

# COB - Services in T24

Day 1 - Session 1-4  
Administration

**Dates**  
MM/DD/YYYY

**Venue**  
XXXX

Technical Courses



Objectives

# Objectives

- ▶ Why do we require COB?
- ▶ COB – Batch Stages
- ▶ How to Initiate the COB process?
  - Services – Overview
  - COB Services
    - TSM
    - COB

# Objectives

- Delivery Services
  - PRINT.IN
  - PRINT.OUT
  - SWIFT.IN
  - SWIFT.OUT
- ▶ TSA.SERVICE
- ▶ TSA.WORKLOAD.PROFILE
- ▶ TSA.PARAMETER
- ▶ TSA.STATUS

# Objectives

- ▶ How to Monitor COB process?
  - COB.MONITOR
  - NON STOP
  - DATES
- ▶ How to Troubleshoot COB Errors?
  - EB.EOD.ERROR
  - EB.EOD.ERROR.DETAIL
- ▶ Where to check Errors in the COB stages?
  - COMO
- ▶ Error Messages

# Objectives

- ▶ How to ADD a JOB to a BATCH ?
- ▶ How to Remove a JOB from a BATCH?

# Session wise Breakup

## ▶ Session 1

- Why do we require COB?
- COB – Batch Stages

## ▶ Session 2

- How to Initiate the COB process?
  - Services – Overview
  - COB Services
  - Delivery Services

# Session wise Breakup

## ▶ Session 3

- TSA.SERVICE
- TSA.WORKLOAD.PROFILE
- TSA.PARAMETER
- TSA.STATUS
- How to Monitor COB process?



# Session wise Breakup

## ▶ Session 4

- How to Troubleshoot COB Errors?
- Where to check Errors in the COB stages?
- Error Messages
- How to ADD a JOB to a BATCH ?
- How to Remove a JOB from a BATCH?

Why do we require COB?

# Why do we require COB?

- ▶ COB stands for Closure Of Business.
- ▶ It marks the end for all the financial transactions of a day.
- ▶ It supports 24 hours Non Stop processing if the Non Stop module installed.
- ▶ COB process is a Batch process.
- ▶ The important events in COB are
  - Generation of loan schedules
  - Accruals
  - Internal bank accounting and reports.



# What is Batch Processing ?

- ▶ The Batch control system which is invoked to display the list of processes to be run.
- ▶ If a 'company mnemonic' has not been specified then the process of default company will be loaded.
- ▶ Otherwise the process of specified company is loaded.
- ▶ The Batch name should be a meaningful with respect to the
  - Application or
  - Function
- ▶ of the process.

# Why do we require COB?

- ▶ COB is used to process
  - Events
  - Calculating and posting interest
  - Change the bank date to next working date &
  - Generation of various reports.
- ▶ The Close Of Business performs several activities based on
  - The scheduled date &
  - The condition specified.

# COB – Batch Stages

# COB – Batch Stages

- ▶ The COB process have five stages.
- ▶ Each stage is sorted and the COB process is performed by the system in the sorted order.
- ▶ The sorted order of the COB stages is
  - Application
  - System Wide
  - Reporting
  - Start of Day &
  - Online

# COB – Batch Stages

## ► Application

- Individual applications process takes place.

```
File . , Record 'tSA_4_1475356349'                Insert    09:31:38
Command->
0001 COMO tSA_4_1475356349 established 15:39:09  22 MAY 2008
0002 Agent 4 started 22 MAY 08 15:39:09
0003 Running on server thesyswhiz PortNumber 192
0004 _0_0_22 MAY 2008_15:39:09_SELECT F.COMPANY Selected=3 time=0secs
0005 Agent stopped
0006 COMO completed 15:39:09  22 MAY 2008
----- End Of Record -----
```



# COB – Batch Stages

- ▶ System Wide
  - System related process like
    - Interest & charges calculations
    - Rescheduling
    - Revaluation
  - are performed

# COB – Batch Stages

- ▶ Reporting
  - Important system reports namely
    - Trial balance
    - General ledger &
    - Transactions journal
  - generations are performed here.

# COB – Batch Stages

## ► Start of Day

- The change in the COB dates takes place.
- Standing orders, cash flow maintenance will be performed

# COB – Batch Stages

## ► Online

- All non critical reports and processes which can be run after the system has returned to online mode.

# Services – Overview

# Services - Overview

- ▶ Services can be run in interactive mode for testing purposes.
- ▶ The agents have to be manually started for every session.
- ▶ This requires the Temenos Service Manager to run in debug mode and thus the subsequent agents have to be manually started.
- ▶ It is advised that this method is used for testing purposes only.
- ▶ After starting the TSM, the individual agents allotted to SERVICE should be manually started.

# Temenos Service Manager (TSM)

- ▶ Temenos Service Manager runs the COB service as a background service.
- ▶ TSM invokes the appropriate agents as defined in the profile of COB service.
- ▶ TSM will automatically start the required number of agents for the service provided the service has the field `SERVICE.CONTROL` set to `AUTO`
- ▶ The agents replace the sessions which were used to run the job in a multi thread architecture to save the time and to maximise the use of system resources.

# Delivery Services



# Delivery Services

- ▶ The process of sending advices is achieved through a module in T24 called 'DELIVERY'
- ▶ Delivery System manages the flow of all messages from T24, such as confirmations, payments and advices.
- ▶ Interface with various GLOBUS transaction or contract processing modules.
- ▶ Control modules for all the different message carriers for both input and output messages
- ▶ Messages may be either printed or sent via electronic carrier systems

# Delivery Services

- ▶ Delivery messages can be of two types namely
  - Inward
    - Received from External Sources
  - Outward.
    - Advices that go out of our delivery subsystem to other sources.
- ▶ Most on-line transactions within T24 will send messages.
- ▶ Messages are generated automatically as soon as contract is authorized.

# Delivery Services

- ▶ The different carriers used in Delivery Services are
  - SWIFT
  - PRINT
- ▶ Record needs to be created in the TSA.SERVICE with the key as
  - SWIFT.IN `ACTION TSA.SERVICE, I SWIFT.IN`
  - SWIFT.OUT `ACTION TSA.SERVICE, I SWIFT.OUT`
  - PRINT.IN & `ACTION TSA.SERVICE, I PRINT.IN`
  - PRINT.OUT `ACTION TSA.SERVICE, I PRINT.OUT`

# Delivery Services – SWIFT.IN

```
TSA.SERVICE, INPUT

SERVICE..... SWIFT.IN
-----
1 DESCRIPTION..... DE FORMATTING SERVICE
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... DE.FORMATTING.SERVICE USED FOR DE FORMATTING SERVICE
4 USER..... INPUTTER          AHILA
5 SERVICE.CONTROL... AUTO
6 REVIEW.TIME..... 10
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 3
16. 1 INPUTTER..... 347_MUTHUK1
-----
18 FEB 2009 10:28:07  USER (26 OCT) MUTHUK2          [320,IN]PAGE 1    >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```

# Delivery Services – SWIFT.OUT

```
TSA.SERVICE, INPUT

SERVICE..... SWIFT.OUT
-----
1 DESCRIPTION..... DE FORMATTING SERVICE
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... DE.FORMATTING.SERVICE USED FOR DE FORMATTING SERVICE
4 USER..... INPUTTER          AHILA
5 SERVICE.CONTROL... AUTO
6 REVIEW.TIME..... 10
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 22
16. 1 INPUTTER..... 195_ADMIN8
-----
18 FEB 2009 10:20:36  USER (26 OCT) MUTHUK2          [320,IN]PAGE 1    >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```

# Delivery Services – PRINT.IN

```
TSA. SERVICE, INPUT

SERVICE..... PRINT.IN
-----
1 DESCRIPTION..... DE FORMATTING SERVICE
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... DE.FORMATTING.SERVICE USED FOR DE FORMATTING SERVICE
4 USER..... INPUTTER          AHILA
5 SERVICE.CONTROL... AUTO
6 REVIEW.TIME..... 10
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 3
16. 1 INPUTTER..... 347_MUTHUK1
-----
18 FEB 2009 10:27:25  USER (26 OCT) MUTHUK2          [320,IN] PAGE 1  >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```

# Delivery Services – PRINT.OUT

```
TSA.SERVICE, INPUT

SERVICE..... PRINT.OUT
-----
1 DESCRIPTION..... DE FORMATTING SERVICE
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... DE.FORMATTING.SERVICE USED FOR DE FORMATTING SERVICE
4 USER..... INPUTTER          AHILA
5 SERVICE.CONTROL... AUTO
6 REVIEW.TIME..... 10
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 22
16. 1 INPUTTER..... 195_ADMIN8
-----
18 FEB 2009 10:19:49 USER (26 OCT) MUTHUK2          [320,IN]PAGE 1    >>>2>>>
ACTION _
AWAITING PAGE INSTRUCTIONS
```

COB Services



# COB Services

- ▶ T24 COB is run as a T24 Service.
- ▶ Record needs to be created in the TSA.SERVICE with the key as COB
- ▶ The key COB is hardcoded and shall remain the same for global close of business
- ▶ This service has to be defined with
  - The appropriate profile
  - The server name
  - The OPERATOR/USER who will be running the Close Of Business

# Services - Overview– COB Record

```
TSA.SERVICE, INPUT

SERVICE..... COB
-----
1 DESCRIPTION..... FOR COB
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... THREE          FOR COB
4 USER..... INPUTTER          AHILA
5 SERVICE.CONTROL... STOP
6 REVIEW.TIME.....
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 174
16. 1 INPUTTER..... 296_ADMIN7
-----
17 FEB 2009 20:10:47  USER (26 OCT) MUTHUK1          [309,IN]PAGE 1    >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```

# Services - Overview– TSA.WORKLOAD.PROFILE

- ▶ The profile is defined in the TSA.WORKLOAD.PROFILE record.
- ▶ The profile contains
  - The number of agents for the Close Of Business has to be invoked

# Services - Overview– TSA.WORKLOAD.PROFILE

```
TSA.WORKLOAD.PROFILE, INPUT

WORKLOAD.PROFILE.. THREE
-----
1 DESCRIPTION..... FOR COB
2. 1 TIME.....
3. 1 AGENTS.REQUIRED 10
4 RESERVED.9.....
5 RESERVED.8.....
6 RESERVED.7.....
7 RESERVED.6.....
8 RESERVED.5.....
9 RESERVED.4.....
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13. 1 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 3
16. 1 INPUTTER..... 301_ADMIN8
-----
18 FEB 2009 10:01:04 USER (26 OCT) MUTHUK1 [320,IN]PAGE 1 >>>2>>>
ACTION _
AWAITING PAGE INSTRUCTIONS
```

# Services - Overview– TSA.SERVICE

- ▶ The details of the REVIEW.TIME and DEATH.WATCH have to be specified in the TSA.SERVICE record.

```
TSA.SERVICE, INPUT

SERVICE..... COB
-----
1 DESCRIPTION..... FOR COB
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... THREE                FOR COB
4 USER..... INPUTTER                AHILA
5 SERVICE.CONTROL... STOP
6 REVIEW.TIME.....
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 174
16. 1 INPUTTER..... 296_ADMIN7
-----
17 FEB 2009 20:10:47  USER (26 OCT) MUTHUK1      [309,IN] PAGE 1    >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```



# Services - Overview– TSA.PARAMETER

- ▶ Otherwise the details will be defaulted from the TSA.PARAMETER record.

```
TSA.PARAMETER INPUT

ID..... SYSTEM
-----
1 REVIEW.TIME..... 60
2 DEATH.WATCH..... 999
3 HIGHEST.AGENT..... 19
4 RESERVED.8.....
5 RESERVED.7.....
6 RESERVED.6.....
7 RESERVED.5.....
8 RESERVED.4.....
9 RESERVED.3.....
10 RESERVED.2.....
11 RESERVED.1.....
12. 1 LOCAL.REF.....
13 RECORD.STATUS.....
14 CURR.NO..... 1
15. 1 INPUTTER..... 3_AUTHORISER
16. 1 DATE.TIME..... 30 NOV 06 15:43
-----
17 FEB 2009 20:10:05 USER (26 OCT) MUTHUK1 [309,IN]PAGE 1 >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```

How to Initiate the COB process?

# Initiate COB Service

- ▶ To initiate the COB service
  - The record in TSA.SERVICE application called COB has to be marked for Starting.
  - If the TSM service is not started, then it needs to be started before the COB is initiated.



# Initiate COB Service

- ▶ The service control field for the COB record is set as “START”

```
TSA.SERVICE, INPUT

SERVICE..... COB
-----
1 DESCRIPTION..... FOR COB
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... THREE          FOR COB
4 USER..... INPUTTER          AHILA
5 SERVICE.CONTROL... START
6 REVIEW.TIME.....
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 175
16. 1 INPUTTER..... 309_MUTHUK1
-----
17 FEB 2009 20:25:27  USER (26 OCT) MUTHUK1          [309,IN]PAGE 1    >>>2>>>
ACTION
AWAITING PAGE INSTRUCTIONS
```

# Initiate COB Service

- ▶ The service control field for the TSM record is set as “START”

```
TSA.SERVICE, INPUT

SERVICE..... TSM
-----
1 DESCRIPTION..... FOR TSM
2. 1 SERVER.NAME....
3. 1 WORK.PROFILE... ONE                FOR TSM
4 USER..... AUTHORISER                AUTHORISER
5 SERVICE.CONTROL... START
6 REVIEW.TIME..... -
7 TIME.OUT.....
8. 1 ATTRIBUTE.TYPE.
9. 1 ATTRIBUTE.VALUE
10 RESERVED.3.....
11 RESERVED.2.....
12 RESERVED.1.....
13 LOCAL.REF.....
14 RECORD.STATUS....
15 CURR.NO..... 369
16. 1 INPUTTER..... 296_ADMIN7
-----
17 FEB 2009 20:24:39 USER (26 OCT) MUTHUK1 [309,IN] PAGE 1 >>>2>>>
ACTION
```

# Initiate COB Service

- ▶ Log out from T24 and return to jshell prompt

```
jsh r09trg ~ -->
```

- ▶ Start the TSM in interactive mode (with the –DEBUG option)

```
jsh r09trg ~ -->START.TSM -DEBUG_
```

# Initiate COB Service

```
jsh r09trg ~ -->START.TSM -DEBUG_
```

```
-----
17 FEB 2009 20:25:53  USER (26 OCT) MUTHUK1          [309,IN]
ACTION jsh r09trg ~ -->START.TSM -DEBUG
START.TSM -DEBUG
tSA 4 -DEBUG
Agent 4 started 17 FEB 09 20:27:51
Running on server thesyswhiz PortNumber 309
tSM -DEBUG


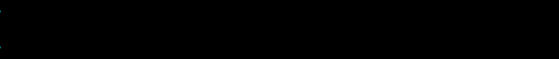
Service Profile TSM FOR TSM (1)
      BNK/DX.RV.SERVICE Revaluation Service (1)
      BNK/PRINT.OUT DE FORMATTING SERVICE (2)
      PRINT.OUT DE FORMATTING SERVICE (2)
      SWIFT.OUT DE FORMATTING SERVICE (2)
      COB FOR COB (10)

Agent 3 on process 281 should be terminated
Manually launch tSA 3  BNK/DX.RV.SERVICE
Agent 6 on process 282 should be terminated
Manually launch tSA 6  BNK/PRINT.OUT
Manually launch tSA 9  BNK/PRINT.OUT
Manually launch tSA 18 PRINT.OUT
Agent 1 on process 298 should be terminated
Manually launch tSA 1  PRINT.OUT
```

How to Monitor COB process?

# COB.MONITOR

- ▶ A view of the COB.MONITOR during the COB process.

STAGE	PROGRESS	PROCESSED	TOTAL	%COMPLETED
APPLICATION	[  ]	64	64	100.00
SYSTEM WIDE	[  ]	34	40	85.00
REPORTING	[  ]	0	119	0.00
START OF DAY	[  ]	0	59	0.00
ONLINE	[  ]	0	13	0.00

# Monitoring COB - tEC

- ▶ Enquiries to monitor the progress of COB are
  - COB.PROGRESS
  - JOB.PROGRESS
- ▶ It shows the he records processed with the time taken.
- ▶ They can be accessed via the Temenos Enterprise Console (tEC).
- ▶ Enquiries to monitor the status of agents is
  - AGENT.STATUS

# Monitoring COB - tEC

## ► COB.PROGRESS

- A listing of active companies and an indication (progress bar) of their time to completion

```
18 FEB 2009 19:08:24  USER (26 OCT) MUTHUK1      [320,IN]  
ACTION ENQ COB.PROGRESS  
AWAITING APPLICATION
```

```
-----  
C51511700  
C0000  
C414102660001  
C676720010002  
C676720010003
```



# Monitoring COB - tEC

## ► JOB.PROGRESS

- This enquiry lists all active and completed jobs by descending start times (i.e. current on top).
- It shows the start time, end time, elapsed time, contracts processed, total contracts to process, throughput (contracts/minute) and individual server rate.
- The latter is the number of contracts processed in one minute by a server process
- This will be compared historically to see if the job is slowing down as time passes.

# Monitoring COB - tEC

## ► JOB.PROGRESS

```
18 FEB 2009 19:17:14  USER (26 OCT) MUTHUK1      [320,IN]  
ACTION ENQ JOB.PROGRESS _  
AWAITING APPLICATION
```

# Monitoring COB – JOB.PROGRESS

- ▶ The output of the Enquiry JOB.PROGRESS

```
B111610:28HEQUE.EOD-EOD.CARD.CYCLE.DATE.POST  
B111110:27ERAL-COLLATERAL.RIGHT.EOD.POST  
B116660:26ERAL-COLLATERAL.EOD  
B116361027ERAL-COLLATERAL.RIGHT.EOD  
B110003:26CH.APP-BUILD.CUST.PORT.MVMT  
B111111:26CH.APP-SC.EOD.UPD.DP.SETT.DATE  
B110000:25CH.APP-SC.EOD.BLK.RECS  
B110000:25CH.APP-SC.EOD.BROKER.POS.UPDATE  
B110000:25CH.APP-SC.EOD.SUB.ACC.CHG  
B115351026CH.APP-SC.EOD.UPD.SETT.DATE  
B110000:25CH.APP-SC.EOD.UPD.STOCK.POS
```

# Monitoring COB

## ▶ AGENT.STATUS

- This enquiry lists the CURRENT status of all the agents.
- It shows the
  - Agent ID
    - » Agent Number
  - Server Name
    - » Name of the server where the agent is running.
  - Agent Status
    - » Status of the agent



# Monitoring COB

- Process Id
  - » Operating system level process ID for the agent process that is running
- Current Service
  - » The service the agent is performing at the moment.
- Next Service
  - » The service the agent is supposed to perform next.
- Last Message
  - » Message displayed by the agents which performs the jobs.



# Monitoring COB

- Como Name
  - » Name of the log file that holds the log information of the agent
- Job Progress
  - » Status of the jobs

# Monitoring COB – AGENT.STATUS

- ▶ The status of the agents through the Enquiry AGENT.STATUS.

```
-----
1      1 thesyswhiz      DEAD      298      TSM      PRINT.OUT 0      tSA_1_14772
263    10 thesyswhiz      RUNNING    286      COB      SWIFT.OUT _BNK/CARD.CHEQUE.EOD_EOD.CARD.CYCLE.DAT|tSA_10_1475
3358   11 thesyswhiz      DEAD      296      COB      COB      0      tSA_11_1477
4579   12 thesyswhiz      RUNNING    77      COB      STOP      _BNK/REPORT.PRINT.SOD_EB.EOD.REPORT.PRI|tSA_12_1440
5085   13 thesyswhiz      DEAD      301      COB      COB      _BNK/CARD.CHEQUE.EOD_CHEQUE.CHARGE.EOD_|tSA_13_1477
6010   14 thesyswhiz      DEAD      299      COB      COB      _BNK/AC.STMT.UPDATE_PRINT.ACCOUNT.STMT_|tSA_14_1477
7869   15 thesyswhiz      RUNNING    82      COB      STOP      _BNK/REPORT.PRINT.SOD_EB.EOD.REPORT.PRI|tSA_15_1440
8124   16 thesyswhiz      DEAD      289      COB      COB      0      tSA_16_1475
9543   17 thesyswhiz      DEAD      301      COB      COB      _BNK/CARD.CHEQUE.EOD_CHEQUE.CHARGE.EOD_|tSA_17_1477
10175  18 thesyswhiz      STOPPED      PRINT.OUT 0      tSA_18_1475
11938  19 thesyswhiz      COB
12      2 thesyswhiz      DEAD      289      COB      COB      0      tSA_2_14753
1373   3 thesyswhiz      DEAD      281      BNK/PRINT.OUT BNK/DX.RV._BNK/PRINT.OUT_DE.OUTWARD_3_22 MAY 2008|tSA_3_14753
1420   4      STOPPED      0      tSA_4_15024
1571   5 thesyswhiz      DEAD      289      COB      COB      0      tSA_5_14753
1674   6 thesyswhiz      DEAD      282      BNK/PRINT.OUT BNK/PRINT._BNK/PRINT.OUT_DE.OUTWARD_6_22 MAY 2008|tSA_6_14753
421    -----
18 FEB 2009 18:28:24  USER (26 OCT) MUTHUK1      [320,IN]PAGE 1 >>>2>>>
```

# TSA.STATUS

- ▶ Temenos Service Agents are invoked to run the Service and they run and update the file **TSA.STATUS** of their progress and status

```
18 FEB 2009 20:02:41  USER (26 OCT) MUTHUK1      [320,IN]
ACTION TSA.STATUS L
AWAITING APPLICATION
```

TSA.STATUS - Default List		
ID	SERVER	FUNCT.
1 1	thesyswhiz	
2 10	thesyswhiz	S
3 11	thesyswhiz	



# Monitoring COB – TSA.STATUS

- ▶ The details view of the TSA.STATUS record.

```
-----  
1      1 thesyswhiz      DEAD      298      TSM      PRINT.OUT 0      tSA_1_14772  
263    10 thesyswhiz      RUNNING    286      COB      SWIFT.OUT  BNK/CARD.CHEQUE.EOD EOD.CARD.CYCLE.DAT|tSA_10_1475  
  
1 SERVER..... thesyswhiz  
2 AGENT.STATUS..... RUNNING  
3 LAST.CONTACT..... 15:25:39  
4 PROCESS.ID..... 286  
5 CURRENT.SERVICE... COB  
6 NEXT.SERVICE..... SWIFT.OUT  
7 LAST.MESSAGE..... _BNK/CARD.CHEQUE.EOD_EOD.CARD.CYCLE.DATE.POST_10_22 MAY 2008_16:16:27_Processing...1 Offset...0 Number of s  
8 COMO.NAME..... tSA_10_1475358358  
9 JOB.PROGRESS..... 7  
  
-----  
17 FEB 2009 20:21:28  USER (26 OCT) MUTHUK1      [309,IN]PAGE 1
```

# Date Changes During COB

- ▶ COB maintains two different records per company in the DATES application.
- ▶ COB restores the old dates record with the key as the CO.CODE-COB
- ▶ Ensures that all COB processing happens based on the - COB record in DATES
- ▶ Online processing happens based on the CO.CODE record in DATES application.

# Date Changes During COB

Company Code	Today	Next Working Day	Last Working Day
US0010001	14 <sup>th</sup> July 2004	15 <sup>th</sup> July 2004	13 <sup>th</sup> July 2004
US0010001-COB	13 <sup>th</sup> July 2004	14 <sup>th</sup> July 2004	12 <sup>th</sup> July 2004

## DATES - Default List

ID	TODAY	VERSION	LAST.WORKING.DAY	FUNCT.
1 GB0010001	26 OCT 2006	1	24 OCT 2006	
2 GB0010001-COB	24 OCT 2006	1	23 OCT 2006	
3 GB0010002	26 OCT 2006	1	24 OCT 2006	
4 GB0010002-COB	24 OCT 2006	1	23 OCT 2006	
5 GB0010003	26 OCT 2006	1	24 OCT 2006	
6 GB0010003-COB	24 OCT 2006	1	23 OCT 2006	

# Non Stop Process @ COB

- ▶ Non Stop Processing and Close Of Business complement each other.
- ▶ Close Of Business disallow input and processing of records in all applications other than one supported by Non-Stop service.
- ▶ The applications that are available in NS stop service will be available without any restrictions.
- ▶ They will be using the next working date for processing.
- ▶ T24 Non stop ensures the concurrent transactions are not picked up by the COB which is running parallel.

# Applications That Support NS Processing (Function I And A)

- FUNDS.TRANSFER
- TELLER
- TELLER.ID
- CUSTOMER
- ACCOUNT
- SEC.ACC.MASTER
- SECURITY.MASTER
- CUSTOMER.SECURITY
- STANDING.ORDER
- DATA.CAPTURE
- SC.SETTLEMENT
- ACCT.INTERIM.CAP
- TABLE.CAPITALISE.CORR
- PAYMENT.STOP
- GROUP.CREDIT.INT
- GROUP.DEBIT.INT
- ACCT.CAPITALISATION
- ACCOUNT.STATEMENT
- GROUP.CAPITALISATION
- ACCT.STATEMENT.CHARGE
- TURNOVER.DEBIT
- TURNOVER.CREDIT

# Applications That Support NS Processing (Function I And A)

- INTEREST.STATEMENT
- ACCOUNT.CREDIT.INT
- ACCOUNT.DEBIT.INT
- ACCOUNT.CLOSURE
- ACCOUNT.DEBIT.LIMIT
- BALANCE.REQUIREMENT
- NOTICE.WITHDRAWAL
- AC.LOCKED.EVENTS
- GENERAL.CHARGE
- ENTITLEMENT
- CURRENCY
- FORWARD.RATES
- PERIODIC.INTEREST
- TRANSACTION.CHARGE
- DEBIT.INT.ADDON
- HIGHEST.DEBIT

# Applications That Support NS Processing (Function I And A) – New Deals Only

- MM.MONEY.MARKET
- FOREX
- SEC.OPEN.ORDER
- SC.EXE.SEC.ORDERS
- SEC.TRADE
- SECURITY.TRANSFER
- MG.MORTGAGE
- MG.PAYMENT
- LD.LOANS.AND.DEPOSITS
- LD.SCHEDULE.DEFINE
- FD.FID.ORDER
- FD.FIDUCIARY
- PD.CAPTURE
- PRE.SYNDICATION.FILE
- FACILITY
- SL.LOANS
- SL.CHARGE
- SL.BUY.SELL
- SL.ROLLOVER
- SL.REPAYMENT.SCHEDULES
- SL.FACI.RATES
- SL.RATES.PART
- SWAP
- FRA.DEAL
- PD.PAYMENT.DUE

# How to Troubleshoot COB Errors?



# Error Handling

- ▶ A process can consist of any number of jobs
- ▶ A Job can have a number of programs or operating system commands.
- ▶ If an error occurs
  - The system may return immediately to the monitor screen and display the process and the job in error
  - In the case of less severe errors, update the record for the current batch and the current company on the EB.EOD.ERROR file and continue.

# Error Handling

- ▶ The details of these errors can be located in
  - `EB.EOD.ERROR` file and
  - `EB.EOD.ERROR.DETAIL` file.
- ▶ In case of any crashes during COB the concerned transaction will be rolled back and the COB will continue.
- ▶ This ensures that COB can continue after an error and partial updates are rolled back to keep the database in sync.

# Error handling

- ▶ Jobs can abort for a variety of reasons, both system and application orientated
- ▶ Any system related crashes will be sensed by the TSM and the dead agent will be started again.
- ▶ In case of no activity in a agent for a period of time as defined in the DEATH.WATCH field of TSA.SERVICE
- ▶ Then, TSM restarts the agent ensuring that the COB Crashes are monitored and restarted by the Service Manager.

# Error Handling

- ▶ Any application related crashes will be written to EB.EOD.ERROR with
  - The information on the job name
  - The record and the text of the crash.
- ▶ The underlying record from the .LIST file will be removed
- ▶ The updates done till then for the particular transaction will be rolled back.

Where to check Errors in the COB stages?

# COMO

- ▶ Log files get stored under a directory &COMO&
- ▶ LIST &COMO& to get a lot of log files
- ▶ JED &COMO& <Log file Name> to view the contents of the log file

```
jsh r09trg ~ -->JED &COMO& tsa_9_1475361802
```

- ▶ Log file ID : tSA\_<Agent Number>\_<Date and time>
- ▶ If an agent is restarted, there will be 2 log files for that agent as the log file ID is based on date and time
- ▶ Log files do not get cleared automatically

# COMO - A View

```
File . , Record 'tSA_9_1475361802'                               Insert      20:15:20
Command->
0001 COMO tSA_9_1475361802 established 17:10:02  22 MAY 2008
0002 Agent 9 started 22 MAY 08 17:10:02
0003 Running on server thesyswhiz PortNumber 288
0004 _0_0_22 MAY 2008_17:10:03_SELECT F.COMPANY Selected=3 time=0secs
0005 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Standard multi-thr
0006 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Calling load routi
0007 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Allocating List Fi
0008 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Updating the Locki
0009 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Starting job
0010 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Calling..DX.RV.SER
0011 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_List starting from
0012 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Building from driv
0013 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Control list..
0014 _BNK/DX.RV.SERVICE_DX.RV.SERVICE_9_22 MAY 2008_17:10:03_Complete_61803_618
0015 Agent stopped
0016 COMO completed 17:10:03  22 MAY 2008
----- End Of Record -----
```

# COMO – A View

```
File . , Record 'tSA_6_1429153255'                                Insert      20:17:02
Command->
000001 COMO tSA_6_1429153255 established 14:47:35  15 FEB 2007
000002 Agent 6 started 15 FEB 07 14:47:35
000003 Running on server thesystcf PortNumber 9
000004 _BNK/SYSTEM.END.OF.DAY3_IC.COB_6_15 FEB 2007_14:47:35_SELECT F.COMPANY W
000005 _BNK/SYSTEM.END.OF.DAY3_IC.COB_6_15 FEB 2007_14:47:35_SSELECT F.BATCH BY
000006 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_Single Thread
000007 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_Allocating Li
000008 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_Updating the
000009 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_Starting job
000010 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_Processing...
000011 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_SELECT F.JOB.
000012 _BNK/SYSTEM.END.OF.DAY3_IC.COB.POST_6_15 FEB 2007_14:47:36_Complete_5325
000013 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_Single
000014 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_Alloca
000015 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_Updati
000016 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_Starti
000017 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_Proces
000018 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_SELECT
000019 _BNK/SYSTEM.END.OF.DAY3_ICA.BUILD.GRP.CORR_6_15 FEB 2007_14:47:36_Comple
000020 _BNK/SYSTEM.END.OF.DAY3_ICA.BLD.ACCT.ACT.CORR_6_15 FEB 2007_14:47:36_Sta
000021 _BNK/SYSTEM.END.OF.DAY3_ICA.BLD.ACCT.ACT.CORR_6_15 FEB 2007_14:47:36_Cal
000022 _BNK/SYSTEM.END.OF.DAY3_ICA.BLD.ACCT.ACT.CORR_6_15 FEB 2007_14:47:36_All
```



# Error Messages

# Error Messages

Error Message	Cause
BATCH NOT COMPLETED YET	You cannot return to online mode until all batch process have been completed
EOD HAS BEEN INITIATED	EOD has already been set
ILLEGAL FREQ FORMAT	Invalid frequency code specified in process
ILLEGAL ORDER	The jobs in the process have been specified in an execution order that is illegal i.e job1 depends on the completion of job 2
INITIALISES ERROR	Job failed during initialization no need to restore the database to re run
INVALID ENTRY, TRY AGAIN	Unknown command at current action level
JOB ERROR	Job terminated with an error see process output
LINE.NO OUT OF RANGE	Row selection number does not have an associated process.
NO ENTRY IN PGM.FILE	Job not defined in PGM.FILE

# Error Messages

Error Message	Cause
OPTION INVALID IN ON-LINE	Option from menu cannot be executed until the end of day has been initiated.
PROCESS JOB STATUS IS xxxxx	You cannot start this process when another has failed. Re-run the job in error first.
PROCESS NAME NOT RECOGNISED	Process name entered is not on the BATCH file
PROCESS NOT IN HOLD OR ERROR	Cannot select process to be restarted when the current status is not HOLD or ERROR
PROCESS NOT IN RUN STATE	Cannot select a process to be halted when the current status is RUNNING
PROCESS NOT PRESENT	Unknown process name entered from action line.
REC MISSING	Fatal error during process execution – see process output for more detail
RESTORE DB	Database must be restored to re-run this job
UNKNOWN JOB IN PGM.FILE	Job not defined in PGM.FILE

How to ADD a JOB to a BATCH ?

# How to add a JOB to a Batch

- ▶ Write a routine compile and catalog it
- ▶ Create a PGM entry for the routine with “S” type.
- ▶ Now edit the Batch in input mode and enter the routine name in the JOB.NAME field.
- ▶ Commit and authorise the batch.
- ▶ Next slide depicts a batch is opened in the Input mode for adding a new batch

# BATCH – Adding A JOB

```
2  DEFAULT.PRINTER...  
3  PROCESS.STATUS.... 2  
4  BATCH.ENVIRONMENT. F  
5  DEPARTMENT.CODE...  
6. 1  JOB.NAME..... AC.CHG.REQ.LIQ.TO.HIST  
7. 1. 1  VERIFICATION  
8. 1  FREQUENCY..... D  
9. 1  NEXT.RUN.DATE..  
10. 1  PRINTER.NAME...  
11. 1. 1  DATA.....  
12. 1  JOB.STATUS..... 2  
13. 1  LAST.RUN.DATE.. 24 OCT 2006
```

# How to add a JOB to a Batch

- ▶ Next slide depicts the addition of the job BR.EOD.LIQ.TO.HIS in a existing batch.

# BATCH – Adding A JOB

```
4 BATCH.ENVIRONMENT. F          FOREGROUND
6. 1 JOB.NAME..... BR.EOD.LIQ.TO.HIS
8. 1 FREQUENCY..... D          DAILY
12. 1 JOB.STATUS..... 0         READY
6. 2 JOB.NAME..... AC.CHG.REQ.LIQ.TO.HIST
8. 2 FREQUENCY..... D          DAILY
12. 2 JOB.STATUS..... 2         COMPLETED SUCCESSFULLY
13. 2 LAST.RUN.DATE.. 24 OCT 2006
17 CURR.NO..... 2
18. 1 INPUTTER..... 320 _MUTHUK1
19. 1 DATE.TIME..... 18 FEB 09 20:32
20 AUTHORISER..... 320 _MUTHUK2
```



How to Remove a JOB from a BATCH?

# How to remove a JOB from a Batch

- ▶ Removing a job from a Batch can be done in 2 ways
  - By removing the Job (routine name) from the Batch by deleting the multivalue field JOB.NAME.
  - By making the particular job's frequency as "Adhoc" by entering the frequency as "A".

# How to remove a JOB from a Batch – Method 1

- ▶ Edit the Batch in Input mode and delete the multivalue field JOB.NAME of the particular job.
- ▶ Commit and authorise and now the Batch will exclude the particular job.
- ▶ Next slide shows the status of the batch with the job BR.EOD.LIQ.TO.HIS opened in the Input mode.
- ▶

# BATCH – Removing A JOB

```
4 BATCH.ENVIRONMENT. F          FOREGROUND
6. 1 JOB.NAME..... BR.EOD.LIQ.TO.HIS
8. 1 FREQUENCY..... D          DAILY
12. 1 JOB.STATUS..... 0         READY
6. 2 JOB.NAME..... AC.CHG.REQ.LIQ.TO.HIST
8. 2 FREQUENCY..... D          DAILY
12. 2 JOB.STATUS..... 2         COMPLETED SUCCESSFULLY
13. 2 LAST.RUN.DATE.. 24 OCT 2006
17 CURR.NO..... 2
18. 1 INPUTTER..... 320 _MUTHUK1
19. 1 DATE.TIME..... 18 FEB 09 20:32
20 AUTHORISER..... 320 _MUTHUK2
```

# How to remove a JOB from a Batch – Method 1

- ▶ Next slide depicts that the job BR.EOD.LIQ.TO.HIS is removed from the batch.

# BATCH – Removing a JOB

```
6. 1 JOB.NAME..... AC.CHG.REQ.LIQ.TO.HIST
8. 1 FREQUENCY..... D                DAILY
12. 1 JOB.STATUS..... 2              COMPLETED SUCCESSFULLY
13. 1 LAST.RUN.DATE.. 24 OCT 2006
17 CURR.NO..... 3
18. 1 INPUTTER..... 320 MUTHUK2
19. 1 DATE.TIME..... 18 FEB 09 20:35
20 AUTHORISER..... 320 MUTHUK1
21 CO.CODE..... GB-001-0001
22 DEPT.CODE..... 1
```

# How to remove a JOB from a Batch – Method 2

- ▶ Edit the Batch in Input mode and make the particular job frequency as “A” (Adhoc)
- ▶ Commit and authorise and now the Batch will exclude the particular job while the batch is called.
- ▶ Next slide shows the status of the batch with the job BR.EOD.LIQ.TO.HIS opened in the Input mode.
- ▶ The FREQUENCY field for the JOB.NAME field BR.EOD.LIQ.TO.HIS is set to “A” (Adhoc)

## BATCH – Removing a JOB (by Ad Hoc)

```
6. 1 JOB.NAME..... BR.EOD.LIQ.TO.HIS
8. 1 FREQUENCY..... A                AD-HOC
12. 1 JOB.STATUS..... 0              READY
6. 2 JOB.NAME..... AC.CHG.REQ.LIQ.TO.HIST
8. 2 FREQUENCY..... D                DAILY
12. 2 JOB.STATUS..... 2              COMPLETED SUCCESSFULLY
13. 2 LAST.RUN.DATE.. 24 OCT 2006
17 CURR.NO..... 4
18. 1 INPUTTER..... 320 MUTHUK1
19. 1 DATE.TIME..... 18 FEB 09 20:37
```





# Workshop 1

- ▶ Create a COB record and run the COB with 5 agents
  - Check the Progress of the COB process
  - Check the dates change
  - Check the status of the Agents
  - Document and Analyse the process of all 5 agents
  - Troubleshoot and Document if any error occurs.

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