none">• HBSS is enabled• McAfee overwrote the registry entry for VBScript.dll with its own entry.
Resolution: <ul style="list-style-type: none">• Disable HBSS for installation• Check the value for the following parameter: <code>HKLM/Software/Classes/CLSID/{B54F3741-5B07-11cf-A4B0-00AA004A55E8}\InprocServer32</code>, Make sure the value is: <code>C:\Windows\system32\vbscript.dll</code>

Error code: None
Message: Microsoft SQL Server is not installed.

Error code: None

Cause: The MSI displays this error during a new database installation if one of the following issues exists:

- The version of Microsoft SQL Server is earlier than 2012.
- The MSI is being run from the application server.

Resolution:

- Install Microsoft SQL Server 2012 or later.
- Perform a new database server installation on the database server.

Error code: 2146893052

Message: Connection was successfully established with the server but an error occurred during the pre-login handshake (provider: SSL provider, error 0. the local security authority cannot be connected).

Cause: The Microsoft SQL Server password requirement is not met by the default password provided in the MSI.

Resolution: Choose a different password than the default password for ngad. Enter a custom password that meets the strong password requirement of Microsoft SQL Server.

Error code: 2147217843

Message: Failed to connect to SQL database (-2147217843 database_name).

Cause: When you receive this during upgrade, it could be corruption in the MSI.

Resolution: Contact BlackBerry AtHoc Support.

Error code: 2148217873

Message: Failed to execute SQL string, error detail: The statement has been terminated.

Cause: Bad data

For example, an SQL statement attempted to insert a null value into a column that does not accept nulls

Resolution: BlackBerry AtHoc Support may be able to help fix the data. If you contact BlackBerry AtHoc Support, be prepared to provide the MSI log file for analysis.

Error code: 2147217887

Message: Generic Error

Cause: A problem with the MSI

Resolution: Report the issue to BlackBerry AtHoc Support; it requires a fix and new installation package.

Error code: 2147217900

Message: No additional message.

Cause: During a new installation, the `ngad` user password does not meet Microsoft SQL Server password requirements.

Resolution: Do not use the default password for `ngad`. Enter a custom password that meets the strong password requirement of Microsoft SQL Server.

Error code: 2147217900

Message: The operating system returned the error "5(Access is denied." while attempting to "restoreContainer::ValidateTargetForCreation" on <path>."

Cause: Microsoft SQL Server service account does not have permission to create files.

Resolution: Change the service account to "Local System account".

Error code: 2147217900

Message: No additional message

Cause: The transaction log for database NGADDATA is full.

Resolution: Shrink the NGADDATA database and back up the transaction log.

Error code: 2147217900

Message: No additional message

Cause: The Application server logon account did not have a logon on the Database server, or did not have a Microsoft SQL Server logon with system administrator rights.

Resolution: Grant the correct permissions or switch to an account that has the correct permissions.

Error code: 2147217900

Message: 3a CreateUsers Error running ATH_CREATE_USERS sp: error -2147217900, exec dbo.ATH_DROP_USERS @dropLogin = 1

Cause: Microsoft SQL Server is configured to require strong passwords, and the user chose to use the default password for the `ngad` database user, which does not meet strong password requirements.

Resolution: Do not use the default password for `ngad`. Enter a custom password that meets the strong password requirement of Microsoft SQL Server.

Error code: 2147217900

Message: 3a CreateUsers Error running ATH_CREATE_USERS sp: error -2147217900, exec dbo.ATH_DROP_USERS @dropLogin = 1

Cause: The ngad user account was created manually (incorrectly).

Resolution: Call your DBA, or contact BlackBerry AtHoc Support. Be prepared to provide the MSI log file for analysis.

Error code: 2147319779

Message: Library not registered

Cause: `sccrun.dll` is not registered. This error occurs when one of the custom actions executes a `CreateObject` on `Scripting.FileSystemObject`. This error occurs on some locked down systems.

Resolution: Register the 32-bit version of `sccrun.dll`.

Error code: 2147467259

Message: Unspecified error

Cause: A connection to the database server could not be made and returns the COM error code: E_FAIL "Unspecified error", which is a generic return code when a COM method call fails.

Resolution: Make sure that the Microsoft SQL Server service is running or call BlackBerry AtHoc Support.

Error code: 2147467259

Message: Failed to connect to SQL database...

Cause: The Windows authentication for the MSI was improperly handled.

Resolution: Contact BlackBerry AtHoc support. Be prepared to provide the MSI log file for analysis.

Error code: None

Message: 3 SetTransactionLogSize - Error: MODIFY FILE failed. Size is greater than MAXSIZE. Provider-SQLOLEDB.I;Server=192.168.0.127;Initial Catalog=msdb;Integrated Security=SSPI.

Cause: The transaction log size is already set to a larger value than the size that the MSI is attempting to set it to.

Resolution: Decrease the size of the database that is specified in the error message. Set the transaction log size to a value less than 10 GB.

Error code: 2147217900

Message: 3a IWSDBCA_IncreaseTransactionLogSize forUpgrade - Error: -214721790, Database 'ngevent' cannot be opened due to inaccessible files or insufficient memory or disk space. See the Microsoft SQL Server error log for details.

Cause: Unsupported upgrade steps

Resolution: Contact BlackBerry AtHoc support and ask for a copy of `ngevent.bak`, and restore it. Rerun the MSI after restoring `ngevent`.

Error code: None

Message: Assertion failed in `c:\documents and settings\robmen\local settings\temp\wp001\src\wcautil.cpp.64 CustomAction ConfigureSql called WcaInitialize() but not WcaTerminate() Abort=Debug, Retry=Skip, Ignore=Skip all`

Cause: Wix or Windows Installer bug

Resolution: Rerun the MSI.

Appendix B: Organization duplicator object management

This section describes the objects that are copied during a single or cross-system duplication. Some objects are not duplicated depending on the type of the source organization or the account type.

The following tables describe objects that are duplicated to the organization on the target server.

Feature: Server configuration
Objects: <ul style="list-style-type: none">• Cascading systems• Images• Gateways and devices• Health monitors (Actions only, not Global Health Monitors.)
Duplicates across servers: <ul style="list-style-type: none">• Enterprise/sub (from SRC/SRC)• Basic (from SRC)
Feature: System Setup (Organization 3)
Objects: <ul style="list-style-type: none">• Attributes• Channels
Duplicates across servers: <ul style="list-style-type: none">• Enterprise/sub (from SRC/SRC)• Basic (from SRC)
Feature: Standard Organization Configuration
Objects: <ul style="list-style-type: none">• Provider configuration• Page layouts• Buttons• Gateways and devices• Standard hierarchy (Org hierarchy, DL hierarchy, Emergency Community)• Standard DLs (Auto delete users, auto disable users)• Alert templates• Maps and layers
Duplicates across servers: <ul style="list-style-type: none">• Enterprise/sub (from SRC/SRC)• Basic (from SRC)

Feature: Custom organization configuration

Objects:

- Attributes
- Channels
- Audio
- Templates
- Mass devices
- Custom DLs (Except static list user membership [see Users].)
- Alert templates (Except targeting of individual users [see Users].)
- Reports
- Schedules

Duplicates across servers:

- Enterprise/sub (from SRC/SRC)
- Basic (from SRC)

Feature: Custom organization configuration

Objects:

- Operator permissions
- Users, their DL memberships, and targeting (Organization users, Static DL user membership, alert templates individual user targeting)

Not duplicated across servers:

- Enterprise/sub (from SRC/SRC)
- Basic (from SRC)

The following tables describe objects that are created on the source server for a new organization, or duplicated to a new organization on the same server.

Feature: Server configuration

Objects:

- Cascading systems
- Images
- Gateways and devices
- Health monitors (Actions only, not Global Health Monitors.)

Feature: Server configuration

Not created on the same server:

- Enterprise (from 5)
- Sub (from ENT)
- Basic (from 6)

Not duplicated on the same server:

- Enterprise (from SRC)
- Sub (from SRC)
- Basic (from SRC)

Feature: System setup (Organization 3)

Objects:

- Attributes
- Channels

Not created on the same server:

- Enterprise (from 5)
- Sub (from ENT)
- Basic (from 6)

Not duplicated on the same server:

- Enterprise (from SRC)
- Sub (from SRC)
- Basic (from SRC)

Feature: Standard organization configuration

Objects:

- Provider configuration
- Page layouts
- Buttons
- Gateways and devices
- Standard hierarchy (Org hierarchy, DL hierarchy, Emergency Community)
- Standard DLs (Auto delete users, auto disable users)
- Alert templates
- Maps and layers

Feature: Standard organization configuration

Created on the same server:

- Enterprise (from 5)
- Sub (from ENT)
- Basic (from 6)

Duplicated on the same server:

- Enterprise (from SRC)
- Sub (from SRC)
- Basic (from SRC)

Feature: Custom organization configuration

Objects:

- Attributes
- Channels
- Audio
- Templates
- Mass devices
- Custom DLs (Except static list user membership [see Users].)
- Alert templates
- Reports

Created on the same server:

- Enterprise (from 5)
- Basic (from 6)

Not created on the same server:

- Sub (from ENT)

Duplicated on the same server:

- Enterprise (from SRC)
- Sub (from SRC)
- Basic (from SRC)

Feature: Custom organization configuration

Objects:

- Users, their DL memberships and targeting (Organization users, static DL user membership, alert templates, individual user targeting)

Feature: Custom organization configuration

Not created on the same server:

- Enterprise (from 5)
- Sub (from ENT)
- Basic (from 6)

Not duplicated on the same server:

- Enterprise (from SRC)
- Sub (from SRC)
- Basic (from SRC)

BlackBerry AtHoc Customer Support Portal

BlackBerry AtHoc customers can obtain more information about BlackBerry AtHoc products or get answers to questions about their BlackBerry AtHoc systems through the Customer Support Portal:

<https://www.blackberry.com/us/en/support/enterpriseapps/athoc>

The BlackBerry AtHoc Customer Support Portal also provides support via computer-based training, operator checklists, best practice resources, reference manuals, and user guides.

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BlackBerry Limited
2200 University Avenue East
Waterloo, Ontario
Canada N2K 0A7

BlackBerry UK Limited
Ground Floor, The Pearce Building, West Street,
Maidenhead, Berkshire SL6 1RL
United Kingdom

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