1/10/2018

IT & Analytics Team

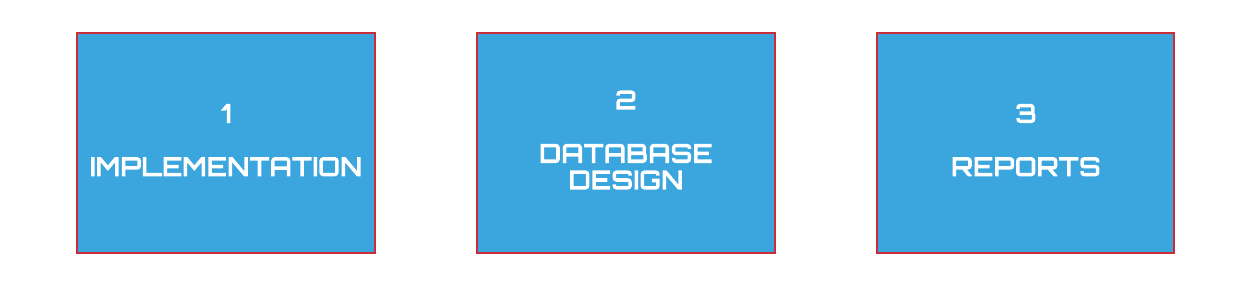
AUTUMN GROUP

Autumn Group

Data Warehouse Project

Manual – Version 3.0

# What will be covered in the document?



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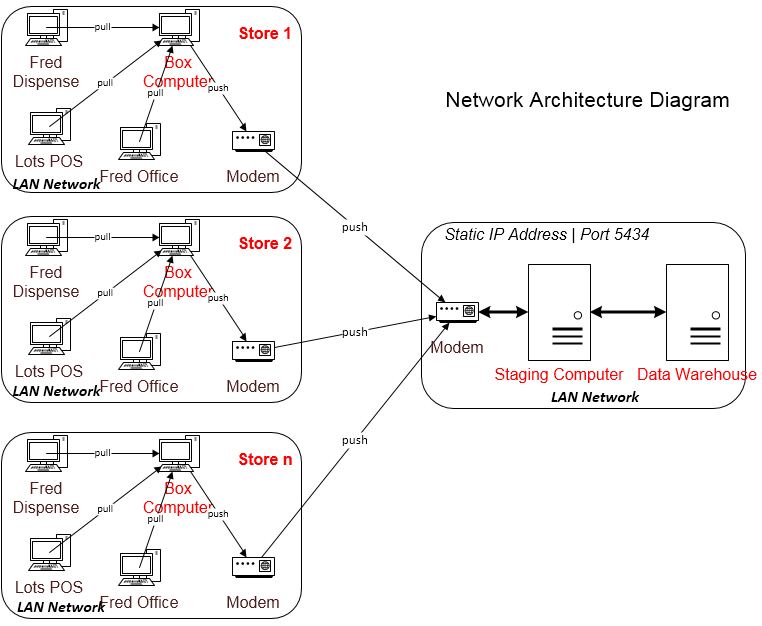
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# IMPLEMENTATION

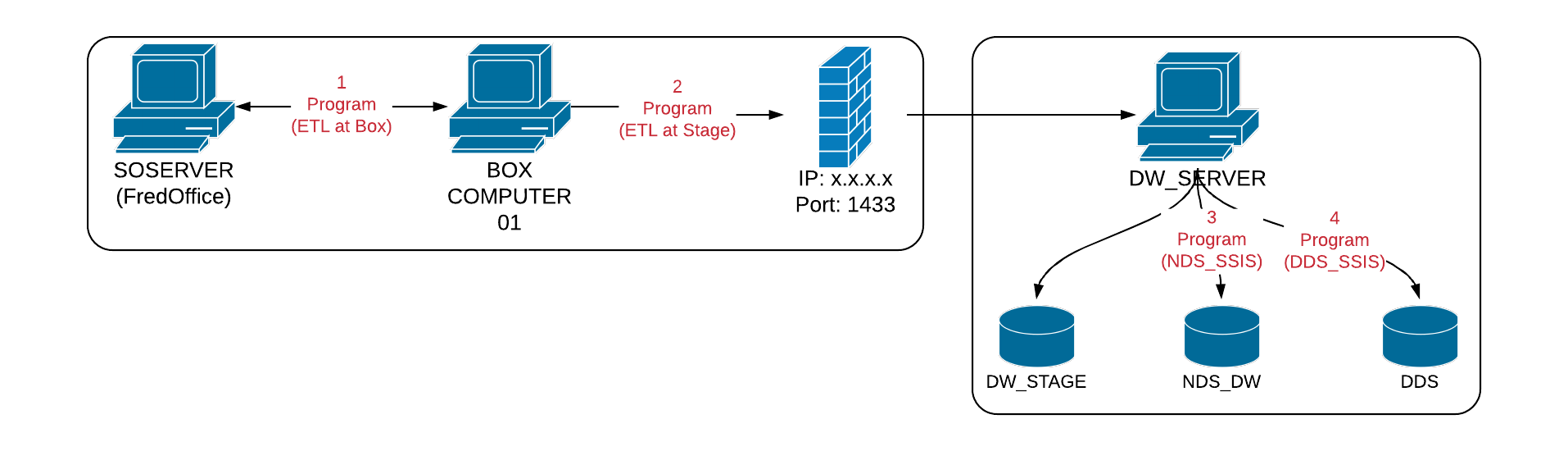
|  |  |
| --- | --- |
| **Network Design** | An overview of data warehouse network. How data is transferred between applications at stores and server computers |
| **Store Site** | Store network. The computers in a store |
| **Server Site** | Local network. The server network design |

## Network Design



The diagram uses 3 stores as an example, but in realistic we can add in as many as we want

### Data transferring



1. Box computer runs a program called “Extract Transfer Load (ETL) at Box” to pull out data from SOSERVER. The program *is scheduled every hour. After executing the program completes, data will be stored in Box Computer database and ready to transfer to Stage Computer*
2. Box computer runs another program called “ETL at Stage” to transfer data from Box computer to dw\_stage in DW\_SERVER via (*static ip address, port 5434)*
3. In DW\_SERVER, The program called NDS\_SSIS (NDS: normalised data store, SSIS: SQL Server Integration Services) will be executed to clean data from dw\_stage to nds\_dw database
4. The DDS\_SSIS (DDS: dimensional data store) program is used to convert data from nds\_dw to dds databases

### Deployment Directory



## Implementation at Server Site

At server site, we use only 1 physical computer named DW\_SERVER

### Network Set Up

Network configuration for Router / Modem

|  |  |  |
| --- | --- | --- |
| **Device** | **Action** | **Value** |
| *Router / Modem* | Open Port | 5434 |
|  | Public IP Address | Static |
| *Firewall of DW\_SERVER* | Inbound Rules: create a new rule | Open port *5434* for public usage |

### SQL Server Installation

SQL Server 2014 Standard Edition will be installed at Server site

The tutorial for SQL Server installation is available in the link below, click the link then and then follow the instructions to server SQL Server Standard

(<https://social.technet.microsoft.com/wiki/contents/articles/23878.installing-sql-server-2014-step-by-step-tutorial.aspx>)

(\*) *However, the named instance in step 9, we use AUTUMNGROUP instead of SQL2014*

After successfully installed, we need to update some properties as follow:

|  |  |
| --- | --- |
| *Setup Protocols* | Protocols for AUTUMNGROUP -> TCP/IP -> Port 5434 |
| *SQL Server* | Built-in Account -> Local Service |
| *SQL Server* | Start Mode: Automatic |
| *SQL Server Browser* | Log On -> Buil-in account (Local Service)  Service -> Start Mode -> Automatic |
| *Authentication* | Windows Authentication |
| *User Admin* | Disable “sa” user for security |
| *Remote User* | Create “dw\_user” as public  Mapping:   * DW\_STAGE (Read&Write) * NDS\_METADATA (Read&Write) |
| *Make sure: they are running* | SQL Server  SQL Server Browser  SQL Server Integration |

(\*\*) *The detail instruction to update properties is placed in Appendix section*

### Script Execution

After successfully installed SQL Server and created dw\_admin user as sysadmin role. We double click on scripts (.sql) one-by-one for execution. You can find these scripts in the directory of Server Site

* 1. DW\_STAGE
* 2. NDS\_DW
* 3. NDS\_METADATA
* 4. SALE\_DDS\_DW
* 5. STOCK\_VALUATION\_DDS\_DW
* 8. REPORTS

## Implementation at Store Site

In the prior setup, we have installed “dw\_user” to all SOSERVER databases

### Network Connection

We need to create 2 connections, please look at Appendix section “*how to create aliases in sql server*”:

* LS\_STORE: connect to SOSERVER computer where we keep databases of Fred or Lots
* LS\_STAGE: connect to DW\_SERVER computer via the internet

### SQL Server Installation

SQL Server 2014 Express Edition will be installed at BOX\_COMPUTER

The tutorial for SQL Server installation is available in the link below, click the link then and then follow the instructions to server SQL Server Express

(<https://social.technet.microsoft.com/wiki/contents/articles/23878.installing-sql-server-2014-step-by-step-tutorial.aspx>)

(\*) However, the named instance in step 9, we use AUTUMNGROUP instead of SQLEXPRESS2014

After successfully installed, some properties need to be updated:

|  |  |
| --- | --- |
| *Setup Protocols* | Protocols for AUTUMNGROUP -> TCP/IP -> Port 5434 |
| *SQL Server* | Built-in Account -> Local Service |
| *SQL Server* | Start Mode: Automatic |
| *SQL Server Browser* | Log On -> Buil-in account (Local Service)  Service -> Start Mode -> Automatic |
| *Authentication* | Windows Authentication |
| *User Admin* | Disable “sa” user for security  Create “dw\_box” as sysadmin role with default password: “*AutumnGroup*” |
| *Make sure: they are running* | SQL Server  SQL Server Browser |

### Script Execution

In the directory of STORE SITE, we need to execute these scripts:

* generate\_box\_computer\_db.sql
* metadata\_autumnplace.sql (\*)
* generate\_db\_users.sql
* generate\_linkedserver\_LS\_STAGE.sql
* generate\_linkedserver\_LS\_STORE.sql

(\*): “autumnplace” is the name of store you are deploying. Depending on which store we deploy, we run scripts in that directory. Here, we deploy “Autumn Place pharmacy”, so we run scripts in AutumnPlace folder

After successfully executed, we need to execute 2 programs in “0. SP at BOX\_COMPUTER” directory:

* v2\_p\_ETL\_SourceToBox.sql
* v3\_p\_ETL\_Box\_Staging.sql

If the pharmacy uses LOTS, we will have to enable change tracking at SOSERVER. The detail and explanation are provided in Appendix

* enable\_change\_tracking.sql

# DEPLOYMENT

## Deployment at Server Site

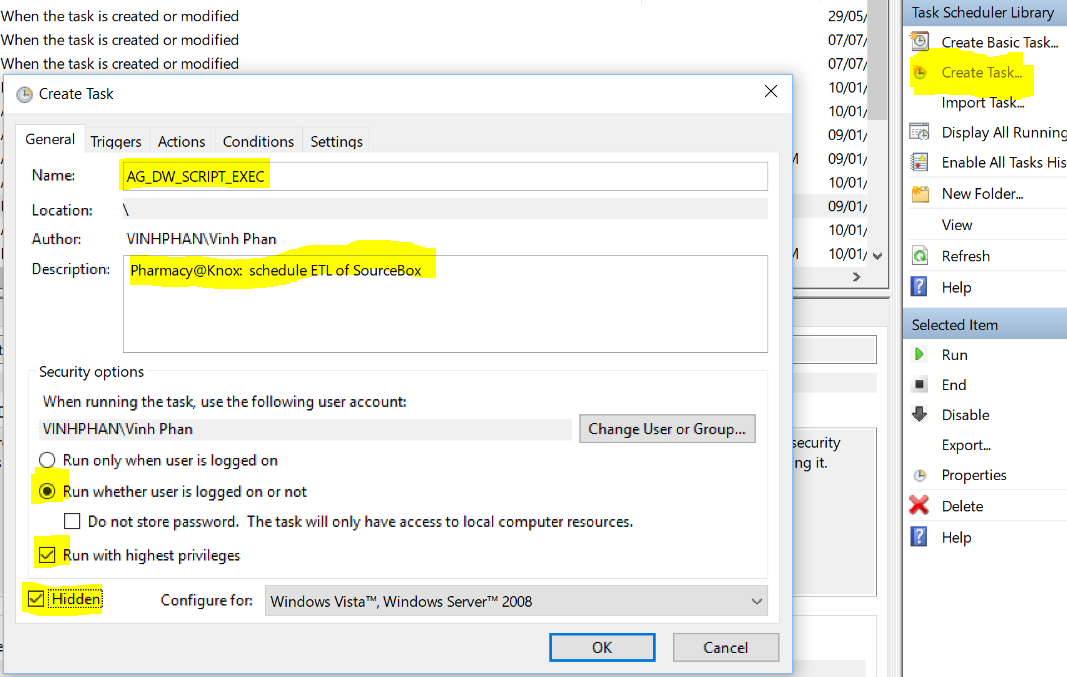
Going to SSMS 2014, and follow the steps (*please check Appendix: how to create catalogs for SSIS for the detail)*

* **Step 1:** Create "Integration Services Catalogs"
* **Step 2:** Deploy SSIS Packages from Visual Studio 2013 to SSMS Catalogs
  + Create 2 folder: first one is Stage\_NDS, second one is NDS\_DDS which contains DDSSales, DDSInventory
* **Step 3:** Going to SQL Server Agent, and create Jobs (*please check Appendix: how to create scheduled jobs with SQL Server Agent*)

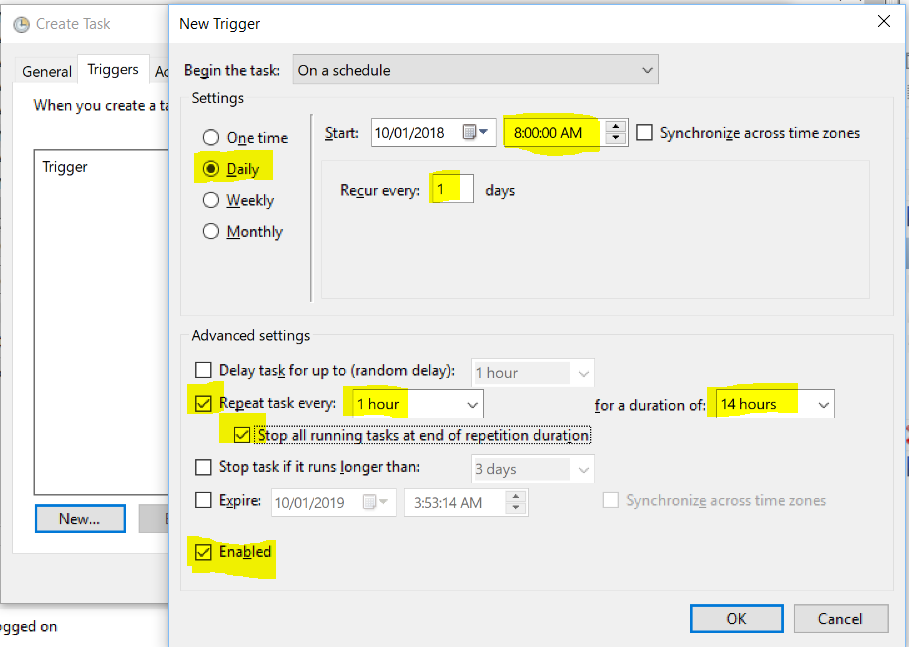
## Deployment at Store Site

Going to directory Store Site, select the pharmacy needs to deploy. Here, we set schedule for Pharmacy@Knox as an example

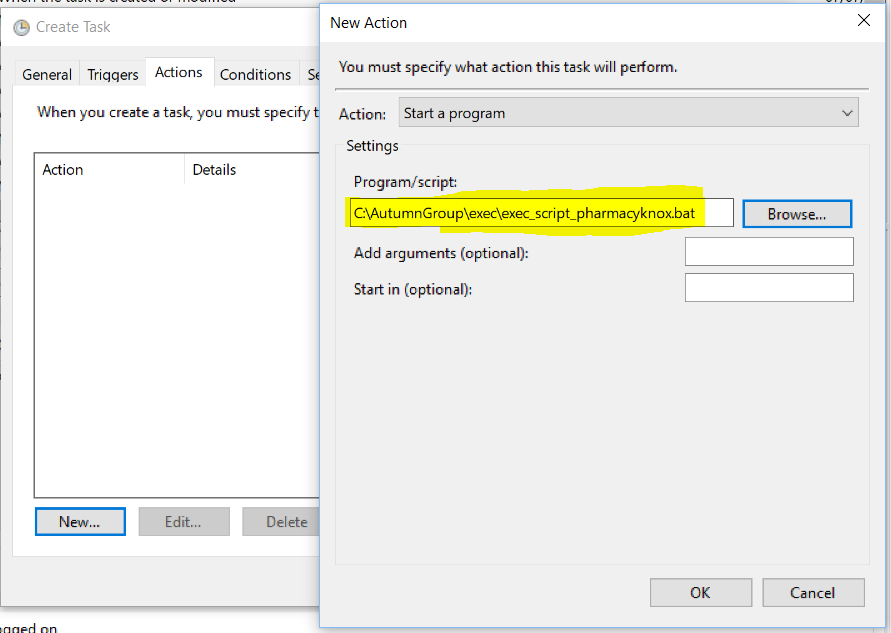
* **Step 1**: create folder “*C:\AutumnGroup\exec\*” in Box\_Computer
* **Step 2**: copy 2 files mentioned below to “exec” folder
  + exec\_script\_pharmacyknox.sql
  + exec\_script\_pharmacyknox.bat
* **Step 3**: open “*Task Scheduler*” in Control Panel, then create task, and follow the highlights



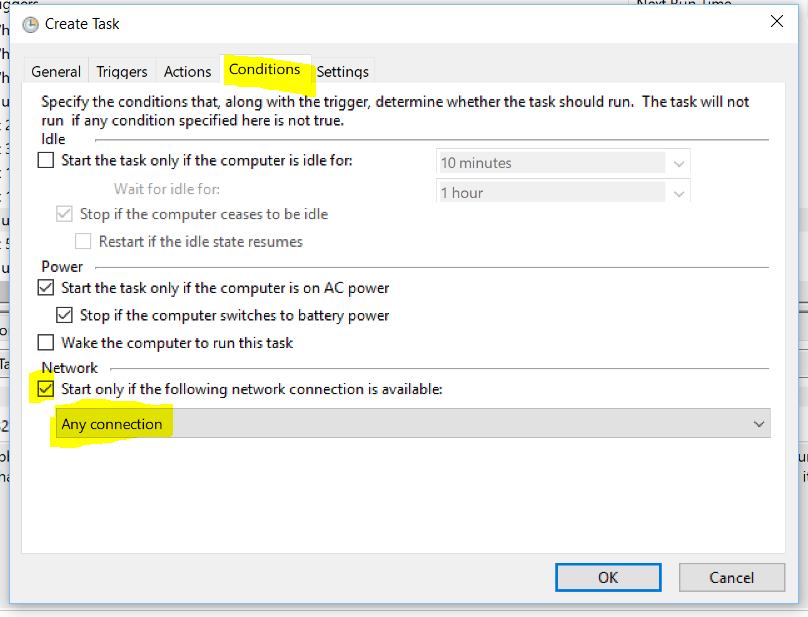
* **Step 4**: create new trigger, scheduling to run the scripts every hour between 8am and 10pm



* **Step 5**: in tab Actions, create new action, then browse to “*exec\_script\_pharmacyknox.****bat***” picture attached



* **Step 6**: in tab Conditions, stick on “Start only if connection is available”



## Computers Used in the Project

|  |  |  |
| --- | --- | --- |
| **Store Name** | **Feature** | **Value** |
| Terry White Knox | Computer Name | SOTILL14 |
| Domain | PHARMACY.local |
| OS | Window 7 (32-bit) |
| Memory | 4gb |
| Local IP | 192.168.1.7 |
| Netmask | 255.255.255.0 |
| Gateway | 192.168.1.1 |
| TW Brimbank | Computer 1 | SOSERVER |
| Access Method | Chrome Remote Connection |
| Account | Autumn Office |
| Computer 2 | FREDCLIENT05 |
| Access Method | From SOSERVER, use Windows Desk Remote Connection |
| User | Fred |
| Password | Bb |
|  |  |  |

# DATABASE DESIGN

# REPORTS

## Fred Reports

### Itemies Transaction Detail

* **Description**: we support “*view\_itemies\_transaction\_detail.sql*” to generate all\_data excel file which contains all items sold from the beginning to the latest update / ETL
* **Fields Supported in the report**

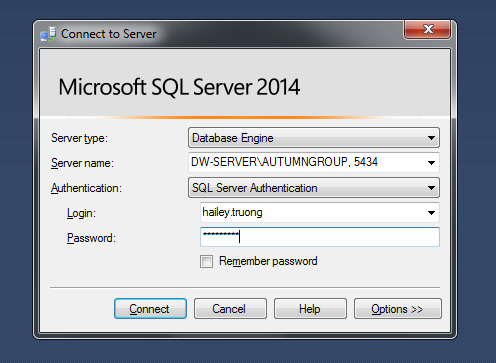
|  |  |  |
| --- | --- | --- |
| **Fields** | **Full name** | **Description** |
| TransactionEntryKey | Transaction Entry Key | The unique key over the pharmacies for each transaction entry |
| Transaction | Transaction Number | Not unique |
| Transaction\_Date | Transaction date |  |
| Transaction\_Hour | Hour of that transaction |  |
| Item\_Description | Product name / Item name |  |
| Department | Department name |  |
| Category | Category name |  |
| QtySold | Quantity sold |  |
| Gov\_Recov | Government recovery |  |
| Tax | Tax |  |
| Discount | Discount |  |
| Profit |  | = Price – (Cost \* QtySold) – Tax + Gov\_Recov |
| Sales\_Ex | Sales excluding tax | = Price - Tax |
| ScriptNumber\_Fred | Script number in Fred | If we run report for Lots, ScriptNumber\_Fred = 0 |
| ScriptNumber\_Lots | Script number in Lots |  |
| Data\_Source | Data source | Lots, FredOffice, FredPOS |
| StoreName | Store name |  |

### Dispensed Script

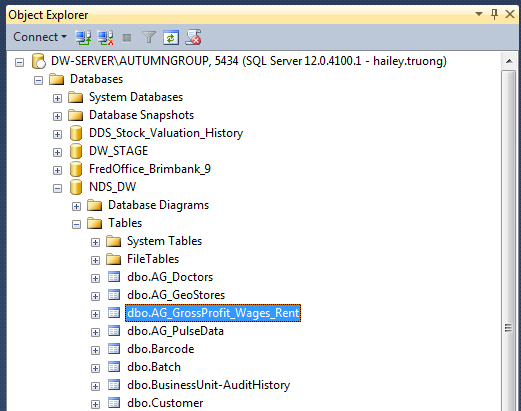
### Stock Valuation History

### Update Wages & Rents into Central Database

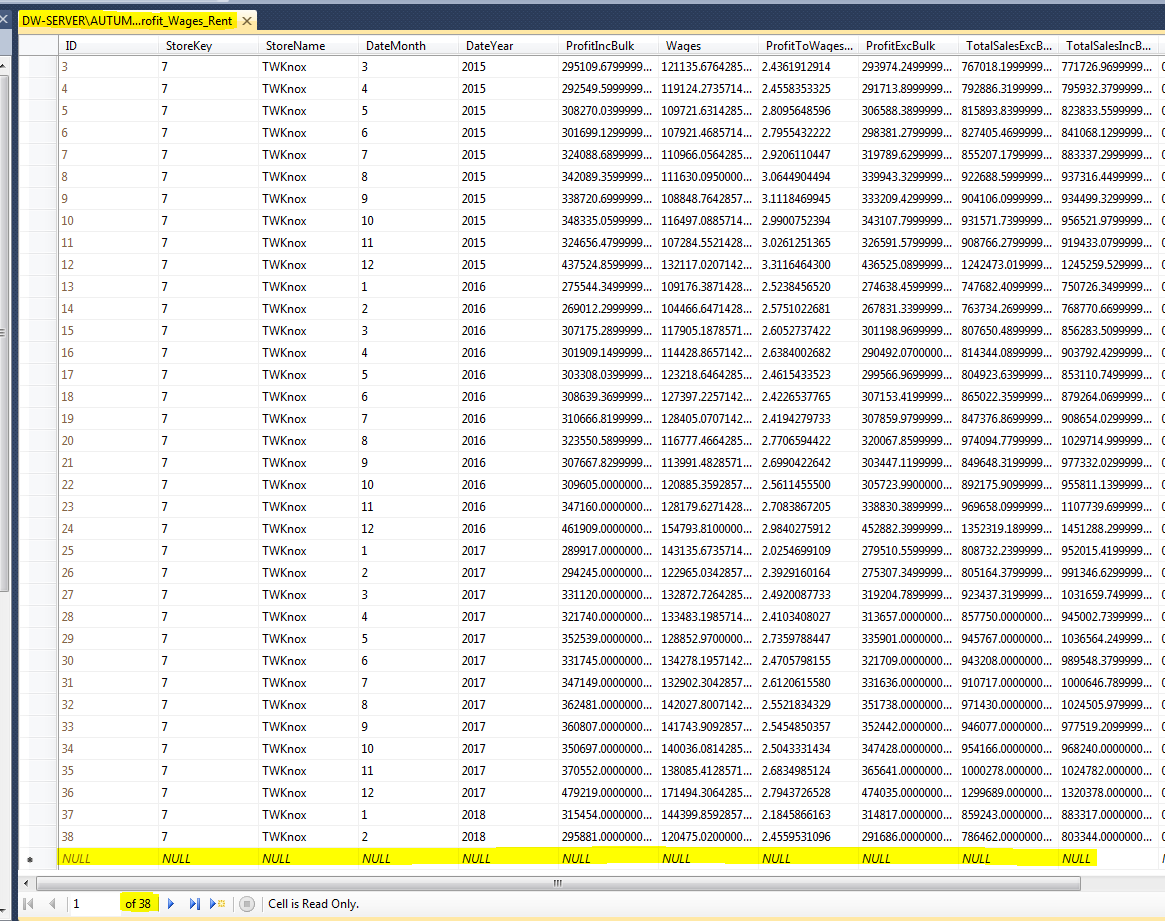
* ***Open SSMS application***
* ***Connect to DW-SERVER computer***
  + **Connection** : DW-SERVER\AUTUMNGROUP, 5434
  + **Username** : haily.truong
  + **Password** : 123456789



* Open **NDS\_DW** database, edit "AG\_GrossProfit\_Wages\_Rent"



* **Right-click** on the table, then select "**Edit Top 200 rows**"
* The edit table will pop-up, then you can edit / insert new row (at the bottom of the table)



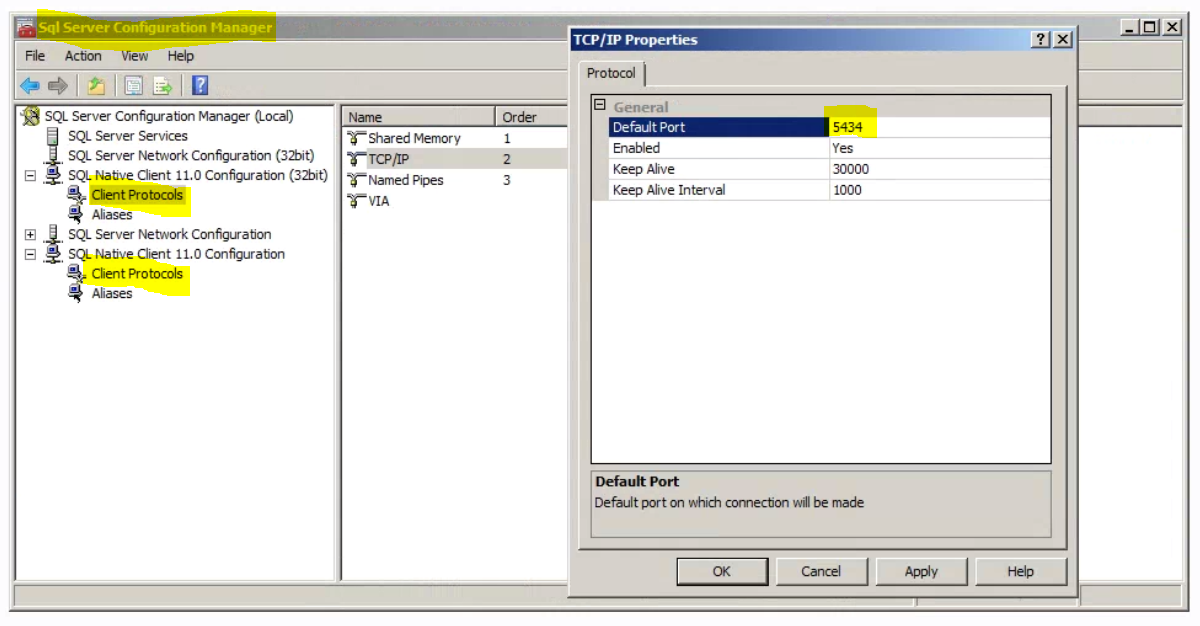
### Stock Valuation History

### Stock Valuation History

## Lots Reports

# APPENDIX

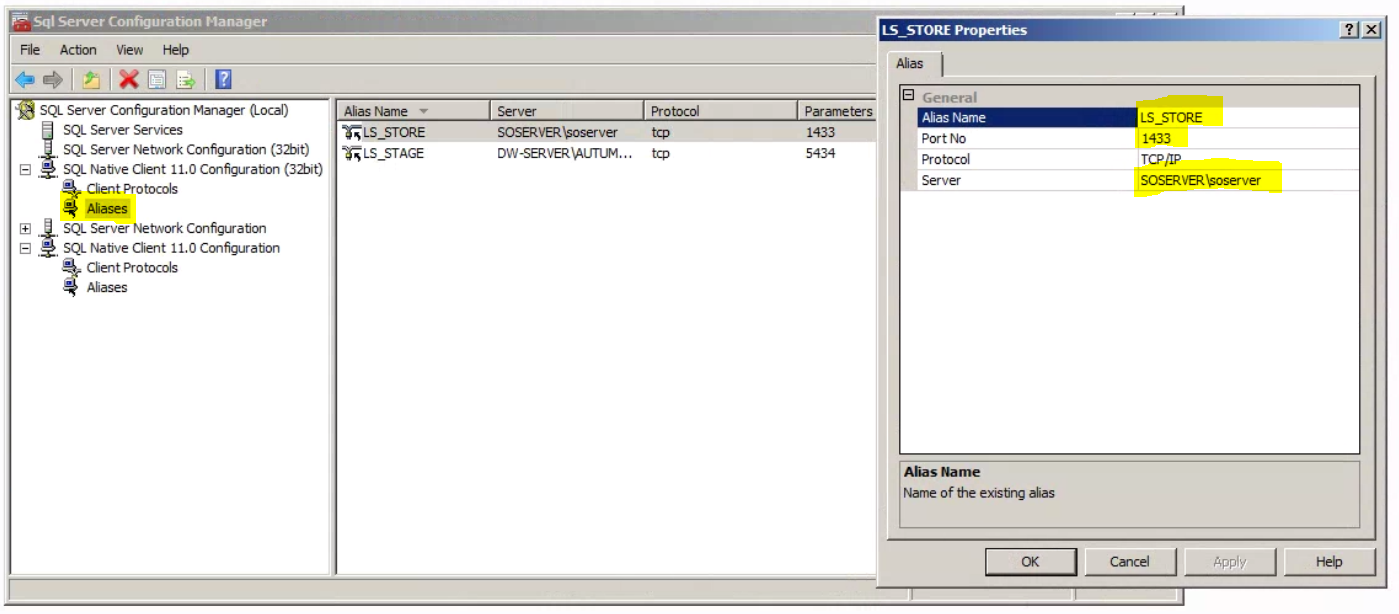
## How to setup protocols in SQL Server Configuration



* Go to “Sql Server Configuration Manager”
* In SQL Native Client 11.0 Configuration -> Client Protocols -> TCP/IP
  + Change Default Port 1433 to 5434
  + OK
* Similarly, we change default port in SQl Native Client 11.0 Configuration (32 bit)

## How to create Aliases in SQL Server Configuration

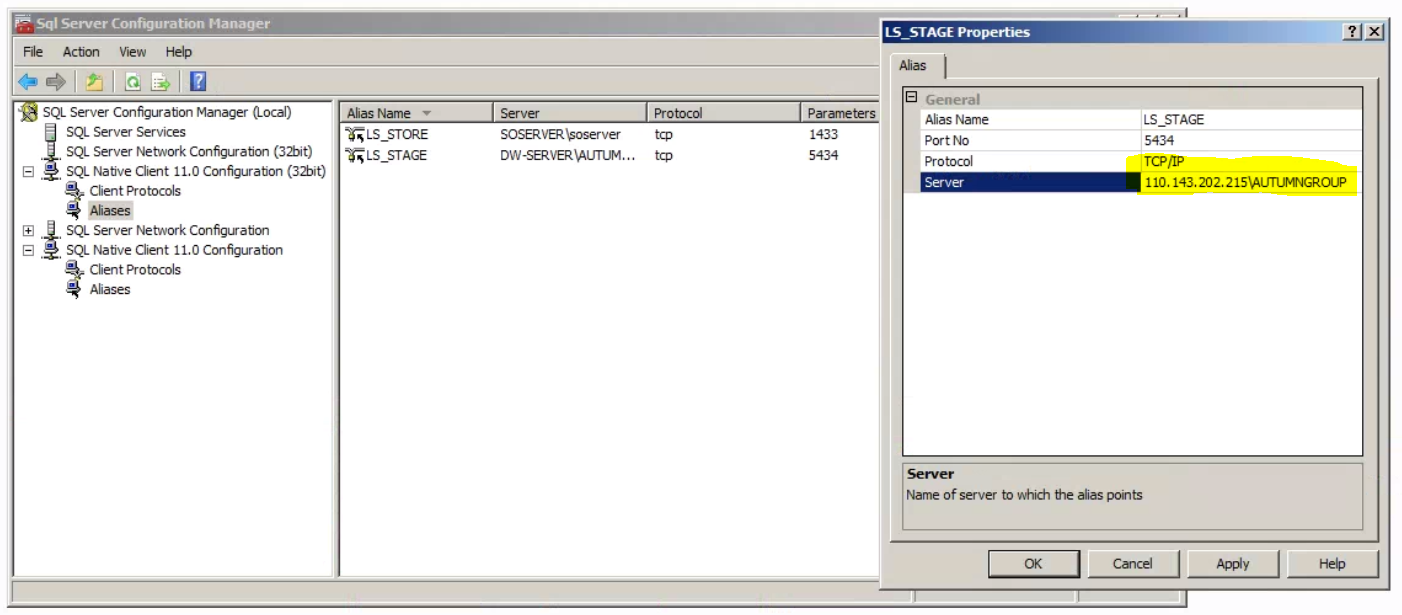
* The objective is to create alias connection to another computer



* Go to “Sql Server Configuration Manager”
* In SQL Native Client 11.0 Configuration -> Aliases
  + Right click to create new Alias
  + Specify Alias Name, Port No, and Server address
* In data warehouse project, we have to create 2 aliases, namely
  + LS\_STORE
    - Port: 1433
    - Server: SOSERVER\soserver (\*)
  + LS\_STAGE
    - Port: 5434
    - Server: <dw\_server static ip>\AUTUMNGROUP (\*\*)
* Do it again for SQL Native Client 11.0 Configuration (32 bit)

(\*): depends on server name in pharmacy, here I use SOSERVER as a default server name

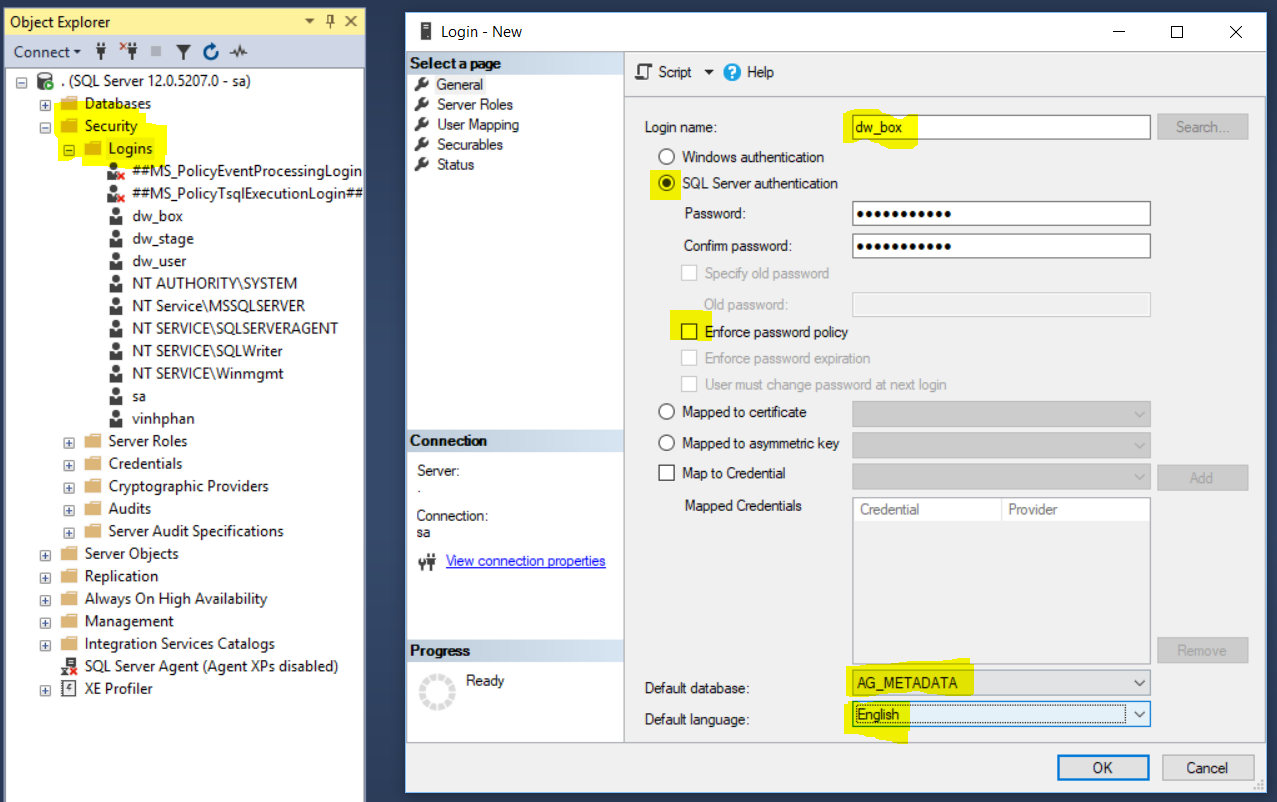
(\*\*): <dw\_server static ip> is 110.143.202.215



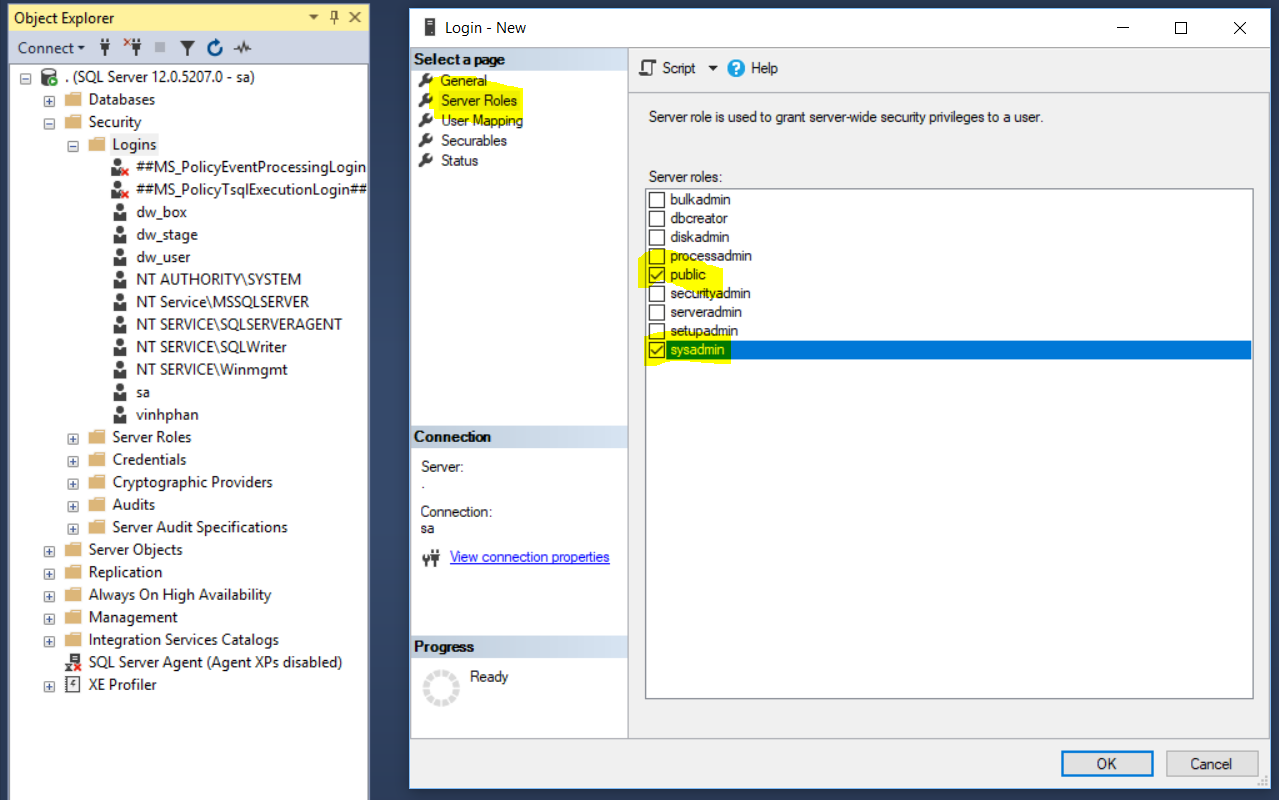
## How to create a new user in SQL Server DB

We will create “dw\_box” user at Box\_Computer. All highlights in photos need to be changed

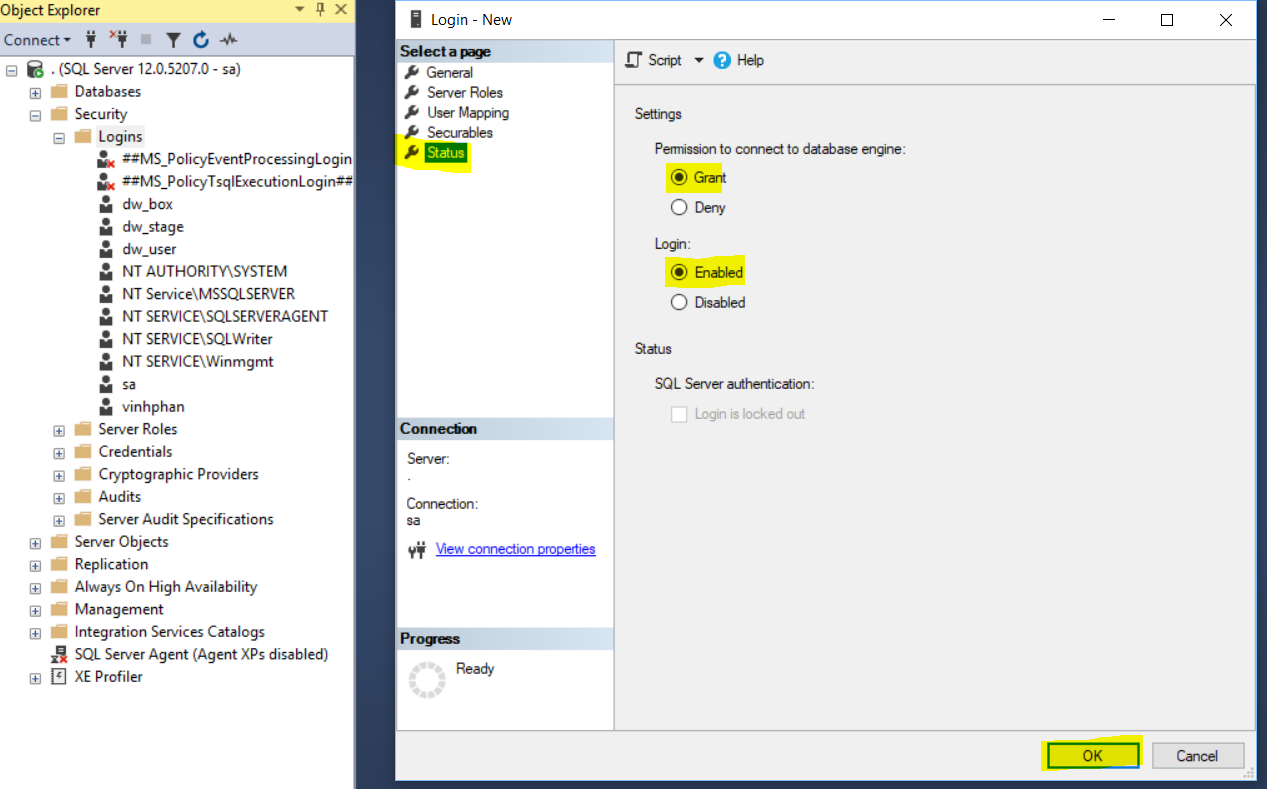
1. Step 1: right-click on Logins -> new login. Enter login name, password, unstick enforce password, change default database



1. Step 2: in the left sidebar, stick on public and sysadmin (*admin permission in a database*)



1. Step 3: move to status, permission – grant, Login – enabled, then click okay to finish



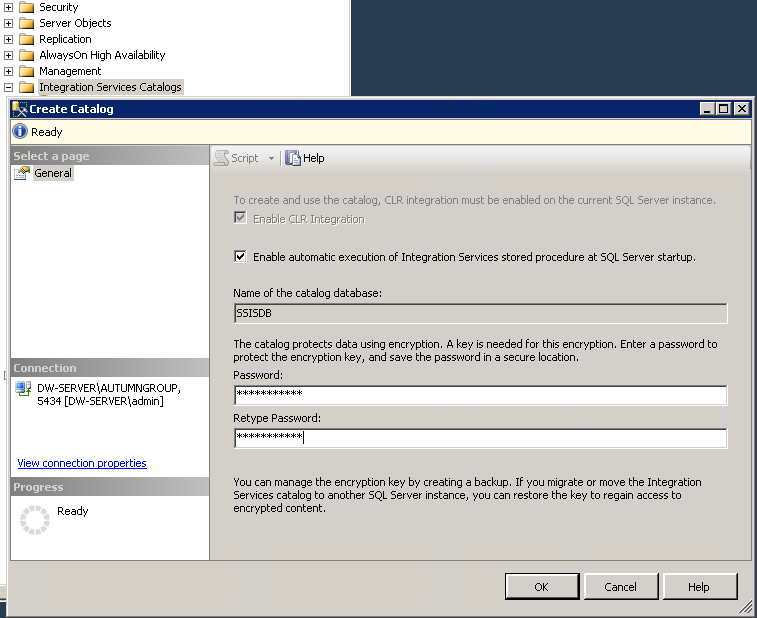
## How to create Integration Services Catalogs in SSMS

***IMPORTANT***:

* It's recommended that we should use relevant SSMS version with SQL Server Instance. Particularly, we use SSMS 2014, and SQL Server 2014
* Also, we have to install SSDTBI (Business Intelligence Tools) for Visual Studio 2013

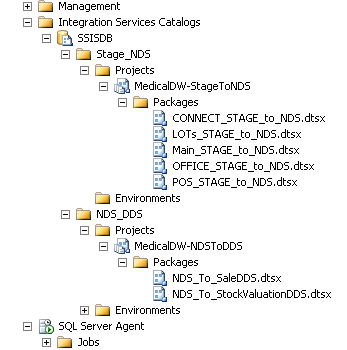
***Installation***

* Right click on "Integration Services Catalogs"
* Check "Enable automate execution...
* Fill in the password (Default: AutumnGroup)
* OK



After that it will create a SSISDB database in your instance

* We need to create 2 folders (Stage\_NDS, NDS\_DDS)
* Then we run Visual Studio to deploy 2 projects into those folders respectively
* The outcome should look like this



## How to create scheduled jobs with SQL Server Agent

## How to

## How to