

EPI INFO™ CLOUD DATA CAPTURE SYSTEM INTEGRATED PACKAGE DEPLOYMENT

Version 1.1.1

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VERSION HISTORY

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DRAFT

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1 INTRODUCTION

1.1 PURPOSE

The vision of the Epi Info™ Cloud Data Capture system is to provide public health community a data collection tool that allows authorized public health professionals to collect and manage the data on the web and mobile devices on premises and in the field in a secure manner.

1.2 AUDIENCE

The audience for this document includes system administrators, database administrators, and information technology personnel who will be configuring the system on web and database servers.

2 SYSTEM DESCRIPTION

2.1 KEY FEATURES

The Epi Info™ Cloud Data Capture system enables the following functionalities on the web:

- **Web enablement:** Epi Info™ Cloud Data Capture enables forms designed in Epi Info™ 7 on the web and mobile devices for data collection by an organization.
- **Quick response time:** A form designed by an Epidemiologist can be immediately made accessible to everyone involved in data collection during a public health event immediately via web or mobile for faster data collection
- **Broader reach:** The data can be collected by data collector in the field using mobile devices or on premise using web browser.
- **Multi user data collection:** Data can be collected by multiple users at the same time using the system for a single public health event or multiple public health events.
- **Centralized data management:** The Epi Info™ Cloud Data Capture system collects and manages data in a single database for all the Epi Info™ forms enabled on the web if configured to do so. It can also be independently deployed for one event with centralized data management capability for single event.
- **Enterprise database integration:** The Epi Info™ Cloud Data Capture system can be configured to write the data in real time to Epi Info SQL Server database on the network that represents a database for a specific public health event from the centralized database.
- **Distributed analysis:** The data on the network database can be accessed using Epi Info™ 7 or Epi Info™ Web Analytics and Visualization product for real time analytics.
- **Role based access:** The Epi Info™ Cloud Data Capture system enables role based access to the system where authorized users of the system can enable Epi Info™ 7 forms on the web, collect data and perform administrative functions.

2.2 INVENTORY

The integrated deployment package consists of a compressed folder structure having following parts:

- 1) ApplicationAndServices
- 2) Database
- 3) Documents
- 4) EpiInfoWebSecurity

2.3 ENVIRONMENT

Below is a list of hardware and software requirements, and operational activities needed for the deployment of the Epi Info™ Cloud Data Capture system:

Hardware:

- Web server: Windows server 2012 or Windows Server 2012 R2
- Database server: Windows Server 2012 or Windows Server 2012 R2

Software:

- Web server:
 - Internet Information Services (IIS) 7.0/7.5/8.0/8.5
 - .NET 4.5
 - ASP.NET MVC 4
- Database server
 - SQL Server 2008/2012
- SMTP Server
 - The application would need to know the name of an SMTP server within the network that it can use.
- Epi Info Web Security
 - Epi Info Web Security utility is included in the installation package. While the Epi Info Web Security can be installed on a different machine than the web server, the installation of the Epi Info™ Cloud Data Capture system is a lot easier with the utility installed on the web server as security related settings can directly be applied on the web server.

Operational activities:

- A system engineer, IT engineer with administrative access on the web server configures the application.
- A database administrator with administrative access on the database server configures the database.

Note: ASP.NET MVC 4 is the recommended version of ASP.NET MVC framework needed to run the application. It is important that as part of enabling IIS on the web server IT administrator enables all the components needed for running an ASP.NET application on the server that includes Common HTTP features, HTTP Logging, Static Content Compression, Request Filtering, .NET Extensibility 3.5/4.5, ASP.NET 3.5/4.5, ISAPI Extensions and Filters and IIS Management Console.

2.4 SYSTEM OPERATIONS

The system will be used for:

- publishing data collection forms;
- collecting data using Epi Info™ Cloud Data Capture portal;
- managing the collected data using Epi Info Cloud Data Capture portal;
- Downloading the collected data for an Access/SQL Server form in Epi Info OR accessing the collected data for a SQL Server form directly if automation is enabled.

Depending on the event the system is deployed for, the system should have enough memory and CPU on the server to support web server traffic.

2.5 SYSTEM ARCHITECTURE

The Epi Info™ Cloud Data Capture system has the following components:

- **Epi Info™ Cloud Data Capture Manager Service:** This web service:
 - Allows for securely publishing a data collection form to the web from the Epi Info™ 7 Form Designer;
 - Stores the meta-data for creation of the data collection to the database; and
 - Allows for securely downloading the collected data to the Epi Info™ 7 Enter module for Epi Info Access project OR immediately makes the data available for Epi Info SQL Server project when automation is enabled.
- **Epi Info™ Cloud Data Capture Web Application:** The web application lets authorized users collect and manage data.
- **Epi Info™ Cloud Data Capture Data Service:** The data service provides the web application with the meta-data to render data collection form, collect and manage data.
- **Epi Info™ Cloud Data Capture Database:** The system uses a relational database to manage:
 - Organizations and users part of organization
 - Data collection forms published by the organizations; and

- Data entered by authorized users.

The diagram below summarizes these components and their interactions.

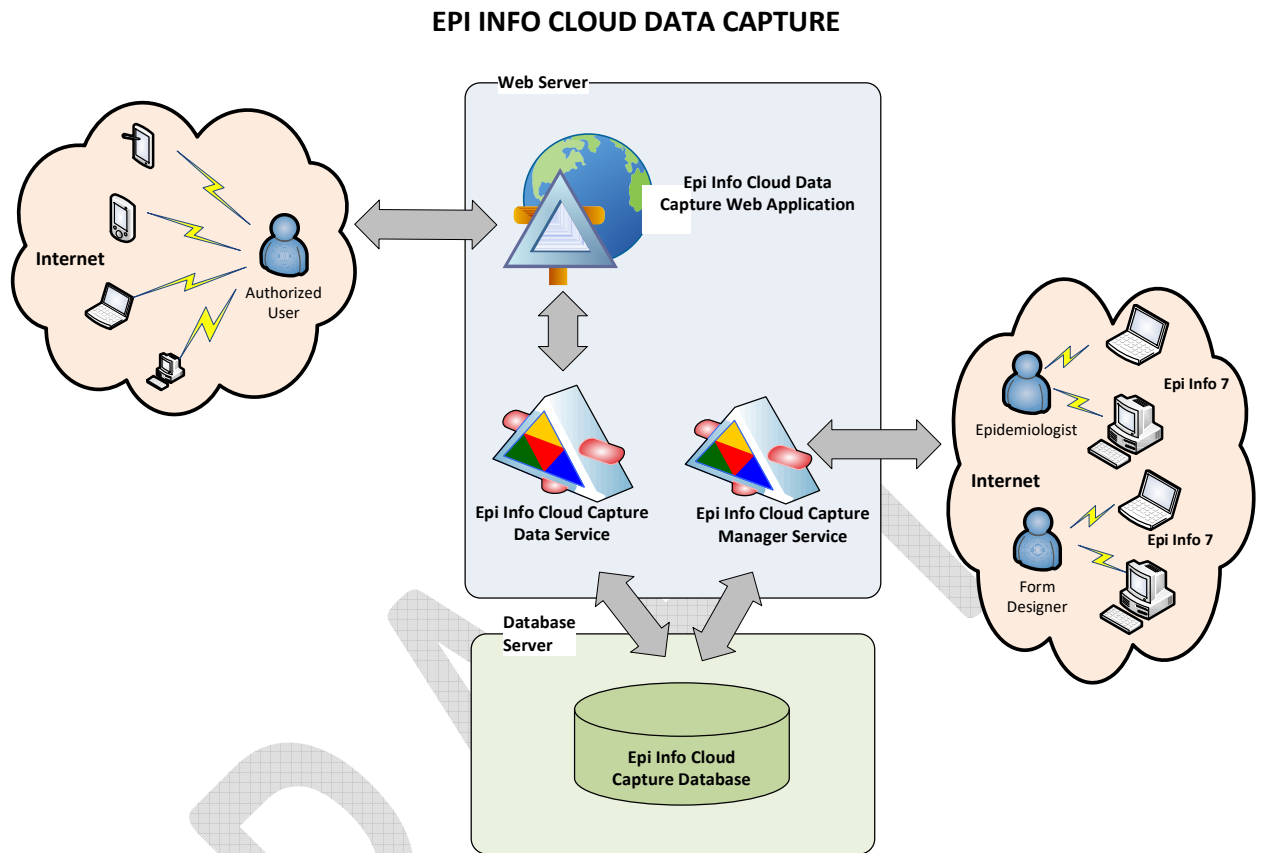


Figure 1: Overview of Epi Info™ Cloud Data Capture System

3 APPLICATION INSTALLATION

3.1 FIRST-TIME USERS

In order to use the Epi Info™ Cloud Data Capture system security keys used by cryptographic algorithm used needs to be configured. The security keys are used to encrypt:

- Database connection string in web.config file
- User password in the database
- Any other sensitive information in the database.

To perform above mentioned operation, Epi Info™ Web Security utility has to be installed either on System Administrator's machine or on the web server. More information on Epi Info Web Security Utility can be found in "**Epi Info Web Security Utility Help.pdf**" document provided in the installation package.

3.2 ACCESS CONTROLS

3.2.1 Database

The person creating and configuring the database should have full administrative access on the database server and rights and privileges to create a database, create database users, and grant access to the database.

3.2.2 Application and Services

The person installing and configuring the application and services should have administrative access on the web server and should have full access and privileges to create a web application in Internet Information Services (IIS).

3.3 INSTALLATION

The installation can be done using the **EICloudDataCapture** package. The package for installation of the system consists of following items: 1) the database in the **Database** folder; 2) the application and services in the **ApplicationAndServices** folder; 3) the required documentation in the **Documents** folder and 4) the security utility in **EpiInfoWebSecurity** folder. The Configuration section describes how these items are used.

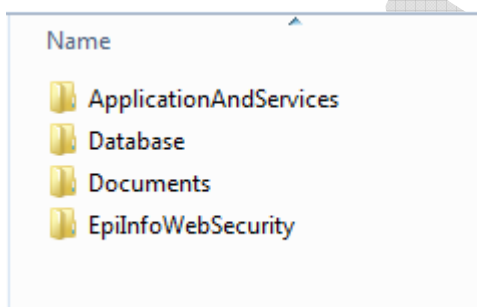


Figure 2: File systems showing components in the EICloudDataCapture package

3.4 CONFIGURATION

3.4.1 Database Configuration

The database for this application requires SQL Server 2008/2012 and should be created on a SQL Server 2008/2012 database server. Creation of the database may require assistance from a SQL Server DBA if access to the database server is managed by the DBA. The scripts should be changed as needed for local circumstances or as per best practices followed by the organization deploying this system.

1. Choose the database server where the database will be hosted. Log into the database server using an account which has admin privileges to create the database, the database user, and assign privileges to the user.
2. Open the provided script "**00CreateDatabase.sql**" in SQL Server Management Studio.

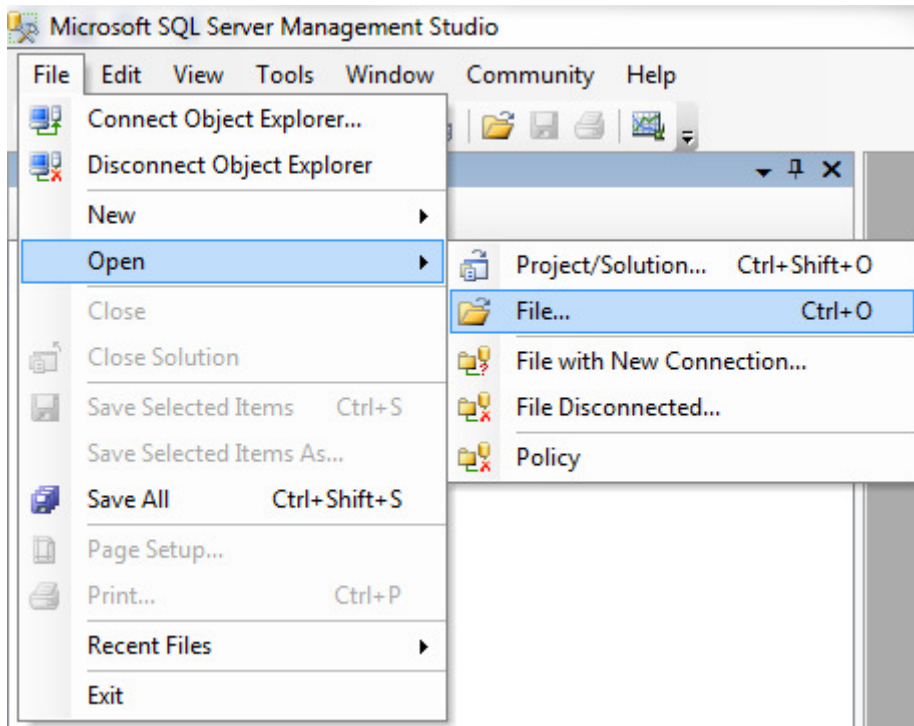


Figure 3: File menu to open the database script file

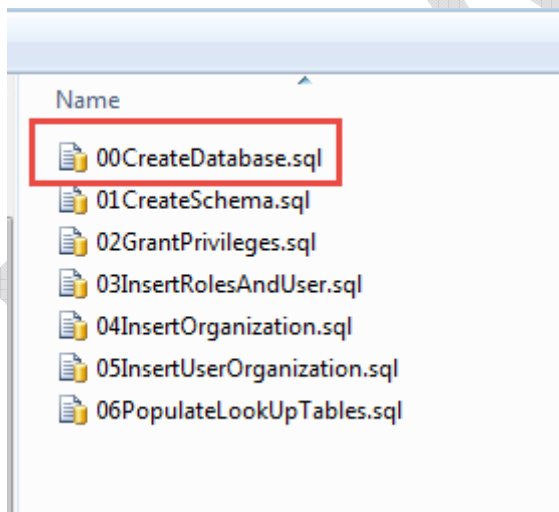


Figure 4: Open File dialog showing the packaged scripts

3. Execute the script "**00CreateDatabase.sql**" to create the database called EIWeb. The name can be changed to meet organizational policies if needed.

```

USE [master]
GO

/***** Object: Database [EIWeb]    Script Date: 4/18/2016 3:38:51 PM *****/
/*****Customer need to decide data file directory *****/
-----Then update the file directory in the create statement

CREATE DATABASE [EIWeb]
CONTAINMENT = NONE
ON PRIMARY
( NAME = N'EIWeb', FILENAME = N'C:\Program Files\Microsoft SQL Server\MSSQL11.MSSQLSERVER\MSSQL\DATA\EIWeb.mdf' , SIZE = 7168KB , MAXSIZE = UNLIMITED, FILEGROWTH = 1024KB )
LOG ON
( NAME = N'EIWeb_log', FILENAME = N'C:\Program Files\Microsoft SQL Server\MSSQL11.MSSQLSERVER\MSSQL\DATA\EIWeb_log.ldf' , SIZE = 1280KB , MAXSIZE = 2048GB , FILEGROWTH = 10%)
GO

ALTER DATABASE [EIWeb] SET COMPATIBILITY_LEVEL = 100
GO
    
```

Figure 5: Snapshot of 00CreateDatabase.sql script

Note: If you receive an error at this point upon execution, check to see if your hard-coded paths (tied directly to your machine) have the appropriate path pointing to the location where databases are created

4. Open and execute the script “**01CreateSchema.sql**” and to create the schema and other database objects.

```

USE EIWeb
GO
/***** Object: UserDefinedTableType [dbo].[DatasourceUserTableType]    Script Date: 4/18/2016 3:14:57 PM *****/
CREATE TYPE [dbo].[DatasourceUserTableType] AS TABLE(
    [DatasourceID] [int] NULL,
    [UserID] [int] NULL
)
GO
/***** Object: Table [dbo].[Canvas]    Script Date: 4/18/2016 3:14:58 PM *****/
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
SET ANSI_PADDING ON
GO
CREATE TABLE [dbo].[Canvas](
    [CanvasID] [int] IDENTITY(1,1) NOT NULL,
    [CanvasGUID] [uniqueidentifier] NOT NULL CONSTRAINT [DF_Canvas_CanvasGUID] DEFAULT (newid()),
    [CanvasName] [varchar](50) NOT NULL,
    [UserID] [int] NOT NULL,
    [CanvasDescription] [varchar](max) NULL,
    [CreatedDate] [datetime] NOT NULL,
    [ModifiedDate] [datetime] NOT NULL,
    [DatasourceID] [int] NOT NULL,
    [CanvasContent] [varchar](max) NOT NULL,
    CONSTRAINT [PK_Canvas] PRIMARY KEY CLUSTERED
(
    [CanvasID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY] TEXTIMAGE_ON [PRIMARY]
    
```

Figure 6: Snapshot of 01CreateSchema.sql script

5. Open and execute the script “**02GrantPrivileges.sql**”. Replace the Password with a strong password that meets your organization’s password policy. Execute the script. This will create the Application User Account and will grant execute permissions on stored procedures.

```
USE [EiWeb]
GO

CREATE LOGIN [eiweb_appuser] WITH PASSWORD=N'P@ssw0rd' DEFAULT_DATABASE=[EiWeb],
    DEFAULT_LANGUAGE=[us_english], CHECK_EXPIRATION=OFF, CHECK_POLICY=OFF

GO

/***** Object: User [eiweb_appuser]    Script Date: 4/18/2016 3:48:10 PM *****/
CREATE USER [eiweb_appuser] FOR LOGIN [eiweb_appuser] WITH DEFAULT_SCHEMA=[dbo]
GO

GRANT EXECUTE ON SCHEMA :: dbo TO [eiweb_appuser];

GO

CREATE ROLE [db_procexec] AUTHORIZATION [dbo]
GO

EXEC dbo.sp_addrolemember @rolename=N'db_procexec', @membername=N'eiweb_appuser'
GO

EXEC dbo.sp_addrolemember @rolename=N'db_datareader', @membername=N'eiweb_appuser'
GO

EXEC dbo.sp_addrolemember @rolename=N'db_datawriter', @membername=N'eiweb_appuser'
GO
```

Figure 7: Snapshot of 02GrantPrivileges.sql script

Note: “eiweb_appuser” is the application account used by the application to connect to the database. Provide username and the password to the person configuring the application on the web server along with the Database server name and the Database name.

6. Open and execute script “**03InsertRolesAndUser.sql**”. This script adds the roles used by the product and the first user of the system. Before executing the script, you must update the sections marked in red, “Inserting Administrator user”. For Administrator, replace following placeholders with relevant values:
 - /*UserName*/
 - UserName has to be valid Email address. For Windows deployed mode, this email has to be the part of Active Directory.
 - /*FirstName*/
 - /*LastName*/
 - /*EmailAddress*/
 - /*PhoneNumber*/
 - /*GUID*/
 - This can be GUID generated by you or the GUID provided in the sample below can be used.

```

GO
/***** Object: Table [dbo].[Role]    Script Date: 4/18/2016 3:50:21 *****/
SET IDENTITY_INSERT [dbo].[Role] ON
INSERT [dbo].[Role] ([RoleID], [RoleValue], [RoleDescription]) VALUES (1, 1, N'User')
INSERT [dbo].[Role] ([RoleID], [RoleValue], [RoleDescription]) VALUES (2, 2, N'OrgAdministrator')
INSERT [dbo].[Role] ([RoleID], [RoleValue], [RoleDescription]) VALUES (3, 3, N'Administrator')
SET IDENTITY_INSERT [dbo].[Role] OFF

----- Insert Administrator User -----
INSERT INTO [dbo].[User]
    ([UserName]
    , [FirstName]
    , [LastName]
    , [PasswordHash]
    , [ResetPassword]
    , [EmailAddress]
    , [PhoneNumber]
    , [UGuid])
VALUES
    ('/*UserName - an email address*/',
    /*FirstName*/',
    /*LastName*/',
    '',
    1,
    /*EmailAddress*/',
    /*PhoneNumber*/',
    /*GUID*/')
GO

```

Figure 8: Snapshot of 03InsertRolesAndUser.sql script

Sample script is provided below:

```

INSERT INTO [dbo].[User]
    ([UserName]
    , [FirstName]
    , [LastName]
    , [PasswordHash]
    , [ResetPassword]
    , [EmailAddress]
    , [PhoneNumber]
    , [UGuid])
VALUES
    ('useremail@org.gov',
    'UserFirstName',
    'UserLastName',
    '',
    1,
    'useremail@org.gov',
    '111-111-1111',
    '3348E05B-B146-4708-9DE5-C840729520C8')
GO

```

Note: Password value is not inserted through this script. The value of ResetPassword is set to 1 so it password can be set up as per the instruction for starting the system.

- Open and execute script “**04InsertOrganization.sql**” to create the first organization for your system by following the instruction provided. Replace following placeholders with relevant values:

- /*Encrypted Organization Key*/
 - Organization key has to be a GUID. A GUID can be generated using any number of GUID generator website online. The Organization key (GUID) is then encrypted using Epi Info Web Security utility. Encrypted Organization Key can only be created after the security keys have been finalized for the Web Site during web site configuration stage. The encrypted key is created as per guidance provided in Section 5 of “Epi Info Web Security Utility Help.pdf” document.
- To continue making progress plane text GUID can be inserted for Encrypted Organization Key to be updated later. Once the security keys are configured for the web application and the Organization key (GUID) is encrypted, the Organization Key can be updated.
- /*Organization Name*/

```

USE [EIWeb]
GO

----- Insert Organization -----
-- Create an Organization key by creating a GUID and encrypting it using the Epi Info Web Security utility.
-- Provide the encrypted key as the value for OrganizationKey.

INSERT INTO [Organization]
           ([OrganizationKey]
           ,[Organization]
           ,[IsEnabled]
           ,[IsHostOrganization])
VALUES
           ('/*Encrypted Organization Key*/',
           /*Organization Name*/,
           1,
           1)

GO
--
    
```

Figure 9: Snapshot of 04InsertOrganization.sql script

8. Open and execute script “**05InsertUserOrganization.sql**”. This script creates the relationship between User and Organization for the recently added Administrator and Organization. The first user is being assigned the role of Administrator, which has a RoleId of 3. To execute the script replace following placeholders with relevant values:
 - /*UserID*/
 - UserID of the user created in the previous step.
 - /*OrganizationID*/
 - Organization ID of the organization created in previous step.

```
----- Insert User and Organization relationship -----  
  
USE [EIWeb]  
GO  
/***** Object: Table [dbo].[UserOrganization]    Script Date: 4/18/2016 4:01:11 *****/  
  
INSERT INTO [dbo].[UserOrganization]  
    ([UserID]  
    ,[OrganizationID]  
    ,[RoleID]  
    ,[Active])  
VALUES  
    (/*UserID*/  
    ,/*OrganizationID*/  
    ,3  
    ,1)  
  
GO
```

Figure 10: Snapshot of 05InsertUserOrganization.sql script

Value of UserID can be retrieved by opening the User table. Value of OrganizationID can be retrieved by opening the Organization table. Sample script is provided below:

```
INSERT INTO [EWAV].[dbo].[UserOrganization]  
    ([UserID]  
    ,[OrganizationID]  
    ,[RoleID]  
    ,[Active])  
VALUES  
    (1  
    ,1  
    ,3  
    ,1)  
  
GO
```

9. Open and execute script “06PopulateLookups.sql” to populate all the lookup tables.

```
USE [EiWeb]
GO

INSERT INTO [dbo].[lk_RecordSource]
([RecordSourceId]
,[RecordSource]
,[RecordSourceDescription])
VALUES (1 , 'ENE' , 'Source is ENE web application' ),
(2 , 'Epi7' , 'Source is Epi7 desktop application' ),
(3 , 'MA' , 'Source is mobile application' )
GO

INSERT INTO [dbo].[lk_Status]
([StatusId]
,[Status])
VALUES
(0, 'deleted'),
(1, 'In Process'),
(2, 'Saved'),
(3, 'for the future'),
(4, 'downloaded')
GO

INSERT INTO [dbo].[lk_SurveyType]
([SurveyTypeId]
,[SurveyType])
VALUES
(1, 'Single Response'),
(2, 'Multiple Reponse')
GO

INSERT INTO [dbo].[DataAccessRules]
([RuleId],
[RuleName],
[RuleDescription])
VALUES
(1, 'Access within organization', ' Organization users can only access the data of their organization'),
(2, 'Enable data access for central organization', ' All users in host organization will have access to all data of all organizations'),
(3, 'Enable data access to all', 'All users of all organizations can access all data')
GO
```

Figure 11: Snapshot of 06PopulateLookups.sql script

10. Provide the server name, database name, application user name, and password to the IT administrator configuring Epi Info™ Cloud Data Capture system. This information will be used to create the connection string used by the application to connect to the database

Note: If the database is configured on a database server different than the web server, firewall ports will have to be opened on the database server for web server communication. In such a case provide the value of the firewall port to the IT administrator configuring the application on web server.

3.4.2 Application and Services Configuration

The application and services configuration documents the steps for configuring the Epi Info™ Cloud Data Capture Web application, the Epi Info™ Cloud Data Capture Manger Service, and the Epi Info™ Cloud Data Capture Data Service as a single integrated application on the Internet Information Services (IIS).

The steps below assume that the Epi Info™ Cloud Data Capture web site is being configured as an application under the default web site. This may not always be the case depending on your local policies. If needed, the site can be configured as its own web site.

1. Create a folder called “**EpiInfoDataCapture**” under “inetpub\wwwroot”. Copy the contents of the folder “EiCloudDataCapture\ApplicationAndServices” (and not the folder itself) to the “inetpub\wwwroot\EpiInfoCloudDataCapture” folder.
2. Create an application named “**EpiInfoCloudDataCapture**” in IIS.
3. Make sure that the site is configured to run on an Application pool that is configured to use .NET 4.0. You can use one of the default application pools called **Default Web Site** or Default AppPool . This application pool uses a Managed Pipeline Mode of “Integrated”.

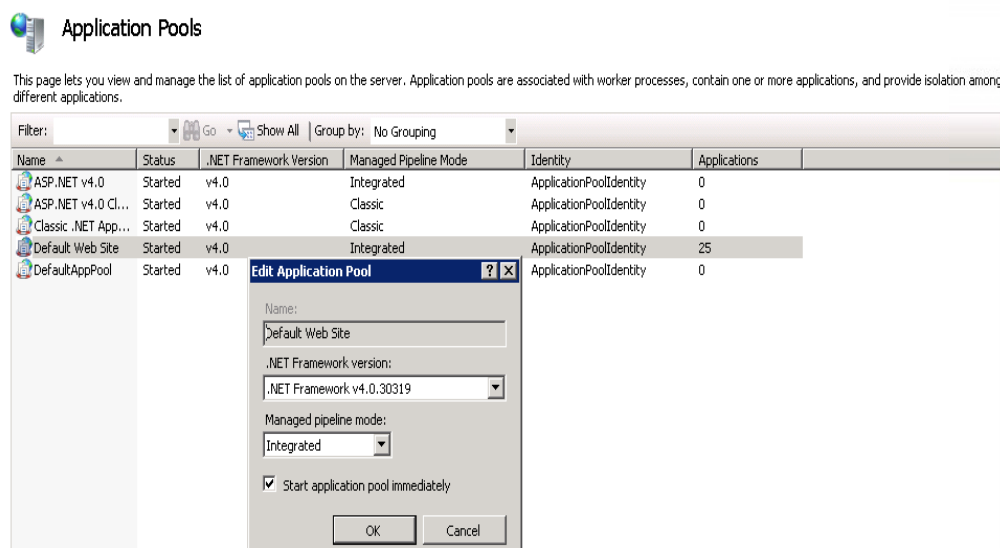


Figure 12: Application pool configured using .NET 4.0

4. Make sure the site uses Anonymous authentication. This is the default setting when the site is configured in IIS. Also Enable Forms Authentication for default configuration OR Enable Windows Authentication if site is being configured in intranet.

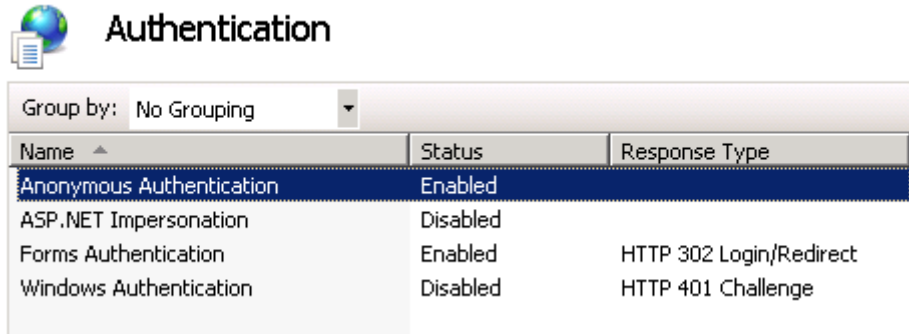


Figure 13: Application configured with Anonymous Authentication Enabled

- Open the web.config file in EpilInfoCloudDataCapture folder for editing in your preferred editor.

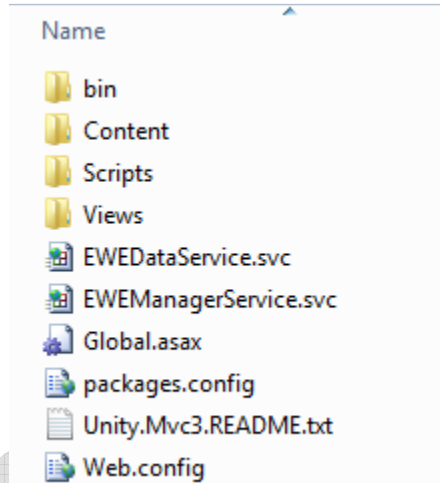


Figure 14: Web.config file for an integrated application

- Update Email notification section in the web.config file.

```
<!-- Email notification -->
<add key="EMAIL_USE_AUTHENTICATION" value="FALSE"/>
<add key="EMAIL_USE_SSL" value="FALSE"/>
<add key="EMAIL_SUBJECT" value="This is the Subject line"/>
<add key="EMAIL_FROM" value="XXXXXXXXXXXXXXXXXXXX"/>
<add key="EMAIL_PASSWORD" value="XXXXXXXXXXXXXXXX"/>
<add key="SMTP_PORT" value="XXXXXXXXXX"/>
<add key="SMTP_HOST" value="XXXXXXXXXXXXXXXX"/>
```

- EMAIL_USE_AUTHENTICATION: The default value is FALSE. Change this to TRUE if authentication is used.
- EMAIL_USE_SSL: The default value is FALSE. Change this to TRUE if SSL is used.

- c) EMAIL_FROM: Provide an email address that can be used for the FROM part of the email.
- d) EMAIL_PASSWORD: A value needs to be provided here only if the EMAIL_USE_AUTHENTICATION is TRUE in step 6a above.
- e) SMTP_PORT: The system uses the default value of 25. Only provide a port number if the port number is other than 25.
- f) SMTP_HOST: This value has to be provided. This should be the name of the SMTP server used by the organization.

The system has built in capability to send email. The settings above, in conjunction with settings specified in next step, can be used by the system to send exception email messages to a specified email account.

7. If you want to receive system exception email messages, update the Log Setting section in the web.config file.

```
<!-- Log Setting -->
<add key="LOGGING_SEND_EMAIL_NOTIFICATION" value="FALSE"/>
<add key="LOGGING_ADMIN_EMAIL_ADDRESS" value="XXXXX"/>
<add key="LOGGING_EMAIL_SUBJECT" value="Epi Info Data Capture - Exception"/>
```

- a) LOGGING_SEND_EMAIL_NOTIFICATION: The default value is set to FALSE. Change this to TRUE in order to receive exception emails in case of system failure.
 - b) LOGGING_ADMIN_EMAIL_ADDRESS: Provide an email address that can receive exception emails in case of system failure.
 - c) LOGGING_EMAIL_SUBJECT: Update the value with the subject you would like to see for exception emails.
8. The application is designed to leverage caching to store form meta information in memory on the web server in order to optimize performance, **if needed**. A very small amount of memory is used and is directly proportional to the size of form meta information. Enabling caching comes at a cost. If the form designer makes changes to form meta data, and then wants to check that his/her changes were made, the revisions are not instantly visible. It may be up to 20 minutes before the changes would be reflected if the publisher of the form does not interact with the published form for 20 minutes. Due to this limitation in the default configuration, caching has been disabled for the application. Caching setting can be customized as per local policies or per your needs. Below are the settings for caching:

```
<!-- Caching -->
<add key="CACHE_IS_ON" value="FALSE"/>
```

```
<add key="CACHE_DURATION" value="20"/>
<add key="CACHE_SLIDING_EXPIRATION" value="TRUE"/>
```

- a) CACHE_IS_ON: Default value of "FALSE" indicates the application is not caching any information on the server. Changing the value to "TRUE" will turn on caching for the application allowing the application to store survey meta data on the server for a given survey. Refer to additional guidance on caching in the implementation guide for information on scenarios that will benefit from caching.
- b) CACHE_DURATION: Duration for the cache is set to 20 minutes. The value can be changed to increase or decrease the duration the cache is maintained.
- c) CACHE_SLIDING_EXPIRATION: The default value of "TRUE" indicates that the cache is set to expire at the defined duration on a sliding scale. If the site is accessed by any user during the defined duration, the sliding scale is again reset. To change the cache to expire at an absolute duration defined by the CACHE_DURATION value, the value for CACHE_SLIDING_EXPIRATION can be changed to "FALSE".

With CACHE_IS_ON set to "FALSE" the value for CACHE_DURATION and CACHE_SLIDING_EXPIRATION are not applicable. The application will work without caching and still perform well.

9. Update the Integrated Epi Info™ Cloud Data Capture Manger Service settings.

```
<!-- Integrated SurveyManagerService Settings -->
<add key="URL" value="http://SERVER_NAME/APPLICATION_NAME/Login"/>
```

Update the SERVER_NAME and APPLICATION_NAME marked in yellow in the value for the URL

- i. SERVER_NAME is the Domain Name Server (DNS) name of the web server where the application is hosted.
- ii. APPLICATION_NAME is the application name created in IIS.

10. Update the following settings in Data Capture settings section

```
<!-- Data Capture settings Start -->
<add Key="SHOW_TERMS_OF_USE" value="TRUE"/>
<add key="ENDPOINT_ADDRESS"
value="http://SERVER_NAME/APPLICATION_NAME/EWManagerService.svc"/>
<add key="WINDOW_AUTHENTICATION" value="No"/>
<add key="BaseUrl" value="http://SERVER_NAME/APPLICATION_NAME/Login"/>
<add key="IsEWAVLiteIntegrationEnabled" value="FALSE"/>
<add key="EWAVLiteBaseUrl"
value="http://SERVER_NAME/EWAVLITE_APPLICATION_NAME/app/index.html"/>
```

- a) SHOW_TERMS_OF_USE: The Terms of service and conditions of use section on the login page is visible by default. Instruction to customize this section are provided further in this document. In case having this section present on login page is not applicable in your scenario then this section can be hidden by providing a value of "FALSE".
- b) ENDPOINT_ADDRESS: Update the SERVER_NAME and APPLICATION_NAME marked in yellow in the value for the URL
 - i. SERVER_NAME is the Domain Name Server (DNS) name of the web server where the application is hosted.
 - ii. APPLICATION_NAME is the application name created in IIS.
- c) WINDOW_AUTHENTICATION: The value is set to No in the default package. If the package is configured as a Windows authenticated app that authenticates the user through the windows active directory then the value will be "Yes". Details of Windows Configuration is not provided in this document.
- d) BaseURL: The value of SERVER_NAME and APPLICATION_NAME can be updated similar to ENDPOINT_ADDRESS
- e) IsEWAVLiteIntegrationEnabled: The value is set to FALSE in the default package. If the implementation also includes the setup and integration of Epi Info Cloud Analytics and Epi Info Cloud Analytics Lite with Epi Info Cloud Data Capture product the value can be set to TRUE. There is a separate document that describes enabling integration across the three products mentioned here.
- f) EWAVLiteBaseURL: If the value is set to TRUE for IsEWAVLiteIntegrationEnabled, the value of SERVER_NAME and EWAVLITE_APPLICATION_NAME can be updated. EWAVLITE_APPLICATION_NAME refers to site configured to host Epi Info Cloud Analytics Lite application.

Following settings in this section do not need updating:

```
<add key="RESPONSE_PAGE_SIZE" value="20"/>  
<add key="RESPONSE_PAGE_SIZE_Mobile" value="10"/>  
<add key="BINDING_PROTOCOL" value="Basic"/>  
<add key="SEND_EMAIL_TO_ASSIGNED_USERS" value="TRUE"/>
```

11. Update the password policy section to reflect the password policy for your organization. This policy will be used by users created in Epi Info™ Cloud Data Capture system. Following is the default password policy provided in the package:

```
<add key="PasswordMinimumLength" value="6"/>  
<add key="PasswordMaximumLength" value="10"/>  
<add key="NumberOfTypesRequiredInPassword" value="3"/>  
<add key="TotalNumberOfTypesInPassword" value="4"/>
```

```
<add key="UseNumbers" value="true"/>
<add key="UseUpperCase" value="true"/>
<add key="UseLowerCase" value="true"/>
<add key="UseSymbols" value="true"/>
<add key="Symbols" value="@#${}^"/>
<add key="RepeatCharacters" value="true"/>
<add key="ConsecutiveCharacters" value="false"/>
<add key="UseUserIdInPassword" value="true"/>
<add key="UseUserNameInPassword" value="true"/>
```

- PasswordMinimumLength: The default minimum length is 6. Change this to meet your organizations requirements.
- PasswordMaximumLength: The default maximum length is 10. Change this to meet your organizations requirements.
- NumberOfTypesRequiredInPassword: The default value is 3. Change this meet your organizations requirements.
- TotalNumberOfTypesInPassword: The system supports alphanumeric characters and symbols making a total of 4 types, namely numbers, upper case, lower case and symbols.
- UseNumbers: The default value for using numbers 0-9 is "TRUE". Change this to meet your organizations requirements.
- UseUpperCase: The default value for using characters A-Z is "TRUE". Change this to meet your organizations requirements.
- UseLowerCase: The default value for using character a-z is "TRUE". Change this to meet your organizations requirements.
- UseSymbols: The default value for using symbol is "TRUE". Change this to meet your organizations requirements.
- Symbols: The default list of symbols supported by the product is "@#\${}^". Change the symbol list to meet your organizations requirements.
- RepeatCharacters: The default value for repeating characters in the password is "TRUE". Change this to meet your organizations requirements.
- ConsecutiveCharacters: The default value for consecutive characters in the password is "FALSE". Change this to meet your organizations requirements.
- UseUserIdInPassword: The default value for using User Id in password is "FALSE". Change this to meet your organizations requirements.
- UserUserNameInPassword: The default value for using user name in password is "FALSE". Change this to meet your organizations requirements.

12. The package comes with default security keys used by system to encrypt needed information. The system can be used as is if needed. We highly

recommended that you create and update the security keys for your system using Epi Info™ Web Security Utility which is a separate install, and is included in the package (instructions on how to install can be found in the Epi Info™ Web Security Utility Help Guide). Section 3 of the document provides instructions for creating the security keys. Once the new security keys are generated using the security utility and the web.config file is updated, the default Encryption keys provided below will be replaced with your keys.

```
<add key="KeyForUserPasswordSalt"
value="sLFoRFyKLCT49hjwj0N4XifzYtkQrDdB00gbuGRuGRRegQYv4EydWV5Q5yGV0ECoTYoq5
a0UbbRIh81xQbDuQWjYf6Vk4gLg/1dQCuutN9iVtDZQbe8d1JL0aAhLbFantM013g==" />
<add key="KeyForConnectionStringPassphrase"
value="atKjwl1YhPv94716lQ8aEophUSm2mz+9VkMzDgzRgscoPsRYJ2/vRs7eJTf43X6r/PiBQ
S2Pb99lzoA0DAVxfmwToq1QXDgovFCZP+axtINlw9vbidyz9cG0Ty3LNjxCYuMoIw==" />
<add key="KeyForConnectionStringSalt"
value="LwKTr/KY9ILBwtIDVIvrO9zwXx1f101FiUMgwTti82LCY0Erdrrdu45vaVQntXe6kD0Jj
K1RXkLL8HdmuzPSEYsvtIKDJQ8SGdAtzHwPyrpkdXmcd5bi/pL04UdL1H3f2ZfpZg==" />
<add key="KeyForConnectionStringVector" value="Z5AIQts7a6hFewK/" />
```

NOTE: The key generation is one time operation. Once the system is operational these keys cannot be changed. The keys are the most critical piece of the system. Please make an archive of keys used by your system and save it at a safe location in case they are lost/changed/updated in web.config file by mistake

13. Create connection string that points to the application database by replacing the text marked in yellow with the appropriate value in the plain text connection string provided below.

```
metadata=res:/*/Epi.Web.Model.csdl|res:/*/Epi.Web.Model.ssd|res:/*/
/Epi.Web.Model.msl;provider=System.Data.SqlClient;provider
connection string= 'Data Source=DATABASE_SERVER_NAME;Initial
Catalog=DATABASE_NAME;Persist Security Info=True;User
ID=APPLICATION_ACCOUNT;Password=PASSWORD_FOR_ACCO
UNT ;MultipleActiveResultSets=True'
```

Below is an example of a connection after replacing the yellow text.

```
metadata=res:/*/Epi.Web.Model.csdl|res:/*/Epi.Web.Model.ssd|res:/*/
/Epi.Web.Model.msl;provider=System.Data.SqlClient;provider
connection string= 'Data Source= etiei-sql;Initial
Catalog=EIWeb;Persist Security Info=True;User
ID=eiweb_appuser;Password= h74$H4d@m23&Bw=GXH8%-
MuH5h;MultipleActiveResultSets=True'
```

Note:

- i. The entire block, starting from “metadata” and ending with “=True” comprises the connection string. Use the complete string provided above and not just the subpart that says “connection string”.
 - ii. The connection string subpart is wrapped in single quotes. In other words, the phrase connection string is followed by an opening single quote (apostrophe) and at the end of the connection string subpart following =True there is the closing single quote.
 - iii. Check the Data Source name with your DBA team in case the application is deployed in a DMZ. In such cases, the Data Source may also include a port number.
 - iv. When copying this connection string from the PDF document to your chosen editor, additional spaces may get created at line breaks resulting in the application unable to communicate with the database. In particular, please note that there are no spaces in the three metadata element strings which are separated by a vertical bar or pipe symbol (|). For example:
res://*/Epi.Web.Model.msl
 - v. In the connection string, the phrases “Data Source”, “Initial Catalog”, “Persist Security Info” and “User ID” all have a single space between the words.
14. After creating the plain text connection string, encrypt the connection string using the Epi Info™ Web Security Utility. Section 5 of “Epi Info™ Web Security Utility Help guide” describes how the connection string can be encrypted. Make a note of the encrypted connection string in a file in order to use it in the next step.

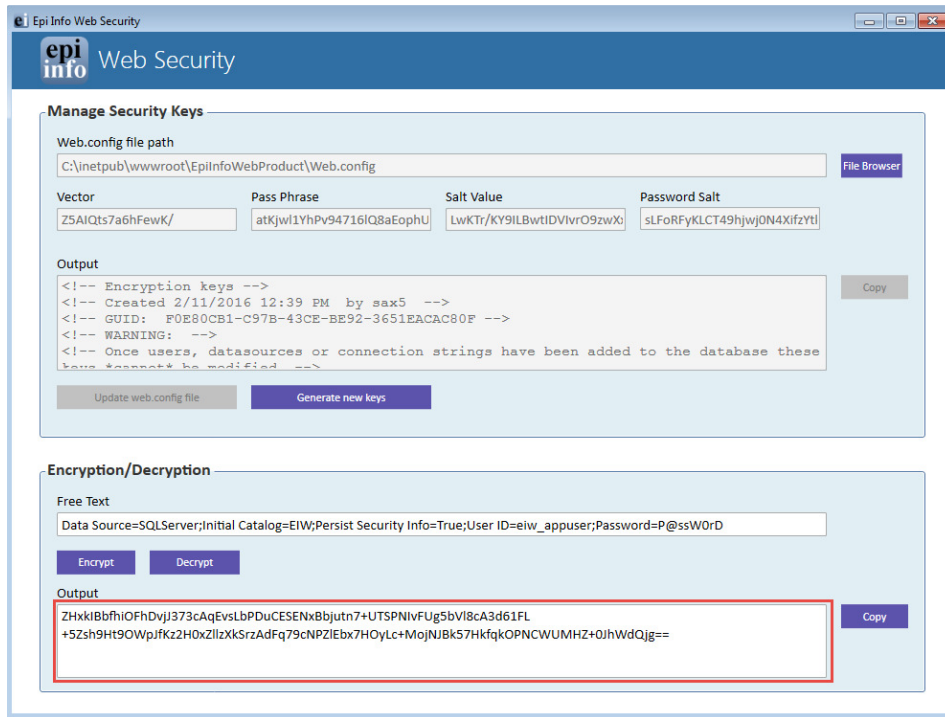


Figure 15: Epi Info Web Security Utility encrypting connection string.

- Update the connection string for “EIWSEntities” marked in yellow below in the web.config file with the encrypted string.

```
<add name="EWEntities" connectionString="
0jYL92zvh/3MZqbJAyKuCKa4bDoF/bIMUTr07X8rI/Dx1Mpn6C4gFS+zig39nLEosiQr3QCwpD5
bQUKmIaCUXLaMFR3/urNDPaUo9NXuD40seDGSTicly1Xcr8F+dNzqYijhBwtQv2aJwvHfBU1laT
gtFUHMrMxD/LBNV1YxkfpFaY3Rg5zZvI9RGNjJmcACiU0sFzsi1p2y92HuiKJlQD+s8X3Ue9pWn
B8zj6o6kyDpzuD8AQU6cWRNtH0Y4cZjWavzx+1Zw9dFaLcQJEaUDKExKEC5I9pQvo2KG+KVVmVX
h5FsYBfiDHOLbrgHb/QjQqCPaDmwm+P/+zqmiebqzRx1Aeze/gN8sGACj4DuBSK9kyDMtTvPMW1
Mfkr7AWp+0V8VzWgAaeS9keCVENrZd41ksi0TBvtovm72KubHCWw=" />
```

- Create another connection string by replacing the value of the text marked in yellow with the appropriate value in the plain text connection string provided below.

```
Data Source=DATABASE_SERVER_NAME;Initial
Catalog=DATABASE_NAME;User
ID=APPLICATION_ACCOUNT;Password=PASSWORD_FOR_ACCOUNT
```

Below is an example of a connection string after replacing the yellow text

```
Data Source=etiei-sql;Initial Catalog=EIWeb;User
ID=eiweb_appuser;Password=h74$H4d@m23&Bw=GXH8%-MuH5h
```


Encrypt the connection string above as done previously for the EIWSEntities connection string and update the connection string for “EIWSADO” marked in yellow below in the web.config file with the encrypted string.

```
<add name="EWEADO" connectionString="
TXToS5W9+YIuXtIix/w+VEhNtJfnp+eY/le+iEA3Pt1c282FtxUuLPRqfU6jzsL523E4z0amO+
Gph/aZNV88aHr0I15wYX0J8C2UUhe138GG38Twwa5ToUDMf4Q4fCzvh9ZmN6whP7FWRIsbYLPTQ
==" />
```

17. Provide the following information about the Epi Info™ Cloud Data Capture Manager Service to the Administrator managing the system.

a) URL for the Survey Manager Service

http://SERVER_NAME/APPLICATION_NAME/EWEManagerService.svc

Update the SERVER_NAME and APPLICATION_NAME, marked in yellow, in the value for the URL.

- i. SERVER_NAME is the Domain Name Server (DNS) name of the web server where the application is hosted.
- ii. APPLICATION_NAME is the application name created in IIS.

b) Windows Authentication value is **No**

c) Binding Protocol used is **Basic**

The information provided above is to be used by the Administrator to access the Epi Info™ Cloud Data Capture Manager Service from Epi Info™ to confirm communication between Epi Info™ and Epi Info™ Cloud Data Capture Manager Service. On the Epi Info™ 7 desktop Main Menu click on the down arrow to access the Options setting. Select the Cloud Data Capture tab. The above information goes in Endpoint address, Windows Authentication and Binding protocol section. After providing the above information, click on the Ping button to confirm communication. After a successful Ping click on “OK” button to commit the settings.

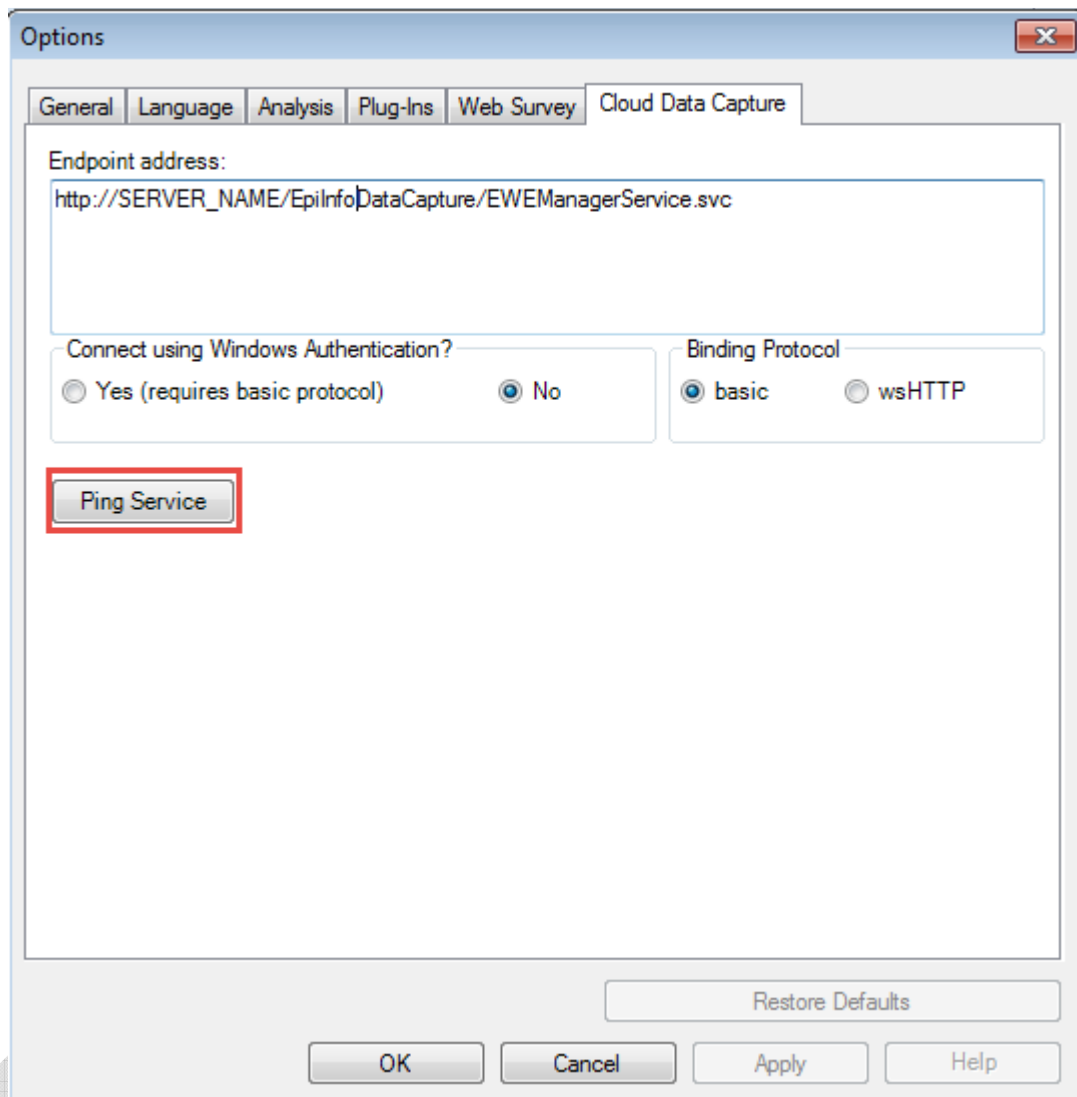


Figure 16: Cloud Data Capture tab in Epi Info Options for testing service communication

18. There are a few additional settings in the web.config file which do not need any updating. These are listed below:

```
<!-- Messages -->
<add key="SURVEY_NOT_EXISTS" value="The Survey does not exist. Please check the
survey link and try again."/>
<add key="SURVEY_SUBMITTED_MESSAGE" value="This survey has been submitted."/>
<add key="SURVEY_CLOSED_MESSAGE" value="This survey is currently closed. Please
contact the author of this survey for further assistance."/>
<add key="SURVEY_SUBMISSION_MESSAGE" value="Thank you! Your survey has been
submitted."/>
<add key="UNKNOWN_ERROR_MESSAGE" value="An unexpected error occurred. Please
click the link below to return to the Home page or contact your system
administrator for more information."/>
```

```
<!-- Messages -->  
  
<!-- Package Type -->  
<add key="INTEGRATED_SERVICE_MODE" value="TRUE"/>  
<!-- Package Type -->  
  
<!--Omniture settings-->  
<add key="OMNITURE_IS_ENABLED" value="FALSE"/>  
<!--Omniture settings-->
```

19. The Terms of service and conditions of use can be provided on Login page for user logging onto the site to see. Organizations terms of use for using the site can be provided by updating “TermsOfUse.txt” document. This document can be found in “EICloudDataCapture\ApplicationAndServices\Content\Text” folder of the application package. Once the document has been updated with correct text it needs to be updated on the web server in “EICloudDataCapture\Content\Text” folder.

Terms of service and conditions of use

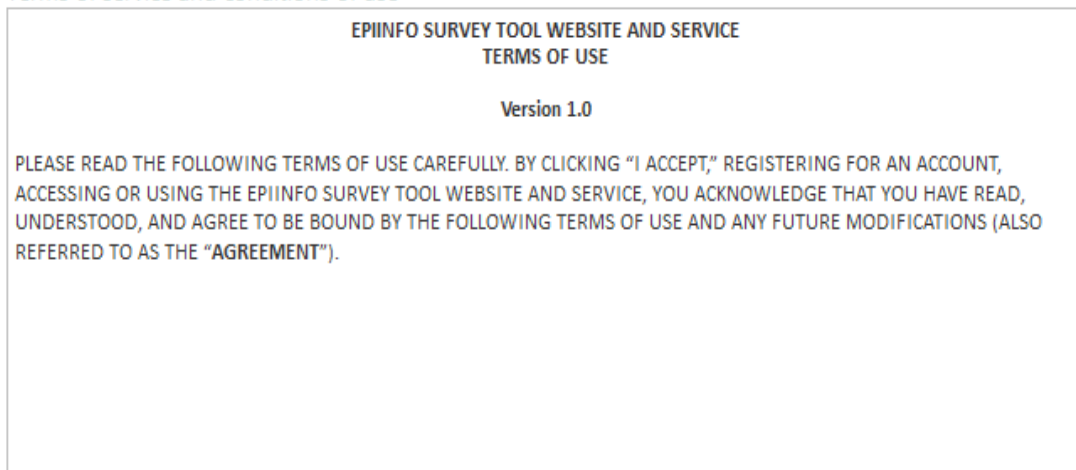


Figure 17: The Terms of service and conditions of use section on Login page

The Terms of service and conditions of use is visible on the Login page as the default setting controlling the display is TRUE. To hide the section change the value to “FALSE” for TermsOfUse setting:

```
<add key="SHOW_TERMS_OF_USE" value="TRUE"/>
```

Note: The html in “TermOfUse.txt” can be used as reference to create your Terms of Use. If you want your text to be formatted in any other manner, the

HTML equivalent of your text along with it's styles need to be provided in this document.

20. The Epi Info™ Cloud Data Capture system can be deployed with one of the color themes provided below. These color themes control the presentation of controls on the form created by the form designer. The chosen color theme is applied site wide and would be applicable to all the data collection forms published to the web application. The chosen color theme controls three aspects of the data collection form:

- a) The rectangular box that displays a Group box title will be the color of the theme in the first column as shown below.
- b) The border for the Group box and color for the arrow present for dropdowns will be color of the theme in the second column.
- c) The background color for Group box will be the color of the theme in column three as shown below.
















	Labelbox on Groupbox	Groupbox border, Dropdown arrow	Groupbox background color
default			
epiform_orangebrown			
epiform_mid_bluegreen			
epiform_light_bluegreen			
epiform_charcoalgreen			

Figure 18: Form color themes available in Epi Info Cloud Data Capture

The screenshot below shows the color for a Group box's label, border, and background, and the color of the arrow for a dropdown when the chosen color theme is epiform_mid_bluegreen. This is the default theme.

GROUP BOX EXAMPLE WITH OPTIONS

Option 1
 Option 2
 Option 3
 Option 4
 Option 5
 Option 6

Legal Value

Comment Legal

Yes / No

Figure 19: Sample showing the controls that are impacted by form theme

To enable a color theme, update the value of “FormTheme” in the web.config file with name of the color theme that you want to use for your organization.

```
<add key="FormTheme" value="default"/>
```

The value for color theme can be one of “default”, “epiform_orangebrown”, “epiform_mid_bluegreen”, “epiform_light_bluegreen”, “epiform_charcoalgreen”

21. The site renders data collection forms developed on a form designer’s machine. The globalization element shown below controls the rendering of the form. The value of culture and uiCulture in the globalization element should match that of the form designer’s machine. Below is the default value provided in the web.config file for a site being configured to render a form developed on a machine in United States:

```
<globalization enableClientBasedCulture="true" requestEncoding="utf-8"
responseEncoding="utf-8" culture="en-US" uiCulture="en-US" />
```

Update the value of culture and ui-culture with the correct values based on the culture present on form designer’s machine. For example, the culture value string for Brazil is “pt-BR”, for France it is “fr-FR” and for Mexico it is “es-MX”. Additional values can be found on the following Microsoft site:

<https://www.microsoft.com/resources/msdn/goglobal/default.aspx>

3.5 STARTING THE SYSTEM

To start the system, perform following steps:

1. Navigate to system's URL: http://<SERVER_NAME>/EpiInfoDataCapture/Login
2. Click on Forgot Password (only for Forms authentication application)
3. Enter the email address which was given during the time of running the initial scripts on the database (only for Forms authentication application)
4. An email will be sent out with temporary password (only for Forms authentication application)
5. Log in using the temporary password and reset your password (only for Forms authentication application)
6. Navigate to Site Administration section by click on the link.
7. Create a new organization if needed.
8. Create Users/Admins for the current organization.
9. Design your form to be published to Epi Info Cloud Data Capture site using the Epi Info™ 7 Form Designer.
10. When the form has been designed and is ready to publish, you will be required to provide the endpoint address of the Epi Info Cloud Data Capture Manager Service, authentication and protocol information. The information goes in the "Tools>Options menu item in the Epi Info 7 Form Designer, on the "Cloud Data Capture" tab. After adding the information Ping the service. Upon successful Ping save the information by clicking OK.

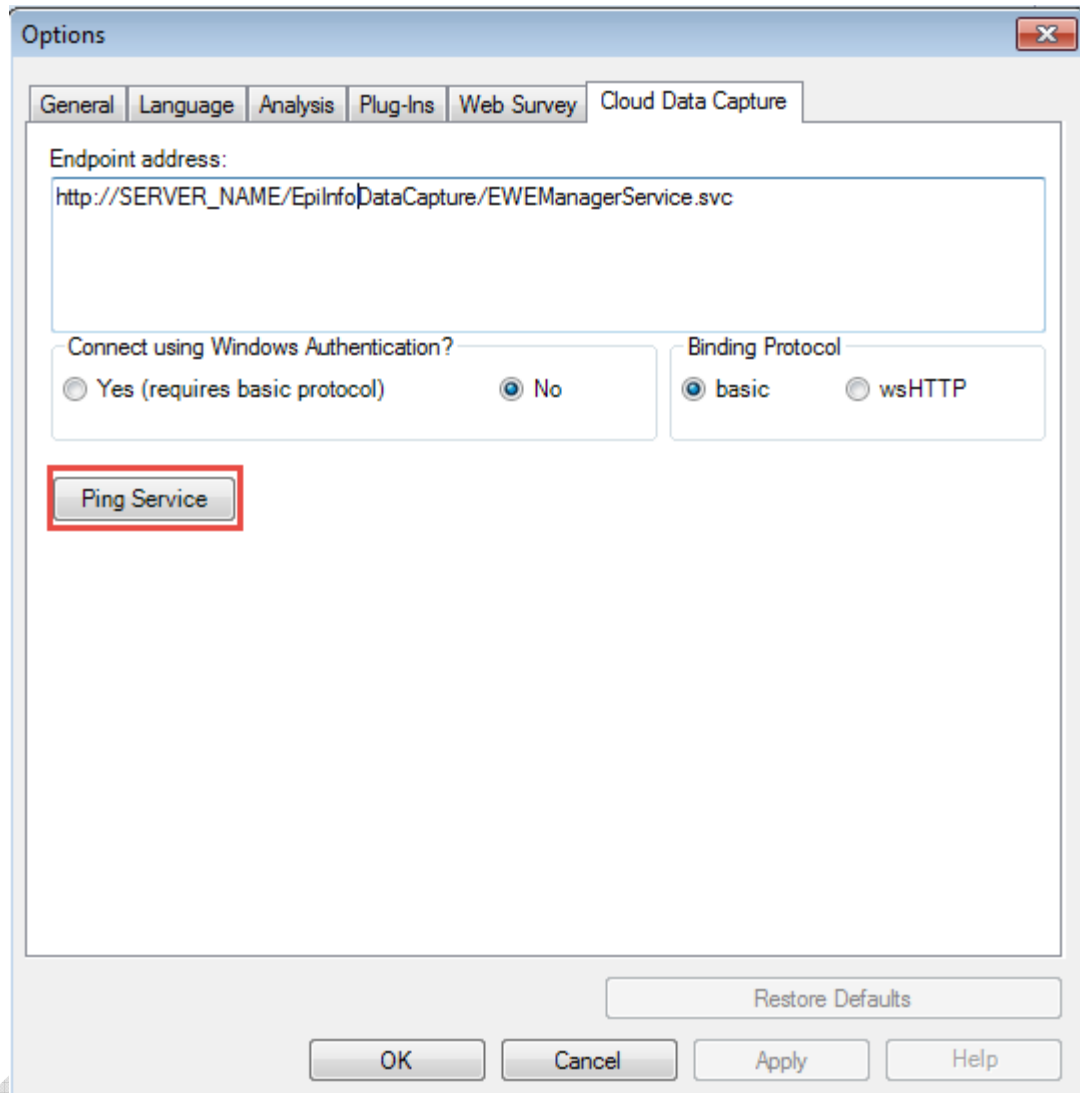


Figure 20: Option to provide the Manager Service endpoint information in Epi Info™ 7 Form Designer

11. Start the process of publishing the designed form to web by selecting the File > Publish Form to cloud data capture menu item on the Epi Info™ 7 Form Designer.

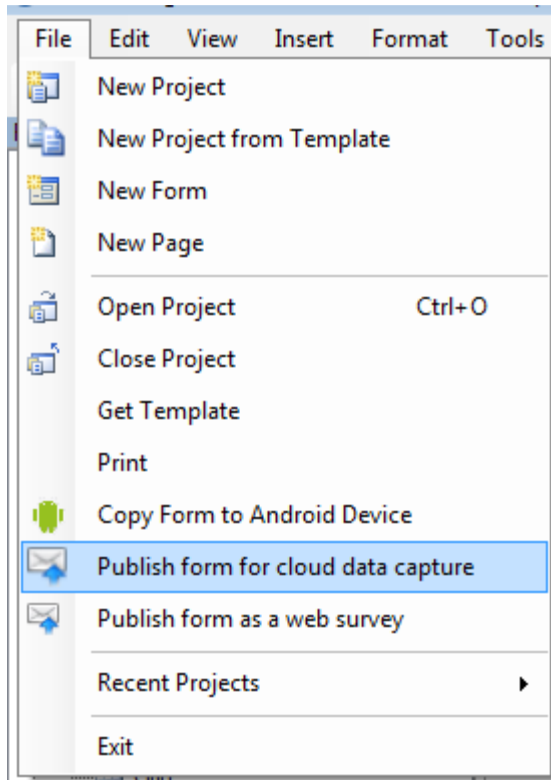


Figure 21: Publish Form for cloud data capture menu item under the File menu in Epi Info™ 7 Form Designer

12. Provide the User Authentication information in the Log In dialog (for Forms authentication).

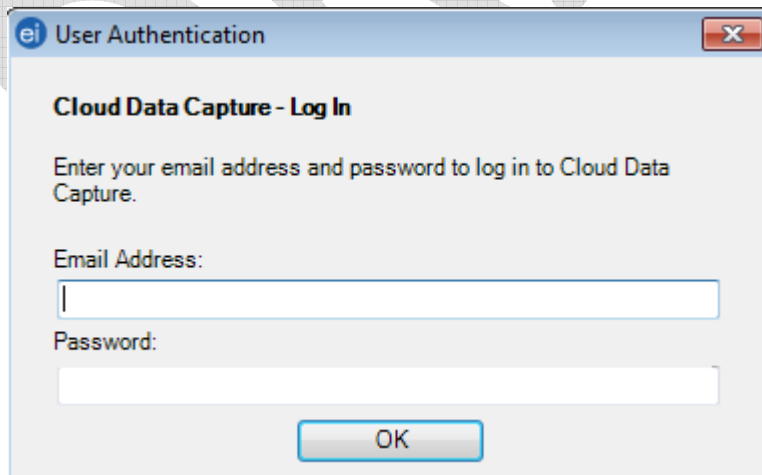


Figure 22: User Authentication dialog during the publish process in Epi Info 7.

13. Provide the Organization key in Organization Key (required) text box in Publish Options tab and click the Publish Form button.

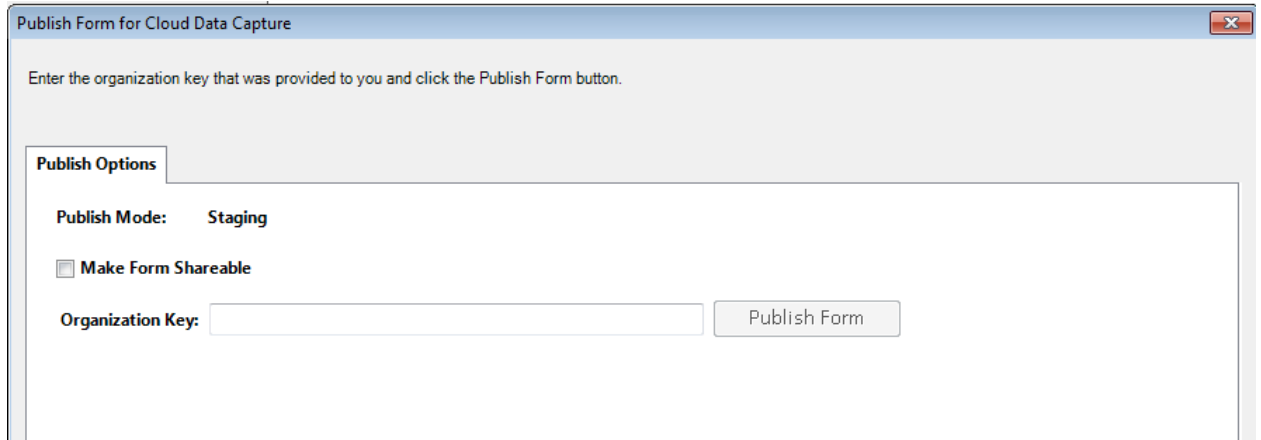


Figure 23: Publish Form for cloud data capture dialog for publishing for in Epi Info 7.

14. Upon successfully publishing the form using Epi Info™ 7, you will receive a URL to launch the application, Form Id and Security Token as shown in the figure below.

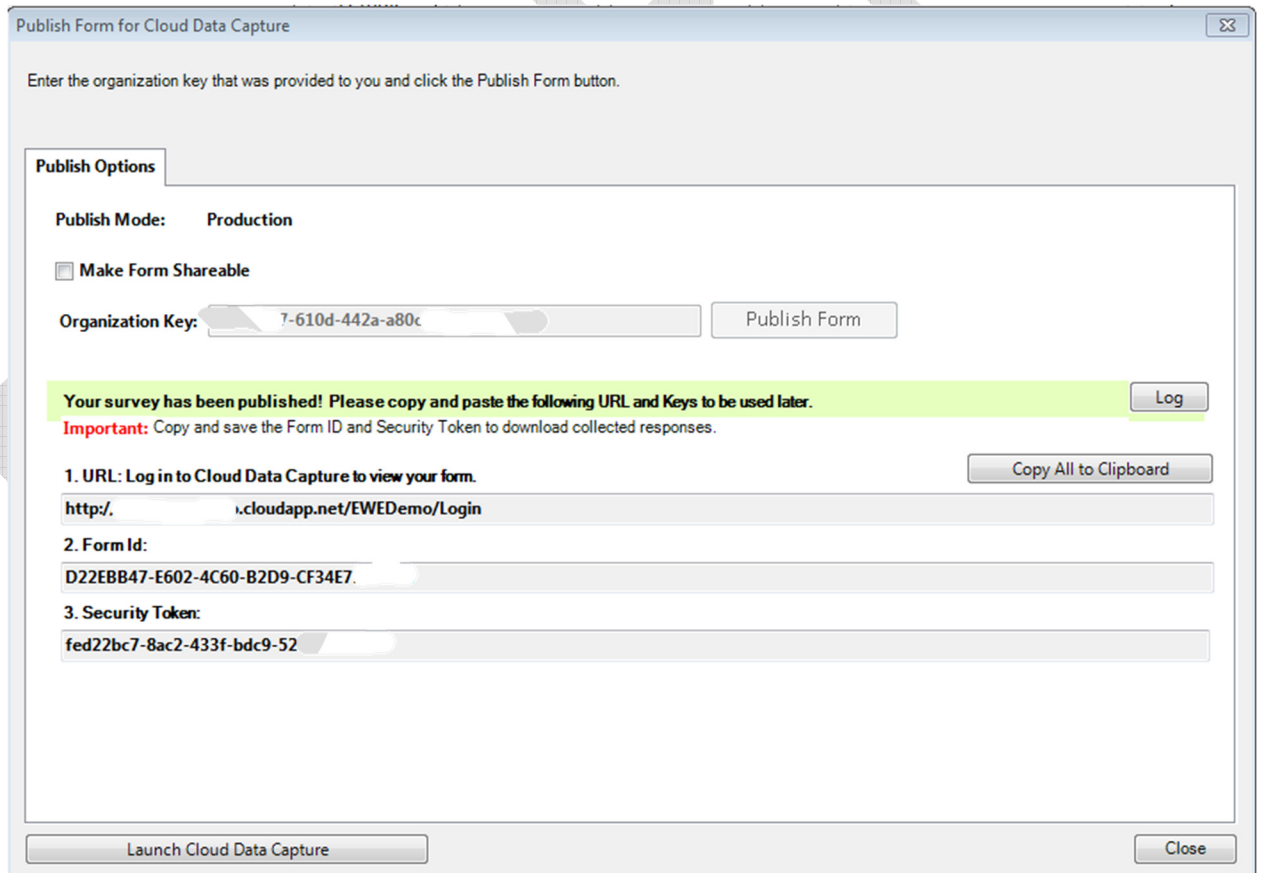


Figure 24: Publish Form for cloud data capture dialog in Epi Info™ 7 Form Designer showing the result of successfully publishing the form.

15. Access the Cloud Data Capture site by clicking on “Launch Cloud Data Capture” button.
16. Make sure that you have saved the Form Id and Security Token if the form is to be used for collecting data in the production environment. It can be saved using the Copy All to Clipboard button, then pasting the information in a document. The information will be needed for downloading form responses back to Epi Info for analysis if automation is not enabled for the configured site.

4 APPLICATION UPGRADE

If you are installing the Epi Info Cloud Data Capture system for the first time, please skip this section. This section describes the steps needed **to upgrade an existing instance** of the Epi Info Cloud Data Capture system to the latest version.

4.1 ACCESS CONTROLS

4.1.1 Database

The person upgrading an existing database should have full administrative access on the database server and have the rights and privileges to update the database.

4.1.2 Application and services

The person updating and configuring the existing version of the system and services should have administrative access on the web server and should have full access and privileges to update a web application in Internet Information Services (IIS).

4.2 INSTALLING THE UPGRADED VERSION

The installation can be done using the **EICloudDataCapture** package. The package for installation of the system consists of two items: 1) the database in the **Database** folder; and 2) the application and services in the **ApplicationAndServices** folder. The Configuration section describes how these items are used.

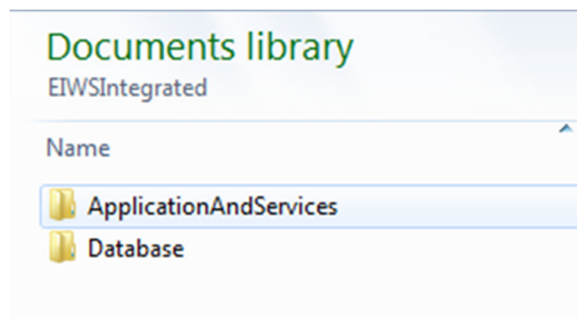


Figure 25: File systems showing components in the EIWSIntegrated package

4.3 CONFIGURATION

4.3.1 Prerequisite

Prior to upgrade, you must determine the current version of the Epi Info™ Cloud Data Capture system deployed in your environment. This is a **critical requirement** for applying the appropriate delta scripts to upgrade the database.

The version of Epi Info™ Cloud Data Capture can be determined by one of the following methods:

- a) Check the value of “EIWS_Version” key in web.config file of your existing website. The value shown below is only an example and is not reflective of the value in your web.config file.

```
<add key="EIWS_Version" value="1.0.0.0"/>
```

- b) Open the URL for the Login page by replacing the “SERVER_NAME” and “APPLICATION_NAME” with the server name and application name of your installation. http://SERVER_NAME/APPLICATION_NAME/Login

The footer of the page shows the version number of the current application.

4.3.2 Database Configuration

The database configuration involves applying the update to the existing instance of the Epi Info™ Cloud Data Capture database on the SQL Server 2008/2012 database server. The update of the database may require the assistance of a SQL Server database administrator (DBA) if access to the database server is managed by the DBA. The update script should be changed as needed for local circumstances or according to best practices followed by the organization deploying this system.

1. Choose the database server where the Epi Info™ Cloud Data Capture database is hosted. Log into the database server using an account which has admin privileges to update the database, manage database users and assign privileges to the users.
2. Make a backup of the Epi Info™ Cloud Data Capture database before attempting to apply the needed updates.
3. Determine the scripts to run for the upgrade.
 - (a) If upgrading from version 1.0 to version 1.1.1, you will have to run “EIWeb_delta_upgrade_v1.0_to_v1.1” and “EIWeb_delta_upgrade_v1.1_to_v1.1.1” delta scripts
 - (b) If upgrading from version 1.1 to version 1.1.1, you will have to run only “EIWeb_delta_upgrade_v1.1_to_v1.1.1” delta script
4. Open and execute delta script after selecting the Epi Info™ Cloud Data Capture database in SQL Server.

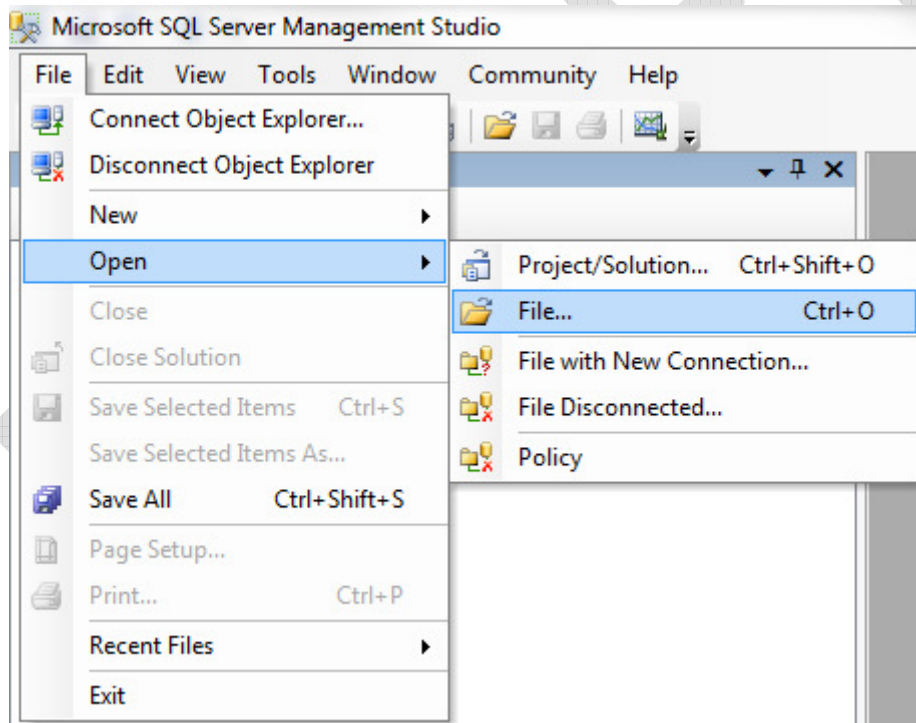


Figure 26: File menu to open the database script file

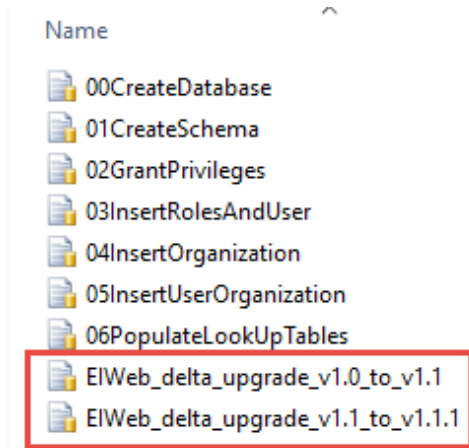


Figure 27: Open File dialog showing the delta script.

5. Make sure that Epi Info™ Cloud Data Capture database name (if it is EIWeb or the name you had provided) displays in the Available Databases drop down list in Microsoft SQL Server Management Studio.
6. Execute the script to update the database. Once the scripts have executed successfully, the updates are applied. Refresh the Epi Info™ Cloud Data Capture database instance.

4.3.3 Application and Services Configuration

The steps below assume that the **EpilInfoCloudDataCapture** web site was previously configured as an application under the default web site.

1. Navigate to the folder called “EpilInfoCloudDataCapture” under “inetpub\wwwroot”
2. Make a backup of all contents in the EpilInfoCloudDataCapture folder before making any changes.
3. Delete the content of the EpilInfoCloudDataCapture folder under “inetpub\wwwroot” after making the backup.
4. From the EICloudDataCapture package, copy the content of the folder “EICloudDataCapture\ApplicationAndServices” to “inetpub\wwwroot\EpilInfoCloudDataCapture” folder **except the web.config file**
5. Using your preferred editor, open the web.config file in the EpilInfoCloudDataCapture site and the web.config file of the backed up site for editing.

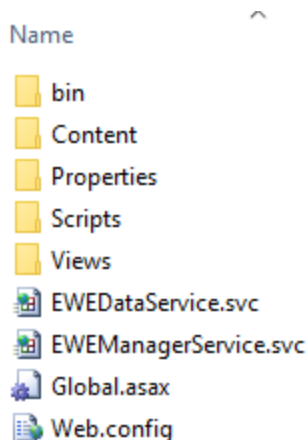


Figure 28: Web.config file for an integrated application

6. In the web.config file, locate the “Data Capture settings” section and find the line that describes the “IsDemoMode” key. Insert a blank line AFTER this line.
7. On the new blank line, insert the node for the new “FormTheme” key as shown below:

```
<add key="FormTheme" value="Default"/>
```

The screenshot below shows the new setting in the web.config file. Additional information on the color theme can be found in step 20 of Section 3.4.2.

```
<!--Data Capture settings Start-->
<add key="SHOW_TERMS_OF_USE" value="TRUE"/>
<add key="RESPONSE_PAGE_SIZE" value="20"/>
<add key="RESPONSE_PAGE_SIZE_Mobile" value="10"/>
<add key="ENDPOINT_ADDRESS" value="http://SERVER_NAME/APPLICATION_NAME/EWEManagerService.svc"/>
<add key="BINDING_PROTOCOL" value="Basic"/>
<add key="WINDOW_AUTHENTICATION" value="No"/>
<add key="BaseUrl" value="http://SERVER_NAME/APPLICATION_NAME/Login"/>
<add key="SEND_EMAIL_TO_ASSIGNED_USERS" value="TRUE"/>
<add key="IsEWAVLiteIntegrationEnabled" value="FALSE"/>
<add key="EWAVLiteBaseUrl" value="http://SERVER_NAME/EWAVLITE_APPLICATION_NAME/app/index.html"/>
<add key="IsDemoMode" value="false"/>
<add key="FormTheme" value="epiform_mid_bluegreen" />
<!--Data Capture settings End-->
```

Figure 29: FormTheme setting in Data Capture settings section

4.3.4 Data Collection Form configuration

With version 1.1 of the Epi Info™ Cloud Data Capture system, we introduced certain performance optimizations. The data collection form deployed with Version 1.0 of the system will not work as expected if they contain Legal Value and Comment Legal dropdown lists. **Immediately after this system upgrade, we recommend that publishers of data collection forms republish their forms before data entry resumes. Republishing the forms will update the forms'**

metadata to properly populate Legal Value and Comment Legal dropdown lists.

5 SYSTEM USAGE

5.1 INSTRUCTIONS

The Epi Info™ Cloud Data Capture system is used with Epi Info™ 7 to publish forms created in the Epi Info™ 7 Form Designer. The process of publishing an Epi Info™ 7 form enables the form for data collection on the web. User of the organization that the publisher is part of can be assigned to the form for data collection purposes. Authorized users can then log into the site and help with the data collection process. The collected data is available to view and manage through the system. The responses can be downloaded to Epi Info™ 7 any time after for analysis using the security information received at time of publish. For Epi Info SQL Server projects when automation is enabled the data is instantaneously available in Epi Info for analysis without having to download.

5.2 CONVENTIONS AND ERROR MESSAGES

5.2.1 Epi Info™ Cloud Data Capture Manager Service Test

The first step before using the system involves the process of pinging Epi Info™ Cloud Data Capture Manager Service by typing its URL and configuration information in Epi Info and pinging the service. If you are not able to ping the service, the error message with possible cause of exception will be displayed as shown below (note: the error message you receive may be different than that shown below)

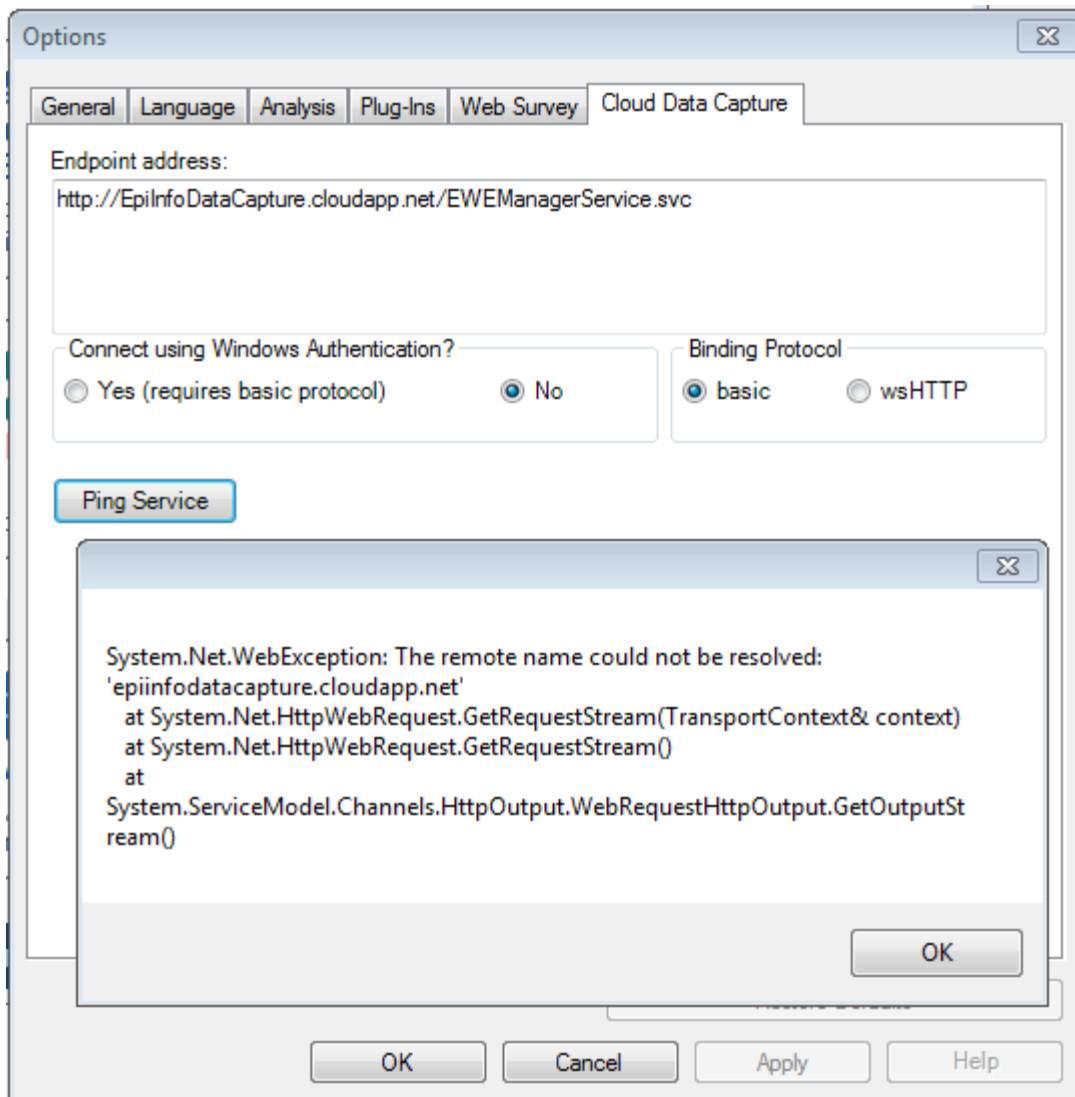


Figure 30: Error message when the Manager Service is not accessible

The possible causes could be:

1. The Epi Info™ Cloud Data Capture Manager Service URL or Windows Authentication and/or Binding Protocol information is not correct. Please confirm the Windows Authentication and Binding Protocol information is correct. Also validate that the URL is correct by browsing to the URL in the browser. If the URL is correct you should get a page as shown below.

EWEManagerService Service

You have created a service.

To test this service, you will need to create a client and use it to call the service. You can do this using the svcutil.exe tool from the command line with the following syntax:

```
svcutil.exe http://[redacted]/EWEDemo/EWEManagerService.svc?wsdl
```

You can also access the service description as a single file:

```
http://[redacted]/EWEDemo/EWEManagerService.svc?singleWsdl
```

This will generate a configuration file and a code file that contains the client class. Add the two files to your client application and use the generated client class to call the Service. For example:

C#

```
class Test
{
    static void Main ()
    {
        EWEManagerServiceClient client = new EWEManagerServiceClient();

        // Use the 'client' variable to call operations on the service.

        // Always close the client.
        client.Close();
    }
}
```

Visual Basic

```
Class Test
Shared Sub Main()
Dim client As EWEManagerServiceClient = New EWEManagerServiceClient()
' Use the 'client' variable to call operations on the service.

' Always close the client.
client.Close()
End Sub
End Class
```

Figure 31: Manger Service accessible in browser.

2. If you do not get the page shown above then the system has not been configured properly and would require reconfiguration

5.2.2 Database Connection String Test

A problem with application connection string can be validated by navigating to the following URL in the browser:

http://SERVER_NAME/APPLICATION_NAME/EIWST/DataService

Update the SERVER_NAME and APPLICATION_NAME marked in yellow in the value for the URL.

- i. SERVER_NAME is the Domain Name Server (DNS) name of the web server where the application is hosted.
- ii. APPLICATION_NAME is the application name created in IIS.

If there is a problem with the application connection string, you would get an error message for the Database Test section of the results as shown in the figure below.

Epi Info™ Cloud Data Capture
Data Service and Database Test Results

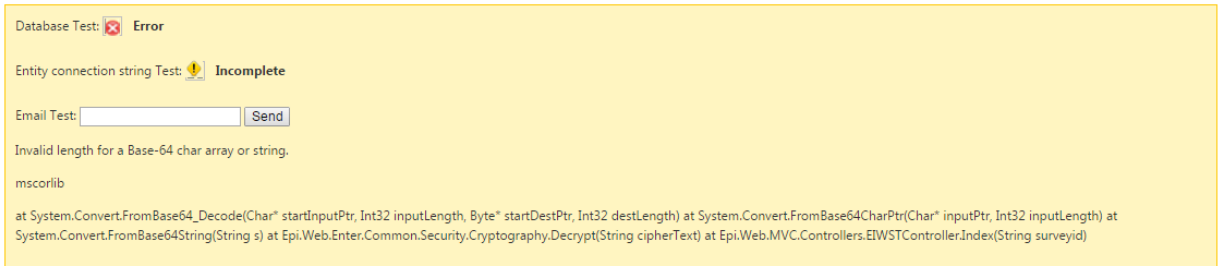


Figure 32: Epi Info™ Cloud Data Capture diagnostics view showing status when the application is not able to communicate with the database server.

After the indicator for various tests, there is some technical information on the cause of error. This is a validation that there is certainly something wrong with the connection string. This requires inspection of every part of the plain text connection string EIWSADO and making sure that it has the same format as provided in this documentation.

After updating the EIWSADO connection string, open the test URL again. The result screen will get updated as shown below if the connection string is correct.

Epi Info™ Cloud Data Capture
Data Service and Database Test Results

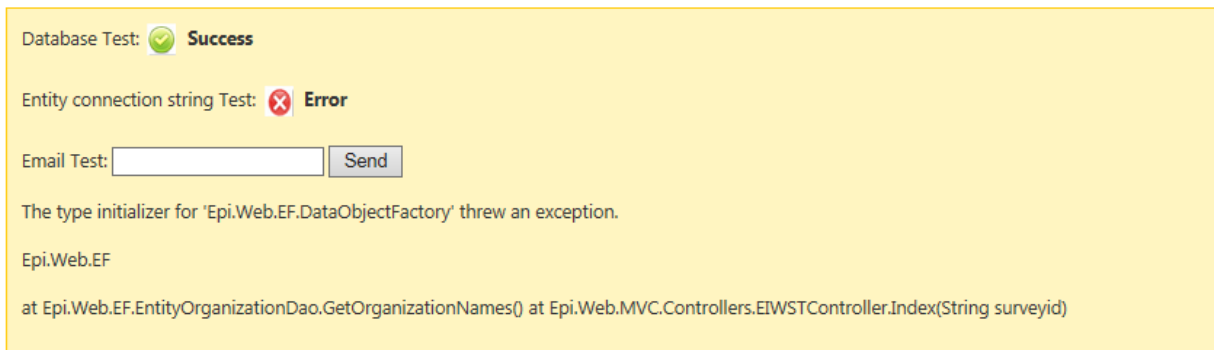


Figure 33: Epi Info™ Cloud Data Capture diagnostics view showing status when the application can communicate with the database server, but an error exists with the connection string.

5.2.3 Application's Database Connection String Test

Once the EIWSADO connection string is correct then use the relevant pieces of the plain text connection string to update the relevant section of the EIWSEntities connection string according to the documentation. If the EIWSEntities connection string is correct, repeat the step as above by navigating to the URL again:

http://SERVER_NAME/APPLICATION_NAME/EIWS/DataService

If the EIWS Entities connection string is set up correctly, you should get the result as shown below.

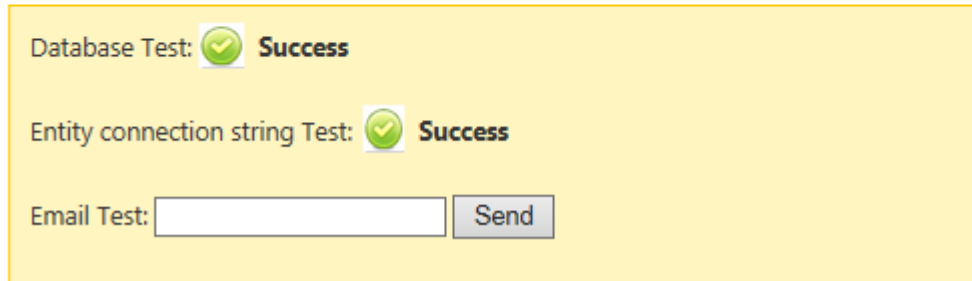
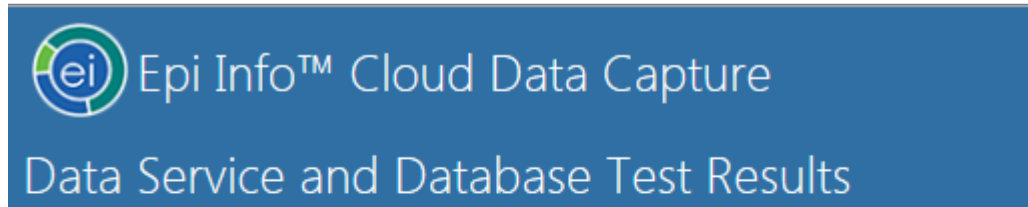


Figure 34: Epi Info™ Cloud Data Capture diagnostics view showing status when the applications connection strings are set up correctly.

5.2.4 SMTP Server Test

The application depends on availability of an SMTP server to successfully send email. The system cannot be used if email functionality is not working. Email Test should allow you to get a confirmation if the system is able to send outgoing emails. If the SMTP server is available and the web server has ports open to send emails then you should get a confirmation stating “An email has been sent”.

APPENDIX A: REFERENCES

The following table summarizes the documents referenced in this document.

Document Name and Version	Description	Location
Epi Info Web Security Utility Help.pdf	This document describes the Epi Info™ Web Security Utility can be used to configure system security keys and encrypt connection string	/EiCloudDataCapture/Documents

DRAFT

APPENDIX B: APPLICATION SETTINGS

The following table summarizes all the settings applicable to the latest version of Epi Info™ Cloud Data Capture application and services.

Category	Settings
MVC Setting	<add key="aspnet:UseTaskFriendlySynchronizationContext" value="true" />
	<add key="webpages:Version" value="2.0.0.0" />
	<add key="webpages:Enabled" value="false" />
	<add key="PreserveLoginUrl" value="true" />
	<add key="ClientValidationEnabled" value="true" />
	<add key="UnobtrusiveJavaScriptEnabled" value="true" />
Epi Info™ Cloud Data Capture Version	<add key="EIWS_Version" value="Version Number"/>
Email Notification	<add key="EMAIL_USE_AUTHENTICATION" value="FALSE"/>
	<add key="EMAIL_USE_SSL" value="FALSE"/>
	<add key="EMAIL_FROM" value="XXXXXXXXXXXXXXXXXXXX"/>
	<add key="EMAIL_PASSWORD" value="XXXXXXXXXXXXXXXX"/>
	<add key="SMTP_PORT" value="XXXXXXXXXX"/>
	<add key="SMTP_HOST" value="XXXXXXXXXXXXXXXX"/>

Log Setting	<add key="LOGGING_SEND_EMAIL_NOTIFICATION" value="FALSE"/>
	<add key="LOGGING_ADMIN_EMAIL_ADDRESS" value="XXXXX"/>
	<add key="LOGGING_EMAIL_SUBJECT" value="Epi Info™ Cloud Data Capture - Exception"/>
Caching	<add key="CACHE_IS_ON" value="FALSE"/>
	<add key="CACHE_DURATION" value="20"/>
	<add key="CACHE_SLIDING_EXPIRATION" value="TRUE"/>
Binding	<add key="ENDPOINT_USED" value="basicHttpBinding_managerservice"/>
Messages	<add key="SURVEY_NOT_EXISTS" value="The Survey does not exist. Please check the survey link and try again."/>
	<add key="SURVEY_SUBMITTED_MESSAGE" value="This survey has been submitted."/>
	<add key="SURVEY_CLOSED_MESSAGE" value="This survey is currently closed. Please contact the author of this survey for further assistance."/>
	<add key="SURVEY_SUBMISSION_MESSAGE"

		value="Thank you! Your survey has been submitted."/>
		<add key="UNKNOWN_ERROR_MESSAGE" value="An unexpected error occurred. Please click the link below to return to the Home page or contact your system administrator for more information."/>
Integrated Survey Manager Service Setting		<add key="URL" value="http://SERVER_NAME/APPLICATION_NAME/Home"/>
		<add key="maxBytesPerRead" value="2048000"/>
		<add key="BandwidthUsageFactor" value="50" />
Package Type		<add key="INTEGRATED_SERVICE_MODE" value="TRUE"/>
Omniure		<add key="OMNITURE_IS_ENABLED" value="False"/>
Data Capture settings		<add Key="SHOW_TERMS_OF_USE" value="TRUE"/>
		<add key="RESPONSE_PAGE_SIZE" value="20"/>
		<add key="RESPONSE_PAGE_SIZE_Mobile" value="10"/>
		<add key="ENDPOINT_ADDRESS" value="http://SERVER_NAME/APPLICATION_NAME/EWEManagerService.svc"/>
		<add key="BINDING_PROTOCOL" value="Basic"/>

	<add key="WINDOW_AUTHENTICATION" value="No"/>
	<add key="BaseUrl" value="http://SERVER_NAME/APPLICATION_NAME/Login"/>
	<add key="SEND_EMAIL_TO_ASSIGNED_USERS" value="TRUE"/>
	<add key="IsEWAVLiteIntegrationEnabled" value="FALSE"/>
	<add key="IsEWAVLiteIntegrationEnabled" value="FALSE"/>
	<add key="EWAVLiteBaseUrl" value="http://SERVER_NAME/EWAVLITE_APPLICATION_NAME/app/index.html"/> <add key="FormTheme" value="epiform_mid_bluegreen" />
Password Policy	<add key="PasswordMinimumLength" value="6"/>
	<add key="PasswordMaximumLength" value="10"/>
	<add key="NumberOfTypesRequiredInPassword" value="3"/>
	<add key="TotalNumberOfTypesInPassword" value="4"/>
	<add key="UseNumbers" value="true"/>
	<add key="UseUpperCase" value="true"/>
	<add key="UseLowerCase" value="true"/>
	<add key="UseSymbols" value="true"/>
	<add key="Symbols" value="@#\${} {}^"/>
	<add key="RepeatCharacters" value="true"/>

	<add key="ConsecutiveCharacters" value="false"/>
	<add key="UseUserIdInPassword" value="true"/>
	<add key="UseUserNameInPassword" value="true"/>
Encryption keys	<add key="KeyForUserPasswordSalt" value="KeyValue" />
	<add key="KeyForConnectionStringPassphrase" value=" KeyValue " />
	<add key="KeyForConnectionStringSalt" value=" KeyValue " />
	<add key="KeyForConnectionStringVector" value="KeyValue/" />
Connection strings	<add name="EIWSEntities" connectionString="encrypted connection string" />
	<add name="EIWSADO" connectionString="Encrypted connection string" />