Configuring the PowerDB Synchronization Server

The PowerDB Synchronization Server allows users to synchronize data between a master database and field databases. The Synchronization Server is always beneficial for transferring data between computers with PowerDB whether in the office, between offices, in the field, or from the field to the office. Transferring data without using the Synchronization Server (i.e., specifying a path to the primary database) means that all database access will take place across the network (when not using SQL server); thus database queries to determine what information to transfer are slowed by the network speed. The Synchronization Server is a client/server solution to this problem. When a PowerDB Synchronization Server handles the primary database, then database queries are divided between the two computers and only data requests and data are sent along the network.

1. **Install PowerDB on a machine accessible to all who will need to access** the primary database. This machine will continuously run the PowerDB Synchronization Server. If you would like to transfer data outside your local area network, then the machine must have Internet access, a fixed IP address, and your firewall must have the following ports open: 25000 for UDP, and 25001-25015 for TCP. Note that these ports can be changed in registry.

2. **Determine where your master database is located.** If you are just getting started with PowerDB then the *powerdb.mdb* file in your installation directory will be your master database. If you already have data in a master database, then move the database to this machine. Your master database can reside in any directory you like, but it should be located on the *Server* machine. If you place the master database on another machine then many of the speed benefits of the PowerDB Synchronization Server are negated.

3. **Run and license PowerDB on the *Server* machine.** Use the 'File > Change Database' menu item to select your master database.

4. **Create a field database** using the 'File > New Database > New Field DB' menu item. All field databases must be created from your master database.

5. **Install and license PowerDB** on your laptops or other office machines.

6. **Copy the field database** that you created in step 4 to each of your laptops or other office machines. Run PowerDB on each of these machines and use the 'File > Change Database' menu item to select the local field database. It is important that the field database reside on the machine running PowerDB in order to gain all speed benefits of using the PowerDB Synchronization Server.

7. **Start the Synchronization Server on the *Server* machine**; i.e., the machine that has the master database. Start PowerDB (verify it is connected to the Master Database). Select Tool->PowerDB Server. (You can also start the server by running `pdbsynch.exe /server` in the installation directory (by default the installation directory is C:\Program Files\PowerDB, Inc.\). It is recommended that you put a shortcut in the Startup group.)

8. **Verify the master database for the Synchronization Server.** Change if needed using the browse button next to the 'Database:' edit box.

9. **Check the 'Quick Start' checkbox.** This causes the synchronization server to start automatically when launched. To cancel a Quick Start you can click on any control in the Synchronization Server dialog during the first couple of seconds after it is launched.

10. **Press the 'Start Server' button.** The server start time is indicated, and the Synchronization Server is now listening for requests.

11. **Synchronize from any field database** by running PowerDB on the laptop or other office machine. Press the 'Job' button to go to the Job List. Right click on any job and select 'Synchronize Data' from the popup menu, or select 'Tools > Synchronize Data' menu item. This will show the PowerDB Database Utility with the 'Job Transfer' operation selected.

    a. **Specify the Primary Database** by selecting 'Connect to PowerDB Server' and typing the *Server* machine name in the address field. If you are connecting via the Internet you will need to specify the machine's IP address or host name (e.g., powerdb.yourcompany.com).

    b. **Specify the Secondary Database as your field database** if it is not already correct.

    c. **Specify the Direction.** A full synchronization will be bi-directional (Field ←→ Master). You can alternatively specify the direction to only get information from the master, or to only send information to the master.

    d. **Specify the Results Options.** A full synchronization will specify all results so that all historical data for each piece of equipment is transferred. Alternatively you can specify only the most recent results for each piece of equipment, or no results.

    e. **Specify the Job Options.** You can synchronize a single job, a selection of multiple jobs, or all jobs. Select 'Transfer ALL Jobs' for a full synchronization.

f. **Specify the Include Options.** These options allow limiting the transfer of some information. If 'Time Records' is checked, then data entry time values are synchronized. If 'Full Address Book' is checked, then the entire address book is synchronized; otherwise only addresses required by the transferred jobs will be synchronized.

g. **Select the Transfer Settings.** It is recommended that you always select 'Verify Transfer'. The verification portion of the synchronization takes little time and will notify you if the synchronization did not complete as expected (e.g., due to a communication problem). The Quick Start option, if selected, will begin the transfer automatically with the same settings the next time synchronization is requested. To cancel a Quick Start you can click on any control in the Database Utility dialog during the first couple of seconds after it is shown.

h. **Press the 'Start Transfer' button.** If there are conflicts between the two databases, then you will be prompted to select between the data to keep or to skip the synchronization of that data. After all conflicts have been resolved a progress indication dialog appears to show the state of the synchronization.

The following text defines the communication process between the synchronization client and the synchronization server for each interface. The client uses 3 to 5 interfaces per synchronization session.

→ The client requests an interface on UDP Port 25000
← The Server creates a listen socket on the next available TCP socket starting at 25001 and returns this socket number to client in a UDP response
→ Client connects to the TCP socket and performs all communication required to synchronize the data using a proprietary, compressed and encrypted protocol.