

ClearControls[®]



iHistorian

iHistorian Manual

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Overview

ReLab iHistorian is part of ReLab Industrial Software Platform. It will allow you to seamlessly store your data in a database at a rate of tens thousands records per second. iHistorian is part of OPC PRODUCT SUITE installation.

iHistorian is a real-time data historian developed by ReLab Software LLC. The iHistorian records data values over time in relational databases such as Oracle, Microsoft SQL Server and others. All types of data can be recorded and each distinct piece of data is known as a iHistorian data point (tag). For a given iHistorian data point, you record its events or data values over time. The recording of different data over time allows for historic data graphing and analysis using other tools.

Highlights

- ✚ Thousands records per second
- ✚ Oracle, Microsoft SQL Server and other relational databases
- ✚ Easy to use
- ✚ Supports redundancy, parallel systems or a single database
- ✚ ODBC Compliant

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Operating System and Hardware Requirements

Operating System (OS)

Microsoft Workstations

- ✓ Windows 8
- ✓ Windows 8.1
- ✓ Windows 10
- ✓ Windows 11

Microsoft Servers

- ✓ Windows Server 2012, 2012-R2
- ✓ Windows Server 2016
- ✓ Windows Server 2019
- ✓ Windows Server 2022

Microsoft SQL Servers

- ✓ SQL Server 2016
- ✓ SQL Server 2017
- ✓ SQL Server 2019
- ✓ SQL Server 2022

Oracle Databases

- ✓ Oracle 12cR1
- ✓ Oracle 12cR2
- ✓ Oracle 18c
- ✓ Oracle 19c

Hardware

- ✓ Processor i5 (minimum)
- ✓ 4GB RAM available (minimum)
- ✓ 120 GB hard drive disk space available (minimum)
- ✓ TCP/IP network interface adapter

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iHistorian Architecture

ReLab iHistorian includes the following components:

- iHistorian run-time (iHistorian.exe)
- iHistorian configuration (iHistorian Console.exe)
- iHistorian Proxy (iHistorian_Proxy.dll)

Note: iHistorian proxy is used to start iHistorian run-time programmatically via. Protocol Server Bridge or other interfaces.

Configuration

Single Database Mode

Inserts historical data into a single database.

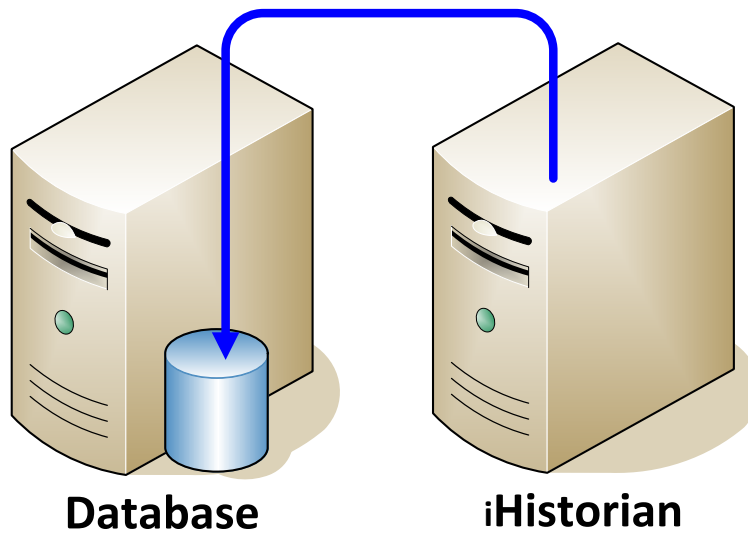


Figure 1

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Parallel Database Mode

Inserts historical data into two databases simultaneously.

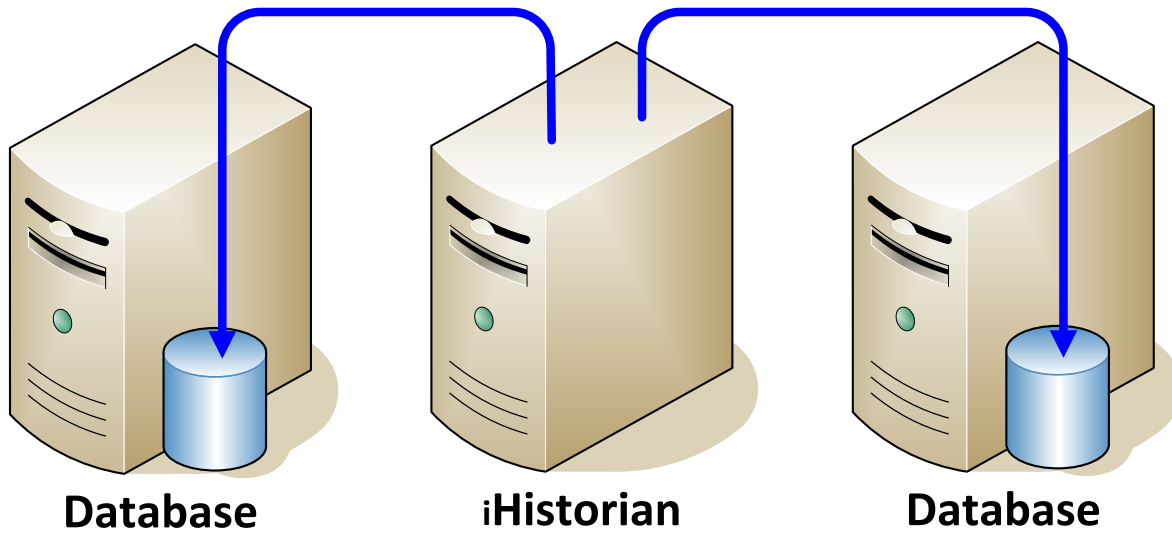


Figure 2

Redundant Database Mode

Inserts historical data into active database.

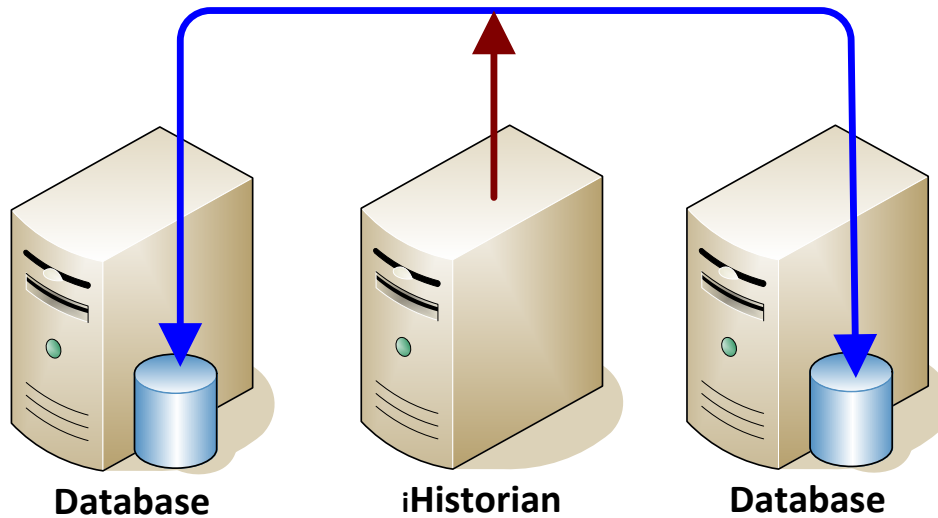


Figure 3

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Registering iHistorian

After you purchase a license you will need to register iHistorian on your machine. To register the Data Historian Configuration Console and click on **Register iHistorian** toolbar button.

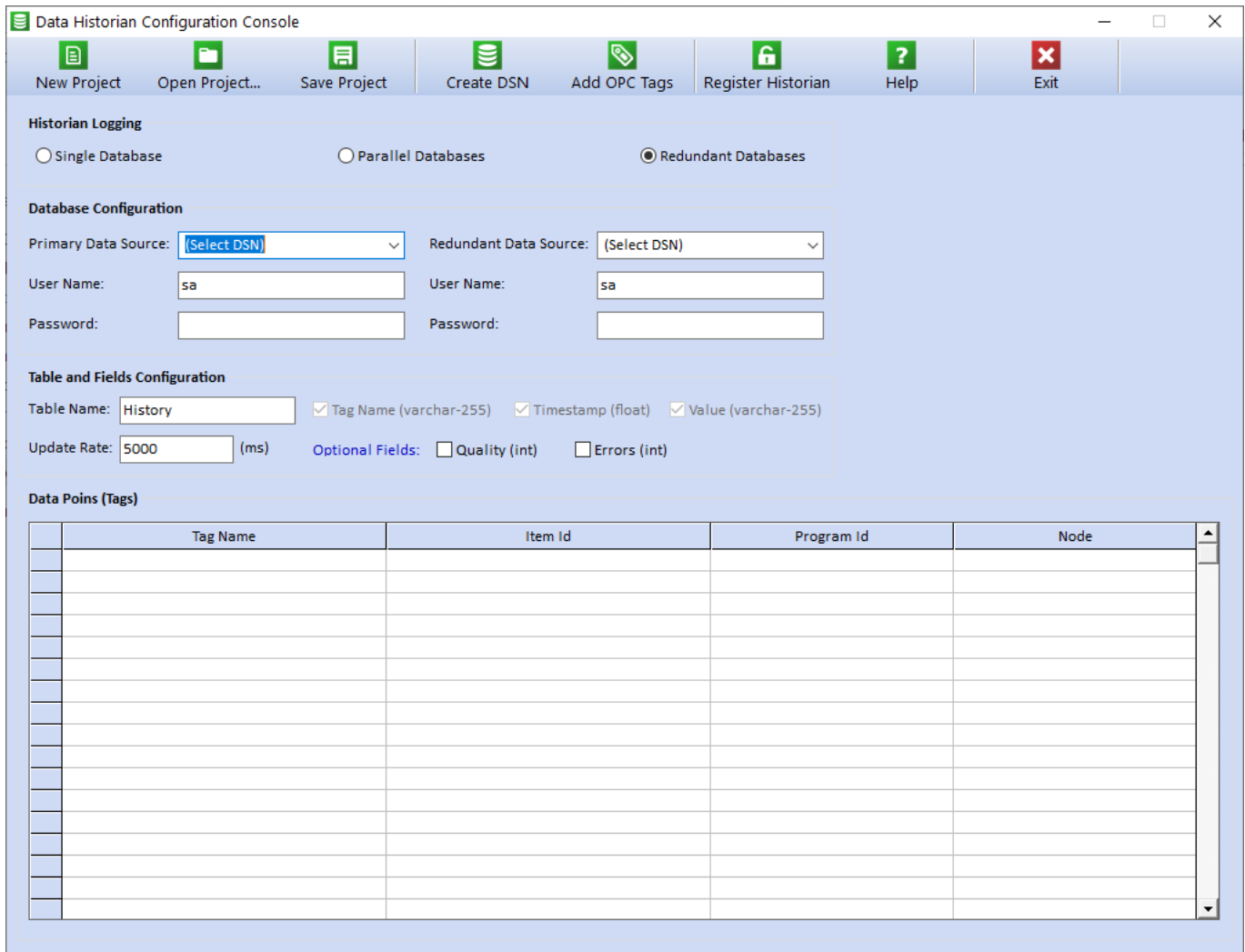


Figure 4

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The licensing interface will appear



Licensing

ReLab SOFTWARE

Customer ID:
F9682FE274018B107E0E7E1062EA760668027D0D48

Key Code:

Warning: This Computer program is protected by copyright law and international treaties. Unauthorized reproduction and distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.

Cancel OK

Figure 5

Copy and paste **Customer ID** in to email addressed to sales@relabsoft.com

ReLab Software sales department will generate a license **Key Code** and it would send out an email.

After receiving an email with **Key Code** license you will need to enter the license in to text box below and click on **OK** button.

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Configuring iHistorian

The screenshot shows the 'Data Historian Configuration Console' window. It features a menu bar with options: New Project, Open Project..., Save Project, Create DSN, Add OPC Tags, Register Historian, Help, and Exit. The main area is divided into several sections:

- Historian Logging:** Three radio buttons for 'Single Database', 'Parallel Databases', and 'Redundant Databases'. 'Redundant Databases' is selected.
- Database Configuration:** Two sets of fields for 'Primary Data Source' and 'Redundant Data Source', each with a '(Select DSN)' dropdown. Below are 'User Name' (both set to 'sa') and 'Password' fields.
- Table and Fields Configuration:** 'Table Name' is 'History'. Checkboxes for 'Tag Name (varchar-255)', 'Timestamp (float)', and 'Value (varchar-255)' are checked. 'Update Rate' is '5000 (ms)'. Under 'Optional Fields', 'Quality (int)' and 'Errors (int)' are unchecked.
- Data Points (Tags):** A table with columns: Tag Name, Item Id, Program Id, and Node. The table is currently empty.

Figure 6

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New Project

1. Click on toolbar button



2. Select the logging mode by clicking the radio buttons
 - a. Single Database
 - b. Parallel Databases
 - c. Redundant Databases
3. Configure your database(s)

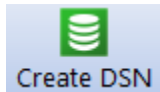
If Single Database option is selected only primary database information will be required

- **Primary Data Source** (DSN)
- Database **User Name**
- User **Password**

If Parallel or Redundant Databases option is select the primary and redundant information will be required

- **Primary Data Source** (DSN)
- Database **User Name**
- User **Password**
- **Redundant Data Source** (DSN)
- Database **User Name**
- User **Password**

4. If **Primary Data Source** or **Redundant Data Source** doesn't exist yet you can created by clicking on toolbar button



On create DSN interface specify the following fields

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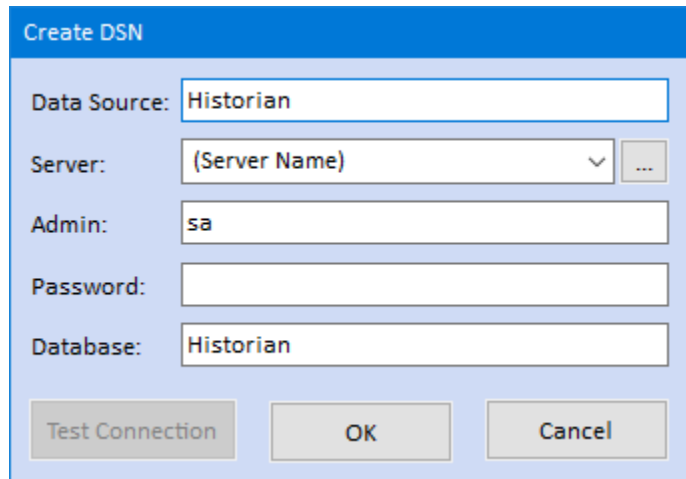


Figure 7

- In **Data Source** Field specify the name of your DSN.
- In the field **Server** specify the full name of your SQL Server.
- In the field **Admin** specify SQL Server user name with access privileges.
- In the field **Password** specify user password.
- In the field **Database** specify the connection database.
- Clicking **OK** button will create a new **Data Source** connection (DSN).
- Clicking on **Test Connection** will verify if newly create **DSN** is valid or not.
- Clicking on Cancel Button will close the interface

5. Table and Fields Configuration

- a. Specify the table name in **Table Name** textbox. This table must exist in your database.
- b. Specify optional table fields if they are present in your table (**Qualities** and **Errors**)

Note: Please note the order of the fields are mandatory for created table in order to achieve better performance iHistorian inserts data by record rather than by field. You cannot add or delete fields from this table.

We provide .SQL file capable of configuring your database (iHistorian.sql)

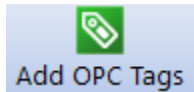
```
USE [Your Database Name Here]
GO
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
SET ANSI_PADDING ON
GO
CREATE TABLE [dbo].[Your Table Name Here](
    [Tag] [varchar](255) NULL,
    [DateTimeStamp] [float] NULL,
    [HistoryValue] [varchar](255) NULL,
```

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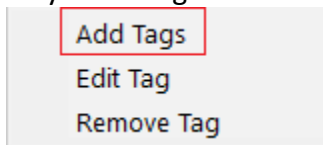
```
[Qualities] [int] NULL,  
[OPCErrors] [int] NULL  
) ON [PRIMARY]  
GO  
SET ANSI_PADDING OFF  
GO
```

- If **Errors** filed are NOT required you can delete this filed from your .sql file
 - If **Qualities** filed are NOT required you will need to delete both fields **Errors** and **Qualities** from your .sql file
 - You can change the names of your fields
6. Specify login Update Interval (minimum 1000ms / 1second). Anything quicker than ones per second may create an issue with performance of your iHistorian server.
 7. Data Point (Tags)

You can add Data Points to your configuration by clicking on toolbar button



Or you can right click on **Data Points (Tags)** interface grid module and select **Add** context menu



- a. The **Add OPC Items...** interface will open
- b. On the left side navigate to required OPC Server and folder
- c. On the right side all tags created by OPC Server will appear
- d. Select tags need to be mapped to iHistorian (for multiple selection use Ctrl & Shift keys)
- e. After the tags are selected click on **OK** button

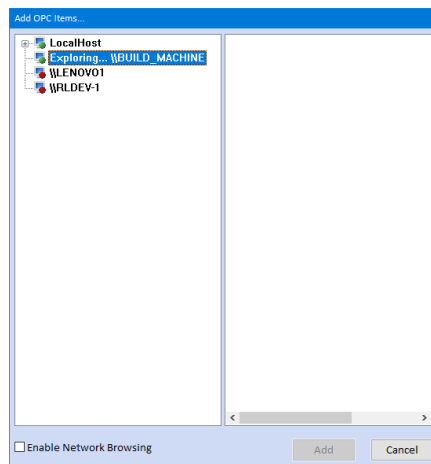


Figure 8

- f. The tags will appear in on main interface

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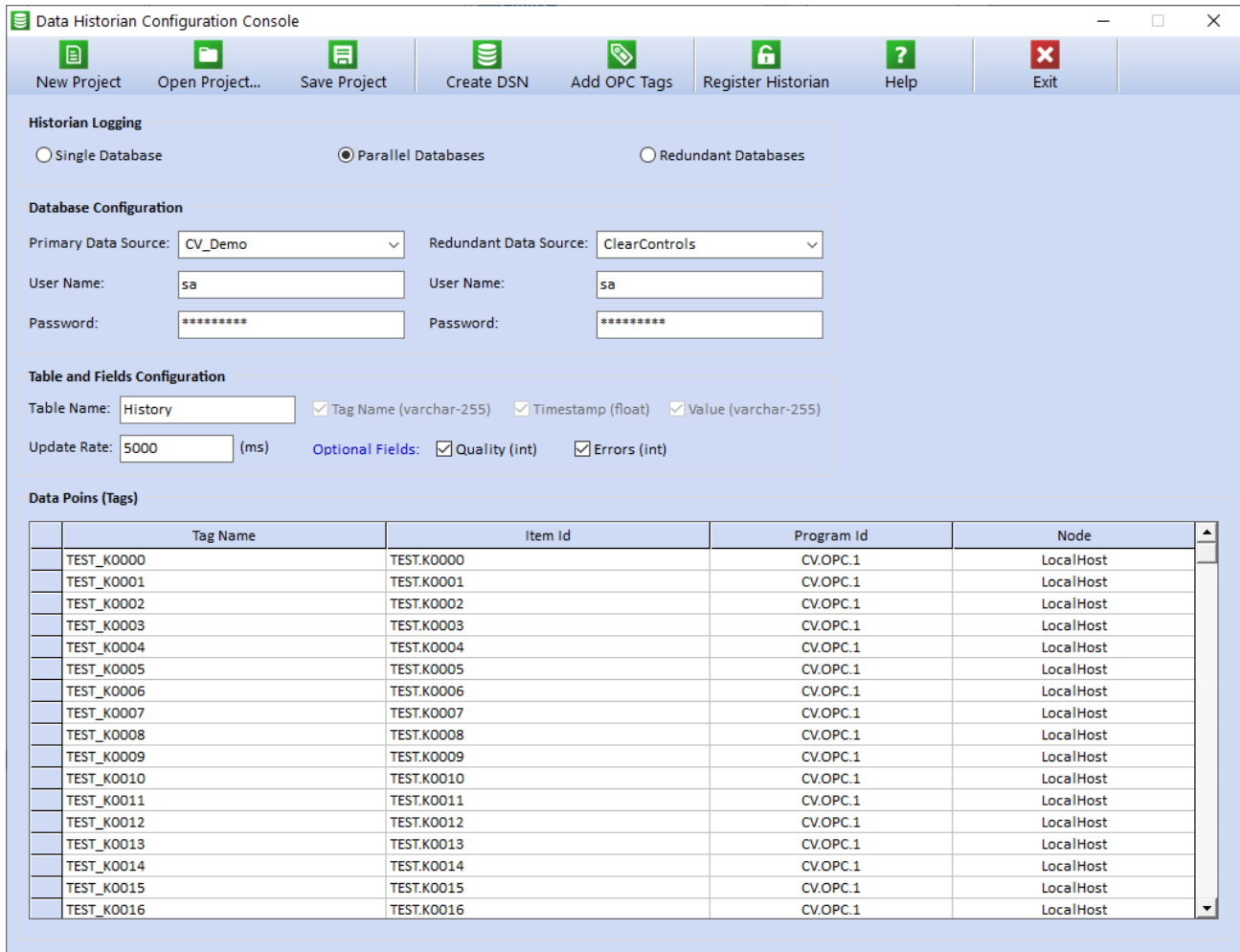
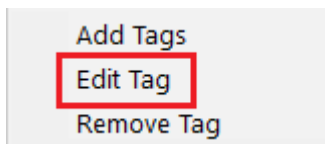


Figure 9

Note: If you accidentally mapped the same data point multiple times the iHistorian will automatically rename the tag with underscore and the row number.

g. You can edit the tag names by using a context menu.



- To edit the tag, select required tag and click on **Edit Tag** in context menu.
- The row you selected will be highlighted in **Green**.

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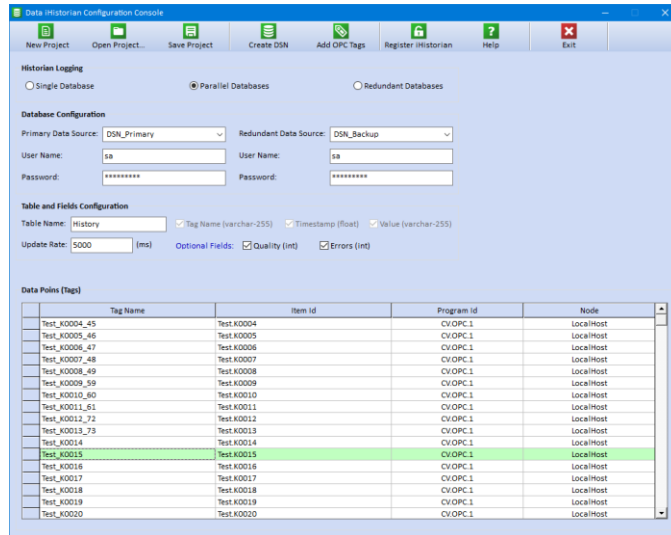


Figure 10

- Press **Enter** key and start editing the selected **Tag Name** (the **Tag Name** cell will change the color to **Yellow**).

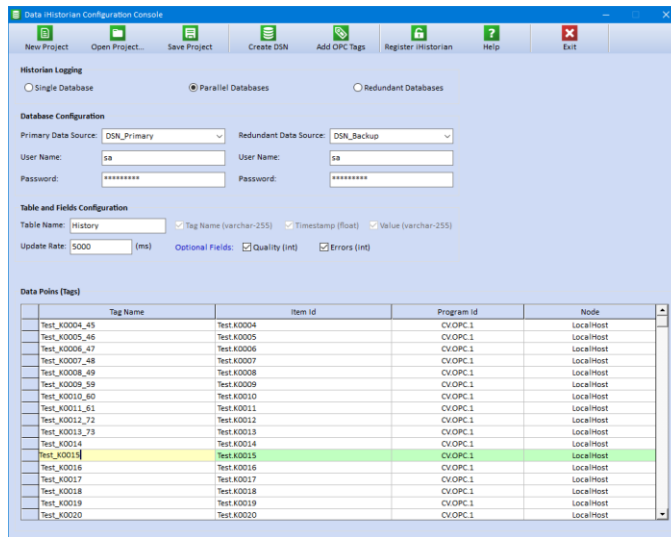
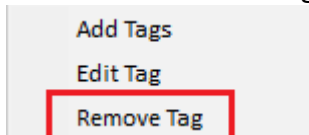


Figure 11

- After finishing editing press **Enter** key again to confirm the change.
- h. You can **Remove** the tag names by using a context menu.



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Open Project

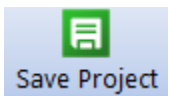
Clicking on **Open Project** toolbar button will open previously save project.



You can modify the project using procedure specified in the section **New Project**

Save Project

Clicking on **Save Project** toolbar button will save created project to default location.

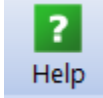


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Help and Exit

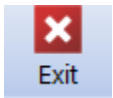
Help

Clicking on help toolbar button will open **iHistorian_Help.pdf** file.



Exit

Clicking on Exit button will close **iHistorian Configuration Console**.



Start iHistorian as Service

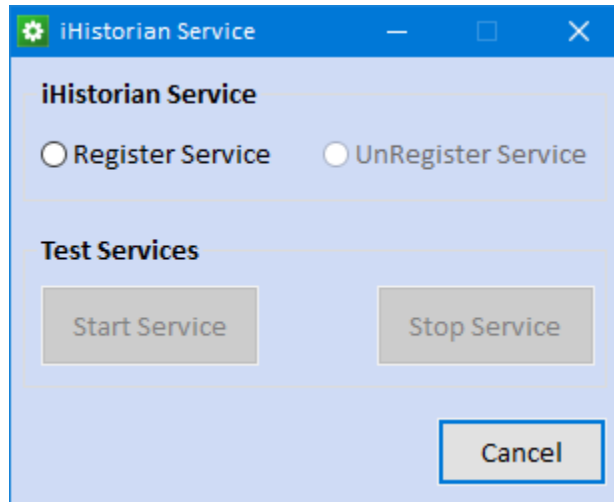


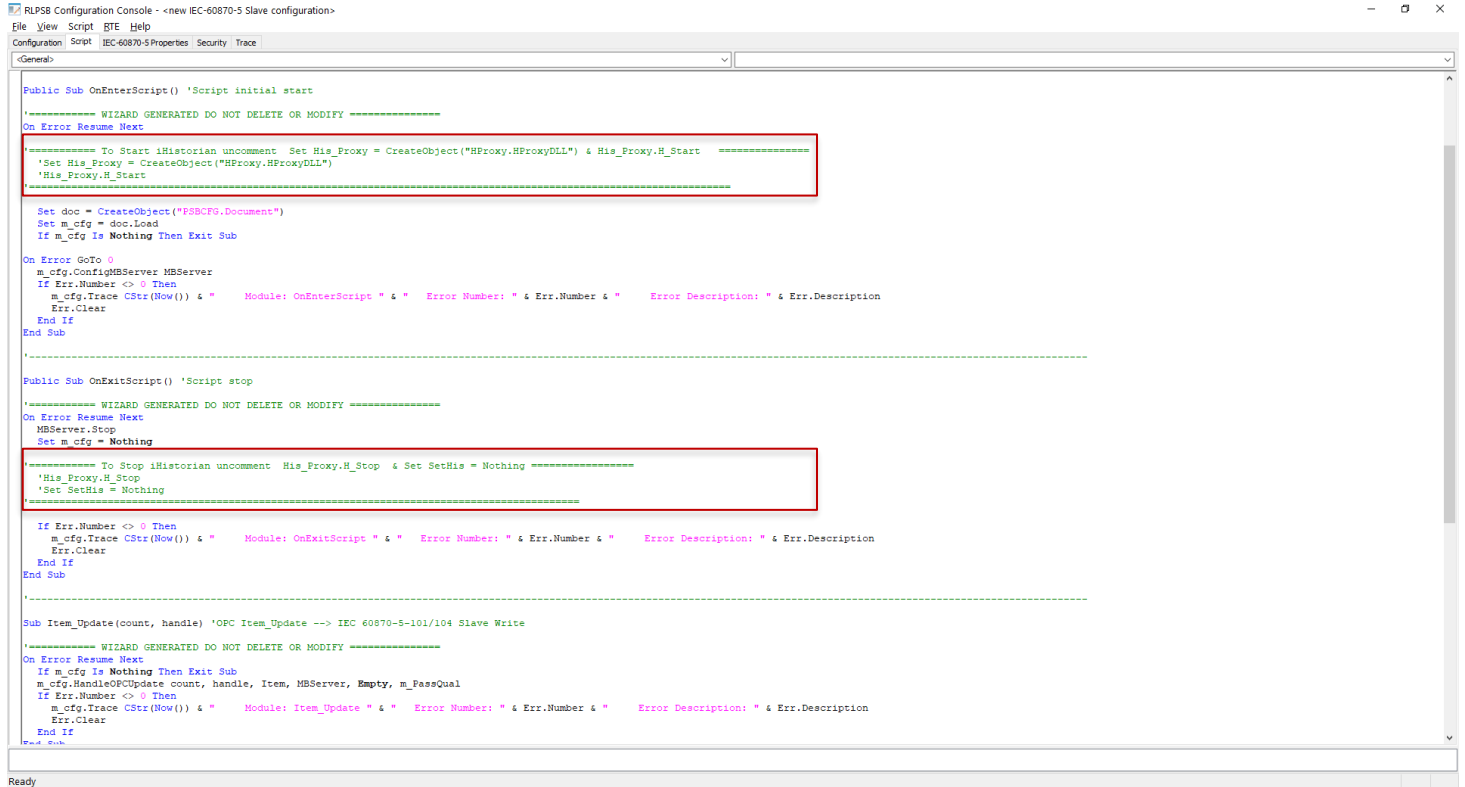
Figure 12

- ❖ **Register Service** – In order to register iHistorian as a service click on register service radio button.
- ❖ **UnRegister Service** – In order to unregister iHistorian as a service click on unregister service radio button.
- ❖ **Start/Stop Service** – In order to test iHistorian service click on start or stop service buttons.
- ❖ **Cancel** – will close iHistorian Service application

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Automatic iHistorian Start via. Proxy

In order to start iHistorian automatically you will need to uncomment couple lines in Protocol Server Bridge scripting.



```
RLPSS Configuration Console - <new IEC-60870-5 Slave configuration>
File View Script BTE Help
Configuration Script IEC-60870-5 Properties Security Trace
<General>

Public Sub OnEnterScript() 'Script initial start
'----- WIZARD GENERATED DO NOT DELETE OR MODIFY -----
On Error Resume Next

'----- To Start iHistorian uncomment Set His_Proxy = CreateObject("HProxy.HProxyDLL") & His_Proxy_H_Start -----
'Set His_Proxy = CreateObject("HProxy.HProxyDLL")
'His_Proxy_H_Start
'-----

Set doc = CreateObject("PSBCFG.Documents")
Set m_cfg = doc.Load
If m_cfg Is Nothing Then Exit Sub

On Error GoTo 0
m_cfg.ConfigMBServer MBServer
If Err.Number <> 0 Then
m_cfg.Trace CStr(Now()) & " Module: OnEnterScript " & " Error Number: " & Err.Number & " Error Description: " & Err.Description
Err.Clear
End If
End Sub

'-----

Public Sub OnExitScript() 'Script stop
'----- WIZARD GENERATED DO NOT DELETE OR MODIFY -----
On Error Resume Next
MBServer.Stop
Set m_cfg = Nothing

'----- To Stop iHistorian uncomment His_Proxy_H_Stop & Set SetHis = Nothing -----
'His_Proxy_H_Stop
'Set SetHis = Nothing
'-----

If Err.Number <> 0 Then
m_cfg.Trace CStr(Now()) & " Module: OnExitScript " & " Error Number: " & Err.Number & " Error Description: " & Err.Description
Err.Clear
End If
End Sub

'-----

Sub Item_Update(count, handle) 'OPC Item_Update --> IEC 60870-5-101/104 Slave Write
'----- WIZARD GENERATED DO NOT DELETE OR MODIFY -----
On Error Resume Next
If m_cfg Is Nothing Then Exit Sub
m_cfg.HandleOPCUpdate count, handle, Item, MBServer, Empty, m_PassQual
If Err.Number <> 0 Then
m_cfg.Trace CStr(Now()) & " Module: Item_Update " & " Error Number: " & Err.Number & " Error Description: " & Err.Description
Err.Clear
End If
End Sub

Ready
```

Figure 13

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Manual iHistorian Start

You can launch **iHistorian Console** (A) and **iHistorian** (B) run-time using a standard Microsoft start menu.

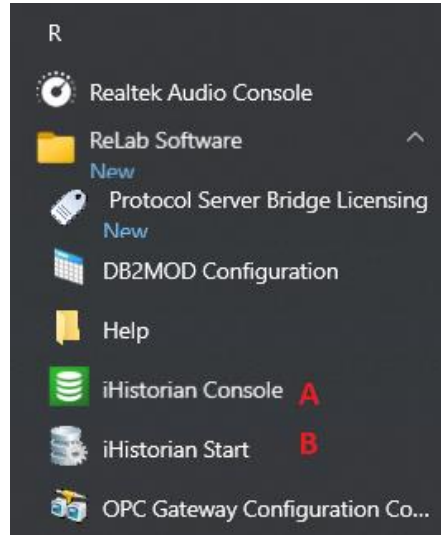


Figure 14

Manually Stopping iHistorian

You can manually Stop or Enable/Disable troubleshooting logging iHistorian run-time by right clicking on iHistorian icon.

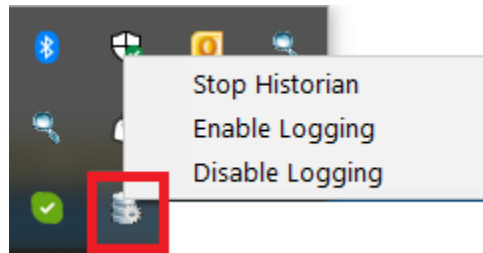


Figure 15

Reinstalling or Moving iHistorian Configuration

If you want to remove the entire iHistorian or move configuration to another iHistorian Server you would need to copy “**iHistorian_Config.csv**” located in **Drive\Program Files (x86)\ReLab Software\Bin** directory and place it somewhere else. After the move or reinstall of iHistorian you would need to copy “**iHistorian_Config.csv**” back into **Drive\Program Files (x86)\ReLab Software\Bin** directory.