**Accelerator Project**

Global Aladdin Implementation

**Project Set up**

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**PREFACE**

**About Accelerator:**

Accelerator is a sample project built to enable faster integration and automation testing capabilities for systems consuming data from Blackrock Aladdin System.

**Purpose of this Document:**

This document serves as a reference to set up Accelerator project locally. The document also provides information about Capabilities of Accelerator Component.

**Intended Audience:**

The intended audience for this document includes the Project Owner, Sponsor, Project Team, Stakeholders and Support Groups.

**Related Documents / References:**

The following documents have been referred to during preparation of this document.

| **Sr. No** | **Document Title and Version No.** | **Description** |
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**Acronyms and Abbreviations:**

The following acronyms and abbreviations have been used in this document.

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| --- | --- | --- |
| **Sr. No** | **Acronym** | **Abbreviations** |
| 1 | MQ | Messaging Queue |
| 2 | SFTP | Secure File Transfer Protocol |
| 3 | S3 | Amazon Cloud Storage Component |
| 4 | FIXML | XML encoding used within FIX. FIXML is widely adopted for derivatives post trade clearing and settlement globally |

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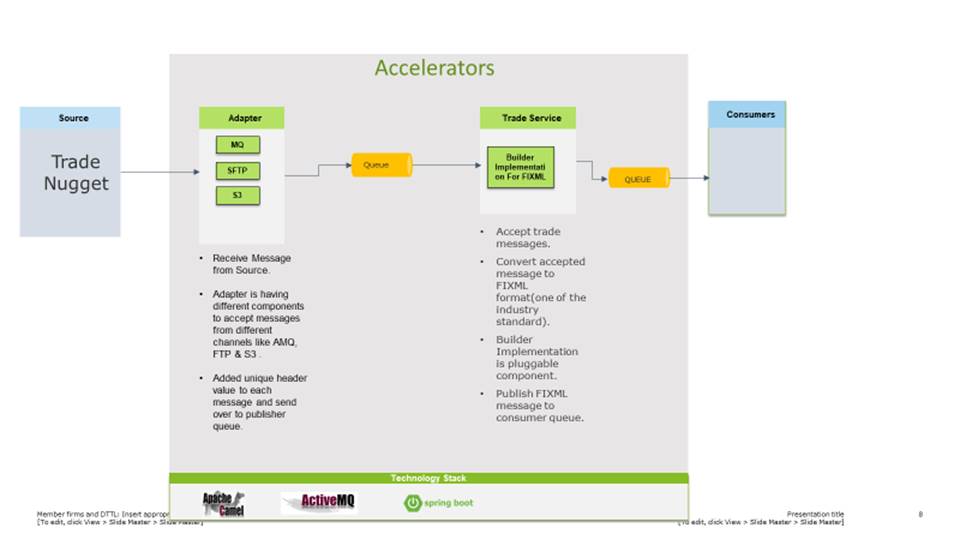
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# Overview

## Flow Diagram:



* BlackRock is an external component to Accelerators which produces asset and trade details in Aladdin XML format.
* This implementation provides two accelerator components : Adapter and Transformer
* Adapter component is set up to consume the inbound messages or files from BlackRock Aladdin landing at various inbound locations like messaging queue, SFTP, S3 etc. The inbound messages are then published to message queue for consumption by transformer component.
* The transformer component performs request and response translation to convert the incoming message to desired client format. ( As of now FIXML implementation is included)
* The transformed message is published to outbound message queue from where it can be consumed by external consumer component
* As part of Accelerator implementation, we have provided sample implementation for consumer component which persists FIXML data to

# Steps to Run the Application with Development Environment

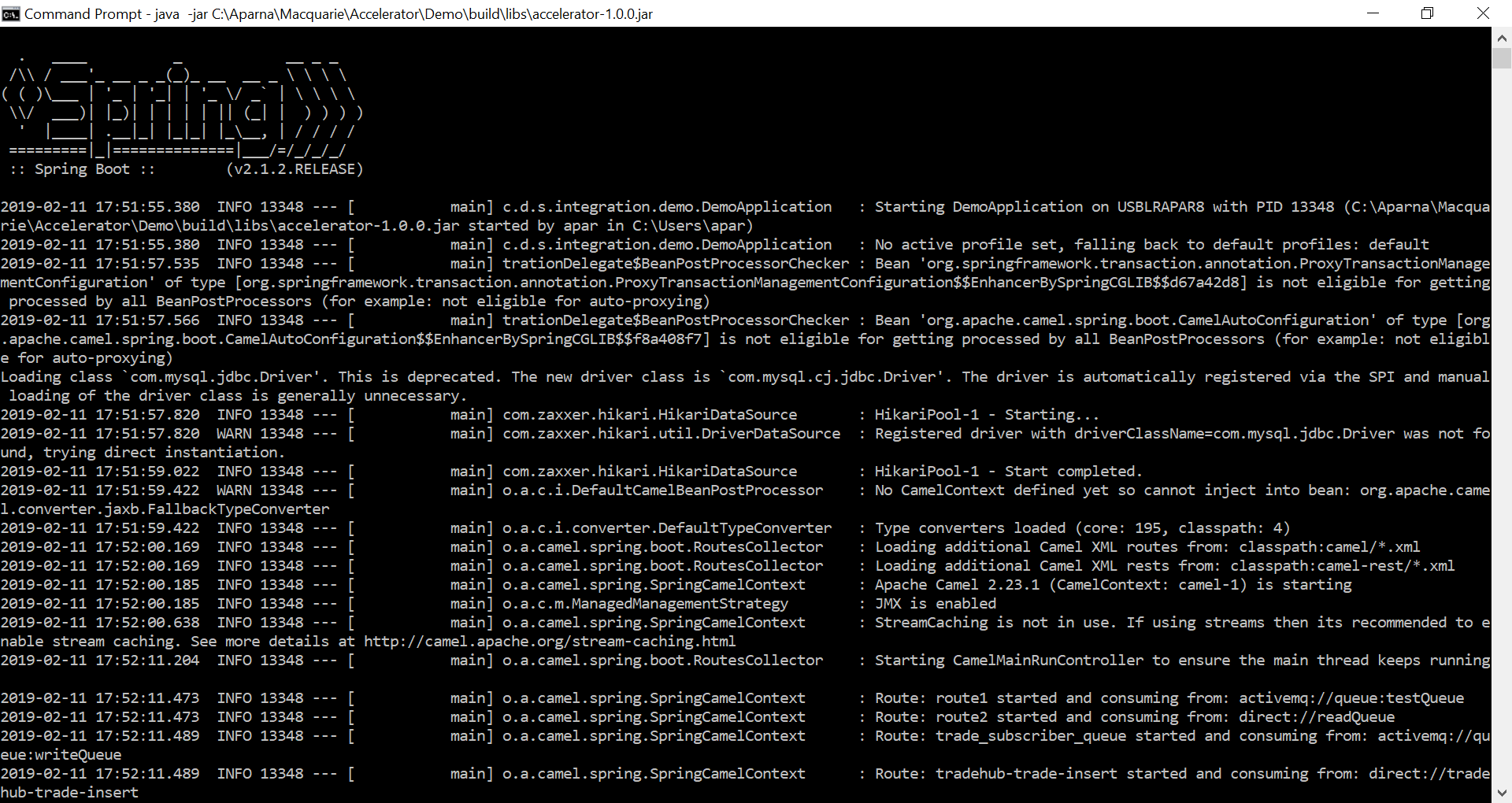
1. **ACTIVEMQ Installation:**
2. Follow this link to set up ActiveMQ locally: [ActiveMQ Installation and Set Up](https://dzone.com/articles/connecting-active-mq-with-apache-camel)
3. Start ActiveMQ instance using the command “activemq start” from {ActiveMQ installation directory}/bin/
4. Logon to ActiveMQ console using the URL: <http://localhost:8161/admin/queues.jsp> with username and password as “admin”
5. Click on “Queues”, provide a Queue name as “testQueue” and click on Create to create inbound queue for the application. Similarly create “writeQueue” as outbound queue.
6. **Consumer Implementation Set Up:**
7. Follow Appendix B to set up MySQL locally and create Schema structure.
8. **Development Environment Set Up:**
9. Download and install IntelliJ.
10. Make sure you have jdk1.8.0\_144
11. Install git
12. Clone: [Accelerator](https://github.com/rashmirao156/Demo.git) project
13. Import project to IntelliJ
14. Execute gradle task clean build –x test bootRun to start the application locally.
15. **Push sample message to testQueue:**
16. Push a Sample Trade message to “testQueue” (Refer Appendix A for sample message)
17. Check <http://localhost:8161/admin/queues.jsp> and verify that the values for ‘Messages Enqueued’ and Messages Dequeued’ have been incremented for both testQueue and writeQueue. Refresh the page to make sure that you are looking at the latest information.
18. Verify that the trades got inserted in TRADEHUB.ALADDIN\_RAW\_TRADES table in MySQL.

# Steps to Run the Application without Development Environment

1. **ACTIVEMQ Installation:**
2. Follow this link to set up ActiveMQ locally: [ActiveMQ Installation and Set Up](https://dzone.com/articles/connecting-active-mq-with-apache-camel)
3. Start ActiveMQ instance using the command “activemq start” from {ActiveMQ installation directory}/bin/
4. Logon to ActiveMQ console using the URL: <http://localhost:8161/admin/queues.jsp> with username and password as “admin”
5. Click on “Queues”, provide a Queue name as “testQueue” and click on Create to create inbound queue for the application. Similarly create “writeQueue” as outbound queue.
6. **Consumer Implementation Set Up:**
7. Follow Appendix B to set up MySQL locally and create Schema structure.
8. **Execute JAR File:**
9. Make sure you have jre 1.8.0\_144. If not get it from the following link:<https://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html>
10. Copy the JAR file attached below to any folder in your system(E.g. C:\myFolder)
11. Open command prompt and execute the following command:

java '-jar C:\myFolder\accelerator-1.0.0.jar'

You will see something similar to the below screenshot:



1. **Push sample message to testQueue:**
2. Push a Sample Trade message to “testQueue” (Refer Appendix A for sample message)
3. Check <http://localhost:8161/admin/queues.jsp> and verify that the values for ‘Messages Enqueued’ and Messages Dequeued’ have been incremented for both testQueue and writeQueue. Refresh the page to make sure that you are looking at the latest information.
4. Verify that the trades got inserted in TRADEHUB.ALADDIN\_RAW\_TRADES table in MySQL.

# Appendix

## Appendix A: Sample Trade Message

*<?***xml version="1.0" encoding="UTF-8"***?>*<**TRANSACTIONS ASOF\_DATE="5/29/2018" CREATE\_DATE="5/29/2018" RECORDS="109"**>  
 <**TRADE**>  
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 <**COUNTERPARTY\_CODE**>1033</**COUNTERPARTY\_CODE**>  
 <**CPN\_TYPE**>F</**CPN\_TYPE**>  
 <**CUSIP**>BRT81JBL1</**CUSIP**>  
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 <**EXECUTION\_TIME**>5/24/2018 15:20:39.000</**EXECUTION\_TIME**>  
 <**EXEC\_TIME\_SOURCE**>A</**EXEC\_TIME\_SOURCE**>  
 <**FIRST\_PAY\_DT**>6/30/2017</**FIRST\_PAY\_DT**>  
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 <**MULTI\_FUND\_ID**>17907</**MULTI\_FUND\_ID**>  
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 <**ROLL\_FEE**>0.0</**ROLL\_FEE**>  
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 <**SM\_CURRENCY**>COP</**SM\_CURRENCY**>  
 <**SM\_PRINCIPAL\_FREQ**>0</**SM\_PRINCIPAL\_FREQ**>  
 <**SM\_SEC\_GROUP**>BND</**SM\_SEC\_GROUP**>  
 <**SM\_SEC\_TYPE**>GOVT</**SM\_SEC\_TYPE**>  
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 <**TRDCOMM\_STIPS\_set SIZE="0"**></**TRDCOMM\_STIPS\_set**>  
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 <**TRD\_COMMISSION\_RATE**>0.0</**TRD\_COMMISSION\_RATE**>  
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 <**TRD\_EXCHANGE\_RATE**>2864.2250000000</**TRD\_EXCHANGE\_RATE**>  
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 <**TRD\_YIELD\_TO\_CALL**>0.0</**TRD\_YIELD\_TO\_CALL**>  
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 <**UNITS**>BONDS</**UNITS**>  
 </**TRADE**>  
   
</**TRANSACTIONS**>

## Appendix B: MYSQL Set Up and Schema Creation

1. **SQL Installation Steps:**

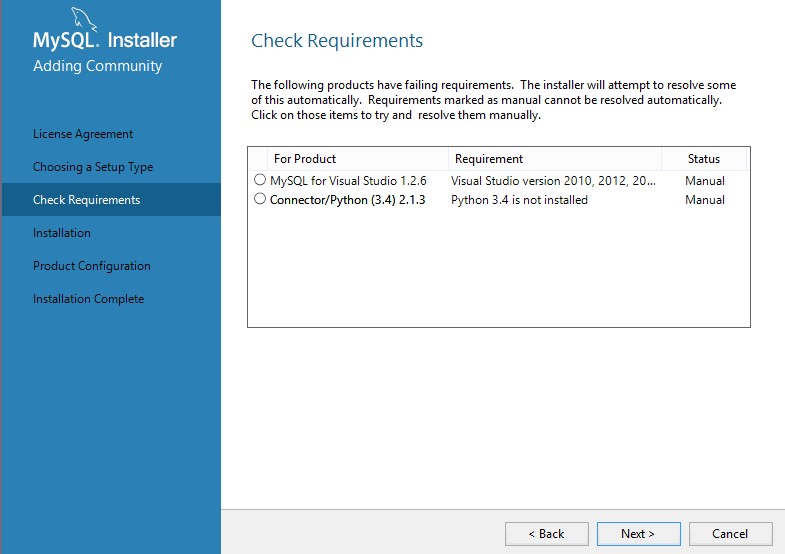
SQL stands for Structured Query Language and is a standard language to communicate with relational database systems. It has some implementations like MySQL, MS Access, and SQLServer. This guide will walk through the installation procedure of MYSQL for your respective platforms

Windows:

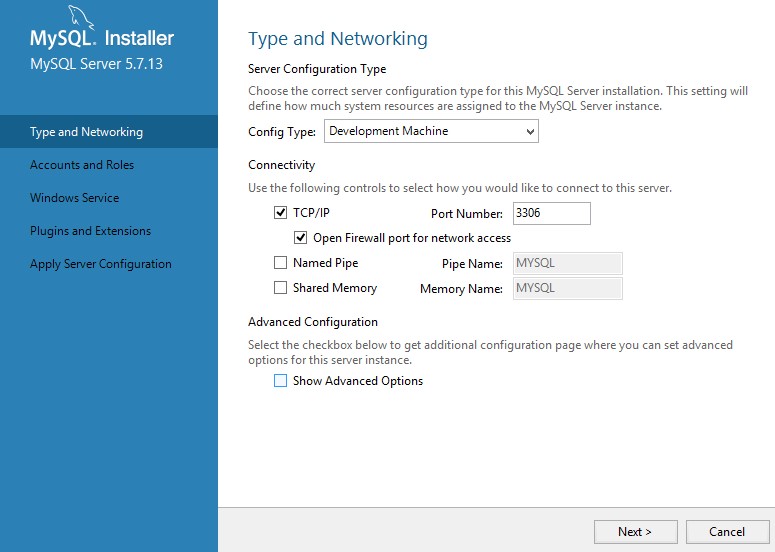
* The windows installer can be downloaded from the official [website](https://dev.mysql.com/downloads/installer/)
* Once you click on download, you will be redirected to another page where you can either create
* an account or click on “No thanks, just start my download”
* Once downloaded, run the installer and initiate the setup process

Setup Steps:

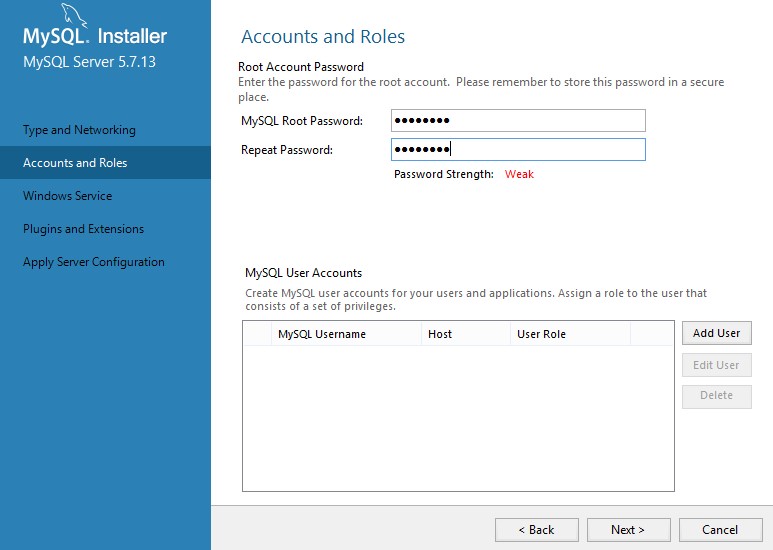
* Click on Next
* On the next page you see 5 options. We would be requiring the server and the examples. In this case, continue with Developer Default
* The next page has the check requirements. It might show a couple of requirements that might not be resolved automatically. In this case, we don’t actually need the Python Connector and Visual Studio, so select Next without clicking on the requirements



* Select execute on the next page to install various products
* On the Product Configuration page, select Next
* Configure as given in the image



* Set the SQL root password. This will be required whilst connecting to the database. Users can also be added for privileges and restrictions, but you can ignore it for now ● The root account has the username “root” which will be used in future



* On the next page (Windows Service), go with the defaults
* Plugins and Extensions is optional, you can skip and select Next ● On Apply Server Configuration, Select Execute ● Once done, Select Finish.

A new window will open where the server connection will happen

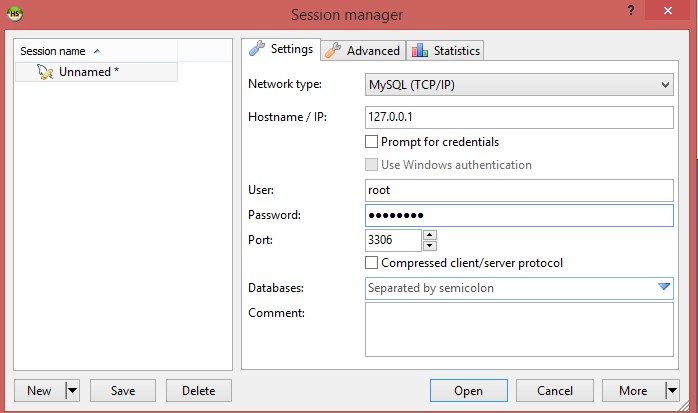
* Select “check”, which will display a message “Connection successful”. Click on Next
* Click on Execute and Finish once done
* Complete the process and you will have MySQL workbench opened

You can connect to local instance by clicking on it and entering your password that you set during the setup process.

In the bottom left, the databases can be seen. Select world and under it select Tables. The 3 tables used in the lectures are present. Right clicking on them and selecting “Select Rows - Limit 1000”.

**HeidiSql:**

The tool used throughout the session is MySQLWorkbench. There is also a simple third party tool for Windows called HeidiSQL with a simple interface. It can be downloaded from [here.](http://www.heidisql.com/download.php) Simply run the setup and launch. Click on New and enter the password



**MAC OS:**

* Go to the MySQL [website,](http://dev.mysql.com/downloads/mysql/) scroll down the page and look for version Mac OS X ver. 10.6 (x86, 64-bit), DMG Archive. Select download and it will take you to a page that asks you to login or signup. You don’t have to signup, instead there is a link right below these buttons. Click the link “No thanks, just start my download.” This will start the download.
* After downloaded you will need to install all 3 of the components in the package. Doubleclick on each package to install them.

**mysql-5.6.10-osx10.6-x86\_64.pkg** – MySQL software

**MySQL.prefPane** – Allows mysql to stop/start

**MYSQLStartupItem.pkg** – Allows mysql to start when booted

* To start MySQL via the command line *sudo /usr/local/mysql/support-files/mysql.server start*

Or you can click Start MySQL Server when the dialog opens after installing the 2nd package.

* Set MySQL root password:

*/usr/local/mysql/bin/mysqladmin -u root password 'yourpassword'*

For more info, refer the [MySQL documentation.](http://dev.mysql.com/doc/refman/5.7/en/osx-installation-pkg.html)

1. **Schema Creation:**

**CREATE SCHEMA** IF **NOT EXISTS** TRADEHUB;  
  
**DROP TABLE** IF **EXISTS** TRADEHUB.ALADDIN\_RAW\_TRADES;  
  
**CREATE TABLE** TRADEHUB.ALADDIN\_RAW\_TRADES(  
 TRD\_NUM BIGINT **null**,  
 TRD\_VER **varchar**(255) **null**,  
 SETTL\_CCY **varchar**(255) **null**,  
 TXN\_TM **varchar**(255) **null**,  
 LAST\_UPDATE\_TM **varchar**(255) **null**,  
 LAST\_PX **varchar**(255) **null**,  
 GROSS\_TRD\_AMT **varchar**(255) **null**,  
 TRANS\_TYP **varchar**(255) **null**,  
 TRD\_DT **varchar**(255) nulla  
);