



Drive by Download 3TM

Installation and Operation Manual

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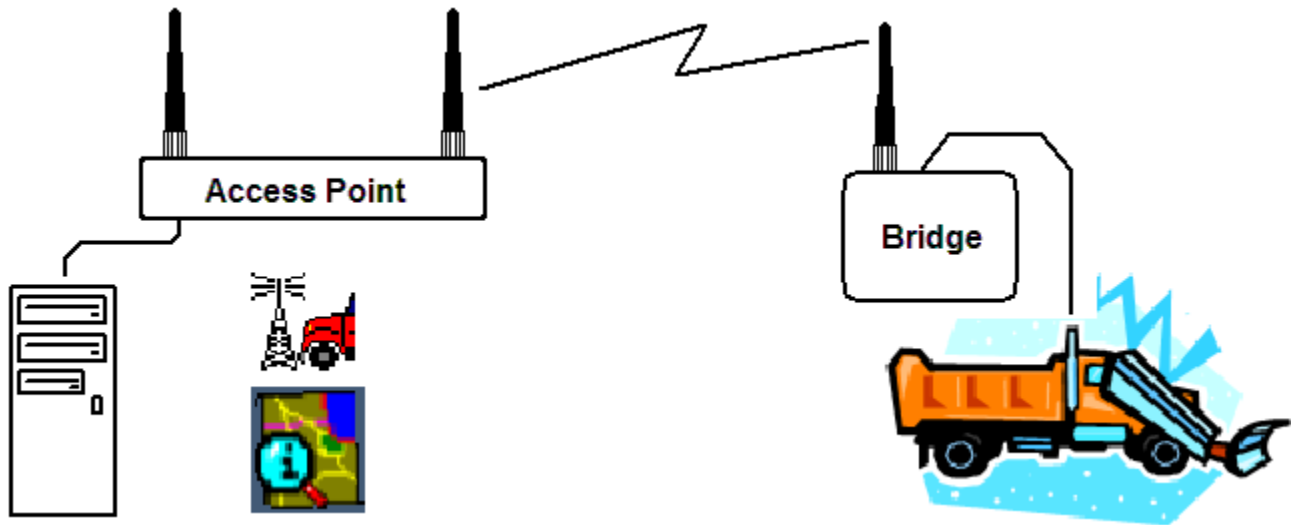
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SYSTEM OVERVIEW

The *Drive By Download*™ (DBD 3) PC utility manages the wireless communication with truck mounted data storage devices. The data retrieved from trucks is used to monitor truck events and optimize fleet performance. Some of the data that can be collected includes:

- Truck Location (GPS), Speed, etc.
- Road/Air Temperature
- Materials Dispensed
- Digital/Analog Inputs

DBD 3 is compatible with the *SpreadSmart Rx*™ and *DataShark*™ systems. Wireless communication is achieved through an access point which is connected to the computer. The access point is mounted at a location trucks will visit during normal operations (fuel, sand/salt, deicing chemical storage sites). When trucks arrive within 250 feet of the access point, the PC initiates a download of the data stored in the truck. DBD 3 collects and stores the data in log files which can be accessed and analyzed at any time.



INSTALLATION

Requirements

Windows XP or Windows 7 operating system

Installing the Software

Step 1: Place the CD into your CD Drive and the program will start to install automatically. If the installation does not start automatically follow these steps:

- a. Open the My Computer icon on your desktop.
- b. Right click on the CD drive the DBD 3 program is in.
- c. Left click Explore.
- d. Double left click on the setup.exe file on the CD.

Configuration

DBD 3 is now installed and needs to associate an IP Address and Vehicle ID to each truck in your fleet so the computer can communicate with them. The configuration file (DriveByDownloadConfigurationFile.cfg) provides a user friendly way to add trucks to your fleet. DBD 3 comes with a configuration file on the installation CD which is prepared at the factory to reflect your custom program settings, as well as truck information. To install the configuration file in DBD 3 go to File->Import Configuration File. Select the file DriveByDownloadConfigurationFile.cfg from the CD. After importing the configuration file the Full Vehicle List is populated with the trucks in your fleet.

Trucks can also be added to the fleet one at a time using *Full Vehicle List->Add Vehicle* menu item.

Choose Log File Location

Choose a folder to store the log files where all of the downloaded data is stored. DBD 3 will create subfolders which sort downloads by truck type and IP Address. To change the location of the log files select *File->DBD 3 Log File Location*.

Change/Update the Sleep Mode of the Computer

Your computer must be on at all times so that DBD 3 can collect data from arriving trucks. To keep your computer on all of the time you must turn off the sleep mode.

Windows 7

Start->Control Panel->Power Options

Click on 'Choose when to turn off display'

Make sure *Turn off the display and Put the Computer to Sleep* are set to Never.

Windows XP

Start->Control Panel->Power Options

Click on the *Power Schemes* tab.

Make sure *Turn off monitor, turn off hard disks, system standby, and system hibernates* are set to Never.

To verify that trucks are downloading, click on a vehicle in the Full Vehicle List that is believed to have downloaded data. All of the settings for the selected truck should be visible in the Vehicle Settings. The time/date of the Last Download will display the last time the truck downloaded data.

System Details

DBD 3 is a utility designed to store the data from *SpreadSmart™* and *DataShark™* in the form of Log Files.

The program runs in the background on a PC with no user interaction required. Once a fleet of trucks has been configured, DBD 3 searches for trucks in range of the Access Point and collects their data. The DBD 3 program must remain open in order to collect data, but it does not need to be monitored. Successfully downloaded data is verified accurate. The user interface assists in fleet configuration and is useful for troubleshooting any trucks that may be having difficulty downloading. The Download Faults List updates, in real time, any trucks that have problems downloading. An alternative way to monitor the download status of trucks is to configure the Fleet Overview emails which can be delivered every 1 to 28 days. The Fleet Overview report allows supervisors to confirm the data is being collected in a timely manner.

Fleet Configuration

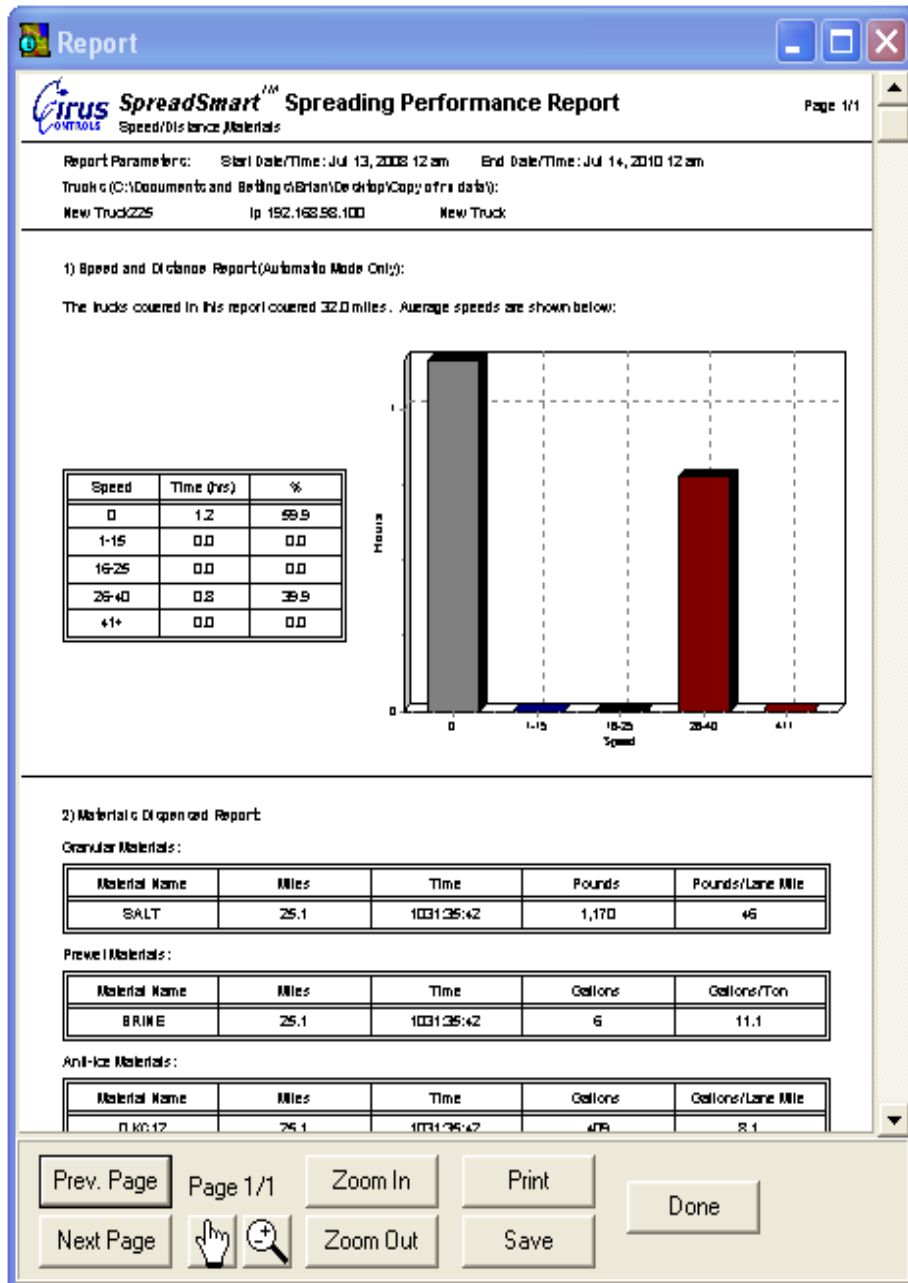
DBD 3 needs to know which IP Address each truck in the fleet has to establish communication. The fleet can be setup manually or automatically using a configuration file. A configuration file can be obtained from Cirus Controls if you know the IP Addresses of the trucks. Manual entry requires the user to go to Full Vehicle List->Create New Vehicle and enter the data in the Vehicle Settings section of DBD 3. Each truck must have a unique IP Address and Vehicle ID. The one exception to the unique Vehicle ID rule is the name 'Cirus'. If the Vehicle ID is 'Cirus', a warning message will appear whenever DBD 3 is opened. The warning advises the user that unique Vehicle ID's help distinguish between trucks.

Downloading

All of the 'Active' trucks in the fleet are continuously scanned to trigger a download. Trucks set to 'Active' will download their data to Log Files when they come into range of the access point. When a truck is set to 'Inactive', it will not download even if the truck comes into range of the Access Point. Successful downloads will not be noted anywhere on the user interface, and the data will be stored in Log files kept in the DBD 3 Log File Location. The last time a truck has downloaded can be found by clicking on a vehicle in the Full Vehicle Listing and viewing the Last Download time in the Vehicle Settings. Unsuccessful downloads will be listed in the Download Faults List. If a problem occurs during download, the download is stopped and DBD 3 will attempt another download after three minutes.

Analyzing the Data

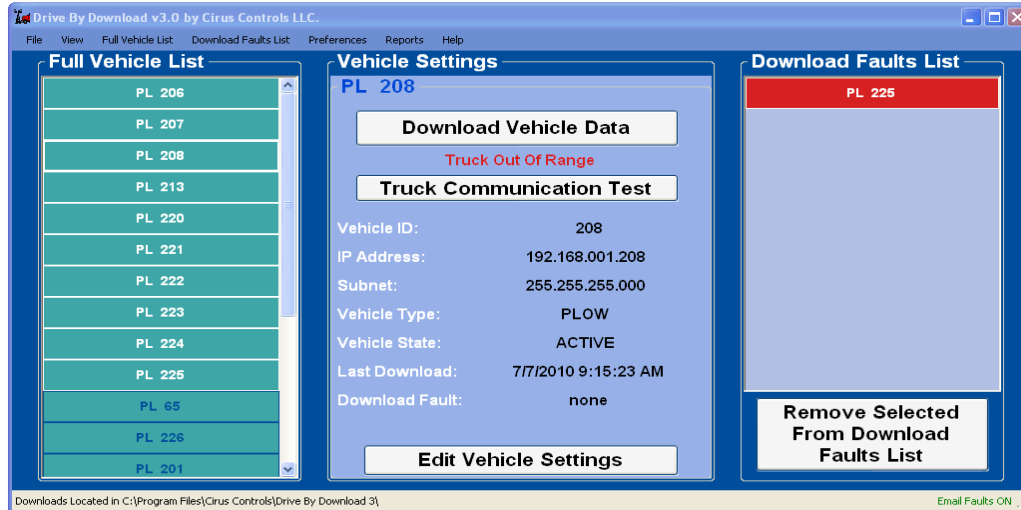
Drive by Download™ includes software called Data Analysis Tool which converts the Log Files into reports containing graphs and tables providing easy analysis of the collected data. The Data Analysis Tool also has the ability to create Shape files for ArcView and other GIS systems.



USER INTERFACE

The user interface is divided up into three sections:

- Full Vehicle List
- Vehicle Settings
- Download Faults List



Full Vehicle List

The Full Vehicle List contains all of the trucks configured in to the system. Trucks listed in white text are active and will download when the truck is in the range of the Access Point. Trucks listed in teal text are inactive and will not download when a truck is in range. Trucks with a green background color are in range of the access point. Trucks that have an orange background color are not in range of the access point.

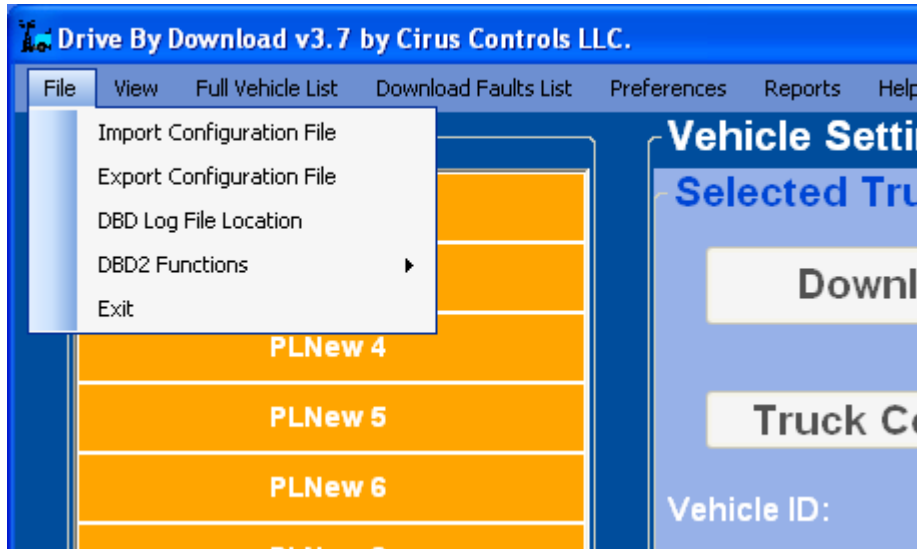
Vehicle Settings Panel

The Vehicle Settings panel provides an area where a truck's settings can be edited and its communication examined. The truck loaded into the Vehicle Settings has the vehicle ID with the first two characters of the Vehicle Type located below the Vehicle Settings title. A new vehicle can be chosen by clicking any vehicle ID in the Full Vehicle List or the Download Faults List. The 'Download Vehicle Data' button allows the user to download a truck if it is in range. The red 'Truck Out Of Range' text will appear when a truck is not close enough to the Access Point to download. Green 'Truck In Range' text will appear when a truck is close enough to the Access Point to download. The Truck Communication Test button will test communications with the truck without doing a data download. The Vehicle Settings provide the ability to edit the Vehicle ID, IP Address, Subnet, Vehicle Type, and Vehicle State. The Vehicle Settings panel displays the Last Download time/date and the Download Fault if there was a problem with the last download. Editing is done by clicking the 'Edit Vehicle Settings' button and the 'Save' button when the changes have been made. The IP Address of every truck must be unique, so DBD 3 will not allow a truck to be saved if it is a duplicate IP Address. The truck ID must be 5 or less characters long and must also be unique unless it is named 'Cirus'.

Download Faults List

The Download Faults List contains all of the trucks with a download error. That error is displayed in a tooltip when the user places the computer mouse over the truck listed in the Download Fault List. Individual Download Faults are also visible in the Vehicle Settings.

File Menu



Import Configuration File

Imports a configuration file (.cfg) which supplies all of the fleet data necessary for downloading.

Export Configuration File

Exports a configuration file (.cfg) which contains all of the fleet data necessary for downloading.

DBD 3 Log File Location

Allows the user to change the location of the log files which contain the data downloaded by the trucks. The current location of the DBD 3 log files is displayed on the bottom left corner of the DBD 3 program.

DBD 2 Functions

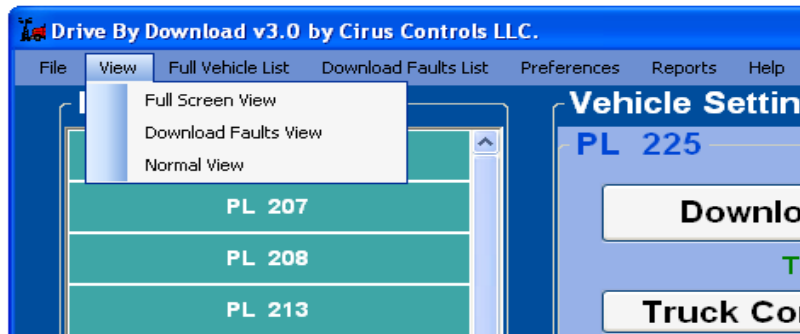
Update DBD 2.2 Log Files to DBD 3

A utility used to convert the log files created from DBD 2.2 into a form that is usable in DBD 3. Before converting files it is recommended that you set all of the vehicles in the Full Vehicle List that you are updating to the INACTIVE state so they will not download data while the conversion is occurring.

Upload DBD 2 Vehicles Into DBD 3

This utility is used when upgrading from DBD 2 to DBD 3. It will upload the truck ID and IP address of each truck in DBD 2 and place them into DBD 3. Using this utility eliminates the need to manually enter the vehicle ID and IP Address of each vehicle you wish to use in DBD 3 that was present in DBD 2. Note that the maximum length of the vehicle ID in DBD 3 is five characters. If there are vehicles in DBD 2 with truck ID's that are longer than 5 characters, you will be asked to shorten them before they can be used in DBD 3.

View Menu



Full Screen View

Displays the Full Vehicle List, Vehicle Settings, and Download Faults List at its maximum size.

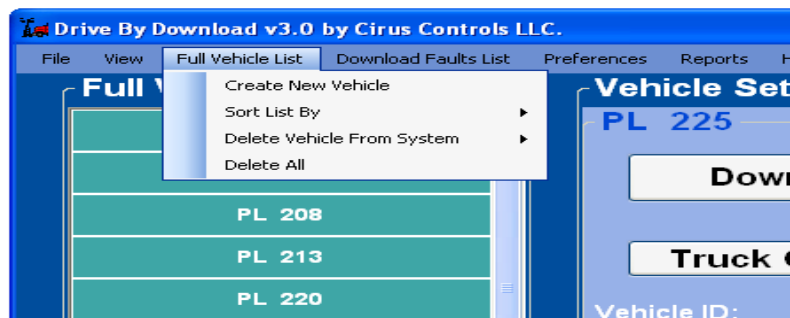
Download Fault View

Displays only the Download Faults List.

Normal View

Returns DBD 3 to its original size when Full Screen View or Download Fault View have been selected.

Full Vehicle List Menu



Create New Vehicle

Provides a way for the user to add a truck to the fleet. The vehicle data is edited in the Vehicle Settings section and a new vehicle is created when the 'Save' button is clicked.

Sort List By

Sorts the Full Vehicle List in the chosen manner:

- By Vehicle ID
- By IP Address
- By Last Download
- By Vehicle Type
- By Vehicle State

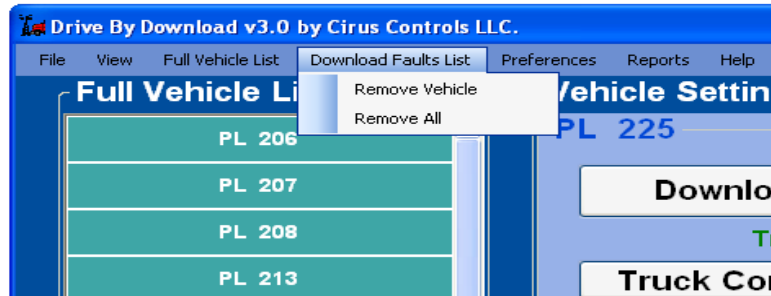
Delete Vehicle From System

Provides a way for the user to delete a truck from the fleet.

Delete All

Deletes all of the trucks in the Full Vehicle List, which removes all of the trucks available to download data.

Download Faults List Menu



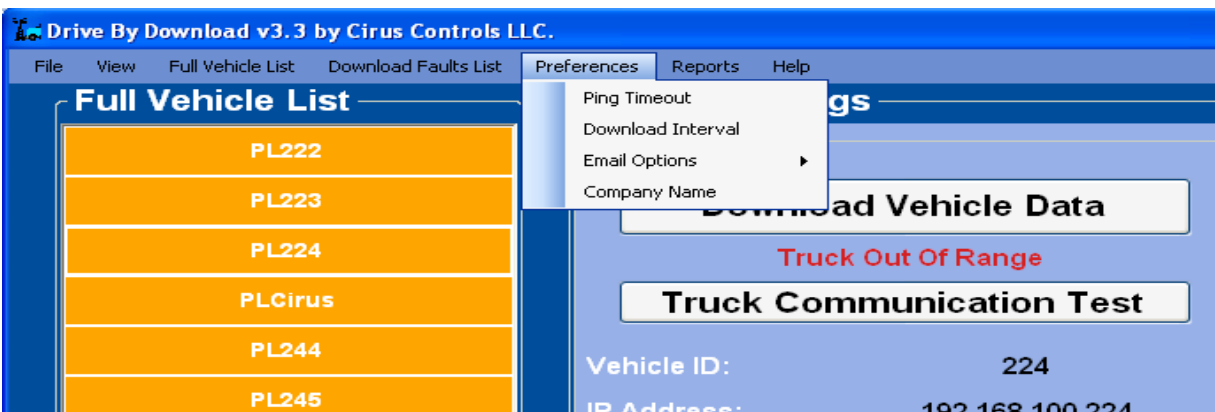
Remove Vehicle

Removes the vehicle selected from the Download Faults List.

Remove All

Removes all of the vehicles from the Download Faults List

Preferences Menu



Ping Timeout

This is the amount of time DBD 3 will attempt to ping a truck. Pings are used to determine whether a truck is in range of the wireless base station (Access Point). The minimum time allowed is 200 milliseconds and the maximum time allowed is 2 seconds. When this value is set to 2 seconds, it will become easier for trucks to be considered in range, but takes longer to check if a truck is in range. When set to 200 milliseconds, it will become harder for each truck to be considered in range, but will determine if each truck is in range quickly.

The ping timeout value determines the time it takes DBD 3 to scan an entire fleet of trucks to verify if they are in range or not. The maximum amount of time to scan a fleet of trucks can be calculated the following way:

Time to Scan Fleet = (ping timeout) x (number of Active trucks in the fleet)

Download Interval

The download interval is the minimum amount of time required to elapse before another download can be attempted. The minimum amount of time is 5 minutes, and the maximum time is 2 hours. The download interval eliminates the possibility of a truck being parked at the base station (access point) and continuously downloading, tying up the computer's resources.

Email Options

There are two email features in DBD 3:

- Email Fleet Overview

- Email Configuration file

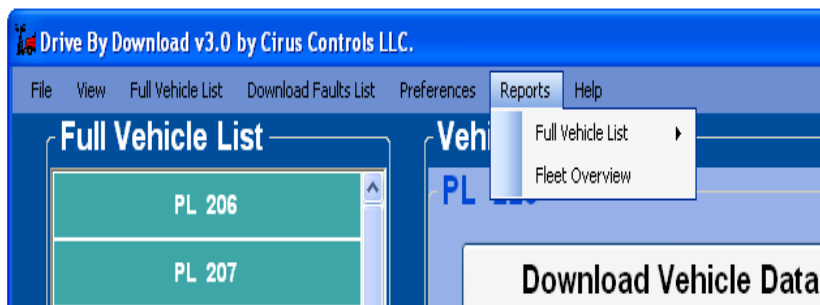
Email Fleet Overview allows a user to receive emails at predefined intervals (set by Preferences->Email Options->Fleet Overview Message->Message Frequency) that contain the Fleet Overview Report. This report is only emailed when selected and when there is a truck which falls into any of the categories listed in the report

Email Configuration File allows the user to email a copy of the configuration file. The user can enter a list of addresses to send the information to, and email the file. This function allows Cirus Controls to have easy access to the configuration file when new equipment is installed, a new configuration file can easily be updated.

Company Name

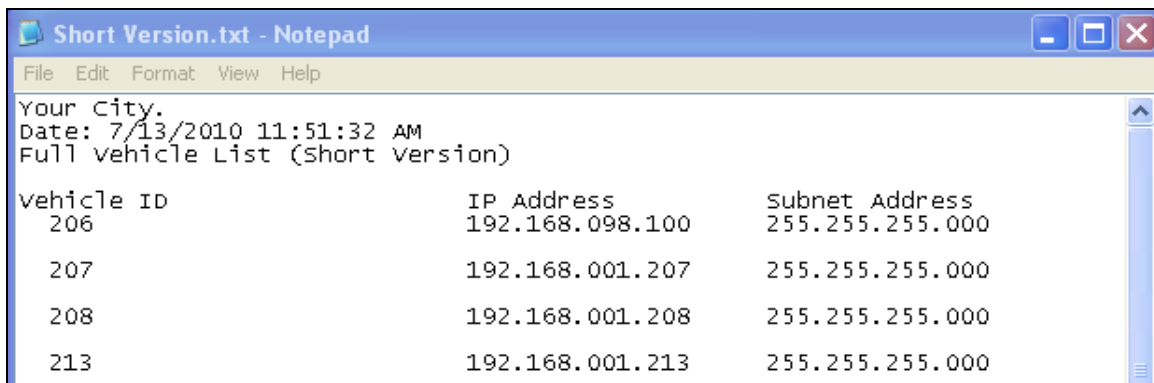
Provides a name which is used in all of the reports provided by DBD3.

Reports Menus



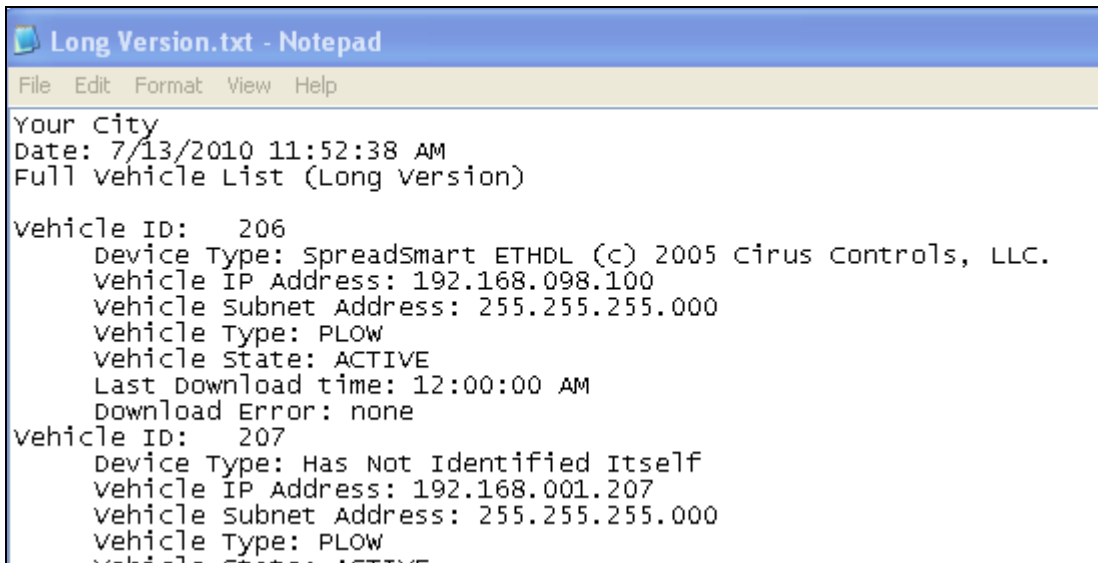
Full Vehicle List - Short Version

Creates a text file which contains all of the trucks in the fleet and details their vehicle ID, IP Address, and Subnet Address.



Long Version

Creates a text file which contains all of the trucks in the fleet and details their Spreader Type, IP Address, Subnet, Vehicle Type, Vehicle State, Last Download Time, Download Error.



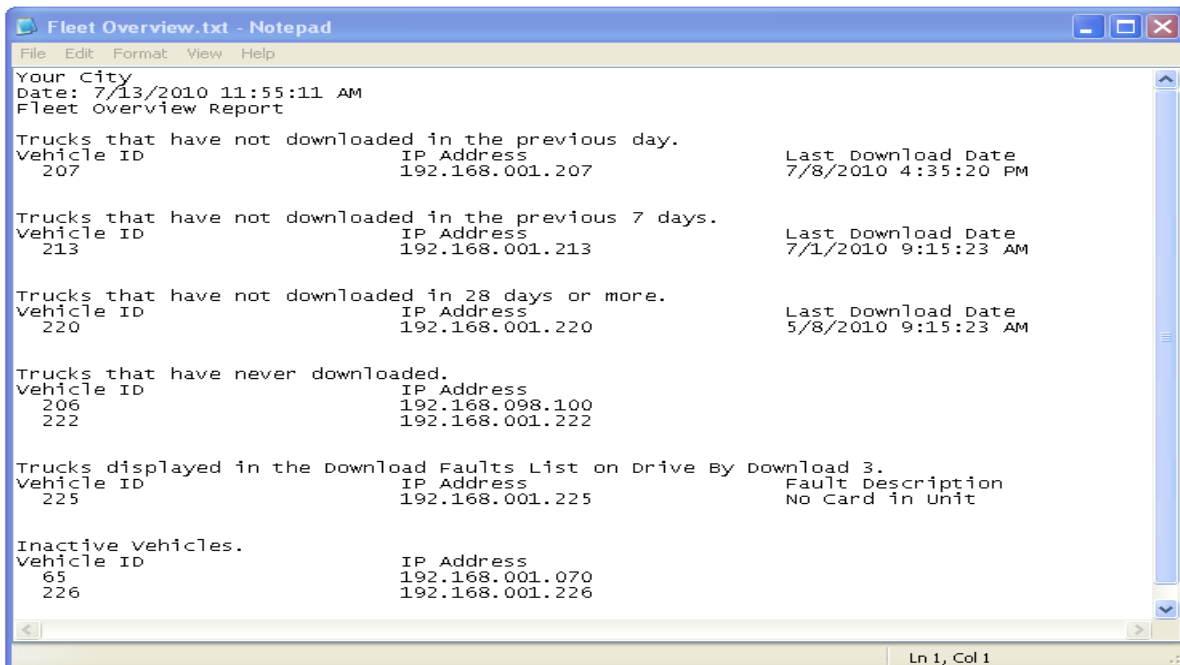
```
Long Version.txt - Notepad
File Edit Format View Help
Your City
Date: 7/13/2010 11:52:38 AM
Full Vehicle List (Long Version)

Vehicle ID: 206
Device Type: SpreadSmart ETHDL (c) 2005 Cirrus Controls, LLC.
Vehicle IP Address: 192.168.098.100
Vehicle Subnet Address: 255.255.255.000
Vehicle Type: PLOW
Vehicle State: ACTIVE
Last Download time: 12:00:00 AM
Download Error: none

Vehicle ID: 207
Device Type: Has Not Identified Itself
Vehicle IP Address: 192.168.001.207
Vehicle Subnet Address: 255.255.255.000
Vehicle Type: PLOW
Vehicle State: ACTIVE
```

Fleet Overview

Creates a text file which lists all of the trucks that have not downloaded in the previous 1, 7, and 28 days. It also details which trucks have never downloaded, which trucks are displayed in the Download Faults List, and lists the trucks which are inactive.



```
Fleet Overview.txt - Notepad
File Edit Format View Help
Your City
Date: 7/13/2010 11:55:11 AM
Fleet overview Report

Trucks that have not downloaded in the previous day.
Vehicle ID      IP Address      Last Download Date
207             192.168.001.207 7/8/2010 4:35:20 PM

Trucks that have not downloaded in the previous 7 days.
Vehicle ID      IP Address      Last Download Date
213             192.168.001.213 7/1/2010 9:15:23 AM

Trucks that have not downloaded in 28 days or more.
Vehicle ID      IP Address      Last Download Date
220             192.168.001.220 5/8/2010 9:15:23 AM

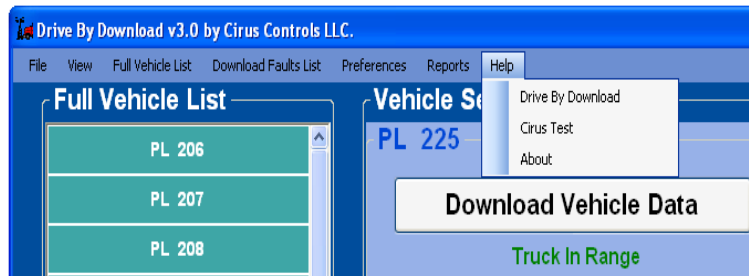
Trucks that have never downloaded
Vehicle ID      IP Address
206             192.168.098.100
222             192.168.001.222

Trucks displayed in the Download Faults List on Drive By Download 3.
Vehicle ID      IP Address      Fault Description
225             192.168.001.225 No Card in Unit

Inactive Vehicles.
Vehicle ID      IP Address
65              192.168.001.070
226             192.168.001.226

Ln 1, Col 1
```

Help Menus



Drive By Download™

Help menus for DBD 3.

Cirus Test

Used for advanced testing and troubleshooting in the presence of a Cirus Controls employee.

About

DBD 3 version number.

COMMON FUNCTIONS

Adding Vehicles to the Fleet

Vehicles can be added to the fleet by clicking on *Full Vehicle List->Create New Vehicle*. The vehicle is edited using the Vehicle Settings panel.

Removing Vehicles from the Fleet

To delete a vehicle from the fleet, click on *Full Vehicle List->Delete Vehicle From System* and select the truck.

Removing Vehicles From the Download Faults List

There are two ways to delete a vehicle from the Download Faults List.

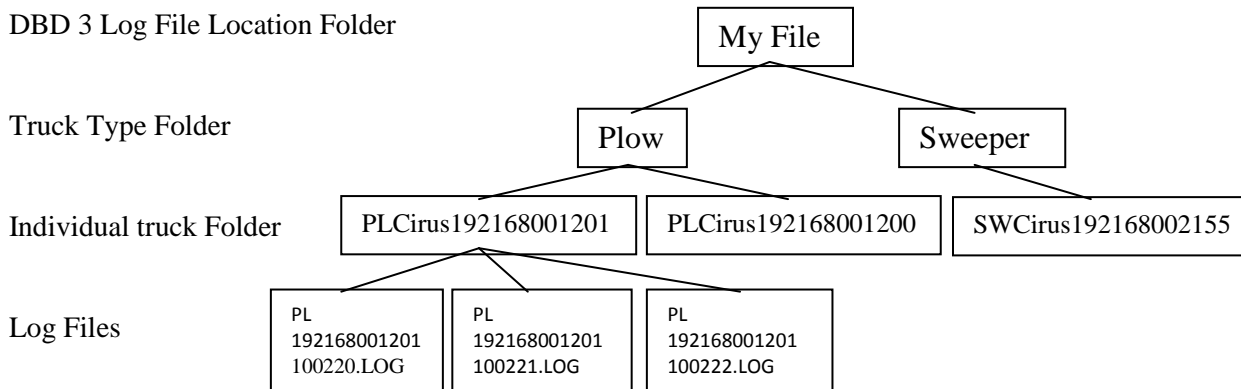
1. Click on the vehicle in the Download Faults List that you want to delete. Then click on the button at the bottom of the Download Faults List.
2. Go to *Download Faults->Remove Vehicle* to remove only one vehicle or *Download Faults->Remove All* to clear the entire Download Faults List.

Locating DBD 3 Log Files

The user interface shows the folder being used to store Log files in the bottom left corner of the screen. The location can be changed by going to *File->DBD 3Log File Location*.

DBD 3 Log File Location Folder

The following tree shows the hierarchy and an example of the naming conventions.



DBD 3 Log File Location Folder – the folder selected by the user using *File->DBD 3Log File Location*.

Truck Type Folder – A folder is created for each type of truck being used.

Individual Truck Folder – A separate folder is created for each truck using the naming convention

AABBBBBBCCCCCCCCCCCC where:

AA = first two characters of the truck type

BBBBBB = the vehicle ID

CCCCCCCCCCCC = the IP Address of the truck (excludes periods)

Log Files – these are the files that contain the data extracted from the vehicle using the naming convention

WWXXXXXXXXXXXXXXXXYYMMDD.LOG where:

WW = first two characters of the truck type

XXXXXXXXXXXXXXXX = the IP Address of the truck (excludes periods)

YY = 2 digit year

MM = 2 digit month

DD = 2 digit day

Updating Log files From DBD 2.2 to DBD 3

This function allows data stored using the DBD 2 program to be updated to the new DBD 3 format so the data can be viewed using the Data Analysis Tool.

Caution: The converter erases the DBD 2.2 files as they are transferred into the DBD3 format. If you wish to keep a copy of the files in the DBD2.2 format, make a backup copy of the folder they are stored in.

Step 1.

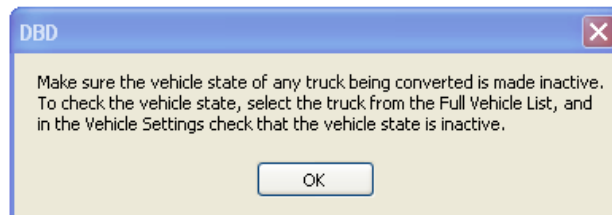
For versions of DBD 3.6 or lower click:

File->Update DBD 2.2 Log Files to DBD 3.

For versions of DBD 3.7 or higher click:

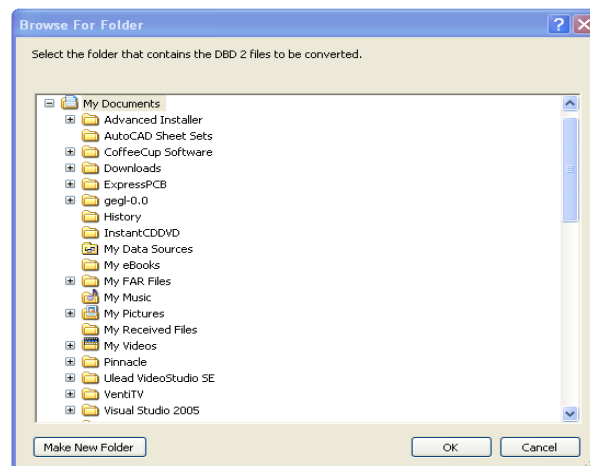
File->DBD2 Functions->Update DBD 2.2 Log Files to DBD3

Step 2.



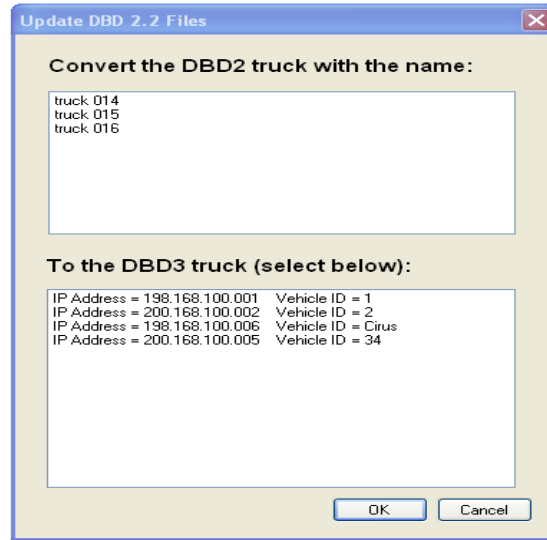
A warning will appear which is a reminder to make each truck inactive. The purpose of making the trucks inactive is to ensure that no trucks will download data while the conversion takes place. If it is certain that no truck will be downloading while the conversion takes place this step can be ignored.

Step 3.



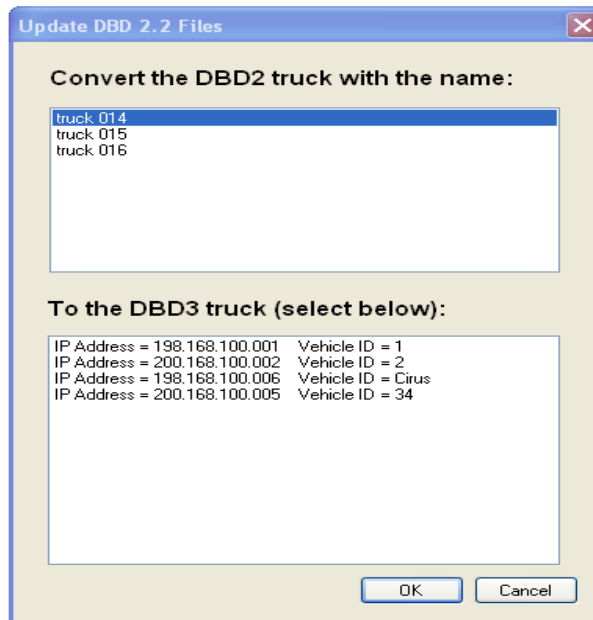
Select the folder that contains the DBD 2.2 files that you want converted.

Step 4.



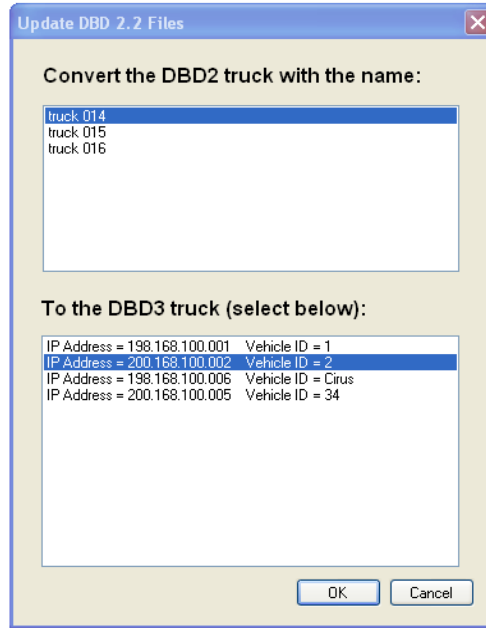
A dialog box will show up which lists all of the truck names from DBD2 and all of the trucks available in DBD3.

Step 5.



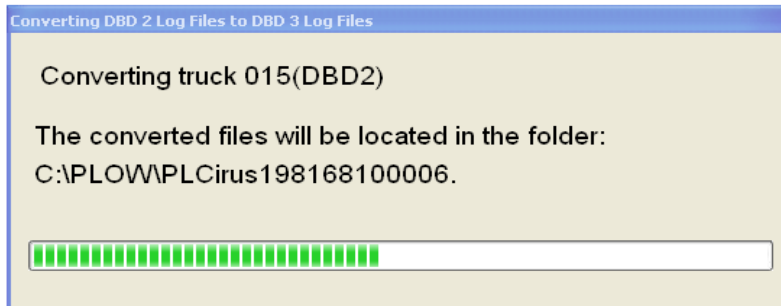
Select the truck from DBD2 which needs to be converted.

Step 6.



Select the truck in DBD3 which the files will be converted into and click 'OK'.

Step 7.



The status bar will show the progress of the download.

Repeat steps 1-7 for each truck that needs to be converted.

All of the data is converted when step 1 is repeated and a popup box containing the text 'Folder Does Not Contain the Necessary Files.(CFG)' appears.

Quick troubleshooting instructions for DBD 3 network connection (for technician with network experience):

Make sure that all the IP addresses of the network components (PC, Access Point, Bridge, and SpreadSmart) are in the same subnet, but none of the IP addresses are identical. Common setup mistakes include setting the spreader systems' IP address to the address listed on the sticker on the bridge or setting the trucks' IP address to the same as address as another truck in the fleet.

From a command prompt on the PC, ping each component in the system from the PC to the SpreadSmart. Start with the access point, then the bridge, then the SpreadSmart, to identify which link (if any) is having problems. Failure to ping the access point indicates a network problem between the PC and access point. Failure to ping the bridge indicates a wireless link problem, and failure to ping the SpreadSmart indicates a cabling problem between the bridge and the SpreadSmart.

Check to make sure that the IP setting in the system setup of the SpreadSmart is NOT the default of 192.168.1.254, but that the last two decimal digits have been set to some other value.

Check to make sure that the IP setting in the SpreadSmart system matches that in the Full Vehicle List of DBD 3.

TROUBLESHOOTING GUIDE

Symptoms	Possible Causes	Remedy
Software will not install	.NET 3.5 framework is not installed	Go to Microsoft updates (windowsupdate.microsoft.com) and get the latest updates.
Software will not install	Incorrect operating system	Drive By Download will only work with Windows XP and Windows 7
DBD 3 cannot connect to SpreadSmart	a) Incorrect IP address b) IP configuration incorrect	a) SpreadSmart IP should not be still set at default 192.168.1.254 b) All component IP addresses must be unique in the same subnet
Truck is always out of range.	a) Truck not close enough b) Cable connection error c) IP addresses don't match d) Base station PC IP address error e) Ping truck to verify connection	a) Confirm the truck is within the range of the access point by checking the WLAN LED on the bridge. A blinking light indicates the bridge is in range. A solid light or no light means unit is not within range. Cycle the power on the Spreadsmart/Datashark for 10 seconds. b) Check the WLAN light on the bridge. It is the right most light, and should be blinking occasionally. If not lit, check the data cable connection between the bridge and the Drive By Data port on the <i>SpreadSmart™</i> system. c) Verify the IP address in the System Setup of the <i>SpreadSmart™</i> and the IP address in the vehicle list in <i>Drive By.exe</i> both are the same & that no two trucks are those numbers. d) Verify that the network configuration settings on the host PC are correct, by opening a command window and typing IPCONFIG. The IP settings should show an address in the 192.168.96.x range. e) Verify a good connection to the truck using PING. On the computer select Run and type command, type PING 192.168.x.x where x is the IP address of the <i>SpreadSmart™</i> unit. If the command times out, reboot the computer and <i>SpreadSmart™</i> system (on the keypad) and try again.
“error – no data card”	a) Digital storage card missing from CPU b) Data card present, loss of connection	a) Replace SD card in controller. b) Reset SpreadSmart (Keypad Switch) to “re-acquire” the connection to the data card.
“card erase fail”	MMC card did not properly erase during data transfer due to transient power	Reset power on the SpreadSmart, wait 10 seconds and then attempt to download data again.

Symptoms	Possible Causes	Remedy
Windows Cannot Access 'foldername'	DBD 3 cannot find the location to write log files to	Check that the DBD 3 Log File Location exists and that the computer has access to that folder.
Truck will not download even though it says 'Truck In Range'	The truck is set to be inactive	Click on the truck in the Full Vehicle List, change the state of the truck in Vehicle Settings to Active.
A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond 192.168.1.xxx:23	a)The IP Address entered for the device is the IP Address for a device that is not a Cirrus controller b) happens when you turn the controller off during download before the Sockets have a chance to make a connection.	a)Device exists and is able to ping, but it is not a Cirrus Controls Device. Could be anything a printer, phone, another computer. b) The Device lost power while a download was in process. Try using the 'Download' button to download again.
An existing connection was forcibly closed by the remote host	The computer with DBD 3 on it started a download, then the computer lost the connection to the network.	Make sure the computer is connected to the network and try to download again.
No connection could be made because the target machine actively refused it	The server is not running.	Make sure the computer is connected to the network.
Timed Out	Truck was in range, then left range	Retry download with manual "Download Vehicle Data" button.

SUPPORT

If you have any questions about your *Drive by Download*TM system or its operation call the Cirrus Controls Technical Support line at: (763) 493-9380.

Technical Support is available Monday thru Friday from 7am to 5:00pm central time. You may also e-mail customer support with your questions at info@cirruscontrols.com.

GLOSSARY

Configuration File – The configuration file allows all of the DBD 3 settings to be set up at the factory which allows for easy installation. The file is named DriveByDownloadConfigurationFile.cfg.

DBD 3 – The 2010 version of Drive By Download.

DBD 3 2.2 – The previous version of Drive By Download.

Fleet – Refers to all of the trucks in the DBD 3 system.

IP Address – A number assigned to each truck which it uses to communicate over the computer network. Each truck in the fleet must have a unique IP Address.

Log File – a file that contains the data collected from a cirus controls spreader.

Log File Location – The folder where all of the downloaded Log Files are kept. The location of the Log Files can be changed by selecting File->DBD 3 Log File Location.

Subnet – A subnet mask is used to identify the network within the large network.

Vehicle ID – 5 character ID given to a truck. Each truck must have a unique vehicle ID unless it is given the generic label 'Cirrus'.

Vehicle Type – Trucks are given a type (i.e. Plow, Sweeper) that is used to help sort log files.

Vehicle State – Classifies a truck as ACTIVE or INACTIVE. Used to distinguish trucks in the fleet that are actively downloading, and those that are not actively downloading. A truck might be made inactive if it is being repaired.