

American Innovations (AI) is pleased to announce version 2.4 of our PCS software. This document explains how to configure the server for PCS in a client/server network.

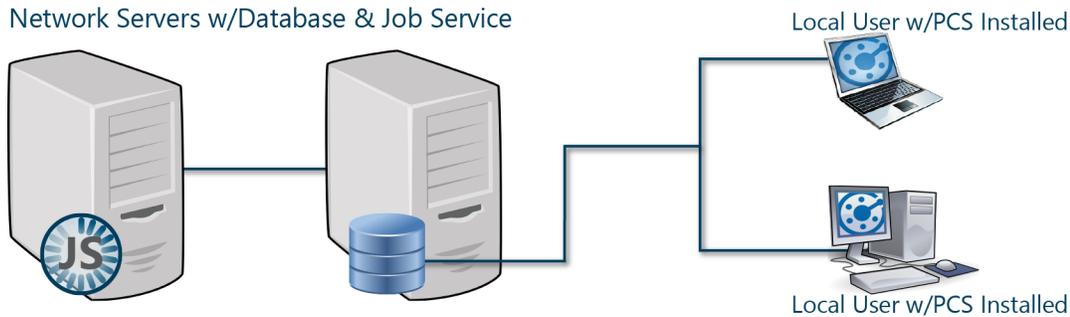


Figure 1-1. PCS Standard Client/Server Installation

For a listing of the recommended environments that the network server with database and job service machines should conform to, refer to [System Recommendations on page 2](#).

The separate [Installation Checklist](#) provides both a breakdown of the steps required for installation and configuration of PCS as well as a recommendation for which tasks should be performed by an IT System Administrator, Database Administrator (DBA), PCS Administrator, or PCS User.

The [PCS Server Installation on page 4](#) section details the configuration of the server and installation of the PCS job service. The job service should be installed on a dedicated network server. There should only be one installation of the job service on a given PCS network environment. The date, time, and time zone settings of the job service's machine must match the settings on the central database server. These tasks are typically performed by the database administrator and the IT system administrator.

A separate [PCS Administrator Setup](#) document details the installation and configuration of the PCS application on a local client or on the server for the PCS Administrator. The [PCS Client Installation](#) document details the steps required to install and configure all client machines. The [PCS Client Installation](#) document will be needed for installation of PCS on the PCS Administrator's machine.

If you have questions or need assistance with the installation, refer to [Technical Support on page 12](#) for contact information.

Product Compatibility

PCS integrates with other products in the American Innovations product line to support additional methods of collecting cathodic protection data. The following table describes the compatibility between PCS version 2.4 and other American Innovations products.

Table 1-1. American Innovations Product Compatibility

AI Product	Compatibility with PCS v2.4	Integration Overview
PCS Field Data Collector App	v1.6 and later	Send survey files to the Allegro AX, Mesa 3, or iOS and receive the completed survey data and images. Receive CI and DCVG survey data.
Allegro QX	PCS version 7.2.1 or newer	Send survey files to the Allegro QX and receive the completed survey data and images. Receive CI and DCVG survey data.
PCS Viewer	PCS Viewer version 2.1 or newer	Review survey data from the Allegro prior to importing into PCS.
Bullhorn Web	Using the Bullhorn token	Receive data from Bullhorn Web using the PCS Bullhorn Bridge.
PCS Survey Manager	Compatible with .pss/.psh, .psx, and .zsvy file types	Facility Surveys are transferred wirelessly using the Integration token and Indirect Surveys are transferred using .zsvy.

System Recommendations

The system specifications that the server, job service, and client machines require will vary depending on the size of your database, the amount of data that is to be accessed on the machines, and the number of simultaneous client-server connections. The following are the minimum specifications we recommend for the server machine with a basic setup. Your company’s configurations may require additional RAM, more powerful processors, or more disk space.

Server System Recommendations

Table 1-2. Dedicated Central Database Server Recommendations

Properties	Recommended
Processor	Intel Xeon
Processor Speed	2 Quad Core CPUs at 2.4 GHz or better
RAM	32 GB
Operating System	Windows Server 2019
Relational Database Software	SQL Server 2019

Notes:

- **RAM** — for optimal performance, additional RAM may be required for larger databases or if a large number of clients will connect to the PCS database at the same time.

- **Disk Space** — consult with your company's IT personnel or DBA to determine where database backups will be created.

Job Service System Recommendations

Table 1-3. Job Service Dedicated Machine Recommendations

Properties	Recommended
Processor	Intel Core i7
Processor Speed	2.3 GHz or better
RAM	8-32 GB *depends on the largest anticipated job size. See Table 1-4 .
Operating System	Windows Server 2019
Available Disk Space	720 MB
Microsoft .NET Framework	Version 4.6.2

Table 1-4. Job Service Memory Recommendations

Maximum Anticipated Job Size	Sample Job	Recommended RAM Size
Small — up to 8 million pieces of data	50 thousand rows, 125 columns	8 GB
Medium — up to 16 million pieces of data	100 thousand rows, 125 columns	16 GB
Large — up to 32 million pieces of data	250 thousand rows, 125 columns	32 GB

Notes:

- **Microsoft .NET Framework** — If the target computer does not have Microsoft .NET Framework v4.6.2 installed, the PCS installation automatically installs it for you. This feature requires an active Internet connection to complete the installation of .NET Framework.
- **RAM** — If a job has more data than the Job Service can handle efficiently, processing time increases dramatically.

PCS Server Installation

Your company's IT System Administrator and Database Administrator (DBA) are responsible for preparing the servers for PCS. The IT System Administrator should add users to a PCS users' user group and (after the DBA has completed the SQL setup) install and start the PCS Job Service. The DBA will restore the PCS database, reset the fill factor limit of the database, create a scheduled database maintenance job, and create a SQL login with specific permission roles for the local domain user group. If desired, the DBA will also set up PCS to record all changes made to the data in the PCS database.

Verify Network Access

The job service machine and all client machines, PCS users, and the Job Service user account must have access to the central database server. In addition, firewall settings and other network configurations must allow access to the following domain:

- <https://www.bullhornsys.com> — necessary only if you plan to synchronize PCS with your Bullhorn Web account.
- <https://aiworldwide.flexnetoperations.com/flexnet/deviceservices> and <https://flex1188.flexnetoperations.com/flexnet/deviceservices> — necessary to verify the license and grant access to PCS for single seat users. Single seat users can disconnect from the Internet and work offline for up to 90 days.
- <https://aiworldwide.compliance.flexnetoperations.com/deviceservices> and <https://flex1188.compliance.flexnetoperations.com/deviceservices> — necessary to verify the license and grant access to PCS for concurrent users.
- <http://support.aiworldwide.com> — necessary to view the PCS online help.
- <https://api-pcs.aiworldwide.com> — necessary to send and receive facility surveys wireless with `[[[Undefined variable productsInfo_ai/cn/sm.softwareName]]]` and PCS Field Data Collector.
- <https://api-auth.aiworldwide.com> — necessary to send and receive facility surveys wireless with `[[[Undefined variable productsInfo_ai/cn/sm.softwareName]]]` and PCS Field Data Collector.
- <https://api-client.aiworldwide.com> — necessary to send and receive facility surveys wireless with `[[[Undefined variable productsInfo_ai/cn/sm.softwareName]]]` and PCS Field Data Collector.

The standard ports for HTTP traffic (TCP port 443 and TCP port 80) must be open to initiate an SSL tunnel.

Create a Job Service User Account

The PCS Job Service is an application that runs continuously in the background of the server and performs most data operations for PCS. Once installed, the Job Service can be managed in the Microsoft Windows *Services* console.

A new user account should be created and used when configuring anything related to the PCS Job Service. If this is not possible, an existing user account can be used as a Job Service user account as long as all job service account configurations in this document are followed using the same user account. The Job Service user account should perform the following:

- Serve as the account the Job Service should use to operate on the server.
- Have an exchange email address configured with Send Mail permissions enabled. The email address configuration is necessary for email notifications in PCS.
- Either be a member of the PCS users' user group or have the same SQL Server login configurations as the PCS users' user group. If you do not make the Job Service user a member of the PCS users' user group, you must configure the Job Service user account directly in SQL Server Management Studio.
- Have a password that never expires. If this is not possible, you will have to update the Log On password in the PCS 2.4 Job Service properties every time the Job Service user account's password changes.
- Have access to the central database server and be a member of the local computer's Administrators group in Windows Computer Management so PCS can write to the event logs.

Configure a User Group for PCS Users

All user accounts that will be used to access PCS, including the Job Service user account if created, require specific permissions configured. To allow these configurations, all PCS user accounts must be added to a single user group.

If an Active Directory group is not set up for PCS users, create a new group in the *Computer Management* console for the PCS users and add all user accounts that will access PCS as members to the new group, including the Job Service user account.

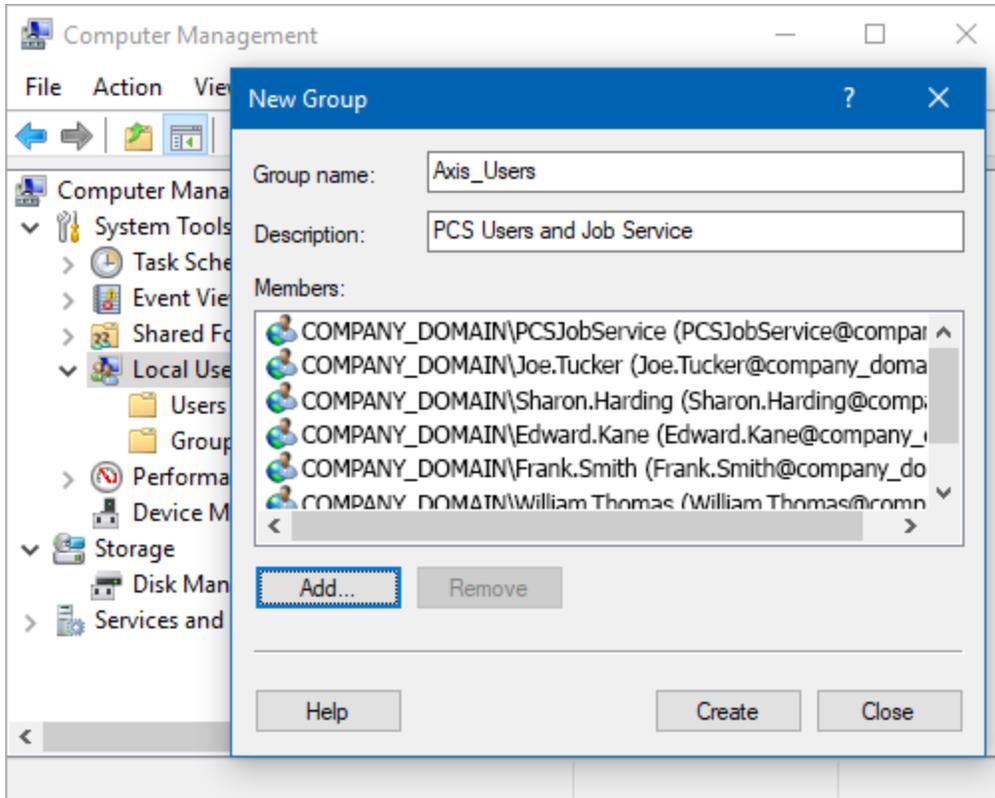


Figure 1-2. Local User Group

Restore the PCS Database

The Database Administrator should start SQL Server Management Studio (SSMS) and restore the PCS database on the central database server using the database backup file provided by AI Support. For best performance, do not include periods or other special characters in the database name.

For instructions detailing how to restore a database backup, visit the Microsoft documentation website at <https://docs.microsoft.com/en-us/> and search for **Restore a Database Backup Using SSMS**.

Run Provided Database Scripts

After installing, upgrading, or restoring the PCS database, the Database Administrator (DBA) should reset the fill factor limit of the PCS database and create a scheduled database maintenance job that optimizes system performance. A stored procedure is available for the maintenance job that reorganizes and defragments the indexes in the PCS database.

Run the Fill Factor Reset Script

In SQL Server Management Studio, run the Fill Factor Reset script labeled **Defrag Fill Factor Reset Post Deployment.SQL** on the PCS database.

Schedule the Database Maintenance Job

In SQL Server Management Studio, to create a scheduled database maintenance job for the PCS database using the Reindex Stored Procedure labeled **dbo.DefragmentIndexes**. Set the job to run daily or once a week during an off-peak time. Scheduling the database maintenance job at regular intervals will ensure optimum system performance.

For best practices when creating database maintenance jobs, visit the Microsoft documentation website at <https://docs.microsoft.com/en-us/> and search for **Maintenance Plans**.

Create a SQL Login and Set Permission Roles

Information in this section explains how to create a new SQL login for the PCS users' user group and set database permissions for the new login. If the Job Service user account is not added to the PCS users' user group, then a new SQL login will be needed for the Job Service user and the same database permissions must be set. For more information regarding SQL logins, visit the Microsoft documentation website at <https://docs.microsoft.com/en-us/> and search for **Create a SQL Login**.

The Database Administrator should start SQL Server Management Studio (SSMS) if not already open, connect to the central database server, and create SQL logins for the PCS users' user group and, if needed, the Job Service user. The SQL logins must have the following settings configured:

- **Default database: master** — the default database can be assigned in the *General* page of the *New Login* window.

The screenshot shows the 'New Login - General Properties' dialog box. The 'Login name' field is 'Axis_Users'. Under 'Authentication', 'Windows authentication' is selected. The 'Default database' is 'master' and the 'Default language' is '<default>'. There are 'Add' and 'Remove' buttons for mapped credentials.

Figure 1-3. Login - General Properties

- **Server roles: public** — click **Server Roles** in *Select a page* and enable the **public** check box. The public server role ensures PCS can access the central database server.



Figure 1-4. Login - Server Roles Properties

- **PCS Database role membership: AXIS_USERS, db_datareader, db_datawriter, db_ddladmin, db_owner, and public roles should map to the PCS database** — database role mapping can be configured in the *User Mapping* page of the *New Login* window. The current user's database roles can be mapped to the database by enabling the following properties:
 1. In the group box *Users mapped to this login*, click to select the check box next to the PCS database.
 2. In the group box *Database role membership for*, enable the following:
 - a. **AXIS_Users**: provides PCS with access to the database and the dbo schema. PCS relies on a role existing with this exact name.
 - b. **db_datareader**: allows PCS to read data in the database.
 - c. **db_datawriter**: allows PCS to write data to the database tables.
 - d. **db_ddladmin**: provides PCS with the ability to create the tables needed to perform bridge imports and to create custom modules, custom facility types in custom modules, and user defined fields (UDFs).
 - e. **db_owner**: provides PCS with the ability to turn on change tracking.
 - f. **public**: provides PCS with access to the database.

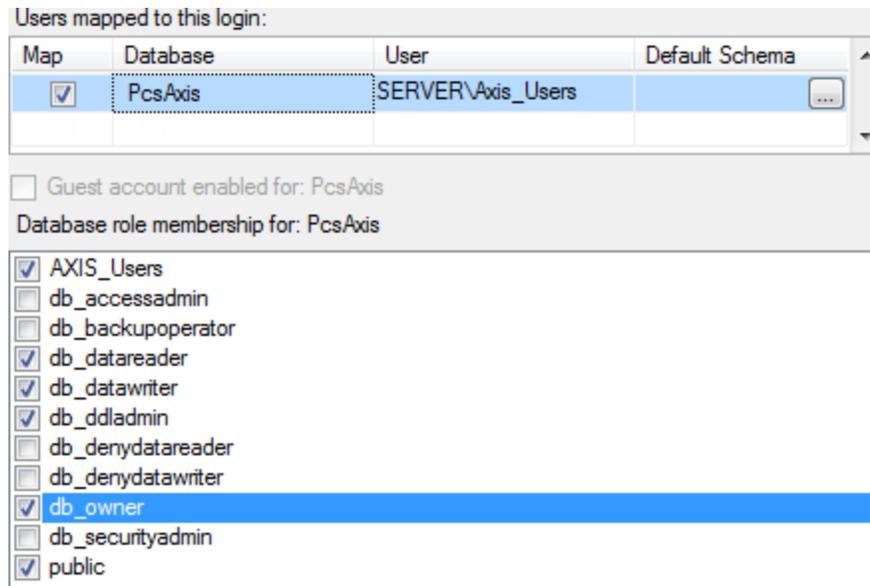


Figure 1-5. Login - User Mapping Properties

Install the PCS Job Service

The PCS job service should be installed on a dedicated network server. Refer to [Job Service System Recommendations on page 3](#) for the recommended system specifications for the job service.

A single installation file labeled `Pcs_2.4.xxx.xxxx.exe` is used to install the PCS Job Service. If Microsoft .NET Framework v4.6.2 is not installed, it will be installed as part of the PCS installation. An active Internet connection is required to complete the installation of .NET Framework.

The IT System Administrator should complete the following steps:

1. Navigate to and open the `Pcs_2.4.xxx.xxxx.exe` installation file.
2. Click **Install** in the PCS window to open *Setup Wizard*.
3. Click **Next** to read the *End-User License Agreement*. To accept the license agreement, click the check box **I accept the terms in the License Agreement** to place a check mark inside the check box. Click **Next** to display *Custom Setup*.
4. To install the job service on the server, click the down arrow in  **PCS Job Service** and select the option **Entire feature will be installed on local hard drive**.
5. By default the PCS application is selected for installation. If you are working on the central database server and do not want to install the application on the server, click the down arrow in  **PCS** and select the option **Entire feature will be unavailable**.

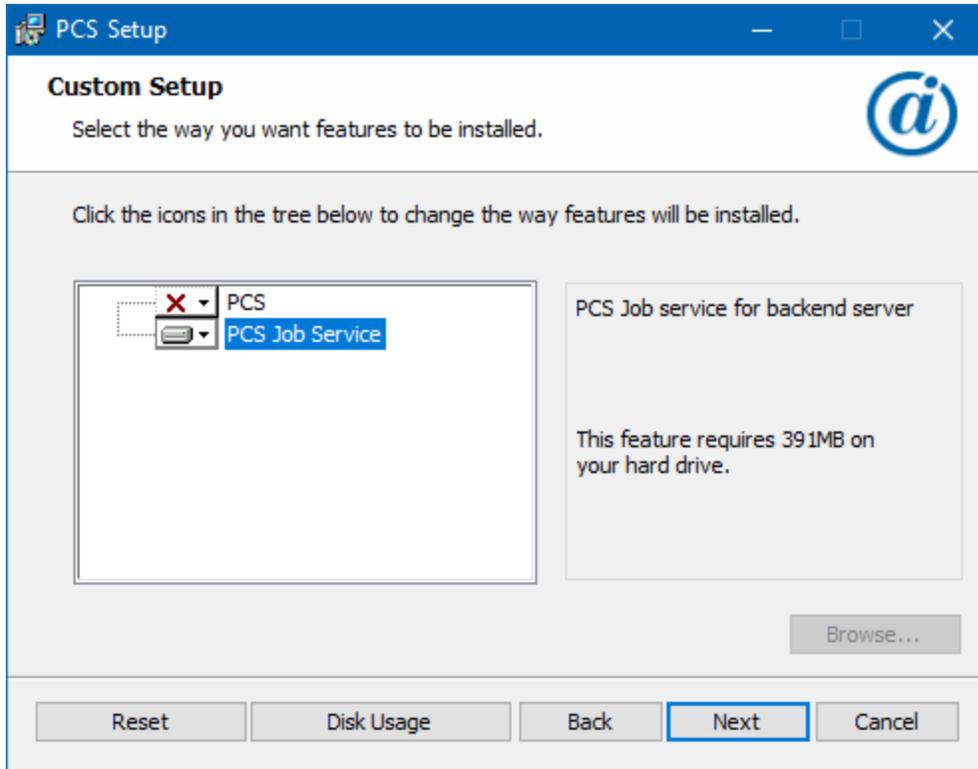


Figure 1-6. Custom Setup

6. Click **Next** and then click **Install** to begin the installation.

When the installation completes and after a short delay, *Connection Manager* opens automatically.

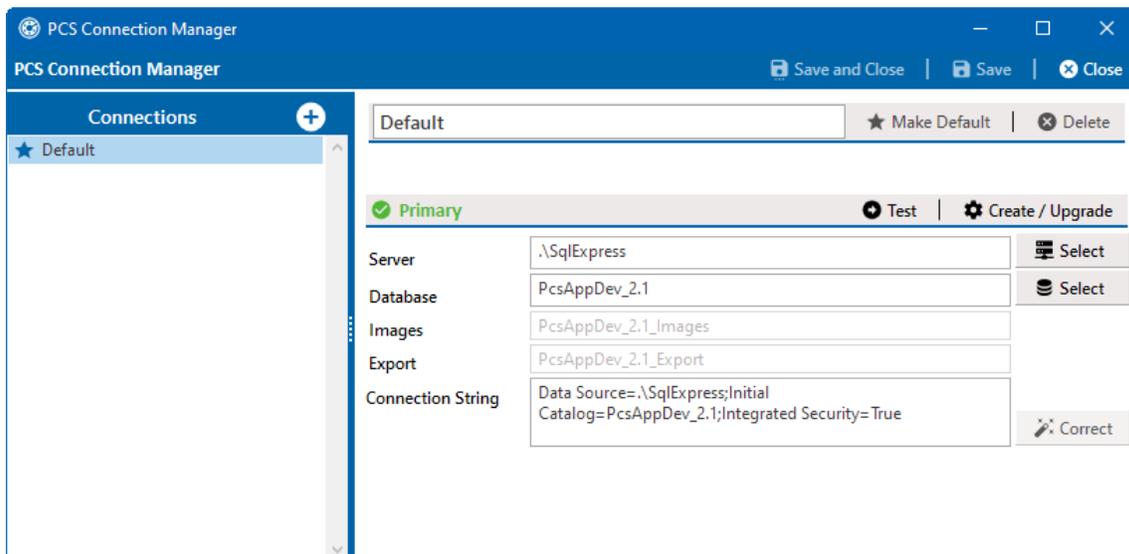


Figure 1-7. Connection Manager

NOTE: When *Connection Manager* opens, it may open on top of the *Setup Wizard*. If this occurs, move the *Connection Manager* window until you see the *Setup Wizard* again.

7. Click **Finish** in *Setup Wizard*, and then click **Close** in the PCS window to close the PCS installation file.

Connect to the PCS Database

Complete the following steps in *Primary* database section of *Connection Manager* to establish a connection to the PCS database on the central database server:

1. Type the name of the central database server and, if necessary, the SQL instance in the **Server** field. Or click **Select** next to the Server field to select the server in the *Select Server* window.
2. Type the name of the PCS database in the **Database** field. Or click **Select** next to the Database field to select the database in the *Select Database* window. For best results, the PCS database should not have periods or other special characters in the database name.

The databases for images and for exports must follow a strict naming standard that is based on the PCS database name. Once a value is entered in the Database field, the Images and Export fields automatically populate with the corresponding name of the images and exports databases.

3. Click  **Test** to verify the connection to the server and database. The connection is tested for each database listed. If the connection is successful, a green circle appears next to the database's field. If the connection is unsuccessful, the circle appears as red.

Review and accept any messages that appear by clicking **OK**.

If the Images and Export databases were not found, click  **Create/Upgrade** to create the Images and Export databases.

4. Click  **Save and Close** to exit *Connection Manager*.

Configure and Start the PCS Job Service

The purpose of the PCS Job Service is to monitor the PCS job queue and initiate jobs as they become available.

For IT System Administrator: complete the following steps to start the PCS Job Service using the *Services* console:

1. Right-click **PCS Job Service 2.4** and select **Properties** to open the *Properties* window.
2. Click the **Log On** tab and select the option **This account**. To set up a user account to log on as a service, type the user name and password of your Job Service user account in the appropriate fields. You can also view a list of available user accounts by clicking **Browse > Advanced > Find Now**.

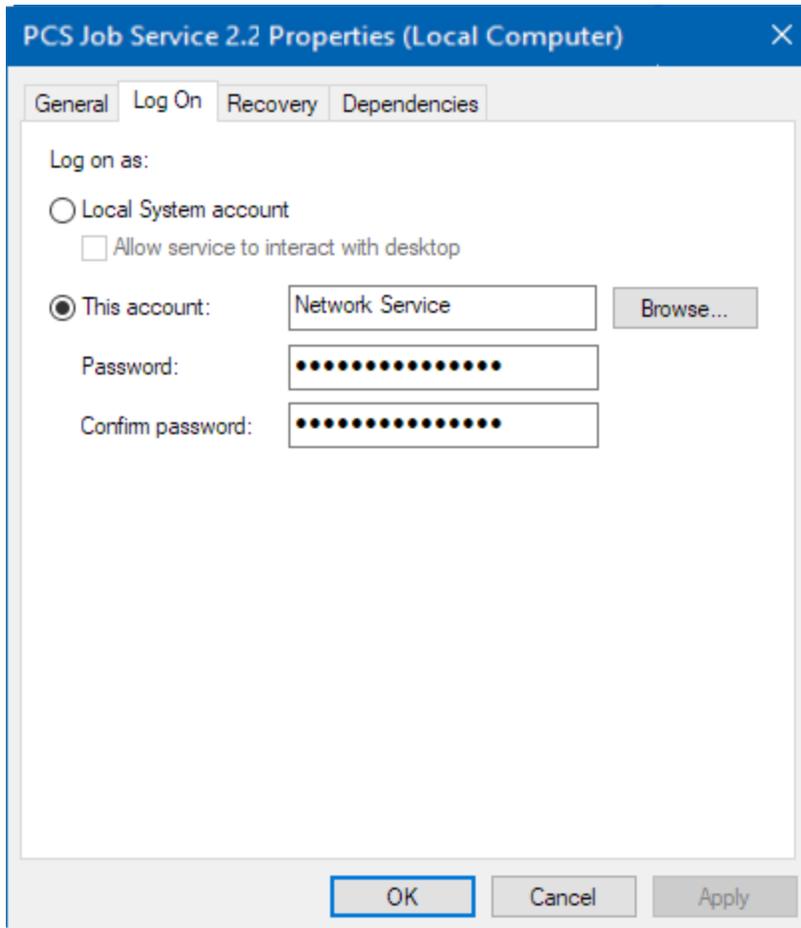


Figure 1-8. PCS Job Service 2.4 Properties

3. Click **Apply** and then **OK** to close the *Properties* window and return to the *Services* console.
4. Select **PCS Job Service 2.4** and then click **Start**.
5. Click **File > Exit** to close the *Services* console.

Technical Support

AI Support is available to provide assistance with PCS, accept feedback about PCS, or discuss your organization's training needs. Use the following information to contact AI Support:

Telephone:

1-800-229-3404

Email:

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