Provincial 9-1-1 Printer Data Capture Reference Manual for British Columbia and Alberta

Version: **V4.0**

November 20, 2011

This document describes the Provincial 9-1-1 Printer Data Capture application. This program is a Microsoft Windows program designed to capture the output of the Provincial 9-1-1 LOG and Real-time printers of both the British Columbia and Alberta 9-1-1 systems, and store the captured data in a database for archival and statistical purposes.

November 20, 2011

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Preface

Preface

This manual describes the setup and operation of the Provincial 9-1-1 Printer Data Capture application. The P911 PDC application is a program designed to capture the printable ASCII data sent to the LOG printer and Real-time printer ports of Call Answer Centres in British Columbia or Alberta, split the data into component fields, and store the data in a database for archival, reporting, and statistical purposes.

Structure of This Document

The document is divided into three parts:

- A section that describes the operating system and hardware requirements and installation of the Provincial 9-1-1 Printer Data Capture application.
- A section describing the operation of the program.
- A section describing the Searching and Reporting Microsoft Access module

Intended Audience

This manual is intended for those individuals in the 9-1-1 Call Answer Centres who are charged with the collection and maintenance of statistical 9-1-1 call information. A working knowledge of appropriate database tools and reporting utilities is assumed.

1 Provincial 9-1-1 Printer Data Capture Overview

The Provincial 9-1-1 Printer Data Capture application is a Microsoft Windows program that is designed to capture and record 9-1-1 call data for statistical, archival, and reporting purposes. It may be used to replace hard-copy printers at 9-1-1 Call Answer Centres in both British Columbia and Alberta. Rather than feed the serial output of the LOG printer and Real-time printer ports to hard-copy printers, they may be attached to the serial COM ports of a PC with the Printer Data Capture application installed. The utility will then capture the ASCII printer data stream, split the data stream into component fields, and store the data into a user database. The Call Answer Centre may use an appropriate reporting tool to produce summaries and statistical reports of 9-1-1 calls.

1.1 Requirements

The Provincial 9-1-1 Printer Data Capture application requires the following hardware and software requirements for proper operation:

- A Pentium class PC with at least one serial port connected to the LOG printer port of a terminal server. To collect Realtime printer data, a second serial port must be present.
- A hard drive of sufficient size to support the database and log files.
- Windows 98, Windows XP Professional, Windows 2000 Professional, Windows 2000 Server, or Windows Server 2003 operating system installed. Running the application in Windows Service mode is not available when installed under Windows 98 due to limitations of the operating system.
- The Microsoft .NET Framework Version 4.5 Redistributable Package must be installed. This is provided on the installation CD-ROM, or may be may be downloaded from Microsoft at: dotnetfx.exe.
- The Crystal Reports Runtime files must be installed. The installation package is provided on the distribution CD-ROM or may be downloaded from https://ngc1952.homeserver.com/p911pdc/CRRuntime_32bit_13_0_1.msi.
- Microsoft Data Access Components (MDAC) 2.8. MDAC 2.8 is provided on the installation CD-ROM, or may be downloaded from Microsoft at the Microsoft Download Centre. Windows XP and Windows Server 2003 already include MDAC 2.8.

The following components are optional:

- Microsoft Access 2000 or 2003 installed if you wish to store data in an Access database.
- Microsoft SQL Server 2000 or 2005 if you wish to store data in an SQL Server database.
- MySQL and the MySQL ODBC connector installed if you wish to store data in a MySQL database.

1.2 Components

The Provincial 9-1-1 Printer Data Capture application is provided on a CD-ROM with the following components:

- *P911PDCSetup.exe* – The installation program for the Printer Data Capture application.
- *CRRedist2005_x86.msi* – The runtime modules for Crystal Reports, required by the P911PDC program.
- *p911callstats.mdb* – A Microsoft Access database with an empty table named *callstats* into which the captured printer data may be stored. It also includes empty tables that are required by the reporting module that are customized by site.
- *mysql-4.0.17-win.zip* – The MySQL database Windows installation
- *MySQL Manual.pdf* - The MySQL reference manual in Adobe Acrobat format
- *MyODBC-3.51.06.exe* - The MySQL ODBC connector installation file.
- *mysqlcc-0.9.4-win32.zip* - The MySQL Control Centre installation file.
- *Create Tables MySQL.sql* - An SQL script used to create the *callstats*, and other tables required by the reporting module table in MySQL
- *Create Tables SQL2K*.sql – An SQL script used to create the *callstats* table, and other tables required by the reporting module in Microsoft SQL Server 2000.
- dotnetfx.exe - The Microsoft .NET Framework Version 1.1 Redistributable Package
- *P911 Reporting.mdb* – A sample Microsoft Access database application that allows you to search for collected 9-1-1 call records. It also contains a sample report that breaks down 9-1-1 call distribution by hour of day.
- *Provincial 9-1-1 Printer Data Capture.pdf* – This document.

1.3 Installation

To install the Provincial 9-1-1 Printer Data Capture application click on the P911PDCSetup program. You will be prompted for a destination folder into which the application will be installed. The default folder is C:\P911PDC. The setup program will then copy the following files to the destination folder:

Table 1 - Installed files

P911PDC.exe	Printer Data Capture capture/client module
P911PDCService.exe	Windows Service data capture module
P911PDCLIB.DLL	Support routines common to both the display and service modules
p911callstats.mdb	Empty Microsoft Access database for storing captured data
Installation.mdb	Site specific database for customizing reports
Create Tables MySQL.sql Create Tables SQL2K.sql	Scripts for creating the callstats table in both MySQL and SQL Server 2000
P911 Reporting.mdb	Microsoft Access database application for searching, reporting and customizing reports
Provincial 9-1-1Printer Data Capture.pdf	This documentation

Existing *p911callstats.mdb*, *Installation.mdb*, and *P911 Reporting.mdb* files will <u>not</u> be overwritten.

1.4 Uninstallation

To uninstall the Printer Data Capture application, open Control Panel → Add or Remove programs and click on the "Remove" button beside the Provincial 9-1-1 Printer Data Capture icon. The PDC Windows Service will be stopped and removed, and the application files will be deleted. However, the following files will not be removed, since they may contain collected data or site-specific modifications:

- *p911callstats.mdb*
- *P911 Reporting.mdb*
- *Installation.mdb*
- *Log files created by the application*
- *Any files in the application directory not created by the installation program*

1.5 Upgrading

When upgrading the Printer Data Capture application to a new version, you generally do not need to uninstall the previous version first. The setup program will automatically take care of uninstalling an existing version for you, and it will preserve all existing settings.

1.6 Contact

To report any errors or problems, or to request additional reports, please contact the author:

Email: colin@ngc1952.com
Phone: 604.731.3106
Home Page: http://www.ngc1952.com

In the case of error reporting, be prepared to supply the log file containing the errors.

1.7 Program Revision History

V4.0.8   11-Aug-2011
- Add email notification for certain errors
- Change date/time displays on search reports to 24 hour clock
- Add failover server to SQL server connection string

V4.0.7   06-Jun-2011
- Ensure that if not collecting to any database due to database startup errors and not retrying database connection, that data is logged to logfile for future import.

V4.0.6   27-Jan-2011
- Add up to COM9 in options COM port dropdown.

V4.0.5   10-Mar-2010
- When option to start minimized was set, window would be briefly visible before minimizing when program started.
- When program was started minimized and then restored, panels would sometimes be shifted to the right.

V4.0.4   4-Mar-2010
- Improved error message when there are problems connecting to the database on application startup. If there are problems connecting to the storage database on startup, an error message will be logged indicating that data collection to the problem database will be disabled until the problem is fixed.
- DNS host name as well as IP address may now be specified in the server address field when you are running P911PDC as a Windows Service and you wish to connect to it in client mode.
- Display of panels and windows is now controlled only by Options->Display tab. Previously, when running in client mode, you had limited control over which panels and windows appeared. Now the client can continue to receive LOG printer and Realtime printer data from the server and has full control over what data is displayed. History is still maintained for panels and windows that are hidden.
- Improved positioning of LOG printer and Realtime printer display panes when application window is resized.
- When running P911PDC as a Windows Service you may now specify service dependencies. A service dependency causes the P911PDC Windows Service to delay startup until the services it is dependent on are started. Consider the scenario where P911PDC is set to store printer data in an SQL Server database running on the same machine. When the machine is booted, if the P911PDC service starts before the SQL service is started, P911PDC will fail to connect to the database and no data will be stored in SQL server until the P911PDC service is restarted. However, if a dependency is added on the SQL Server service, the P911PDC will delay startup until the SQL server service is running, thereby ensuring it can connect to the database. You should specify the service name as either:
  o MSSQLSERVER if you are running SQL Server Enterprise
  o MSSQL$EXPRESS if you are running SQL Server Express

You only need to specify the dependency if you are running P911PDC on the same machine as SQL server and you are collecting data to the local SQL server database. Leave this field blank if it does not apply.

V4.0.0   23-Oct-2009
- Improve regular expressions used for matching fields.

- Add support for new LOG printer Type 4 format, which may include Wireless Phase II location information.
- Improve database searches, stores, and updates.
- Replace multiple trailing line feeds in captured printer data with single crlf.
- Begin to make storage table name a setting.
- Modify panels to support larger font sizes. Maximum font size is 14.
- Modify panels to support 1024x768 screen size (smallest resolution supported).
- Adjust panel placement when window size is changed.
- Support Microsoft Access 2007 database type .accdb

V3.7.3   27-Jan-2008
- In StoreRecord routine, if required database connection not open, then open it. Handles case of database being inaccessible when program starts but comes online later.
- Fix parsing of host address in ConnectTo routine of SmartSockets, broken because Vista may return a list of IPV4 and IPV6 addresses.
- Check for proper Windows Service TCP/IP address in Options tab Other.
- Activate proper tab when Options are in error.

V3.7.2   12-May-2007
- Rearrange size and spacing of text boxes on panels to accommodate larger fonts.
- Allow changing of font on Realtime and LOG panels.
- Add option to format phone numbers.

V3.7.1   21-Feb-2007
- Add option to prevent closing or minimizing of window when run under non-administrative account.

V3.7.0   9-Oct-2006
- Updated documentation.
- Support the 5 types of printer formats available from TELUS and documented in the *Terminal-to-Network Interfaces For Provincial 9-1-1 Service Alberta and British Columbia*. This document may be downloaded from http://about.telus.com/publicpolicy/pdf/TID-08.pdf.
- Automatic selection of proper printer format based on what is seen at the printer port.
- Fix bug where if "display as received" was set, all raw data was displayed in the raw realtime printer display window.
- Fix bug where clear button did not clear fields in Call Detail Report search window.
- In order to conserve database resources, when producing reports from a client where the data collection is running as a Windows service (local or remote), only connect to database as needed, rather than keeping the connection always open.
- When updating an existing LOG record with a realtime record, update the PSAPName since the PSAPName from the LOG record may be truncated. Conversely, when updating an existing realtime record with a LOG record, don't update the PSAPName, since it may be truncated. The realtime printer record will always contain a full PSAPName.

V3.6.2   11-Apr-2006
- Added a print button to the LOG printer and Realtime printer panels to print the currently displayed record. Printer options may be set in the new File->Printer Settings... menu item.
- Added print button to the Abandoned Attempt Alarm forms.

V3.6.0   07-Apr-2006
- Connect to local service even if service is paused.
- Add method to flush remaining records in storage queue to logfile if shutting down.
- Only reconnect to databases if serious connectivity error occurs. This will prevent an infinite retry loop if there is an error in one of the database fields.
- Fixed Recent record search of Call Details Report.
- In Realtime record storage routines possible clock change wasn't being taken into account, so sometimes it wouldn't update the existing LOG record.

V3.5.4   27-Mar-2006
- Add support for printer formats as used in TELUS Alberta.
- Restart threads if they crash unexpectedly.
- Upgraded to Visual Studio .NET 2005
- Added option to switch positions of realtime and LOG printer panels
- Make logging window, realtime printer raw data window, and LOG printer raw data window optional.
- Reworked searching SQL code
- Add option to beep PC speaker when BEL characters found in printer stream
- Add option to pop up alarm window on unanswered calls (abandoned attempts)
- Reworked database connection code.
- Add import function to import skipped records from log file

V3.4.1   30-Jun-2005
- Transfer PSAP Name wasn't being collected if call was not answered at transferred-to PSAP.
- Saved SQL Server database name was being ignored and "p911callstats" was always being opened.
- Added Call Details report.
- Add pause/resume so that application can disconnect from database temporarily while still collecting data but not storing it until resume is selected. This allows an Access database to be modified and not lose any data

V3.3.4   27-May-2005
- Add trace facility to debug matching and updating of Realtime and LOG records.
- Better handling of record locking in Access database.
- Improve method by which LOG and Realtime printer records are matched and updated in the databases.

V3.3.2   22-Apr-2005
- Correct bug when updating existing Realtime data from LOG printer data in SQL Server.
- Add statistics display.
- Improve algorithm that finds existing Realtime printer data to update with LOG printer data for all databases.
- Fix display of SQL SELECT statement when more than one existing Realtime printer record is updated with LOG printer data.

V3.3.1   18-Apr-2005
- Add ability to change font type, size, and color in LOG printer, Realtime printer and Logging output windows.

V3.3.0   15-Apr-2005
- Remove ProcessBuffer thread and add ProcessData routine called in each serial port read thread.
- Increase serial port input buffer size to prevent buffer overruns.
- Prevent multiple duplicate entries from appearing in dropdown lists on search forms.
- Change raw printer text output windows from RichTextBox to multiline TextBox and limit the amount of text displayed to prevent memory consumption.
- Add a registry fix to prevent the Jet OLE DB provider from consuming too much memory as outlined in Microsoft Knowledgebase article http://support.microsoft.com/kb/248014/EN-US/
- Increase process priority of data collector so it will be more responsive to incoming data.
- Show a wait cursor when doing a lengthy database search.
- When searching for LOG or Realtime printer records to update, update the first matching record with the minimum time difference between RTCallTime and AnswerTime (or DisconnectTime if abandoned).
- Display raw printer output in log file when there is an error storing it in all databases.

V3.2.1   23-Mar-2005
Prevent running multiple programs. If another copy is started, activate the existing running program and exit. When in client mode, if a printer is not defined, and a message comes in to update that printers' window, make the window visible. Respace form controls slightly so that more can be seen on low resolution screens. Make search form font match that of the main form.

V3.2.0   18-Mar-2005
Added a Search button for both LOG print and Realtime print display panels. The Search button brings up a Search window that allows you to search for records based on input selections such as date, PSAP Name, ESZ, Customer Name, Address, etc. The search results are shown in a Crystal Reports report window, allowing you to print or export the report. This distribution file is larger than normal due to the necessity of providing the Crystal Reports .NET runtime libraries along with the application.

V3.1.1   24-Feb-2005
Rewrite application in C#. Only log LOG and Real-time data records to log file when there is a problem storing the data in the database. Implement "local service", so P911PDC.EXE can be run in client-only mode and connect to the Service running on another machine. Add native SQL Server 2000 database support. Add "Test" buttons to database selection options to test proper connection to databases. Combine LOG printer and Real-time printer data processing threads into single thread.

V3.0.0   15-Oct-2004
Split data capture, settings save/restore, and logger into classes. Add P911PDCService program so data capture can be run as a Windows Service. Add ClientUpdate class and SmartSocket class so service can send updates to display client(s). Add an installer. Move all common routines to a support library.

V2.3.1   29-Jun-2004
Added options to start the program minimized and to hide the program in the system tray when minimized.

V2.3.0   23-Apr-2004
Merge and store data from real-time printer in database.

V2.2.1   13-Apr-2004
Fix 24-hour clock times displayed and stored. Correct parsing of RCER dates and times where OFFER, ANSWER, TRANSFER, and TRANSFER ANSWER times may be in previous day than DISCONNECT time.

V2.2.0   7-Apr-2004
Fix ParseRCER parsing of date routine. Format date with alpha month to make month and day unambiguous. Fix parsing of LOG and Realtime printer records with an ESZ present but no Municipality or Postal Code.

V2.1.0   1-Apr-2004
Add ability to use incoming TCP/IP connections for printers rather than serial ports. This option would be used mainly for testing purposes. Fix bug where using Access Database file selection button on Options form would cause Options form to close.
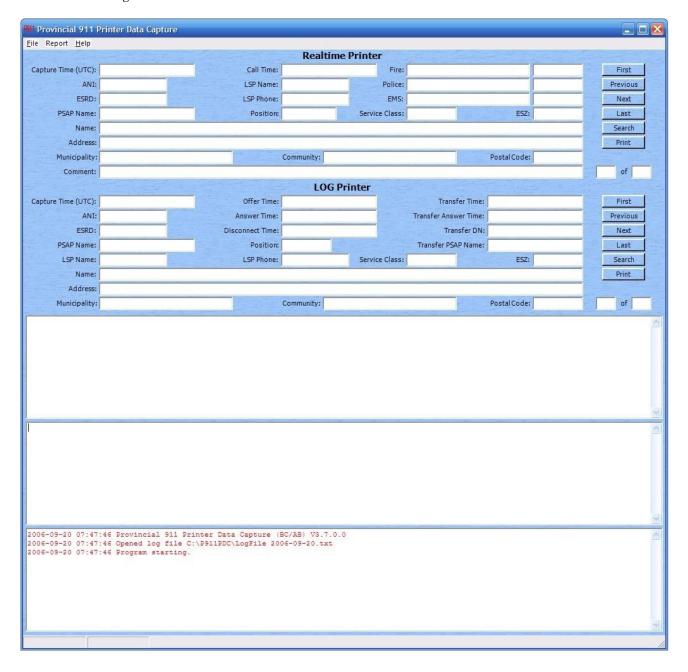
V2.0.0   1-Mar-2004
Original version of program.

2 Provincial 9-1-1 Printer Data Capture Operation

2.1 Starting

To execute the Printer Data Capture application, double-click on the P911PDC.exe program icon. The Windows interface generally consists of 2 panels and 3 windows, but may not appear exactly as pictured below depending upon how the application is configured.
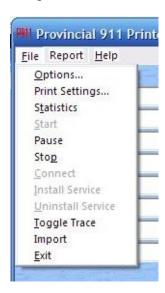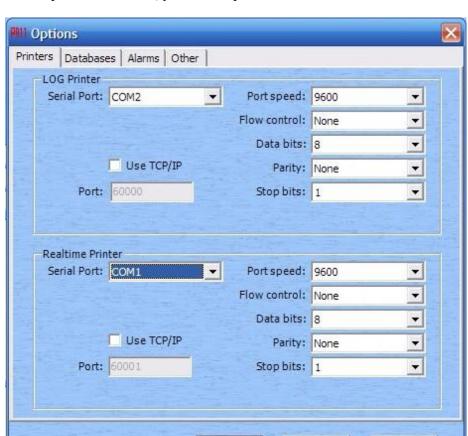
The top panel contains the field display of the data read from the LOG printer port. The panel directly underneath contains the field display of data read from the Real-time printer. The three lower windows consist of the raw LOG printer display window, the raw Real-time printer display window, and the logging window that contains error and informational messages.

2.2 Configuration

Before the utility can begin to capture and store data, you must configure which serial ports are connected to which Provincial 9-1-1 printers. To begin configuration, select File → Options... from the menu bar.

After Options is selected, you will be presented with the **Printers** tab.

Select the serial communications port that the LOG printer is attached to, and optionally the serial port that the Real-time printer is attached to. The choices are COM1 through COM4. You may also configure the serial port settings such as baud rate and flow control as recommended by the 9-1-1 terminal interface document. For British Columbia and Alberta the defaults of 9600 baud, no flow control, 8 data bits, no parity, and 1 stop bit should be appropriate.
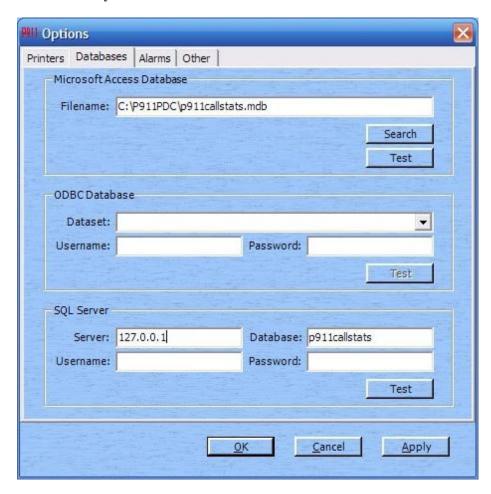
The "Use TCP/IP" checkboxes and port number fields are intended to be used or debugging. If checked, instead of reading data from the serial ports, the program will listen on the specified TCP/IP port for an incoming connection from a printer. These would not normally be checked as TELUS does not provide network printing for 9-1-1.

The next tab, **Databases**, allows you to select the database into which the collected data will be stored. You have a choice of a Microsoft Access database, an ODBC (Open Database Connectivity) database, or an SQL Server 2000/2005 database. The ODBC database may be any third party database that you have installed an ODBC connector for, such as MySQL, or Oracle. You may choose to store data in any or all databases simultaneously.

In the Microsoft Access Database group, press the **Search** button to select the location of the Microsoft Access database file.
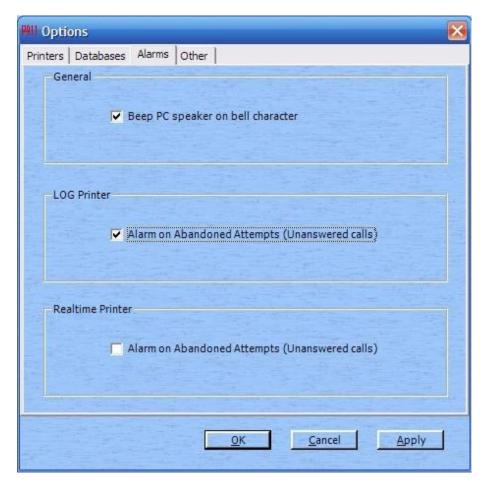
In the ODBC Database group, the Dataset dropdown box will present you with a list of defined ODBC connectors. If the ODBC database requires authentication, the username and password may be supplied. The connector may be defined and configure in the Control Panel Data Sources (ODBC) applet.

In the SQL Server group, type the address of the networked SQL Server machine where the database is located. If the database is located on the machine where the data capture software is installed, enter *localhost*, or *127.0.0.1*. If you are using database authentication, supply the username and password of a user that has read/write access to the database.

Any databases selected must contain a table named *callstats*, with the required named table fields as described in a subsequent section. The **Test** button in each group will test the connection to the database.
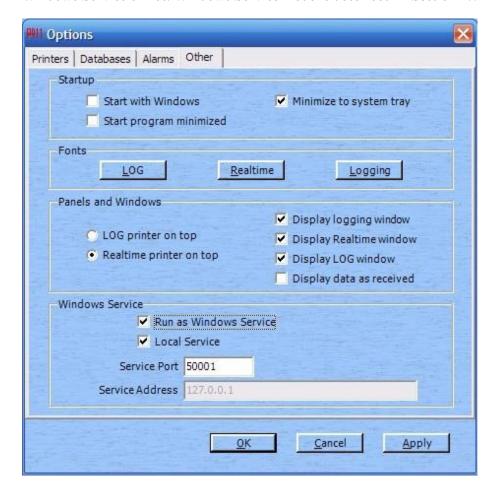
The third tab, **Alarms**, sets alarm options for the data seen at the printers.

You may choose to have the PC speaker beep when bell characters are seen in the printer input stream. You may also choose to have a popup window displayed when an Abandoned Attempt is seen at either or both of the printers. Abandoned attempts are 9-1-1 calls where the caller hangs up before the operator answers. The popup window contains basic caller information, and will remain displayed until explicitly dismissed. Multiple Abandoned Attempt popup windows may be active at the same time.

The last tab, **Other**, contains several sections that allow you to configure how the program starts, how the windows and panels are displayed, and whether it runs as a Windows Service or not. Windows Service mode is described in Section 2.7

The sections and their options are described as follows:

Table 2 - Startup

Start with Windows	If checked, the application will start when Windows starts and a user logs in. In standalone mode, the user must have administrative privileges. In client/server mode, administrative privileges are required only if client will be used to control the server.
Start minimized	If checked, the application will start minimized.
Minimize to system tray	If checked, when the application is minimized it will show an icon in the system tray area, but not the taskbar. Double-clicking the tray icon will restore the program window to a normal state, while right-clicking the icon will present a context menu that will allow you to restore the window, or exit the program.

The **Fonts** section contains buttons that bring up a font dialog box that will allow you to change the font, font size, and font color for each of the LOG, realtime, and Logging windows.

Table 3 - Windows Service Options

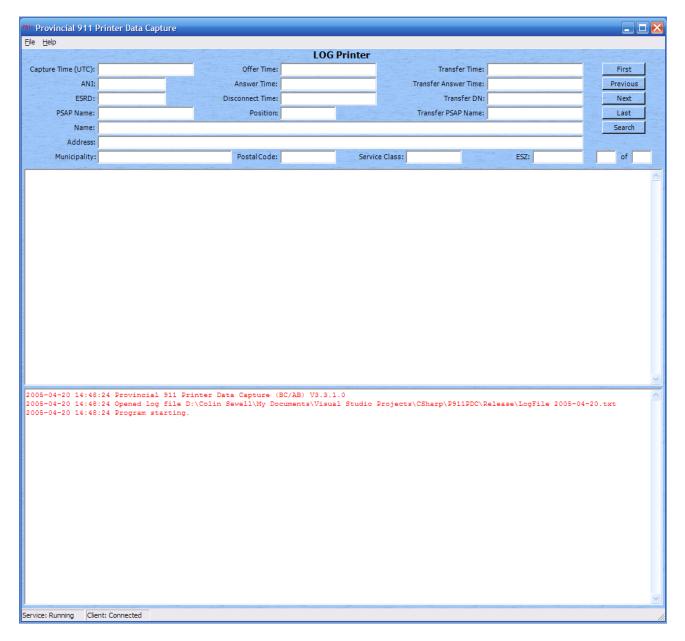|	
Run as Windows Service	If checked, the application will run as a Windows Service. It will automatically run and start collecting data when the PC boots. An administrative user does not have to log in first to start the program. The application will continue to run even if no one is logged on, or the P911PDC.exe is shut down. This is the recommended mode of operation. If not checked, the application will run standalone and connect to the COM ports directly.
Local Service	This option is only important if the "Run as Windows Service" option is checked. If checked, the program will attempt to connect to and control the P911PDC Windows Service on the current machine. If not checked, the program will attempt to connect to a Service running on the machine as specified by the Service Address.
Service Port	When the application runs as a Windows Service, the P911PDC.exe program becomes a display client only. This is the port used for the client to communicate with the Windows Service. It should not be changed unless the port conflicts with another applications' use.
Service Address	When Local Service is unchecked this specifies the TCP/IP address of the machine that the Windows Service is running on. It will allow the service to run on another PC and still allow the display of collected data on the local machine.

When the application is run as a service, the P911PDC.exe program becomes a display client only. The real work of capturing printer data and storing it in a database is done by the P911PDCService.exe program. As the service collects and stores data, it also sends it to any display client that is connected to it. The display client does not need to be running for the printer data to be captured.

When the application is not run as a service, the P911PDCService.exe program is not used and the P911PDC.exe program becomes both the capture and display application. In this case, it must be running before any printer data is captured. In order to run, a user must log on to the PC it is installed on. The application then must be either started manually, or the option to start with windows must be checked.

Pressing the **OK** or **Apply** button makes the changes immediately. The panes and windows displayed will change according to which printers are being used, as described in the next section.

2.3 Screen Format

The screen display of the Provincial 9-1-1 Printer Data Capture application changes depending upon which serial ports are assigned. In the case of a single LOG printer port being read, the display will look like:

The panel at the top displays the individual fields as extracted from the raw 9-1-1 LOG printer output. These are the fields that are stored in the databases. Also in the LOG printer pane are buttons that allow you scroll through the history of 9-1-1 calls that have occurred. The two small windows under the history scroll back buttons indicate the current history entry number that is displayed, and the total history entries that have been collected so far, up to the configured maximum.

The window directly underneath the LOG printer fields pane is used to display the raw LOG printer data as read directly from the serial port. The bottommost window is the logging window and is used to display informational and error messages.

If the Real-time printer serial port is also configured, the Real-time field pane and Real-time raw serial window will also be displayed.
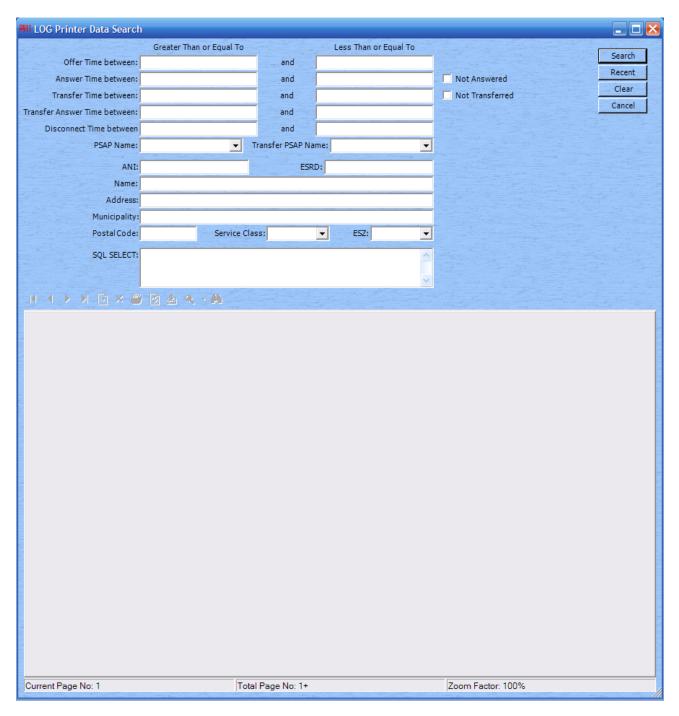
The status bar at the bottom will be blank if the application is not run as a Windows Service. If running as a service, the first status panel displays the status of the service as Running, Stopped, or Not Installed. The second panel displays the client connection status, normally Connected if the service is running.
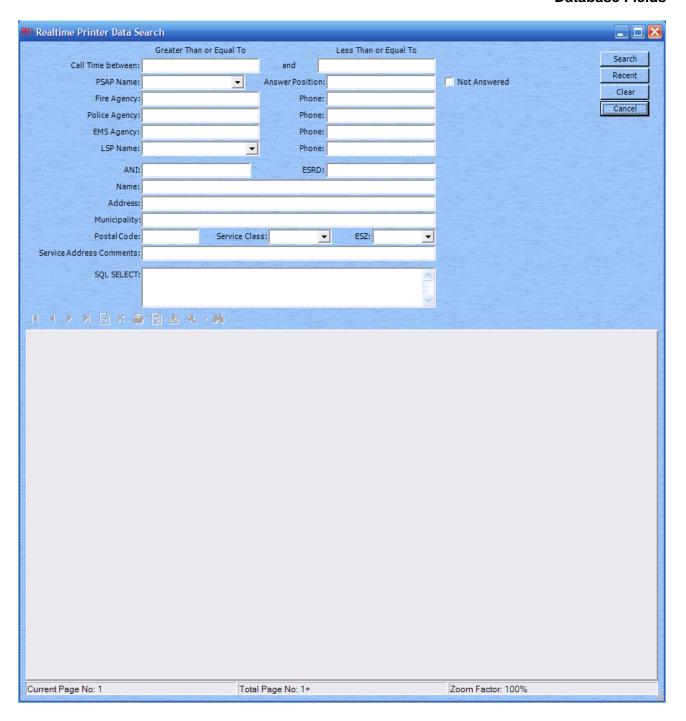
2.4 Statistics

2.5 Search Screen

Pressing the Search button on either the LOG or Realtime printer panels brings up the Search screen.

Realtime Printer Data Search

	Greater Than or Equal To		Less Than or Equal To	
Call Time between:		and		
PSAP Name:		Answer Position:		☐ Not Answered
Fire Agency:		Phone:		
Police Agency:		Phone:		
EMS Agency:		Phone:		
LSP Name:		Phone:		
ANI:		ESRD:		
Name:				
Address:				
Municipality:				
Postal Code:		Service Class:	ESZ:	
Service Address Comments:				
SQL SELECT:				

Search
Recent
Clear
Cancel

Current Page No: 1   Total Page No: 1+   Zoom Factor: 100%

2.6 Database Fields

The Provincial 9-1-1 Printer Data Capture application splits the raw LOG printer serial port printer record into its component fields and stores it in the user-defined database. If a real-time printer port is also configured and attached, the real-time printer data is also split into its component fields and merged with the existing LOG printer data. The

Provincial 9-1-1 Printer Data Capture Operation
Database Fields

following table lists the names and data types of all the fields collected. These must be defined in a table named *callstats* within the database to be collected properly.

Table 4 - callstats table

Field Name	Data Type	Size	Field Description
CaptureTime	Date/Time	8	The date and time the data was captured from the LOG printer (PC UTC)
ANI	Text	10	The telephone number of the 9-1-1 caller
PSAPName	Text	16	The PSAP name of the answering agency
Position	Text	5	The position answering the call (may not be accurate)
Login	Text	5	The login time of the position (usually null for non-ACD)
OfferTime	Date/Time	8	The time the 9-1-1 call was offered (DMS-100 time)
AnswerTime	Date/Time	8	The time the 9-1-1 call was answered (DMS-100 time). Null for abandoned attempts.
TransferTime	Date/Time	8	The time the 9-1-1 call was transferred to another agency. (DMS-100 time) Null for non-transferred calls.
DisconnectTime	Date/Time	8	The time the 9-1-1 call was disconnected (DMS-100 time)
TransferDN	Text	10	The directory number used to transfer the 9-1-1 call. Null for non-transferred calls.
TransferPSAPName	Text	16	The PSAP name of the agency the 9-1-1 call was transferred to. Null for non-transferred calls.
TransferAnswerTime	Date/Time	8	The time the call was answered at the transferred-to agency (DMS-100 time). Null for non-transferred calls.
ESRD	Text	10	The Emergency Service Routing Digits for a cellular call. Null for non-cellular calls or for carriers that do not subscribe to enhanced 9-1-1 services.
Name	Text	63	The name of the customer placing the 9-1-1 call.
Address	Text	68	The address of the customer placing the 9-1-1 call.
Municipality	Text	30	The municipality of the customer placing the 9-1-1 call.
PostalCode	Text	7	The postal code of the customer placing the 9-1-1 call. May be null or "NPC"
ServiceClass	Text	4	The service class of the customer placing the 9-1-1 call. May be one of • RES • BUS • CELL • UNKN (for ANI failure) • COIN (may not be implemented on 9-1-1 side)
ESZ	Text	5	The 5 digit Emergency Services zone of the customer placing the 9-1-1 call.
RTCaptureTime	Date/Time	8	The date and time the data was captured from the real-time printer (PC UTC)
RTCallTime	Date/time	8	The date and time the call was answered according to the real-time printer
RTPosition	Text	20	The Answering position as sent in the CAD packet, or "(abandoned call)" if the call was not answered.
FireAgency	Text	30	The name of the Fire dispatch agency for the caller's ESZ.
FirePhone	Text	10	The telephone number of the Fire dispatch agency.

PoliceAgency	Text	30	The name of the Police dispatch agency for the caller's ESZ.
PolicePhone	Text	10	The telephone number of the Police dispatch agency.
EMSAgency	Text	30	The name of the EMS dispatch agency for the caller's ESZ.
EMSPhone	Text	10	The telephone number of the EMS dispatch agency.
ServiceAddressComments	Text	120	The Service Address Comments associated with the caller.
LSPName	Text	15	The name of the Local Service Provider for the telephone line.
LSPPhone	Text	10	The Local Service Provider's contact number.

The database table may be modified to add additional keys for performance improvements when sorting, searching, and reporting, as long as the field names, file sizes, and data types are not modified.

2.7 Operation

When started, if the LOG printer and/or Real-time printers are configured, the utility will immediately begin reading from the serial ports and storing and displaying data. To exit the program, select File->Exit from the menu. To stop and start reading from the ports without exiting, select File->Start or File->Stop.

If the utility is reading from both a LOG printer port and a real-time printer port, the utility will attempt to merge the data from both data streams into the same database record. In some cases, the merge will fail, and both types of records will be stored in the database. The merge failure is due to the fact that the timestamps for the LOG printer data and the real-time printer are from different systems, and the clocks will probably not match. For example, if the real-time printer data is stored first, when the LOG printer data is captured, the real-time printer data is looked up by answer time. Since the answer time for the real-time data will in all likelihood not match the answer time for the LOG printer data exactly, a "rough" match is done that may not always succeed if the clocks are too different.

Informational and error messages are always logged in the bottom logging window pane. In addition, they are also logged to a file called "LogFile yyyy-mm-dd.txt" in the same folder that the utility is installed. This log file is automatically rolled over daily at midnight. If there is a database problem, and no data can be stored in any database, the call data will be logged as a single string record having the fields delimited by a vertical bar character. For data read from the LOG printer, the record is preceded by the keyword "LOGDATARECORD:". Real-time printer data is preceded by the keyword "RTDATARECORD:". If the storage database becomes damaged or unavailable, the data from the log provides a data stream that may be imported into the database once the problem is resolved.

3 Searching and Reporting

The Printer Data Capture application is also supplied with a Microsoft Access database utility called *P911 Reporting.mdb*. The utility includes a menu system that allows you to call up a search module, reports, and maintenance and customization forms. A sample report that breaks down 9-1-1 call data by hour of day is also included. If you are familiar with Microsoft Access, you may create your own reports and modules and integrate them into the menu system using the Access Switchboard Manager.

In order to be distributed without affecting the customers' data, the Searching and Reporting database uses links into the external 9-1-1 call statistics data table. There are also several external data tables that are needed to customize 9-1-1 reports. The links are created or redefined by the "Select Database" menu item found on the Maintenance menu.

An empty Microsoft Access database, Installation.mdb is provided that contains empty site-specific tables.

The tables and their fields are documented in the following table.

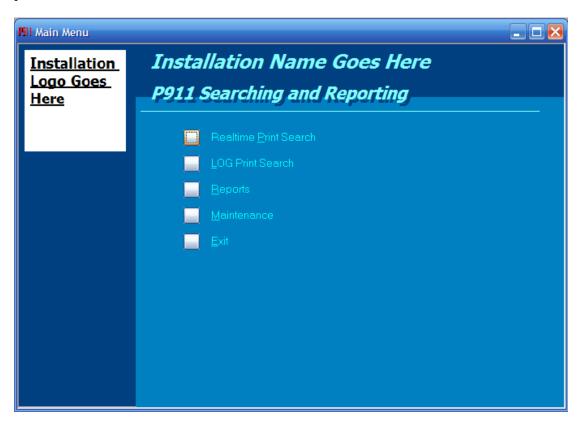**Table 5 - Site specific tables in Installation.mdb**

Table Name	Field Name	Data Type	Size	Description
tblInstallation This table contains data that appears on the sample reports and menu.	ID	Text	5	A unique installation identifier key.
	Name	Text	50	The name of the installation. This name appears at the top of the sample reports and on the main menu.
	Logo	OLE Object	--	A bitmap logo that appears on the main menu and at the top of sample reports. Please not that the MySQL database does not support the storage of bitmap data.
tblAgency This table provides descriptions and Agency types for the PSAP Names found in the call records. The PSAP name corresponds to a call answer centre.	PSAPName	Text	16	The name of the PSAP as reported by the LOG printer.
	Description	Text	32	The description of the call answer centre.
	Type	Text	1	A character describing the type of call answer centre: • P - Police • F - Fire • E - EMS • O- Other

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Table Name	Field Name	Data Type	Size	Description
tblExchange This table provides descriptions for the local exchanges, used in the Exchange report.	NPANXX	Text	6	The NPANXX, first 6 digits of a telephone number.
tblESZ This table provides descriptions for the local Emergency Services Zones.	ESZ	Text	5	The 5 digit Emergency Services Zone number.
	Description	Text	50	The description of the ESZ.

3.1 Main Menu

Initial running of the utility will result in presentation of the "Select Data Source" form in order to choose the location where the 9-1-1 call statistics are being collected, and also the database location of the site-specific customization tables. Subsequent starts will be presented with a menu window.
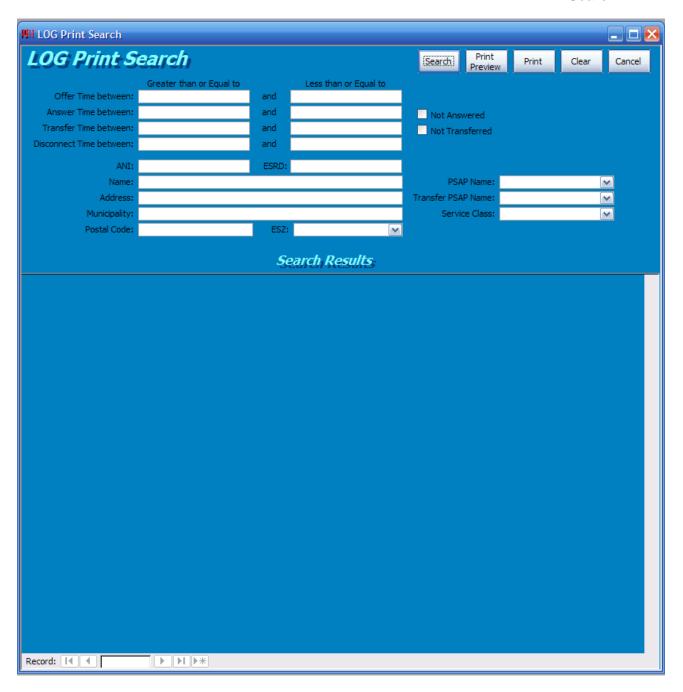

3.2 Search

There are two types of searches that can be performed on the call data. The first search type searches only the realtime printer records, provided you are collecting data from a realtime printer. Using this search you can display and print call data for calls that are still in progress. The second type of search searches only the LOG printer records. Using this search, you may only display and print call record data for calls that have already completed. Either search allows you to specify any number of search criteria for finding relevant call records. In addition, the Realtime Print search window has a button that will display the 10 most recent calls.

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Search

The **Search** button performs the search based on the data entered on the form. The results are displayed in the lower portion of the form. The **Print Preview** button displays a sample of the search results and the **Print** button will print the search results without a preview. The Clear button clears the form of the entered search data allowing you to input new values. The **Cancel** button closes the form and returns you to the previous menu.

Some pointers to take into account when entering search parameters:

- If a search field is left blank, it is not used as a search criterion.

- For the date/time fields, if you specify both a lower and upper bound, the upper bound will change to 1 second less than the entered date if you specify a date with no time. For instance, if you enter 1-JAN-2001 in the lower bound field, and 2-JAN-2001 in the upper bound field, the upper bound field will change to 1-JAN-2001 23:59:59. This is done so that records falling exactly on midnight are not included.
- For date/time fields, if you only specify a lower bound, all records having a date greater than or equal to the date are selected.
- For date/time fields, if you only specify an upper bound, only records less than or equal to the date are selected.
- For text fields that do not have dropdown boxes, and string entered is searched using a partial match. That is, records are search for fields containing the search string. If you want to restrict the search further, use the wildcard characters "*" and "?". The "*" wildcard matches any number of characters or zero characters. The "?" wildcard matches exactly one character. For instance entering "BOB*" in the Name field will find all records with names starting with "BOB". Therefore just entering the string "BOB" is equivalent to entering "*BOB*".
- For text fields with dropdown boxes, you may select a value from the dropdown list, which represent all unique values found in the stored data, or enter your own value.

3.3 Reports

The **Reports** menu option displays the Reports form, allowing you to call up various 9-1-1 statistical reports. As initially shipped, only the "Call Distribution by Hour" report is provided.

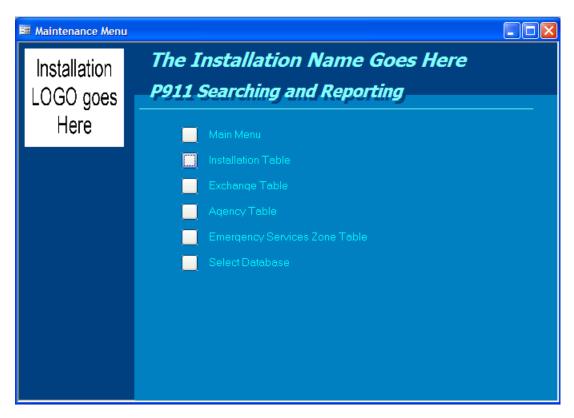Choosing the "Call Distribution by Hour" report brings up a report selection criteria form:

The *Call Time Distribution Report* report reports the number of 9-1-1 calls per hour for a given range of days for a selected PSAP.

The report may only select a months worth of data. Any dates entered in the Start Month or End Month fields are automatically reformatted to "Month, Year". To save time, you need only enter a date such as "Jan 2001" in either of these fields. If a date is entered only in the Start Month, only that month will be reported. The PSAP Name dropdown box will list the unique values found in the PSAP Name field of collected 9-1-1 call data.

3.4 Maintenance

The **Maintenance** menu option displays the Maintenance sub-menu, allowing you to customize the site-specific tables used by the reporting modules. It also allows you to choose the location of the call statistics table and the site-specific customization tables.
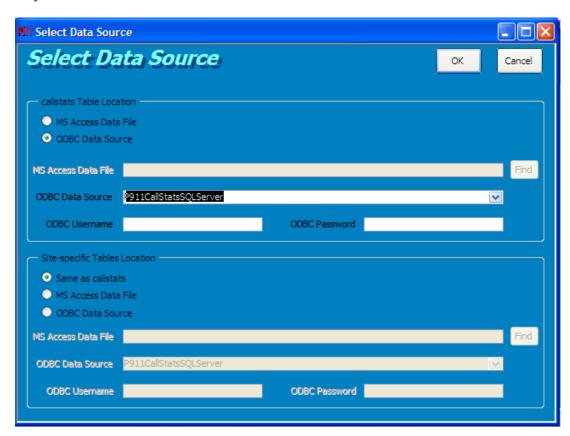

The Installation Table maintenance menu allows you to choose a site specific ID, and the name and bitmap logo that will appear on the menu and at the top of reports. Right click the logo box to enter a new logo, or double click it to edit a stored logo.

The **Choose Database** menu item brings up a form that allows you to specify where the database where the 9-1-1 call statistics data is being stored and where the site specific customizable tables *tblInstallation*, *tblAgency*, *tblExchange*, and *tblESZ* are stored. You may select either a Microsoft Access Database or an ODBC database.

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