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Objectives

Upon successful completion of this chapter, you will be able to:

- Explain the major components of the Facets core environment
- Explain the major elements of the System Configuration file
- Explain the difference between Run xml files and Procedure xml files
- Explain the application server directory structure
- Explain the manual procedure for executing a batch job
- Explain the available trouble-shooting methods for errors

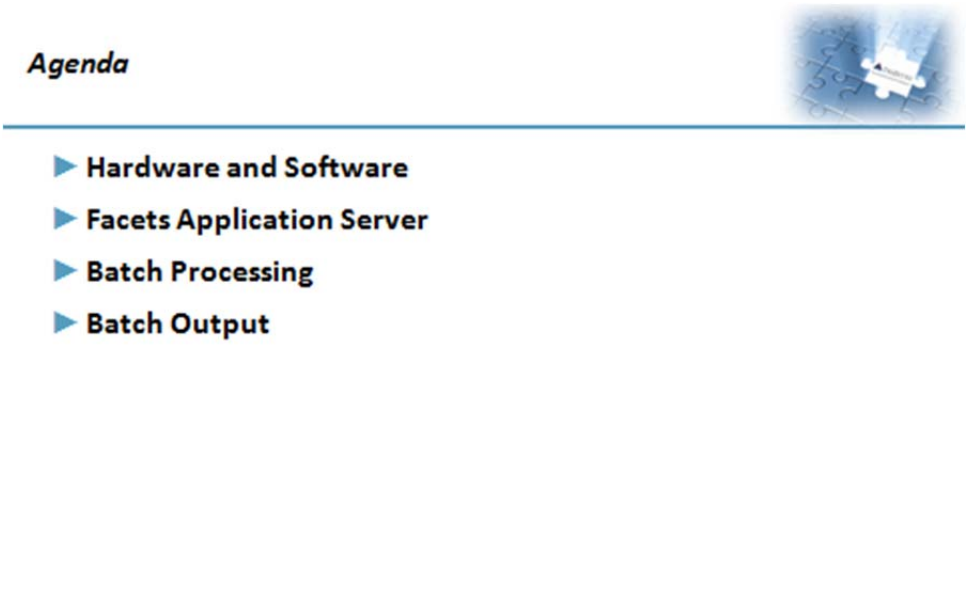
Upon successful completion of this chapter, you will be able to (continued):

- Explain the three types of execution in a batch step
- Explain the output directory structure
- Explain the available tools for trouble-shooting
- Explain how to use EnableCapture and where to find the output
- Explain the purpose of the **SYML** table in relation to the batch job
- Explain where to find the trouble-shooting parameters in the system configuration file

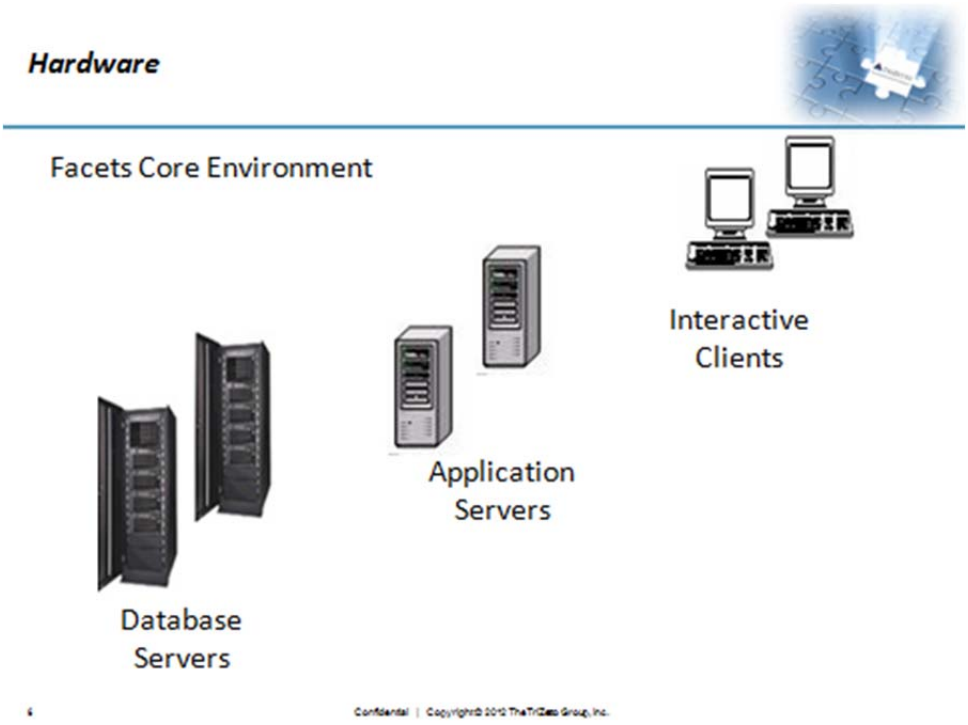
Upon successful completion of this chapter, you will be able to (continued):

- Explain the function and purpose of each parameter under Database Diagnostics
- Explain the purpose of the SYIN_INST ID

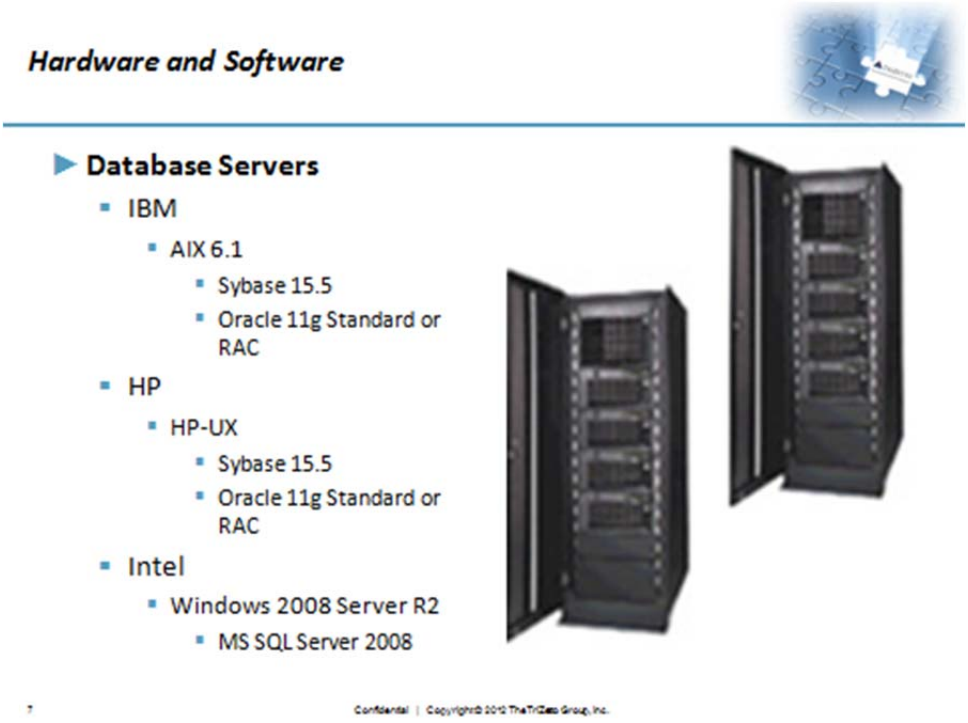
Agenda



Hardware



Hardware and Software



Hardware and Software

- **Interactive Clients**
  - MS Windows 7 – 32 or 64 bit
  - JRE 1.6
  - IE 9.0 or Firefox 3.6
  - MS Visual Studio Tools for Office 3.0
  - MS Office 2007 or 2010 – 32 or 64 bit
    - Word
    - Access

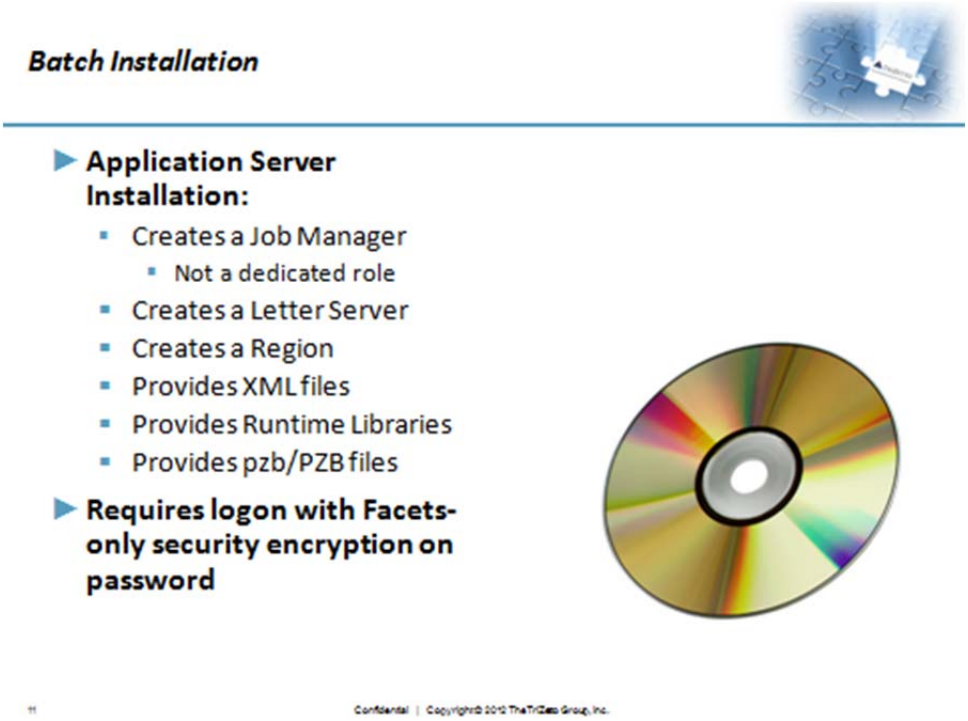
Hardware and Software

- **Application Server**
  - MS Windows Server 2008
  - MS Windows 2010 32 or 64 bit
  - IE 9, Firefox v3.6, Google Chrome 5
  - JRE 1.6
  - MSXML Parser 6.0
  - Windows Scripting Host 5.6
  - .Net 3.5 SP1

Hardware and Software

- **Application Server (continued)**
  - ODBC Driver:
    - SQL: SQL Native Client 10.5
    - Oracle: 11.2.02
    - Sybase: SDK 15.0 EBF 17890 ESD #24 (32bit)
    - Sybase: SDK 15.0 EBF 17904 ESD #24 (64bit)

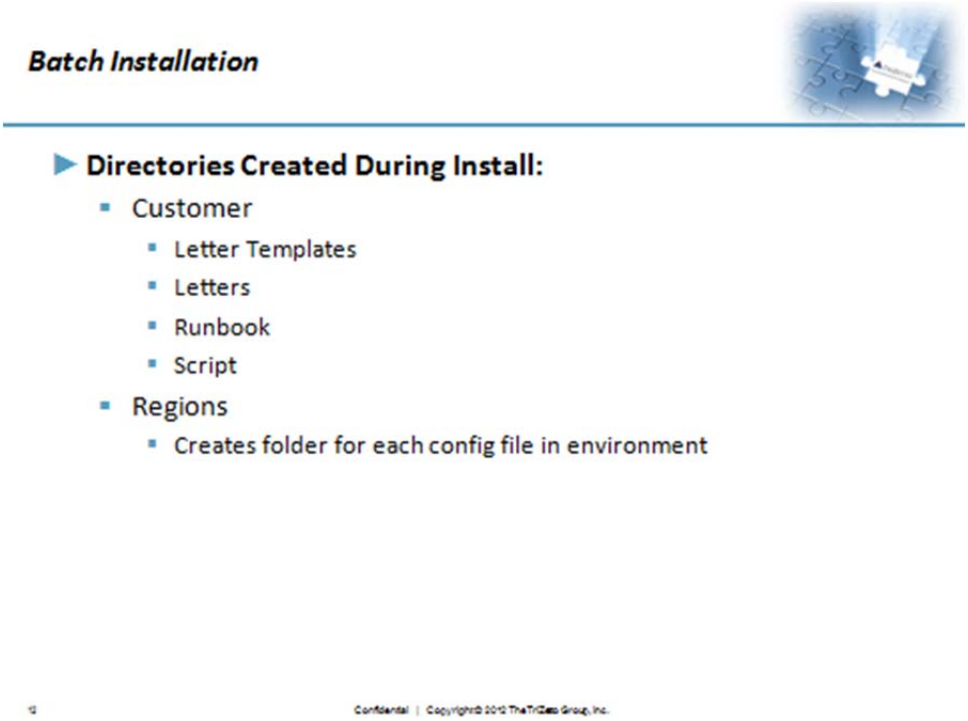
Batch Installation



The setting of power in AppServer determines the engine distribution across the application servers.

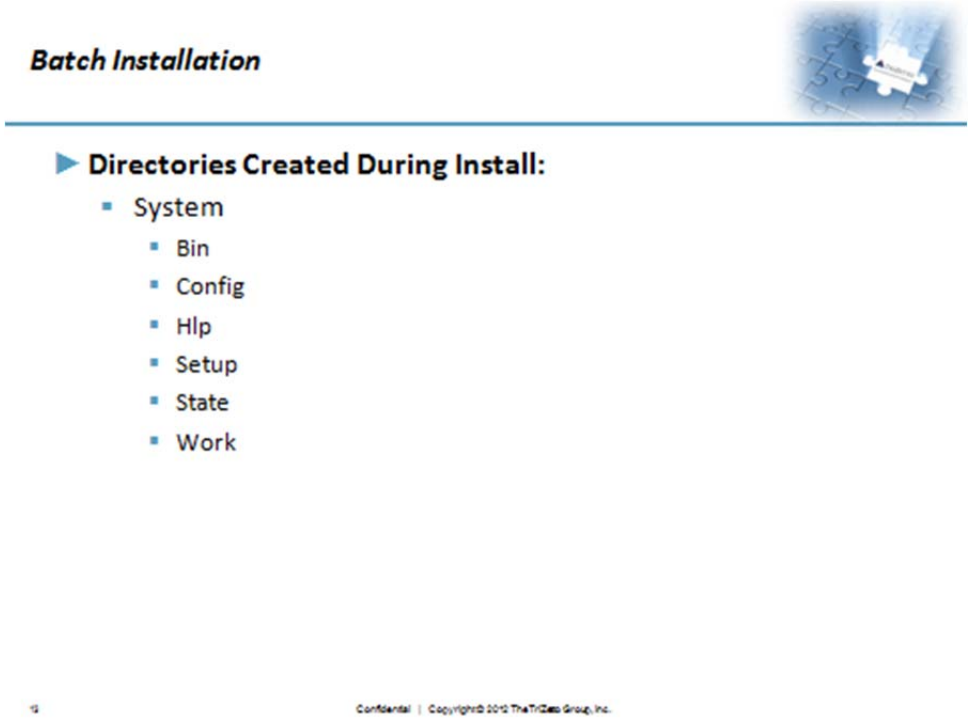
During the Batch Installation process, the Job Manager initiates a batch, then steers all subsequent work to other application servers in the environment.After installing the Facets Application Server, the user creates only one network user profile to handle batch operations and uses the “runas” command for running jobs through this profile. The user role for this function is normally a local user or administrator. The best practices recommendation for these procedures suggests that one specified user holds this role considering the requirement of component identity assignment and DCOM configuration's use of one user identity. In order to run and stop properly, the batch user needs Read/Write access permissions to the output directories defined in the “UserOutputDirectory” and “BatchOutputDirectory” parameters in the region configuration file. The same user requires Read/Write access permissions to all temp folders on each application server.

Batch Installation



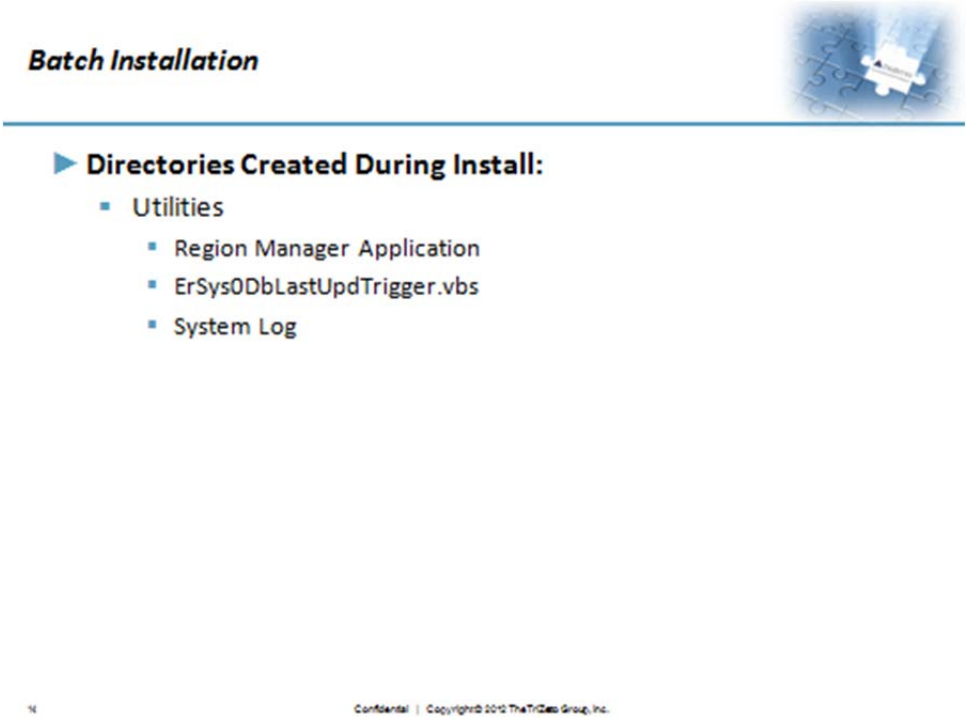
Facets creates these directories during batch installation processes:

- Customer
  - Letter Templates –This contains headers and templates for the letter server.
  - Letters – This is storage for saved letters.
  - Runbook – This is XML Run Files.
  - Script – This is available for Custom VB scripts.
- Regions
  - This creates a folder for each System Configuration file in the environment.



Directories Created During the Install:

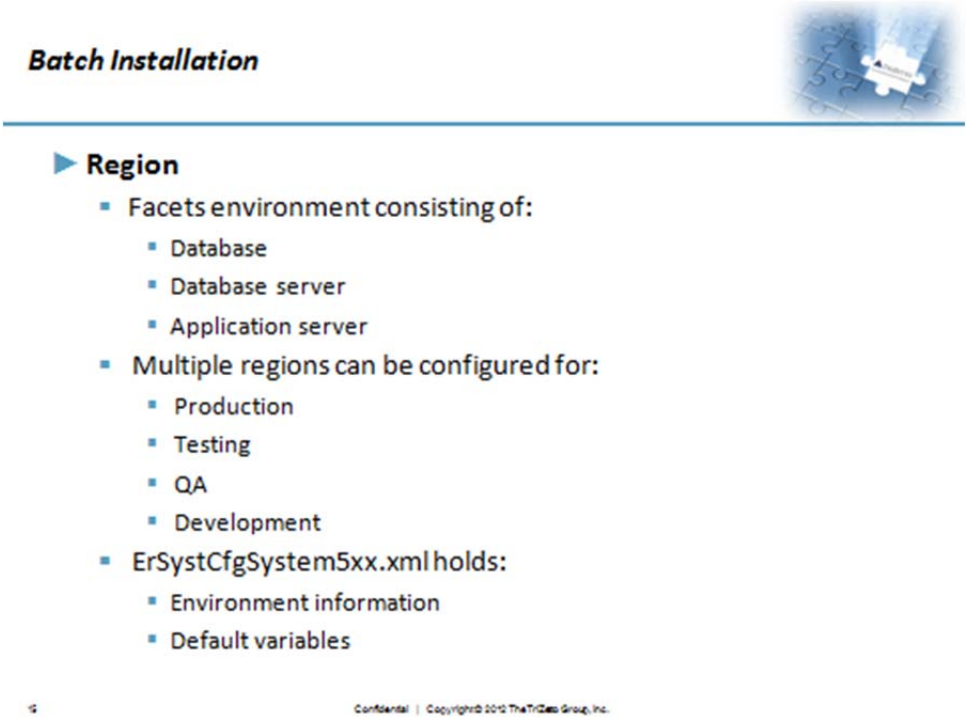
- System
  - Bin – This includes dll, executable, and Procedure files.
  - Config – This includes system and pzb files.
  - Hlp – This includes user documentation used for the Interactive client.
  - Setup – This includes system configuration utilities (registry scripts).
  - State – This is a temporary directory for batch use.
  - Work – This is capture log storage.



Some Facets tables include a **Date/Time** column indicating the date and time when the system inserted and updated the row. Facets provides an additional script utility (ErSys0LastUpdTrigger.vbs) that allows users to select certain tables to update (or create). The trigger code for that script then populates the new column.

On the Facets Application Server, the ErSys0DbLastUpdTrigger.vbs script creates a datetime entry in the SYS_LAST_UPD_DTM column on the table. The user finds this in the Facets\5xx\Utilities directory. Then, using the C:\Facets\5xx\Utilities\ErSys0DbLastUpdTrigger.vbs --RegionName = (value),--TableName = (value), --Indicator = (value) command, the user passes the required parameters to enable or disable the trigger.

In order to test this utility, a user inserts a row in a table with an enabled date/time indicator. The user may then verify the results: a correctly populated **Date/Time** column.



Region:

- A region consists of a Facets environment with a database, a database server, and an application server.

The user may configure multiple regions for:

- Production
- Testing
- QA
- Development

The following script: ErSystCfgSystem5xx.xml holds the environment information and default variables.

ErSystCfgSystem5xx.xml

ErSystCfgSystem5xx.xml

```
<Category name="SystemSignon">
        <Item name="FacetsUser">UserID</Item>
        <Item name="SignonMethod">F</Item>
    </Category>
    <Category name="Environment">
        <Item name="UserOutputDirectory">C:\Program Files\TriZetto\Facets\5xx\Customer\output</Item>
        <Item name="BatchOutputDirectory">C:\Program Files\TriZetto\Facets\5xx\Customer\output</Item>
        <Item name="ScriptDirectory">C:\Program Files\TriZetto\Facets\5xx\System\Bin</Item>
        <Item name="AppServer" power="1" commarea="Y" default="Y">App Server Name</Item>
        <Item name="RunFileDirectory">C:\Program Files\TriZetto\Facets\5xx\Customer\Runbook</Item>
        <Item name="ProcFileDirectory">C:\Program Files\TriZetto\Facets\5xx\System\Bin</Item>
        <Item name="SQLUtilDir">c:\program files\microsoft sql server\80\tools\binn</Item>
        <Item name="SQLImportExportProgram">bcp.exe</Item>
```

ErSystCfgSystem5xx.xml

```
<Category name="Control">
    <Item name="MsgLog">SYML</Item>
    <Item name="RequestWaitTries" commarea="Y">1</Item>
    <Item name="RequestWaitSeconds" commarea="Y">10</Item>
    <Item name="AcknowledgementCountLimit" commarea="Y">50</Item>
    <Item name="NumberOfEngines" commarea="Y">1</Item>
    <Item name="StepCompleteWait">60</Item>
    <Item name="ResumeInterval" commarea="Y">10</Item>
    <Item name="EngineWaitTime" commarea="Y">6</Item>
    <Item name="EOFMode" commarea="Y">C</Item>
    <Item name="EnableSystemAppServers">Y</Item>
    <Item name="OutputType">X</Item>
    <Item name="MergeLogs"></Item>
    <Item name="TempLogRetry">5</Item>
```


A user may combine all three types of master logs into single files. This process involves copying the “MergeLogs” parameter from the region configuration file into the run file and valuing it with “E,L,O”.

ErSystCfgSystem5xx.xml

```
<Category name="SystemDiagnostics">
        <Item name="ConsoleOutput">True</Item>
        <Item name="TraceSqlOut">False</Item>
        <Item name="TraceFunction">False</Item>
        <Item name="TraceDebug" commarea="Y">False</Item>
        <Item name="TestMode">False</Item>
        <Item name="TraceDictionary">False</Item>
    </Category>
```

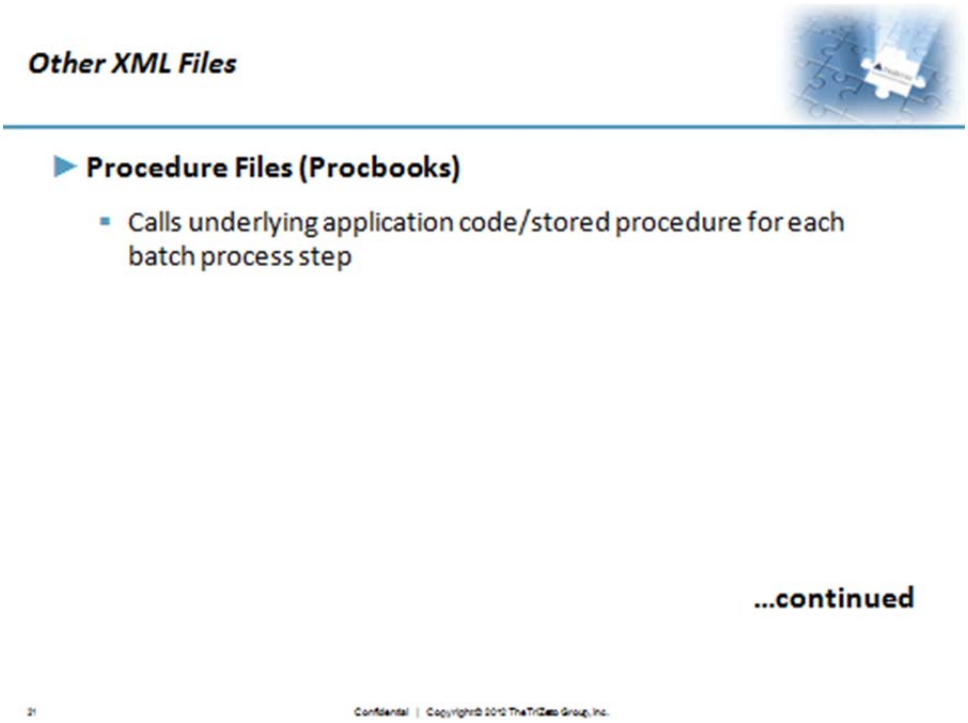
ErSystCfgSystem5xx.xml

```
<Category name="DatabaseDiagnostics">
    <Item name="EnableCapture">N</Item>
    <Item name="Playback">N</Item>
    <Item name="TimeDifference">N</Item>
    <Item name="MaxTime">00:00:00.000</Item>
    <Item name="DelayTime">N</Item>
    <Item name="CaptureFileDirectory">C:\Program Files\TriZetto\Facets\4xx\System\Work</Item>
    <Item name="DisplayConnectionSpecificationInfo">N</Item>
    <Item name="DisplayGetProcParmsCalls">N</Item>
    <Item name="DisplayResults">N</Item>
    <Item name="DisplayStmtOnly">N</Item>
    <Item name="ReportAllErrors">N</Item>
```

ErSystCfgSystem5xx.xml

```
<Category name="DataDomains">
        <Item name="DataDomain" commarea="Y">RegionName</Item>
        <DataDomain name="RegionName ">
    <!--Sybase Connection Specifications: PORT will be appended to Datasource, Database required, PacketSize required-->
        <!--Microsoft Connection Specifications: Database required, PacketSize required-->
        <!--Oracle Connection Specifications: "Schema" will replace "Database", required, -->
        <ConnectionSpecification name="SYS0" protocol="ODBC" platform="Microsoft">
        <ConnectionAttribute name="Datasource">Servername</ConnectionAttribute>
        <ConnectionAttribute name="Database"> DB Name </ConnectionAttribute>
        <ConnectionAttribute name="UserId">UserID</ConnectionAttribute>
        <ConnectionAttribute name="Password">Password</ConnectionAttribute>
        <ConnectionAttribute name="ODBCDriver">SQL Server</ConnectionAttribute>
        <ConnectionAttribute name="PacketSize">4096</ConnectionAttribute>
        </ConnectionSpecification>
```

Other XML Files



Other XML Files

continued…

```
<Action number="3000_1000">
    <ActionOrder>3000_1000</ActionOrder>
    <Category name="Indicative">
        <Item name="ActionNumber" override="N">3000_1000</Item>
        <Item name="StepId" override="N">BELG</Item>
        <Item name="ExecutionType" override="N">E</Item>
        <Item name="ProgramName" override="N">cerbexe0</Item>
        <Item name="Architecture" override="N" commarea="Y">2X</Item>
    </Category>
    <Category name="Control">
        <Item name="PzapAppId" override="Y" commarea="Y">BELG</Item>
    </Category>
    <Category name="Parameters">
        <Item name="NumberOfEngines" override="Y">2</Item>
```

Other XML Files

- **Run Files (Runbooks)**
  - Calls the Procedure XML
  - Overrides the default variables

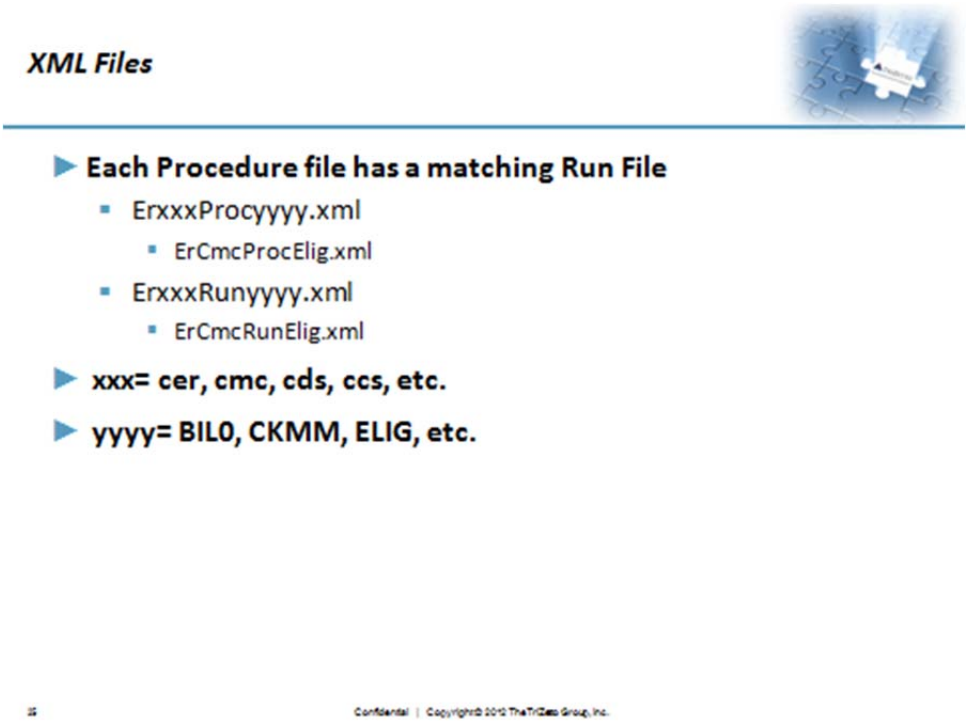
...continued

Other XML Files

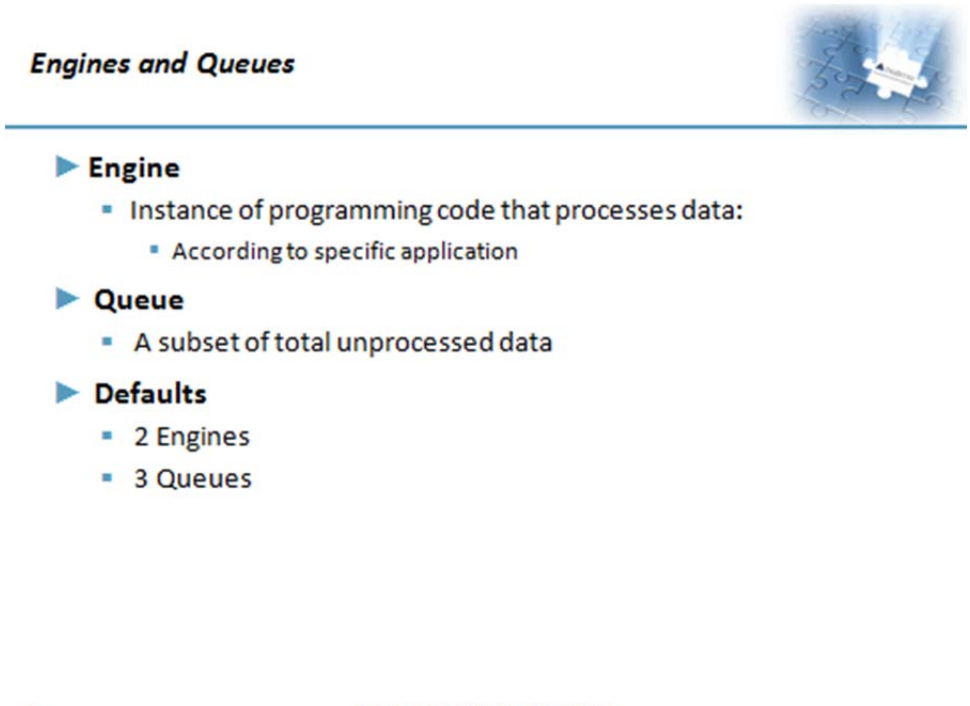
continued...

```
            <!--<Item name="BypassStep">1000</Item>-->
            <!--<Item name="RestartStep">1000</Item>-->
            <!--<Item name="StopStep">1000</Item>-->
            <!--<Item name="RunDate">mm/dd/yyyy 00:00:00.000</Item>-->
            <!--<Item name="RunThruDate">mm/dd/yyyy 00:00:00.000</Item>-->
            <!--<Item name="SbElprMaxQueue">5000</Item>-->
        <Step number="2000">
        <Category name="Parameters">
<!--################################
        # Step Level Overrides
################################-->
            <!--<Item name="EnginesTimesQueues">6</Item>-->
        <Step number="3000">
        <Category name="Parameters">
<!--################################
        # Step Level Overrides
################################-->
            <!--<Item name="NumberOfEngines" commarea="Y">2</Item>-->
```

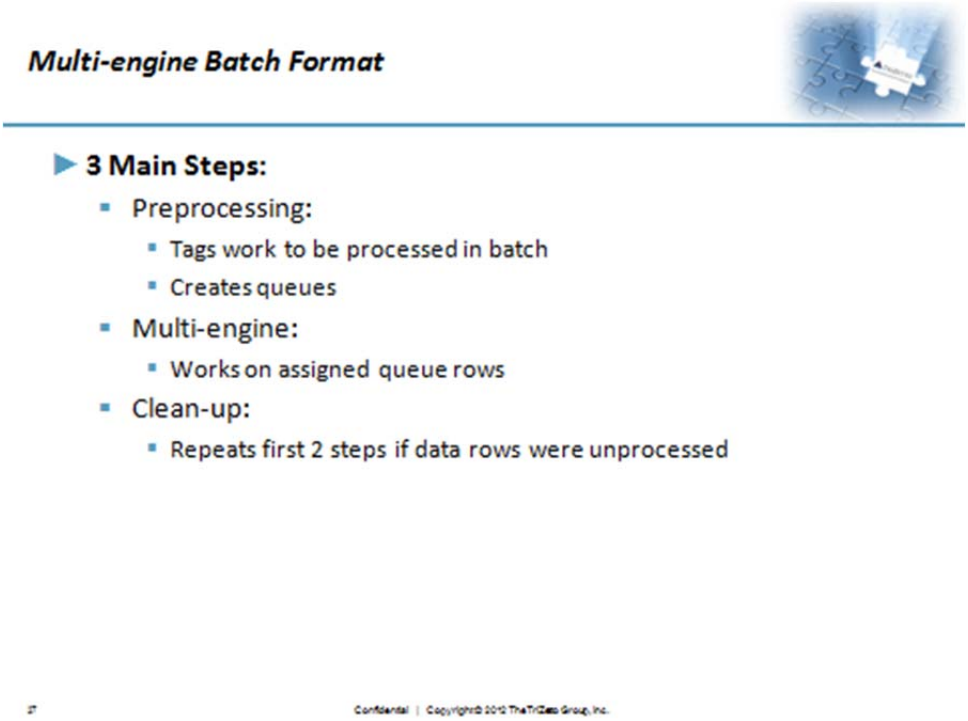
XML Files



Engines and Queues



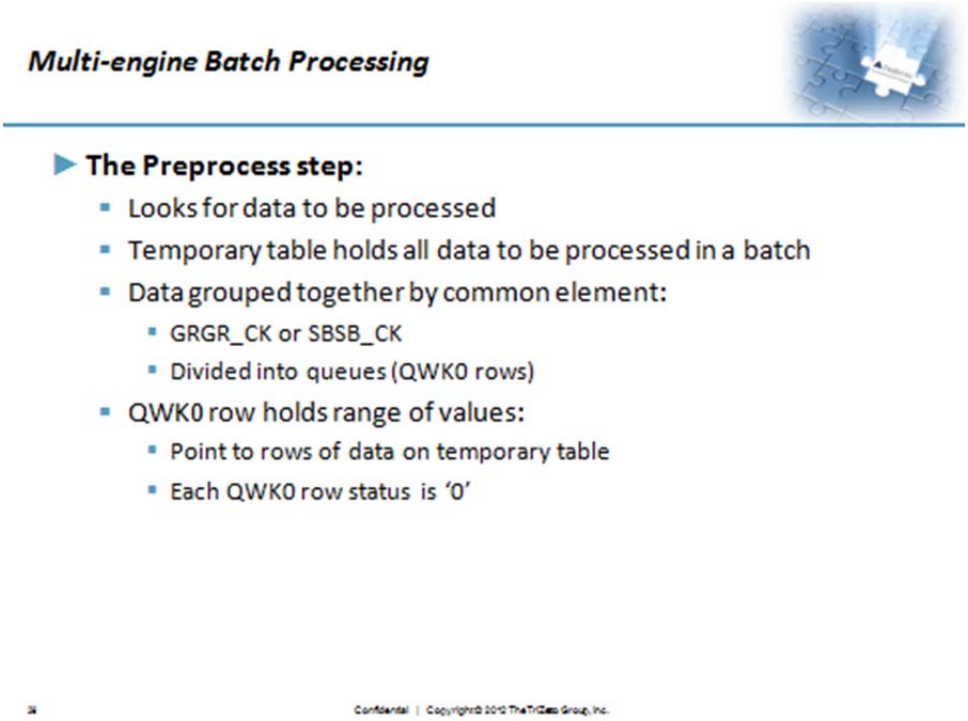
Multi-engine Batch Format



The Multi-engine Batch Format consists of these three main steps:

1. Preprocessing – This step tags the work batch processes and creates subsets called queues.
2. Multi-engine – The engines work on assigned queue rows until all queues are processed.
3. Cleanup –This step repeats the first two steps using one queue row and one engine to address rows with contention on the database.

Multi-engine Batch Processing



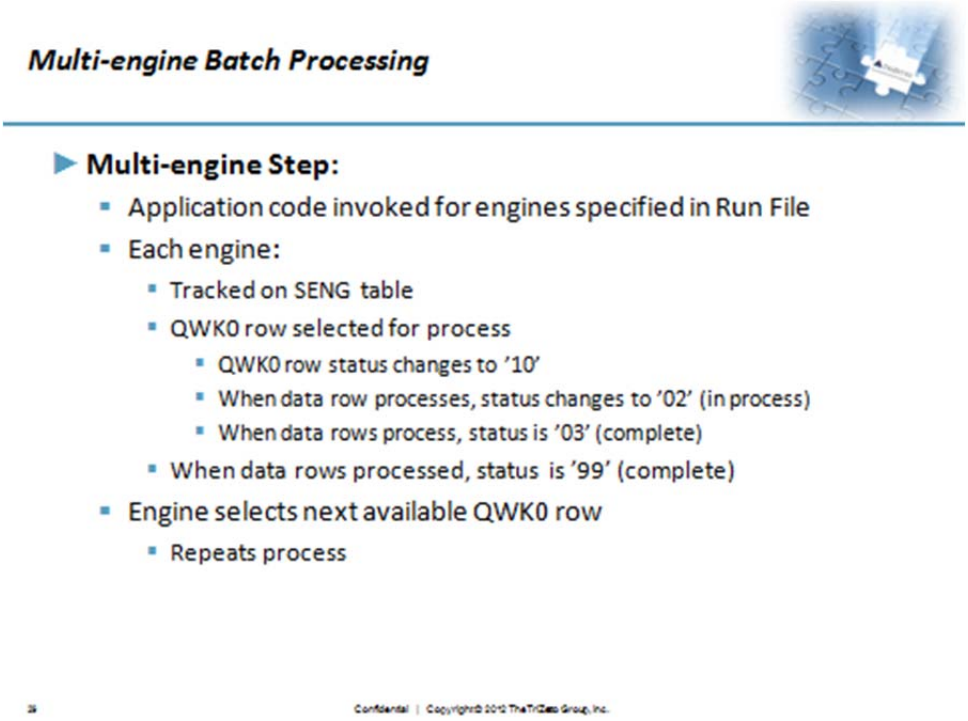
The Preprocess step:

1. Searches for data ready to process

Note: For most batches, Facets holds this data on a trigger table with a status of 01.

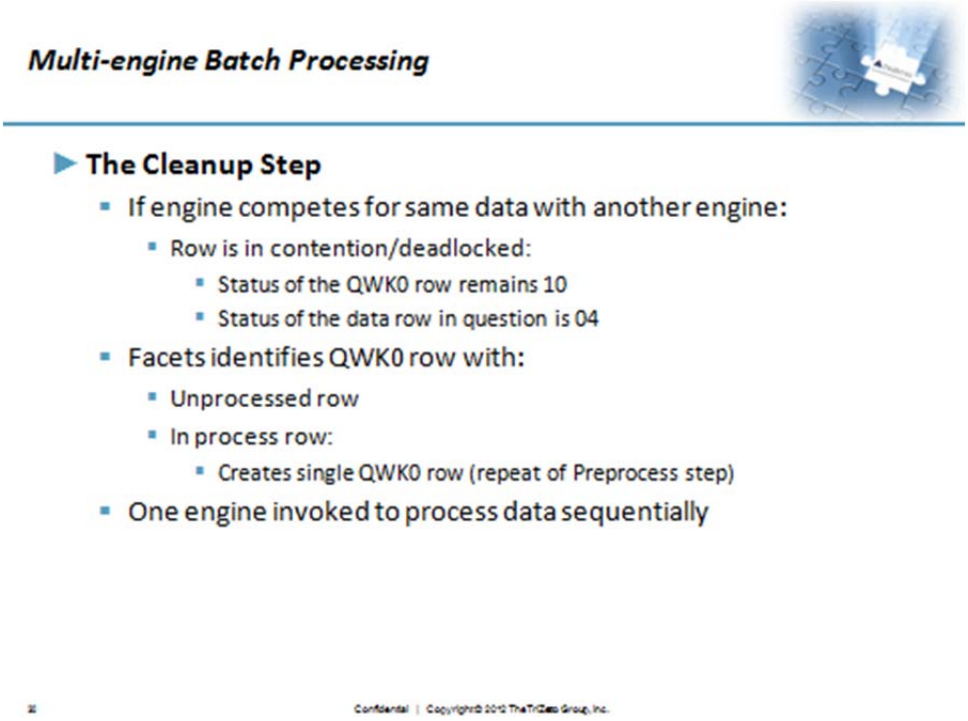
2. A temporary table holds all data ready for processing in a specific batch.
3. Facets groups data together by common elements, such as GRGR_CK or SBSB_CK, and divides them into smaller work sets called queues (QWK0 rows).

Note: Each QWK0 row holds a range of values that point to rows of data on the temporary table. The status is 0 for each QWK0 row.



The Multi-engine Step:

4. Facets invokes the application code for the number of engines specified in the Run File.
5. Facets tracks each engine on the **SENG** table by a spid number and selects a QWK0 row for processing:
   a. The QWK0 row status changes to 10 (in process).
   b. As each pointer presents a data row for processing, the row on the temporary table changes status to 02 – in process.
   c. As Facets processes each data row, the status changes to 03 – complete.
6. After processing completes for all data rows in the QWK0, the status changes to 99 – complete.
7. The engine selects the next available QWK0 row and repeats the process until processing completes for all QWK0 rows.



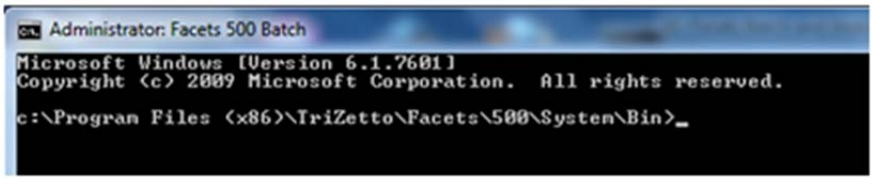
The Cleanup Step:

8. If an engine competes with another engine for the same data, the row is in contention or deadlocked. The status of the QWK0 row remains a 10 and the status of the data row in question becomes 04 (deadlocked).
9. Facets identifies the QWK0 row with unprocessed or in process rows and creates a single QWK0 row (a repeat of the Preprocess step).
10. One engine invokes to process the data sequentially (a repeat of the Multi-engine step).

Batch Processing

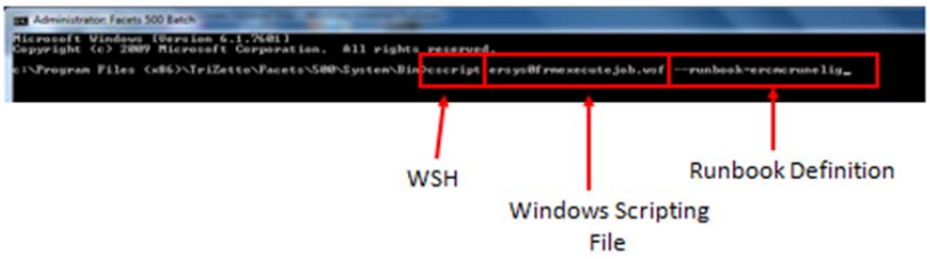
Batch Processing

- All batch jobs initiated on Job Manager
- Jobs initiated in System/Bin when 'cmd' session started

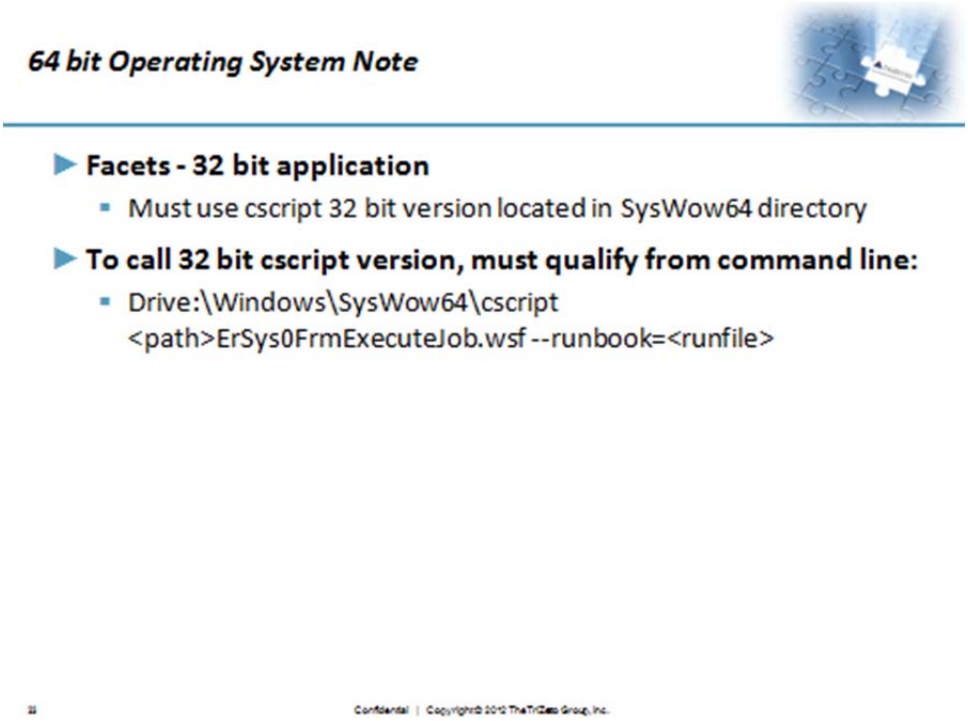


Batch Processing

- **The command to run batch is**
  Cscript ErSys0FrmExecuteJob.wsf --Runbook=runbook name



64 bit Operating System Note



Due to the nature of a 32 bit application, Facets must use the 32 bit version of cscript located in the SysWow64 directory. In order to call the 32 bit version of cscript and qualify Facets, the command lines must show:

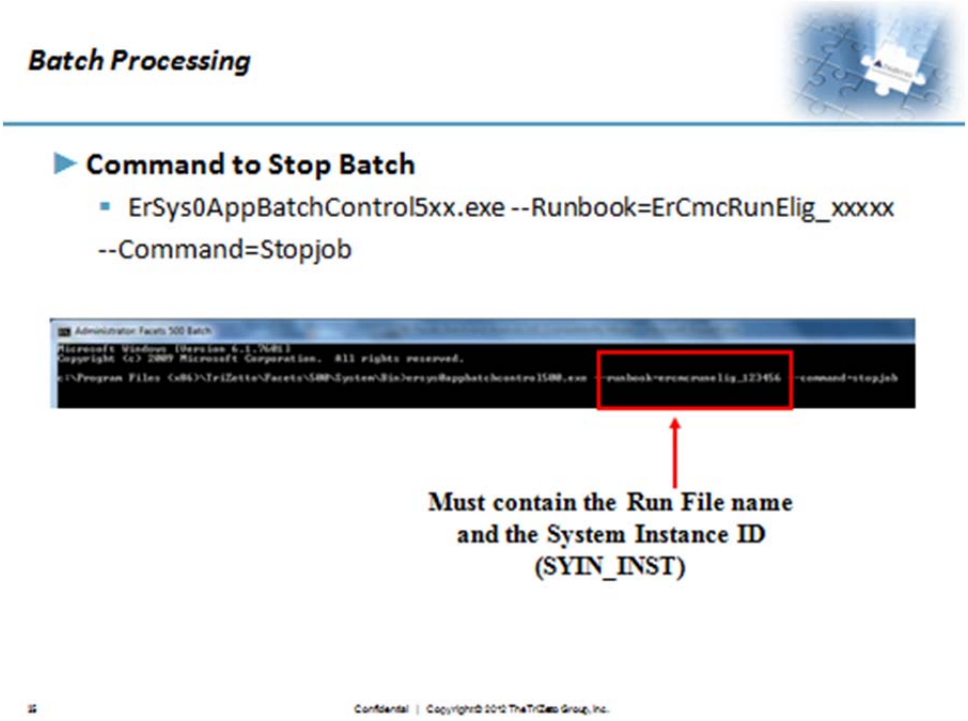
Drive:\Windows\SysWow64\cscript <path>ErSys0FrmExecuteJob.wsf --runbook=<runfile>

Batch Processing

- The command to run batch against a specific region

  Cscript ErSys0FrmExecuteJob.wsf --Runbook=*runbook name*
  --region=region_name

Specifies a System Configuration File to use for this batch job



The batch control command line tool allows a user control over all running batches. To use this tool:

11. Open a command prompt
12. Find the Queued Work Item Process script: \Facets\501\System\Bin within your Job Manager's home directory
13. Run the Queued Work Item Process console file ErSys0AppBatchControl451

ErSys0AppBatchControl5xx.exe

ErSys0AppBatchControl5xx.exe

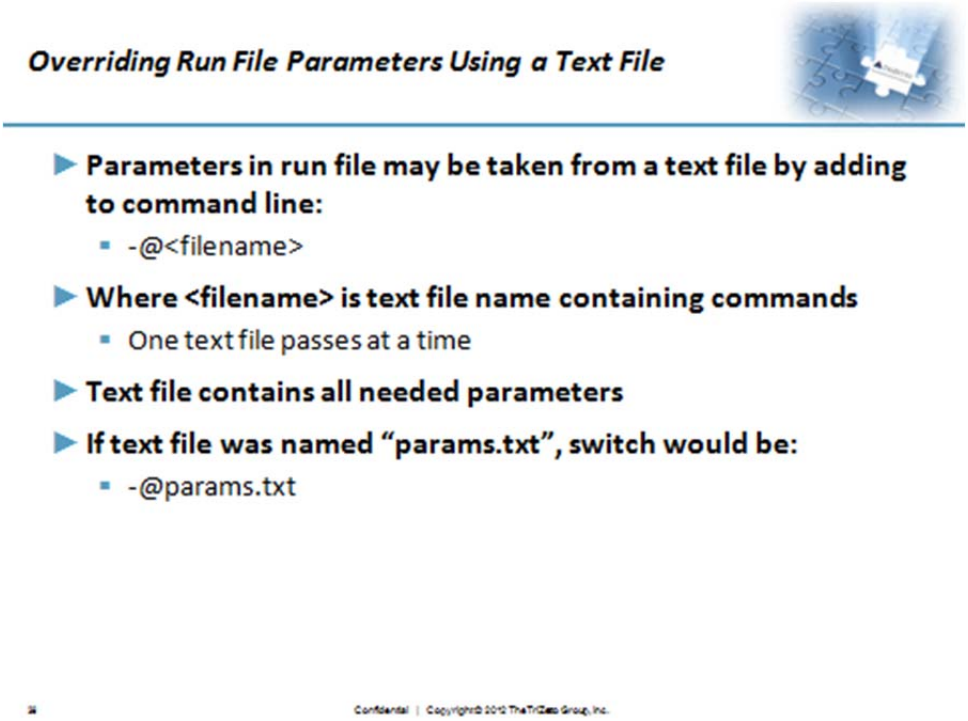
Option	Required/ Optional	Description
JobFile_Instance	Required	Runbook appended with the instance number of the job separated by an underscore. For example, ErCmcRunElig_23542.
Command	Required	**KillJob:** Hard kill of the job. Engines are killed without regard to where they are in a business transaction. **Status:** Gives the status of the job. When using this option, if the run file starts with a prefix other than "Er", the parameter "--JobPrefix=XX" must be added, where "XX" is the first two characters of the renamed run file. **ServiceControl:** Allows you to change the process mode of submission services. The following switches are available: • **Mode:** Required. Sets the process mode of the service. Valid values are Q (Sets the service mode to Queued), R (Sets the mode to Real-time), and S (Returns the current setting). • **Service:** Required. The name of a submission service to have the process mode switched. • **CallingSystem:** Optional. The name of the calling system to use (i.e. "Default"). If left blank this request will apply to all calling systems.
Style	Optional	**Job:** Lists all available job objects on the Facets Virtual Server. This runs by default when "Command=Status" is used. **ProcessId:** Supply a given process ID to learn which job object it belongs to.

The batch control command line tool allows the user to control all batches while they run.

ErSys0AppBatchControl5xx.exe

- **Generic:**
  - ErSys0AppBatchControl500 JobFile_Instance --Command=[...] --Action=[...] --Engine=#
- **Status:**
  - ErSys0AppBatchControl500 ErCmcRunEnrl_123 --Command=Status --Style=[...] --Content=[....]
- **Kill Job:**
  - ErSys0AppBatchControl500 ErCmcRunEnrl_123 --Command=KillJob

Overriding Run File Parameters Using a Text File



Facets takes run file parameters from a text file by adding the following switch to the command line: -@<filename>.

<filename> is the name of the text file that contains the commands. Only one text file passes at a time.

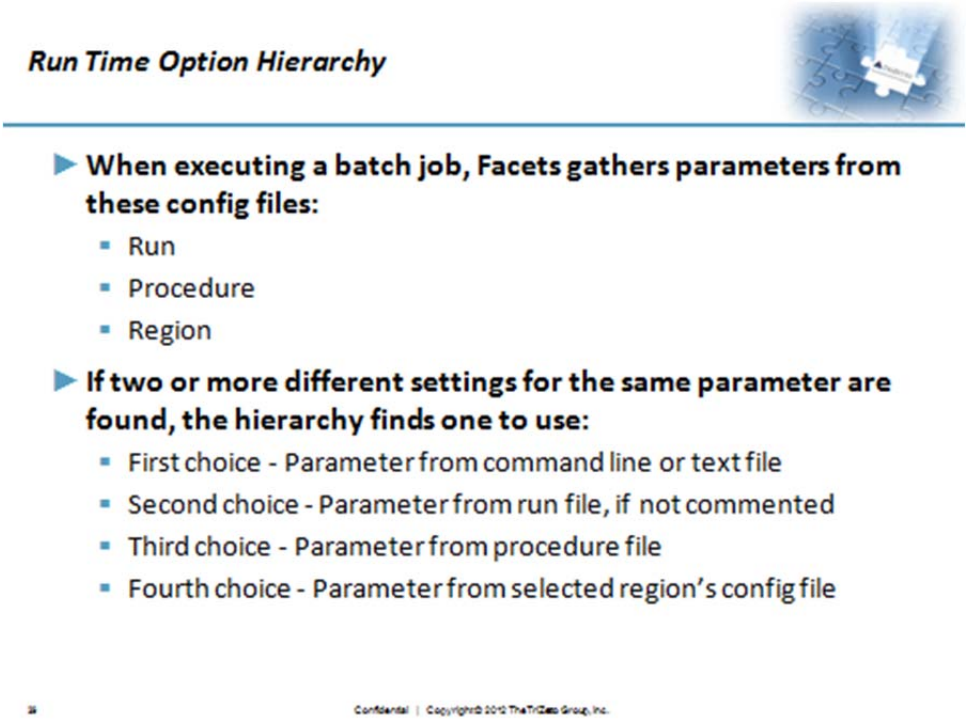
The text file contains the requisite amount of parameters. For example:

If the number of engines equals 3 for action 1000 of step 4000, all of step 5000, and the database is FA400, the resulting text file shows:

- NumberOfEngines = 3[4000_1000,5000]
- Database = FA400

If the text file name is"params.txt", Facets uses this switch: -@params.txt

Run Time Option Hierarchy



When executing a batch job, Facets gathers parameters from the run, procedure, and region configuration files. If the procedure results in two or more different settings for the same parameter in these files; a hierarchy determines the appropriate setting for building the job file:

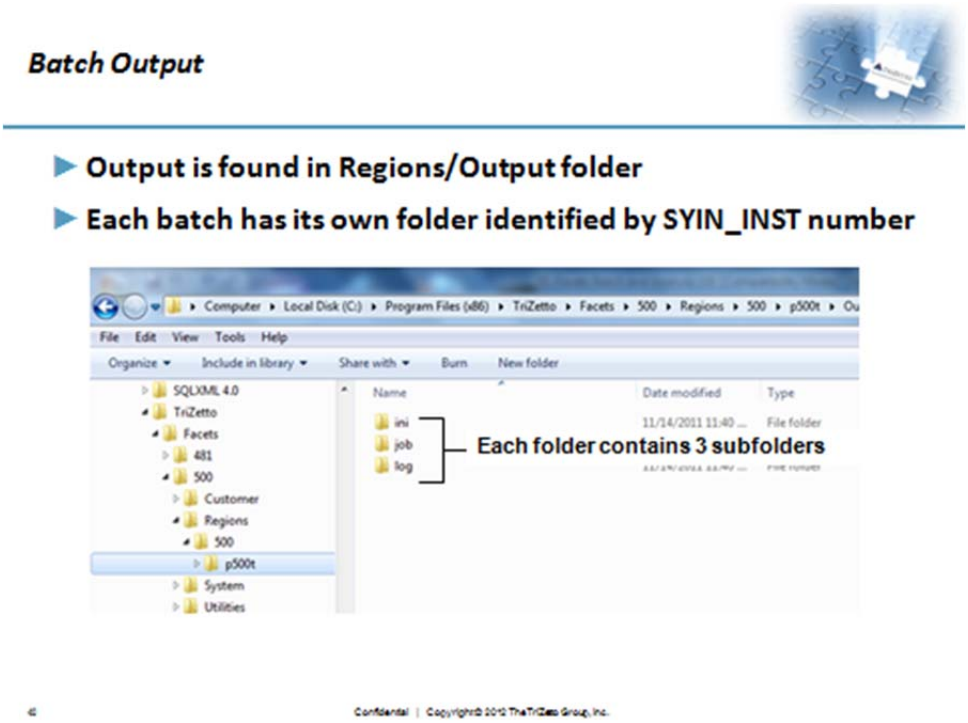
First choice: Parameter from command line or text file (if used)

Second choice: Parameter from run file (if not commented)

Third choice: Parameter from procedure file

Fourth choice: Parameter from the selected region's configuration file

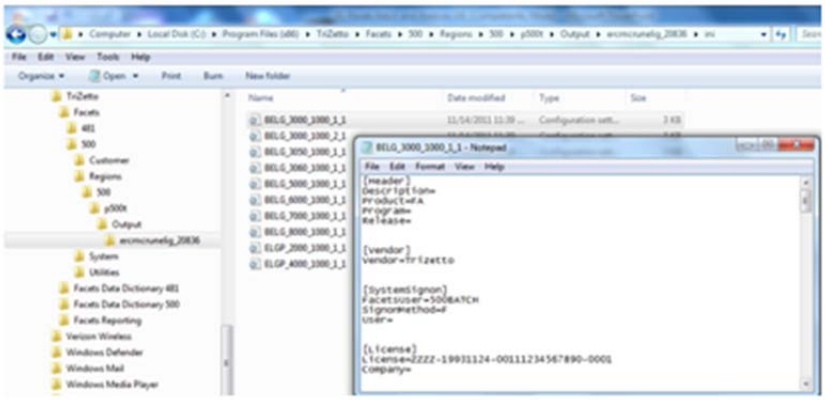
Batch Output



For the Batch Output, the user finds all output in the Regions/Region _name/Output folder. Facets then identifies each batch through specific folders with a SYIN_INST number.

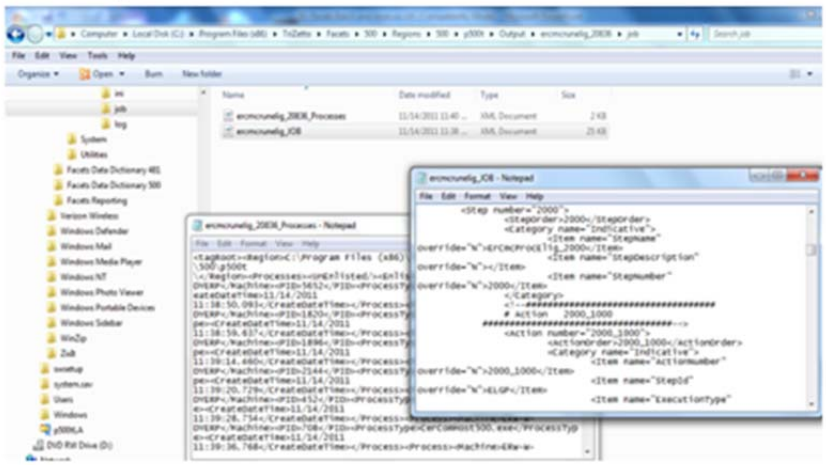
Batch Output

- The ini folder holds initialization file; one per step



Batch Output

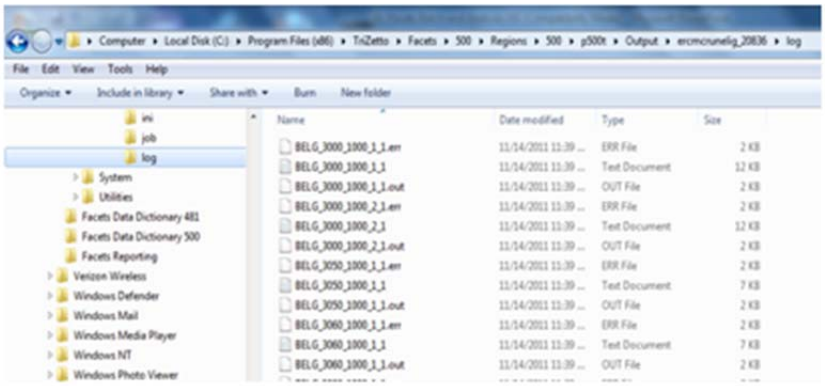
- **Job folder holds:**
  - Merged file of XML files, list of Process IDs used



The Batch Output job folder holds the merged file of the XML files and a list of Process IDs used for this job.

Batch Output

- **Log folder holds error, log, and output files for each:**
  - Step, action, engine and jcl file

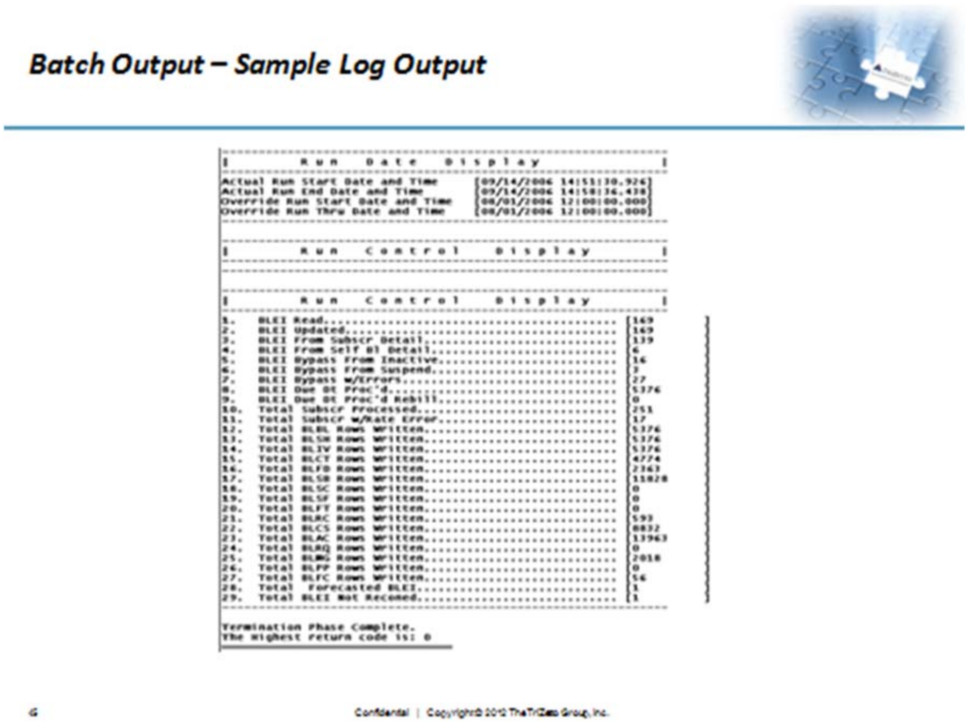


Batch Output - Sample Error Output

Batch Output – Sample Error Output

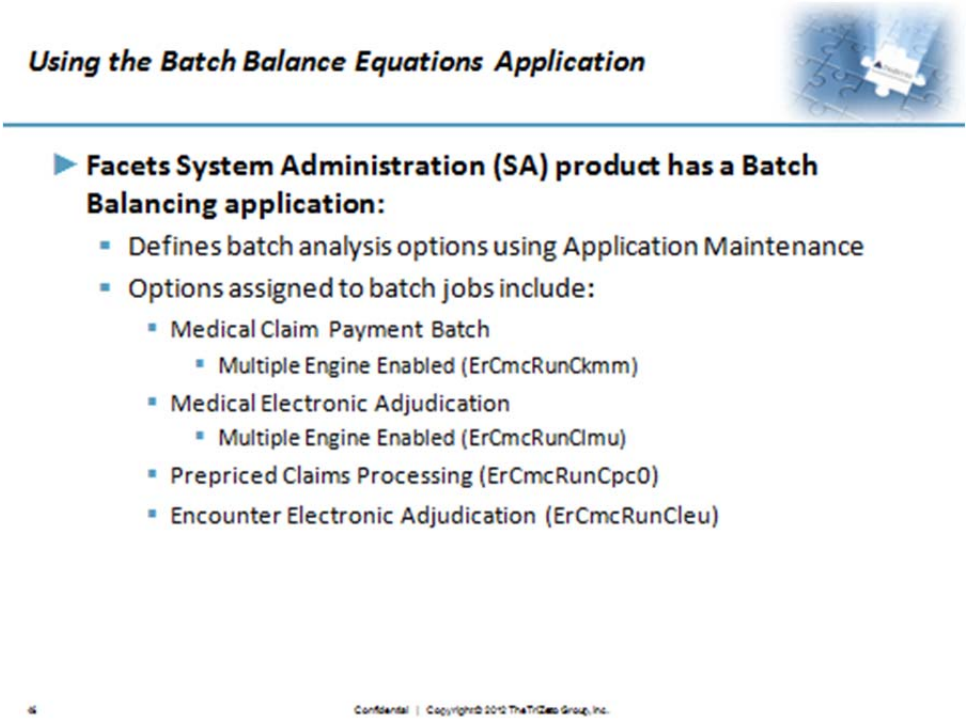
```
Application Server: EMR-W-FOYER
Process ID        : 1520

*-- Standard Error --*
_____
Initialization Phase Started.

Actual Run Start Date and Time     [09/14/2006 14:51:30.926]

Initialization Phase Complete.
_____
Execution Phase Started.

Facets - Error: Return Code: 8
Error Code: 10000
Error Message:

Accounting Error - Billing Entity: Group: jf1, Sub Group: jf1
Warning, No G/L mapping entry -
Type = T Activity = P
Lobd = jf1  Acct Category =
User variable 1 =                  User variable 2 =                  User variable 3 =
Solution: Correct GL mapping entry.
Journal entry will not have GL number.

Facets - Error: Return Code: 8
Error Code: 10000
Error Message:

Accounting Error - Billing Entity: Group: jf1, Sub Group: jf1
Warning, No G/L mapping entry -
Type = P Activity = I
Lobd = jf1  Acct Category =
User variable 1 =                  User variable 2 =                  User variable 3 =
Solution: Correct GL mapping entry.
Journal entry will not have GL number.

Facets - Error: Return Code: 8
Error Code: 10000
Error Message:

Accounting Error - Billing Entity: Group: jf1, Sub Group: jf1
Warning, No G/L mapping entry -
Type = T Activity = P
Lobd = jf1  Acct Category =
User variable 1 =                  User variable 2 =                  User variable 3 =
Solution: Correct GL mapping entry.
Journal entry will not have GL number.

Facets - Error: Return Code: 8
Error Code: 10000
```

Batch Output - Sample Log Output




```
---------------------------------------------------------------
|          R u n   D a t e   D i s p l a y                    |
---------------------------------------------------------------
Actual Run Start Date and Time        [09/14/2006 14:51:30.926]
Actual Run End Date and Time          [09/14/2006 14:58:36.438]
Override Run Start Date and Time      [08/01/2006 12:00:00.000]
Override Run Thru Date and Time       [08/01/2006 12:00:00.000]
---------------------------------------------------------------

---------------------------------------------------------------
|          R u n   C o n t r o l   D i s p l a y              |
---------------------------------------------------------------
---------------------------------------------------------------

---------------------------------------------------------------
|          R u n   C o n t r o l   D i s p l a y              |
---------------------------------------------------------------
1.    BLEI Read..................................... [169
2.    BLEI Updated.................................. [169
3.    BLEI From Subscr Detail....................... [139
4.    BLEI From Self Bl Detail...................... [6
5.    BLEI Bypass From Inactive..................... [16
6.    BLEI Bypass From Suspend...................... [3
7.    BLEI Bypass w/Errors.......................... [27
8.    BLEI Due Dt Proc'd............................ [5376
9.    BLEI Due Dt Proc'd Rebill..................... [0
10.   Total Subscr Processed........................ [251
11.   Total Subscr w/Rate Error..................... [17
12.   Total BLBL Rows Written....................... [5376
13.   Total BLSH Rows Written....................... [5376
14.   Total BLIV Rows Written....................... [5376
15.   Total BLCT Rows Written....................... [4774
16.   Total BLFD Rows Written....................... [2363
17.   Total BLSB Rows Written....................... [11828
18.   Total BLSC Rows Written....................... [0
19.   Total BLSF Rows Written....................... [0
20.   Total BLFT Rows Written....................... [0
21.   Total BLRC Rows Written....................... [593
22.   Total BLCS Rows Written....................... [8832
23.   Total BLAC Rows Written....................... [13963
24.   Total BLRQ Rows Written....................... [0
25.   Total BLMG Rows Written....................... [2018
26.   Total BLPP Rows Written....................... [0
27.   Total BLFC Rows Written....................... [56
28.   Total  Forecasted BLEI........................ [1
29.   Total BLEI Not Reconed........................ [1
---------------------------------------------------------------

Termination Phase Complete.
The Highest return code is: 0
```

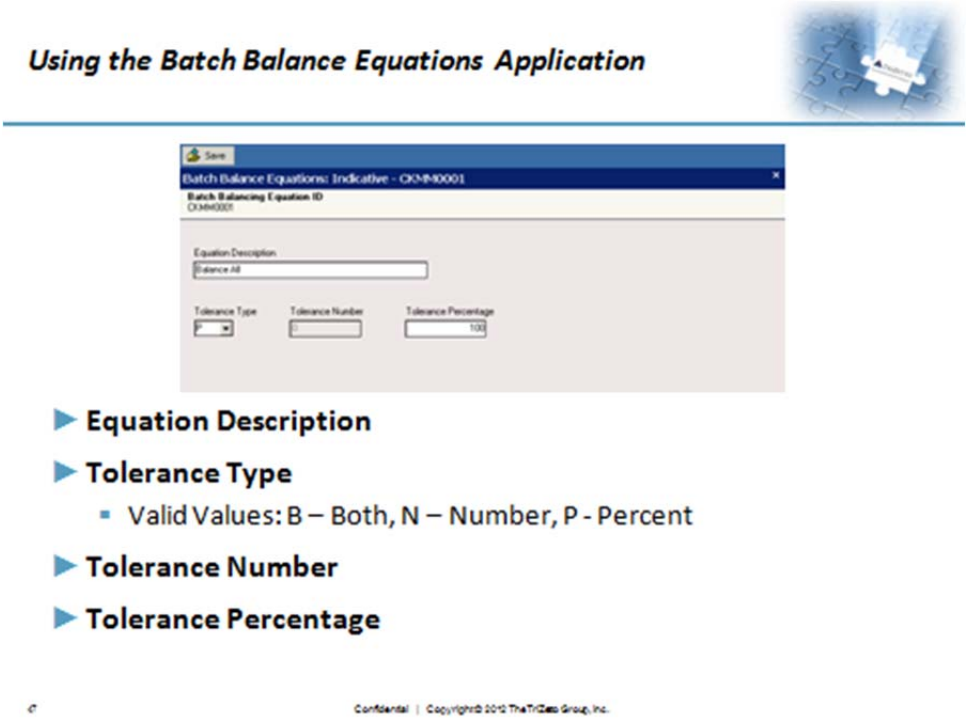
Using the Batch Balance Equations Application



When the user enables these options, new run control sections appear that report on balancing and performance.

To define Batch Balance Equations:

14. Navigate to the System Data application group and open the Batch Balance Equations application.
15. Selecting the **File** menu and then selecting the **New** menu item creates a new set of batch balance equations.
16. Selecting the **File** menu and then selecting the **Open** menu item opens an existing set.
17. Entering a unique ID identifies this set of batch balancing equations.



Equation Description - Enter a description for this Batch Balancing Equation ID.

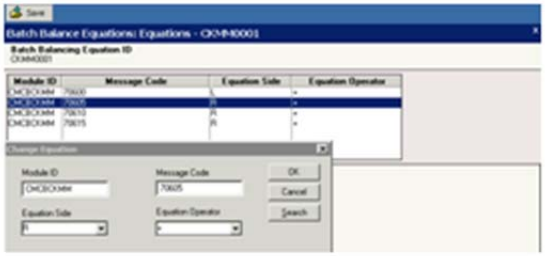
Tolerance Type - Select a method for the system to analyze batch balance performance. Valid values:

- B – Both
- N – Number
- P - Percent

Tolerance Number - Enter the number of transactions tolerated by the batch balance performance analysis.

Tolerance Percentage -Enter the percentage of transactions tolerated by the batch balance performance analysis.

Using the Batch Balance Equations Application



- Module ID
- Message Code
- Equation Side
- Equation Operator

Module ID - Enter the ID of the batch job Facets performs balancing on.

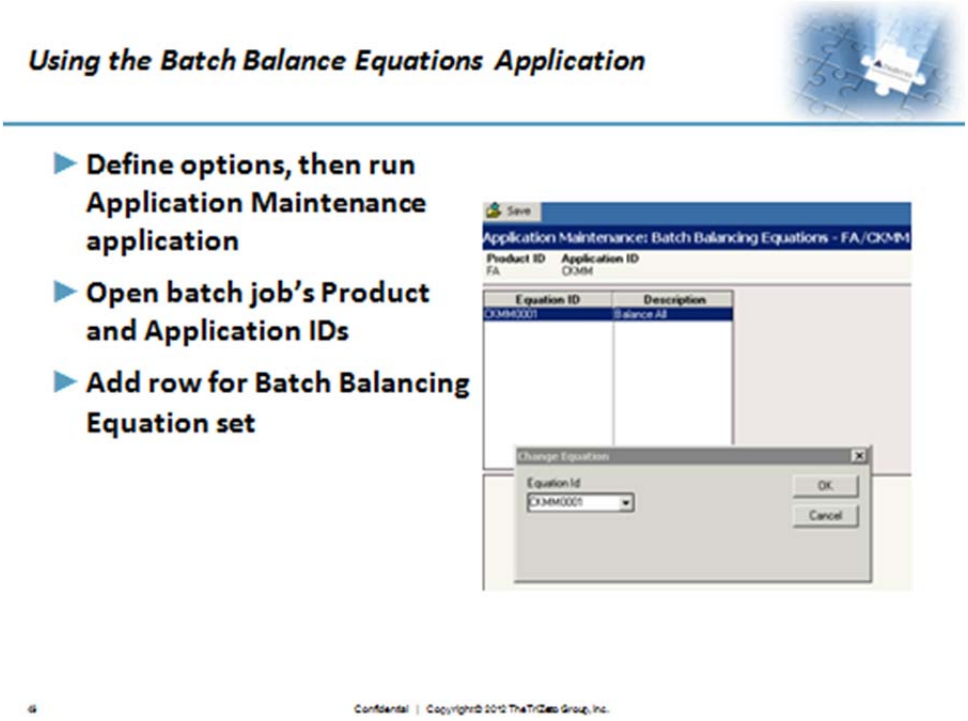
Message Code - Enter the SYMD identifying the batch results being balanced.

Equation Side - Select the side of the equation on which Facets evaluates this Module ID. Valid values:

- L = Left
- R = Right

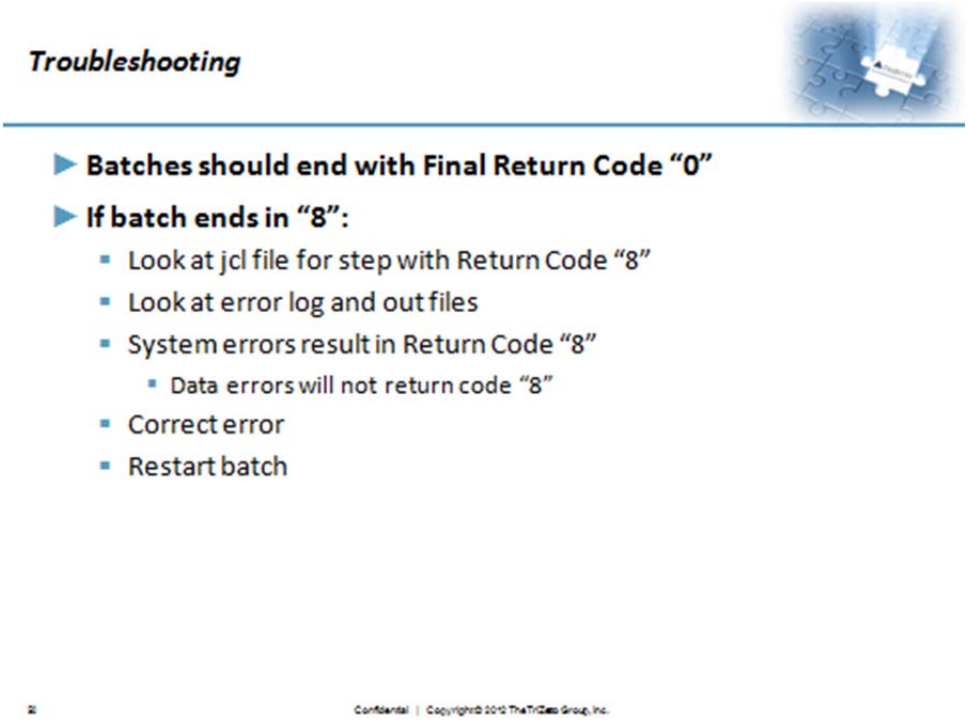
Equation Operator - Select the operation Facets performs on the balancing data from this Module ID. Valid values:

- + = Plus
- - = Minus



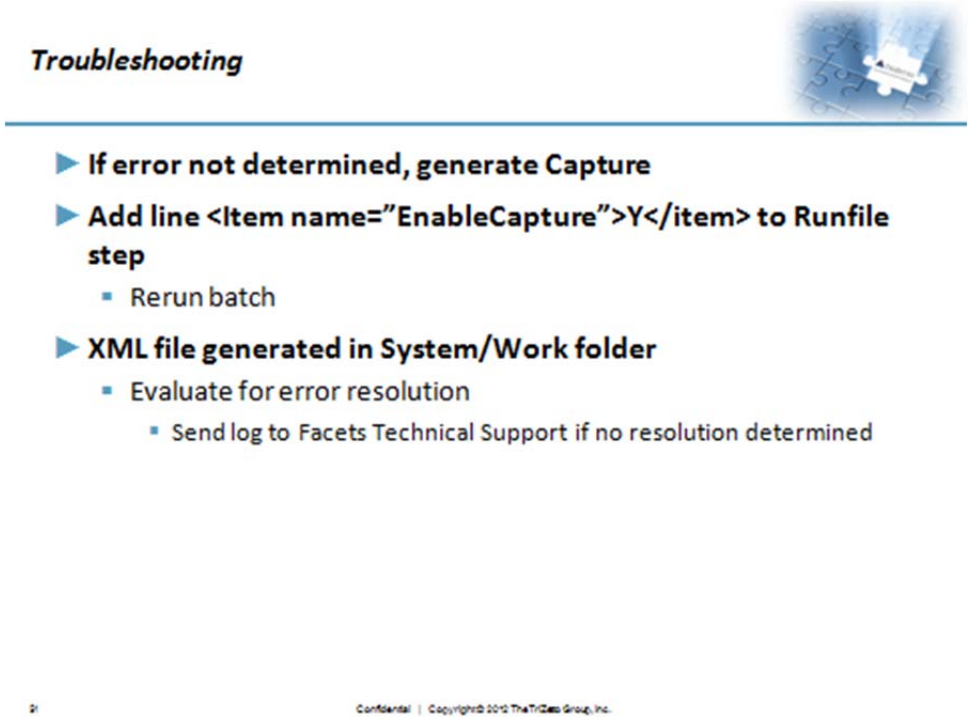
18. After defining the options, the user may then run the Application Maintenance application in the Application group.
19. Then, the user opens the batch job's Product ID and Application ID and navigates to the ***Batch Balancing Equations*** page.
20. Add a row for the Batch Balancing Equation set associated with the batch job.

Troubleshooting



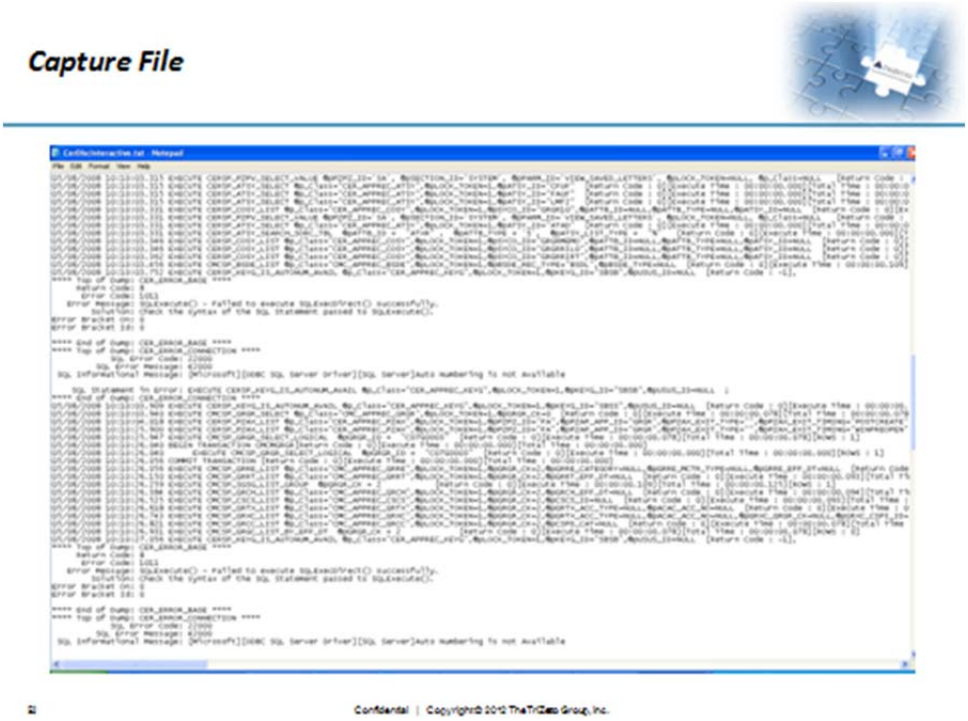
Ensure all batches end with Final Return Code 0. If a batch ends in an 8, follow these procedures:

21. Review the jcl file for the step with a Return Code 8.
22. Review the error log and out files for the step with the specific error.
23. System errors result in a Return Code 8 (data errors will not return an 8).
24. Correct the error then restart the batch according to the ORM instructions.

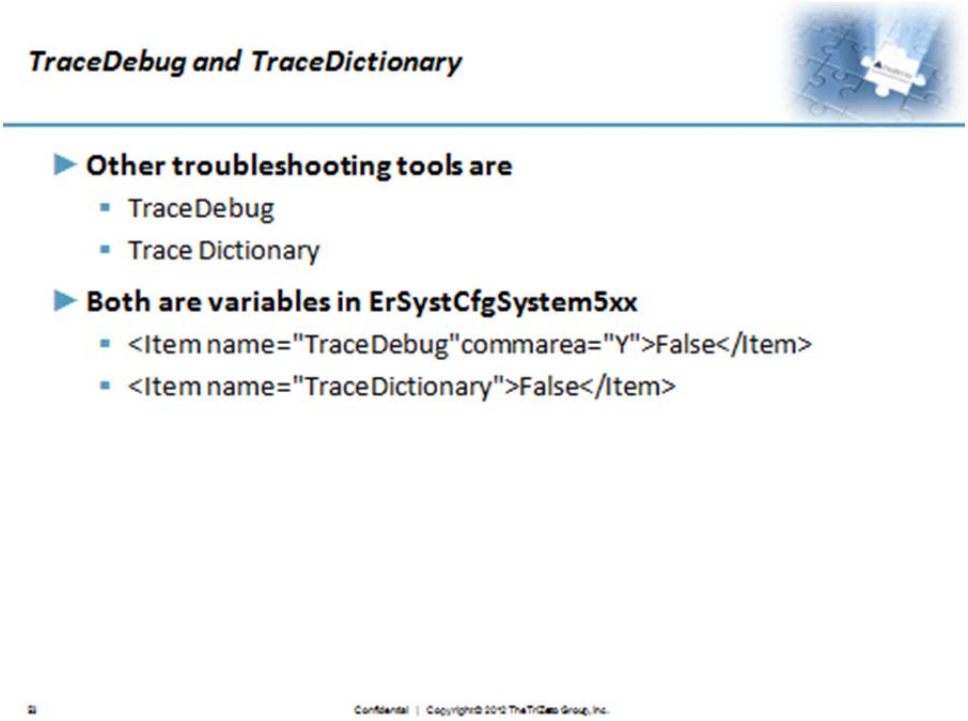


25. If Facets cannot determine the error, the user generates a Capture file.
26. Find and add <Item name="EnableCapture">Y</item> to the Runfile step with the error, then rerun the batch.
27. An XML file generates in the System/Work folder.
28. The user evaluates for error resolution. If he/she cannot determine a resolution, the user needs to contact Facets Technical Support and send the appropriate log.

Capture File



TraceDebug and TraceDictionary



Additional troubleshooting tools include:

- TraceDebug –details debugging information.
- Trace Dictionary –contains contents of VBScript dictionary objects

These tools represent variables in ErSystCfgSystem5xx:

- <Item name="TraceDebug"commarea="Y">False</Item>
- <Item name="TraceDictionary">False</Item>

Objective Summary

You are now able to:

- Explain the major components of the Facets core environment
- Explain the major elements of the System Configuration file
- Explain the difference between Run xml files and Procedure xml files
- Explain the application server directory structure
- Explain the manual procedure for executing a batch job
- Explain the available trouble-shooting methods for errors

You are now able to (continued):

- Explain the three types of execution in a batch step
- Explain the output directory structure
- Explain the available tools for trouble-shooting
- Explain how to use EnableCapture and where to find the output
- Explain the purpose of the **SYML** table in relation to the batch job
- Explain where to find the trouble-shooting parameters in the system configuration file

You are now able to (continued):

- Explain the function and purpose of each parameter under Database Diagnostics
- Explain the purpose of the SYIN_INST ID

Coming Up

Coming Up

Next we will discuss:

- **Membership Batch**