# TS-Mirth-ADT-Interface-Generator-User-Manual

TECHNOSOFT
Instill Excellence

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# 1. Getting Started with "TS Mirth ADT Interface Generator"

TS Mirth ADT Interface allows user to setup mirth Admission Discharge Transfer interface. Setup will take care about the technicalities and create inbound and outbound ADT channels.

Following are the pre-requisites installing and setting up the TS Mirth ADT Interface Generator:

- .Net Framework 4.0
- MySQL/SQL server
- Mirth Connect

## 1.1 Installing MySQL/SQL Server

SQL Server and MySQL both can be used, please visit following URL's for their installation:

### MySQL

Download: http://dev.mysql.com/downloads/installer/
For assistance while installing MySQL, please visit following URL:
http://dev.mysql.com/doc/refman/5.7/en/index.html

### SQL Server

Download: http://www.microsoft.com/en-us/sqlserver/get-sql-server/try-it.aspx
For assistance while installing SQL Server, please visit following URL:
http://technet.microsoft.com/en-us/library/bb500434(v=sql.105).aspx

## 1.2 Setting up Mirth

Following are the steps for installing mirth:

### Download Mirth Connect

First of all we need to download mirth and install on our development machine. Mirth connects setup can be easily acquired from the download section of their official website:

Download: http://www.mirthcorp.com/community/downloads

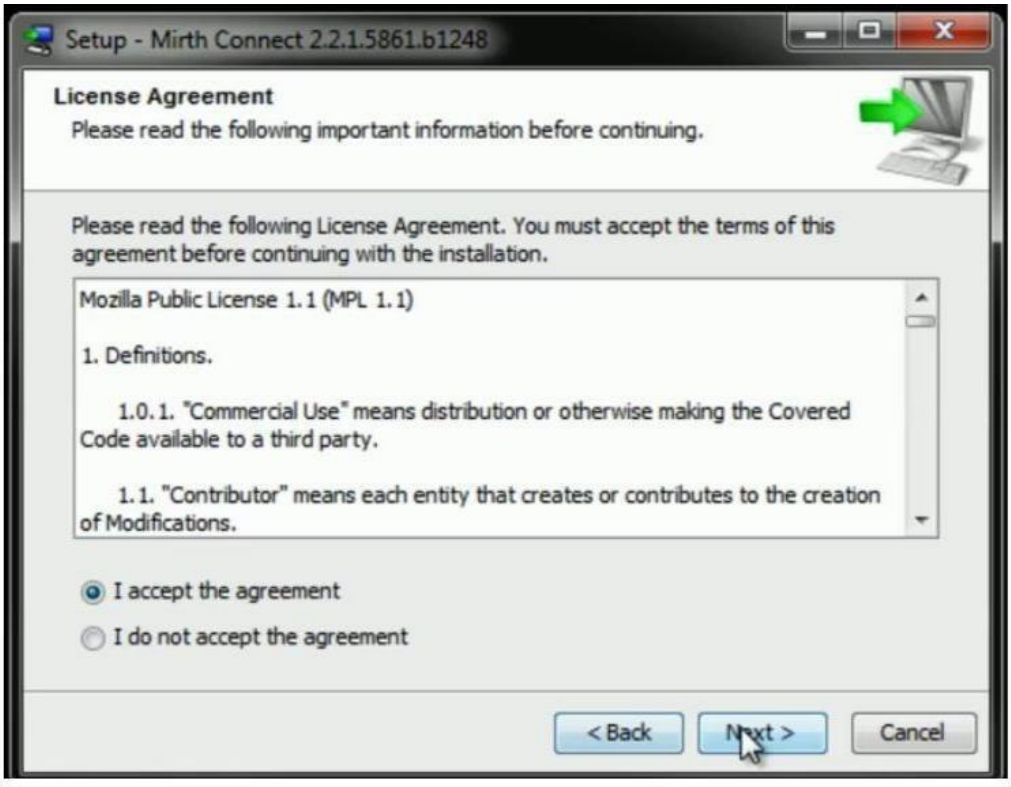
Choose the appropriate version according to your system specification.

### Installation and Configuration of Mirth Connect

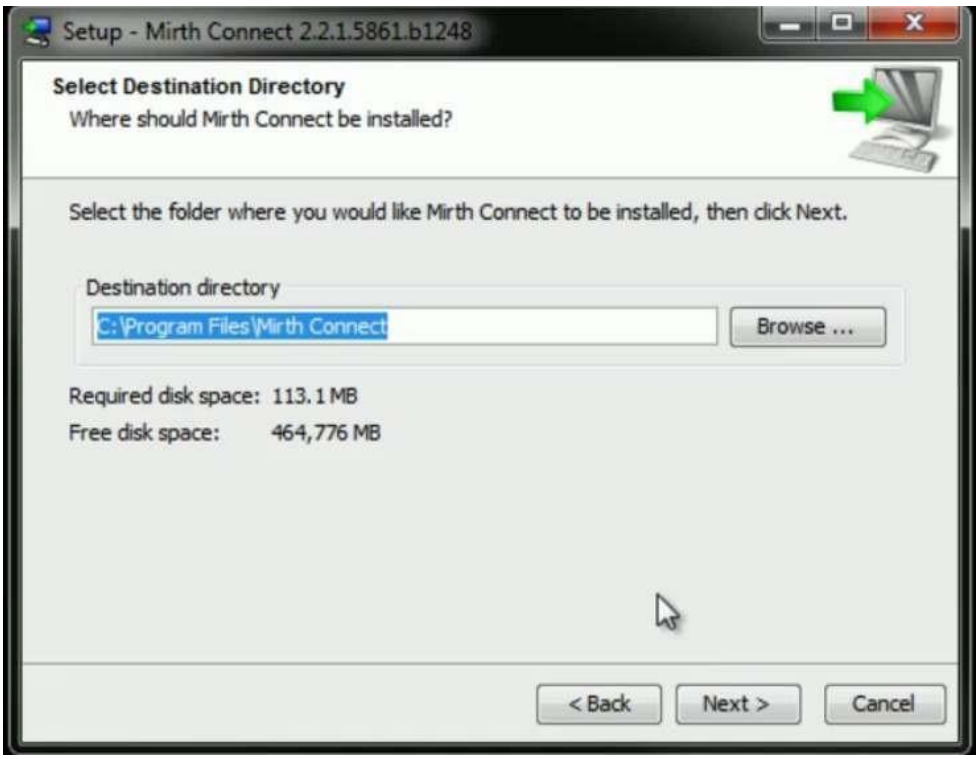
Following are the steps for installing and configuration of mirth connect.

After downloading mirth connect, execute the setup, the installer will show the mirth connection setup welcome screen.

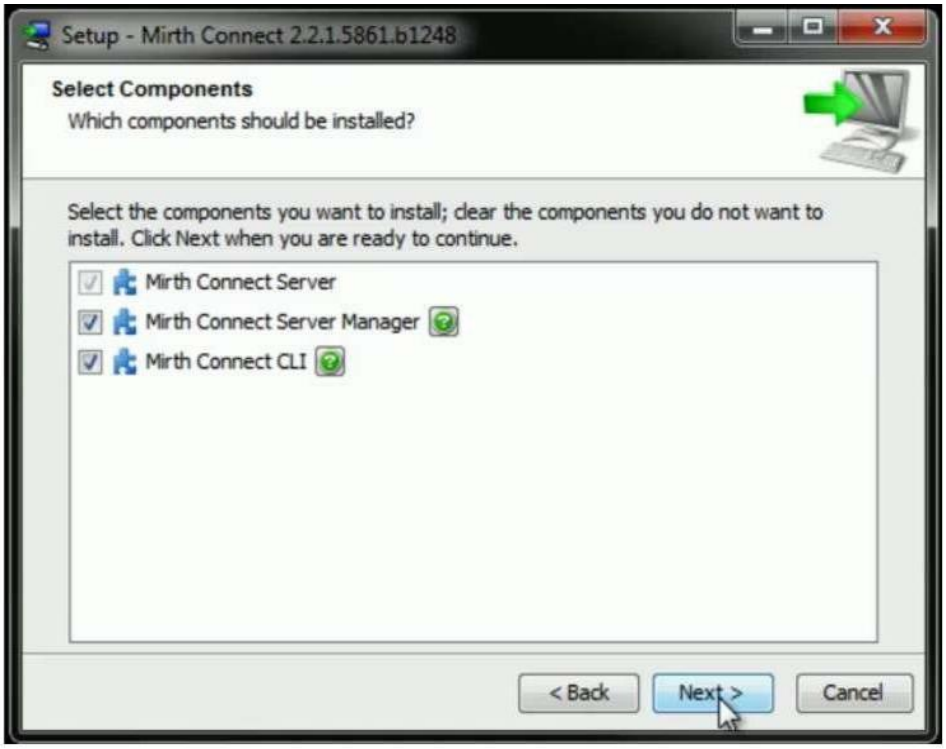
Press “Next” button on welcome screen and the setup will show the license agreement screen.



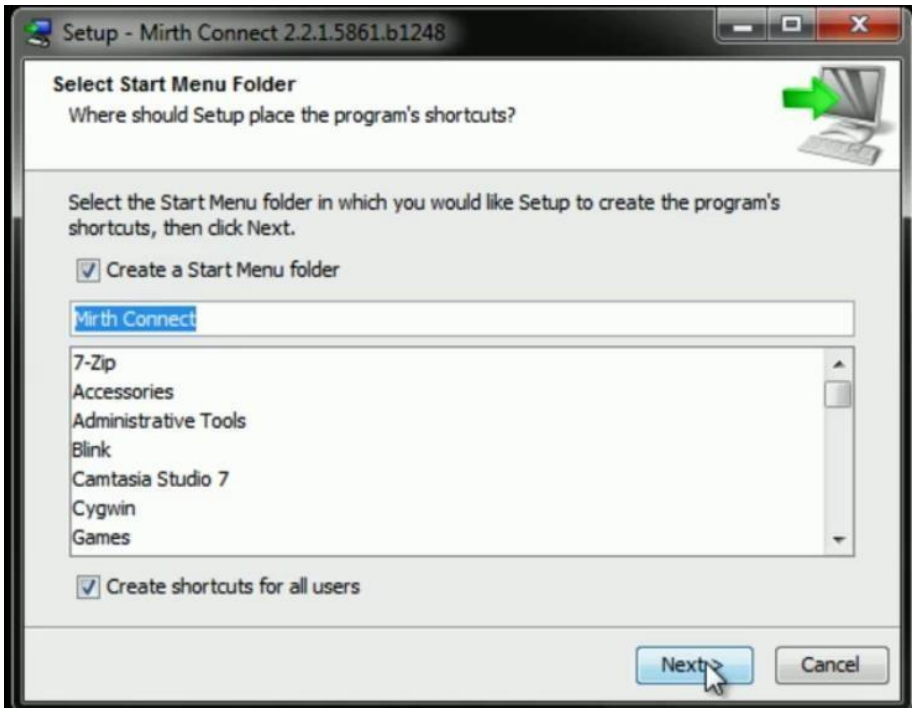
Read the license carefully and choose the option shown in above figure. Press “Next” button. Setup will show the screen for setting up the destination directory where mirth connect files will be placed.



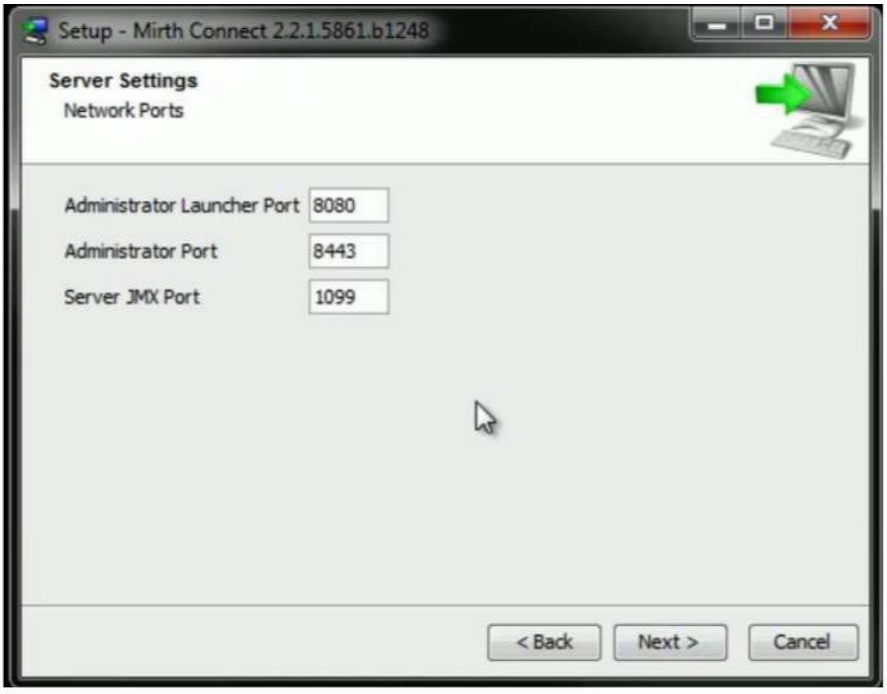

Destination directory can be changed according to the requirement. Press “Next” button.



Setup will show the screen containing list of components that should be installed. Choose the options as shown in figure above and press “Next” button. Setup will show the option to create start menu and shortcuts links option screen. Press “Next” button as shown in figure below.

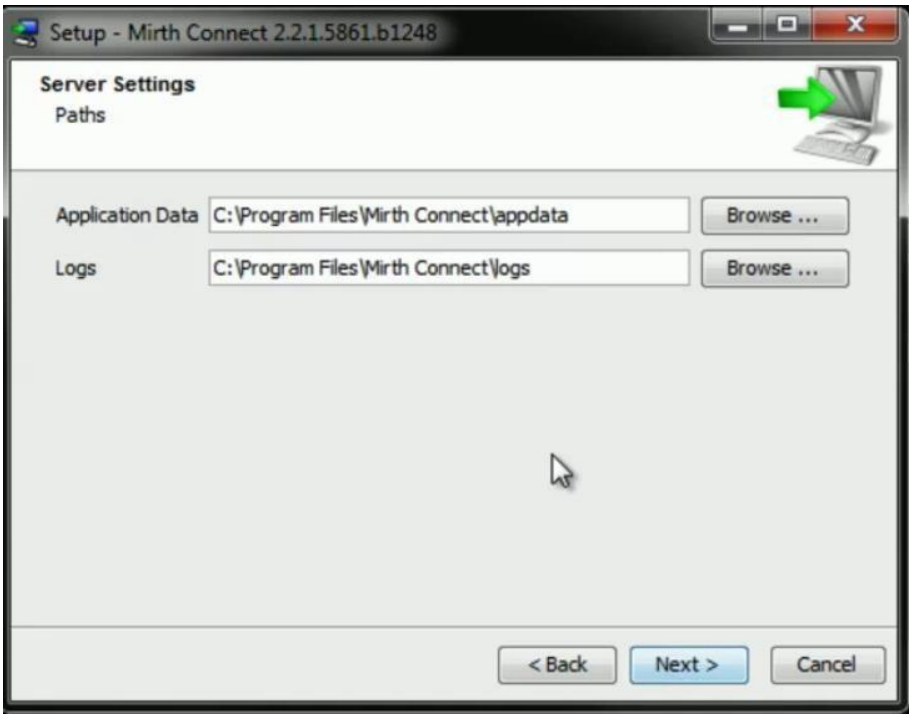



Setup will show the “Server Settings” screen. If the default ports as shown in figure below are vacant use the default ports. Though ports can be changed according to the requirement.

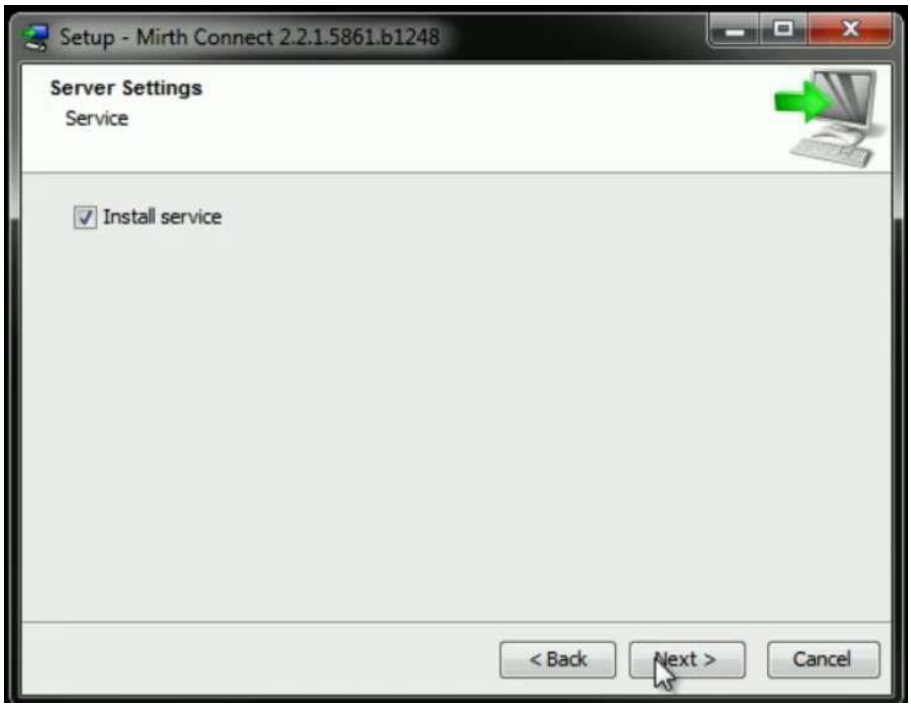


Press “Next” button on server settings screen. Setup will show the “Security Settings” screen on which options regarding to password requirements needs to be set. If there is any no such requirement leave the default values and press “Next” button.

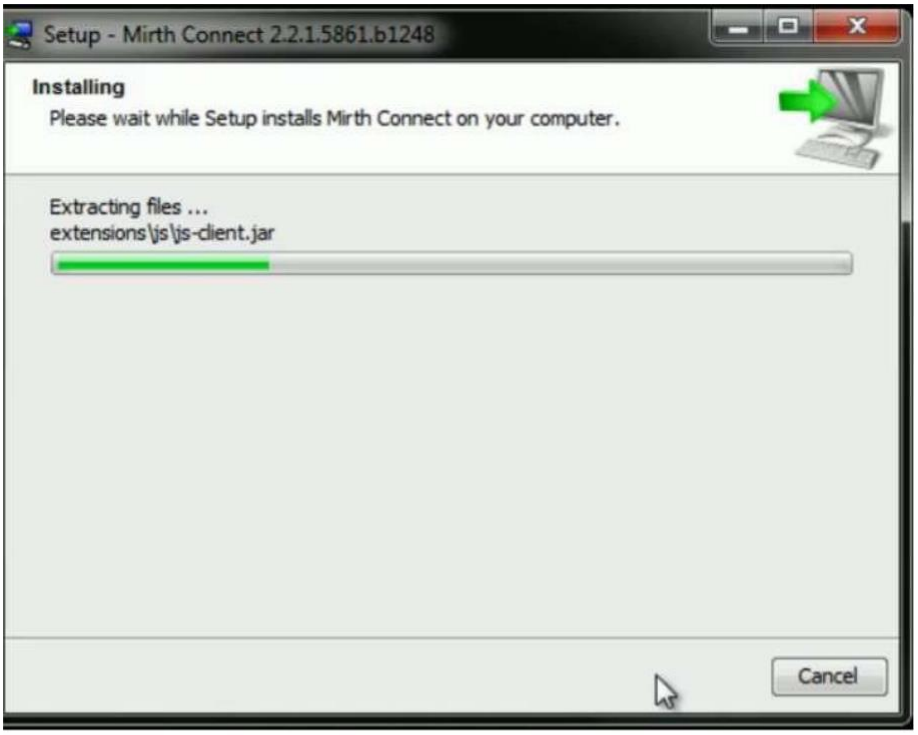
Setup will show the “Server Settings” screen. Showing the option regarding saving physical location of application data and where the log will be maintained. Leave the default values though both location can be changed. Press “Next” button.




Setup will show another “Server Setting” screen for installing the window service. Press “Next” Button.

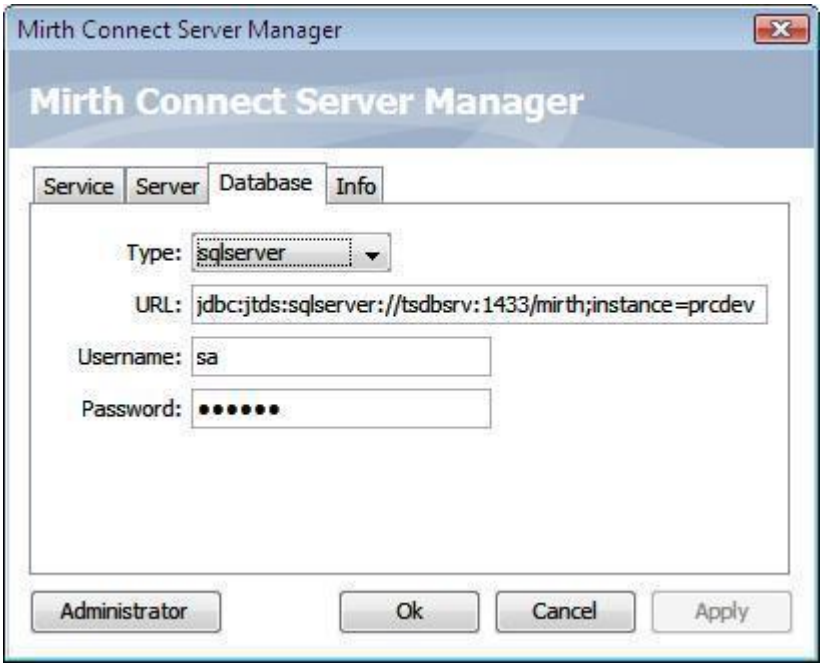



Setup will start installing the mirth connect and on completion it will show the finish screen of the setup as shown in the figures below.



On finish screen setup will ask to view the readme as well give the option to run mirth connect server manager. Choose from options and press "*Finish*" button.

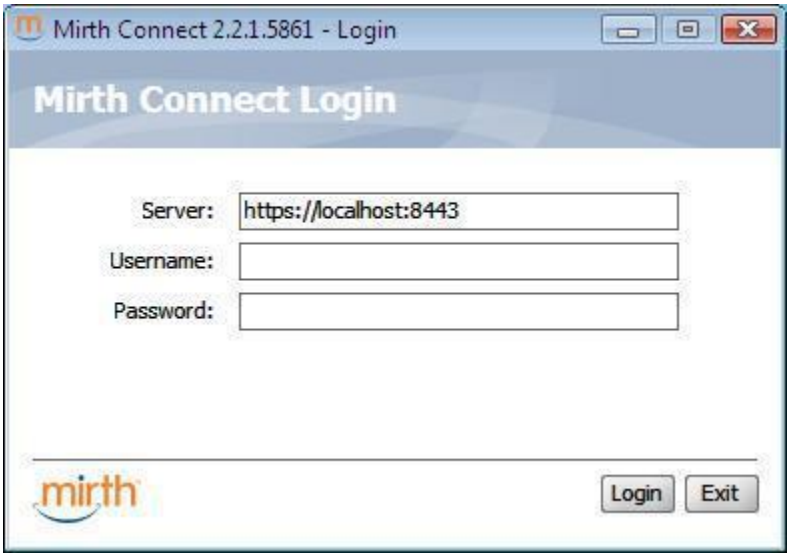
Once the mirth is installed on the system, it will need to be configured through the "*Mirth Connect Server Manager*". Launch the "*Mirth Connect Server Manager*" from Program-> Mirth.




In figure above mirth is using SQL server for its internal use. The database tab determines which database Mirth uses for its internal purposes. Mirth provides support for Derby, Postgres, MySql, Oracle and SQL Server. Obviously the choice in database can affect the overall performance of Mirth in this walk through we have chosen to use SQL Server.

By default Mirth uses ports 8080, 8443 and 1099 and these should work fine unless they conflict with other services on the existing system, in which case they can be changed in the server tab.

Now the mirth connect is installed, mirth administrator can be accessed by using the button on Mirth Connect Server Manager or from Program-> Mirth launch the "*Mirth Connect Administrator*".




It will be downloaded and will ask for the credentials first time we can give any username or password. Later we will use the same credentials for accessing mirth administrator.

## 2. How to Install "TS Mirth ADT Interface Generator"

Follow the procedure described below for the installation and the procedure to generate the interface using the TS Mirth ADT Interface Generator.

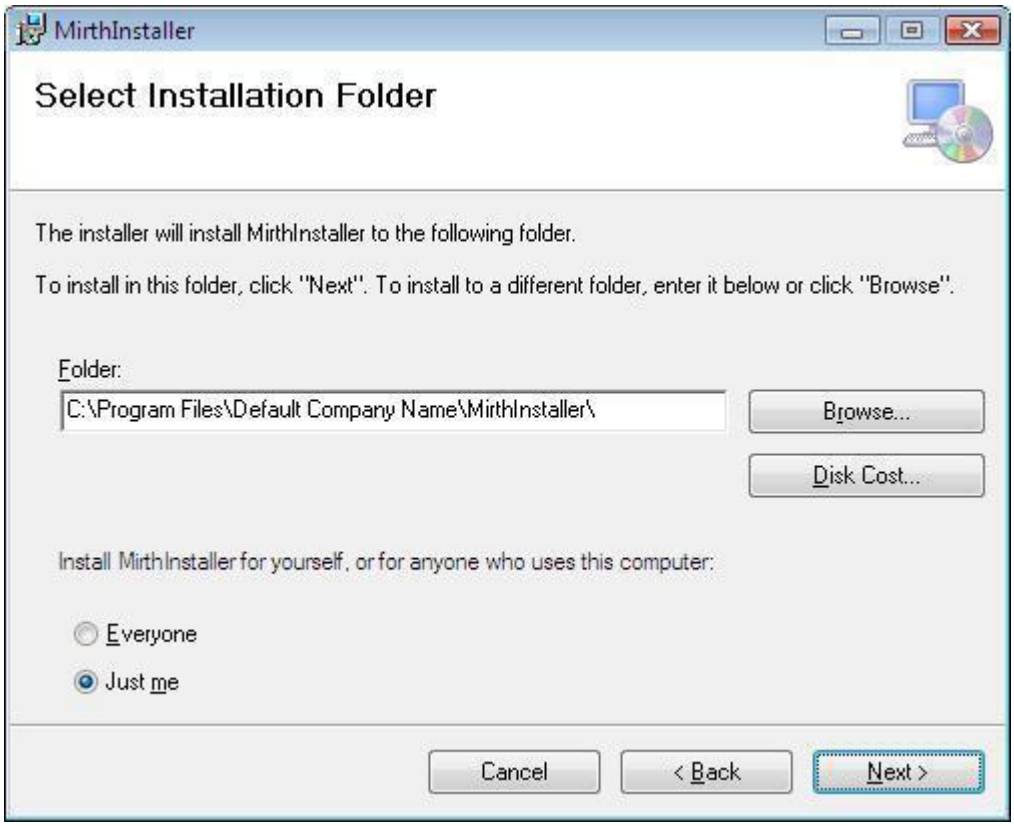
### 2.1 Run Setup

Run setup of TS Mirth ADT Interface for installing the application. Following are the simple steps for installation.

### 2.1.1 Welcome Screen

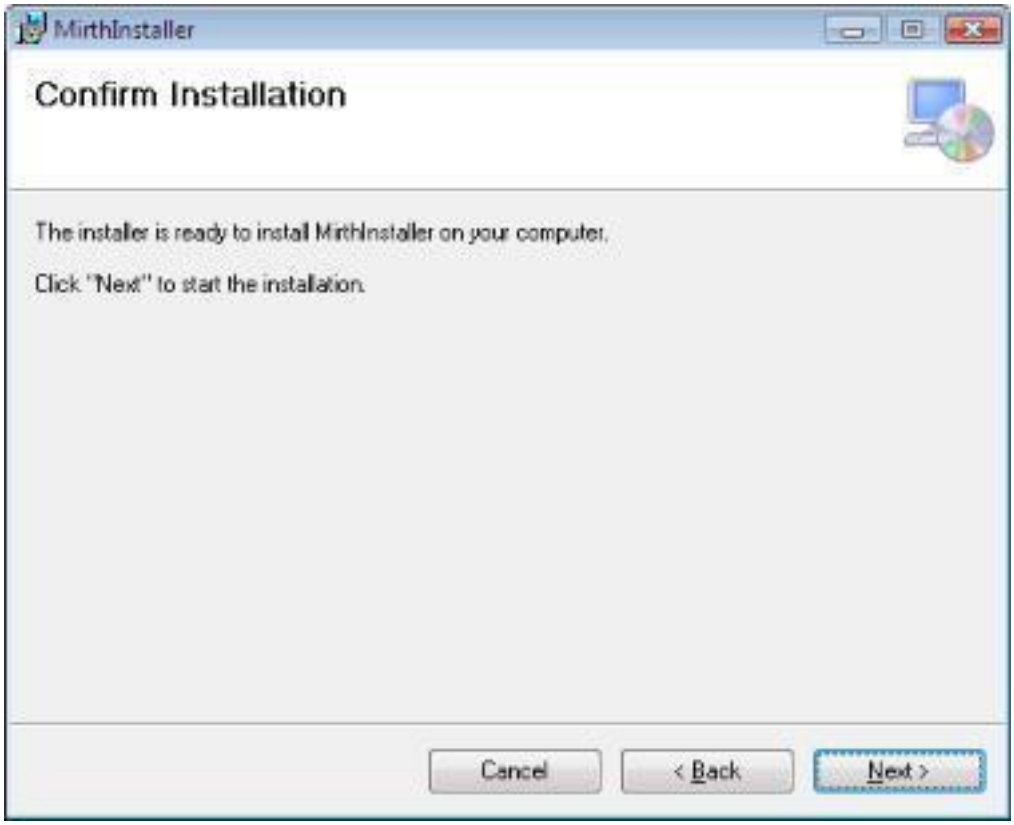
Press "*Next*" button.

### 2.1.2 Select Installation Folder Screen




Edit the folder path (*if required*). Press "*Next*" button.

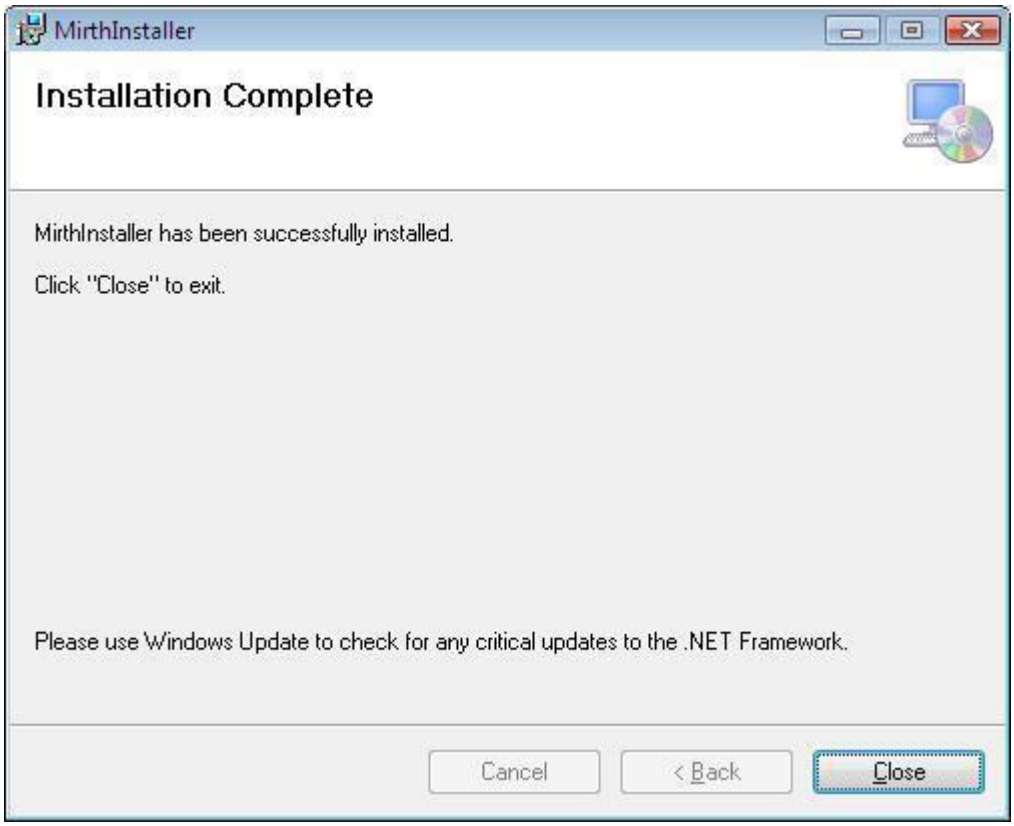
### 2.1.3 Installation Confirmation




Press "*Next*" button to confirm the installation.

### 2.1.4 Installation Complete

Setup will complete the installation process and in the end it will show the "*Installation Complete*" screen. Press "Close" button to end the setup.




# 3. How to Use "TS Mirth ADT Interface Generator"

Follow the procedure described below to use "TS Mirth ADT Interface Generator". Program ->TS Mirth ADT Interface launch the executable.

## 3.1 Mirth Connect Database Connection Information

As a first step "TS Mirth ADT Interface Generator" will require mirth database information which was set by the taken from "*Mirth Connect Server Manager->Database tab"* by using following fields.

**Database Type** – *Select from two options are given SQL Server or MySQL*

**Server Name or Server IP** – *Server name or Server IP through which database can be accessed.*

**Database Name** – *Specify mirth connect database name.*

**Username** – *Specify username to connect to mirth connect database.*

**Password** – *Specify password to connect to mirth connect database.*

Specify the information described above on the screen, connection can also be tested using "*Test Connection*" button. Now press "*Next*" button, application will check the mirth database and on after validation it will show the screen for channel/interface creation.

## 3.2 Mirth Connect Interface Creation

In Second step there is an option given to select the type of interface needs to be created i.e. "*Create Outbound Interface*" or "*Create Inbound Interface*" by selecting which an appropriate section will be enabled.

### 3.2.1 Create Outbound Interface

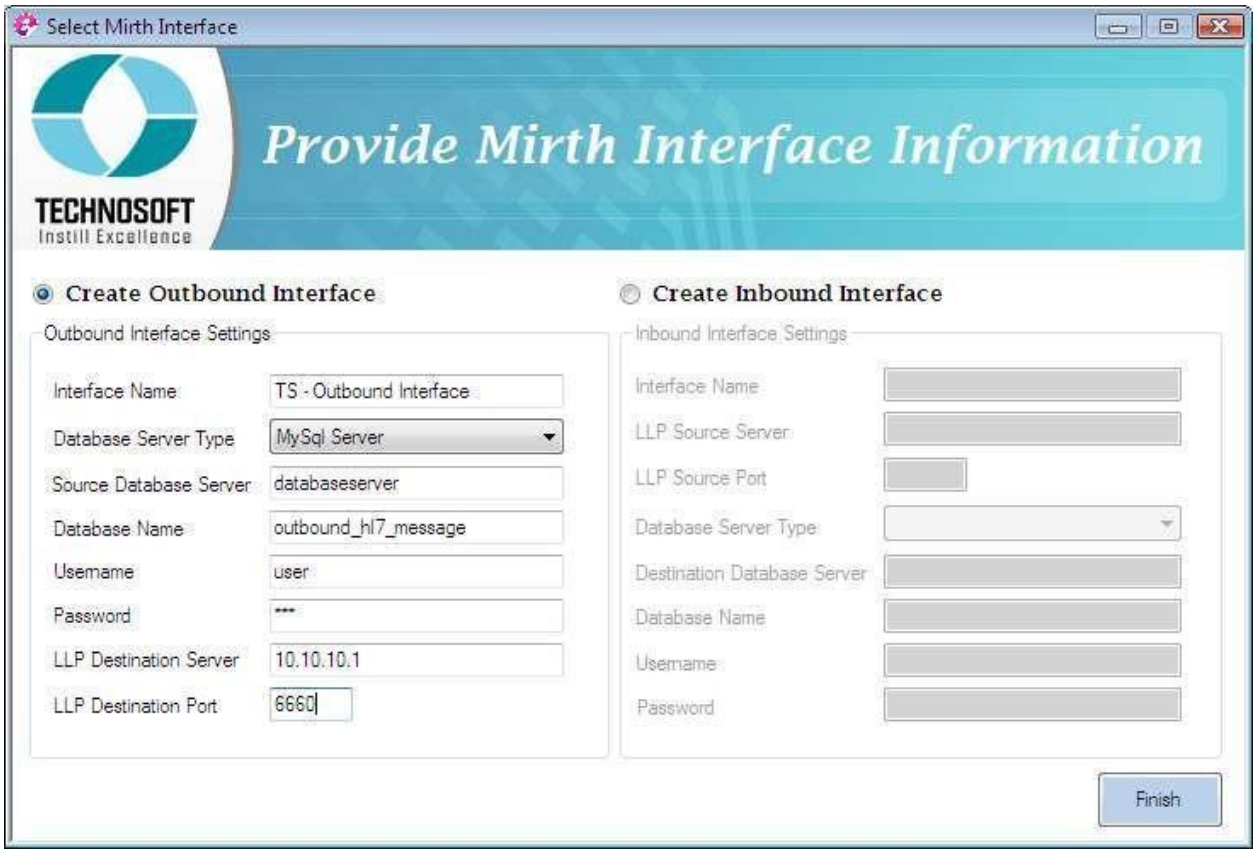
On selection of "*Create Outbound Interface*", "*TS Mirth ADT Interface Generator*" will require following information for the creation of outbound channel/interface.

**Interface Name** – Interface name/ Title of the channel/interface that will be shown in mirth.
**Database Server Type** – *Select from two options are given SQL Server or MySQL*
**Source Database Server** – Server name or Server IP through which interface source database can be accessed

**Database Name** – *Specify source database name for interface.*

**Username** – *Specify username to connect to mirth connect database.*

**Password** – *Specify password to connect to mirth connect database.*
**LLP Destination Server –** *Destination Server name or IP where HL7 message needs to be sent.*
**LLP Destination Port –** *Port on which the destination server will be accepting the HL7 Message.*



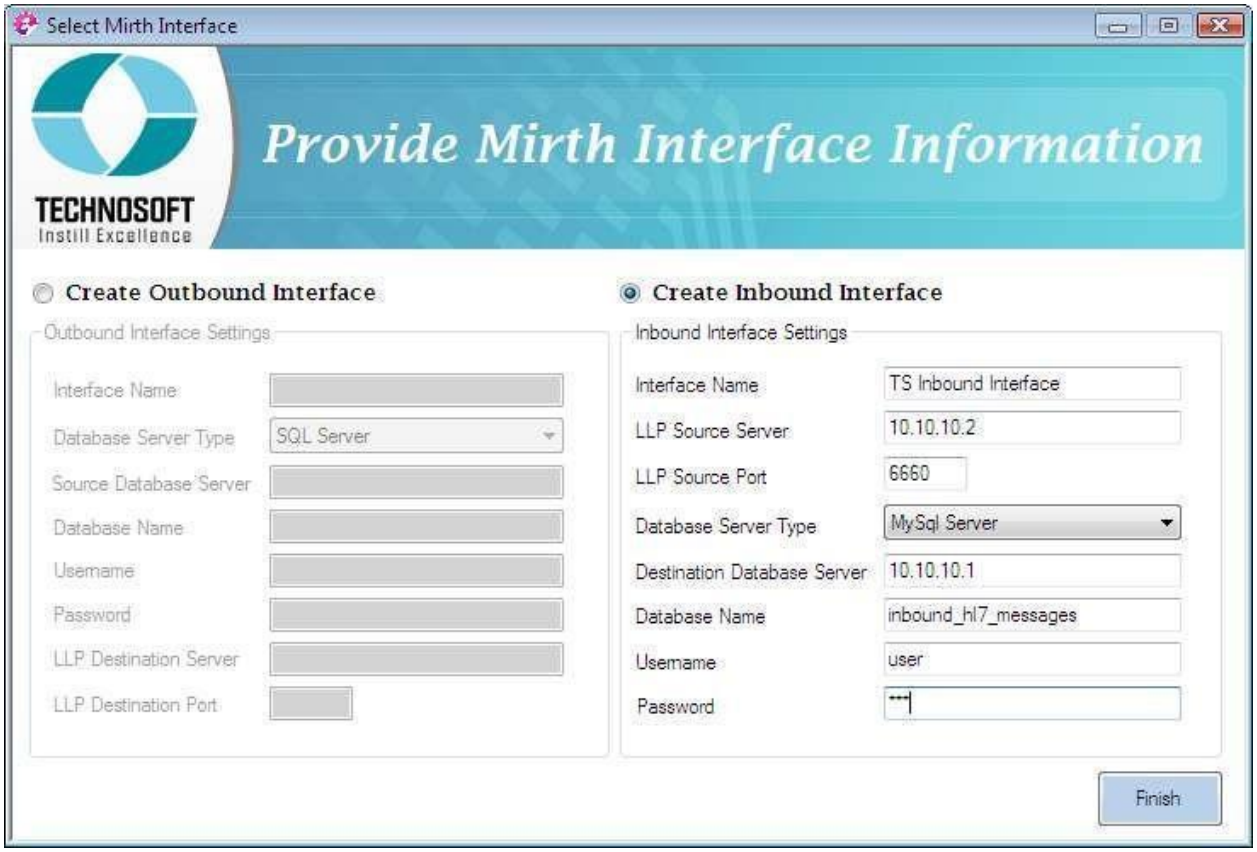

After providing the above mentioned information, press “Finish” button. Application will create an outbound interface against the specified name in mirth.

**NOTE**
“Please note that channel/interface will be enabled by default, but deployment might be required”.

### 3.2.2 Create Inbound Interface

On selection of “*Create Inbound Interface*”, “*TS Mirth ADT Interface Generator*” will require following information for the creation of inbound channel/interface.

**Interface Name** – *Interface name/ Title of the channel/interface that will be shown in mirth.*
**LLP Source Server** – *Server name or Server IP of the source from which message will be accepted.*
**LLP Source Port** – *Port on which the interface will be accepting the message.*
**Database Server Type** – *Select from two options are given SQL Server or MySQL.*
**Destination Database Server** – *Server name or IP on which the destination database is installed.*
**Database Name** – *Provide destination database name.*
**Username –** *Specify username to connect to destination database.*
**Password –** *Specify password to connect to destination database.*



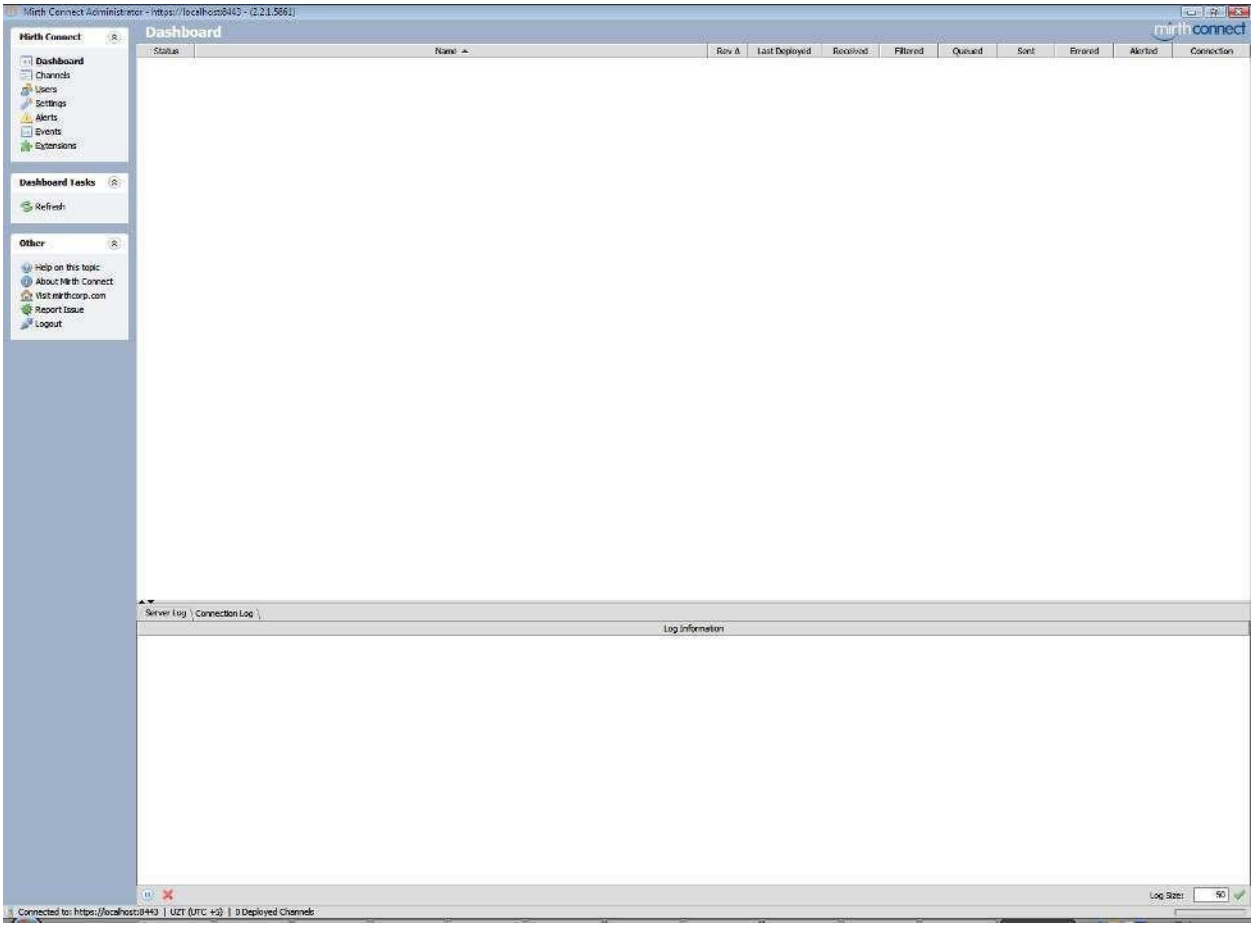

**NOTE**

"Please note that channel/interface will be enabled by default, but deployment might be required".

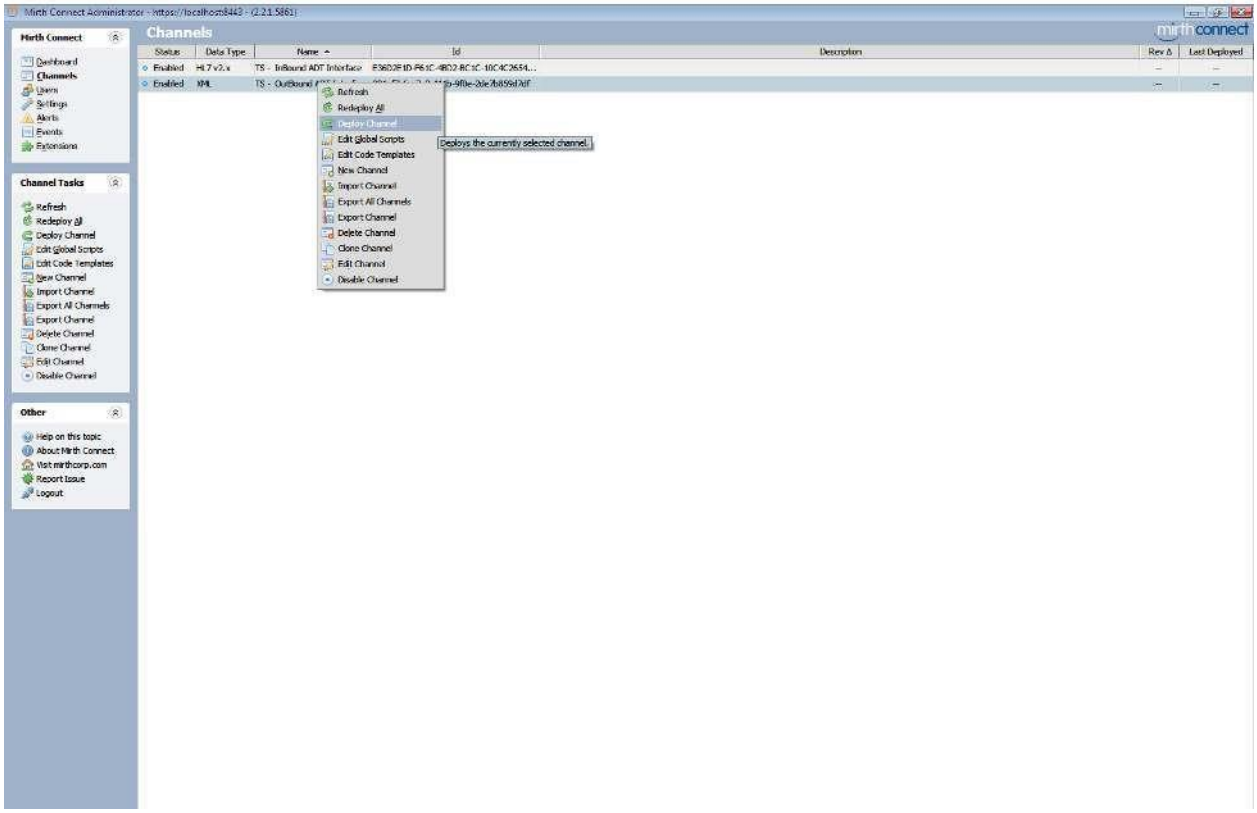
## 3.3 Deploy Interface/Channel

Both outbound and inbound channel will be created by following the above described procedure. Now outbound and inbound channels should be deployed so that they can pull or receive the message from source database or from source interface respectively.

Open Mirth Administrator from Program -> Mirth Connect, launch the Mirth Administrator. Click on "*Channels*" link to view the list of channels under "*Mirth Connect Menu Options*" as shown in figure below.




Following figure will appear which will be showing the list of interfaces. For deployment right click on the channel and click on “Deploy Channel” option to deploy it. Perform the same procedure for Outbound and Inbound Channel/Interface.




Now, outbound will start pulling the data from the source database and after transformation and converting it into proper HL 7 message it will sent the message to Inbound interface.
Inbound channel will accept the message and after validation it will store the message in destination database and send the acknowledgment back to the source interface.

# 4. Application Generated Interface HL 7 Message Specification

The Interface generated by the TS Mirth Interface Generator is based on TS Standards HL7. TS Standards are the subset of the full standard as it is defined in the HL7 manual. It generates the outgoing as well as registration interface which the receives the HL 7 message containing demographic, registration, patient visit, next of kin and insurance information.

Following are the triggering events supported by the interface generated by the TS Mirth Interface Generator. The notation used to describe the message structure is described in chapter two of the HL7 manual, "Format for Defining Abstract Messages."

**ADT^A01 Admit/Visit Notification -** This trigger event is used when a patient is admitted.

**ADT^A02 Transfer a Patient -** This trigger event is used when a patient is transferred.

**ADT^A03 Discharge/End Visit -** This trigger event is used when a patient is discharged.

**ADT^A04 Register a Patient -** This trigger event is used when a patient is checked into a specific visit or registered for a Hospital Outpatient Visit within the application.

**ADT^A05 Pre-admit a Patient -** This trigger event is used when a patient is pre-admitted.
**ADT^A08 Update Patient Information -** This trigger event is used extensively for all the updates to a patient's demographics, registration and visit information.

## 4.1 Basics of the Message

| | |
|---|---|
| HL7 MLLP: | Beginning of envelop character: Hex '0B'<br>End envelop character: Hex '1C'<br>Segment terminator: Hex '0D'<br>End of Message: Hex '0D 1C 0D' |
| HL7 Acknowledgment: | Received Successfully: Application Accept ('AA' in MSA)<br>Transmission Error: Application Reject ('AR' in MSA) |
| Message Control | Field Separator: \|<br>Component Separator: ^<br>Sub-component Separator: &<br>Repetition Separator: ~<br>Escape Character: \ |
| HL7 Version | 2.5 |

## 4.2 Structure of the HL 7 Message

| | A01 | A02 | A03 | A04 | A05 | A08 | Supported |
|---|---|---|---|---|---|---|---|
| MSH | MSH | MSH | MSH | MSH | MSH | MSH | Y |
| EVN | EVN | EVN | EVN | EVN | EVN | EVN | Y |
| PID | PID | PID | PID | PID | PID | PID | Y |
| PD1 | PD1 | PD1 | PD1 | PD1 | PD1 | PD1 | N |
| PV1 | PV1 | PV1 | PV1 | PV1 | PV1 | PV1 | Y |
| PD1 | PD1 | PD1 | PD1 | PD1 | PD1 | PD1 | N |
| NK1 | NK1 | NK1 | NK1 | NK1 | NK1 | NK1 | Y |
| NK2 | [{NK2}] | [{NK2}] | [{NK2}] | [{NK2}] | [{NK2}] | [{NK2}] | N |
| NK3 | [{NK3}] | [{NK3}] | [{NK3}] | [{NK3}] | [{NK3}] | [{NK3}] | N |
| PV1 | PV1 | PV1 | PV1 | PV1 | PV1 | PV1 | Y |
| IN1 | IN1 | IN1 | IN1 | IN1 | IN1 | IN1 | Y |
| IN2 | [{IN2}] | [{IN2}] | [{IN2}] | [{IN2}] | [{IN2}] | [{IN2}] | Y |
| IN3 | [{IN3}] | [{IN3}] | [{IN3}] | [{IN3}] | [{IN3}] | [{IN3}] | Y |

[ ] = Indicates an optional segment.
{} = Indicates a repeat segment.
}$^{x}$ = Indicates that a segment may be repeated up to x times.

### Notes

Not all data from the supported segments are used. Please see Section: “Segment Listings” for a full list of these data elements.

## 4.3 Segments Implementation Detail

### Segment Columns Legend

**SEQ:** The SEQ column is the ordinal position of the data field within the segment. The field numbering follows the HL7 convention. The segment name at the beginning of each segment is considered to be field 0 per the HL7 convention.

**Element:** The Element Name column corresponds to the Element Name within the HL7 standard.

**Data Type:** The Data Type column contains restrictions on the constraints of the data field. These data types follow the HL7 conventions. For more information refer to Chapter 2 of the HL7 standard.

**Length:** The Length column contains the numeric length used by the interface. It is calculated to include the component and sub-component separators. Repetition characters are not included in calculating the maximum length. These values may vary from the HL7 standard.

**Required:** A value of R is placed in this column to indicate that it is a required field.

**Comments:** The Comments column describes the details of the field, specific values allowed description of conditions, constant values and mapping table references.

**Fields shaded Grey:** All HL7 fields are listed in following section, however, data for the field's shaded grey will only be sent through this interface.

## 4.4 Segment Listings

Below are the segments of the ADT message.

### 4.4.1 MSH – Message Header

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Field Separator | ST | 1 | R | |
| 2 | Encoding Characters | ST | 4 | R | |
| 3 | Sending Application | HD | 227 | R | |
| 4 | Sending Facility | HD | 227 | R | |
| 5 | Receiving Application | HD | 227 | R | |
| 6 | Receiving Facility | HD | 227 | R | |
| 7 | Date/Time of Message | TS | 26 | R | Field 7.1 will be sent. |
| 8 | Security | ST | 40 | | |
| 9 | Message Type | MSG | 15 | R | Fields 9.1, 9.2, 9.3 will be sent. Message code will always be 'ADT'. |
| 10 | Message Control ID | ST | 250 | R | Unique ID for this message |
| 11 | Processing ID | PT | 250 | R | Only 11.1 will be sent. Acceptable values: 'D' = Debugging, 'P' = Production, 'T' = Training |
| 12 | Version ID | VID | 4 | R | Field 12.1 will be sent. |
| 13 | Sequence Number | NM | 15 | O | |
| 14 | Continuation Pointer | ST | 180 | O | |

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 15 | Accept Acknowledgement Type | ID | 2 | O | |
| 16 | Application Acknowledgement Type | ID | 2 | O | |
| 17 | Country Code | ID | 3 | O | |
| 18 | Character Set | ID | 16 | O | |
| 19 | Principal Language Of Message | CE | 250 | O | |
| 20 | Alternate Character Set Handling scheme | ID | 20 | O | |
| 21 | Message Profile Identifier | EI | 427 | O | |

### 4.4.2 EVN – Event Type

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Event Type Code | ID | 3 | R | Field 1.1 will be sent. |
| 2 | Recorded Date/Time | TS | 26 | R | Field 2.1 will be sent. |
| 3 | Date/Time Planned Event | TS | 26 | O | |
| 4 | Event Reason Code | IS | 3 | O | |
| 5 | Operator ID | XCN | 250 | O | |
| 6 | Event Occurred | TS | 26 | O | |
| 7 | Event Facility | HD | 241 | O | |

### 4.4.3 PID – Patient Identification

**Notes:** Only one PID segment per event. Patient ID is sent in PID: 3.1.

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Set ID – PID | SI | | O | |
| 2 | Patient ID | CX | | B | |
| 3 | Patient Identifier List | CX | 250 | R | Fields 3.1,3.4 and 3.5 will be sent. |
| 4 | Alternate Patient ID - PID | | | | |
| 5 | Patient Name | XPN | 250 | R | Fields 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7 and 5.14 will be sent |
| 6 | Mother's Maiden Name | XPN | 250 | R | Field 6.1 will be sent |
| 7 | Date/Time of Birth | TS | 26 | R | Field 7.1 will be sent |

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 8 | Administrative Sex | IS | 1 | R | Field 8.1 will be sent |
| 9 | Patient Alias | XPN | 250 | B | |
| 10 | Race | CE | 250 | O | Field 10.1 will be processed. |
| 11 | Patient Address | XAD | 250 | R | Fields 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, and 11.9 will be sent. |
| 12 | County Code | IS | 4 | B | |
| 13 | Phone Number - Home | XTN | 250 | O | Fields 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, and 13.8 will be processed. |
| 14 | Phone Number - Business | XTN | 250 | O | Fields 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.7, and 14.8 will be processed. |
| 15 | Primary Language | CE | 250 | O | Field15 .1 will be processed. |
| 16 | Marital Status | CE | 250 | | Field 16.1 will be processed. |
| 17 | Religion | CE | 250 | O | Field 17.1 will be processed. |
| 18 | Patient Account Number | CX | 250 | O | Patient Account number is sent in PID:18. If the receiving system requires it to be sent in PV1:19 |
| 19 | SSN Number - Patient | ST | 16 | O | Field 19.1 will be processed. |
| 20 | Driver's Licence Number – Patient | DLN | 25 | O | Field 20.1, 20.2, 20.3 will be processed. |
| 21 | Mother's Identifier | CX | 250 | O | |
| 22 | Ethnic Group | CE | 250 | O | Field 22.1 will be processed. |
| 24 | Multiple Birth Indictor | ID | 1 | O | Field 24.1 will be processed. |
| 25 | Birth Order | NM | 2 | O | |
| 26 | Citizenship | CE | 250 | O | |
| 27 | Veterans Military Status | CE | 250 | O | |
| 28 | Nationality | CE | 250 | B | |
| 29 | Patient Death Date and Time | TS | 26 | O | Field 29.1 will be processed. |
| 30 | Patient Death Indicator | ID | 1 | O | Field 30.1 will be processed. |
| 31 | Identity Unknown Indicator | ID | 1 | O | |
| 32 | Identity Reliability Code | IS | 20 | O | |
| 33 | Last Update Date/Time | TS | 26 | O | |
| 34 | Last Update Facility | HD | 241 | O | |
| 35 | Species Code | CE | 250 | C | |
| 36 | Breed Code | CE | 250 | C | |
| 37 | Stain | ST | 80 | O | |
| 38 | Production Class Code | CE | 250 | O | |
| 39 | Tribal Citizenship | CWE | 250 | O | |

### 4.4.4 PD1– Additional Demographics

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Living Dependency | IS | 2 | O | |
| 2 | Living Arrangement | IS | 2 | O | |
| 3 | Patient Primary Facility | XON | 250 | O | |
| 4 | Patient Primary Care Provider Name & ID No. | XCN | 250 | B | Fields 4.1, 4.2, 4.3 will be sent |
| 5 | Student Indicator | IS | 2 | O | |
| 6 | Handicap | IS | 2 | O | |
| 7 | Living Will Code | IS | 2 | O | |
| 8 | Organ Donor Code | IS | 2 | O | |
| 9 | Separate Bill | ID | 1 | O | |
| 10 | Duplicate Patient | CX | 250 | O | |
| 11 | Publicity Code | CE | 250 | O | |
| 12 | Protection Indicator | ID | 1 | O | |
| 13 | Protection Indicator Effective Date | DT | 8 | O | |
| 14 | Place Of Worship | XON | 250 | O | |
| 15 | Advance Directive Code | CE | 250 | O | |
| 16 | Immunization Registry Status | IS | 1 | O | |
| 17 | Immunization Registry Status Effective Date | DT | 8 | O | |
| 18 | Publicity Code Effective Date | DT | 8 | O | |
| 19 | Military Branch | IS | 5 | O | |
| 20 | Military Rank/Grade | IS | 2 | O | |
| 21 | Military Status | IS | 3 | O | |

### 4.4.5 NK1 – Next Of Kin

**Notes:** There can be multiple Next of Kin segments (up to 3 segments).

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Set ID - NK1 | SI | 4 | R | Field 1.1 will be sent |
| 2 | Name | XPN | 250 | O | Fields 2.1, 2.2, 2.3, 2.4, 2.5 will be sent. |
| 3 | Relationship | CE | 250 | O | Field 3.1 will be processed |
| 4 | Address | XAD | 250 | O | Fields 4.1, 4.2, 4.3, 4.4, 4.5 will be processed. |
| 5 | Phone Number | XTN | 250 | B | Fields 5.1, 5.2, 5.3 will be sent. |
| 6 | Business Phone Number | XTN | 250 | B | |
| 7 | Contact Role | CE | 250 | O | |
| 8 | Start Date | DT | 8 | O | |
| 9 | End Date | DT | 8 | O | |

| Field | Element Name | Data Type | Length | RequiredComments |
|---|---|---|---|---|
| 10 | Next of Kin / Associated Parties Job Title | ST | 60 | O |
| 11 | Next of Kin / Associated Parties Job Code/Class | JCC | 20 | O |
| 12 | Next of Kin / Associated Parties Employee Number | CX | 250 | O |
| 13 | Organization Name - NK1 | XON | 250 | O |
| 14 | Marital Status | CE | 250 | O |
| 15 | Administrative Sex | IS | 1 | O |
| 16 | Date/Time of Birth | TS | 26 | O |
| 17 | Living Dependency | IS | 2 | O |
| 18 | Ambulatory Status | IS | 2 | O |
| 19 | Citizenship | CE | 250 | O |
| 20 | Primary Language | CE | 250 | O |
| 21 | Living Arrangement | IS | 2 | O |
| 22 | Publicity Code | CE | 250 | O |
| 23 | Protection Indicator | ID | 1 | O |
| 24 | Student Indicator | IS | 2 | O |
| 25 | Religion | CE | 250 | O |
| 26 | Mother's Maiden Name | XPN | 250 | O |
| 27 | Nationality | CE | 250 | O |
| 28 | Ethnic Group | CE | 250 | O |
| 29 | Contact Reason | CE | 250 | O |
| 30 | Contact Person's Name | XPN | 250 | O |
| 31 | Contact Person's Telephone Number | XTN | 250 | B |
| 32 | Contact Person's Address | XAD | 250 | O |
| 33 | Next of Kin/Associated Party's Identifiers | CX | 250 | O |
| 34 | Job Status | IS | 2 | O |
| 35 | Race | CE | 250 | O |
| 36 | Handicap | IS | 2 | |
| 37 | Contact Person Social Security Number | ST | 16 | |
| 38 | Next Of Kin Birth Place | ST | 250 | |
| 39 | VIP Indicator | IS | 2 | |

### 4.4.6 PV1 – Patient Visit

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Set ID - PV1 | SI | | O | |
| 2 | Patient Class | IS | 1 | R | Patient class value must correspond to mapping table of patient class. Field 2.1 will be sent. |
| 3 | Assigned Patient Location | PL | | O | |
| 4 | Admission Type | IS | | O | |
| 5 | Pre-admit Number | CX | | O | |
| 6 | Prior Patient Location | PL | | O | |
| 7 | Attending Doctor | XCN | | O | |
| 8 | Referring Doctor | XCN | | O | |
| 9 | Consulting Doctor | XCN | | B | |
| 10 | Hospital Service | IS | | O | |
| 11 | Temporary Location | PL | | O | |
| 12 | Pre-admit Test Indicator | IS | | O | |
| 13 | Re-admission Indicator | IS | | O | |
| 14 | Admit Source | IS | | O | |
| 15 | Ambulatory Status | IS | | O | |
| 16 | VIP Indicator | IS | | O | |
| 17 | Admitting Doctor | XCN | | O | |
| 18 | Patient Type | IS | | O | |
| 19 | Visit Number | CX | | O | Patient Account number is sent in PID:18. If the receiving system requires it to be sent in PV1:19 |
| 20 | Financial Class | FC | | O | |
| 21 | Charge Price Indicator | IS | | O | |
| 22 | Courtesy Code | IS | | O | |
| 23 | Credit Rating | IS | | O | |
| 24 | Contract Code | IS | | O | |
| 25 | Contract Effective Date | DT | | O | |
| 26 | Contract Amount | NM | | O | |
| 27 | Contract Period | NM | | O | |
| 28 | Interest Code | IS | | O | |
| 29 | Transfer to Bad Debt Code | IS | | O | |
| 30 | Transfer to Bad Debt Date | DT | | O | |
| 31 | Bad Debt Agency Code | IS | | O | |
| 32 | Bad Debt Transfer Amount | NM | | O | |
| 33 | Bad Debt Recovery Amount | NM | | O | |
| 34 | Delete Account Indicator | IS | | O | |
| 35 | Delete Account Date | DT | | O | |
| 36 | Discharge Disposition | IS | | O | |
| 37 | Discharged to Location | DLD | | O | |

| Field | Element Name | Data Type | LengthRequiredComments | | |
|---|---|---|---|---|---|
| 38 | Diet Type | CE | O | | |
| 39 | Servicing Facility | IS | O | | |
| 40 | Bed Status | IS | B | | |
| 41 | Account Status | IS | O | | |
| 42 | Pending Location | PL | O | | |
| 43 | Prior Temporary Location | PL | O | | |
| 44 | Admit Date/Time | TS | O | | |
| 45 | Discharge Date/Time | TS | O | | |
| 46 | Current Patient Balance | NM | O | | |
| 47 | Total Charges | NM | O | | |
| 48 | Total Adjustments | NM | O | | |
| 49 | Total Payments | NM | O | | |
| 50 | Alternate Visit ID | CX | O | | |
| 51 | Visit Indicator | IS | O | | |
| 52 | Other Healthcare Provider | XCN | B | | |

### 4.4.7 IN1 – Insurance Information

**Notes:** There can be multiple Insurance Information segments (up to 3 segments).

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Set ID - IN1 | SI | 4 | R | Field 1.1 will be processed. |
| 2 | Insurance Plan Id | CE | 250 | R | Field 2.1 will be processed. |
| 3 | Insurance Company Id | CX | 250 | R | Field 3.1 will be processed. |
| 4 | Insurance Company Name | XON | 250 | O | |
| 5 | Insurance Company Address | XAD | 250 | O | |
| 6 | Insurance Co Contact Person | XPN | 250 | O | |
| 7 | Insurance Co Phone Number | XTN | 250 | O | |
| 8 | Group Number | ST | 12 | O | |
| 9 | Group Name | XON | 250 | O | |
| 10 | Insured's Group Emp ID | CX | 250 | O | |
| 11 | Insured's Group Emp Name | XON | 250 | O | |
| 12 | Plan Effective Date | DT | 8 | O | |
| 13 | Plan Expiration Date | DT | 8 | O | |
| 14 | Authorization Information | AUI | 239 | O | |
| 15 | Plan Type | IS | 3 | O | |
| 16 | Name of Insured | XPN | 250 | O | Field 16.1 will be processed. |
| 17 | Insured's Relationship To Patient | CE | 250 | O | |

| Field | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 18 | Insured's Date Of Birth | TS | 26 | O | |
| 19 | Insured's Address | XAD | 250 | O | |
| 20 | Assignment Of Benefits | IS | 2 | O | |
| 21 | Coordination Of Benefits | IS | 2 | O | |
| 22 | Coord of Ben. Priority | ST | 2 | O | |
| 23 | Notice Of Admission Flag | ID | 1 | O | |
| 24 | Notice Of Admission Date | DT | 8 | O | |
| 25 | Report Of Eligibility Flag | ID | 1 | O | |
| 26 | Report of Eligibility Date | DT | 8 | O | |
| 27 | Release Information Code | IS | 2 | O | |
| 28 | Pre-Admit Cert (PAC) | ST | 15 | O | |
| 29 | Verification Date/Time | TS | 26 | O | |
| 30 | Verification By | XCN | 250 | O | |
| 31 | Type Of Agreement Code | IS | 2 | O | |
| 32 | Billing status | IS | 2 | O | |
| 33 | Lifetime Reserve Days | NM | 4 | O | |
| 34 | Days Before L.R. Day | NM | 4 | O | |
| 35 | Company Plan Code | IS | 8 | O | |
| 36 | Policy Number | ST | 15 | O | |
| 37 | Policy Deductible | CP | 12 | O | |
| 38 | Policy Limit – Amount | CP | 12 | B | |
| 39 | Policy Limit – Days | NM | 4 | O | |
| 40 | Room Rate – Semi-Private | CP | 12 | B | |
| 41 | Room Rate – Private | CP | 12 | B | |
| 42 | Insured's Employment Status | CE | 250 | O | |
| 43 | Insured's Administrative Sex | IS | 1 | O | |
| 44 | Insured's Employer's Address | XAD | 250 | O | |
| 45 | Verification Status | ST | 2 | O | |
| 46 | Prior Insurance Plan ID | IS | 8 | O | |
| 47 | Coverage Type | IS | 3 | O | |
| 48 | Handicap | IS | 2 | O | |
| 49 | Insured's ID Number | CX | 250 | O | |
| 50 | Signature Code | IS | 1 | O | |
| 51 | Signature Code Date | DT | 8 | O | |
| 52 | Insured's Birth Place | ST | 250 | O | |
| 53 | VIP Indicator | IS | 2 | O | |

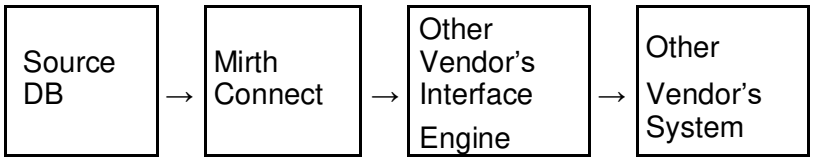
### 4.4.8 MSA - Message Acknowledgment

| Seq | Element Name | Data Type | Length | Required | Comments |
|---|---|---|---|---|---|
| 1 | Acknowledgment Code | ID | 2 | R | AA=Accept, AR=Reject |
| 2 | Message Control ID | ST | 20 | R | A message control id to uniquely identify for each message. |
| 3 | Text Message | ST | 80 | O | |
| 4 | Expected Sequence Number | NM | 15 | O | |
| 5 | Delayed Acknowledgement Code | ID | 1 | B | |
| 6 | Error Condition | CE | 250 | O | |

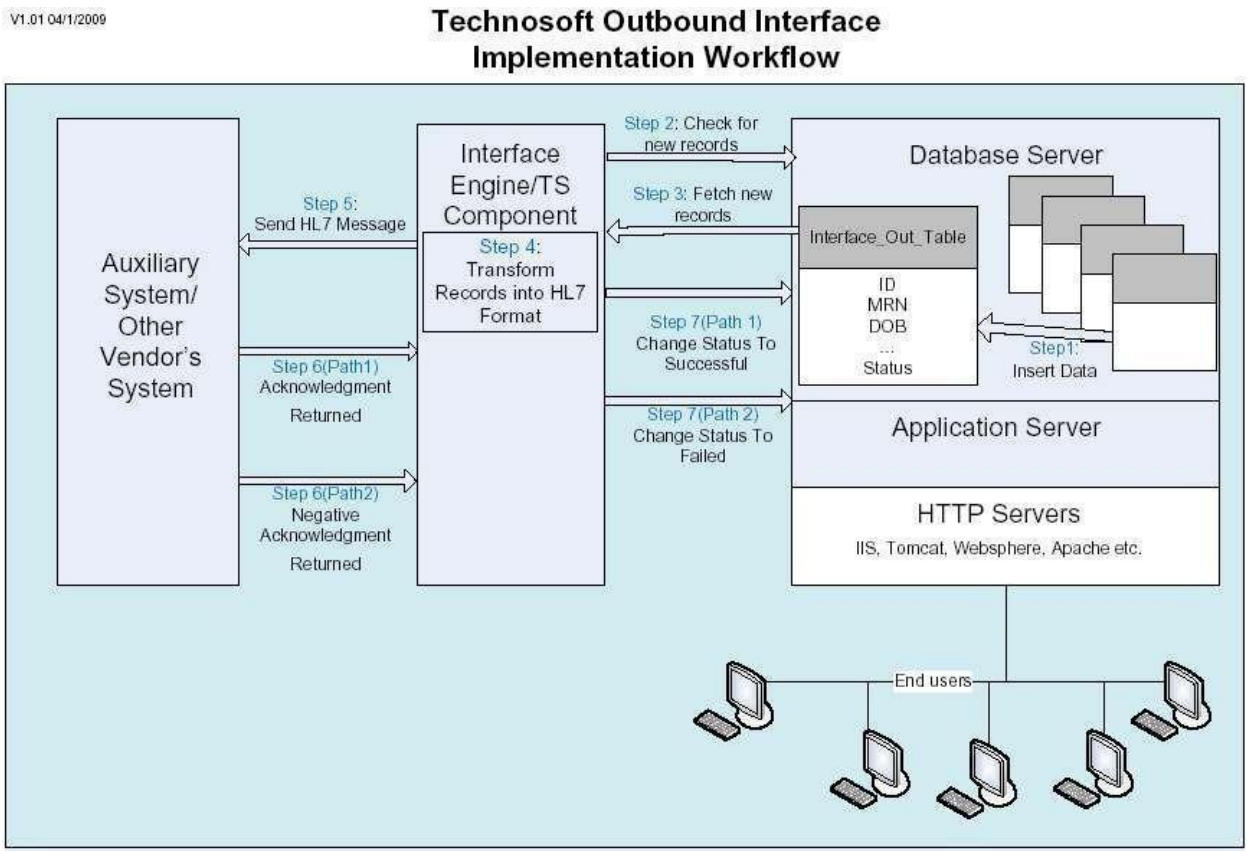
# 5. Data Flow Detail of Interfaces

## 5.1 Outbound Interface Overall Data Flow

Following is a rough diagram that shows all the systems involved in the data flow from source system to destination system.




### 5.1.1 Data Flow Details

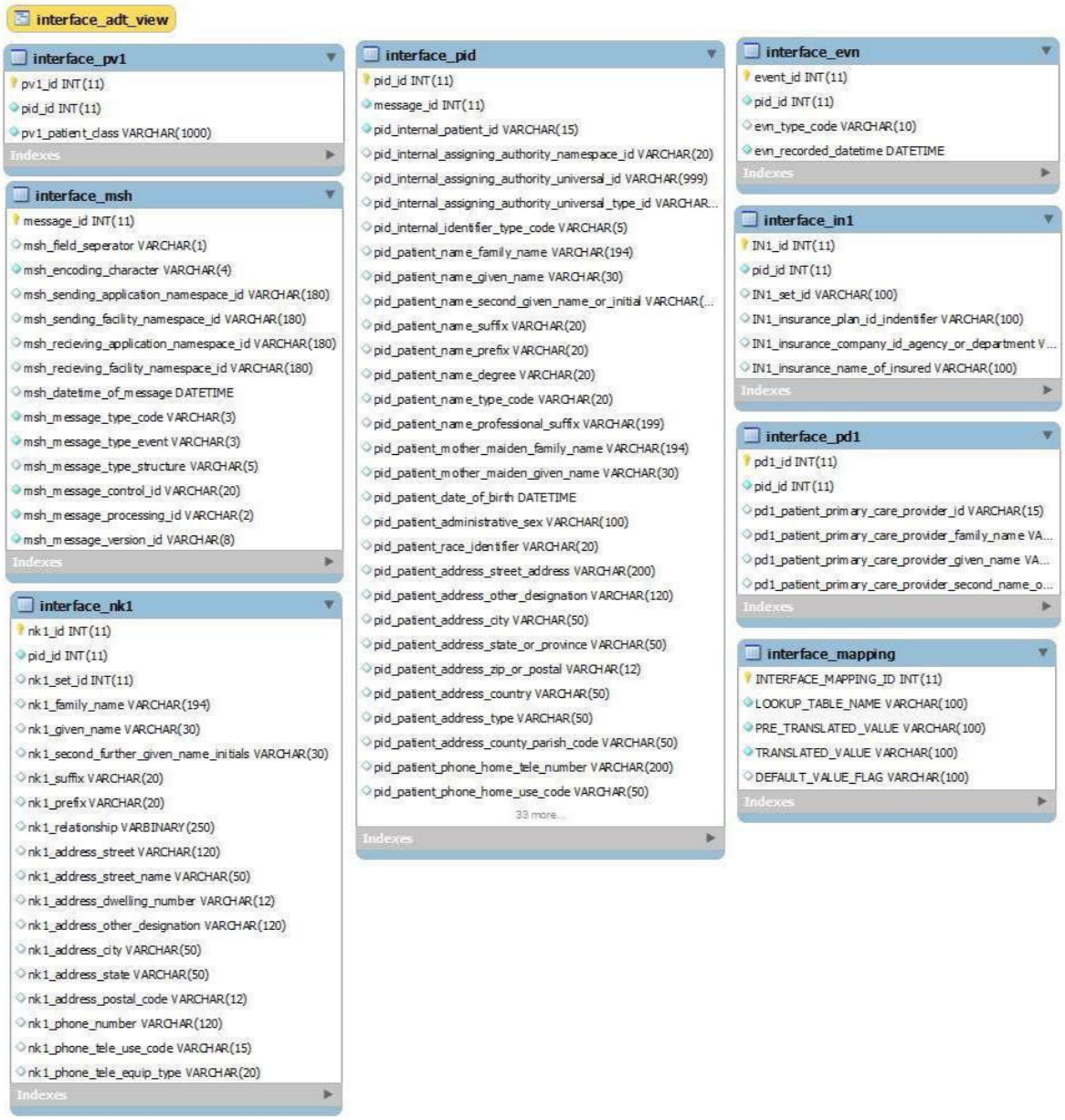



### 5.1.2 Data Flow Steps In Detail

**Step 1:** Insert data that need to be sent, into the source database tables.
**Step 2:** Mirth Engine will periodically check for new records in the interface out tables.
**Step 3:** If a new record is found, then interface engine fetches data from the database.

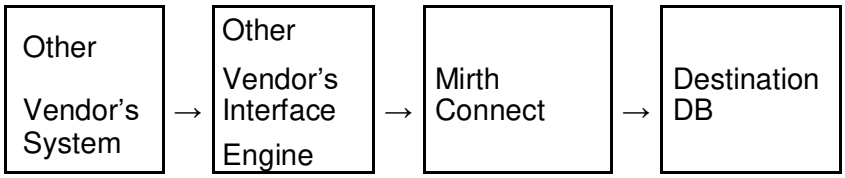
**Step 4:** Interface Engine transform data into HL7 format and perform any lookup translations, ID padding, etc.
**Step 5:** Interface Engine transmit data to the other vendor System in HL7 Format using TCP/IP Sockets.
**Step 6 Path A:** The other vendor accepts message and sends back a positive acknowledgement.
**Step 7 Path A:** The Interface Engine changes the status of the record to Successful. Or,
**Step 6 Path B:** The other vendor accepts message and sends back a Negative acknowledgement.
**Step 7 Path B:** The Interface Engine changes the status of the record to Failed.

### 5.1.3 Outbound – Source Database

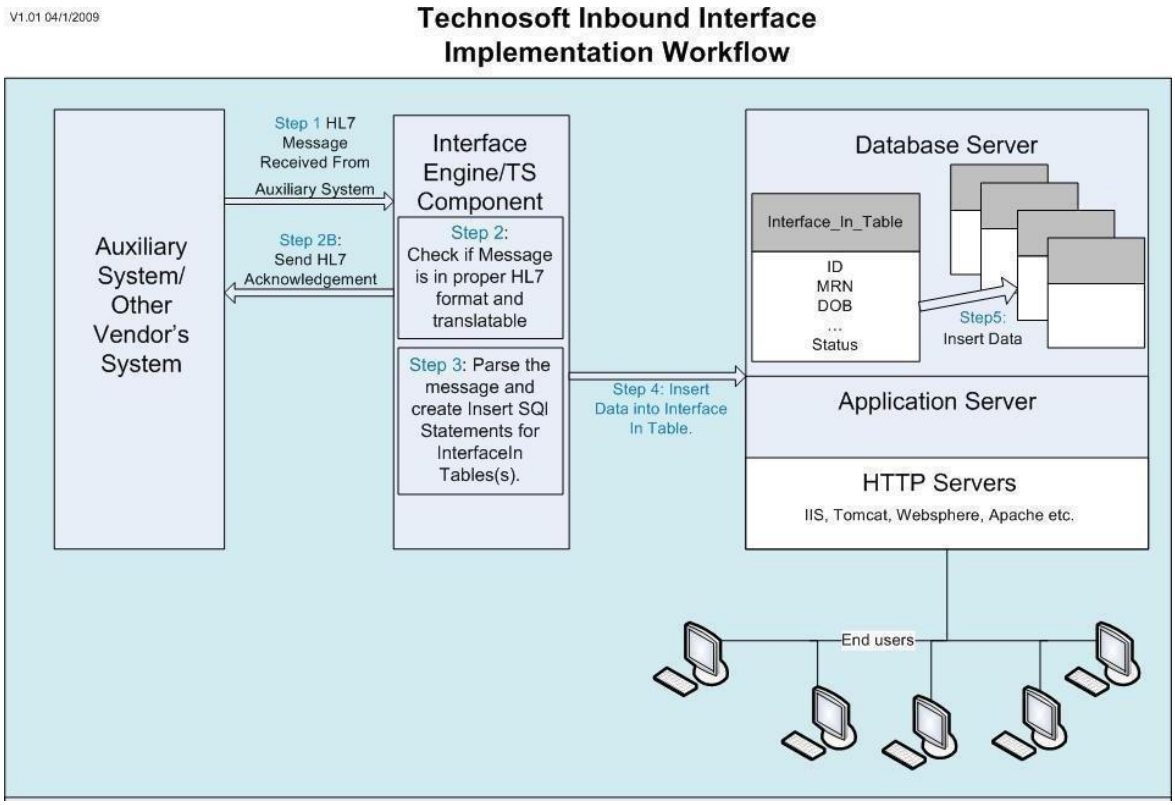


## 5.2 Inbound Interface Overall Data Flow

Following is a rough diagram that shows all the systems involved in the data flow from source system to destination system.



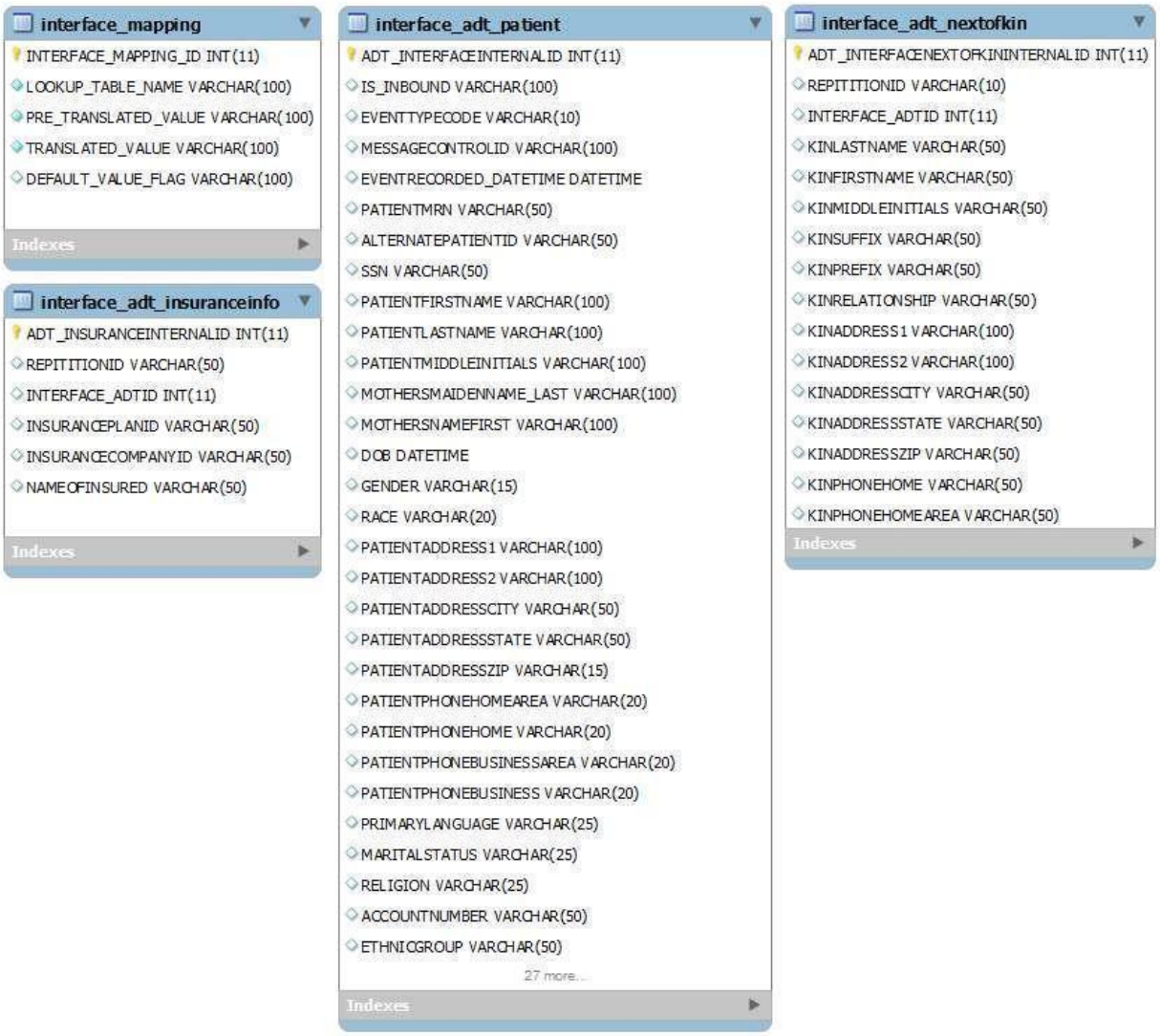

### 5.2.1 Data Flow Details



### 5.2.2 Data Flow Steps In Detail

**Step 1:** External System will send a HL7 message to Mirth (Destination Interface Engine).
**Step 2:** Mirth Engine will send a positive acknowledgment to the external system, if the message is in proper HL7 format and Interface supports that HL7 event.
**Step 3:** Parse the message and create Insert SQL statement(s) from the message data.
**Step 4:** Insert data in database table(s) setup during the Interface generation.
**Step 5:** now further processing can be performed on the stored message information.

### 5.2.3 Inbound – Destination Database



# 6. Sample Messages

### ADT^A01 Sample Message

MSH|^~\&|AccMgr|1|||20050110045504||ADT^A01|599102|P|2.3|||
EVN|A01|20050110045502|||||
PID|1||10006579^^^1^MRN^1||DUCK^DONALD^D||19241010|M||1|111 DUCK
ST^^FOWL^CA^999990000^^M|1|8885551212|8885551212|1|2||40007716^^^AccMgr^VN^1|12312
1234|||||||||||NO NK1|1|DUCK^HUEY|SO|3583 DUCK
RD^^FOWL^CA^999990000|8885552222||Y|||||||||||||
PV1|1|I|PREOP^101^1^1^^^S|3|||37^DISNEY^WALT^^^^^^AccMgr^^^^CI|||01||||1|||37^DISNEY^
WALT^^^^^^AccMgr^^^^CI|2|40007716^^^AccMgr^VN|4|||||||||||||||||||1||G|||200501100452 53||||||

IN1|1|MEDICARE|3|MEDICARE|||||||TECHNOSOFT SOLUTIONS
INC|19891001|||4|DUCK^DONALD^D|1|19241010|111^DUCK
ST^^FOWL^CA^999990000|||||||||||||||123121234A|||||PT|M|111 DUCK
ST^^FOWL^CA^999990000|||||8291 IN2|1||123121234|Cartoon Ducks
Inc|||123121234A|||||||||||||||||||||||||||||||||||||||||||||||||||||||||8885551212 IN1|2|NON-
PRIMARY|9|MEDICAL MUTUAL CALIF.|PO BOX
94776^^HOLLYWOOD^CA^441414776||8003621279|PUBSUMB|||Cartoon Ducks
Inc||||7|DUCK^DONALD^D|1|19241010|111 DUCK
ST^^FOWL^CA^999990000|||||||||||||||056269770||||||PT|M|111^DUCK
ST^^FOWL^CA^999990000|||||8291
IN1|3|SELF PAY|1|SELF PAY||||||||||5||1

### ADT^A04 Sample Message:

MSH|^~\&||TEST|||200810010949||ADT^A04|TRNS-ADTOE.1.5052131|P|2.5|||AL|NE||
EVN|A04|200810010949
PID|1||D999999^^^TEST~D999999^^^TEST||SAMPLE^BERNICE^V||19310802
PD1
PV1|1||||||P.FOO^FOOD^DOCTOR

### ADT^A05 Sample Message:

MSH|^~\&||ABC|CBORD||204102130800||ADT^A05|1015||2.2||||
PID|||333||LastName^FirstName^MiddleInitial^SR^NickName||19760228|F|||||||||5555
5|012345678
PV1|||I|ICU^115^A||||007^DoctorName^DOC|||||||B6|Y|||||||||||||||||||||||||||204
102130800|

### ADT^A08 Sample Message:

MSH|^~\&||4|||200803181216||ADT^A08|5002|D|2.5|
EVN|A08|200803181216|
PID|1||MR800900^^^^MRN||test11^adt11^||19640318|M||WHT|109 rainbow
St^leftst^Emeryville^CA^95068||
PV1|1|O|12265^^^12265^^^^^add update25's Practice||||33804^add^update25|