Digi-SFT Quick Start Guide

Welcome to Digi-SFT!

This tutorial provides a very simple and quick introduction to the Digi-SFT workflow by walking you through the creation and operation of a simple set of Modbus points. Once you are done with this tutorial, you will have a general knowledge of how to monitor and control your system through the Digi-SFT application.

This tutorial takes less than 30 minutes to complete.

You can always refer to the *Digi-SFT User's Guide*, distributed with the software, which provides comprehensive tutorials that highlight a wider range of features and programming techniques for a variety of daily needs.

As you may have noticed, the Digi-SFT system is Client/Server architected, so for information about constructing the server side of this system, please refer to these documents:

1. DSFT10-2141-0001 – Server Install Instructions - V1.10
2. DSFT10-2141-0004 – SBM Install Instructions - V1.00

Contents

To complete this tutorial, you need the following software and resources on your PC.

Software or Resource	Version Required
Digi-SFT client software	version 7.3.0
Java Runtime Environment (JRE)	version 8 update>=111
Internet access	

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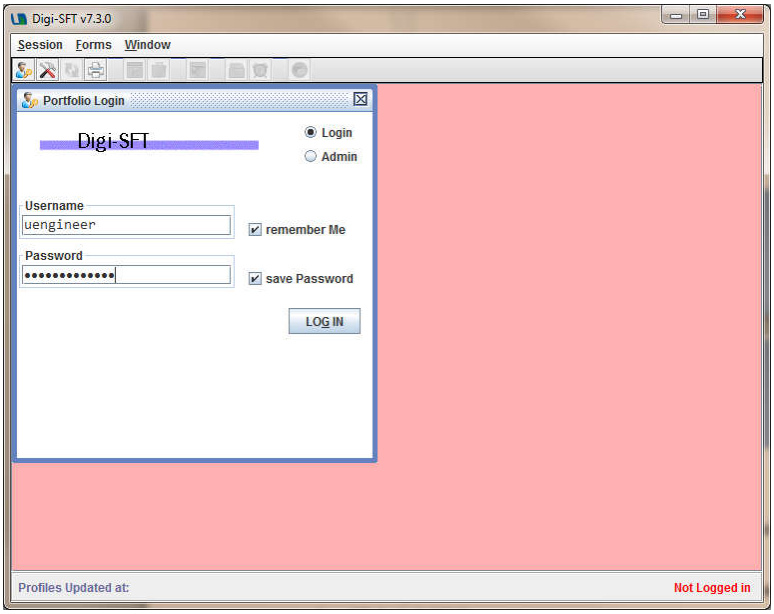
Download and install Digi-SFT

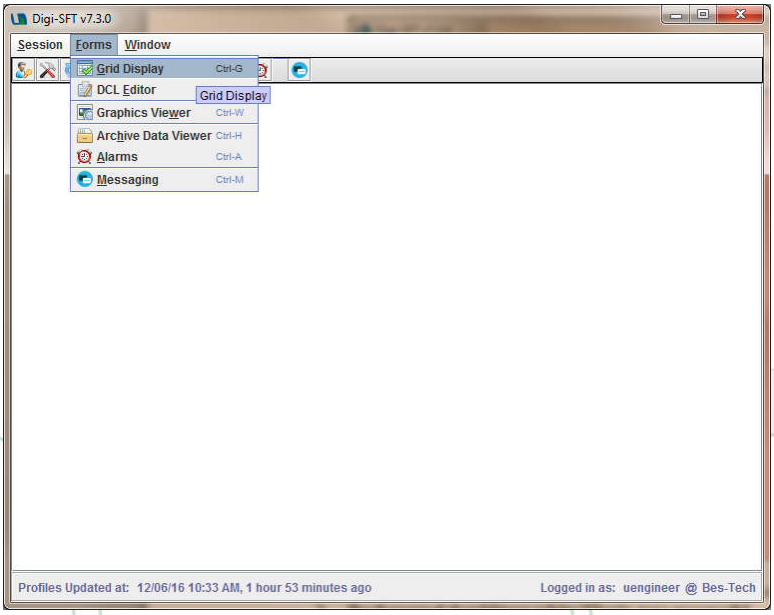
Go to http://digi-sft.bes-tech.net/ and follow instructions to install the current version of Digi-SFT

Login and view data

1. Run Digi-SFT, and input your username and default password assigned for you.
2. Click "LOGIN"



3. Background should turn white if login was successful
4. Choose Forms->Grid Display



5. Double click on any graphic object and you should see the graph window opened up.

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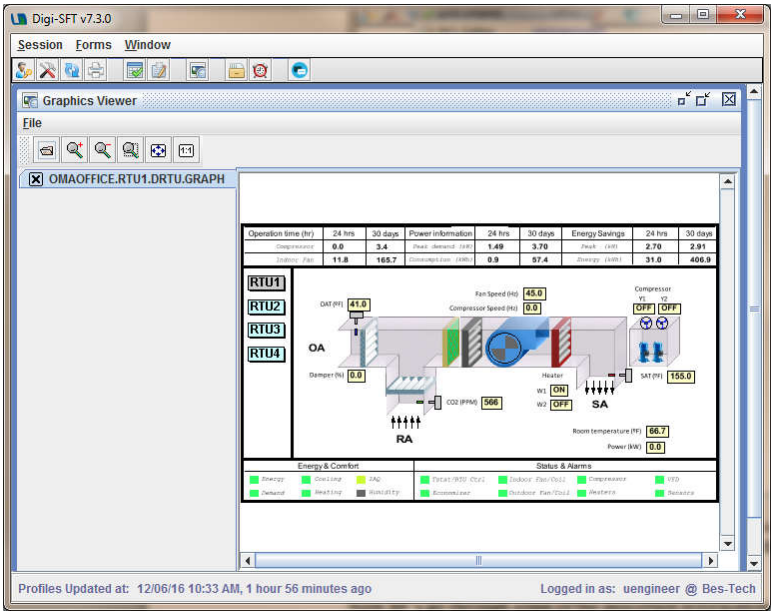

6. Right click on number box and select Trend plot

View and edit point definition

1. In Grid Display, "All Object Type" from right top, and check only "AI/AO/DI/DO", click "Select"

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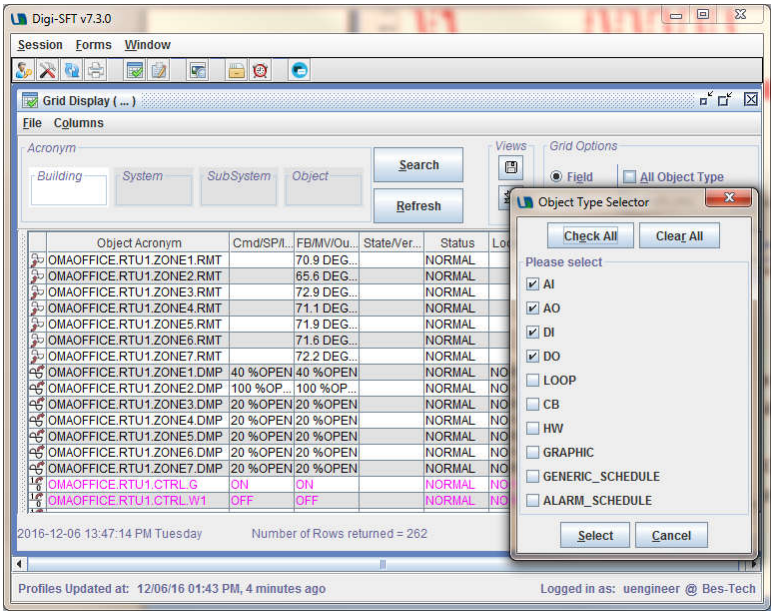
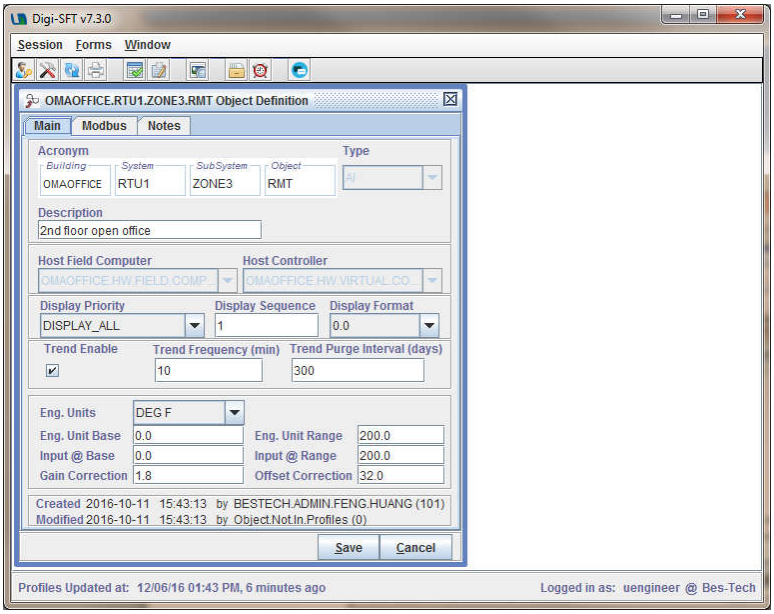


2. From any from the filtered result set, right click on any and choose "View/Edit Object Definition"



3. This example is an AI point in Digi-IOS, let's go through 1st tab we have here:
   a. *Acronym*: these 4 fields combined is a unique identifier in the system, each field is 15 character max length.
   b. *Host hardware*: I/O points are managed in each Field Computer (Digi-SFM), so here we must choose a Field Computer in Host Field Computer drop box. Leave the Host Controller selection as default.
   c. *Display*: Display priority has 3 options: ALL < Normal < Critical, this allows you to filter rows in Grid Display. Display sequence is a 0-10 number. Among all points sharing same "Building" and "System" acronyms, the points with smaller display sequence comes first.
   d. *Engineering Units and scaling*:

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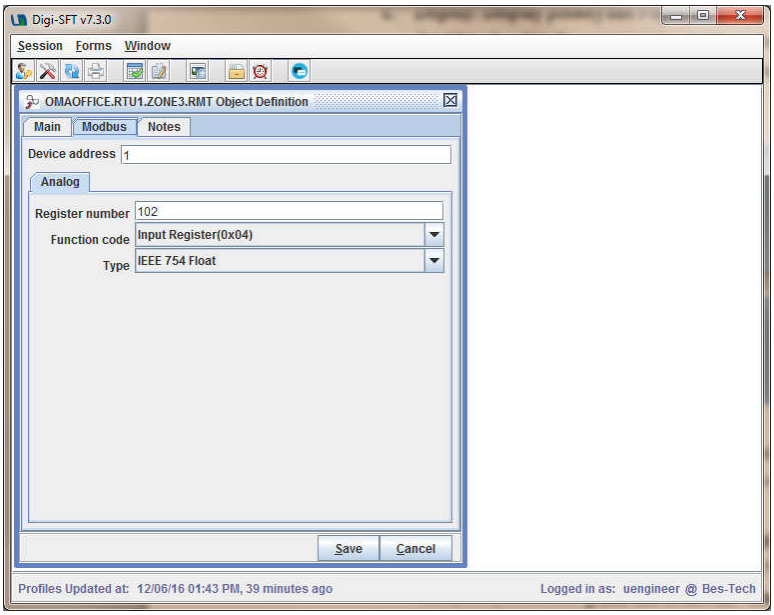
In AI type, the value read from slave devices will be scaled from [Input @ Base, Input @ Range] to [Eng. Unit Base, Eng. Unit Base], then multiplied by Gain Correction[1] and finally added with Offset Correction. This yields the Feedback Value.

In AO type, the Command Value will be multiplied by Gain Correction and then added with Offset Correction, and this yields the Feedback Value. Command Value scaled from [Eng. Unit Base, Eng. Unit Range] to [Output @ Base, Output @ Range], and this is the real value sending out. The Eng. Unit @ 0% and Eng. Unit @ 100% are used when writing a value in its percentage when you don't really care the actual number, and scaling can be done here by these 2 factors.

4. Now click on "Modbus" tab,
   a. Device address : the slave address (first byte) in Modbus protocol, in decimal
   b. Register number: the register number (4th, and 5th bytes), in hexadecimal.
   c. Function code: 2nd type. For analog, options are Input Register and Holding Register
   d. Type: target type to parse raw data bytes



5. In Grid display, you can right click on I/O points and select "Create New Object" or "Create Similar Object" to create new points.

[1] If you don't need this number, put 1.0 here. Default 0.0 will be treated as 1.0 as well.

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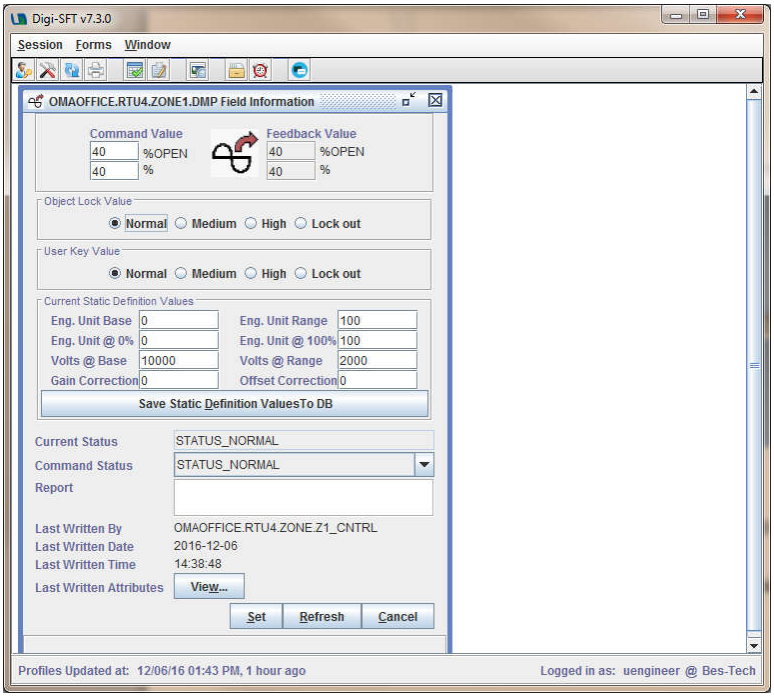
Control points

1. You can control a point by set command value to it, and the Field Computer will take care of Modbus communication.
2. From Grid display, double click on a Analog Output point, in this example, it's a Digi-IOS's AO as Damper position.



3. You can see here the current command value is 40, and slave device applied it so the feedback value is also 40.
4. AO can be written by either a User or a CB. The "Last Written By" item shows the subject who recently wrote to it. In this example it's a CB. If a CB is routinely writing to AO, then user will need to set the "Object Lock Value" higher than Normal, because a CB by default holds Normal key, and when AO's Lock Value is higher than CB's Key Value, writing will not take effect. This gives user right to override points.

View and edit control blocks

1. A Control Block (CB) in Digi-SFT is a piece of program. User writes code in distributed control language (DCL), to control I/O points. In this section, we'll demonstrate how to create and code a CB, and then compile and run it. Our goal here is to let Digi-IOS[2]'s BO0 flashes through a simple CB.
2. In Grid Display, create a DO object with:

[2] This example requires using a Digi-IOS 1014/1018

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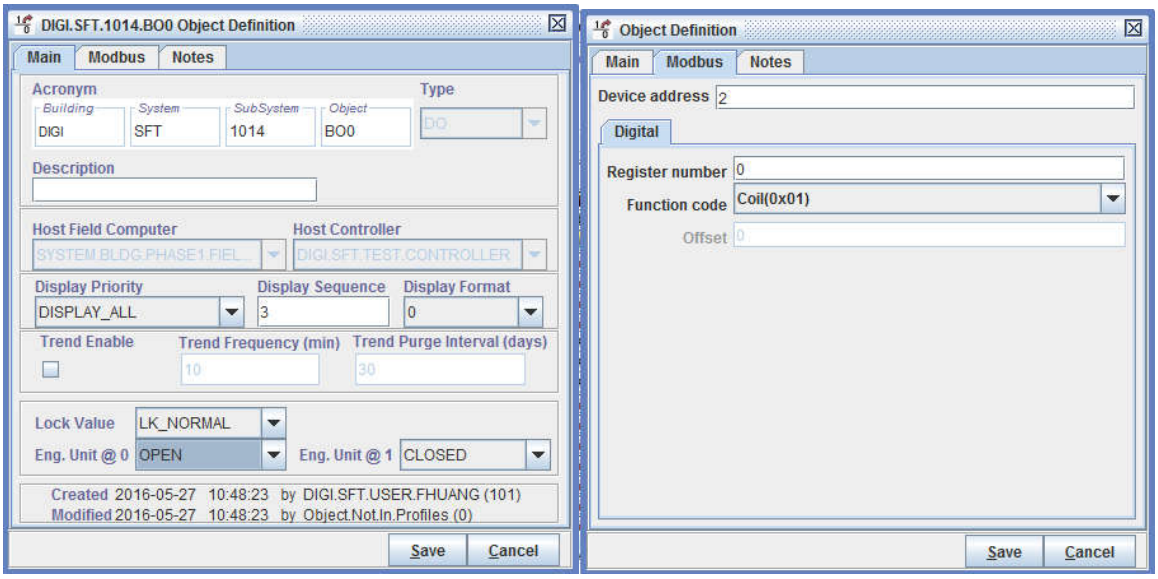
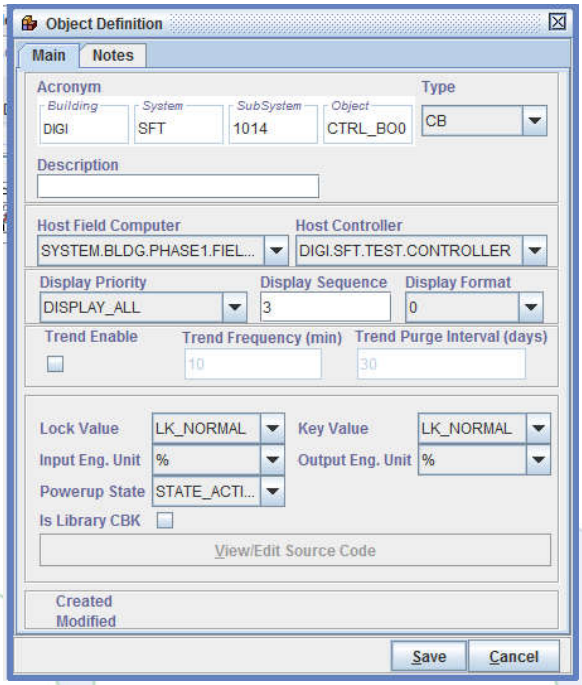


3. Click Save Button. And double click on BO0, click on each of the 2 options of the Command Value, observe that Digi-IOS's BO0 LED flashes[3] on and off.
4. Create a CBK object with information:



5. Click Save button, and then locate the newly created CBK object and right click, choose "Edit Control Block/Schedule".
6. In the blank text area, right click, and choose "Insert CB Code Skeleton".

[3] In Digi-IOS, LED for each BO will be ON when its relay is energized and closed.

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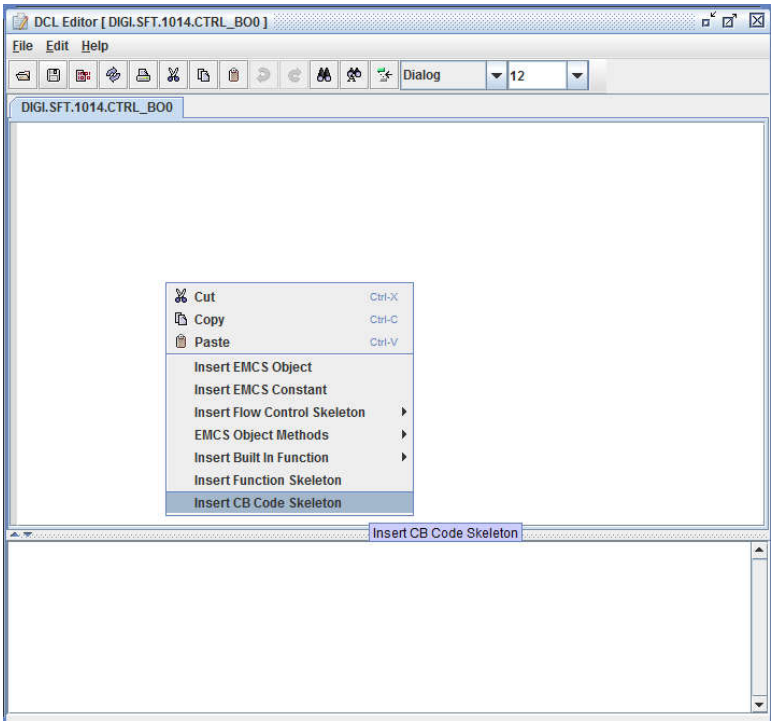

7. Type [4]in the following source code in to the skeleton:

```
DO bo0 = [DIGI.SFT.1014.BO0];

activate(){} // End activate

resume(){} // End resume

main()

{

      while(1){

            if(bo0.getValue()==OPEN){

                  bo0.setCommand(CLOSED);

            }else{

                  bo0.setCommand(OPEN);

            }

            delay(3);

      }

} // End main

deactivate(){} // End deactivate

shutdown(){} // End shutdown
```

8. The code here is quit straight forward. It first declares a reference to the BO0 object, then in the main function, while loops forever for setting the opposite command to the BO0 object, in every 3 seconds.
9. After typing, choose File > Compile and Save, then close the editor. Observe that Digi-IOS 1014's BO0 Led is flashing in every 3 seconds.
10. To stop the CBK, double click on it in Grid Display and from the State options, choose Deactivate.

[4] Most of the methods names can be inserted from right click pop up menu.

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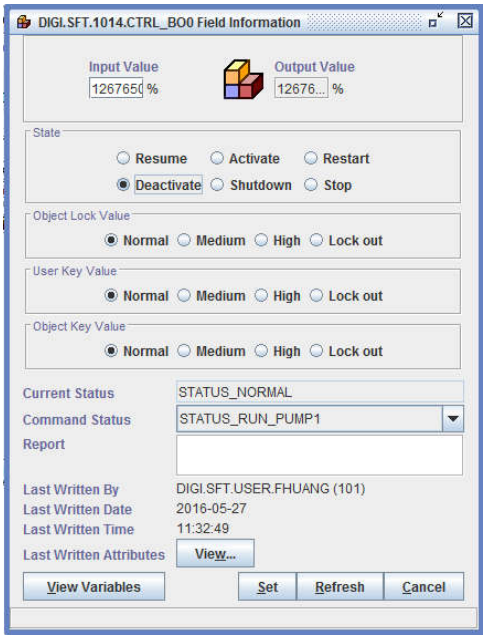
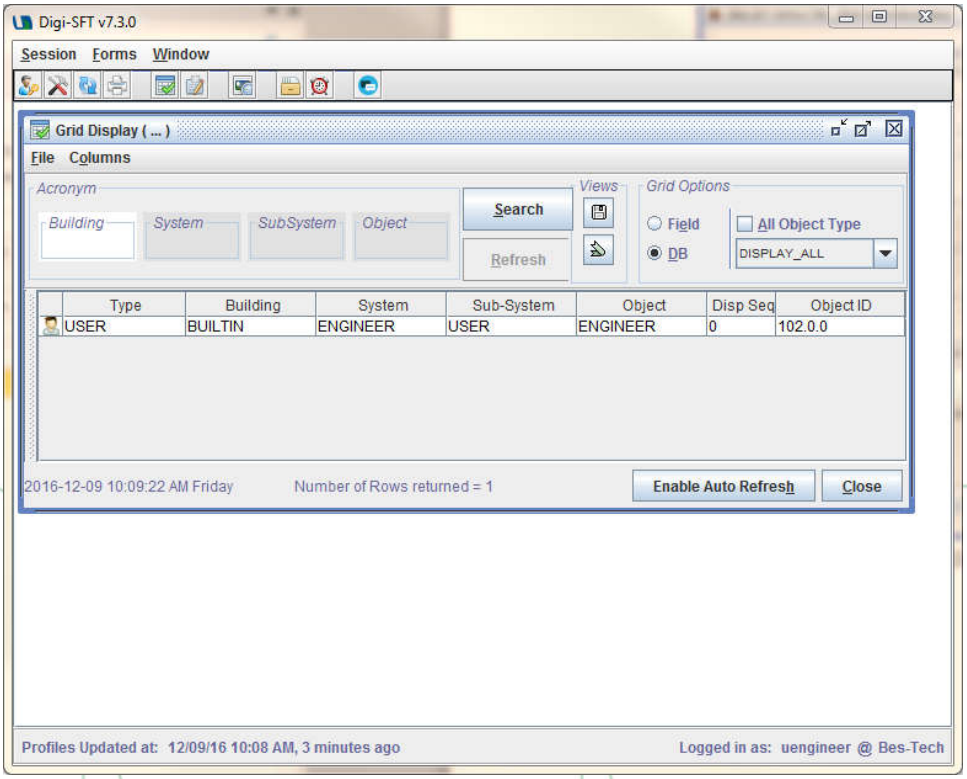


11. You can refer to Digi-SFT User Manual for DCL specification and usage.

Edit your account profile

1. In Grid display, use the DB-USER-DISPLAY_ALL grid option combination to filter out your user account object.



2. Right click on it and select “View/Edit Object Definition”.

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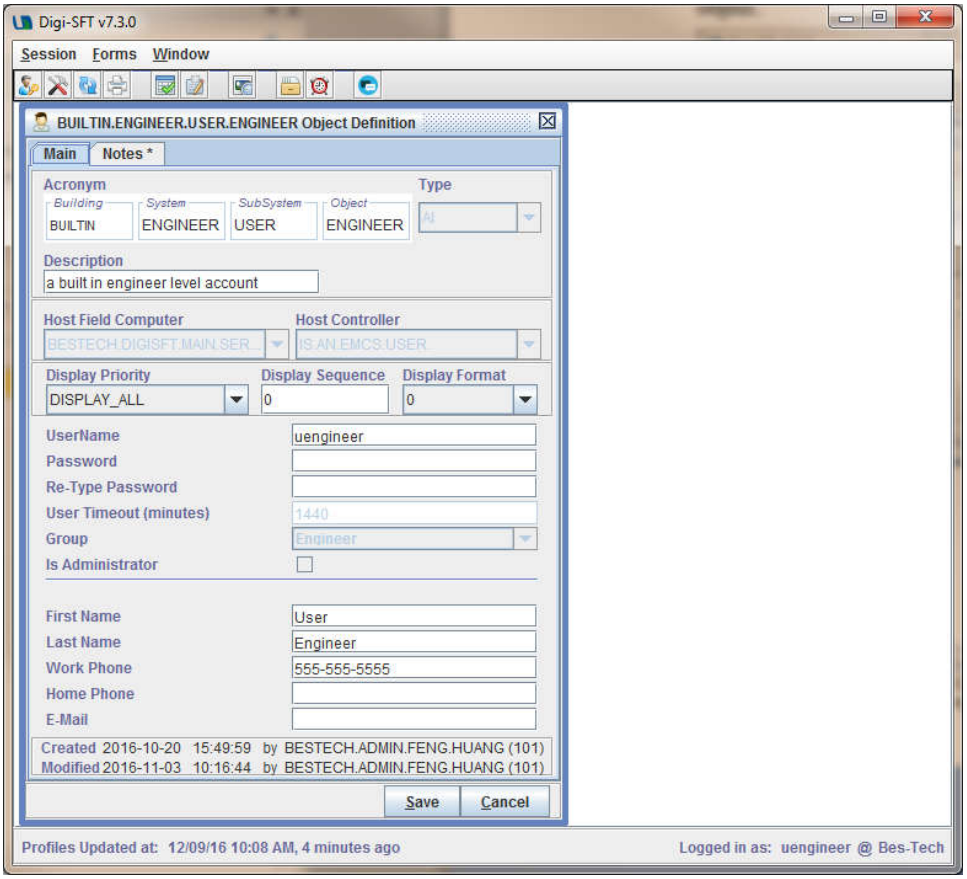

3. From this information window, you can modify your password, first/last name, phone and email[5]. Normally you should not modify text fields other than these.
4. The "User Timeout" attribute is the number of minutes before server terminates your current session if no communication has been initiated since previous one.
5. Greyed out fields are managed by Bes-Tech admin, and are read-only to normal users.

[5] The phone and email here is only for profile purpose, and is not used when system sending alarm notifications.

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