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Abstract: This document details the Maestro scheduling of the DRS Host processes including NWB, DCP and ETU.

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0.0Document Control

0.1 Document History

Version No.	Date	Reason for Issue	Associated CP/PinICL
0.1	02-Aug-2002	Draft – Based on NWB schedule with DCP additions	CP3263
0.2	08-Aug-2002	Draft – minor revisions	
0.3	04-Sept-2002	Draft – further minor revisions	
0.4	13-Sept-2002	Draft – further minor revisions Added additional dependencies to DRS_EFT_C4L_SOB1 & DRS_EFT_C4l_SOB2	81375 81160
0.5, 0.6 & 0.7	23-Sept-2002	Draft – further minor changes Change report schedule Add DRSX362E to DCP Rename DRSX361? To DRSC361? Correct typo on DRS_FILE_TRN_ACK	 81374 81321
0.8	27-Sep-2002	Separation of 353 from C4SD loading schedule	81764
0.9	8-Oct-2002	Change of schedule for DRSC323 to run it once for each of the twelve sections.	81891
0.10	8-Oct-2002	Addition of 9th run of DRSC303 for 65th partition	82282
0.11	24-Oct-2002	Removal of Main Store night sweep up (DRSC310)	82279
0.12	04-Nov-2002	DRSC366 to run after TPSREP	83414
0.13	05-Nov-2002	Various dependency changes.	83414
0.14	12-Nov-2002	Revised DRS_EFT_PAUS_AGT pause period from 5 to 15 minutes	83719
0.15 & 0.16	18-Dec-2002	Addition of DRSC368	84186
0.17	23-Dec-2002	Various changes to schedule DRS_EFT_C4LD_1	Review comments
0.18	23-Dec-2003	Updated the document with NWB and DCP processes and schedule details.	
0.19	21-Jan-2003	Updated the document as per the review comments.	Review comments
1.0	30-Jan-2003	Sent the document for approval	
1.1	02-May-2003	Revised to include new ETU schedule and resultant dependencies.	
1.2	12-Sept-2003	Revised to define schedule for DCS permanent EMIS fix (Removed for S50 baseline)	

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2.0	13-Oct-2003	Revised as per comments and released for Approval. (permanent EMIS specific information removed so document can be baselined for S50, will be issued for review in later draft)	
2.1	17-Jun-2004	Revised to include permanent EMIS specific information – process DRSC370	
3.0	09-July-2004	Released for Approval	
3.1	13-Oct-2004	Schedule updated for S75	
3.2	1 Nov-2004	All sections revised where appropriate for S75	
4.0	14-Jan-2005	Released for Approval	
4.1	18-Jan-2005	First draft containing revised schedule for S80	CP3716
5.0	13-Apr-2005	Released for Approval	

0.2 Review Details

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0.3 Associated Documents

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	Reference	Version	Date	Title	Source
[R1]	NB/HLD/003	1.0	20/09/2002	DRS Network Banking High Level Design	PVCS
[R2]	NB/IFS/004	0.6	09/09/2002	Network Banking Message Flows and Interfaces	PVCS
[R3]	PA/PER/031	2.0	11/06/2002	Horizon New Service Business Volumes	PVCS
[R4]	NB/HLD/009			DRS Live Sizing Analysis	
[R5]	TD/MAN/021	2.2	04/09/2002	Maestro Support Guide	PVCS
[R6]	TI/MAN/002	5.0	16/04/2002	TPS Operations Manual	PVCS
[R7]	AD/DES/032	1.1	03/12/2001	Maestro Agent Schedule Design	PVCS
[R8]	TD/ION/035	2.0	16/08/02	FTMS Configuration for DRS to POL Reporting	PVCS
[R9]	TD/ION/036	1.0	14/08/02	FTMS Configuration for DCP Reports to POL	PVCS
[R10]	EF/DES/009			Debit Card System EMIS Timestamp Correction Design Proposal	Fujitsu POA
[R11]	NB/HLD/015			S75 High Level Design for DRS	Fujitsu POA
[R12]	NB/HLD/019			TES Maestro Schedule	Fujitsu POA
[R13]	NB/HLD/016			TES High Level Design	Fujitsu POA
[R14]	DE/DES/161			Raw Volume Sizes for S75 Databases	Fujitsu POA
[R15]	NB/HLD/026			DRS Host Application and Workstation High Level Design Delta for IMPACT Release 3	Fujitsu POA

0.4 Abbreviations/Definitions

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Abbreviation	Definition
BCV	Business Continuity Volume
DCP	Debit Card Project. New name for EFTPoS/Debit Card Service
DRS	Data Reconciliation Service
DRS System Date	The logical DRS business day. DRS business day falls between running DRS Start of Day and DRS End of Day jobs. Normally same as the calendar day DRS Start of Day was run on.
DW	Fujitsu Services Data Warehouse
EFT	EFTPoS. Old name for Debit Card Project
EMIS	Electronic Management Information Service
EOD	End of Day
ETS	Electronic Top-Up Service
ETU	Electronic Top-Up
FTMS	File Transfer Managed Service
MA	Merchant Acquirer (Debit Card Project specific)
MAC	Message Authentication Code
MSU	Management Support Unit
NBE	Network Banking Engine
NBS	Network Banking Service
NSI	National Savings and Investments
NWB	DRS-specific abbreviation for Network Banking Service
PFG	Payment File Generation
Reconciliation Date	The Reconciliation Date is the date attributed to a transaction to allow PO Ltd to reconcile. It will be set to the first available Settlement Date from the Transaction Elements ([C112], [C12], [C4], [S], [D]) that make up that transaction. If no Settlement Date is available, the Reconciliation Date will be set to the processing date that the DRS first recorded any element of the transaction. If a Settlement Date subsequently becomes available, the first available Settlement Date will replace the processing date. However, once a transaction has been accounted for on a reconciliation report, the Reconciliation Date will never change.
Routing Gateway	The Routing_Gateway as defined Network Banking Message Flows and Interfaces [NB/IFS/004].
Run Date	The DRS logical date listed on a report and shows which calendar day the data is for. It is same as DRS System Date in all cases except NB103 reports where it is a day (configurable) behind DRS System Date.
Settlement Date	The date on which the Client has settled the transaction (in some instances a default is set by the Banking Host). The Settlement Date will be allocated by the Client (or failing that the Banking Host) and included in both

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	authorisations and confirmations. The [C4], [S], and [D] always contain a Settlement Date. Other messages may contain a Settlement Date.
TES	Transaction Enquiry Service
TIP	Transaction Information Project
TPS	Transaction Processing System
XML	eXtensible Mark-up Language

0.5 Changes in this Version

Version	Changes
0.1	First Draft
0.2	DCP changes and additions captured
0.3	Minor changes resulting from comments
0.4	Minor changes resulting from comments
0.5, 0.6 & 0.7	Various changes – see section 0.1
0.8	Separation of 353 from C4SD loading schedule.
0.9	Changes for DRSC323 schedule.
0.10	Addition of 9th run of DRSC303 for 65th partition
0.11	Removal of Main Store night sweep up – ninth instance.
0.12	DRSC366 to run after TPSREP plus various other dependency changes relating to the same move
0.13	TPSTIPL changed to TPSCAREP MS day will stop at 17:01 instead of 20:00 SOB will be dependent on MS day finishing for both NWB and EFT SOB dependent on SOD removed for NWB and DCS MS day Monitors changed to alert at 17:45 for NWB and DCS
0.14	Revised DRS_EFT_PAUS_AGT pause period from 5 to 15 minutes
0.15	Addition of job DRSC368 database 'analyze' job
0.16	Amended DRSC368 entries to make the job names unique
0.17	Various changes to schedule DRS_EFT_C4LD_1
0.18	Added various sections detailing the NWB and EFT processes and schedule.
0.19	Minor updates to various sections as per the review comments.
1.2	Updated to include revised schedule for DCS Permanent EMIS functionality

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	(Removed for approval at v2.0 & to be re-introduced in later draft)
2.1	Re-introduction of DCS Permanent EMIS functionality for S60. Also Online Transaction Monitoring schedule requirements.
3.1	Addition of new TES to DRS C4/D Copy process and reporting dependencies, note this draft captures only schedule changes. Further drafts will capture remaining operational information
3.2	Completion of S75 related information including: Revised NBS DRSC350 functionality for C2 table partition management Revised NBS DRSC301 functionality to write data to C2 tables New NBS process DRSC371 to copy C4/D data from the TES Revised NBS schedule and Exceptions table to reflect processes above. Replacement of volume information with reference to DE/DES/161 Also includes revisions associated with the following PEAKS: PC0103444 – Maestro Resource Lock implemented between DRSC350E and DRSC350N to prevent deadlock on data-dictionary when dropping partitions PC0106514 – DRSC350 modified such that it will not roll the DRS logical processing day forward unless the multiple runs flag in DRS_PROCESSES table is changed from its default of 'N' to 'Y'
4.0	Minor revisions following comments from v3.1 that were not included in V3.1
4.1	First draft of S80 changes mainly related to the removal of the NB103 report. This results in the removal of CAP totaling process (DRSC321), the NB103 report population process (DRSC326) and the NB103 Report File generation process (DRSC327).
5.0	None – issued for approval

0.6 Changes Expected

Changes
None

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0.7 Table of Contents

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1 Introduction

1.1 Document Overview

This document describes the operational requirements of the DRS application. The document also describes the procedures for supporting and tuning the application.

The introduction of ETU and NSI transactions at S50 are considered, for the purposes of this document, to be a subset of Network Banking transactions. The DRS is not performing any ETU or NSI specific functionality.

Like other pathway host systems, the DRS application has been designed to fail-over from one data centre to the fallback data centre without the need for operator intervention. The restart which requires an operator intervention can be done on the fall-over data centre.

DRS application performs two main functions during a business day:

1. Provide a high throughput Reconciliation Service handling Debit Card, and Network Banking transactions in large volumes. Also, for Debit Card provide a real time Transaction Processing System for forwarding the [C2] confirmation messages to the Confirmation Agents. At S75, Network Banking transactions will also be transformed into [C2] confirmation messages for the TES.
2. Provide an Online Database for 91 (configurable) days to support the Reconciliation Reports and the Online Query and Resolution System.

The database schema and application modules that primarily deal with the first function have been designed to provide high throughput and make use of parallelism in processing.

The schema objects and modules (batch and online) that facilitate the second function have been designed to meet the query requirements with quickest response time.

Most DRS jobs that run as a part of the Network Banking and Debit Card Maestro Schedules make use of checkpoints. These checkpoints are created/maintained in the database and offer the following benefits:

- Minimise the work that needs to be re-done in the event of fail-over from one data centre to the other.
- Prevent duplicate report files being produced for the report clients (MSU/Audit/TIP).
- Avoid re-creating transient objects and data in case of a re-start.

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The DRS Maestro schedule must be run once for each calendar day[1]. DRS records the Current Working Day in the database in order to ensure that a process is not run twice or not skipped in the event of fail-over from one data centre to the other.

The document provides the following appendices for quick reference:

Appendix A – Network Banking Maestro Schedule

Appendix B – Debit Card Maestro Schedule

Appendix C – Tablespaces and Raw Volumes

Appendix D – DRS Tables

Appendix E – DRS Exceptions

Appendix F – DRS Archiving Table Mapping

Appendix G – DRS File Housekeeping Parameters

[1] ETS schedule items where distinct from NBS are included in the NBS schedule

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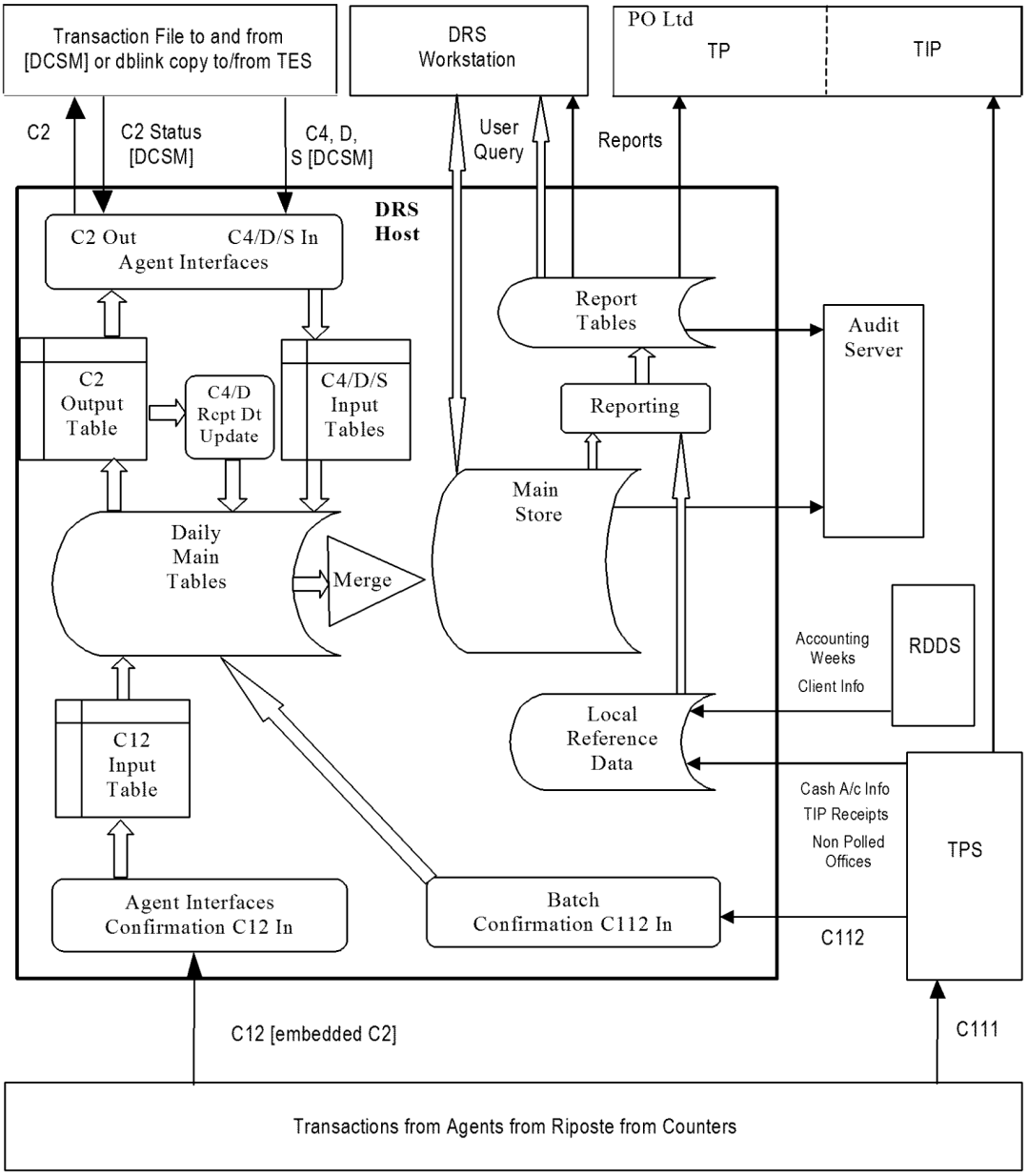
1.2 DRS Data Flow Diagram



The C12 transaction parts are input into DRS database through Agents calling an Oracle Stored Procedure.

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DCS C2 transaction parts are output to the MA through Agents using a file interface. At S75, NBS C2 transaction parts are copied from the DRS by the TES Host application over a database link.

The C112 transaction parts are input into DRS from TPS over a unique database link from DRS to TPS database The DRS requires financial C112 transaction parts only, not Balance Enquiry's or PIN changes. Furthermore a list of Non Polled Offices and TIP receipted Cash Account Lines are also input into DRS from TPS.

At S75, NBS C4/D transaction parts are copied from the TES Host application over a database link. These transactions are written directly into the DRS C4/D daily main and daily main exception tables. The existing NWB C4/D file load process will remain throughout the S75 migration period.

At S80, the cash account is replaced by the branch trading statement. This will entail removing the NB103 report and supporting processes. Additionally some NB102 report titles will be modified. The DRS changes are detailed in the high level design [R15].

The Account Week and Client Information are input into DRS from RDDS. Again, the data is copied over a unique database link from DRS to RDDS database.

The DRS produces a number of ASCII Text Reconciliation Reports which are transferred to the MIS Workstation, POCL TIP and the Audit Server.

The Network Banking and Debit Card transactions stored in DRS database are sent to the Audit Server in Archive format.

The DRS Workstation accesses the DRS database for MSU On-line Queries.

Within DRS Host the transaction parts C12, C4, D and S are first stored in XML format as received from the Agents. The C112 transaction parts are copied directly from TPS transaction table to DRS transaction table. Therefore, C112 transaction parts are not stored in XML format.

Next, the DRS Parse and Load Process parses, validates and loads the data into a set of Daily Input tables. These tables are transient and are emptied every day. Any transaction parts which fail the validation are stored in Daily Exceptions tables.

At S60 new functionality is required to enable the Receipt Date to be correctly set on DCS C4/D transaction parts derived from Streamline EMIS files. The full requirements are defined in Design Proposal [R10].

Finally, the DRS Match and Merge Process reads the Daily Input and Exceptions tables and moves the matched and merged data into a permanent storage called DRS Main Store. The data in DRS Main Store is kept for a configurable number of days currently set to 91 days.

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All the Reconciliation Reports and MSU On-line Queries access data from DRS Main Store. The Reconciliation Reports and MSU On-line Queries also make use of the reference data copied from TPS and RDDS.

2 Installation

2.1 Environment Variables

All the DRS environment variable names and values are present in the "/home/drs/.vars" file. When a DRS user logs in, all the variables are "exported" so that they become available to the DRS executables.

The following table lists the name and values of all the environment variables used by DRS.

The "Accessed by" column in the table below indicates that this directory is accessed by another application through NFS to move the data in and out of DRS. The details of the data access will be specified in the IPDU Main Host Platform Specification or the relevant Application Specification/User Guide.

Environment Variable	Value	Accessed by
ORACLE_HOME	*<Path-of-the-Oracle-Home>*	
ORACLE_SID	DRS	
NWB_AUDIT_OUTPUT	/bvnw01/drs/trans/drsaudit	**AUDIT SERVER**
NWB_MSU_OUTPUT	/bvnw01/drs/trans/drsmsu	**SSC SERVER**
NWB_TIP_OUTPUT	/bvnw01/drs/trans/nwbtip	**FTMS**
NWB_NBE_INPUT	/bvnw01/drs/trans/nwbC4Din	**MAESTRO NBE IN**
NWB_SUPPORT_OUTPUT	/bvnw01/drs/trans/drssupport	**SSC ARCHIVE SERVER**
NWB_ARCHIVE_OUTPUT	/bvnw01/drs/trans/drsarchive	**SSC ARCHIVE SERVER**
NWB_EXPORT_LOG	/bvnw01/drs/trans/drsexplog	**SSC ARCHIVE SERVER**
EFT_AUDIT_OUTPUT	/bvnw01/drs/trans/drsaudit	**AUDIT SERVER**
EFT_FILE_AUDIT	/bvnw01/drs/trans/dcpfileaudit	**AUDIT SERVER**
EFT_MSU_OUTPUT	/bvnw01/drs/trans/drsmsu	**SSC SERVER/DCSM SERVER**
EFT_TIP_OUTPUT	/bvnw01/drs/trans/efttip	**FTMS**
EFT_NBE_INPUT	/bvnw01/drs/trans/eftC4DSin	**DCSM SERVER**
EFT_C2_INPUT	/bvnw01/drs/trans/eftC2in	**DCSM SERVER**
EFT_C2_OUTPUT	/bvnw01/drs/trans/eftC2out	**DCSM SERVER**
EFT_SUPPORT_OUTPUT	/bvnw01/drs/trans/drssupport	**SSC ARCHIVE SERVER**
EFT_ARCHIVE_OUTPUT	/bvnw01/drs/trans/drsarchive	**SSC ARCHIVE SERVER**

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EFT_EXPORT_LOG	/bvnw01/drs/trans/drsexplog	**SSC ARCHIVE SERVER**
DRS_CONNECT_STR	drs	
DRS_PROC	/app_sw/drs/c	
DRS_SH	/app_sw/drs/sh	
DRS_SQL	/app_sw/drs/sql	
EXCP_USER	ORAEXCP/EXCP123	
DATA_CENTRE_CHAR	W	
TZ	Set to the format described in the Host handover note e.g. GMT0BST –1,M3.5.0/1:00:00,M10.5.0/2:00:00	
NLS_DATE_FORMAT	DD-MON-YYYY	
NLS_LANG	AMERICAN_UNITED KINGDOM.WE8ISO8859P1	
LD_LIBRARY_PATH	*<Path-of-the-Oracle-Home>*/lib:/usr/lib:/opt/epc/lib:/usr/include	
PATH	/bin:/usr/bin:*<Path-of-Oracle-Home>*/bin:/app_sw/drs/c:/app_sw/drs/sh	

The syntax of TZ can be described as follows:

```
TZ          ->  zone
                | zone signed_time
                | zone signed_time zone
                | zone signed_time zone dst
zone        ->  letter letter letter
signed_time ->  sign time
                | time
time        ->  hour
                | hour : minute
                | hour : minute : second
dst         ->  signed_time
                | signed_time; dst_date
dst_date    ->  date/time
date        ->  Jjulianone
                | julianzero
                | Mmonth.week.day
month       ->  1|2|……|12
week        ->  1|2|3|4|5
day         ->  0|1|2|3|4|5|6
letter      ->  a|A|b|B|……|z|Z
hour        ->  00|01|02|……|23
minute      ->  00|01|02|……|59
second      ->  00|01|02|……|59
```

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julianzero -> 0|1|2|.....|365
julianone -> 1|2|3|.....|366
sign -> -|+
For more information, refer to the UNIX manual pages for "tzset"

2.2 Directories

Following table lists the directories for Network Banking and Debit Card. The table also shows the minimum storage required on the file-system for these directories. The actual space allocated could be more and will be set by the System Administrator [ISD].

No	Directory Name	Owner	Group	Unix Mode	Live Size (in Mbytes)
1.	/oracle/DRS/bdump	oracle8i	dba	750	100
2.	/oracle/DRS/cdump	oracle8i	dba	750	100
3.	/oracle/DRS/udump	oracle8i	dba	750	100
4.	/archredo/DRS	oracle8i	dba	750	20000
5.	/home/drs (Home directory common to all 9 DRS Unix Users)	drs	pathway	770	180
6.	/bvnw01/drs/trans/drsaudit	drs	pathway	770	1200
7.	/bvnw01/drs/trans/drsmsu	drs	pathway	770	6000
8.	/bvnw01/drs/trans/drssupport	drs	pathway	770	9000
9.	/bvnw01/drs/trans/drsarchive	drs	pathway	770	3000
10.	/bvnw01/drs/trans/drsexplog	drs	pathway	770	200
11.	/app_sw/drs/c	drs	pathway	550	200
12.	/app_sw/drs/sh	drs	pathway	550	10
13.	/app_sw/drs/sql	drs	pathway	550	10
14.	/db_build/DRS	oracle8i	pathway	770	100
15.	/bvnw01/drs/trans/nwbtip	drs	pathway	770	5500
16.	/bvnw01/drs/trans/nwbC4Din	drs	pathway	770	8000
17.	/bvnw01/drs/trans/efttip	drs	pathway	770	600
18.	/bvnw01/drs/trans/eftC4DSin	drs	pathway	770	1500
19.	/bvnw01/drs/trans/eftC2in	drs	pathway	770	200
20.	/bvnw01/drs/trans/eftC2out	drs	pathway	770	1000
21.	/bvnw01/drs/trans/dcpfileaudit	drs	pathway	770	1500

2.3 Unix Users

The following Unix users are used by DRS Application for Network Banking and Debit Card:

Unix User Name	Group	Home	Profile
oracle8i	dba	/home/oracle8i	/home/oracle8i/.profile
drs	pathway	/home/drs	/home/drs/.profile

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drsnwb	pathway	/home/drs	/home/drs/.profile
drsnwb1	pathway	/home/drs	/home/drs/.profile
drsnwb2	pathway	/home/drs	/home/drs/.profile
drsnwb3	pathway	/home/drs	/home/drs/.profile
drsnwb4	pathway	/home/drs	/home/drs/.profile
drsnwb5	pathway	/home/drs	/home/drs/.profile
drsnwb6	pathway	/home/drs	/home/drs/.profile
drsnwb7	pathway	/home/drs	/home/drs/.profile
drsnwb8	pathway	/home/drs	/home/drs/.profile
drseft	pathway	/home/drs	/home/drs/.profile
drseft1	pathway	/home/drs	/home/drs/.profile
drseft2	pathway	/home/drs	/home/drs/.profile
drseft3	pathway	/home/drs	/home/drs/.profile
drseft4	pathway	/home/drs	/home/drs/.profile
drseft5	pathway	/home/drs	/home/drs/.profile
drseft6	pathway	/home/drs	/home/drs/.profile
drseft7	pathway	/home/drs	/home/drs/.profile
drseft8	pathway	/home/drs	/home/drs/.profile
<User Name> for DRS Workstation Security Manager	Pathway	/home/drs	/home/drs/.profile

2.4 Oracle Tablespaces and Raw Volumes

The details of storage space allocated to DRS database for both Network Banking and Debit Card are present in Appendix C – Tablespaces and Raw Volumes.

2.5 Database Roles and Users

2.5.1 Roles

DRS has following Oracle roles which are used for both Network Banking and Debit Card:

Role Name	Roles Granted	System Privs Granted	Description
ALT_MAIN _STORE			Role has been granted to DRS-Host users “OPS$DRSNWB” and "OPS$DRSEFT" in order to allow them to add/drop the partitions of tables DRS_RX_NWB_MAIN_STORE and DRS_RX_EFT_MAIN_STORE
AUDITOR	MONITOR		Role defined for use by Internal/External auditors of the system
BMC	CONNECT RESOURCE		Role has been granted to “BMC_USER” in order to support the BMC Patrol and Knowledge Modules
MONITOR		• Select Any Table	Role made available for all users that require query-only access to the system
SECURITY		• Alter User	Role has been defined for use by support

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_MANAGER		• Drop User • Grant Any Role • Select Any Table • Create User	staff who are authorised to administer support users and to investigate security breaches
SSC	MONITOR		Role has been defined for use by SSC (EDSC) Support which will act as third line support team for the DRS Application
TMS			Role is used by the NBS [C12] agents and has been granted to users "TMS_NWB_USER" and "TMS_EFT_USER" to allow the agents to call the DRS-interface to transfer [C12] XML records. This role has got the object privileges necessary to harvest C12 messages into DRS database.
DRS_EXCEPTIONS	CONNECT RESOURCE		Role has been granted to user "ORAEXCP" to enable it to log an operational exception
DRS_BATCH	CONNECT RESOURCE	• Create Procedure • Select Any Table • Insert Any Table • Create Session • Create Public Synonym • Update Any Table • Delete Any Table • Drop Public Synonym • Create Database Link • Create Sequence • Create Public Database link • Create Synonym • Drop Public Database Link • Create Table • Create View • Select Any Sequence	Role is used all DRS batch users. It has been granted to users "OPS$DRSNWB" , "OPS$DRSNWB1…8", OPS$DRSEFT and OPS$DRSEFT1…8.
MSU	CONNECT RESOURCE		Role will be been granted to DRS Workstation users. in order to enable them to access the DRS Database. The DRS

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			Workstation users will be created on demand.
TES_USERS	CONNECT RESOURCE		Role is used by the TES copy processes and TES Query applications and has been granted to user "DRSTES" to allow the processes to extract parsed [C2] messages. This role has got the object privileges necessary to read [C2] messages from DRS database.
APPSUP	CONNECT RESOURCE	All System privileges belong to the DBA role.	Role has been defined for use by ISD Support which will act as first line support team for the DRS Application
DB_MONITOR	CONNECT	• Select Any Table	Role has been defined for use by ISD Support which will act as first line support team for the DRS Application
UNXADM	CONNECT RESOURCE DBA		Role has been defined for use by ISD Support which will act as first line support team for the DRS Application

2.5.2 Oracle Users

DRS has following Oracle Users which are used for both Network Banking and Debit Card:

User Name	Default Tablespace	Temp Tablespace	Roles Granted	Privs Granted	Description
BMC_USER	USER_TABLESPACE	TEMP	BMC		User is used by the BMC/Patrol scripts to connect to the DRS database and fetch details about operational exceptions
ORAEXCP	USER_TABLESPACE	TEMP	DRS_EXCEPTIONS		User is used to connect to the DRS database via a concurrent connection in order to log an operational exception
OPS$DRS	USER_TABLESPACE	TEMP	DRS_BATCH		Owns the DRS schema. Has been granted the DBA role in order to allow the build to create objects in all user tablespaces and to allow executing jobs that perform purge/housekeeping functions
OPS$MET_DRS	USER_TABLESPACE	TEMP		• Select Any Table	Used by the Metron performance monitoring tool to gather database statistics
OPS$D	USER_TAB	TEMP	DRS_BATC		Used to execute single

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RSNWB	LESPACE		H ALT_MAIN_ STORE		instance jobs including Main-Store partition creation for Network Banking
OPS$D RSNWB 1…8	USER_TAB LESPACE	DRS_TEMP 1…8	DRS_BATC H		Used to execute the multiple instance jobs for Network Banking
OPS$D RSEFT	USER_TAB LESPACE	TEMP	DRS_BATC H ALT_MAIN_ STORE		Used to execute single instance jobs including Main-Store partition creation for Debit Card.
OPS$D RSEFT1 …8	USER_TAB LESPACE	DRS_TEMP 1…8	DRS_BATC H		Used to execute the multiple instance jobs for Network Banking/Debit Card.
DRSN WBAG ENT	USER_TAB LESPACE	TEMP	CONNECT RESOURCE		User owns the PL/SQL package interface used by the Horizon NBS Agents for transferring [C12] XML for NWB to DRS.
TMS_N WB_US ER	USER_TAB LESPACE	TEMP	CONNECT RESOURCE		Used by the Horizon NBS Agent/s to connect to the DRS database for transferring [C12] XML for NWB via the PL/SQL package interface to DRS.
DRSEF TAGEN T	USER_TAB LESPACE	TEMP	CONNECT RESOURCE		User owns the PL/SQL package interface used by the Horizon NBS Agents for transferring [C12] XML for DCP to DRS.
TMS_E FT_US ER	USER_TAB LESPACE	TEMP	CONNECT RESOURCE		Used by the Horizon NBS Agent/s to connect to the DRS database for transferring [C12] XML for DCP via the PL/SQL package interface to DRS.
DRSTE S	USER_TAB LESPACE	TEMP	CONNECT TES_USERS		Used by the TES copy process to access the DRS C2 tables.

2.5.3 DRS Workstation Users

DRS Workstation users will be created on demand as per Access Control Policy (RS/POL/003). The DRS Workstation users include the MSU or SSC users who will be accessing the DRS database using DRS Workstation Application and one or more DRS Workstation Security Manager users who will be creating and managing DRS Workstation MSU and SSC users.

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2.5.3.1 DRS Workstation Security Manager Setup

The procedure for DRS Workstation Security Manager user setup is as follows:

- MSU/SSC will fill the application form as defined in RS/PRO/040 (Application for Access to the Live Network) to create a new Unix user account on the Host as per the following details:

  User Name: As per RS/PRO/040

  User Description: DRS Workstation Security Manager

  User Home Directory: /home/drs

  Unix Profile: /home/drs/.profile

  User Group: pathway

- Host Administrator/DBA (ISD) will create a Unix user account. Also, they will create an Oracle account (OPS$<Unix User Name>) in the DRS database. The Oracle account will be identified "externally". That is, no explicit password will be assigned to the Oracle account.

- Host Administrator/DBA (ISD) will grant SECURITY_MANAGER role to the newly created Oracle account. The SECURITY_MANAGER role already exists in the DRS database.

For example, the SQL commands to create an Oracle user account for the Unix user "arrism" and grant the required role are:

(Connect to DRS database as the Oracle user "sys" or a user with DBA privileges)

```
SQL> create user ops$arrism identified externally
        default tablespace USER_TABLESPACE temporary tablespace TEMP;
SQL> grant SECURITY_MANAGER to ops$arrism;
```

2.5.3.2 DRS Workstation User Account Setup

The procedure for DRS Workstation user account setup is as follows:

- MSU/SSC will fill the application form as defined in RS/PRO/040 (Application for Access to the Live Network) to create a new **Oracle** account in the DRS database.

- The DRS Workstation Security Manager will create the DRS Workstation user account by running a Unix shell script. The script will also create the necessary Oracle synonyms and grant user the privileges to access the DRS database.

- The Security Manager will confirm to user that account has been created along with password to use for first logon (the user will automatically be forced to change this).

The steps required by the Security Manager to create a DRS Workstation user are as follows:

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- Login to the Host as Security Manager Unix user.
- Execute the following command on the Unix prompt (the shell script is present in the directory "/app_sw/drs/sh" but the directory has been included in the PATH):

  create_drs_workstation_user.sh <Oracle_User_Name> <Oracle_User_Password>

  Where the <Oracle_User_Name>
  - must start with the letters DRSWKSNWB for Network Banking users and DRSWKSEFT for Debit Card Project users.
  - can be up to 30 characters long and should contain only letters and numbers.

  The <Oracle_User_Password>
  - must be at least 6 chars long.
  - must be a mixture of alphanumeric characters i.e. a mixture of letters and numbers (must contain at least 1 char in the range a-z,A-Z and 1 char in the range 0-9).
  - must not have two consecutive characters the same.
  - can not be the same as the username.

The successful execution of the script displays a number of messages on the standard output. The exit code of the shell script must be 0 (After running the script, check the exit code using the command *echo $?*).

2.5.4 DRS Workstation User Account Closure

The procedure for DRS Workstation user account closure is as follows:

- MSU/SSC will fill in the account closure application form as defined in RS/PRO/040.
- ISD will lock the user account using the following commands:

  (Login to the Host as Security Manager Unix user)

  sqlplus /

  SQL> alter user <Oracle_User_Name> account lock;

  SQL> quit;

2.5.5 DRS Workstation User Account Unlocking

The DRS will lock MSU/SSC Oracle user accounts following 3 unsuccessful logon attempts. In the event of this

- Call will be raised with ISD.
- ISD will unlock the account. If the password has been forgotten, it will be reset and the account status will be set to "password expired"(to force password change on first use). The procedure for unlocking the account and/or resetting the password follows:

  (Login to the Host as Security Manager Unix user)

  sqlplus /

  SQL> alter user <Oracle_User_Name> account unlock;

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SQL> alter user <Oracle_User_Name> identified by <Temporary_Password>;

SQL> alter user <Oracle_User_Name> password expire;

SQL> quit;

- Confirmation will be sent by ISD to the user that the account has been unlocked along with temporary password to use (the user will automatically be forced to change this at the first logon).

3 Maestro Resources

No Maestro resources have been explicitly defined in the DRS Network Banking and Debit Card project schedules.

4 Transaction Volumes and Database Storage Capacity

This section has been included only for reference and to provide a brief description of the expected data volume and the method used to estimate the database storage required. The details of the current and the estimated transaction volumes are available in [R3]. The details of the sizing analysis for the DRS database are available in [R4].

As described in [R4], the DRS database can handle Phase-2 'Design-Limit' volumes of 4.45 million (combined) Network Banking, Debit Card and Electronic Top-Up transactions. Further, to handle situations where all the transactions for a day are not harvested until the following day, i.e., two days of transactions are harvested on a single day, the DRS tables have been sized to handle up to 8.6 million transactions.

The storage required for the DRS Main Store table, which keeps the data online for up to 91 days, has been estimated as follows:

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Measure	Value
Peak daily transactions (Contract Limit)	3,711,000
Peak daily transactions (Design Limit)	4,445,000
Number of Days for which the data is stored	91 Days
Average Main Store record size	460 bytes
Maximum Main Store record Size	767 bytes
Database Storage required for one day considering average daily transaction volumes where each record is of maximum size	3,711,000 * 767 = 2.65GB
Storage allocated at BI3 for one day's Main Store data	2000MB
Additional Storage required input/output, Report tables and indexes	136GB
Total Database size considering peak daily transaction volumes	2000MB * 91 days + 136GB ≈ 314 GB

5 Process Failure and Recovery

DRS Host processes can fail due to Oracle, Application or System errors. The various types of error conditions leading to process failure and the possible recovery actions are common for most processes and are listed below:

5.1 Automatic re-run by Maestro

In some cases, if a process instance fails a recovery job is automatically started by Maestro, which effectively reruns the process instance once.

For example, Maestro reruns a failed instance of C12 Parser. The auto rerun of an instance is done only once. Subsequent failures on the same instance require manual intervention.

5.2 Failures due to Oracle Error

In case of **Oracle** failures such as 'Object does not exist' or 'Insufficient Oracle privileges' or 'Insufficient Rollback segments' or 'Unable to access database links' and others, an Operational Exception is logged in the DRS Operational Exceptions table along with the SQL statement that caused the failure.

Please refer to Oracle message manual (or "oerr ORA ####" from a command prompt) for advice on the appropriate recovery action for all such failures.

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5.3 Failures due to Application and System Error

In case of **Application** errors such as invalid reference data or reference data does not exist, an exception to indicate process failure is raised and recorded in the DRS Operational Exceptions table which would be highlighted by BMC / PATROL.

In case of **System** errors such as errors related to the Operating System please refer to the Operating System manual for advice on the appropriate recovery.

All DRS processes can be restarted after rectifying the cause of failure.

6 Network Banking Schedule Details

This section describes all the Schedules and Jobs listed in Appendix A – Network Banking Maestro Schedule. The Network Banking Maestro Schedule includes network banking specific jobs and the jobs which are common (like Reference Data Copy) between Network Banking and Debit Card.

For each job in the schedule, a brief description is included along with implementation details, Job dependencies (if any) and Rerun action in case of a failure.

Implementation includes the Job name as used in the Maestro Schedule. Full details of the Jobs including the command-line parameters being passed can be found in Appendix A – Network Banking Maestro Schedule.

6.1 Schedule M_DB_SRV#DRS_NWB_SOD

This is the start of the DRS Network Banking schedule. It will start after the database restart on completion of cold backup at around 8am.

6.1.1 Dependencies

Follows successful completion of the DRS Network Banking schedule for the previous logical processing day (implemented via a dependency on DRS_NWB_BATCH_COMPLETE.FLAG).

Precedes schedules DRS_RDDS_EXTRACT, DRS_NWB_RUN_AGT, DRS_NWB_MS_DAY and DRS_NWB_SOB.

6.1.2 Process DRSC350

Process DRSC350 runs at the start of the DRS Network banking day to set the working day for the schedule, create the Main Store (DRS_RX_NWB_MAIN_STORE) partition for that working day and re-set various flags.

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The DRS working day is controlled by two logical dates that are stored as “DRS SYSTEM DATE” and “PARTITION RECEIPT DATE” system parameters for the Application Type "NWB" in the database. These dates normally correspond to the System Date on the Rig with the exception of a post fail-over catch-up situation where the dates could lag by one or more days.

At S75, DRSC350 has been revised to perform partition maintainence on the NBS C2 tables. New partitions are created and old partitions dropped. The DRS_NRT_INTERFACE_METADATA table is updated to reflect the partition state of each C2 output table.

6.1.2.1 Implementation

Implemented in the M_DB_SRV#DRSC350N job (postfix "N" stands for Network Banking).

6.1.2.2 Job Dependencies

This job is dependent on the Maestro resource DRSC350LK. This is necessary so that DRSC350N and DRSC350E do not run at the same time. This resource has a value of 1 and will hold up the running of DRSC350N until it is available. DRSC350E has the same dependency.

6.1.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery

Additionally, a migration specific Application error could occur in the form of process failure when run for the **first time** on the Rig. The reason for such an error could be missing values for “DRS SYSTEM DATE” and “PARTITION RECEIPT DATE” system parameters in DRS_SYSTEM_PARAMETERS table. These parameters are created with NULL values as a part of DRS database and schema build and must be set by ISD to the value of Unix System Date one day prior to running the BI3 schedule for the first time. The details of how to set these dates in DRS_SYSTEM_PARAMETERS table are available in the DRS Delivery Handover Note.

The process can be restarted after rectifying the cause of failure.

Note that it is possible due to the unavoidable implicit database commit performed when adding/dropping table partitions that, in some esoteric failure scenarios, the partition metadata will be out of sync with the actual partitions. In this situation, re-running the SOD process will potentially fail.

In this scenario it will be necessary to confirm whether the metadata/partitions are inconsistent by running a script provided by development.

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If the partitions/metadata are inconsistent it will be necessary to manipulate either to remedy the situation. Given that the remedial activity will be dependent on a number of variables including whether any data has been written to the new partitions etc, a call should be raised with 4th line support.

In some situations, typically in test, it is desirable to run DRSC350 more than once in a calendar day. The default (build) value of the PROCESS_DAY_MULTIPLE_RUNS_YN flag in the DRS_PROCESSES table for the DRSC350 process is 'N' so would prevent this. Therefore the PROCESS_DAY_MULTIPLE_RUNS_YN flag should be changed to 'Y' to allow this if required.

WARNING – This should only be done in Live at the guidance of development.

6.2 Schedule M_DB_SRV#DRS_ETU_C4LD

The schedule runs DRSC305 to load the ETU file containing C4/D messages into the NWB C4SD input table and then DRSC306 to parse the C4/D messages into the C4/D daily main tables.

6.2.1 Dependencies

Follows successful completion of the schedules DRS_NWB_SOD and DRS_ETU_BATCH_COMPLETE.FLAG.

6.2.2 Process DRSC305

This process reads [C4/D] XML records from a data-file whose absolute filename is passed to it on command-line by Maestro and loads them into the FTMS_RX_NWB_C4SD input table.

The input data-file/s are read from directory $NWB_NBE_INPUT and are renamed to change their extension to lowercase once they have been successfully processed.

6.2.2.1 Implementation

Implemented in M_DB_SRV#DRSC305T where the postfix "T" stands for ETU.

6.2.2.2 Job Dependencies

None

6.2.3 Process DRSC306

This process sets the value of DRS system parameter "C4SD FILE LOAD COMPLETE" for Application Type "NWB" to 'Y' to indicate that all the DRS C4/S/D files have been successfully loaded. Once this flag is set, all instances of

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DRSC302 (see section 6.19.2) exit after processing the last set of C4/S/D input records.

6.2.3.1 Implementation

Implemented in M_DB_SRV#DRSC306N.

6.2.3.2 Job Dependencies

Depends on successful completion of DRSC305T where the postfix “T’ stands for ETU.

6.2.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.3 Schedule M_DB_SRV#DRS_NWB_ANALYZE

The schedule runs a job every day to gather the statistics for specified DRS database objects. The statistics are used by Oracle optimiser to improve the query performance.

6.3.1 Dependencies

Follows successful completion of the M_DB_SRV#DRS_NWB_SOD.

6.3.2 Process DRSC368

The process reads the table DRS_ANALYZED_OBJECTS for the details of DRS database objects to be "ANALYZED". It then runs DBMS_STATS package or SQL command "ANALYZE" to gather and store statistics on the objects specified. This is required when ever a tables data content changes or a partition is dropped as part of Start of Day. In this way Workstation Query and Report Generation performance can be optimised.

6.3.2.1 Job Dependencies

None.

6.3.2.2 Implementation

Implemented in the M_DB_SRV#DRSC368N_1 job (the postfix "N" stands for Network Banking).

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6.3.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.4 Schedule M_DB_SRV#DRS_RDDS_EXTRACT

This schedule runs DRSC364, which copies RDDS reference data for Routing Gateways and Accounting Weeks into DRS.

The schedule is common between Network Banking and Debit Card.

6.4.1 Dependencies

This schedule follows the successful completion of the schedule DRS_NWB_SOD and DRS_EFT_SOD.

6.4.2 Process DRSC364

Process DRSC364 refreshes accounting weeks (RDDS_ACCOUNTING_WEEKS), routing gateways (RDDS_ROUTING_GATEWAYS) tables and clients (RDDS_CLIENTS) using corresponding tables/views in RDDS-Host system. The RDDS objects are accessed via a pre-defined database link. The RDDS table names from where the data is copied from are DRS_ACCOUNTING_WEEKS, DRS_ROUTING_GATEWAYS and DRS_CLIENTS respectively.

6.4.1.1 Implementation

Implemented in M_DB_SRV#DRSC364C (the postfix "C" stands for Common).

6.4.1.2 Job Dependencies

None.

6.4.1.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery. The exception to the rerun action described in the common section is that Maestro will continue processing in case of a process failure. No page message will be sent to first-line support. Operational exception/s will be logged and they can be used for error analysis and resolution.

6.5 Schedule M_DB_SRV#DRS_NWB_RUN_AGT

This schedule contains jobs that set the appropriate run state in table TMS_ART_DRS to allow the C12 agents to call the C12-interface to populate the DRS database and informs the schedule that C12 agents can populate the database.

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The schedule and job details have been provided by the TMS agent team. Refer to [R7] for further details.

6.6 Schedule M_DB_SRV#DRS_NWB_C12_PARS

This schedule runs multiple instances of the DRS [C12] parse and load process. The schedule becomes active after completion of DRS start-of-day and continues until the DRS end-of-day processing has completed.

6.6.1 Dependencies

Follows successful completion of DRS Network Banking schedule DRS_NWB_SOD and DRS_NWB_RUN_AGT.

Precedes schedule DRS_COLD_BU.

6.6.2 Process DRSC301

This process reads [C12] XML records from TMS_RX_NWB_C12 (C12-Input), parses and loads them into the DRS_RX_NWB_C12 and DRS_RX_NWB_C12_EXCP tables.

Maestro invokes eight instances of DRSC301 at the start of the schedule.

The process polls the C12-Input table once there are sufficient records to be processed in the input table or after a timeout occurs whose duration in seconds is taken from the value of “HORIZON C12 INPUT ALERT TIMEOUT” system parameter.

The process can be re-run during a DRS processing Day and every run of the process, which is not a re-start, will create a new entry in DRS_PROCESS_CONTROL.

Introduced at S75, the DRSC301 instances will write NBX transactions (as derived from Logical FI) into a set of partitioned C2 tables. These tables are used to copy C2 transactions in the TES.

The process execution is controlled by the value of system parameter “DRS PROCESSING DAY COMPLETE”. At the end of DRS processing day, the parameter value is set to “N” by DRSC351, which would result in all eight instances of DRSC301 exiting successfully.

6.6.2.1 Implementation

Implemented in the M_DB_SRV#DRSC301N_1…8 jobs (the postfix "N" stands for Network Banking).

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6.6.2.2 Job Dependencies

None

6.6.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery. As listed in this section, if an instance of DRSC301 fails, Maestro automatically reruns the failed instance once. If it fails on the rerun, Maestro does not attempt any further automatic reruns for that instance. Any failures would result in operational exceptions being logged which can be used for fault analysis/resolution.

6.6.3 Process DRSC312

At regular intervals (every C12_MONITOR_SLEEP_INTERVAL seconds), this process summarises entries made by the C12 parsers into the DRS_C12_*APP_TYP*_MONITOR table. Where an entry for the relevant time interval and routing gateway doesn't exist, the process will insert a new record. Where an entry already exists it will update the Transaction_Count, Failed_Count, Failure_Percentage and Alert values as appropriate. If the failure percentage exceeds a threshold value (C12_MONITOR_FAILURE_THRESHOLD), in addition to inserting or updating a row in the monitor table, it will write an entry into the application log file which is monitored by Tivoli. See [R11] for full details of file format and path.

Only one instance of the program must be run at any time (per app_type). This program will be run once during a day as part of DRS Start of Day , if it fails it can be restarted. . Processing is complete when DRSC351 sets the summary complete flag (C12_MONITOR_COMPLETE) to Y when the end of the DRS processing day occurs.

- **Implementation**

Implemented in the M_DB_SRV#DRSC312N job (the postfix "N" stands for Network Banking).

- **Job Dependencies**

None

6.6.1.1 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

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6.7 Schedule M_DB_SRV#DRS_NWB_MS_DAY

This schedule runs DRS Main Store Processing (DRSC310) during the day until 17:01 hours at a configurable interval currently set to 30 minutes. This is to enable MSU (Management Support Unit) querying on transaction parts which arrived late in DRS. The same process DRSC310 is also used as part of the Batch overnight schedule. See section 6.21 for details.

6.7.1 Dependencies

This schedule follows the successful completion of the schedule DRS_NWB_SOD.

6.7.2 Process DRSC310 [DAY]

The "DAY" run of the process picks up only those transaction parts for processing which have Receipt Date older than the current Partition Receipt Date. The value of current Partition Receipt Date is derived from DRS System Parameter "PARTITION RECEIPT DATE" and APPLICATION_TYPE [refer to System Parameters for details].

This process reads the transaction parts [C12/C112/C4/S/D] from Daily Input tables [DRS_RX_NWB_C12, DRS_RX_NWB_C112, DRS_RX_NWB_C4, DRS_RX_NWB_D and DRS_RX_NWB_S] in the order of their arrival sequence in DRS. No [S] transactions are expected for Network Banking. The transaction parts are matched on necessary elements and the State Information is derived and set in chronological order once for the arrival of each transaction part. The resulting transaction record containing all the available transaction parts and the State Information is then inserted into DRS_RX_NWB_MAIN_STORE table. The process also inserts a copy of Main Store record into DRS_RX_NWB_MAIN_STORE_UPDATES to facilitate fast reporting.

Multiple instances of the process can be run in parallel. Each instance can process a set number of Daily Input table partitions.

6.7.2.1 Implementation

This process has been implemented in M_DB_SRV#DRSC310DN_*x*, where *x* is the instance number ranging from 1 to 8 and the postfix "DN" stands for Day and Network Banking.

6.7.2.2 Job Dependencies

None

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6.7.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.8 Schedule M_DB_SRV#DRS_NWB_SOB

This schedule runs the first job of the DRS batch overnight for Network Banking which is Start of the Batch overnight.

6.8.1 Dependencies

Follows successful completion of TPS schedule TPSCAREP.

Precedes schedule DRS_NWB_TPS_COPY.

6.8.2 Process DRSC353

This job runs at the start of the DRS batch overnight process on completion of the TPS TIP and the APS Client Host processing jobs.

It sets the value of system parameter “BATCH JOB STARTED” for Application Type "NWB" to “Y” to inform the DRS Workstation that the batch overnight has started and all subsequent connections should be read-only. It also ‘kills’ the SQL*Net connections made by DRS workstation users (all Oracle usernames starting with “DRSWKS”) to the database using the SQL statement “ALTER SYSTEM DISCONNECT SESSION…”

6.8.2.1 Implementation

Implemented in job M_DB_SRV#DRSC353N (the postfix "N" stands for Network Banking).

6.8.2.2 Job Dependencies

None.

6.8.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.9 Schedule M_DB_SRV#TES_AL_REC_RUN

This schedule is defined in [R12] and contains all jobs associated with producing REC files for Alliance and Leicester. It is included in this document because it contains the DRS job DRSC371N. See 6.15.2 for more details.

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6.9.1 Dependencies

See [R12].

6.9.2 Job DRSC371N

The TES_TX_C4 and the TES_TX_D tables will be partitioned by a single numeric column (PARTITION_ID) and the TES will create a new partition in each table for each Routing Gateway's delivery of data to the DRS.

For each table in turn, the DRS [C4/D] copy process should select all rows from TES_PARTITION_CREATES and where a row contains a status value 'AVAIL' use the partition_id value to qualify the selection of transactions from the input table.

Following processing of all the rows, within each partition:

1. a single row will be written into table APPLICATION_ACCESSES to indicate that the data within the partition has been accessed and is no longer required by DRS.
2. The TES_PARTITION_CREATES row status value should be updated to 'USED'
3. A new row should be inserted into the TES_PARTITION_STATUS_HISTORY table to reflect the change in partition status. The status should be set to 'AVAIL' and the create date value set to sysdate.

A single commit at this point ties-up the retrieval of the data with the indicator to TES that the data is no longer required. This ensures re-runnability of the job without needing any special condition processing.

Each available partition is processed in-turn for both the C4 and the D tables. The following processing is performed for each row within each partition:

All rows from the partition will be inserted into the C4 daily table using a single SQL INSERT INTO….SELECT FROM…. statement. This gives maximum performance since all of the data operations are contained within the Oracle instance and Oracle can manage parallel DML. However, there is a remote possibility that this may result in a duplicate primary constraint or other schema constraint violations. If this is the case, then the partition must be read and inserts performed on a row-by-row basis. This will be done in a similar manner to the existing C4/D parsers; the existing DRS HLD describing these parsers is repeated here for clarity:

If an insert fails due to unique key violation, the insert will be re-attempted using only the primary key values and after incrementing the sequence number value. Non-key data will not be mandatory and so does not require default values. The

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duplicate flag will be set to indicate that this exception is a duplicate. The data exception flag will accordingly not be set. Once the duplicate record entry has been made in the respective Daily table, the entire record (including non-primary key values) will be inserted into the corresponding exception table. Alerts will be raised for exception conditions as deduced from insertion. The C4/D type daily tables will be constrained in order to validate each record's value to the respective domains. If a record cannot be inserted due to check constraint violation on one/more columns of the daily table, the record will be inserted using the database default values for all non-primary key columns. A copy of the erroneous record will be inserted into the C4/D Exceptions table along with the error details.

6.9.2.1 Implementation

Implemented in the M_DB_SRV#DRSC371N job (the postfix "N" stands for Network Banking).

6.9.2.2 Job Dependencies

None

6.9.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery. As listed in this section, if an instance of DRSC371 fails, Maestro automatically reruns the failed instance once. If it fails on the rerun, Maestro does not attempt any further automatic reruns for that instance. Any failures would result in operational exceptions being logged which can be used for fault analysis/resolution.

6.10 Schedule M_DB_SRV#TES_CAPO_REC_RUN

This schedule is defined in [R12] and contains all jobs associated with producing REC files for Card Account. It is included in this document because it contains the DRS job DRSC371N. See 6.15.2 for more details.

6.10.1 Dependencies

See [R12].

6.10.2 Job DRSC371N

See 6.15.2 for more details.

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6.11 Schedule M_DB_SRV#TES_LINK_REC_RUN

This schedule is defined in [R12] and contains all jobs associated with processing LREC files from LINK. It is included in this document because it contains the DRS job DRSC371N.

6.11.1 Dependencies

See [R12].

6.11.2 Job DRSC371N

See 6.15.2 for more details.

6.12 Schedule M_DB_SRV#DRS_NWB_C4_PARSE

This schedule runs multiple instances of the DRS [C4/D] parse and load process.

6.12.1 Dependencies

Follows successful completion of schedule DRS_ETU_C4LD.DRSC306N.

Precedes schedule DRS_NWB_MS_NIGHT.

6.12.2 Process DRSC302

This process reads [C4 /D] XML records from FTMS_RX_NWB_C4SD (C4D-Input), parses and loads them into the DRS_RX_NWB_{C4|D} and DRS_RX_NWB_{C4|D}_EXCP tables respectively.

Maestro invokes eight instances of DRSC302 at the start of the schedule.

The process polls the C12-Input table at periodic intervals after a pause whose duration in seconds is taken from the value of “C4SD PAUSE WAIT LIMIT” system parameter.

The process execution is controlled by the value of system parameter “C4SD FILE LOAD COMPLETE” for Application Type "NWB". The parameter value is set to “N” by process DRSC306 on successful completion of all C4SD file load jobs and this would result in all eight instances of DRSC302 to exit after processing the last let of records from the C4/D input table.

6.12.2.1 Implementation

Implemented in the M_DB_SRV#DRSC302N_1…8 jobs (the postfix "N" stands for Network Banking).

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6.12.2.2 Job Dependencies

None

6.12.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery. As listed in this section, if an instance of DRSC302 fails, Maestro automatically reruns the failed instance once. If it fails on the rerun, Maestro does not attempt any further automatic reruns for that instance. Any failures would result in operational exceptions being logged, which can be used for fault analysis/resolution.

6.13 Schedule M_DB_SRV#DRS_NWB_TPS_COPY

This schedule runs DRSC303, which copies [C112] transactions from TPS-Host to DRS. This schedule is run daily however [C112] transactions are also copied on a weekly basis just prior to NB103 report generation. See section 6.5 for more details.

6.13.1 Dependencies

This schedule follows the successful completion of the schedule DRS_NWB_SOB.

6.13.2 Process DRSC303

Multiple instances of the process can be run in parallel. Each instance can process a set number of Daily Input table partitions.

The process fetches data from the TPS table view over the database link "tps". The data is extracted from TPS tables TMS_RX_NWB_TRANSACTIONS_n ("n" is partition number) and inserted into DRS partitioned table DRS_RX_NWB_C112. The TPS database has one physical table for each partition whereas DRS database has one partitioned table to store the C112 data.

All transactions are copied where the value of the column FINACIAL_TRANSACTION is set to 1 in the TPS table. If an error occurs during an insert the record is inserted into the C112 daily exceptions table (DRS_RX_NWB_C112_EXCP) and the appropriate flags are set in the DRS C112 daily table (DRS_RX_NWB_C112).

6.13.2.1 Implementation

This process has been implemented in M_DB_SRV#DRSC303N_*x*, where *x* is the instance number ranging from 1 to 9 and the postfix "N" stands for Network Banking. A 9th instance of the process is run to deal with any TIP repaired transactions in the 65th partition.

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6.13.2.2 Job Dependencies

None

6.13.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.14 Schedule M_DB_SRV#DRS_NWB_MS_NIGHT

This schedule runs DRS Main Store Processing (DRSC310) as "batch-overnight" to process all the transaction parts [C12/C112/C4/D] received in DRS since the last run of the schedule. The same process DRSC310 is also used as part of the daily schedule. See section 6.9 for details.

6.14.1 Dependencies

This schedule follows the successful completion of the schedule DRS_NWB_C4_PARSE and DRS_NWB_TPS_COPY.

This schedule precedes the schedule DRS_NWB_MS_EXCPTN.

6.14.2 Process DRSC310 [NIGHT]

The 'NIGHT' run of the DRSC310 process picks up all the transaction parts for processing which have Receipt Date less than or equal to the current Partition Receipt Date. The value of current Partition Receipt Date is derived from DRS System Parameter "PARTITION RECEIPT DATE" for the Application Type "NWB" [refer to System Parameters for details].

This process reads the transaction parts [C12/C112/C4/S/D] from Daily Input tables [DRS_RX_NWB_C12, DRS_RX_NWB_C112, DRS_RX_NWB_C4, DRS_RX_NWB_D and DRS_RX_NWB_S] in the order of their arrival sequence in DRS. No [S] transactions are expected for Network Banking. The transaction parts are matched on necessary elements and the State Information is derived and set in chronological order once for the arrival of each transaction part. The resulting transaction record containing all the available transaction parts and the State Information is then inserted into DRS_RX_NWB_MAIN_STORE table. The process also inserts a copy of Main Store record into DRS_RX_NWB_MAIN_STORE_UPDATES table where the transaction part(s) had the Receipt Date less than the current Partition Receipt Date to facilitate fast reporting.

Multiple instances of the process can be run in parallel. Each instance can process a set number of Daily Input table partitions.

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6.14.2.1 Implementation

This process has been implemented in M_DB_SRV#DRSC310NN_*x*, where *x* is the instance number ranging from 1 to 8 and the postfix "NN" stands for Night Network Banking.

6.14.2.2 Job Dependencies

None

6.14.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.15 Schedule M_DB_SRV#DRS_NWB_MS_EXCPTN

This schedule runs DRSC311, which copies records from the daily exception tables into the corresponding main store exception tables.

6.15.1 Dependencies

This schedule follows the successful completion of the schedule DRS_NWB_MS_NIGHT.

6.15.2 Process DRSC311

The purpose of this module is to merge those DRS Transaction parts [C112, C12, D, C4, S] that are in exception with the corresponding DRS main exception tables. No [S] transactions are expected for Network Banking.

Only one instance of the program must be run at any time. Multiple instances could result in duplicate rows being inserted into the main exception tables.

All the transaction parts that have the value of Receipt Date less than or equal to the current Partition Receipt Date are processed. The value of current Partition Receipt Date is derived from DRS System Parameter "PARTITION RECEIPT DATE" for the Application Type "NWB". The record is validated to check it exists in the Main Store (DRS_RX_NWB_MAIN_STORE) and the current state of the transaction part in exception is derived or copied from the main store.

After a record has been successfully processed and inserted into the Exceptions Main table, the PROCESSED_YN flag for the corresponding record in Daily Exceptions table is set to ‘Y’.

6.15.2.1 Implementation

Implemented in M_DB_SRV#DRSC311N (the postfix stands for Network Banking).

FUJ00090719

6.15.2.2 Job Dependencies

None

6.15.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.16 Schedule M_DB_SRV#DRS_TPS_EXTRCT_D

This schedule executes the process DRSC366, which transfers the data about the TPS Outlets last polled and Cash Accounts delivered to TIP from the TPS-Host database. Note that at S80, no Cash Account information will be returned however the process will remain in the schedule to copy non-poll information.

6.16.1 Dependencies

Follows successful completion of the schedules DRS_RDDS_EXTRACT, DRS_NWB_MS_EXCPTN and DRS_EFT_MS_EXCPTN. Precedes schedule DRS_NWB_REP_101.

This schedule is also dependent on the TPS job TPSREP.TPSC234.

6.16.2 Process DRSC366

The purpose of this DRS host program is to copy TPS_OUTLETS_LAST_POLLED and TPS_TIP_CA_RECEIPTS from TPS to their corresponding DRS tables through Oracle Views via database link.

6.16.1.1 Job Dependencies

None

6.16.1.2 Implementation

Implemented in the M_DB_SRV#DRSC366C job (the postfix "C" stands for Common).

6.16.1.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.17 Schedule M_DB_SRV#DRS_NWB_REP_101

This schedule contains jobs that generate the Network Banking NB101 report.

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This Schedule is run daily after the DRS Main store processing and DRS Main exception merge from daily exception tables.

6.17.1 Dependencies

Follows after successful completion of schedule DRS_NWB_MS_EXCPTN and DRS_TPS_EXTRCT_D

Precedes schedule DRS_NWB_REP_000

6.17.2 Process DRSC322

The purpose of this DRS host program is to extract all C4 Transactions for each Routing Gateway from DRS Main Store (DRS_RX_NWB_MAIN_STORE), Main Store Updates (DRS_RX_NWB_MAIN_STORE_UPDATES) and C4 Exception Main table (DRS_RX_NW B_C4_EXCP_MAIN) tables against each settlement date, received for the current Run date i.e., DRS Processing date. The extracted information is then populated onto the DRS NB101 Results table (DRS_REP_NWB_RESULTS_NB101).

This program does not create any report files.

6.17.2.1 Job Dependencies

None

6.17.2.2 Implementation

Implemented in the M_DB_SRV#DRSC322N job (the postfix "N" stands for Network Banking).

6.17.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.17.3 Process DRSC324

The purpose of this DRS host program is to Generate NB101 Reconciliation report for the current Run date. Data is extracted from DRS_REP_NWB_RESULTS_NB101 table and written to the report text files.

6.17.3.1 Job Dependencies

Follows successful completion of M_DB_SRV#DRSC322N.

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6.17.3.2 Implementation

Implemented in the M_DB_SRV#DRSC324N job (the postfix "N" stands for Network Banking).

6.17.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.18 Schedule M_DB_SRV#DRS_NWB_REP_102

The generation of DRS Network Banking NB102 reconciliation report involve three functional steps:

1. Population of Intermediate tables DRS_REP_NWB_STATE_TOTALS (process DRSC320).
2. Population of Result tables DRS_REP_NWB_RESULTS_NB102_1…12 (process DRSC323).
3. Producing the report text files on the Host operating system (process DRSC325).

Jobs in this schedule perform the above-mentioned three steps.

This Schedule is run daily after successful completion of NB101 Reconciliation report generation.

6.18.1 Dependencies

Follows after successful completion of schedule DRS_NWB_MS_EXCPTN and DRS_TPS_EXTRCT_D.

Precedes schedule DRS_NWB_REP_000.

6.18.2 Process DRSC320

The purpose of this DRS host program is to populate the DRS State Totals table (DRS_REP_NWB_STATE_TOTALS) from the transactions held within the DRS Main store (for current day's transactions), DRS Main Store Updates and the DRS Exception tables for NB102 reports.

This program does not create any report files.

6.18.2.1 Job Dependencies

None

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6.18.2.2 Implementation

Implemented in the M_DB_SRV#DRSC320N job (the postfix N stands for Network Banking).

6.18.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.18.3 Process DRSC323

The purpose of this DRS host program is to populate the 12 tables of DRS report NB102 results (DRS_REP_NWB_RESULTS_NB102_1…12) where each table corresponds to a section of the report.

To derive this information records from the DRS Main Store (DRS_RX_NWB_MAIN_STORE), Exceptions Main tables (DRS_RX_NWB_{C12|C112|C4|S|D}_EXCP_MAIN) and the State totals table (DRS_REP_NWB_STATE_TOTALS) is populated into DRS NB102 result tables. No [S] transactions are expected for Network Banking.

For performance this process is run twelve times, once for each section to be produced. Sections 1,6,7 and 12 are run sequentially, then after these have finished execution, sections 2,3,4,5,8,9,10 and 11 are run in parallel.

Please note that sections do not take similar lengths of time to run. For instance sections 5 and 11 can take up to 30 to 40 minutes, while other sections may be over in a few seconds.

This program does not create any report files.

6.18.3.1 Job Dependencies

This Program DRSC323N follows after successful completion of DRS host program DRSC320N.

6.18.3.2 Implementation

Implemented in the M_DB_SRV#DRSC323N_x job. Where N is for Network Banking and x is the section number.

6.18.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

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6.18.4 Process DRSC325

The purpose of this DRS host program is to Generate NB102 Reconciliation report for the current Run Date. Data is extracted from DRS_REP_NWB_RESULTS_NB102_1…12 tables and written to text files.

This program is scheduled to run daily.

6.18.4.1 Job Dependencies

This Program follows successful completion of all M_DB_SRV#DRSC323N_x jobs, where N is for Network Banking and x is the value all the sections run in parallel in job DRSC323.

6.18.4.2 Implementation

Implemented in the M_DB_SRV#DRSC325N job (the postfix N stands for Network Banking).

6.18.4.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.19 Schedule M_DB_SRV#DRS_NWB_REP_000

This schedule runs DRS328C job which produces Nil Returns Report.

6.19.1 Dependencies

Follows after successful completion of schedule DRS_NWB_REP_101 and DRS_NWB_REP_102.

Precedes schedule DRS_NWB_ADMIN.

6.19.2 Process DRSC328

The purpose of this DRS host program is to create the DRS Nil Return Report NB000.

This program displays reports produced for all routing gateways for the current run date. For routing gateways where no transactions have been reported, a '[NIL RETURN]' entry is displayed on the report. Data is extracted from DRS_REP_FILE_REGISTER, DRS_REPORTS and RDDS_ROUTING_GATEWAYS to be written to a text file.

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6.19.2.1 Job Dependencies

None

6.19.2.2 Implementation

Implemented in the M_DB_SRV#DRSC328C job (where "C" stands for Common).

6.19.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.20 Schedule M_DB_SRV#DRS_ADMIN

The schedule generates the Database statistics.

6.20.1 Dependencies

Follows successful completion of DRS_NWB_REP_000.

6.20.2 Script DRSX365

This Unix shell script generates Database statistics such as Oracle Tablespace usage, Extents and Data segments available.

6.20.2.1 Job Dependencies

None

6.20.2.2 Implementation

Implemented in the M_DB_SRV#DRSX365C job (the postfix "C" stands for Common).

6.20.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.21 Schedule M_DB_SRV#DRS_NWB_ADMIN

This is the Database housekeeping schedule. The schedule archives and purges data and housekeeps file older than the pre-defined retention period.

6.21.1 Dependencies

Follows successful completion of DRS_ADMIN.

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Precedes schedule DRS_NWB_TRN_ACK

6.21.2 Process DRSC361

The purpose of this module is to Archive Control, Data and Report tables to Support and Audit requirements and Archive/Purge Data and Report tables older than the Retention period for Archive server. The archive files stored under Archive server are for future references. The old data is cleared to make space for the new data. Entries from the table DRS_ARCHIVED_TABLES are used for archive parameters and criteria. The records that go into this table are also present in the form of a spreadsheet in Appendix F – DRS Archiving Table Mapping.

This module uses Oracle Export/Import method to archive data as specified in the DRS High Level Design [R1].

Only one instance of the program must be run at any time. Multiple instances at the same time could result in corrupt export dump files being created.

If the data purge process fails due to the process not being able to get exclusive access to the table to purge, an exception is raised and it continues to the next table. The next time the purge process is run it will purge two days worth of data. Some of the tables (like the daily tables) can only hold around three days worth of data, so three failures in a row will give problems.

6.21.2.1 Job Dependencies

None.

6.21.2.2 Implementation

Implemented in the M_DB_SRV#DRSC361N job (the postfix "N" stands for Network Banking).

6.21.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.21.3 Process DRSC368

Please refer to the section 6.3.2 for details of the process.

6.21.3.1 Job Dependencies

Follows the successful completion of M_DB_SRV#DRSC361N job.

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6.21.3.2 Implementation

The job runs every day. Implemented in the M_DB_SRV#DRSC368N_3 job (the postfix "N" stands for Network Banking).

6.21.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.21.4 Script DRSX362

The purpose of this Unix shell script is to housekeep various input/output files. Entries from the table DRS_FILES_TO_HOUSEKEEP are used as parameters for file deletion.

6.21.4.1 Job Dependencies

This job should follow after successful completion of the job DRSC361N.

6.21.4.2 Implementation

Implemented in the M_DB_SRV#DRSX362N job (the postfix "N" stands for Network Banking).

6.21.4.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.22 Schedule M_DB_SRV#DRS_NWB_PAUS_AGT

This schedule contains jobs that set the appropriate run state in table TMS_ART_DRS to inform the C12 agents about DRS End-of-Day and to wait for the C12 agents to complete execution. This job should run at 23:30.

The schedule and job details have been provided by the TMS agent team. Refer to [R7] for further details.

6.23 Schedule M_DB_SRV#DRS_NWB_ TRN_ACK

The schedule contains a job that checks for delivery status of report files by FTMS to the TIP remote gateway.

6.23.1 Dependencies

Follows after successful completion of Schedule DRS_NWB_ ADMIN

Precedes Schedule DRS_NWB_EOD

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6.23.2 Process DRSC367

Report files created by DRS in the $NWB_TIP_OUTPUT (for Network Banking) directories are transferred by FTMS to the TIP remote gateway. For each report file transferred, FTMS creates a delivery receipt (acknowledgement) file.

Process DRSC367 harvests file receipt information by checking for report file delivery success in the delivery receipt files. If found, it renames the files and updates the TIP Receipt date in DRS_REP_FILE_REGISTER for the corresponding report file.

6.23.2.1 Job Dependencies

None

6.23.2.2 Implementation

Implemented in the M_DB_SRV#DRSC367N job (the postfix "N" stands for Network Banking).

6.23.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.24 Schedule M_DB_SRV#DRS_NWB_EOD

This schedule runs the last job/s of the DRS batch overnight for Network Banking.

6.24.1 Dependencies

Follows successful completion of schedules DRS_NWB_ TRN_ACK and DRS_NWB_PAUS_AGT.

Precedes schedule DRS_COLD_BU.

6.24.2 Process DRSC351

This process sets the value of DRS system parameter “DRS PROCESSING DAY COMPLETE” to ‘Y’ to indicate completion of the DRS Processing Day to all Network Banking instances of DRSC301 and cause them to exit successfully.

6.24.2.1 Implementation

Implemented in M_DB_SRV#DRSC351N (the postfix "N" stands for Network Banking).

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6.24.2.2 Job Dependencies

None

6.24.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

6.25 Schedule M_DB_SRV#DRS_COLD_BU

This schedule contains jobs that 'couple' the BCV to bring it line with the active volumes, shutdown the DRS database, split the BCV, start the DRS database and backup the volumes from the BCV.

The schedule and job details have been provided by the ISD. Refer to [R5] for further details.

6.26 Schedule M_DB_SRV#DRS_COMPLETE

This schedule contains a job that creates the Network Banking and Debit Card schedule completion flags. These flags are used by Maestro to determine successful logical completion of the processing.

The schedule and job details have been provided by the Maestro Development team. Refer to [R5] for further details.

7 Debit Card Schedule Details

This section describes all the Schedules and Jobs listed in Appendix B – Debit Card Maestro Schedule. The Debit Card Maestro Schedule includes just the Debit Card specific jobs and **NOT** the jobs which are common (like Reference Data Copy) between Network Banking and Debit Card.

For each job in the schedule, a brief description is included along with implementation details, Job dependencies (if any) and Rerun action in case of a failure.

Implementation includes the Job name as used in the Maestro Schedule. Full details of the Jobs including the command-line parameters being passed can be found in Appendix B – Debit Card Maestro Schedule.

7.1 Schedule M_DB_SRV#DRS_EFT_SOD

This is the start of the DRS Debit Card schedule. It will start after the database restart on completion of cold backup at around 8am.

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7.1.1 Dependencies

Follows successful completion of the DRS Debit Card schedule for the previous logical processing day (implemented via a dependency on DRS_EFT_BATCH_COMPLETE.FLAG).

Precedes schedules DRS_RDDS_EXTRACT, DRS_EFT_RUN_AGT, DRS_EFT_MS_DAY, DRS_EFT_C2_P1_D, DRS_EFT_C2_P2_D, DRS_EFT_C2_P1_SU.

7.1.2 Process DRSC350

Process DRSC350 runs at the start of the DRS Debit Card day to set the working day for the schedule, create the Main Store (DRS_RX_EFT_MAIN_STORE) partition for that working day and re-set various flags.

The DRS working day is controlled by two logical dates that are stored as “DRS SYSTEM DATE” and “PARTITION RECEIPT DATE” system in the database. There are two sets of logical dates - one for NWB and EFT each. These dates normally correspond to the System Date on the Rig with the exception of a post fail-over catch-up situation where the dates could lag by one or more days.

7.1.2.1 Implementation

Implemented in the M_DB_SRV#DRSC350E job (the postfix "E" stands for Debit Card/EFTPoS).

7.1.2.2 Job Dependencies

This job is dependent on the Maestro resource DRSC350LK. This is necessary so that DRSC350N and DRSC350E do not run at the same time. This resource has a value of 1 and will hold up the running of DRSC350E until it is available. DRSC350N has the same dependency.

7.1.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

Additionally, a migration specific Application error could occur in the form of process failure when run for the **first time** on the Rig. The reason for such an error could be missing values for “DRS SYSTEM DATE” and “PARTITION RECEIPT DATE” system parameters in DRS_SYSTEM_PARAMETERS table. These parameters are created with NULL values as a part of DRS database and schema build and must be set by ISD to the value of Unix System Date one day prior to the running the BI3 schedule for the first time. The details of how to set these dates in DRS_SYSTEM_PARAMETERS table are available in the DRS Delivery Handover Note.

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The process can be restarted after rectifying the cause of failure.

7.2 Schedule M_DB_SRV#DRS_EFT_ANALYZE

The schedule runs a job every day to gather the statistics for specified DRS database objects. The statistics are used by Oracle optimiser to improve the query performance.

7.2.1 Dependencies

Follows successful completion of the M_DB_SRV#DRS_EFT_SOD.

7.2.2 Process DRSC368

Refer to the section 6.3.2 for details of the process.

7.2.2.1 Job Dependencies

None.

7.2.2.2 Implementation

Implemented in the M_DB_SRV#DRSC368E_1 job (the postfix "E" stands for Debit Card/EFTPoS).

7.2.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.3 Schedule M_DB_SRV#DRS_EFT_RUN_AGT

This schedule contains jobs that set the appropriate run state in table TMS_ART_DRS to allow the C12 agents to call the C12-interface to populate the DRS database and informs the schedule that C12 agents can populate the database.

The schedule and job details have been provided by the TMS agent team. Refer to [R7] for further details.

7.4 Schedule M_DB_SRV#DRS_EFT_C12_PARS

This schedule runs multiple instances of the DRS [C12] parse and load process. The schedule becomes active after completion of DRS start-of-day and continues until the DRS end-of-day processing has completed.

7.4.1 Dependencies

Follows successful completion of DRS Debit Card schedule DRS_EFT_RUN_AGT.

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Precedes schedule DRS_COLD_BU.

7.4.2 Process DRSC301

This process reads [C12] XML records from TMS_RX_EFT_C12 (C12-Input), parses and loads them into the DRS_RX_EFT_C12 and DRS_RX_EFT_C12_EXCP tables for Debit Card. Maestro invokes eight instances of DRSC301 at the start of the schedule.

The process polls the C12-Input table once there are sufficient records to be processed in the input table or after a timeout occurs whose duration in seconds is taken from the value of "HORIZON C12 INPUT ALERT TIMEOUT" system parameter.

The process can be re-run during a DRS processing Day and every run of the process, which is not a re-start, will create a new entry in DRS_PROCESS_CONTROL.

The process execution is controlled by the value of system parameter "DRS PROCESSING DAY COMPLETE". At the end of DRS processing day, the parameter value is set to "N" by DRSC351, which would result in all eight instances of DRSC301 exiting successfully.

7.4.2.1 Implementation

Implemented in the M_DB_SRV#DRSC301E_1…8 jobs (the postfix "E" stands for Debit Card/EFTPoS).

7.4.2.2 Job Dependencies

None

7.4.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery. As listed in this section, if an instance of DRSC301 fails, Maestro automatically reruns the failed instance once. If it fails on the rerun, Maestro does not attempt any further automatic reruns for that instance. Any failures would result in operational exceptions being logged which can be used for fault analysis/resolution.

7.4.3 Process DRSC312

This process will query the C12 Daily table and C12 Daily Exceptions table, which have C12 transactions for the current business day. The query will select all transactions, group them by receipt time interval of m minutes which would be in DRS_SYSTEM_PARAMETERS and calculate for each group what percentage of transactions have failed. Any other values that are not defined in the parameter

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value will be disregarded in computing failure percentage. The results of this query will be written to a new summary table (DRS_C12_DAILY_SUMMARY) that will hold 7 days (parameter defined in archived_tables) worth of data before being house kept by the existing DRS housekeeping process. Should any of the summarised records have a failure percentage greater than a parameterised value a flag will be set in the summary and a message will be written to the application log. The time interval, sleep time, failure threshold percentage and the response codes are parameterised and kept in DRS_SYSTEM_PARAMETERS table to be able to tune monitoring as required.

Only one instance of the program must be run at any time. This program should only be run once during a day, if it fails it can be restarted. The module will sleep for a certain period of time (also defined in DRS_SYSTEM_PARAMETERS) before it runs again and refreshes the summary for the current processing day. Processing is complete when DRSC306 sets the summary complete flag to Y when the end of the DRS processing day occurs.

- **Implementation**

Implemented in the M_DB_SRV#DRSC312E job (the postfix "E" stands for Network Banking).

- **Job Dependencies**

None

7.4.3.1 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.5 Schedule M_DB_SRV#DRS_EFT_MS_DAY

This schedule runs DRS Main Store Processing (DRSC310) during the day until 17:01 hours at a configurable interval currently set to 30 minutes. This is to enable MSU (Management Support Unit) querying on transaction parts which arrived late in DRS. The same process DRSC310 is also used as part of the Batch overnight schedule. See section 7.16 for details.

7.5.1 Dependencies

This schedule follows the successful completion of the schedule DRS_EFT_SOD.

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7.5.2 Process DRSC310 [DAY]

The "DAY" run of the process picks up only those transaction parts for processing which have Receipt Date older than the current Partition Receipt Date. The value of current Partition Receipt Date is derived from DRS System Parameter "PARTITION RECEIPT DATE" and APPLICATION_TYPE [refer to System Parameters for details].

This process reads the transaction parts [C12/C112/C4/S/D] from Daily Input tables [DRS_RX_EFT_C12, DRS_RX_EFT_C112, DRS_RX_EFT_C4, DRS_RX_EFT_D and DRS_RX_EFT_S] in the order of their arrival sequence in DRS. The transaction parts are matched on necessary elements and the State Information is derived and set in chronological order once for the arrival of each transaction part. The resulting transaction record containing all the available transaction parts and the State Information is then inserted into DRS_RX_EFT_MAIN_STORE table. The process also inserts a copy of Main Store record into DRS_RX_EFT_MAIN_STORE_UPDATES to facilitate fast reporting.

Multiple instances of the process can be run in parallel. Each instance can process a set number of Daily Input table partitions.

7.5.2.1 Implementation

This process has been implemented in M_DB_SRV#DRSC310DE_*x*, where *x* is the instance number ranging from 1 to 8 and the postfix "DE" stands for Day and Debit Card/EFTPoS.

7.5.2.2 Job Dependencies

None

7.5.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.6 Schedule M_DB_SRV#DRS_EFT_C2_P1_D

This schedule runs the jobs to generate the first (see section 7.9 for details of second Payment File run) Payment File and load back the Status File produced by the DCS C2 Agent. The schedule runs Monday to Saturday at 15:00 hours.

7.6.1 Dependencies

Follows successful completion of schedule DRS_EFT_SOD.

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7.6.2 Process DRSC307

The process extracts the contents of C2 Output (DRS_TX_EFT_C2) table into a data file containing C2 XML messages. The data file is created in the directory defined by the environment variable EFT_C2_OUTPUT.

The process extracts all C2 XML records from the C2 Output table where the PROCESS_STATUS is set to "I" (Initial) and writes these records to a data file in order of Merchant Number, Receipt Date and Sequence number in the ascending order. After successfully writing a record to the file, the record's PROCESS_STATUS is set to "T" (Transfer) and the RECORD_STATUS to "N" (None).

If no records are found in C2 Output table for processing, the file is generated with header and trailer records and the module exits with SUCCESS.

The single instance of the program can be run several times a day.

7.6.2.1 Implementation

Implemented in job M_DB_SRV#DRSC307E (the postfix "E" stands for Debit Card/EFTPoS).

7.6.2.2 Job Dependencies

None.

7.6.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

- **DRSC307 Job Reset Procedure**

Execute the following script when logged in as ops$drs user:

```
update drs_tx_eft_c2
set record_status='N',
     process_status='I',
     transfer_date='',
     horizon_agent_error_code='',
     horizon_agent_error_message=''
where process_status='T';
```

This script will reset all records updated as part of the last DRSC307 run to allow the transactions to be included in a future C2 Bulk File. Note that this script should

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NOT be run if DRSC308 has been run. The dependency revisions to the schedule mean that DRSC308 will not run unless the S bulk process has completed successfully.

WARNING – Indiscriminate use of this script can result in duplicate transactions being passed to Streamline. Under no circumstances run this script unless absolutely sure that it is required. This script should only be run where the payment run has been abandoned and no payment file has been sent to Streamline.

7.6.3 Process DRSC308

The process reads the C2 Status File sent by the DCS C2 Agent and updates the C2 record status in the C2 Output (EFT_C2_OUTPUT) table. Once a record is loaded successfully the record's PROCESS_STATUS is set to "C" (complete and the RECORD_STATUS to the value sent by the Agent. If the RECORD_STATUS is received as "E" (Error) then the Agent Error Code and Message are also updated in the C2 Output table.

The C2 Status File resides in the directory defined by the environment variable EFT_C2_INPUT.

At present, the program is run twice every week day and Saturdays. It is run once on Sunday. If no records are found in C2 status file for processing, the module exits with SUCCESS.

7.6.1.1 Implementation

Implemented in job M_DB_SRV#DRSC308E (the postfix “E” stands for Debit Card/EFTPoS).

7.6.1.2 Job Dependencies

Commencement of this job is dependent on completion of the job DCSM_S_BULK_P1D.DCSM_S_BULK_P1.

7.6.1.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.7 Schedule M_DB_SRV# DRS_EFT_PAUS_AGT

The schedule runs daily at 20:30 and signals the EFT C12 Agent to stop.

Once the C12 Agent has stopped, the schedule puts a 15 minutes delay before the second Payment File generation for the day takes place. The 15 minutes gap between stopping the C12 Agent and Payment File generation allows the C12

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Parsers to catch up if there was a backlog in the C12 Input (TMS_RX_EFT_C12) table.

The schedule and job details have been provided by the TMS agent team. Refer to [R7] for further details.

7.8 Schedule M_DB_SRV# DRS_EFT_C2_P2_D

This schedule runs the jobs to generate second Payment File and load back the Status File produced by the DCS C2 Agent. The schedule runs Monday to Saturday at 20:30 hours.

7.8.1 Dependencies

Follows successful completion of schedule DRS_EFT_SOD and DRS_EFT_PAUS_AGT.

7.8.2 Process DRSC307

Refer to the section 7.7.2 for the details of the process.

7.8.2.1 Implementation

Implemented in job M_DB_SRV#DRSC307E (the postfix "E" stands for Debit Card/EFTPoS).

7.8.2.2 Job Dependencies

None.

7.8.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.8.3 Process DRSC308

Refer to the section 7.7.3 for the details.

7.8.3.1 Implementation

Implemented in job M_DB_SRV#DRSC308E (the postfix "E" stands for Debit Card/EFTPoS).

7.8.3.2 Job Dependencies

Commencement of this job is dependent on completion of the job DCSM_S_BULK_P2D.DCSM_S_BULK_P2.

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7.8.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.9 Schedule M_DB_SRV# DRS_EFT_C2_P1_SU

This schedule runs the jobs to generate second Payment File and load back the Status File produced by the DCS C2 Agent. The schedule runs on Sunday only at 20:30 hours.

7.9.1 Dependencies

Follows successful completion of schedule DRS_EFT_SOD and DRS_EFT_PAUS_AGT.

7.9.2 Process DRSC307

Refer to the section 7.7.2 for the details of the process.

7.9.2.1 Implementation

Implemented in job M_DB_SRV#DRSC307E (the postfix “E” stands for Debit Card/EFTPoS).

7.9.2.2 Job Dependencies

None.

7.9.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.9.3 Process DRSC308

Refer to the section 7.7.3 for the details.

7.9.3.1 Implementation

Implemented in job M_DB_SRV#DRSC308E (the postfix “E” stands for Debit Card/EFTPoS).

7.9.3.2 Job Dependencies

Commencement of this job is dependent on completion of the job DCSM_S_BULK_P1S.DCSM_S_BULK_P1.

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7.9.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.10 Schedule M_DB_SRV#DRS_EFT_SOB

This schedule runs the first job of the DRS batch overnight for Debit Card. The job runs at around 20:30 every day.

7.10.1 Dependencies

Follows successful completion of schedule TPS.TPSCAREP and DRS_EFT_MS_DAY.

Precedes schedule DRS_EFT_TPS_COPY.

7.10.2 Process DRSC353

This job runs at the start of the DRS batch overnight process on completion of the TPS Cash Account Report jobs.

It sets the value of system parameter "BATCH JOB STARTED" to "Y" to inform the DRS Workstation that the batch overnight has started and all subsequent connections should be read-only. It also 'kills' the SQL*Net connections made by DRS workstation users (all Oracle usernames starting with "DRSWKS") to the database using the SQL statement "ALTER SYSTEM DISCONNECT SESSION…"

7.10.1.1 Implementation

Implemented in job M_DB_SRV#DRSC353E (the postfix "E" stands for Debit Card/EFTPoS).

7.10.1.2 Job Dependencies

None.

7.10.1.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.11 Schedule M_DB_SRV#DRS_EFT_C4LD_1

This schedule runs the loading of the C4/S/D input data files into the DRS C4/S/D XML input table from Monday to Saturday.

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DRS receives two sets of Zero-Value-C4 (corresponding to Null Confirmations) and S input data files each day- one set for each Payment File generated. DRS also receives a C4/D data file from Monday to Saturday. The schedule contains a set of jobs for the multiple runs of the DRS C4D File Loader – one job for each input data file received.

The schedule also contains a job to set "C4SD FILE LOAD COMPLETE" flag in the DRS database so that the C4/S/D parsers exit after processing the current set of data loaded into the DRS C4/S/D XML input table.

7.11.1 Dependencies

Follows successful completion of schedules TPS.TPSCAREP, DRS_EFT_C2_P2_D and DCSM_S_BULK_P2D.

Precedes schedule DRS_EFT_C4_PARSE.

7.11.2 Process DRSC305

This process reads [C4/S/D] XML records from input data file passed on the command line and loads the contents into FTMS_RX_EFT_C4SD table.

The input data-file/s are read from the directory $EFT_NBE_INPUT and are renamed to change their extension to lowercase once they have been successfully processed.

7.11.2.1 Implementation

Implemented in M_DB_SRV#DRSC305E_C40_P1, M_DB_SRV#DRSC305E_S_P1, M_DB_SRV#DRSC305E_C40_P2, M_DB_SRV#DRSC305E_S_P2 and M_DB_SRV#DRSC305E_C4D, where P1 and P2 are the instances to process the data files for Payment File Generation Cycles 1 and 2 respectively. Each job is passed the input data file name containing [C4/D] or [S] parts as the command line parameter.

This job M_DB_SRV#DRSC305E_C4D is actually a part of DCSM_EMIS schedule which runs this job only on working days, i.e., Monday to Friday except bank holidays. But the job dependencies shown here have been implemented in the same way.

7.11.2.2 Job Dependencies

The jobs are run serially within the schedule. That is, the job M_DB_SRV#DRSC305E_S_P1 runs after the successful execution of M_DB_SRV#DRSC305E_C40_P1, and so on.

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7.11.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.11.3 Process DRSC306

This process sets the value of DRS system parameter "C4SD FILE LOAD COMPLETE" for the Application Type "EFT" to 'Y' to indicate that all the DRS C4/S/D files have been successfully loaded.

Once this flag is set, all instances of DRSC302 exit after processing the last let of C4/S/D input records.

7.11.3.1 Implementation

Implemented in M_DB_SRV#DRSC306E (the postfix "E" stands for Debit Card/EFTPoS).

7.11.3.2 Job Dependencies

Follows successful completion of M_DB_SRV#DRSC305E_C4D.

7.11.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.12 Schedule M_DB_SRV#DRS_EFT_C4LD_2

This schedule runs the loading of the C4/S/D input data files into the DRS C4/S/D XML input table for Sunday.

DRS receives one Zero-Value-C4 (corresponding to Null Confirmations) and one S input data file on Sunday. DRS does not receive any C4/D files on Sunday. The schedule contains a set of jobs for the multiple runs of the DRS C4/D File Loader – one job for each input data file received.

The schedule also contains a job to set "C4SD FILE LOAD COMPLETE" flag in the DRS database so that the C4/S/D parsers exit after processing the current set of data loaded into the DRS C4/S/D XML input table.

7.12.1 Dependencies

Follows successful completion of schedules TPS.TPSCAREP, DRS_EFT_C2_P1_SU and DCSM_S_BULK_P1S.

Precedes schedule DRS_EFT_C4_PARSE.

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7.12.2 Process DRSC305

Refer to the section 7.12.2 for details.

7.12.2.1 Implementation

Implemented in M_DB_SRV#DRSC305E_C40_P1, M_DB_SRV#DRSC305E_S_P1, where P1 is the instance to process the data files for Payment File Generation Cycles 1. Each job is passed the input data file name containing [C4/D] or [S] parts as the command line parameter.

7.12.2.2 Job Dependencies

The jobs are run serially within the schedule. That is, the job M_DB_SRV#DRSC305E_S_P1 runs after the successful execution of M_DB_SRV#DRSC305E_C40_P1, and so on.

7.12.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.12.3 Process DRSC306

Refer to the section 7.12.3 for details.

7.12.3.1 Implementation

Implemented in M_DB_SRV#DRSC306E (the postfix “E” stands for Debit Card/EFTPoS).

7.12.3.2 Job Dependencies

Follows successful completion of M_DB_SRV# DRSC305E_S_P1.

7.12.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section 5-Process Failure and Recovery.

7.13 Schedule M_DB_SRV#DRS_EFT_C4_PARSE

This schedule runs multiple instances of the DRS C4/D parse and load process.

7.13.1 Dependencies

Follows successful completion of the jobs DRS_EFT_C4LD_1.DRSC305E_C40_P1 or DRS_EFT_C4LD_2.DRSC305E_C40_P1.

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The job DRS_EFT_C4LD_1.DRSC305E_C40_P1 runs from Monday to Saturday and DRS_EFT_C4LD_2.DRSC305E_C40_P1 runs only on Sunday.

Precedes schedule DRS_EFT_MS_NIGHT.

7.13.2 Process DRSC302

This process reads [C4/D] XML records from FTMS_RX_EFT_C4SD (C4D-Input), parses and loads them into the DRS_RX_EFT_{C4|D} and DRS_RX_EFT_{C4|D}_EXCP tables respectively for Debit Card.

Maestro invokes eight instances of DRSC302 at the start of the schedule.

The process polls the C12-Input table at periodic intervals after a pause whose duration in seconds is taken from the value of "C4SD PAUSE WAIT LIMIT" system parameter.

The process execution is controlled by the value of system parameter "C4SD FILE LOAD COMPLETE" for the Application Type "EFT". The parameter value is set to "N" by process DRSC306 on successful completion of all C4SD file load jobs and this would result in all eight instances of DRSC302 to exit after processing the last set of records from the C4/D input table.

7.13.2.1 Implementation

Implemented in the M_DB_SRV#DRSC302E_1…8 jobs (the postfix "E" stands for Debit Card/EFTPoS).

7.13.2.2 Job Dependencies

None

7.13.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery. As listed in this section, if an instance of DRSC302 fails, Maestro automatically reruns the failed instance once. If it fails on the rerun, Maestro does not attempt any further automatic reruns for that instance. Any failures would result in operational exceptions being logged, which can be used for fault analysis/resolution.

7.13.3 Process DRSC370

This process updates the receipt date on each C4/D daily and daily exception record using the receipt date defined for each record in the C2 Output table. This is required to reconstitute the seconds information on the Receipt Date which is removed by Streamline.

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7.13.3.1 Implementation

Implemented in M_DB_SRV#DRSC370E (the postfix "E" stands for Debit Card/EFTPoS).

7.13.3.2 Job Dependencies

Follows normal completion of all parser jobs DRSC302E_1 – 8.

7.13.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery. As listed in this section, if an instance of DRSC302 fails, Maestro automatically reruns the failed instance once. If it fails on the rerun, Maestro does not attempt any further automatic reruns for that instance. Any failures would result in operational exceptions being logged, which can be used for fault analysis/resolution.

7.14 Schedule M_DB_SRV#DRS_EFT_TPS_COPY

This schedule runs DRSC303, which copies [C112] transactions from TPS-Host to DRS.

7.14.1 Dependencies

This schedule follows the successful completion of the schedule DRS_EFT_SOB.

7.14.2 Process DRSC303

Multiple instances of the process can be run in parallel. Each instance processes a set number of TPS transaction tables.

The process fetches data from the TPS tables over the database link "tps" and inserts into DRS table. The data is extracted from TPS tables TMS_RX_EFT_TRANSACTIONS_n ("n" is partition number) and inserted into DRS partitioned table DRS_RX_EFT_C112. The TPS database has one physical table for each partition whereas DRS database has one partitioned table to store the C112 data.

All transactions are copied where the value of the column FINACIAL_TRANSACTION is set to 1 in the TPS table. If an error occurs during an insert the record is inserted into the C112 daily exceptions table (DRS_RX_EFT_C112_EXCP) and the appropriate flags are set in the DRS C112 daily table (DRS_RX_EFT_C112).

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7.14.2.1 Implementation

This process has been implemented in M_DB_SRV#DRSC303E_*x*, where *x* is the instance number ranging from 1 to 9 and the postfix "E" stands for Debit Card/EFTPoS. The 9th instance of the process is run to deal with any TIP repaired transactions present in the 65th partition.

7.14.2.2 Job Dependencies

The 9th instance of the process is dependent on the completion of the 1st instance (DRSC303E_1).

7.14.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.15 Schedule M_DB_SRV#DRS_EFT_MS_NIGHT

This schedule runs DRS Main Store Processing (DRSC310) as "batch-overnight" to process all the transaction parts [C12/C112/C4/D/S] received in DRS since the last run of the schedule. The same process DRSC310 is also used as part of the daily schedule. See section 7.6 for details.

7.15.1 Dependencies

This schedule follows the successful completion of the schedule DRS_EFT_C4_PARSE and DRS_EFT_TPS_COPY.

This schedule precedes the schedule DRS_EFT_MS_EXCPTN.

7.15.2 Process DRSC310 [NIGHT]

The 'NIGHT' run of the DRSC310 process picks up all the transaction parts for processing which have Receipt Date less than or equal to the current Partition Receipt Date. The value of current Partition Receipt Date is derived from DRS System Parameter "PARTITION RECEIPT DATE" for the Application Type "EFT" [refer to System Parameters for details].

This process reads the transaction parts [C12/C112/C4/S/D] from Daily Input tables [DRS_RX_EFT_C12, DRS_RX_EFT_C112, DRS_RX_EFT_C4, DRS_RX_EFT_D and DRS_RX_EFT_S for Debit Card] in the order of their arrival sequence in DRS. The transaction parts are matched on necessary elements and the State Information is derived and set in chronological order once for the arrival of each transaction part. The resulting transaction record containing all the available transaction parts and the State Information is then inserted into DRS_RX_EFT_MAIN_STORE table. The process also inserts a copy of Main Store record into DRS_RX_EFT_MAIN_STORE_UPDATES table where the

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transaction part(s) had the Receipt Date less than the current Partition Receipt Date to facilitate fast reporting.

Multiple instances of the process can be run in parallel. Each instance can process a set number of Daily Input table partitions.

7.15.2.1 Implementation

This process has been implemented in M_DB_SRV#DRSC310NE_*x,* where *x* is the instance number ranging from 1 to 8 and the postfix "NE" stands for Night and Debit Card/EFTPoS.

7.15.2.2 Job Dependencies

None

7.15.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.16 Schedule M_DB_SRV#DRS_EFT_MS_EXCPTN

This schedule runs DRSC311, which copies records from the daily exception tables into the corresponding main store exception tables and sets the appropriate State for the records.

7.16.1 Dependencies

This schedule follows the successful completion of the schedule DRS_EFT_MS_NIGHT.

Precedes the schedules DRS_EFT_REP_101, DRS_EFT_REP_102.

7.16.2 Process DRSC311

The purpose of this module is to copy the DRS Transaction parts [C112, C12, D, C4 and S] that are in exception from the Daily Exception tables [DRS_RX_EFT_{C12|C112|C4|D|S}_EXCP] to the corresponding Exception Main tables [DRS_RX_EFT_{C12|C112|C4|D|S}_EXCP_MAIN].

Only one instance of the program must be run at any time. Multiple instances could result in duplicate rows being inserted into the Exception Main tables.

On the pattern of DRS Main Store processing (DRSC310), only those exceptions are processed that have the value of Receipt Date less than or equal to the current Partition Receipt Date. The value of current Partition Receipt Date is derived from DRS System Parameter "PARTITION RECEIPT DATE" for the Application Type "EFT". The record is validated to check it exists in the Main Store

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(DRS_RX_EFT_MAIN_STORE] table and the current state of the transaction part in exception is either derived or copied from the Main Store table.

After a record has been successfully processed and inserted into the Exceptions Main table, the PROCESSED_YN flag for the corresponding record in Daily Exception table is set to 'Y'.

7.16.2.1 Implementation

Implemented in M_DB_SRV#DRSC311E (the postfix stands for Debit Card/EFTPoS).

7.16.2.2 Job Dependencies

None

7.16.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.17 Schedule M_DB_SRV#DRS_EFT_REP_101

This schedule contains jobs that generate the Debit Card NB101 report.

This Schedule is run daily after the DRS Main store processing and DRS Main exception merge from daily exception tables.

7.17.1 Dependencies

Follows after successful completion of schedule DRS_EFT_MS_EXCPTN and DRS_TPS_EXTRCT_D.

Precedes the Network Banking schedule DRS_NWB_REP_000.

7.17.2 Process DRSC322

The process extracts the C4 transactions for each Routing Gateway from DRS Main Store (DRS_RX_EFT_MAIN_STORE), Main Store Updates DRS_RX_EFT_MAIN_STORE_UPDATES) and C4 Exception Main DRS_RX_EFT_C4_EXCP_MAIN) tables and inserts into the DRS NB101 Results (DRS_REP_EFT_RESULTS_NB101) table.

This program does not create any report files.

7.17.2.1 Job Dependencies

None

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7.17.2.2 Implementation

Implemented in the M_DB_SRV#DRSC322E job (the postfix "E" stands for Debit Card/EFTPoS).

7.17.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.17.3 Process DRSC324

The process generates NB101 reconciliation reports for the current Run date. The data is extracted from DRS_REP_EFT_RESULTS_NB101 table and written to the text files.

7.17.3.1 Job Dependencies

Follows successful completion of M_DB_SRV#DRSC322E.

7.17.3.2 Implementation

Implemented in the M_DB_SRV#DRSC324E job (the postfix "E" stands for Debit Card/EFTPoS).

7.17.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.18 Schedule M_DB_SRV#DRS_EFT_REP_102

The generation of DRS NB102 reconciliation report for Debit Card involves three functional steps:

1. Population of Intermediate tables DRS_REP_EFT_STATE_TOTALS (process DRSC320).
2. Population of Result tables DRS_REP_EFT_RESULTS_NB102_1…12 (process DRSC323).
3. Producing the report text files on the Host operating system (process DRSC325).

The jobs in this schedule perform the above-mentioned three steps.

This Schedule is run daily after the successful completion of NB101 reconciliation reports.

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7.18.1 Dependencies

Follows after successful completion of schedule DRS_EFT_MS_EXCPTN and DRS_TPS_EXTRCT_D.

Precedes the Network Banking schedule DRS_NWB_REP_000.

7.18.2 Process DRSC320

The process populates the DRS State Totals (DRS_REP_EFT_STATE_TOTALS) table from the transactions held within the DRS Main store (for current day's transactions), DRS Main Store Updates and the DRS Exception tables for NB102 reports.

This program does not create any report files.

7.18.2.1 Job Dependencies

None

7.18.2.2 Implementation

Implemented in the M_DB_SRV#DRSC320E job (the postfix E stands for Debit Card/EFTPoS).

7.18.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.18.3 Process DRSC323

The process populates DRS report NB102 Results (DRS_REP_EFT_RESULTS_NB102_1…12) tables where each table corresponds to a section of the NB102 reports.

The data is extracted from the DRS Main Store (DRS_RX_EFT_MAIN_STORE) Exceptions Main (DRS_RX_EFT_{C12|C112|C4|S|D}_EXCP_MAIN) and the State Totals (DRS_REP_EFT_STATE_TOTALS) tables and inserted into DRS NB102 Results tables.

The process runs once for each section. To reduce the overall run time, the multiple instances of the process are run in parallel, where possible. The sections 1,6,7 and 12 are run sequentially – one after the other but the sections 2, 3, 4, 5, 8, 9, 10 and 11 are run in parallel.

Please note that sections do not take similar lengths of time to run. For instance sections 5 and 11 can take up to 30 to 40 minutes, while other sections may be over in a few seconds.

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This program does not create any report files.

7.18.3.1 Job Dependencies

Follows successful completion of M_DB_SRV#DRSC320E.

7.18.3.2 Implementation

Implemented in the M_DB_SRV#DRSC323E_x job. Where N is for Debit Card and x is the section number ranging from 1 to 12. . Please refer to the Maestro Schedule for Debit Card for inter-dependencies among the multiple instances of DRSC323.

7.18.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.18.4 Process DRSC325

The process generates NB102 reconciliation reports. The data is extracted from NB102 Results (DRS_REP_EFT_RESULTS_NB102_1…12) tables and written to the text files.

7.18.4.1 Job Dependencies

This Program follows successful completion of M_DB_SRV#DRSC323N_x jobs, where “E” stands for Debit Card/EFTPoS and x is the report sections run in parallel (DRSC323).

7.18.4.2 Implementation

Implemented in the M_DB_SRV#DRSC325E job (the postfix E stands for Debit Card/EFTPoS).

7.18.4.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.19 Schedule M_DB_SRV#DRS_EFT_ADMIN

This is the database housekeeping schedule. The schedule archives and purges data from the Oracle tables and deletes the report/data files older than the pre-defined retention period.

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7.19.1 Dependencies

Follows successful completion of the Network Banking schedules DRS_ADMIN and DRS_NWB_ADMIN.

Precedes schedule DRS_EFT_TRN_ACK

7.19.2 Process DRSC361

The purpose of this module is to Archive Control, Data and Report tables to Support and Audit requirements and Archive/Purge Data and Report tables older than the Retention period for Archive server. The archive files stored under Archive server are for future references. The old data is cleared to make space for the new data. Entries from the table DRS_ARCHIVED_TABLES are used for archive parameters and criteria. The records that go into this table are also present in the form of a spreadsheet in Appendix F – DRS Archiving Table Mapping.

This module uses Oracle Export/Import method to archive data as specified in the DRS High Level Design [R1].

Only one instance of the program must be run at any time. Multiple instances at the same time could result in corrupt export dump files being created.

If the data purge process fails due to the process not being able to get exclusive access to the table to purge, an exception is raised and it continues to the next table. The next time the purge process is run it will purge two days worth of data. Some of the tables (like the daily tables) can only hold around three days worth of data, so three failures in a row will give problems.

7.19.2.1 Job Dependencies

None.

7.19.2.2 Implementation

Implemented in the M_DB_SRV#DRSC361E job (the postfix “E” stands for Debit Card/EFTPoS).

7.19.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.19.3 Process DRSC368

Please refer to the section 6.3.2 for details of the process.

7.19.3.1 Job Dependencies

Follows the successful completion of M_DB_SRV#DRSC361E job.

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7.19.3.2 Implementation

The job runs every day. Implemented in the M_DB_SRV#DRSC368E_3 job (the postfix "E" stands for Debit Card/EFTPoS).

7.19.3.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.19.4 Script DRSX362.sh

The purpose of this Unix shell script is to delete various report/data files older than the file retention period. The script reads the records present in the table DRS_FILES_TO_HOUSEKEEP for the details of the report/data files to be deleted.

7.19.4.1 Job Dependencies

This job should follow after successful completion of the job DRSC361E (the postfix "E" stands for Debit Card/EFTPoS).

7.19.4.2 Implementation

Implemented in the M_DB_SRV#DRSX362E job (the postfix "E" stands for Debit Card/EFTPoS).

7.19.4.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.19.5 DRS_EFT_AUDIT

This job is for Debit Card File Auditing.

The schedule and job details have been provided by the Maestro Development team. Refer to [R5] for further details.

7.20 Schedule M_DB_SRV#DRS_EFT_TRN_ACK

The schedule contains a job that checks for delivery status of report files by FTMS to the TIP remote gateway.

7.20.1 Dependencies

Follows after successful completion of Schedule DRS_EFT_ ADMIN

Precedes Schedule DRS_EFT_EOD

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7.20.2 Process DRSC367

The DRS report files for Debit Card are created in the directory pointed to by the environment variable $EFT_TIP_OUTPUT. For each report file transferred to TIP, FTMS creates a delivery receipt (acknowledgement) file in the same directory.

Process DRSC367 harvests file receipt information by checking for report file delivery success in the delivery receipt files. If found, it renames the files and updates the TIP Receipt date in DRS_REP_FILE_REGISTER for the corresponding report file.

7.20.2.1 Job Dependencies

None

7.20.2.2 Implementation

Implemented in the M_DB_SRV#DRSC367E job (the postfix "E" stands for Debit Card/EFTPoS).

7.20.2.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

7.21 Schedule M_DB_SRV#DRS_EFT_EOD

This schedule runs the last job/s of the DRS batch overnight for Debit Card.

7.21.1 Dependencies

Follows successful completion of schedules DRS_EFT_TRN_ACK.

Precedes schedule DRS_COLD_BU.

7.21.2 Process DRSC351

This process sets the value of DRS system parameter "DRS PROCESSING DAY COMPLETE" to 'Y' to indicate completion of the DRS Processing Day. This causes all instances of EFT C12 Parsers (DRSC301) to exit successfully.

7.21.2.1 Implementation

Implemented in M_DB_SRV#DRSC351E (the postfix "E" stands for Debit Card/EFTPoS).

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7.21.1.2 Job Dependencies

None

7.21.1.3 Rerun action

The common process failure scenarios and rerun actions are described in the section Process Failure and Recovery.

8 DRS Tables Overview

8.1 Common Tables

All DRS tables that are used to store non-transactional data are common to both Network Banking and Debit Card/EFTPoS applications. These include tables for storing system parameters, process control, audit and various file register tables.

All common tables have a column named APPLICATION_TYPE, which can be mandatory or optional depending on the type of table. If the application type is mandatory, it is a part of the key for the table and its value is derived from the Application-Type command-line input parameter that is passed to the process. If the application type is non-mandatory, it will be used only for records that are Application specific. The two APPLICATION_TYPE values used are 'EFT' for Debit Card Transactions and 'NWB' for Network Banking Transactions and ETU Transactions.

Refer to Appendix D – DRS Tables for a brief description of all common DRS tables.

8.2 System Parameters

The System Parameters are configurable parameters stored in DRS_SYSTEM_PARAMTERS table. One set of System Parameters is stored for Network Banking (NWB) and Debit Card (EFT) each. The table below lists all the System Parameters currently used by DRS.

Name	App	Data-type	Description
DRS SYSTEM DATE	NWB & EFT	DATE	The current date that the DRS system is working for. The program DRSC350 at the start of each day updates the parameter by incrementing its value by 1 day. Before the DRS logical processing day starts, this parameter will have the value of the preceding day. E.g. at 7am (or before execution of DRSC350) on the 27th of June 2002, this parameter will have the value "26th June 2002".

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			The parameter value is set to NULL after DRS baseline installation. It is expected to be set to TRUNC (SYSDATE) on the day prior to running the DRS schedule for the first time.
PARTITION RECEIPT DATE	NWB & EFT	DATE	Indicates the Receipt Date that the most recent partition in the DRS_RX_NWB_MAIN_STORE table will hold transactions for. The program DRSC350 at the start of each day updates the parameter by incrementing its value by 1 day. Normally its value should match the value of parameter "DRS SYSTEM DATE". Before the DRS logical processing day starts, this parameter will have the value of parameter "DRS SYSTEM DATE". The parameter value is set to NULL after DRS baseline installation. It is expected to be set to TRUNC (SYSDATE) on the day prior to running the DRS schedule for the first time.
DRS C4SD INPUT PARTITIONS	NWB & EFT	NUMBER	Indicates the number of partitions for the table FTMS_RX_NWB_C4SD. This value is used by DRSC302 process to derive the next partition number to be processed.
C12 PARSE PROCESS COUNT	NWB & EFT	NUMBER	Indicates the number of instances of C12 parser (DRSC301). This value is used to derive the total number of transactions processed before a set of database alerts could be raised that trigger the DRSC301 processing.
C12 INPUT ALERT LIMIT	NWB & EFT	NUMBER	Stores the minimum number of transactions that need to be loaded into a partition of TMS_RX_NWB_C12 before a database alert is raised to trigger the DRSC301 processing.
DRS C12 INPUT PARTITIONS	NWB & EFT	NUMBER	Indicates the number of partitions for the table TMS_RX_NWB_C12. This value is used by DRSC301 process to derive the next partition number to be processed.
VERSION FOR WORKSTATION	NWB & EFT	NUMBER	Stores the current major version number of the DRS Workstation. This is compared by the Workstation with a number stored within the application to check if the DRS Workstation version is compatible with the DRS-Host.
HORIZON C12 INPUT ALERT TIMEOUT	NWB & EFT	NUMBER	Stores the number of seconds after which instances of the C12 parse and load process DRSC301 will timeout while waiting for a database alert to trigger C12 processing.

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OPTIMUM C12 XML COUNT	NWB & EFT	NUMBER	Indicates the recommended number of records that the Horizon C12 NBS agent should pass to the Host in each call to the C12-interface.
C4SD PAUSE WAIT LIMIT	NWB & EFT	NUMBER	Stores the number of seconds for which instances of the C4/S/D parser (DRSC302) are required to pause before polling the FTMS_RX_NWB_C4SD table for the next batch of input XML records.
C4SD PARSE PROCESS COUNT	NWB & EFT	NUMBER	Indicates the number of instances of C4/S/D parser (DRSC302). This parameter is unused as of now.
DRS DAILY TABLE PARTITIONS	NWB & EFT	NUMBER	Indicates the number of partitions for each of the DRS Daily Tables i.e. DRS_RX_NWB_C12, C4, C112, S and D. This value is used by instances of the Main Store process (DRSC310) to derive the next partition number to be processed.
TPS NWB TABLE PARTITIONS	NWB & EFT	NUMBER	Indicates the number of partitions of the TPS-Host table TMS_RX_NWB_TRANSACTIONS_1…64. This value is used by instances of the C112 TPS copy process (DRSC303) to derive the next partition number of the above-mentioned TPS-Host table to be processed.
DRS PROCESSING DAY COMPLETE	NWB & EFT	TEXT	Indicates if the DRS Processing Day has completed. The value is set to "Y" by DRS End of Day process (DRSC351) and is used by instances of C12-parse and load process (DRSC301) to exit processing.
C4SD FILE LOAD COMPLETE	NWB & EFT	TEXT	Indicates if the C4SD file(s) loading has completed. The value is set to "Y" by DRS File Load Complete process (DRSC306) and is used by instances of C4SD-parse and load process (DRSC302) to exit processing.
MAXIMUM NUMBER OF PARTITIONS	NWB & EFT	NUMBER	Stores the maximum number of partitions of the table (DRS_RX_NWB_MAIN_STORE that can be created. Note that this parameter value must correspond with the number of tablespaces available to hold the main store partitions in order for the DRS Start of Day process to succeed.
C12 RAISE REPEATED KEY EXCEPTION	NWB & EFT	TEXT	Indicates if an alert should be raised by the C12 Parse and load process (DRSC301) if it encounters a C12 record that matches a record processed earlier during the processing day on the Horizon-Transaction-Id and Receipt-Date.
BATCH JOB	NWB		Indicates if the DRS batch processing has started.

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STARTED	& EFT	TEXT	This is used by the DRS Workstation to prevent updates to the database.
NEWEST RECEIPT DATE PRD OFFSET	NWB & EFT	NUMBER	Specifies the upper limit wrt PARTITION RECEIPT DATE for allowable Receipt Dates
OLDEST RECEIPT DATE PRD OFFSET	NWB & EFT	NUMBER	Specifies the lower limit wrt PARTITION RECEIPT DATE for allowable Receipt Dates
NB102 EXCEPTION LIMIT	NWB & EFT	NUMBER	To store the maximum limit for records to printed on the NB102 reports
NB103_REP_RUN_ DATE_OFFSET	NWB & EFT	NUMBER	NB103 Report Run date offset, either 0-Today(FRI) or 1-NextDay(SAT)
INVALID PK OPERATIONAL EXCEPTION LIMIT	NWB & EFT	NUMBER	Specifies the threshold limit for reporting transaction parts with NULL key values as Operational Exceptions
SUBPARTITION COUNT AL A	NWB	NUMBER	Specifies the number of rows Financial Institution AL_A subpartition can hold
SUBPARTITION COUNT AL B	NWB	NUMBER	Specifies the number of rows Financial Institution AL_B subpartition can hold
SUBPARTITION COUNT CAPO A	NWB	NUMBER	Specifies the number of rows Financial Institution CAPO_A subpartition can hold
SUBPARTITION COUNT CAPO B	NWB	NUMBER	Specifies the number of rows Financial Institution CAPO_B subpartition can hold
SUBPARTITION COUNT LINK A	NWB	NUMBER	Specifies the number of rows Financial Institution LINK_A subpartition can hold
SUBPARTITION COUNT LINK B	NWB	NUMBER	Specifies the number of rows Financial Institution LINK_B subpartition can hold
NRT LOCK FLAG	NWB	N/A	Row used as a flag to implement serial access to DRS_NRT_INTERFACE_METADATA.
C12 DAILY SUMMARY TIME INTERVAL	NWB & EFT	NUMBER	Specifies the Time (in minutes) for each summary interval.
C12 DAILY SUMMARY RESPONSE CODE	NWB & EFT	CHAR	Specifies the list of response codes of the transactions that need to be summarised.

8.3 DRS Tables

The DRS tables can be divided into three categories:

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8.3.1 Static Data Tables

Static data tables store reference-type information that is used by Host Processes and DRS Workstation.

All static data tables have a column named APPLICATION_TYPE to show whether the reference data is to be used for Network Banking (NWB), Debit Card (EFT) or both. This column could be mandatory or nullable depending upon the type of data stored in a static data table. If the column is nullable, just one set of values is stored in the table and the APPLICATION_TYPE column is set only for the records that are specific to an APPLICATION_TYPE. For example, APPLICATION_TYPE column is nullable in DRS_PROCESSES table, which stores the details of the DRS processes. APPLICATION_TYPE column in this table is populated only for the processes specific to Network Banking or Debit Card. For common processes, APPLICATION_TYPE column is not populated in DRS_PROCESSES table.

If the APPLICATION_TYPE column is mandatory and a part of the Unique/Primary Key constraint, common records in the table are repeated for each application type. For example, APPLICATION_TYPE column is mandatory in DRS_SYSTEM_PARAMETERS table which stores details of the System Parameters. This table stores all common System Parameters twice, that is, once for each application type.

8.3.2 Control/Registry Data Tables

The DRS database has a single set (as opposed to two sets of transaction tables) of tables that store Control and Registry Information. The control records for both Network Banking and Debit Card are stored in the same table and are distinguished by the value in APPLICATION_TYPE column, which forms a part of the Unique/Primary key for the table. Examples of such tables include DRS_REP_FILE_REGISTER, DRS_C4SD_FILE_REGISTER, DRS_PROCESS_CONTROL etc.

8.3.3 Transaction Data Tables

The DRS has two sets of transaction data tables one for Network Banking and one for Debit Card. Each set has a 3-letter acronym in the table name to show which application type the table belongs to. The Network Banking tables use “NWB” and the Debit Card tables use the “EFT” acronym. The tables storing similar transactional data for Networking Banking and Debit Card reside in the same tablespace. For example, DRS_RX_NWB_MAIN_STORE_UPDATES and DRS_RX_EFT_MAIN_STORE_UPDATES tables store updates to the old Network Banking transactions and reside in the tablespace DRS_MAIN_STORE_UPDATES.

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The DRS has two sets of Oracle users one for Network Banking and one for Debit Card. These users access the transaction data tables through a set of private synonyms. From example, DRS_RX_NWB_MAIN_STORE_UPDATES table is accessed through a private synonym named DRS_RX_MAIN_STORE_UPDATES for the Oracle users "OPS$DRSNWB" and "OPS$DRSNWB1…8". Similarly, DRS_RX_EFT_MAIN_STORE_UPDATES table is accessed through a private synonym named DRS_RX_MAIN_STORE_UPDATES for the Oracle users "OPS$DRSEFT" and "OPS$DRSEFT1…8". The names of the private synonyms are same for both the sets of Oracle users.

9 Files Created/Used

9.1 Input and Output Data Files

The input data files contain [C4/D/S] messages in XML format received from the Network Banking Engine (for Network Banking) or Merchant Acquirer (for Debit Card). The input files containing [S] messages are received for Debit Card only.

The output data files contain [C2] messages in XML format and are sent to Merchant Acquirer through DCP C2-Bulk File Agent. The output files containing [C2] messages are created for Debit Card only.

9.1.1 Network Banking & Electronic Top-Ups

9.1.1.1 C4/D Input

These files contain [C4] and [D] messages in XML format and Control Information received from the Network Banking Engine. Maestro runs a script that delivers these files into a Host directory to be loaded into the DRS database. For Electronic Top-Ups the daily transaction feed file from e-pay is converted into [C4] and [D] messages in XML format and placed by Maestro into the same Host directory used for Network Banking. No MAC or control information is required for Electronic Top-Ups.

The file names and storage location areas are as follows:

Storage Location	File Naming Convention	Extension Before Processing	Extension After Processing
$NWB_NBE_INPUT (/bvnw01/drs/trans/nwbC4Din)	SFX*yyyymmddnnnnn*	.DTF	.dtf
$NWB_NBE_INPUT (/bvnw01/drs/trans/nwbC4Din)	EODCTRL*yyyymmddnn*	.CTL	.CTL
$NWB_NBE_INPUT (/bvnw01/drs/trans/nwbC4Din)	ETU_C4DIN_yyyymmdd	.DTF	.dtf

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Where *yyyymmdd* is the Date of creation of the file in Year-Month-Day format and *nn[nn]* is the sequence number of the file segment. The details of MAC check and file delivery to the Host are available in [R5] (not applicable to Electronic Top-Ups).

At S75, NBE C4/D input files are discontinued.

The processed files (*.dtf and *.CTL) are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh). Also all files are deleted from this directory after a further configurable amount of time to sweep up any temporary files that are created by Maestro.

9.1.2 Debit Card

9.1.2.1 C2 Output

These files contain [C2] messages in XML format. The Host process DRSC307 creates these files. The Maestro launches the DCS C2 Bulk File Agent to process the [C2] transaction file.

The file names and storage location areas follows:

Storage Location	File Naming Convention	Extension Before Processing	Extension After Processing
$EFT_C2_OUTPUT (/bvnw01/drs/trans/eftc2out)	DCS_C2BULKOUT_*yyymmdd_nn*	.TRN	.trn

Where *yyyymmdd* is the Date of creation of the file in Year-Month-Day format and *nn* is the sequence number derived from the current PFG cycle number maintained by Maestro (starts at 01 and increments for each successive run in current business day). The details PFG cycle number are available in [R5].

The processed files are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh).

9.1.2.2 C2 Status Input

These files contain [C2] Status messages in ASCII format. The DCS C2 Bulk File Agent generates this file once it has processed the [C2] messages file. The Host process DRSC308 loads this file into DRS database.

The file names and storage location areas follows:

Storage Location	File Naming Convention	Extension Before Processing	Extension After Processing
$EFT_C2_INPUT (/bvnw01/drs/trans/eftc2in)	DCS_C2STSIN_*yyyymmdd_nn*	.STS	.sts

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Where *yyyymmdd* is the Date of creation of the file in Year-Month-Day format and *nn* is the sequence number is derived from the current PFG cycle number maintained by Maestro (starts at 01 and increments for each successive run in current business day). The details PFG cycle number are available in [R5].

The processed files are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh).

9.1.2.3 C40 (Zero-Value-Confirmations) Input

These files contain Zero Value [C4] messages in XML format, received from the Bulk File Agent. Maestro delivers these files into a Host directory to be loaded into DRS database.

The file names and storage location areas follows:

Storage Location	File Naming Convention	Extension Before Processing	Extension After Processing
$EFT_NBE_INPUT (/bvnw01/drs/trans/eftC4Dsin)	DCS_C40IN_*yyyymmdd_nn*	.DTF	.dtf

Where *yyyymmdd* is the Date of creation of the file in Year-Month-Day format and *nn* is the sequence number is derived from the current PFG cycle number maintained by Maestro (starts at 01 and increments for each successive run in current business day).

9.1.2.4 S Input

These files contain [S] messages in XML format, received from the Bulk File Agent. Maestro delivers these files into a Host directory to be loaded into DRS database.

The file names and storage location areas follows:

Storage Location	File Naming Convention	Extension Before Processing	Extension After Processing
$EFT_NBE_INPUT (/bvnw01/drs/trans/eftC4Dsin)	DCS_SIN_*yyyymmdd_nn*	.DTF	.dtf

Where *yyyymmdd* is the Date of creation of the file in Year-Month-Day format and *nn* is the sequence number is derived from the current PFG cycle number maintained by Maestro (starts at 01 and increments for each successive run in current business day).

9.1.2.5 C4/D Input

These files contain [C4] and [D] messages in XML format, received from the Bulk File Agent. The Bulk File Agent generates these files using the EMIS files

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containing [C4/D] messages produced by the Merchant Acquirer (MA). Maestro delivers these files into a Host directory to be loaded into DRS database.

The file names and storage location areas follows:

Storage Location	File Naming Convention	Extension Before Processing	Extension After Processing
$EFT_NBE_INPUT (/bvnw01/drs/trans/eftC4Dsin)	DCS_C4DIN_*yyyymmdd*_*nn*	.DTF	.dtf

Where *yyyymmdd* is the Date of creation of the file in Year-Month-Day format and *nn* is the sequence number derived from the current EMIS cycle number (starts at 01 and increments for each successive EMIS pickup run in current business day – it is anticipated that this will only occur once a day currently).

The processed files are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh).

9.2 Report Files

9.2.1 Network Banking (Including ETU) and Debit Card

9.2.1.1 MSU Report Files

These files contain NB000 (for Network Banking only), NB101, NB102 and NB103 Reconciliation Reports for MSU (Management Support Unit). The files are produced daily (with the exception of NB103 which is weekly), one for each routing gateway and currency type. Electronic Top-Ups are reported through the Network Banking reports as a unique routing gateway. Also, a Unix link of these files is created in the TIP and/or Audit directories, where necessary.

Maestro copies these report files from the Host to the MIS Workstation. Audit Server copies the report files by running its own script. In the future there will be a staging server that the files will be copied to, then the MSU Workstation can then access these files via this staging server.

The old report files (*.TXT) are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh).

The file names and storage location are as follows:

Directory Name	File Name	Extension Before Processing	Extension After Processing
$NWB_MSU_OUTPUT & $EFT_MSU_OUTPUT (/bvnw01/drs/trans/drsmsu)	<Application><Date><RoutingGateway><ReportNum><Section><TxnGroup><Currency>	.LCK	.TXT

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As mentioned above, the report files for both Network Banking and Debit Card are created in the same physical directory.

The naming convention for the report files is as follows**:**

<Application><Date><RoutingGateway><ReportNum><Section><TxnGroup><Currency>.<EXT>

<Application>	'NBS' is used for Network Banking (including Electronic Top-Ups) reports and 'DCP' for Debit Card reports in NB101, NB102 and NB103 reports. 'DRS' is used for NB000 report.
<Date>	Report Run Date in format 'YYYYMMDD'.
<RoutingGateway>	Routing Gateway Id. Add leading zeros to fit in the format nnnnnnnnn for NB101, NB102 and NB103. NB000 uses 'NIL_RETURN'.
<ReportNo.>	'NB000' , 'NB101', 'NB102' or 'NB103'.
<Section>	Report Section. NB102 uses '01' to '12'. NB000, NB101 and NB103 use '00'.
<TxnGroup>	Transaction Group. NB103 use 'WDR' (Withdrawals) or 'DEP' (Deposits). NB000, NB101 and NB102 use 'N_A' .
<Currency>	Currency. NB101, NB102 and NB103 use a value passed from the database, usually 'GBP' or 'EUR'. The currency is substituted by 'N_A' if not found for the report. NB000 uses 'N_A'.
<EXT>	Initially set to LCK, once the file generation process is complete it is set to TXT.

E.g., NBS200207300000000010NB10100N_AGBP.TXT

DCP200201291111111111NB10100N_AEUR.TXT

9.2.1.2 TIP Report and Acknowledgement Files

The directories $NWB_TIP_OUTPUT (for Network Banking) and $EFT_TIP_OUTPUT (for Debit Card) contain the report files that are required by POL (Post Office Limited) TIP.

All the report files are initially created in $NWB_MSU_OUTPUT and $EFT_MSU_OUTPUT. Then, Unix links are created in the directory $NWB_TIP_OUTPUT and $EFT_TIP_OUTPUT for the report files that are required by POL TIP.

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The FTMS transfers these report files to TIP Gateway. For each file successfully transferred to TIP, FTMS creates an acknowledgement file in $NWB_TIP_OUTPUT directory. The acknowledge files (.ACK) are loaded into DRS database by DRSC367 (Load FTMS acknowledgement file) and then renamed to lower case '.ack'.

The old report (*.TXT.OK) and acknowledgement (*.ack) files are deleted after a configurable number of days by DRS File Purge process (DRSX362.sh).

The file names and storage location for Network Banking are as follows:

Directory Name	File Name	Extension Before Processing	Extension After Processing
$NWB_TIP_OUTPUT (/bvnw01/drs/trans/nwbtip)	<Application><Date><RoutingGateway><ReportNum><Section><TxnGroup><Currency>	.TXT	.ok
$NWB_TIP_OUTPUT (/bvnw01/drs/trans/nwbtip)	<Application><Date><RoutingGateway><ReportNum><Section><TxnGroup><Currency>	.TXT.ACK	.TXT.ack

Similarly, the file names and storage location for Debit Card are as follows:

Directory Name	File Name	Extension Before Processing	Extension After Processing
$EFT_TIP_OUTPUT (/bvnw01/drs/trans/efttip)	<Application><Date><RoutingGateway><ReportNum><Section><TxnGroup><Currency>	.TXT	.ok
$EFT_TIP_OUTPUT (/bvnw01/drs/trans/efttip)	<Application><Date><RoutingGateway><ReportNum><Section><TxnGroup><Currency>	.TXT_ACK	.TXT.ack

The details of report file naming convention are available in the section MSU Report Files.

9.3 Oracle Export Files for Audit, Archive and Support

Oracle export files are created for audit, archive and support requirements.

9.3.1 Network Banking and Debit Card

9.3.1.1 Oracle Export Files for Support

These files are created using Oracle "exp" utility. The export dump files contain data from DRS tables as detailed in Appendix F – DRS Archiving Table Mapping Once the dump files are successfully created, the files are compressed using Unix utility 'compress' to reduce the disk space usage.

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The file names and storage location for Network Banking and Debit Card are as follows:

Directory Name	File Name	Extension Before Compression	Extension After Compression
$NWB_SUPPORT_OUTPUT & $EFT_SUPPORT_OUTPUT (/bvnw01/drs/trans/drssupport)	DRS<ApplicationAlias><ArchiveGroupAlias><RunDate>	.dmp	.dmp.Z

Where,

ApplicationAlias — Stored in DRS_ARCHIVED_TABLES table, NWB for Network Banking Application and EFT for Debit Card.

ArchiveGroupAlias — Stored in DRS_ARCHIVED_TABLES table, e.g., OPR (for Operational tables)

RunDate — Current DRS Processing date in the format 'YYYYMMDD'.

For example, the name of Oracle dump file for DRS_RX_NWB_MAIN_STORE table will be DRSNWBDMS20020523.dmp.Z and DRS_RX_EFT_MAIN_STORE table will be DRSEFTDMS20020523.dmp.Z.

An export parameter containing the parameters required by the Oracle export utility and a log file containing any errors encountered during the export are also created as per the following details:

Directory Name	File Name	Extension Before Compression	Extension After Compression
$NWB_SUPPORT_OUTPUT & $EFT_SUPPORT_OUTPUT (/bvnw01/drs/trans/drssupport)	DRS<ApplicationAlias><ArchiveGroupAlias>	.par	N/A
$NWB_EXPORT_LOG & $EFT_EXPORT_LOG (/bvnw01/drs/trans/drsexplog)	DRS<ApplicationAlias><ArchiveGroupAlias><RunDate>	.log	N/A

Where,

ApplicationAlias — Stored in DRS_ARCHIVED_TABLES table, NWB for Network Banking Application and EFT for Debit Card.

ArchiveGroupAlias — Stored in DRS_ARCHIVED_TABLES table, e.g., OPR (for Operational tables).

RunDate — Current DRS Processing date in the format 'YYYYMMDD'.

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For example, the name of Oracle export parameters and logs files for DRS_RX_NWB_MAIN_STORE table will be DRSNWBDMS.par and DRSNWBDMS20020523.log respectively. Similarly, the name of Oracle export parameters and logs files for DRS_RX_EFT_MAIN_STORE table will be DRSEFTDMS.par and DRSEFTDMS20020523.log respectively.

Old files (DRSNWB*.log and DRSEFT*.log) are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh). The *.par files do not need housekeeping as the same file is overwritten each day.

9.3.1.2 Oracle Export Files for Archive

The Oracle export dump files are initially created in the directory /bvnw01/drs/trans/drssupport (pointed to by $NWB_SUPPORT_OUTPUT and $EFT_SUPPORT_OUTPUT). After the files have been created and compressed successfully a Unix link is created in the directory /bvnw01/drs/trans/drsarchive (pointed to by $NWB_ARCHIVE_OUTPUT and $EFT_ARCHIVE_OUTPUT) for the files required for archive purpose as detailed in Appendix F – DRS Archiving Table Mapping.

The file names and storage location for export dump files are as follows:

Directory Name	File Name	Extension Before Compression	Extension After Compression
$NWB_ARCHIVE_OUTPUT & $EFT_ARCHIVE_OUTPUT (/bvnw01/drs/trans/drsarchive)	DRS<ApplicationAlias><ArchiveGroupAlias><RunDate>	N/A	.dmp.Z

Where,

ApplicationAlias	Stored in DRS_ARCHIVED_TABLES table, NWB for Network Banking Application and EFT for Debit Card.
ArchiveGroupAlias	Stored in DRS_ARCHIVED_TABLES table, e.g., OPR (for Operational tables)
RunDate	Current DRS Processing date in the format 'YYYYMMDD'.

For example, the name of Oracle dump file for DRS_RX_NWB_MAIN_STORE table will be DRSNWBDMS20020523.dmp.Z and for DRS_RX_EFT_MAIN_STORE table will be DRSEFTDMS20020523.dmp.Z

Old files (DRSNWB*.dmp.Z and DRSEFT*.dmp.Z) are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh).

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9.1.1.3 Oracle Export Files for Audit

The Oracle export dump files are initially created in the directory /bvnw01/drs/trans/drssupport (pointed to by $NWB_SUPPORT_OUTPUT and $EFT_SUPPORT_OUTPUT).. After the files have been created and compressed successfully a Unix link is created in the directory bvnw01/drs/trans/drsaudit (point to by $NWB_AUDIT_OUTPUT and $EFT_AUDIT_OUTPUT) for the files required for audit purpose as detailed in Appendix F – DRS Archiving Table Mapping.

The file names and storage location for export dump files are as follows:

Directory Name	File Name	Extension Before Compression	Extension After Compression
$NWB_AUDIT_OUTPUT & $EFT_AUDIT_OUTPUT (/bvnw01/drs/trans/drsaudit)	DRS<ApplicationAlias><ArchiveGroupAlias><RunDate>	N/A	.dmp.Z

Where,

ApplicationAlias	Stored in DRS_ARCHIVED_TABLES table, NWB for Network Banking Application and EFT for Debit Card.
ArchiveGroupAlias	Stored in DRS_ARCHIVED_TABLES table, e.g., OPR (for Operational tables)
RunDate	Current DRS Processing date in the format 'YYYYMMDD'.

For example, the name of Oracle dump file for DRS_RX_NWB_MAIN_STORE table will be DRSNWBDMS20020523.dmp.Z and for DRS_RX_EFT_MAIN_STORE table will be DRSEFTDMS20020523.dmp.Z

Old files (DRSNWB*.dmp.Z and DRSEFT*.dmp.Z) are deleted after a configurable number of days by DRS File Purge job (DRSX362.sh).

10 Support Usage of Archive/Support Export Files

DRS Archive/Support files for Network Banking and Debit Card are created in the form of compressed Oracle Export database dumps. For details on the naming conventions, file locations and the file contents, refer to the sections 9.3 and Appendix F – DRS Archiving Table Mapping.

The compressed Oracle export file formats have been chosen to facilitate transport of these files to multiple environments and ease of loading. Additionally, as the data will be sufficiently compacted, the disk usage and transfer time will less. Note that these files are not meant for restoring the state of tables in Live. The Live Backup and Restores are discussed in Section 11.

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The Archive/Support files can be loaded by Support on a separate DRS Support environment. This would typically be a machine running the same Host operating system and version of Oracle as Live. The support rig must have all Host work packages that have been applied to Live. Also, the size of the DRS database must match that of Live for all tablespaces with the exception of the Main Store partition tablespaces.

The following steps should be followed to use the Archive/Support files on the Support rig:

- Copy the compressed Archive/Support file/s to the "/loadarea" directory on the Support rig.
- Uncompress the file/s
- Delete all existing records from the target table/s in order to ensure no Primary Key violations occur and that there is sufficient space in the target tablespace
- If importing the Main Store table (DRS_RX_NWB_MAIN_STORE), drop the table and use import to create the table with the required partition name
- Use the Oracle 8.1.7 Import Utility "imp" to load the contents of the file into target tables. In addition to the mandatory parameters like USERID and FILE, it is recommended that the following parameters are used to minimise chances of failure:

  BUFFER = 44000000

  IGNORE = Y

  COMMIT = Y

  FROMUSER = OPS$DRS

  TOUSER = OPS$DRS

  FILE = <Name of the database dump file>

  TABLES = <List of tables being imported>

11 Backup and Recovery

11.1 Backup

The DRS backups use the EMC Timefinder product, which allows the EMC array to maintain a 3rd mirror of defined disk volumes contained within the disk array. This 3rd mirror (known as a BCV) can be split from the parent volumes at any time. Timefinder also allows the BCV's to be resynchronised with the parent disks, only copying the tracks that have changed since the BCV was last connected, therefore minimising the time taken to resynchronise.

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The backup strategy follows the traditional database backup scheme of a cold backup supported by redo logs tracking the changes made since the cold backup. The time taken for the cold backup will be limited to the time taken to close down and restart the Oracle database instance.

The backup schedule is defined by IPDU and ISD but is expected to be along the following lines:

1. Following the completion of the Network Banking and Debit Card end of day schedules, resynchronise the BCVs with the parent volumes.
2. Once resynchronised and all other database jobs have completed, shutdown the DRS Oracle instance.
3. Split the BCVs from the parent volumes.
4. Start the Oracle database instance.
5. Start backing up the data on the BCV's to tape.

The BCVs will remain split until the completion of next processing day's batch overnight jobs (the Maestro day runs from 8 am in the morning) thus ensuring improved recovery from backup, if it proves necessary.

The Middleware scripts that control the splitting and resynchronisation of BCV volumes have been provided by ISD and their integration with the Maestro schedule has been done by Maestro development.

11.2 Recovery

11.2.1 Process Failure

In case of failure, the DRS processes rollback changes made to the database wherever possible before exiting and/or make use of the Process Control to save the last successful restart point.

Dependencies have been defined in the schedule, which disallows Maestro from running processes that are dependent on the failed process this ensuring data integrity. The failed process is then re-run by the Maestro scheduler after a predefined time gap (with manual intervention). In case of multiple restart points in a process, program logic is used to start from the latest restart point.

11.2.2 System Failure

If the operating system crashes or there is an Oracle Instance failure during the DRS processing day, it is possible to restart DRS from the point of failure. This is because the DRS database will be run in 'Archive-Log' mode.

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Once the system (Sequent – Dynix / Oracle) is re-started, standard Oracle recovery process would apply all committed transactions which have not been saved earlier, to the database through the use of redo-log buffers and rollback segments in a process called "roll forward and back". For more information refer to the Oracle Administrators Guide for version 8.1.7.

The Maestro scheduler records the process name that was being executed when the crash occurred. As in the case of Process Failure, the schedule will need to be manually restarted from the process that has failed.

11.2.3 Media Failure

In case of a media or disk failure, Oracle may not be able to save / read data from the disk. This could happen due to a number of causes but as the DRS database is running in 'Archive-log' mode, it is possible to restart from a point in time prior to the failure in the DRS processing day. This can be achieved by restoring the previous consistent database backup from the BCV (refer to Section 11.1) and using the archived and online redo-log files to recover to a point of time just prior to the media failure.

Successful database recovery from a media failure should be followed by schedule re-start from the point of failure for the Network Banking/Debit Card and other connected systems.

It is not envisaged that a part of the schedule would need to be rerun as the restore using online and archived redo-logs is expected to recover the database to its state prior to the failure and the incomplete DRS processes could be restarted. However if there is a need for schedule rerun, refer to Section 14.

12 External System Failures/Restarts

This section lists the external systems that interface with DRS and discusses the most common failure scenarios and how DRS can recover from them. For an exhaustive description of Failure Scenarios and Recovery, please refer to [R2].

12.1 C12 Confirmation Agent Failure

If one or more instances of the NBS confirmation agent fail, the DRS C12 Parse and Load Process (DRSC301) waits for the [C12] XML records to arrive, i.e., the process loops and polls the input table at regular intervals.

Although, the Horizon NBS [C12] confirmation agent stores checkpoints at regular intervals in the DRS database and in the Messagestore, there is a possibility of harvesting duplicate C12 records on agent restart. The DRS C12 Parse and Load Process (DRSC301) filters any duplicate C12 records as long as they are received on the same processing day. If the agent instances are not restarted until

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the next DRS processing day, any re-harvested records are not detected by the C12 Parse and Load Process (DRSC301) due to transient DRS_RX_{NWB|EFT}_C12 tables but are detected by the Main Store Match and Merge Process (DRSC310).

12.2 TPS Host/Agent Failure

DRS obtains the [C112] Confirmation Messages, Outlet Last Polled Statuses and the TIP Cash Account Delivery Statuses from TPS Host. There are two possible failure scenarios with TPS as described below.

12.2.1 C112 Confirmation Agent Failure

A failure on the part of the C112 TMS Agent to load Network Banking/Debit Card [C112] transactions into TPS-Host results in the TPS schedule being held up. This in turn would result in the DRS schedule being held up because of the DRS Maestro dependency on completion of TPS Reports (schedule named M_DB_SRV#TPSCAREP).

DRS waits until the C112 TMS Agents have successfully harvested the Network Banking/Debit Card [C112] transactions into TPS-Host.

12.2.2 TPS Host failure

TPS and DRS share the same the machine. To prevent the resource contention, the TPS TIP jobs which have to meet an SLA are run before the DRS jobs.

If a TPS Host failure occurs before the start of the DRS schedule, DRS waits for the TPS issue to be resolved. The DRS Start of Batch Overnight (DRSC353) job is dependent on TPS Cash Account Reports (schedule M_DB_SRV#TPSCAREP).

There is a Maestro dependency from DRS to TPS schedule as well. TPS Housekeeping (TPSC209) job can not run until the Network Banking and Debit Card transactions have been copied to DRS. Refer to [R6] for more details.

If a database error occurs while the DRS C112 Transactions Copy (DRSC303) or the Last Polled Outlet/CA Receipts Copy (DRSC366) processes are running, DRS waits until the issue is resolved. The DRS Copy Processes are rerun after the database problem has been resolved.

12.3 RDDS Host Database Failure

If a RDDS Host database failure occurs before the execution of the RDDS-to-DRS copy process (DRSC364), a Maestro dependency makes DRS wait for RDDS to be backed up again before allowing the DRSC364 process to run.

If a RDDS Host database failure occurs during the execution of the RDDS-to-DRS copy process (DRSC364), the process is likely to fail and log one/more

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Operational Exceptions to record the error details. Once RDDS database is back up again, the process can be rerun.

12.4 TES Host Database Failure

A TES Host database failure would result in the C4/D transactions not arriving. One or more of the TES owned TES_AL_REC_RUN/TES_CAPO_REC_RUN/ TES_LINK_REC_RUN schedules would not complete due to DRSC371 failing which will result in all the DRS batch overnight schedules being held up.

Once the failure is resolved and the preceding TES processes have completed, the DRS batch overnight jobs will start execution.

Because of the dependencies within the DRS schedule, there would be a corresponding delay in the completion of TPS-Host batch overnight.

12.5 FTMS Report-file Transfer Failure

FTMS transfers the Network Banking and Debit Card reconciliation reports to TIP-remote server and their transfer acknowledgement files back to DRS.

If a failure occurs in transferring these files to the TIP-remote server due to the failure of FTM transfer mechanism or the Network, DRS-Host would not receive acknowledgements for the files that could not be transferred. This would be reflected in the value of TIP_RECEIPT_DATE in table DRS_REP_FILE_REGISTER.

All report files created for transfer to TIP are retained for 5 working days (configurable) as listed in Appendix G – DRS File Housekeeping Parameters. As long as the failure is resolved and the report files are transferred with that period, there would be no loss of data.

12.6 Maestro File Transfer Failure

Maestro scripts transfer the MSU Reports to MSU using NFS mounted host directory (/bvnw01/drs/trans/drsmsu) on the SSC Server. Another set of scripts transfer the DRS Support and Archive files to the SSC Archive Server again via NFS mounted Host directories (/bvnw01/drs/trans/drssupport and /bvnw01/drs/trans/drsarchive).

Failure in transferring files to the MSU/SSC Archive may result in some/all of the files not being transferred. This should not be an issue for Host processing and would not result in loss of data as long as the file transfer mechanism is able to successfully transfer the files before the files are deleted by DRS file housekeeping process.

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The files would remain on the DRS-Host for MSU to request for manual transfer in case of automatic transfer failures. Similarly the Support/Archive files can also be requested for a manual transfer from the DRS-Host.

From 2.2 and [R4], space for 5 peak working days at phase-2 volumes has been requested for the DRS Support and MSU-Report directories.

12.7 Audit Server File Transfer Failure

DRS creates Unix hard links for reconciliation reports and a compressed export of the oldest Main Store partition in the DRS-Audit (/bvnw01/drs/trans/drsaudit) directory.

Failure in transferring files to the Audit Server may result in some/all of the files not being transferred to the Audit Server. This should not be an issue for Host processing and would not result in loss of data as long as the file transfer mechanism is able to successfully transfer the files before the space allocated to the audit directory is exhausted or before the files are deleted by Audit file housekeeping. From 2.2 and [R4], space for 5 peak working days at phase-2 volumes has been requested for the Audit directory.

13 Tuning

13.1 Oracle Tuning

The following table indicates the tuning that has been done to the initTPS.ora parameter file:

Parameter	Value	Reason
DB_FILE_MULTIBLOCK_READ_COUNT	16	Set to 1Mb, so that table scans are done as close as possible to one extent against the partitioned main store table and that full table scans are efficient
DB_FILES	600	Maximum number of database files that can be opened for this database.
OPEN_CURSORS	400	Maximum number of open cursors a session can have at a time.
DML_LOCKS	2048	Maximum number of DML locks – one for each table modified in a transaction.
DB_BLOCK_BUFFERS	12800 (100MB)	Attempt to fetch large number of main store transaction records into memory in order to improve performance
LOG_BUFFERS	163840	Size of the Redo Log Buffers

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	(16MB)	
SORT_AREA_SIZE	67108864 (64MB)	Allows the batch processes to sort large volumes of transactions in memory
PARALLEL_MAX_SERVERS	80	Maximum number of Parallel Query Servers that can be opened. Set to a high value to allow the various multiple instance processes to execute parallel queries
PARALLEL_MIN_SERVERS	10	Minimum number of Parallel Query Servers that are always open. Value has been set such that Oracle does not need to open any parallel query servers while the single instance processes (e.g. reports) are running
PROCESSES	100	Maximum number of operating system user processes that can simultaneously connect to Oracle.
TRANSACTIONS	64	Maximum number of Concurrent Transactions.
DISTRIBUTED_TRANSACTIONS	30	Maximum number of Concurrent Distributed Transactions.

13.2 Schedule tuning

There are two ways to tune the schedule performance:

13.2.1 Schedule parallelism

Several parallel streams will run the load, parse and main store update jobs within the DRS schedule (e.g. if eight streams are run, each stream will process on eighth of the total number of partitions). The processes have been scheduled such that write to the same set of tables are not run at the same time.

The parallelism needs to be tuned on a regular basis to take into account the changing volumes and spread of data so that each activity *can* make maximum use of the computer configuration.

13.2.2 Resource pools

Maestro has a facility to limit the number of jobs running that requires a particular resource, such as a tape drive. These resource pools are user defined, and can be used to minimise contention.

DRS does not currently use Maestro resource pools as the number of jobs running at any given time is not considered high enough.

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13.3 Main store partition tuning

The DRS Main Store tables for Network Banking and Debit Card have been partitioned on Receipt Date and sub-partitioned on 'hash' of Horizon-Transaction-Id. Each partition (along with its sub-partitions) has its own tablespace, which is spread across physical disks. This has been done to improve query efficiency and is particularly beneficial for use in parallel queries.

13.4 SQL hint tuning

The Oracle Database Server supports a number of 'hints' to its optimiser which informs the RDBMS at run time of access paths that have been found (through performance testing) to be the most efficient path to use.

Bearing in mind that DRS is a new product and that the transaction spread may change over time, the SQL hints used have been stored in a table named DRS_SQL_HINTS. Host processes that expect to find SQL hints access this table to fetch and use the SQL hint. This has been implemented to provide for ease of change.

For processes that access large tables, the hint "Parallel" can be/is used for SQL operations doing fetches and performing sorts. This makes use of the multiple processors present on Host, multiple parallel query servers possible due to the virtual memory available on the host and the striping of the tablespaces' data files across disks.

14 Re-run

DRS has been designed to automatically recover from a data centre failure. All programs will restart at the point of failure regardless of whether the Maestro schedule was recovered.

Since DRS maintains data for 91 days and the non-transient tables are updated on receipt of each transaction part, it is not advisable to rerun part of the schedule that has been successfully processed.

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15 Appendix A – Network Banking Maestro Schedule

DRS Maestro scheduling requirements for Network Banking and Common Jobs

Schedule Name Y = Common	Schedule Frequency	Schedule Dependencies	Job Name	Job Dependency	Input Parameters	No. of Instances	Unix user	Description	Rerun
DRS_NWB_SOD	Daily	DRS_NWB_BATCH_COMPLETE.FLAG	DRSC350N	DRS350LK	Application Type	1	drsnwb	This is the start of the Day process and increments the system date *$DRS_PROC/DRSC350 NWB*	
DRS_ETU_C4LD	Daily	DRS_NWB_SOD DRS_ETU_BATCH_COMPLETE.FLAG	DRSC305T		Application Type Filename	1	drsnwb	Loads the ETU data into input tables. *$DRS_PROC/DRSC305 NWB <FILENAME>*	
			DRSC306T	DRSC305N DRSC305T	Application Type	1	drsnwb	End Load of C4/S/D *$DRS_PROC/DRSC306 NWB*	
DRS_NWB_ANALYZE	Daily	DRS_NWB_SOD	DRSC368N_1		Application Type Object group list	1	drs	Uses the Oracle 'Analyze' function on object groups for database performance *$DRS_PROC/DRSC368 NWB MST MSI*	
DRS_RDDS_EXTRACT Common = Y	Daily	DRS_NWB_SOD DRS_EFT_SOD rddslock	DRSC364C		Application Type	1	drs	DRS extract from RDDS, Routing Gateways, Accounting weeks *$DRS_PROC/DRSC364 NWB*	Continue on error No page.
DRS_NWB_RUN_AGT	Daily	DRS_NWB_SOD	DRS_NWB_C12_RUN_AGENT			1	drsnwb	Allows C12 agents to call to populate database.	
	Daily		DRS_NWB_C12_AGT_RUNNING	DRS_NWB_C12_RUN_AGENT		1	drsnwb	Informs the Schedule that the C12 agents can populate database	

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DRS_NWB_C12_PARS	Daily	DRS_NWB_RUN_AGT	DRSX357			1	drsnwb	Batch Partition Management Process	
			DRSX357_MON_NOPAGE					Sleeps for 60 seconds and then confirms DRSX357 has completed successfully.	One auto rerun upon failure after waiting 300 seconds. Will page on second failure.
			DRSC301N_1	DRSX357_MON_NOPAGE	Application Type Instance Number Total No of Instances	8	drsnwb1	Enable DRS C12 processing into Daily tables. The process triggers again if the previous instance of DRSC301 fails. *$DRS_PROC/DRSC301 NWB x 8* *Where x is the instance number between 1 to 8*	One auto rerun for the same instance on failure. Subsequent failures on the same instance will require manual intervention
			DRSC301N_2	DRSX357_MON_NOPAGE			drsnwb2		
			DRSC301N_3	DRSX357_MON_NOPAGE			drsnwb3		
			DRSC301N_4	DRSX357_MON_NOPAGE			drsnwb4		
			DRSC301N_5	DRSX357_MON_NOPAGE			drsnwb5		

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			DRSC301N_6	DRSX357_MON_NOPAGE			drsnwb6		
			DRSC301N_7	DRSX357_MON_NOPAGE			drsnwb7		
			DRSC301N_8	DRSX357_MON_NOPAGE			drsnwb8		
			DRSC312N		Application Type	1	drsnwb	Summarises C12 monitor table records and if threshold exceeded writes an entrance to application log. *$DRS_PROC/DRSC312 NWB*	One auto re-run. Subsequent failures require manual intervention
DRS_NWB_MS_DAY	Daily	DRS_NWB_SOD	DRSC310DN_1	Every half an hour during the day until 17:01 Hrs	Run Type Application Type Instance Number Total No of Instances	8	drsnwb1	Enable Main Store to process old transactions *$DRS_PROC/DRSC310 DAY NWB x 8* *Where x is the instance number between 1 to 8*	Monitor to alert if still running at 17:45.
			DRSC310DN_2				drsnwb2		
			DRSC310DN_3				drsnwb3		
			DRSC310DN_4				drsnwb4		
			DRSC310DN_5				drsnwb5		
			DRSC310DN_6				drsnwb6		

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			DRSC310DN_7				drsnwb7		
			DRSC310DN_8				drsnwb8		
DRS_NWB_SOB	Daily 20:00	DRS_NWB_ANALYZE TPSCAREP DRS_NWB_MS_DAY	DRSC353N		Application Type	1	drs	The Start of Overnight Batch indicates Completion of TPS TIP and APS client Host processing *$DRS_PROC/DRSC353 NWB*	
TES_AL_REC_RUN	Daily 20:30	See NB/HLD/019	DRSC371N	TESC340 D371LOCK	Application Type	1	drsnwb	Copies the C4/D messages from TES to DRS *$DRS_PROC/DRSC371 NWB*	
TES_CAPO_REC_RUN	Daily 20:30	See NB/HLD/019	DRSC371N	TESC340 D371LOCK	Application Type	1	drsnwb	Copies the C4/D messages from TES to DRS *$DRS_PROC/DRSC371 NWB*	
TES_LINK_REC_RUN	Daily 20:30	See NB/HLD/019	DRSC371N	TESC340 D371LOCK	Application Type	1	drsnwb	Copies the C4/D messages from TES to DRS *$DRS_PROC/DRSC371 NWB*	
DRS_NWB_C4_PARSE	Daily	DRS_ETU_C4LD.DRSC306T D371LOCK	DRSC302N_1		Application Type Instance Number Total No of Instances	8	drsnwb1	After successful execution of at least one file loading this job triggers to parse data. The process triggers for failed parse data once. *$DRS_PROC/DRSC302 NWB x 8* *Where x is the instance number between 1 to 8*	One auto rerun for the same instance on failure. Subsequent failures on the same instance will require manual intervention
			DRSC302N_2				drsnwb2		

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			DRSC302N_3				drsnwb3		
			DRSC302N_4				drsnwb4		
			DRSC302N_5				drsnwb5		
			DRSC302N_6				drsnwb6		
			DRSC302N_7				drsnwb7		
			DRSC302N_8				drsnwb8		
DRS_NWB_TPS_COPY	Daily	DRS_NWB_SOB	DRSC303N_1		Application Type Instance Number Total No of Instances	8	drsnwb1	DRS bulk copy of C112 from TPS *$DRS_PROC/DRSC303 NWB x 8* *Where x is the instance number between 1 to 8*	
			DRSC303N_2				drsnwb2		
			DRSC303N_3				drsnwb3		
			DRSC303N_4				drsnwb4		
			DRSC303N_5				drsnwb5		
			DRSC303N_6				drsnwb6		
			DRSC303N_7				drsnwb7		

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			DRSC303N_8				drsnwb8		
			DRSC303N_9	DRSC303N_1	Application Type Instance Number Total No of Instances	1	drsnwb1	DRS bulk copy of C112 from TPS of 65th partition *$DRS_PROC/DRSC303 NWB 65 1*	
DRS_NWB_MS_NIGHT	Daily	DRS_NWB_C4_PARSE, DRS_NWB_TPS_COPY TES_AL_REC_RUN TES_CAPO_REC_RUN TES_LINK_FILEMON_MARKER	DRSC310NN_1		Run Type Application Type Instance Number Total No of Instances	8	drsnwb1	DRS Main store Data processing, merge parts and set state. *$DRS_PROC/DRSC310 NIGHT NWB x 8* *Where x is the instance number between 1 to 8*	
			DRSC310NN_2				drsnwb2		
			DRSC310NN_3				drsnwb3		
			DRSC310NN_4				drsnwb4		
			DRSC310NN_5				drsnwb5		
			DRSC310NN_6				drsnwb6		
			DRSC310NN_7				drsnwb7		
			DRSC310NN_8				drsnwb8		

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DRS_NWB_MS_EXCPTN	Daily	DRS_NWB_MS_NIGHT	DRSC311N		Application Type	1	drsnwb	DRS Main exception storage from daily to main *$DRS_PROC/DRSC311 NWB*	
DRS_TPS_EXTRCT_D Common = Y	Daily	DRS_RDDS_EXTRACT DRS_NWB_MS_EXCPTN DRS_EFT_MS_EXCPTN TPSREP.TPSC234	DRSC366C		Application Type	1	drsnwb	DRS extract from TPS TIP CA Receipts and Outlets Last Polled. The dependency on DRS_RDDS_EXTRACT is present to make sure this schedule is not left with no follow on schedule. *$DRS_PROC/DRSC366 NWB*	
DRS_NWB_REP_101	Daily	DRS_NWB_MS_EXCPTN DRS_TPS_EXTRCT_D	DRSC322N		Application Type	1	drsnwb	DRS data extract Main Store to Result tables for NB101 report *$DRS_PROC/DRSC322 NWB*	
			DRSC324N	DRSC322N	Application Type	1	drsnwb	DRS file generation for NB101 report *$DRS_PROC/DRSC324 NWB*	
DRS_NWB_REP_102	Daily	DRS_NWB_MS_EXCPTN DRS_TPS_EXTRCT_D	DRSC320N		Application Type	1	drsnwb	DRS data extract Main Store to Result tables for NB102 report *$DRS_PROC/DRSC320 NWB*	
			DRSC323N_1	DRSC320N	Application Type Report Section Number	1	drsnwb	DRS data extract Main Store to State Totals tables for NB102 report section 1 *$DRS_PROC/DRSC323 NWB 1*	
			DRSC323N_6	DRSC323N_1	Application Type Report	1	drsnwb	DRS data extract Main Store to State Totals tables for NB102 report section 6 *$DRS_PROC/DRSC323 NWB 6*	

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					Section Number				
			DRSC323N_7	DRSC323N_6	Application Type Report Section Number	1	drsnwb	DRS data extract Main Store to State Totals tables for NB102 report section 7 *$DRS_PROC/DRSC323 NWB 7*	
			DRSC323N_12	DRSC323N_7	Application Type Report Section Number	1	drsnwb	DRS data extract Main Store to State Totals tables for NB102 report section 12 *$DRS_PROC/DRSC323 NWB 12*	
			DRSC323N_2	DRSC323N_12	Application Type Report Section Number NWB 2	8	drsnwb1	DRS data extract Main Store to State Totals tables for NB102 report sections 2, 3, 4, 5, 8, 9, 10, and 11. *$DRS_PROC/DRSC323 NWB x* *Where the value of x is 2, 3, 4, 5, 8, 9, 10, 11*	
			DRSC323N_3	DRSC323N_12	NWB 3		drsnwb2		
			DRSC323N_4	DRSC323N_12	NWB 4		drsnwb3		
			DRSC323N_5	DRSC323N_12	NWB 5		drsnwb4		
			DRSC323N_8	DRSC323N_12	NWB 8		drsnwb5		
			DRSC323N_9	DRSC323N_12	NWB 9		drsnwb6		
			DRSC323N_10	DRSC323N_12	NWB 10		drsnwb7		
			DRSC323N_11	DRSC323N_12	NWB 11		drsnwb8		

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			DRSC325N	DRSC323N_2, DRSC323N_3, DRSC323N_4, DRSC323N_5, DRSC323N_8, DRSC323N_9, DRSC323N_10, DRSC323N_11	Application Type	1	drsnwb	DRS file generation for NB102 report *$DRS_PROC/DRSC325 NWB*	
DRS_NWB_REP_000 Common = Y		DRS_NWB_REP_101 DRS_NWB_REP_102 DRS_EFT_REP_101 DRS_EFT_REP_102	DRSC328C		Application Type	1	drsnwb	DRS Summary report *$DRS_PROC/DRSC328 NWB*	
DRS_ADMIN Common = Y	Daily	DRS_NWB_REP_000	DRSX365C		Application Type	1	drs	DRS Database Statistics *$DRS_SH/DRSX365.sh NWB*	
DRS_NWB_ADMIN	Daily	DRS_ADMIN	DRSC361N		Application Type	1	drs	DRS Archiving and Auditing *$DRS_PROC/DRSC361 NWB*	
			DRSC368N_3	DRSC361N	Application Type Object group list	1	drs	Uses the Oracle 'Analyze' function on object groups for database performance *$DRS_PROC/DRSC368 NWB MST MSI EXC STT STI*	

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			DRSX362N	DRSC361N	Application Type	1	drs	DRS file purging – housekeeping *$DRS_SH/DRSX362.sh NWB*	
DRS_NWB_PAUS_AGT	Daily 23:30	DRS_NWB_RUN_AGT	DRS_NWB_C12_PAUSE_AGT			1	drsnwb	Inform C12 Agents about DRSEOD	
	Daily		DRS_NWB_C12_PAUSED	DRS_NWB_C12_PAUSE_AGT		1	drsnwb	Wait for C12 Agents to Complete	
DRS_NWB_TRN_ACK	Daily	DRS_NWB_ADMIN	DRSC367N		Application Type	1	drsnwb	File Control FTMS ACK reader *$DRS_PROC/DRSC367 NWB*	
			TESC391	DRSC367N TES_REPORTS.TESC390	Source App	1	tesrep	Create DRS Report *$TES_PROC/TESC391 DRS*	
DRS_NWB_EOD	Daily	DRS_NWB_TRN_ACK DRS_NWB_PAUS_AGT	DRSC351N		Application Type	1	drsnwb	End of Batch Process End of Day Process *$DRS_PROC/DRSC351 NWB*	
			DRSX358N	DRSC351N DRSC301N_1 DRSC301N_2 DRSC301N_3 DRSC301N_4 DRSC301N_5 DRSC301N_6 DRSC301N_7		1	drsnwb	Flags Batch Partition Management (DRSX357) to exit *$DRS_PROC/DRSX358*	

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				DRSC301N_8					
DRS_COLD_BU Common = Y		DRS_NWB_EOD DRS_NWB_C12_PARS DRS_EFT_EOD DRS_EFT_C12_PARS	DRS_BCV_ESTABLISH					Cold Backup	
			DRS_DB_STOP	DRS_BCV_ESTABLISH				Cold Backup	
			DRS_BCV_SPLIT	DRS_DB_STOP				Cold Backup	
			DRS_DB_START	DRS_BCV_SPLIT				Cold Backup	
			DRS_BCV_BACKUP	DRS_BCV_SPLIT				Cold Backup	
DRS_COMPLETE Common = Y		DRS_COLD_BU.DB_START	DRS_NWB_BATCH_COMPLETE DRS_EFT_BATCH_COMPLETE.FLAG					Creates Flag files	

ASSUMPTIONS

1. All the DRS users point to the same HOME directory "/home/drs"
2. Valid Values of the Parameters will be

- Run Type : DAY/NIGHT
- Application Type : NWB

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- Instance Number : The sequence number of the instance which is one of the numbers from 1 – Max Number of Instances

Total Instances: Total Number of Instances that are run for a Job

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16 Appendix B – Debit Card Maestro Schedule

Schedule Name	Schedule Frequency	Schedule Dependencies	Job Name	Job Dependency	Input Parameters	No. of Instances	Unix user	Description	Rerun
DRS_EFT_SOD	Daily	DRS_EFT_BATCH_COMPLETE.FLAG	DRSC350E	DRS350LK	Application Type	1	drseft	This is the start of the Day process and increments the system date *$DRS_PROC/DRSC350 EFT*	
DRS_EFT_ANALYZE	Daily	DRS_EFT_SOD	DRSC368E_1		Application Type Object group list	1	drs	Uses the Oracle 'Analyze' function on object groups for database performance *$DRS_PROC/DRSC368 EFT MST MSI*	
DRS_EFT_RUN_AGT	Daily	DRS_EFT_SOD	DRS_EFT_C12_RUN_AGENT			1	drseft	Allows C12 agents to call to populate database.	
	Daily		DRS_EFT_C12_AGT_RUNNING	DRS_EFT_C12_RUN_AGENT		1	drseft	Informs the Schedule that the C12 agents can populate database	
DRS_EFT_C12_PARS	Daily	DRS_EFT_RUN_AGT	DRSC301E_1		Application Type Instance Number Total No of Instances	8	drseft1	Enable DRS C12 processing into Daily tables. The process triggers again if the previous instance of DRSC301 fails. *$DRS_PROC/DRSC301 EFT x 8* *Where x is the instance number between 1 to 8*	One auto rerun for the same instance on failure. Subsequent failures on the same instance will require manual intervention
			DRSC301E_2				drseft2		
			DRSC301E_3				drseft3		

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			DRSC301E_4				drseft4		
			DRSC301E_5				drseft5		
			DRSC301E_6				drseft6		
			DRSC301E_7				drseft7		
			DRSC301E_8				drseft8		
			DRSC312E		Application Type	1	drseft	Summarises C12 monitor table records and if threshold exceeded writes an entrance to application log. *$DRS_PROC/DRSC312 EFT*	One auto re-run. Subsequent failures require manual intervention
DRS_EFT_MS_DAY	Daily	DRS_EFT_SOD	DRSC310DE_1	Every half an hour during the day until 17:01 Hrs	Run Type Application Type Instance Number Total No of Instances	8	drseft1	Enable Main Store to process old transactions *$DRS_PROC/DRSC310 DAY EFT x 8* *Where x is the instance number between 1 to 8*	Monitor to alert if still running at 17:45.
			DRSC310DE_2				drseft2		
			DRSC310DE_3				drseft3		
			DRSC310DE_4				drseft4		
			DRSC310DE_5				drseft5		
			DRSC310DE_6				drseft6		
			DRSC310DE_7				drseft7		

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			DRSC310DE_8				drseft8		
DRS_EFT_C2_P1_D	Mon-Sat 15:00	DRS_EFT_SOD	DRSC307E		Application Type	1	drseft	Extracts contents of C2 Out table into an XML file.	
			DRSC308E	DCSM_S_BULK__P1D. DCSM_S_BULK_P1	Application Type	1	drseft	Parses C2 status file and updates C2 Out table. (Requires C2 status file from DCS C2 Agent)	
DRS_EFT_PAUS_AGT	Daily 20:30		DRS_EFT_C12_PAUSE_AGT		Application Type	1	drseft	Signal EFT C12 agent to stop	
			DRS_EFT_C12_PAUSED	DRS_EFT_C12_PAUSE_AGT		1		Wait for C12 Agents to Complete	
			FIFTEEN_MIN_WAIT	DRS_EFT_C12_PAUSED		1		Allow C12 Parse instances to complete output table population by waiting for 15 minutes. This will allow the parser instances to process up to approximately 45000 transactions if present in the input table prior to the C2 Bulk file being produced. This should minimise reconcilliation report exceptions in scenarios where the network has been down for a period of time and the data centre systems then have to 'catch up'.	
DRS_EFT_C2_P2_D	Mon-Sat 20:30	DRS_EFT_SOD DRS_EFT_PAUS_AGT DRS_EFT_C2_P1_D	DRSC307E		Application Type	1	drseft	Extracts contents of C2 Out table into an XML file.	
			DRSC308E	DCSM_S_BULK_P2D. DCSM_S_BULK_P2	Application Type	1	drseft	Parses C2 status file and updates C2 Out table. (Requires C2 status file from DCS C2 Agent)	

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DRS_EFT_C2_P1_SU	Sunday 20:30	DRS_EFT_SOD DRS_EFT_PAUS_AGT	DRSC307E		Application Type	1	drseft	Extracts contents of C2 Out table into an XML file.	
			DRSC308E	DCSM_S_BULK_P1S.DCSM_S_BULK_P1	Application Type	1	drseft	Parses C2 status file and updates C2 Out table. (Requires C2 status file from DCS C2 Agent)	
DRS_EFT_SOB	Daily 20:30	DRS_EFT_ANALYZE TPSCAREP DRS_EFT_MS_DAY	DRSC353E		Application Type	1	drs	The Start of Overnight Batch indicates Completion of TPS TIP and APS client Host processing *$DRS_PROC/DRSC353 EFT*	
DRS_EFT_C4LD_1	Mon-Sat	TPSCAREP DRS_EFT_C2_P2_D DCSM_S_BULK_P2D	DRSC305E_C40_P1		Application Type & File Name	1	drseft	Load C40 file for PFG cycle 1 into input tables *$DRS_PROC/DRSC305 EFT <FILENAME>*	
			DRSC305E_S_P1	DRSC305E_C40_P1	Application Type	1	drseft	Load S file for PFG cycle 1	
			DRSC305E_C40_P2	DRSC305E_S_P1	Application Type	1	drseft	Load C40 file for PFG cycle 2	
			DRSC305E_S_P2	DRSC305E_C40_P2	Application Type	1	drseft	Load S file for PFG cycle 2	
			DCSM_EMIS.DRSC305E_C4D	DRSC305E_S_P2 & DCSM_EMIS.DCSM_C4D_BULK	Application Type	1	drseft	Load C4D file. This job is actually a part of DCSM_EMIS schedule which runs this job only on working days, i.e., Monday to Friday except bank holidays. But the job dependencies shown here have been implemented in the same way.	
			DRSC306E	DRSC305E_S_P1	Application Type	1	drseft	End Load of C4/S/D	

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								$DRS_PROC/DRSC306 EFT	
DRS_EFT_C4LD_2	Sun	TPSCAREP DRS_EFT_C2_P1_SUDCSM_S_BULK_P1S	DRSC305E_C40_P1		Application Type	1	drseft	Load C40 file for PFG cycle 1 into input tables *$DRS_PROC/DRSC305 EFT <FILENAME>*	
			DRSC305E_S_P1	DRSC305E_C40_P1	Application Type	1	drseft	Load S file for PFG cycle 1	
			DRSC306E	DRSC305E_C4D	Application Type	1	drseft	End Load of C4/S/D *$DRS_PROC/DRSC306 EFT*	
DRS_EFT_C4_PARSE	Daily	DRS_EFT_C4LD_1.DRSC305E_C40_P1, DRS_EFT_C4LD_2.DRSC305E_C40_P1	DRSC302E_1		Application Type Instance Number Total No of Instances	8	drseft1	After successful execution of at least one file loading this job triggers to parse data. The process triggers for failed parse data once. *$DRS_PROC/DRSC302 EFT x 8* *Where x is the instance number between 1 to 8*	One auto rerun for the same instance on failure. Subsequent failures on the same instance will require manual intervention
			DRSC302E_2				drseft2		
			DRSC302E_3				drseft3		
			DRSC302E_4				drseft4		
			DRSC302E_5				drseft5		
			DRSC302E_6				drseft6		
			DRSC302E_7				drseft7		
			DRSC302E_8				drseft8		

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DRS_EFT_C4_RCPTD		DRS_EFT_MS_DAY, DRS_EFT_C4_PARSE	DRSC370E_1			8	drseft1	Update of seconds component of Receipt Date in C4/D Daily and Exception tables with values from C2 Output Table. *$DRS_PROC/DRSC370 EFT x 8 EXCP* *Where x is the instance number between 1 to 8 and EXCP is used on one instance to handle exception tables*	One auto rerun for the same instance on failure. Subsequent failures on the same instance will require manual intervention
			DRSC370E_2				drseft2		
			DRSC370E_3				drseft3		
			DRSC370E_4				drseft4		
			DRSC370E_5				drseft5		
			DRSC370E_6				drseft6		
			DRSC370E_7				drseft7		
			DRSC370E_8				drseft8		
DRS_EFT_TPS_COPY	Daily	DRS_EFT_SOB	DRSC303E_1		Application Type Instance Number Total No of Instances	8	drseft1	DRS bulk copy of C112 from TPS *$DRS_PROC/DRSC303 EFT x 8* *Where x is the instance number between 1 to 8*	
			DRSC303E_2				drseft2		
			DRSC303E_3				drseft3		
			DRSC303E_4				drseft4		
			DRSC303E_5				drseft5		
			DRSC303E_6				drseft6		
			DRSC303E_7				drseft7		

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			DRSC303E_8				drseft8		
			DRSC303E_9	DRSC303E_1	Application Type Instance Number Total No of Instances	1	drseft1	DRS bulk copy of C112 from TPS of 65th partition *$DRS_PROC/DRSC303 EFT 65 1*	
DRS_EFT_MS_NIGHT	Daily	DRS_EFT_C4_RCPTD, DRS_EFT_TPS_COPY	DRSC310NE_1		Run Type Application Type Instance Number Total No of Instances	8	drseft1	DRS Main store Data processing, merge parts and set state. *$DRS_PROC/DRSC310 NIGHT EFT x 8* *Where x is the instance number between 1 to 8*	
			DRSC310NE_2				drseft2		
			DRSC310NE_3				drseft3		
			DRSC310NE_4				drseft4		
			DRSC310NE_5				drseft5		
			DRSC310NE_6				drseft6		
			DRSC310NE_7				drseft7		
			DRSC310NE_8				drseft8		
DRS_EFT_MS_EXPTN	Daily	DRS_EFT_MS_NIGHT	DRSC311E		Application Type	1	drseft	DRS Main exception storage from daily to main	

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								$DRS_PROC/DRSC311 EFT	
DRS_EFT_REP_101	Daily	DRS_EFT_MS_EXCPTN DRS_TPS_EXTRCT_D	DRSC322E		Application Type	1	drseft	DRS data extract Main Store to Result tables for NB101 report *$DRS_PROC/DRSC322 EFT*	
			DRSC324E	DRSC322E	Application Type	1	drseft	DRS file generation for NB101 report *$DRS_PROC/DRSC324 EFT*	
DRS_EFT_REP_102	Daily	DRS_EFT_MS_EXCPTN DRS_TPS_EXTRCT_D	DRSC320E		Application Type	1	drseft	DRS data extract Main Store to Result tables for NB102 report *$DRS_PROC/DRSC320 EFT*	
			DRSC323E_1	DRSC320E	Application Type Report Section Number EFT 1	1	drseft	DRS data extract Main Store to State Totals tables for NB102 report section 1 *$DRS_PROC/DRSC323 EFT 1*	
			DRSC323E_6	DRSC323E_1	Application Type Report Section Number EFT 6	1	drseft	DRS data extract Main Store to State Totals tables for NB102 report section 6 *$DRS_PROC/DRSC323 EFT 6*	
			DRSC323E_7	DRSC323E_6	Application Type Report Section Number EFT 7	1	drseft	DRS data extract Main Store to State Totals tables for NB102 report section 7 *$DRS_PROC/DRSC323 EFT 7*	
			DRSC323E_12	DRSC323E_7	Application Type Report Section	1	drseft	DRS data extract Main Store to State Totals tables for NB102 report section 12	

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					Number EFT 12				
			DRSC323E_2	DRSC323E_12	Application Type Report Section Number EFT 2	8	drseft1	DRS data extract Main Store to State Totals tables for NB102 report sections 2, 3, 4, 5, 8, 9, 10, and 11. *$DRS_PROC/DRSC323 EFT x* *Where the value of x is 2, 3, 4, 5, 8, 9, 10, 11*	
			DRSC323E_3	DRSC323E_12	EFT 3		drseft2		
			DRSC323E_4	DRSC323E_12	EFT 4		drseft3		
			DRSC323E_5	DRSC323E_12	EFT 5		drseft4		
			DRSC323E_8	DRSC323E_12	EFT 8		drseft5		
			DRSC323E_9	DRSC323E_12	EFT 9		drseft6		
			DRSC323E_10	DRSC323E_12	EFT 10		drseft7		
			DRSC323E_11	DRSC323_12	EFT 11		drseft8		
			DRSC325E	DRSC323E_2, DRSC323E_3, DRSC323E_4, DRSC323E_5,	Application Type	1	drseft	DRS file generation for NB102 report *$DRS_PROC/DRSC325 EFT*	

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				DRSC323E_8, DRSC323E_9, DRSC323E_10, DRSC323E_11					
DRS_EFT_ADMIN	Daily	DRS_ADMIN DRS_NWB_ADMIN	DRSC361E		Application Type	1	drs	DRS Archiving and Auditing *$DRS_PROC/DRSC361 EFT*	
			DRSC368E_3	DRSC361E	Application Type Object group list	1	drs	Uses the Oracle 'Analyze' function on object groups for database performance *$DRS_PROC/DRSC368 EFT MST MSI EXC STT STI*	
			DRSX362E	DRSC361E	Application Type	1	drs	DRS file purging – housekeeping *$DRS_SH/DRSX362.sh EFT*	
			DRS_EFT_AUDIT	DRSX362E		1		DRS DCP File Auditing	
DRS_EFT_TRN_ACK	Daily	DRS_EFT_ADMIN	DRSC367E		Application Type	1	drseft	File Control FTMS ACK reader *$DRS_PROC/DRSC367 EFT*	
DRS_EFT_EOD	Daily	DRS_EFT_TRN_ACK	DRSC351E		Application Type	1	drseft	End of Batch Process End of Day Process *$DRS_PROC/DRSC351 EFT*	

ASSUMPTIONS

1. All the DRS users point to the same HOME directory "/home/drs"
2. Valid Values of the Parameters will be

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- Run Type : DAY/NIGHT
- Application Type : EFT
- Instance Number : The sequence number of the instance which is one of the numbers from 1 – Max Number of Instances

Total Instances: Total Number of Instances that are run for a Job

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17 Appendix C – Tablespaces and Raw Volumes

Refer to [R14] for full details.

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18 Appendix D – DRS Tables

This section provides a list of tables used by DRS along with their purpose and partition key details.

18.1 Common Table

These tables are common between the Network Banking and Debit Card.

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Table Name	Partition Key	Brief Description
DRS_ARCHIVED_TABLES	-	Holds the parameters that define rules for archiving each table.
DRS_C4SD_FILE_REGISTER	-	Records loading and processing of NBE files received into DRS.
DRS_EXCEPTION_CODES	-	Contains all the possible exceptions the DRS system may encounter. If an exception is raised and does not appear in this table then it is known an unknown error.
DRS_FILES_TO_HOUSEKEEP	-	Holds parameters that define rules for housekeeping [purging] the DRS-Host owned data directories \ files.
DRS_OPERATIONAL_EXCEPTIONS	-	Stores details of errors that the system has encountered during processing (or during the time the system is operating). Errors are inserted into this table from individual modules.
DRS_ORACLE_ERROR_CODES	-	Stores all Oracle Error Codes that correspond to a data exception.
DRS_PROCESSES	-	List of all processes with descriptions used by the DRS System.
DRS_PROCESS_AUDIT	-	Table maintains process audit information for all DRS Host processes. An entry is made in it at the beginning and end of each Host process.
DRS_PROCESS_CONTROL	-	Table is used to allow process re-startability. An entry is made for new execution of a DRS process instance. In case such an entry exists for an instance for the processing day, a re-start condition is assumed. A valid Process end date indicates process completion. Some processes require multiple runs for the processing day and this is handled by incrementing the run number for run of the process.
DRS_REPORTS	-	Holds static data of all Reports defined for each application and destination.
DRS_REP_FILE_REGISTER	-	Details of each report produced are logged into this table. Also any links created are flagged for each report.
DRS_REP_LINES	-	Hold SQL queries called by various report programs and used to derive the results for various Report sections.
DRS_SQL_HINTS	-	Stores the SQL hints that may be used by DRS host/workstation processes to optimise the query performance. Storing the SQL Hint outside the code gives the facility of changing the hint without having to redeliver code.
DRS_STATE_VALIDATION		

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_RULES	-	Table to store DRS state validation rule ids and rule definitions.
DRS_SYSTEM_PARAMETERS	-	Stores all DRS System Parameters for each Application-Type.
DRS_TRANSACTION_STATES	-	Lookup table that stores the states a transaction can be set to.
DRS_TRANSACTION_TYPE_GROUPS	-	Lookup table that stores the Transaction-Type numbers contained within a transaction group.
RDDS_ACCOUNTING_WEEKS	-	DRS local copy of RDDS Accounting Weeks used for NB103 reporting.
RDDS_ROUTING_GATEWAYS	-	DRS local copy of RDDS Routing Gateways.
TMS_ACT_DRS	-	Agent Checkpoint table. This table is populated by the Horizon NBS Confirmation C12 Agent with a pointer to the last record from the Messagestore that has been successfully loaded into DRS.
TMS_ART_DRS	-	Table stores the run state of the Horizon NBS Confirmation C12 Agent. The status is used to communicate the run state of the Agent to other Agent instances.
TPS_OUTLETS_LAST_POLLED	-	Contains date of Last End of Day message received by TPS from each outlet by Group-Id. Copied daily from TPS after the TPS batch run
TPS_TIP_CA_RECEIPTS	-	Contains dates of when the last 13 Cash Account files have been receipted by TIP for each Outlet Copied daily from TPS after the TPS batch run.
DRS_ANALYZED_OBJECTS	-	To store the details of DRS database objects need to be ANALYZED to gather the statistics. The statistics is used by Oracle optimiser to improve the query performance.
DRS_MSU_TEMP_RESULT	-	To store the temporary results of the query executed by the DRS Workstation.

18.2 Network Banking Tables

The following tables are specific to the Network Banking.

Table Name	Partition Key	Brief Description

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DRS_C12_NWB_INP_EXCEPTIONS	-	Stores unparsable / corrupt / invalid NBE [C12] XML messages.
DRS_C4SD_NWB_INP_EXCEPTIONS	-	Stores unparsable / corrupt / invalid NBE [C4/S/D] XML messages.
DRS_REP_NWB_CAP_TOTALS	-	This table holds selective data from DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_MAIN_STORE_UPDATES, DRS_RX_NWB_C112_EXCP_MAIN and DRS_RX_NWB_C4_EXCP_MAIN. This set of data is then used to populate DRS_REP_NWB_RESULTS_NB103.
DRS_REP_NWB_RESULTS_NB101	-	This table holds data from a combination of DRS_RX_NWB_MAIN_STORE and DRS_RX_NWB_C4_EXCP_MAIN used to populate report line details for the NB101 Settlement Statement.
DRS_REP_NWB_RESULTS_NB102_1	-	This table holds selective data from DRS_REP_NWB_STATE_TOTALS required to populate report line details for the NB102 Section 1 output file.
DRS_REP_NWB_RESULTS_NB102_10	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN used to populate report line details for the NB102 Section 10 output file.
DRS_REP_NWB_RESULTS_NB102_11	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN required to populate report line details for the NB102 Section 11 output file.
DRS_REP_NWB_RESULTS_NB102_12	-	This table holds selective data from DRS_REP_NWB_STATE_TOTALS required to populate report line details for the NB102 Section 12 output file.
DRS_REP_NWB_RESULTS_NB102_2	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN required to populate report line details for the NB102 Section 2 output file.
DRS_REP_NWB_RESULTS_	-	This table holds selective data from a combination of

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NB102_3		DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN required to populate report line details for the NB102 Section 3 output file.
DRS_REP_NWB_RESULTS_NB102_4	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN required to populate report line details for the NB102 Section 4 output file.
DRS_REP_NWB_RESULTS_NB102_5	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN required to populate report line details for the NB102 Section 5 output file.
DRS_REP_NWB_RESULTS_NB102_6	-	This table holds selective data from DRS_REP_NWB_STATE_TOTALS required to populate report line details for the NB102 Section 6 output file.
DRS_REP_NWB_RESULTS_NB102_7	-	This table holds selective data from DRS_REP_NWB_STATE_TOTALS required to populate report line details for the NB102 Section 7 output file.
DRS_REP_NWB_RESULTS_NB102_8	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN required to populate report line details for the NB102 Section 8 output file.
DRS_REP_NWB_RESULTS_NB102_9	-	This table holds selective data from a combination of DRS_RX_NWB_MAIN_STORE, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN to populate report line details for the NB102 Section 9 output file.
DRS_REP_NWB_RESULTS_NB103	-	This table holds selective data from DRS_REP_NWB_CAP_TOTALS required to populate report line details for the NB103 Settled Transaction / Cash Account Reconciliation Statement output file.
DRS_REP_NWB_STATE_TOTALS	-	This table holds selective data from DRS_RX_NWB_MAIN_STORE,

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		DRS_RX_NWB_MAIN_STORE_UPDATES, DRS_RX_NWB_C112_EXCP_MAIN, DRS_RX_NWB_C12_EXCP_MAIN, DRS_RX_NWB_C4_EXCP_MAIN, DRS_RX_NWB_D_EXCP_MAIN and DRS_RX_NWB_S_EXCP_MAIN. This set of data is then used to populate NB102 results tables for sections 1, 6, 7 and 12.
DRS_RX_NWB_C112	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [C112] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_NWB_C112_EXCP.
DRS_RX_NWB_C112_EXCP	-	C112 Daily exceptions table populated by the DRS C112 load processes.
DRS_RX_NWB_C112_EXCP_MAIN	-	This table stores C112 exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_NWB_C12	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [C12] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_NWB_C12_EXCP.
DRS_RX_NWB_C12_EXCP	-	C12 Daily Exceptions table populated by the DRS C12 Parse processes.
DRS_RX_NWB_C12_EXCP_MAIN	-	This table stores C12 exceptions data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_NWB_C4	-	Table contains the parsed and domain-validated [C4] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_NWB_C4_EXCP.
DRS_RX_NWB_C4_EXCP	-	C4 Daily Exceptions table populated by the DRS C4 Parse processes.
DRS_RX_NWB_C4_EXCP_MAIN	-	This table stores C4 exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.

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DRS_RX_NWB_D	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [D] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_NWB_D_EXCP.
DRS_RX_NWB_D_EXCP	-	D Daily Exceptions table populated by the DRS D Parse processes.
DRS_RX_NWB_D_EXCP_MAIN	-	This table stores [D] exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_NWB_MAIN_STORE	RANGE (RECEIPT_DATE) (upto 91 partitions) Sub-partitioned on HASH (HORIZON_TRANSACTION_ID), 64 sub-partitions	Main DRS table that store all the transaction parts received along with the transaction status
DRS_RX_NWB_MAIN_STORE_UPDATES	-	Table stores a copy of all the changes done to the Main Store partitions other than the current day's partition.
DRS_RX_NWB_S	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [S] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_NWB_S_EXCP.
DRS_RX_NWB_S_EXCP	-	S Daily Exceptions table populated by the DRS S Parse processes
DRS_RX_NWB_S_EXCP_MAIN	-	This table stores [S] exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
FTMS_RX_NWB_C4SD	HASH (DRS_INSERT_SEQUENCE_NUMBER), 8 partitions	C4/S/D Input Store populated by the DRS File load process using transactions from the C4/S/D data file from the NBS Switch for Network Banking and Solve-PFG/MA for Debit Card.
TMS_RX_NWB_C12	HASH (DRS_INSERT_SEQUENCE_NUMBER), 8 partitions	C12 Input Store populated by the Agent instances via database object calls
DRS_TX_NWB_C2_AL_A	RANGE	NBX C2 table that stores all the C2 transaction for the financial institution AL_A

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	(PARTITION_LOGICAL_DATE) (Upto 5 Partitions) Sub-partitioned on HASH(SUBPARTITION_ID), 100 sub-partitions.	
DRS_TX_NWB_C2_AL_B	RANGE (PARTITION_LOGICAL_DATE) (Upto 5 Partitions) Sub-partitioned on HASH(SUBPARTITION_ID), 100 sub-partitions.	NBX C2 table that stores all the C2 transaction for the financial institution AL_B
DRS_TX_NWB_C2_CAPO_A	RANGE (PARTITION_LOGICAL_DATE) (Upto 5 Partitions) Sub-partitioned on HASH(SUBPARTITION_ID), 100 sub-partitions.	NBX C2 table that stores all the C2 transaction for the financial institution CAPO_A
DRS_TX_NWB_C2_CAPO_B	RANGE (PARTITION_LOGICAL_DATE) (Upto 5 Partitions) Sub-partitioned on HASH(SUBPARTITION_ID), 100 sub-partitions.	NBX C2 table that stores all the C2 transaction for the financial institution CAPO_B
DRS_TX_NWB_C2_LINK_A	RANGE (PARTITION_LOGICAL_DATE) (Upto 5 Partitions) Sub-partitioned on HASH(SUBPARTITION_ID), 100 sub-partitions.	NBX C2 table that stores all the C2 transaction for the financial institution LINK_A
DRS_TX_NWB_C2_LINK_B	RANGE (PARTITION_LOGICAL_DATE) (Upto 5 Partitions) Sub-partitioned on HASH(SUBPARTITION_ID),	NBX C2 table that stores all the C2 transaction for the financial institution LINK_B

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	100 sub-partitions.	

18.3 Debit Card Tables

The following tables are specific to the Debit Card.

Table Name	Partition Key	Brief Description
DRS_C12_EFT_INP_EXCEPTIONS	-	Stores unparsable / corrupt / invalid NBE [C12] XML messages.
DRS_C4SD_EFT_INP_EXCEPTIONS	-	Stores unparsable / corrupt / invalid NBE [C4/S/D] XML messages.
DRS_REP_EFT_CAP_TOTALS	-	This table holds selective data from DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_MAIN_STORE_UPDATES, DRS_RX_EFT_C112_EXCP_MAIN and DRS_RX_EFT_C4_EXCP_MAIN. This set of data is then used to populate DRS_REP_EFT_RESULTS_NB103.
DRS_REP_EFT_RESULTS_NB101	-	This table holds data from a combination of DRS_RX_EFT_MAIN_STORE and DRS_RX_EFT_C4_EXCP_MAIN used to populate report line details for the NB101 Settlement Statement.
DRS_REP_EFT_RESULTS_NB102_1	-	This table holds selective data from DRS_REP_EFT_STATE_TOTALS required to populate report line details for the NB102 Section 1 output file.
DRS_REP_EFT_RESULTS_NB102_10	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN used to populate report line details for the NB102 Section 10 output file.
DRS_REP_EFT_RESULTS_NB102_11	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN required to populate report line details for the NB102 Section 11 output file.

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DRS_REP_EFT_RESULTS_NB102_12	-	This table holds selective data from DRS_REP_EFT_STATE_TOTALS required to populate report line details for the NB102 Section 12 output file.
DRS_REP_EFT_RESULTS_NB102_2	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN required to populate report line details for the NB102 Section 2 output file.
DRS_REP_EFT_RESULTS_NB102_3	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN required to populate report line details for the NB102 Section 3 output file.
DRS_REP_EFT_RESULTS_NB102_4	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN required to populate report line details for the NB102 Section 4 output file.
DRS_REP_EFT_RESULTS_NB102_5	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN required to populate report line details for the NB102 Section 5 output file.
DRS_REP_EFT_RESULTS_NB102_6	-	This table holds selective data from DRS_REP_EFT_STATE_TOTALS required to populate report line details for the NB102 Section 6 output file.
DRS_REP_EFT_RESULTS_NB102_7	-	This table holds selective data from DRS_REP_EFT_STATE_TOTALS required to populate report line details for the NB102 Section 7 output file.
DRS_REP_EFT_RESULTS_NB102_8	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN required to populate report line details for the NB102 Section 8 output file.

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DRS_REP_EFT_RESULTS_NB102_9	-	This table holds selective data from a combination of DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN to populate report line details for the NB102 Section 9 output file.
DRS_REP_EFT_RESULTS_NB103	-	This table holds selective data from DRS_REP_EFT_CAP_TOTALS required to populate report line details for the NB103 Settled Transaction / Cash Account Reconciliation Statement output file.
DRS_REP_EFT_STATE_TOTALS	-	This table holds selective data from DRS_RX_EFT_MAIN_STORE, DRS_RX_EFT_MAIN_STORE_UPDATES, DRS_RX_EFT_C112_EXCP_MAIN, DRS_RX_EFT_C12_EXCP_MAIN, DRS_RX_EFT_C4_EXCP_MAIN, DRS_RX_EFT_D_EXCP_MAIN and DRS_RX_EFT_S_EXCP_MAIN. This set of data is then used to populate NB102 results tables for sections 1, 6, 7 and 12.
DRS_RX_EFT_C112	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [C112] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_EFT_C112_EXCP.
DRS_RX_EFT_C112_EXCP	-	C112 Daily exceptions table populated by the DRS C112 load processes.
DRS_RX_EFT_C112_EXCP_MAIN	-	This table stores C112 exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_EFT_C12	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [C12] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_EFT_C12_EXCP.
DRS_RX_EFT_C12_EXCP	-	C12 Daily Exceptions table populated by the DRS C12 Parse processes.
DRS_RX_EFT_C12_EXCP_MAIN	-	This table stores C12 exceptions data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the

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		Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_EFT_C4	-	Table contains the parsed and domain-validated [C4] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_EFT_C4_EXCP.
DRS_RX_EFT_C4_EXCP	-	C4 Daily Exceptions table populated by the DRS C4 Parse processes.
DRS_RX_EFT_C4_EXCP_MAIN	-	This table stores C4 exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_EFT_D	HASH (HORIZON_TRANSACTION_ID), 64 partitions	Table contains the parsed and domain-validated [D] records for a DRS processing Day. For duplicate and corrupt records, the non-key column values are 1 blank and a corresponding record is created in the table DRS_RX_EFT_D_EXCP.
DRS_RX_EFT_D_EXCP	-	D Daily Exceptions table populated by the DRS D Parse processes.
DRS_RX_EFT_D_EXCP_MAIN	-	This table stores [D] exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
DRS_RX_EFT_MAIN_STORE	RANGE (RECEIPT_DATE) (upto 91 partitions) Sub-partitioned on HASH (HORIZON_TRANSACTION_ID), 64 sub-partitions	Main DRS table that store all the transaction parts received along with the transaction status
DRS_RX_EFT_MAIN_STORE_UPDATES	-	Table stores a copy of all the changes done to the Main Store partitions other than the current day's partition.
DRS_RX_EFT_S	HASH	Table contains the parsed and domain-validated [S] records for a DRS

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	(HORIZON_TRANSACTION_ID), 64 partitions	processing Day. For duplicate and corrupt records, the non-key column values are l blank and a corresponding record is created in the table DRS_RX_EFT_S_EXCP.
DRS_RX_EFT_S_EXCP	-	S Daily Exceptions table populated by the DRS S Parse processes
DRS_RX_EFT_S_EXCP_MAIN	-	This table stores [S] exception data for up to 90 days. The table will be partitioned on the same partition key as the Main Store table, i.e., on the Receipt Date of the transaction. Data older than 90 days will be archived and then deleted from the table.
FTMS_RX_EFT_C4SD	HASH (DRS_INSERT_SEQUENCE_NUMBER), 8 partitions	C4/S/D Input Store populated by the DRS File load process using transactions from the C4/S/D data file from the NBS Switch for Network Banking and Solve-PFG/MA for Debit Card.
TMS_RX_EFT_C12	HASH (DRS_INSERT_SEQUENCE_NUMBER), 8 partitions	C12 Input Store populated by the Agent instances via database object calls
DRS_TX_EFT_C2	-	C2 Output tables to store the C2 XML and status of transmission information.

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19 Appendix E – DRS Exceptions

Priority listed against the exceptions in the following table stands for:

A - Business critical error. If ignored, would violate SLA with Post Office. The error should be fixed immediately / workaround be implemented to avoid violating the SLA deadline.

B - Error condition but of medium priority. May/will cause the DRS schedule to be held up and should be resolved at the earliest on the same/in the next business day after resolving exceptions of Priority A.
C - Low priority error conditions / warnings / information only messages. These should be looked onto after resolving all exceptions of A and B priorities.

X - Ignore. Exception is no longer in use or exception is not being generated.

Exception Code	Short Description	Full Description	Action	Program Name	Priority
DRS00000	Log no exception	For application use only. No error logged for this exception	Ignore exception		X
DRS00001	Application Exception	Exception with no application error code defined. Refer to exception details			B
DRS00002	Oracle Exception	Oracle exception for which there is no business reason to occur			B
DRS10101	Invalid input System Parameter	The Input System parameter was not found in table DRS_SYSTEM_PARAMETERS or has NULL value	Refer to exception details for parameter name and check contents of DRS_SYSTEM_PARAMETERS table	drscommon.pc	B

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DRS10102	Process entry is missing/invalid	No entry for the current process name found in table DRS_PROCESSES when executing function StartControl ()	Refer to exception details for parameter name and check contents of DRS_SYSTEM_PARAMETERS table	drscommon.pc	B
DRS10103	Process entry is missing/invalid	No entry for the current process name found in table DRS_PROCESSES when executing function StopControl ()	Refer to exception details for parameter name and check contents of DRS_SYSTEM_PARAMETERS table	drscommon.pc	B
DRS10104	Invalid input System Parameter	The System parameter named "DRS SYSTEM DATE" was not found in table DRS_SYSTEM_PARAMETERS	Refer to exception details for parameter name and check contents of DRS_SYSTEM_PARAMETERS table	drscommon.pc	B
DRS10105	Missing Data-Centr-Char	Environment variable DATA_CENTRE_CHAR is not set	Check the .vars file in the home directory of the UNIX user used to execute the process	drscommon.pc	B
DRS10106	Invalid Env Variable TZ	Environment variable TZ (Time Zone) is not set in the required format	Check/rectify the contents of environment variable TZ	drscommon.pc	B
DRS10107	Invalid Application Type parameter	Invalid value of Application Type input parameter in function call with the given Parameter Name, Instance Number and Partition	Check that the command-line parameters being passed to the calling module are being correctly processed and that the first one is being assigned to the Application Type global	drscommon.pc	B

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DRS10108	Invalid Application Type parameter	Invalid value of Application Type input parameter in function call with the given Parameter Name, Instance Number and Partition	Check that the command-line parameters being passed to the calling module are being correctly processed and that the first one is being assigned to the Application Type global	drscommon.pc	B
DRS10109	Invalid Application Type parameter	Invalid value of Application Type input parameter in function call with the given Parameter Name, Instance Number and Partition	Check that the command-line parameters being passed to the calling module are being correctly processed and that the first one is being assigned to the Application Type global	drscommon.pc	B
DRS10110	Invalid Application Type parameter	Application Type global variable has invalid value	Check that the command-line parameters being passed to the calling module are being correctly processed and that the first one is being assigned to the Application Type global	drscommon.pc	B
DRS10201	Invalid Application Type parameter	Invalid value of Application Type input parameter received in function call with given values of Parameter Name and Instance Number	Check if the application module is passing correct parameters to the function	pkg_drs_common_body.sql	B
DRS10202	Invalid input System Parameter	The Input System parameter was not found in table DRS_SYSTEM_PARAMETERS or has NULL value	Refer to exception details for parameter name and check contents of DRS_SYSTEM_PARAMETERS table	pkg_drs_common_body.sql	B
DRS10203	Invalid Application Type parameter	Invalid value of Application Type input parameter received in function call with given values of Process Name and Input Partition	Check if the application module is passing correct parameters to the function	pkg_drs_common_body.sql	B

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DRS10204	Process entry is missing/invalid	No entry for the current process name found in table DRS_PROCESSES for given value of Process Name	Refer to exception details for Process Name and check contents of DRS_SYSTEM_PARAMETERS table	pkg_drs_common_body.sql	B
DRS10205	Invalid Application Type parameter	Invalid value of Application Type input parameter received in function call with given values of Process Name and Input Partition	Check if the application module is passing correct parameters to the function	pkg_drs_common_body.sql	B
DRS10206	Process entry is missing/invalid	No entry for the current process name found in table DRS_PROCESSES for given value of Process Name	Refer to exception details for Process Name and check contents of DRS_SYSTEM_PARAMETERS table	pkg_drs_common_body.sql	B
DRS10207	Invalid input System Parameter	The System parameter named "DRS SYSTEM DATE" was not found in table DRS_SYSTEM_PARAMETERS	Refer to exception details for parameter name and check contents of DRS_SYSTEM_PARAMETERS table	pkg_drs_common_body.sql	B
DRS30101	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC301	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC301 <Application Type> <Instance Number> <Total Instances>	DRSC301.pc	B
DRS30102	Missing/Invalid Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC301	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC301 <Application Type> <Instance Number> <Total Instances>	DRSC301.pc	B

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DRS30103	Missing System parameter	No entry for parameter 'HORIZON C12 INPUT ALERT TIMEOUT' found in table DRS_SYSTEM_PARAMETERS	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC301.pc	B
DRS30104	Invalid Alert occurred	Unknown Alert with the given name has occurred while waiting for alerts with names Process-Alert-1..8 and End-of-day-Alert to occur	Check if the database trigger on table DRS_RX_C12 is raising correct alerts. Also check if the DRS End-of-Day processing is raising correct alerts	DRSC301.pc	B
DRS30105	Unparsable Exceptions occurred	The given number of exceptions related to input XML data which is unparsable has occurred	Check the contents of the C12 input exceptions table to manually decipher/reconcile data	DRSC301.pc	C
DRS30106	XML Parser Error	XML Parser initialisation has failed with given error	Check if sufficient amount of memory is available for the process. Also check if the Oracle XML parser for C has been correctly installed	DRSC301.pc	B
DRS30107	C12 Daily table Sequence Error	The count of number of occurences of Horizon-Txn-Id and Receipt-Date (3rd part of the primary key) has exceeded acceptable limit	Check for the reason of the duplicates in the table. Possible causes are that the [C12] input interface is not working correctly or program errors with DRSC301 and/or the confirmation agent processes	DRSC301.pc	B
DRS30108	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_C12	Check oracle error message for further information	DRSC301.pc	B
DRS30109	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into tables DRS_RX_C12 or DRS_RX_C12_EXCP	Check oracle error message for further information	DRSC301.pc	B

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DRS30110	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_C12_EXCP	Check oracle error message for further information	DRSC301.pc	B
DRS30111	Missing System parameter	No entry for parameter 'DRS PROCESSING DAY COMPLETE' found in table DRS_SYSTEM_PARAMETERS	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC301.pc	B
DRS30112	Missing DRS System Parameter	No entry for parameter 'C12 RAISE REPEATED KEY EXCEPTION' found in table DRS_SYSTEM_PARAMETERS for given value of Application Type	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC301.pc	B
DRS30113	Program Error	No record matching the given Input Sequence Number was found in the input buffer	Contact support with error details.	DRSC301.pc	B
DRS30114	Duplicate [C12] records found	Detected one or more [C12] messages as duplicate based on their Horizon-Transaction-Id and Receipt-Date/Time	Indicates possible Confirmation Agent restart after failure. Contact support with error details	DRSC301.pc	C
DRS30115	Incorrect C2 XML tag	The XML tag indicating the beginning of the given [C2] XML was not found in the [C12] record corresponding to the current Input Sequence Number	Verify the integrity of the [C2] XML record. If a tag is corrupt, check if the confirmation Agent is functioning correctly	DRSC301.pc	B
DRS30116	Incorrect C2 XML tag	The XML tag indicating the end of the given [C2] XML was not found in the [C12] record corresponding to the current Input Sequence Number	Verify the integrity of the [C2] XML record. If a tag is corrupt, check if the confirmation Agent is functioning correctly	DRSC301.pc	B

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DRS30117	Incorrect C2 Message Type	The value of XML tag that identifies the Message Type does not match the given expected value for record with current Input Sequence Number	Verify the integrity of the [C2] XML record. If a tag is corrupt, check if the confirmation Agent is functioning correctly	DRSC301.pc	B
DRS30118	Invalid System Parameter	No entry for parameter 'INVALID PK OPERATIONAL EXCEPTION LIMIT' found in table DRS_SYSTEM_PARAMETERS	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC301.pc	B
DRS30119	Undefined Key Value Error	Unable to determine the cause of Key Value error. Probable cause is a bug in DRSC301	Contact support with error details.	DRSC301.pc	B
DRS30120	No matching record found in Input	No record matching the given Input Sequence Number found in the input buffer	Probable cause is a bug in DRSC301. Contact Support with more details.	DRSC301.pc	C
DRS30130	Null/Corrupt Horizon Transaction Id	The [C12] transaction part corresponding to the given Insert Sequence Number has NULL/Corrupt value of Horizon Transaction Id	Check the XML message attached to the Operational Exception and contact MSU for further action	DRSC301.pc	C
DRS30131	Null/Corrupt Receipt Date	The [C12] transaction part corresponding to the given Insert Sequence Number has NULL/Corrupt value of Receipt Date/Time	Check the XML message attached to the Operational Exception and contact MSU for further action	DRSC301.pc	C
DRS30132	Receipt Date out of bounds	The [C12] transaction part corresponding to the given Insert Sequence Number has Receipt Date/Time outside the allowed date range values	Check the XML message attached to the Operational Exception and contact MSU for further action.	DRSC301.pc	C

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DRS30133	Exception Threshold Exceeded	The Exception threshold <INVALID PK OPERATIONAL EXCEPTION LIMIT> for reporting on corrupt key transactions as exceptions has exceeded	An unnaturally high number of records with corrupt Primary Key values indicate that system as a whole is not functioning normally. Check various system hardware/software components for failure and contact support	DRSC301.pc	A
DRS30134	Unable to PREPARE Insert SQL	Unable to Prepare Insert statement for table [%s]	Check oracle error message for further information	DRSC301.pc	B
DRS30135	Database function unsuccessful	Database function FN_START_NEW_BATCH call returned [%d], Check exceptions for [%s]	Check the Operational exception table for [%s]	DRSC301.pc	B
DRS30136	Database function unsuccessful	Database function FN_START_NEW_BATCH returned SQL code [%d]	Check oracle error message for further information	DRSC301.pc	B

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DRS30137	Database function unsuccessful	Database function FN_START_NEW_BATCH returned invalid Partition Keys [Partition Logical date=>%s][Subpartition id=>%d][Logical Subpartition id=>%d]	Check the Operational exception table for all DRSC301 Services.	DRSC301.pc	B
DRS30138	Database function unsuccessful	Database function FN_CONFIRM_PRIOR_TO_BATCH call returned [%d], Check exceptions for [%s]	Check the Operational exception table for [%s]	DRSC301.pc	B
DRS30139	Database function unsuccessful	Database function FN_CONFIRM_PRIOR_TO_BATCH returned SQL code [%d]	Check oracle error message for further information	DRSC301.pc	B
DRS30140	Unable to insert record	Error occurred whilst Inserting into DRS_TX_NWB_C2_EXCP table	Check oracle error message for further information	DRSC301.pc	B

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DRS30141	No routing gateways to monitor.	No routing gateways found in table DRS_TMON_ROUTING_GATEWAYS to monitor	Check the static data scripts been loaded correctly.	DRSC301.pc	D
DRS30142	Invalid System Parameter value	Invalid value [%d] found in DRS_SYSTEM_PARAMETERS for parameter [%s]	Check the System parameter specified in [%s] has a valid value set.	DRSC301.pc	B
DRS30143	NULL value in System Parameter	NULL value found in DRS_SYSTEM_PARAMETERS for parameter [%s]	Check the System parameter specified in [%s] has a Non-NULL value set.	DRSC301.pc	B
DRS30144	Unable to access table	Error occurred whilst accessing table DRS_TMON_ROUTING_GATEWAYS table	Check oracle error message for further information	DRSC301.pc	B

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DRS30145	Unable to (Re)open cursor	Error occurred whilst (Re)opening cursor dtrg_cur	Check oracle error message for further information	DRSC301.pc	B
DRS30146	Unable to fetch from table	Error whilst fetching from DRS_TMON_ROUTING_GATEWAYS table	Check oracle error message for further information	DRSC301.pc	B
DRS30147	Number of routing gateways exceeded.	More than [%d] routing gateways have been found in DRS_TMON_ROUTING_GATEWAYS table, only [%d] will be monitored, rest will be ignored.	This message is intended as an informational message only. No need to take any preventive actions. If the limit needs increasing the module have to be changed.	DRSC301.pc	D
DRS30148	System parameter not found	No record found in table DRS_SYSTEM_PARAMETERS for the parameter [%s]	Check the System parameter specified in [%s] exists in the table.	DRSC301.pc	B

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DRS30149	Unable to access System parameters table	Error whilst accessing table DRS_SYSTEM_PARAMETERS	Check oracle error message for further information	DRSC301.pc	B
DRS30150	Unable to PREPARE Dynamic SQL	Error whilst Preparing Dynamic SQL [%s]	Check the SQL specified in [%s] for any Syntax errors, if not, check the oracle error message for further information.	DRSC301.pc	B
DRS30151	Error deriving time period intervals	Error whilst deriving Time period intervals	Check oracle error message for further information	DRSC301.pc	B
DRS30152	Error fetching time period intervals	Error whilst fetching the time period intervals	Check oracle error message for further information	DRSC301.pc	B

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DRS30153	Error deriving Int. no. for Receipt time	Error whilst deriving the Interval number for Receipt time [%s], record ignored for monitoring	This message is intended as an informational message only. This is due to an invalid Receipt time. No need to take any action, this transaction will be captured by C12 exception.	DRSC301.pc	D
DRS30154	Unable to PREPARE UPDATE Dynamic SQL	Error whilst preparing UPDATE Dynamic SQL [%s]	Check the SQL specified in [%s] for any Syntax errors, if not, check the oracle error message for further information.	DRSC301.pc	B
DRS30155	Unable to PREPARE INSERT Dynamic SQL	Error whilst preparing INSERT Dynamic SQL [%s]	Check the SQL specified in [%s] for any Syntax errors, if not, check the oracle error message for further information.	DRSC301.pc	B
DRS30156	Error inserting into DRS_C12_MONITOR	Error whilst Insering into DRS_C12_MONITOR table.	Check oracle error message for further information	DRSC301.pc	B

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DRS30157	Error updating DRS_C12_MONITOR	Error whilst updating DRS_C12_MONITOR table.	Check oracle error message for further information	DRSC301.pc	B
DRS30158	Error fetching START NEW BATCH RETRIES	Error whilst fetching START NEW BATCH RETRIES from drs_system_parameters.	Check oracle error message for further information	DRSC301.pc	B
DRS30159	Error fetching START NEW BATCH SLEEP	Error whilst fetching START NEW BATCH SLEEP from drs_system_parameters.	Check oracle error message for further information	DRSC301.pc	B
DRS30160	Error releasing old partitions	Error whilst releasing old partitions pkg_drs_batch_mgt.fn_release_all_mine	Check oracle error message for further information	DRSC301.pc	B

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DRS30161	Error releasing old partitions	Error whilst releasing old partitions pkg_drs_batch_mgt.fn_release_all_mine	Check oracle error message for further information	DRSC301.pc	B

DRS30201	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC302	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC302 <Application Type> <Instance Number> <Total Instances>	DRSC302.pc	B
DRS30202	Missing/Invalid Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC302	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC302 <Application Type> <Instance Number> <Total Instances>	DRSC302.pc	B
DRS30203	Missing System parameter	No entry for parameter 'C4SD PAUSE WAIT LIMIT' found in table DRS_SYSTEM_PARAMETERS	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC302.pc	B
DRS30204	Missing System parameter	No entry for parameter 'C4SD FILE LOAD COMPLETE' found in table DRS_SYSTEM_PARAMETERS	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC302.pc	B
DRS30205	Unparsable Exceptions occurred	The given number of exceptions related to input XML data which is unparsable has occurred	Check the contents of the C4SD input exceptions table to manually decipher/reconcile data	DRSC302.pc	C

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DRS30206	XML Parser Error	XML Parser initialisation has failed with given error	Check if sufficient amount of memory is available for the process. Also check if the Oracle XML parser for C has been correctly installed	DRSC302.pc	B
DRS30207	Unknown Error during inserts	A non-data related Oracle error has occurred during bulk inserts into table DRS_RX_C4	Check oracle error message for further information	DRSC302.pc	B
DRS30208	Unknown Error during inserts	A non-data related Oracle error has occurred during bulk inserts into table DRS_RX_D	Check oracle error message for further information	DRSC302.pc	B
DRS30209	Unknown Error during inserts	A non-data related Oracle error has occurred during bulk inserts into table DRS_RX_S	Check oracle error message for further information	DRSC302.pc	B
DRS30210	Invalid Input Message Type	Invalid value of Message Type passed to the function that handles Data related exceptions	Check contents of the FTMS_RX_C4SD input table to see if one or more XML messages are of invalid message type	DRSC302.pc	B
DRS30211	Sequence reached Max Value	The Horizon Transaction Id - Receipt Date Sequence has reached its maximum allowed value	Confirm correct execution of the C4SD Loader process. Check for valid data in the FTMS_RX_C4SD table	DRSC302.pc	B
DRS30212	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into tables DRS_RX_C4 or DRS_RX_C4_EXCP	Check oracle error message for further information	DRSC302.pc	B
DRS30213	Sequence reached Max Value	The Horizon Transaction Id - Receipt Date Sequence has reached its maximum allowed value	Confirm correct execution of the C4SD Loader process. Check for valid data in the FTMS_RX_C4SD table	DRSC302.pc	B

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DRS30214	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into tables DRS_RX_D or DRS_RX_D_EXCP	Check oracle error message for further information	DRSC302.pc	B
DRS30215	Sequence reached Max Value	The Horizon Transaction Id - Receipt Date Sequence has reached its maximum allowed value	Confirm correct execution of the C4SD Loader process. Check for valid data in the FTMS_RX_C4SD table	DRSC302.pc	B
DRS30216	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into tables DRS_RX_C4 or DRS_RX_C4_EXCP	Check oracle error message for further information	DRSC302.pc	B
DRS30217	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_C4_EXCP	Check oracle error message for further information	DRSC302.pc	B
DRS30218	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_D_EXCP	Check oracle error message for further information	DRSC302.pc	B
DRS30219	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_S_EXCP	Check oracle error message for further information	DRSC302.pc	B
DRS30220	Invalid Input Message Type	Invalid value of Message Type returned by the function that parses the C4SD XML input	Check contents of the FTMS_RX_C4SD input table to see if one or more XML messages are of invalid message type	DRSC302.pc	B
DRS30401	Invalid input Application Type	The input Application Type parameter value is invalid	Check if the C12 Confirmation Agent is passing correct value of input Application Type	pkg_c12_agent_data_body.sql	B
DRS30402	Invalid input Application Type	The input Application Type parameter value is invalid	Check if the C12 Confirmation Agent is passing correct value of input Application Type	pkg_c12_agent_data_body.sql	B

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DRS30403	Severe Oracle Error detected	Severe Oracle Error detected in PKG_C12_AGENT_DATA. Initialisation has failed with one/more errors	One or more errors have occurred in earlier calls to the interface or during initialisation which prevent the processing from proceeding successfully	pkg_c12_agent_data_body.sql	B
DRS30501	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC305	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC305 <Application Type> <Input C4SD Filename incl Path>	DRSC305.pc	B
DRS30502	Missing/Invalid Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC305	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC305 <Application Type> <Input C4SD Filename incl Path>	DRSC305.pc	B
DRS30503	Environment Variable is invalid	The environment variable <ApplicationType>_NBE_INPUT which points to the location of the C4/S/D input files is not set or has invalid value	Check whether the Rig has the correct DRS build. Also check the .vars file for correct value of environment variable <ApplicationType>_NBE_INPUT and confirm if the .vars file is being executed for the Unix user	DRSC305.pc	B
DRS30504	Error during File-open	Error occurred while opening the input file segment with given name (incl Path)	Check for the existence of the file with correct filename and path. Also check for correct read privileges on the file	DRSC305.pc	B
DRS30505	Error during File close	Error occurred while closing the currently open file segment	Check if the file has been modified while it was being read from by DRSC305. Also check if the privileges on the file have been altered in any way	DRSC305.pc	B

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DRS30506	Incorrect File Header Record	A header record, which wasn't the first record of the file, was detected in the Input C4/S/D file	Check if the input File contents are valid	DRSC305.pc	D
DRS30507	Incorrect File Trailer Record	File trailer record, which wasn't the last record of the file, was detected in the input C4/S/D file	Check if the input File contents are valid	DRSC305.pc	D
DRS30508	Trailer Record count mismatch	The record count in the C4/S/D File Segment Trailer does not match with the count of records processed	Check if the input File contents are valid	DRSC305.pc	C
DRS30509	Invalid File Segment Header	Invalid value of File Segment Header Record-type found in the input File Segment	Check if the input File contents are valid	DRSC305.pc	D
DRS30510	Invalid File Segment Header	The File Segment Header Record does not have the expected number of elements	Check if the input File contents are valid	DRSC305.pc	D
DRS30511	Invalid File Segment Trailer	Invalid value of File Segment Trailer Record-type found in the input File Segment	Check if the input File contents are valid	DRSC305.pc	D
DRS30512	Invalid File Segment Trailer	The File Segment Trailer Record does not have the expected number of elements	Check if the input File contents are valid	DRSC305.pc	D
DRS30513	Input File Segment being reprocessed	The Input File Segment is being reprocessed	Check if the Maestro scripts are re-processing the file or if the Control and/or Data Files are being re-transmitted by NBE	DRSC305.pc	C
DRS30514	Program/Rig Error	Function StartControl () returned a value of 0 when a file entry could be made in the C4SD File Register	Contact technical support for more information	DRSC305.pc	B

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DRS30515	Proram/Rig Error	No record found in the C4SD File Register for given input File Segment and Application Type	Most likely cause is that the entry for DRSC305 in DRS_PROCESSES does not have the Multiple-Runs-in-single-day flag set. Contact technical support for more information	DRSC305.pc	B
DRS30516	Input File Segment being reprocessed	The Input File Segment is being reprocessed	Check if the Maestro scripts are re-processing the file or if the Control and/or Data Files are being re-transmitted by NBE	DRSC305.pc	C
DRS30517	Proram/Rig Error	Function StartControl () returned a value of 0 when a file entry could be made in the C4SD File Register	Most likely cause is that the entry for DRSC305 in DRS_PROCESSES does not have the Multiple-Runs-in-single-day flag set. Contact technical support for more information	DRSC305.pc	B
DRS30518	Unable to rename File Segment	Cannot file a '.' separator in the input File Segment Name hence cannot rename the file to change its extension	Refer to the error message for more details before deciding on action	DRSC305.pc	C
DRS30519	Unable to rename File Segment	The File rename operation to change theFile Segment extension has failed with error	Refer to the error message for more details before deciding on action. Probable causes would be user privileges on the File or special characters in the File name	DRSC305.pc	C
DRS30520	Invalid File Record	The first record of the C4/S/D File Segment is not a header record	Check if the input File contents are valid	DRSC305.pc	D
DRS30521	No File Trailer Record	No File Segment Trailer record found as the last record of the input C4/S/D file	Check if the input File contents are valid	DRSC305.pc	D

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DRS30601	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC306	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC306 <Application Type>	DRSC306.pc	B
DRS30602	Invalid/Null Parameter Value	Invalid/Null value fetched for system parameter 'C4SD FILE LOAD COMPLETE'	Check contents of table DRS_SYSTEM_PARAMETERS for a valid character value for 'C4SD FILE LOAD COMPLETE'	DRSC306.pc	B
DRS30701	Incorrect no of Command-line parameters	Incorrect number of command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC307 <Application Type> <MaestroSequenceNumber>	DRSC307.pc	B
DRS30702	Invalid Command line parameter	Invalid command-line parameter	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC307 <Application Type> <MaestroSequenceNumber>	DRSC307.pc	B
DRS30703	Environment variable is not set	Environment variable is not set	Set the Environment variable with correct value.	DRSC307.pc	B
DRS30704	Failed to access directory	Failed to access directory set by EFT_C2_OUTPUT	Change the access permissions for the directory	DRSC307.pc	B
DRS30705	DRS SYSTEM DATE not set	DRS SYSTEM DATE not set in DRS_SYSTEM_PARAMETERS table	Check table DRS_SYSTEM_PARAMETERS for DRS SYSTEM DATE	DRSC307.pc	B
DRS30706	File already exists	Output File .TRN already exists		DRSC307.pc	B
DRS30707	Failed to open File	Failed to open .LCK File	Refer to the Exception Error message for further details	DRSC307.pc	B

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DRS30708	Failed to write Header	Failed to write Header record to .LCK File	Refer to the Exception Error message for further details	DRSC307.pc	B
DRS30709	Update of C2 XML records failed	Update of Host Array for C2 XML records failed	Check oracle error message for further information	DRSC307.pc	B
DRS30710	Failed to write Body record	Failed to write Body record to .LCK File	Refer to the Exception Error message for further details	DRSC307.pc	B
DRS30711	Failed to write Trailer	Failed to write Trailer record to .LCK File	Refer to the Exception Error message for further details	DRSC307.pc	B
DRS30712	Failed to close File	Failed to close .LCK File	Refer to the Exception Error message for further details	DRSC307.pc	B
DRS30713	Failed to rename file	Failed to rename .LCK file to .TRN file	Refer to the Exception Error message for further details	DRSC307.pc	B
DRS30801	Incorrect no of Command-line parameters	Incorrect number of command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC307 <Application Type> <MaestroSequenceNumber>	DRSC308.pc	B
DRS30802	Invalid Command line parameter	Invalid command-line parameter	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC307 <Application Type> <MaestroSequenceNumber>	DRSC308.pc	B
DRS30803	Environment variable is not set	Environment variable is not set	Set the Environment variable with correct value.	DRSC308.pc	B
DRS30804	Failed to access directory	Failed to access directory set by EFT_C2_INPUT	Change the access permissions for the directory	DRSC308.pc	B
DRS30805	DRS SYSTEM DATE not set	DRS SYSTEM DATE not set in DRS_SYSTEM_PARAMETERS table	Check table DRS_SYSTEM_PARAMETERS for DRS SYSTEM DATE	DRSC308.pc	B

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DRS30806	Invalid File Name	Invalid File Name <InputFileName>		DRSC308.pc	B
DRS30807	Failed to open File	Failed to open <InputFileName> File	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30808	File already processed	File <InputFileName> already processed	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30809	Invalid Header Record	Invalid Header Record in Input File	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30810	Header record missing	Header record missing in Input File	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30811	Invalid Body Record	Invalid Body Record in Input File	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30812	Error Threshold Reached	Number of Invalid Body Record Count has increased the error threshold	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30813	Invalid Body Record	Invalid Body Record in Input File for Insert Sequence Number <InsSeqNo>	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30814	Body Record missing	Body Record Missing in Input file	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30815	Failed to update records	Failed to update C2 XML records	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30816	Trailer record missing	Invalid Trailer Record in Input File / Trailer Record missing in Input File	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30817	Invalid Trailer Record	Invalid Trailer Record in Input File / Trailer Record missing in Input File	Refer to the Exception Error message for further details	DRSC308.pc	B
DRS30818	Failed to rename file	Failed to rename .LCK file to .TRN file	Refer to the Exception Error message for further details	DRSC308.pc	B

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DRS31001	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC310	Usage: DRSC310 <Run Type> <Application Type> <Instance Number> <Total Instances>	DRSC310.pc	B
DRS31002	Incorrect Command-line parameters	Incorrect value/number of the RunType command-line parameter has been supplied to the module DRSC310	Invalid Run Type passed on the command-line. Only 'DAY' or 'NIGHT' is allowed.	DRSC310.pc	B
DRS31003	Incorrect Command-line parameters	Missing or invalid command-line parameters have been supplied to the module DRSC310	Usage: DRSC310 <Run Type> <Application Type> <Instance Number> <Total Instances>	DRSC310.pc	B
DRS31005	State lookup buffer overflow	Fatal Error. More than 256 elements required in State Lookup Buffer. The buffer could not be populated successfully.	Increase the state lookup buffer size in the program. Contact 4th line support.	DRSC310.pc	B
DRS31006	Match not found in DRS States table	No match found in State Lookup Buffer for the Current State and Transaction Part Arrived.	Check the contents of DRS Transaction States table. Contact support with error details.	DRSC310.pc	B
DRS31007	No room to store the next trans state	All state columns for the transaction have been occupied. Could not store the next state of the transaction into Main Store table.	Check the contents of the transaction present in the Main Store table. Contact support with error details.	DRSC310.pc	B
DRS31008	State rules lookup buffer overflow	Fatal Error. More than 128 elements required in State Rules Lookup Buffer. The buffer could not be populated successfully.	Increase the state rules lookup buffer size in the program. Contact support with error details.	DRSC310.pc	B
DRS31009	Missing state validation rule id	Rule Id was not found in DRS_STATE_VALIDATION_RULES table	Check the contents of DRS_STATE_VALIDATION_RULES table. Contact support with error details.	DRSC310.pc	B

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DRS31010	Main Store buffer overflow	Can not initialise a new transaction record in Main Store Buffer. Maximum count has been reached.	Contact support with error details.	DRSC310.pc	B
DRS31011	Duplicate C12 transaction part not found	Duplicate flag has been found set by the daily input processing where there is no existing transaction part for the matching Primary Key present in the Main Store table.	Check the contents of the DRS Main Store and C12 Daily Input tables. Contact support with error details.	DRSC310.pc	B
DRS31012	Duplicate C4 transaction part not found	Duplicate flag has been found set by the daily input processing where there is no existing transaction part for the matching Primary Key present in the Main Store table.	Check the contents of the DRS Main Store and C4 Daily Input tables. Contact support with error details.	DRSC310.pc	B
DRS31013	Duplicate C112 trans part not found	Duplicate flag has been found set by the daily input processing where there is no existing transaction part for the matching Primary Key present in the Main Store table.	Check the contents of the DRS Main Store and C112 Daily Input tables. Contact support with error details.	DRSC310.pc	B
DRS31014	Duplicate D trans part not found	Duplicate flag has been found set by the daily input processing where there is no existing transaction part for the matching Primary Key present in the Main Store table.	Check the contents of the DRS Main Store and "D" Daily Input tables. Contact support with error details.	DRSC310.pc	B
DRS31015	Duplicate S trans part not found	Duplicate flag has been found set by the daily input processing where there is no existing transaction part for the matching Primary Key present in the Main Store table.	Check the contents of the DRS Main Store and "S" Daily Input tables. Contact support with error details.	DRSC310.pc	B

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DRS31016	Insert into Main Store Update failed	Could not insert a record into DRS Main Store Updates table.	Check the contents of DRS Main Store Updates table. Contact support with error details.	DRSC310.pc	B
DRS31017	Missing DRS System Parameter	No record found in table DRS_SYSTEM_PARAMETERS for the parameter named 'PARTITION RECEIPT DATE'	Check the contents of the table DRS_SYSTEM_PARAMETERS. Contact support with error details.	DRSC310.pc	B
DRS31018	State validation rules has changed	Fatal Error. One or more validation rules have changed in DRS_STATE_VALIDATION_RULES table.	Check the definition of state validation rules in the database and the program and update program accordingly. Contact support with error details.	DRSC310.pc	B
DRS31019	Loss of State in Main Store table.	State information has been lost when updating state to F99 via the DRS Workstation.	Check the DRS_Operational_Exceptions table for lost information. Contact support with error details.	Drs Workstation	B
DRS31101	Incorrect number of parameters	Incorrect number of command-line input parameters have been supplied to the module	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC311 <Application Type>	DRSC311.pc	B
DRS31102	Single insert failed	Single Insert into DRS_RX_C12_EXCP_MAIN has failed	Check ORACLE error message for further information	DRSC311.pc	B
DRS31103	Exception unknown	The exception to be copied is of unknown type	Check ORACLE error message for further information	DRSC311.pc	B
DRS31104	Read current state has failed	Unable to process the current state of the transaction	Check ORACLE error message for further information	DRSC311.pc	B
DRS31105	Too many elements in state lookup buffer	too many elements in the state lookup buffer so the buffer could not be populated successfully	Check total state records in DRS_TRANSACTION_STATES	DRSC311.pc	B

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DRS31106	no match in lookup buffer	Unable to find matching primary keys in the main store for the duplicate exception in the daily table.	Check data in DRS_RX_MAIN_STORE	DRSC311.pc	B
DRS31107	Single insert failed	Single Insert into DRS_RX_C4_EXCP_MAIN has failed	Check ORACLE error message for further information	DRSC311.pc	B
DRS31108	Single insert failed	Single Insert into DRS_RX_D_EXCP_MAIN has failed	Check ORACLE error message for further information	DRSC311.pc	B
DRS31109	Single insert failed	Single Insert into DRS_RX_S_EXCP_MAIN has failed	Check ORACLE error message for further information	DRSC311.pc	B
DRS31110	Single insert failed	Single Insert into DRS_RX_C112_EXCP_MAIN has failed	Check ORACLE error message for further information	DRSC311.pc	B
DRS31111	Data Error	Unable to copy a transaction due to a data error.	Transaction may not exist in main store. Check log to see what field failed.	DRSC311.pc	B
DRS32001	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC320	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC320 <Application Type>	DRSC320.pc	B
DRS32002	Missing/Invalid Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC320	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC320 <Application Type>	DRSC320.pc	B
DRS32201	Incorrect Command-line parameters	Missing/Incorrect command line input parameters have been supplied to the module DRSC322	Check the Maestro scripts to see if the call being made to the module is of the form DRSC322 <Application Type>	DRSC322.pc	B
DRS32202	Missing/Invalid Command-line parameters	The input parameter <Application Type> value is NULL, specify a valid value.	Check the Maestro scripts to see if the call being made has a valid Application Type.	DRSC322.pc	B

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DRS32203	No report line query found	No report line query found for report NB101, check DRS_REP_LINES table	Check table DRS_REP_LINES for appropriate query	DRSC322.pc	B
DRS32204	Failed to open cursor C1	Failed to open cursor C1, check ORACLE error code	Check ORACLE error message for further information	DRSC322.pc	B
DRS32205	Insert into NB101 Results table failed	Could not insert a record into DRS NB101 Results table.	Check oracle error message for further information	DRSC322.pc	B
DRS32206	PARTITION RECEIPT DATE' Not found.	No record found in DRS_SYSTEM_PARAMETERS table for 'PARTITION RECEIPT DATE'.	Check table DRS_SYSTEM_PARAMETERS for the appropriate parameter	DRSC322.pc	B
DRS32207	PARTITION RECEIPT DATE' is NULL	System Parameter 'PARTITION RECEIPT DATE' is NULL	Check table DRS_SYSTEM_PARAMETERS for the appropriate parameter	DRSC322.pc	B
DRS32301	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC323	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC323 <Application Type>	DRSC323.pc	B
DRS32302	Missing/Invalid Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC323	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC323 <Application Type>	DRSC323.pc	B
DRS32303	No report line query found for report	No report line query found for report, check DRS_REP_LINES table	Check table DRS_REP_LINES for appropriate query	DRSC323.pc	B
DRS32304	Failed to open cursor CUR_DRS_REP_LINES	Failed to open cursor CUR_DRS_REP_LINES, check ORACLE error code	Check ORACLE error message for further information	DRSC323.pc	B
DRS32401	Incorrect Command-line parameters	Incorrect number of command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC324 [ApplicationType]	DRSC324.pc	B

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DRS32402	Missing/Invalid command-line parameters	Missing/Invalid command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC324 [ApplicationType]	DRSC324.pc	B
DRS32403	Environment variable is not set	Environment variable is not set	Check the environment variable $NWB_MSU_OUTPUT or $_NWB_OUTPUT or $NWB_AUDIT_OUTPUT or $NWB_TIP_OUTPUT	DRSC324.pc	B
DRS32404	Opening file failed with error	Opening report file failed with error	Check if file already exists with restricted permissions or if direcctory has restricted permissions	DRSC324.pc	B
DRS32405	Closing file failed with error	Closing report file failed with error	Check if file exists in $NWB_MSU_OUTPUT or $_MSU_OUTPUT	DRSC324.pc	B
DRS32406	Writing Header error	Header being printed is too big	Increase header size if necessary	DRSC324.pc	B
DRS32407	Error Printing 1st column headings	Error in printing first column headings row	Check column heading data	DRSC324.pc	B
DRS32408	Error Printing 2nd column headings	Error in printing second column headings row	Check column heading data	DRSC324.pc	B
DRS32409	Error Printing 1st column headings	Error in printing last TOTAL row	Check column heading data	DRSC324.pc	B
DRS32410	Error formatting record outputs	Error printing data from drs_rep_file register to the output file	Check data in drs_rep_results_nb101	DRSC324.pc	B
DRS32411	Error renaming .LCK file to .TXT file	Error renaming .LCK file to .TXT file in $NWB_MSU_OUTPUT	Check permissions on .LCK files in $NWB_MSU_OUTPUT	DRSC324.pc	B
DRS32412	Error whilst removing file	Error whilst removing file <TxtFile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC324.pc	C

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DRS32413	Unable to link file TIP/AUDIT directory	Unable to link file from $NWB_MSU_OUTPUT to $NWB_TIP_OUTPUT or $NWB_AUDIT_OUTPUT directory	Delete file from $NWB_TIP_OUTPUT and/or $NWB_AUDIT_OUTPUT. Check permissions on directory	DRSC324.pc	B
DRS32501	Incorrect Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC325	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC325 <Application Type>	DRSC325.pc	B
DRS32502	Missing/Invalid Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC325	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC325 <Application Type>	DRSC325.pc	B
DRS32503	Environment variable is not set	Environment variable is not set	Check the environment variable $NWB_MSU_OUTPUT or $_NWB_OUTPUT or $NWB_AUDIT_OUTPUT or $NWB_TIP_OUTPUT	DRSC325.pc	B
DRS32504	Writing Header error	Header being printed is too big	Increase header size if necessary	DRSC325.pc	B
DRS32505	Opening file failed with error	Opening report file failed with error	Check if file already exists with restricted permissions or if direcctory has restricted permissions	DRSC325.pc	B
DRS32506	Closing file failed with error	Closing report file failed with error	Check if file exists in $NWB_MSU_OUTPUT or $_MSU_OUTPUT	DRSC325.pc	B
DRS32507	Error Printing 1st column headings	Error in printing first column headings row	Check column heading data	DRSC325.pc	C
DRS32508	Error Printing 2nd column headings	Error in printing second column headings row	Check column heading data	DRSC325.pc	C

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DRS32509	Error formatting record outputs	Error printing data from drs_rep_file register to the output file	Check data in drs_rep_results_nb102_x	DRSC325.pc	C
DRS32510	Error renaming .LCK file to .TXT file	Error renaming .LCK file to .TXT file in $NWB_MSU_OUTPUT	Check permissions on .LCK files in $NWB_MSU_OUTPUT	DRSC325.pc	B
DRS32511	Error whilst removing file	Error whilst removing file <TxtFile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC325.pc	C
DRS32512	Unable to link file TIP/AUDIT directory	Unable to link file from $NWB_MSU_OUTPUT to $NWB_TIP_OUTPUT or $NWB_AUDIT_OUTPUT directory	Delete file from $NWB_TIP_OUTPUT and/or $NWB_AUDIT_OUTPUT. Check permissions on directory	DRSC325.pc	B
DRS32801	Incorrect Command-line parameters	Incorrect number of command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC328 [ApplicationType]	DRSC328.pc	B
DRS32802	Missing/Invalid command-line parameters	Missing/Invalid command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC328 [ApplicationType]	DRSC328.pc	B
DRS32803	Environment variable is not set	Environment variable is not set	Check the environment variable $NWB_MSU_OUTPUT or $_NWB_OUTPUT or $NWB_AUDIT_OUTPUT or $NWB_TIP_OUTPUT	DRSC328.pc	B
DRS32804	Opening file failed with error	Opening report file failed with error	Check if file already exists with restricted permissions or if direcctory has restricted permissions	DRSC328.pc	B
DRS32805	Closing file failed with error	Closing report file failed with error	Check if file exists in $NWB_MSU_OUTPUT or $_MSU_OUTPUT	DRSC328.pc	B

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DRS32806	Writing Header error	Header size being printed is too big	Increase header size if necessary	DRSC328.pc	C
DRS32807	Error Printing 1st column headings	Error in printing first column headings row	Check column heading data	DRSC328.pc	C
DRS32808	Error Printing 2nd column headings	Error in printing second column headings row	Check column heading data	DRSC328.pc	C
DRS32809	Error formatting record outputs	Error printing data from drs_rep_file register to the output file	Check data in drs_rep_file_register	DRSC328.pc	B
DRS32810	Invalid/No row selected in drs_rep_lines	Invalid/Null SQL found in DRS_REP_LINES for report = NB000 and (Application-Type = x Or Application-Type = NULL)	Check entry in drs_rep_lines for report_number = 'NB000'	DRSC328.pc	B
DRS32811	Error renaming .LCK file to .TXT file	Error renaming .LCK file to .TXT file in $NWB_MSU_OUTPUT	Check permissions on .LCK files in $NWB_MSU_OUTPUT	DRSC328.pc	B
DRS32812	Error whilst removing file	Error whilst removing file <TxtFile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC328.pc	C
DRS32813	Unable to link file TIP/AUDIT directory	Unable to link file from $NWB_MSU_OUTPUT to $NWB_TIP_OUTPUT or $NWB_AUDIT_OUTPUT directory	Delete file from $NWB_TIP_OUTPUT and/or $NWB_AUDIT_OUTPUT. Check permissions on directory	DRSC328.pc	B
DRS35001	Incorrect no of Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC350	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC350 <Application Type>	DRSC350.pc	B
DRS35002	Invalid Command line parameter	Invalid command-line input parameters have been supplied to the module DRSC350	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC350 <Application Type>	DRSC350.pc	B
DRS35003	Failed to retrieve Tablespace Name	Could not retrieve tablespace Name for <TableName>	Check ORACLE error message for further information	DRSC350.pc	B

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DRS35004	Parameter not set	Parameter MAXIMUM NUMBER OF PARTITIONS not set for <ApplicationType>	Check ORACLE error message for further information	DRSC350.pc	B
DRS35005	Parameter not set	Parameter PARTITION RECEIPT DATE not set for <ApplicationType>	Check ORACLE error message for further information	DRSC350.pc	B
DRS35006	Failed to drop Partition	Failed to drop Partition <PartitionNAme> for <TableName>	Check ORACLE error message for further information	DRSC350.pc	B
DRS35007	Failed to create Partition	Failed to create Partition <PartitionNAme> for <TableName>	Check ORACLE error message for further information	DRSC350.pc	B
DRS35008	Failed to update DRS_SYSTEM_PARAMETERS	Failed to update DRS SYSTEM DATE and PARTITION RECEIPT DATE for <ApplicationType>	Check ORACLE error message for further information	DRSC350.pc	B
DRS35009	Failed to update DRS_SYSTEM_PARAMETERS	Failed to update C4SD FILE LOAD COMPLETE, DRS PROCESSING DAY COMPLETE and BATCH JOB STARTED for <ApplicationType>	Check ORACLE error message for further information	DRSC350.pc	B
DRS35101	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC351	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC351 <Application Type>	DRSC351.pc	B
DRS35102	Missing System parameter	No entry for parameter 'DRS PROCESSING DAY COMPLETE' found in table DRS_SYSTEM_PARAMETERS	Check the contents of table DRS_SYSTEM_PARAMETERS to see if a record corresponding to the given parameter is present	DRSC351.pc	B
DRS35301	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC353	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC350 <Application Type>	DRSC353.pc	B

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DRS35302	Invalid Command line parameter	Invalid command-line input parameters have been supplied to the module DRSC353	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC350 <Application Type>	DRSC353.pc	B
DRS35303	Update of Batch Parameter failed	Table DRS_SYSTEM_PARAMETERS could not be updated	Check ORACLE error message for further information	DRSC353.pc	B
DRS36101	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC361	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC361 [ApplicationType]	DRSC361.pc	B
DRS36102	Missing/Invalid Command-line parameters	Missing/Invalid command-line parameters have been supplied to the module DRSC361.	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC361 [ApplicationType]	DRSC361.pc	B
DRS36103	System parameter not found	PARTITION RECEIPT DATE or MAXIMUM NUMBER OF PARTITIONS not found.	Check table DRS_SYSTEM_PARAMETERS for the appropriate parameters	DRSC361.pc	B
DRS36104	Unable to access table	Unable to access DRS_SYSTEM_PARAMETERS table	Check Oracle table DRS_SYSTEM_PARAMETERS exists and has necessary permissions	DRSC361.pc	B
DRS36105	Invalid System parameter	PARTITION RECEIPT DATE system parameter is NULL	Check table DRS_SYSTEM_PARAMETERS for the appropriate parameter	DRSC361.pc	B
DRS36106	Invalid System parameter	MAXIMUM NUMBER OF PARTITIONS System parameter is NULL	Check table DRS_SYSTEM_PARAMETERS for the appropriate parameter	DRSC361.pc	B

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DRS36107	Unable to access table	Unable to access DRS_ARCHIVED_TABLES table	Check Oracle table DRS_ARCHIVED_TABLES exists and has necessary permissions.	DRSC361.pc	B
DRS36108	Unable to fetch from table	Unable to fetch from DRS_ARCHIVED_TABLES table	Check Oracle table DRS_ARCHIVED_TABLES for the appropriate message	DRSC361.pc	B
DRS36109	Environment variable is not set	Environment variable <EnvVar> is not set.	Set the Environment variable with correct value.	DRSC361.pc	B
DRS36110	Error creating parameter file	Error creating parameter file <Parfile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC361.pc	B
DRS36111	Unable to create a link to a file	Unable to create a link to the file <Source> -> <Target>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC361.pc	B
DRS36112	Unable to execute Dynamic SQL stmt	Unable to execute dynamic SQL statement <SQL Stmt>	Check ORACLE error message for further information	DRSC361.pc	B
DRS36113	Unable to access table	Unable to access USER_TAB_PARTITIONS table	Check Oracle table USER_TAB_PARTITIONS exists and has necessary permissions.	DRSC361.pc	B
DRS36114	Unable to fetch from table	Unable to fetch from USER_TAB_PARTITIONS table	Check Oracle table USER_TAB_PARTITIONS for appropriate message	DRSC361.pc	B
DRS36115	Error executing unix command	Error executing command <CommandStr>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC361.pc	B
DRS36116	Error opening export Log file	Error opening export Log file <Logfile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC361.pc	B
DRS36117	Error whilst exporting data	Error whilst exporting data, check log file <LogFile>	Check export log file <Logfile> for the actual error message.	DRSC361.pc	B
DRS36118	Unable to read export log file	Unable to read export log file <Logfile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC361.pc	B

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DRS36119	Static data missing	DRS_ARCHIVED_TABLES static data missing, no tables archived/purged	Check Oracle table DRS_ARCHIVED_TABLES, if entries missing, run build script to populate.	DRSC361.pc	B
DRS36120	Error whilst renaming .dmp to .err file	Error whilst renaming file from <SrcFile> to <TgtFile>:<ErrorMsg>	Check <ErrorMsg> for further details	DRSC361.pc	B
DRS36201	File Housekeeping job has failed	DRS File Housekeeping job has failed due to an application or database error	Check the Maestro log for more details of the error. Contact EDSC/SSC (3rd Line Support) in normal working hours.	DRSX362.sh	B
DRS36401	Incorrect Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC364	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC364 <Application Type>	DRSC364.pc	B
DRS36402	No data to be copied from RDDS	No data has been found to be copied from RDDS table DRS_ROUTING_GATEWAYS	Check the data and correct public synonyms exist.	DRSC364.pc	B
DRS36403	No data to be copied from RDDS	No data has been found to be copied from RDDS table DRS_ACCOUNTING_WEEKS	Check the data and correct public synonyms exist.	DRSC364.pc	B
DRS36601	Incorrect Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC366	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC366 <Application Type>	DRSC366.pc	B
DRS36602	No data to be copied from TPS	No data has beenn found to be copied from the TPS tabe TPS_OUTLETS_LAST_POLLED	Check the data and correct public synonyms exist.	DRSC366.pc	B

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DRS36701	Incorrect Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC367	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC367 <Application Type>	DRSC367.pc	B
DRS36702	Missing/Invalid Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC367	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC367 <Application Type>	DRSC367.pc	B
DRS36703	Environment variable is not set	Environment variable NWB || _TIP_OUTPUT is not set	Set environment variable appropriately	DRSC367.pc	B
DRS36704	Error occurred opening pipe	Error occurred opening pipe	Refer to the Exception Error message for further details	DRSC367.pc	B
DRS36705	Error occurred closing pipe	Error occurred closing pipe	Refer to the Exception Error message for further details	DRSC367.pc	B
DRS36706	TIP Receipt File open failed with error	Error occurred while opening the TIP harvest receipt file in Read mode	Check for the existence of TIP harvest receipt file and refer to the Exception Error message for further details	DRSC367.pc	B
DRS36707	TIP File Delivery Date/Time not found	The file delivery Date/Time of corresponding transaction file for the TIP interface was not found in the TIP Harvest Receipt file		DRSC367.pc	B
DRS36708	File entry not found in File Register	Entry for the TIP transaction file was not found in the table tps_file_register		DRSC367.pc	B
DRS36709	Error while renaming receipt file	An Error occurred while renaming the TIP Harvest Receipt file to change file extension from ".ACK" to ".ack"	Check Exception Error message for further details	DRSC367.pc	B

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DRS36801	Incorrect Command-line parameters	Incorrect number of input command-line parameters	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC368 <Application Type> <Run Group 1>...<Run Group N>	DRSC368.pc	B
DRS36802	Invalid Command line parameters	No input Run Groups have been provided on command line	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC368 <Application Type> <Run Group 1>...<Run Group N>	DRSC368.pc	B
DRS36803	Invalid Input Record Group	No records found in table DRS_ANALYZED_OBJECTS for Object Group with given name	Check if the Run-Group being passed command-line corresponds with data in DRS_ANALYZED_OBJECTS table	DRSC368.pc	B
DRS36804	No record found in DRS Metadata	No corresponding record for the input Table/Index with given name found in DRS Metadata	Check contents of DRS_ANALYZED_OBJECTS to ensure that the correct Object Name and Object Type are used	DRSC368.pc	B
DRS36805	Given Partition Number not available	The given partition number for Table/Index with given Object Name is not available as the object has only set sumber of partitions	Check contents of DRS_ANALYZED_OBJECTS to ensure that the correct Partition Number is present as parameter for the Object Name and Object Type	DRSC368.pc	B
DRS36806	Given Partition Number not available	No corresponding entry for the input Table/Index with given name and given partition position found in DRS Metadata	Check contents of DRS_ANALYZED_OBJECTS to ensure that the correct Partition Number is present as parameter for the Object Name and Object Type	DRSC368.pc	B
DRS37101	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC371	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC371 <Application Type>	DRSC371.pc	B

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DRS37102	Missing/Invalid Command-line parameters	Missing/Incorrect command-line input parameters have been supplied to the module DRSC371	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC371 <Application Type>	DRSC371.pc	B
DRS37106	Invalid C4/D table names	Invalid C4/D table names entry in tes_partition_creates table	Check C4/D entry in tes_partition_creates table	DRSC371.pc	A
DRS37107	Unknown Error during inserts	A non-data related Oracle error has occurred during bulk inserts into table DRS_RX_C4	Check oracle error message for further information	DRSC371.pc	B
DRS37111	Sequence reached Max Value	The Horizon Transaction Id - Receipt Date Sequence has reached its maximum allowed value	Confirm correct execution of the C4SD process(TESC340). Check for valid data in the TES_TX_C4 table	DRSC371.pc	B
DRS37112	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into tables DRS_RX_C4 or DRS_RX_C4_EXCP	Check oracle error message for further information	DRSC371.pc	B
DRS37117	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_C4_EXCP	Check oracle error message for further informatio	DRSC371.pc	B
DRS37108	Unknown Error during inserts	A non-data related Oracle error has occurred during bulk inserts into table DRS_RX_D	Check oracle error message for further information	DRSC371.pc	B
DRS37113	Sequence reached Max Value	The Horizon Transaction Id - Receipt Date Sequence has reached its maximum allowed value	Confirm correct execution of the C4/D process(TESC340). Check for valid data in the TES_TX_D table	DRSC371.pc	B
DRS37114	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into tables DRS_RX_D or DRS_RX_D_EXCP	Check oracle error message for further information	DRSC371.pc	B
DRS37118	Unknown Error during inserts	A non-data related Oracle error has occurred during inserts into table DRS_RX_D_EXCP	Check oracle error message for further information	DRSC371.pc	B
DRS37110	Invalid Input Message Type	Invalid value of Message Type passed to the function that handles Data related exceptions	Check contents of the TES_TX_C4/D input table to see if one or more messages are of invalid message type	DRSC371.pc	B
DRS37101	Incorrect Command-line parameters	Incorrect number of command-line input parameters have been supplied to the module DRSC371	Check the Maestro scripts to see if the call being made to the module is of the form: DRSC371 <Application Type>	DRSC371.pc	B

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20 Appendix F – DRS Archiving Table Mapping

"DRS Archived Table for NWB and DCP.xls"

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21 Appendix G – DRS File Housekeeping Parameters

Directory Name	File Name	Retention Period	Delete Sub-directories?	Application Type
/bvnw01/drs/trans/nwbC4Din	*.dtf	5	N	NWB
/bvnw01/drs/trans/nwbC4Din	*.CTL	5	N	NWB
/bvnw01/drs/trans/drsmsu	NBS*.TXT	5	N	NWB
/bvnw01/drs/trans/drsmsu	DRS*.TXT	5	N	NWB
/bvnw01/drs/trans/nwbtip	*	5	N	NWB
/bvnw01/drs/trans/drssupport	DRSNWB*.dmp.Z	5	N	NWB
/bvnw01/drs/trans/drsarchive	DRSNWB*.dmp.Z	5	N	NWB
/bvnw01/drs/trans/drsexplog	DRSNWB*.log	5	N	NWB
/bvnw01/drs/trans/nwbC4Din	*	7	N	NWB
/bvnw01/drs/trans/eftC4DSin	*.dtf	5	N	EFT
/bvnw01/drs/trans/eftC4DSin	*.CTL	5	N	EFT
/bvnw01/drs/trans/drsmsu	DCP*.TXT	5	N	EFT
/bvnw01/drs/trans/efttip	*	5	N	EFT
/bvnw01/drs/trans/drssupport	DRSEFT*.dmp.Z	5	N	EFT
/bvnw01/drs/trans/drsarchive	DRSEFT*.dmp.Z	5	N	EFT
/bvnw01/drs/trans/drsexplog	DRSEFT*.log	5	N	EFT
/bvnw01/drs/trans/eftC4DSin	*	7	N	EFT
/bvnw01/drs/trans/eftC2in	*	5	N	EFT
/bvnw01/drs/trans/eftC2out	*	5	N	EFT