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# External Manufacturer (EM) Data Reporting and Support Process Requirements for Memory

## Overview

This document gives a general description of the data reporting and other process requirements to be followed by Oracle external manufacturers (EM) when returning failed memory modules to the supplier for failure analysis (FA), or reporting line metrics data to Oracle Supplier Engineering (SE).



## Audience

Operations Manufacturing Engineering, supplier program managers (SPM) and Oracle external manufacturers (EM)

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## **1. PA/QUALIFICATION BUILD**

- The requirements for PA/qualification builds are as follows:
- Daily status reports of build/ship progress, unless otherwise defined in the Process Alert (PA)
- Capability to receive and quarantine qualification material until it is needed for build
- Raw material storage and segregation by vendor. This requirement is not only for PA builds, but for normal operations as well.
- A Nonconformance Corrective Action Tool (NCAT) must be created for each failing component, according to the Oracle NCAT process, and populated with the part, vendor and failure information (Failing Test Logs) prior to returning the failed component to the vendor for failure analysis (FA)
- Critical NCATs must be returned using the fastest possible shipping method – not the standard shipment period used for line fails.

## **2. RETURN MATERIAL AUTHORIZATION (RMA)**

Report on Material Inventory in RMA to be provided by the EM on a weekly basis or as requested by Memory SE. Report should include quantity, age, reason for discrepancy, supplier, Oracle P/N, supplier P/N, responsible for disposition and disposition.

## **3. FA REPORTS**

The support model for sending the failed components for FA, and communicating FA results, must conform to the following:

- The EM must verify fails and return the failed parts, with accompanying failure information, to the appropriate vendors.
- MRB returns of routine failures must be made weekly, and within 48 hours of failure verification (including creation of a NCAT) for qualification fails.
- Requests for FA results from vendors must come through Oracle SE and not be made directly to the supplier by the EM.

## **4. FAILURE INFORMATION**

The supplier must be provided with an individual failure record with each return. Both a hard copy record accompanying the returning component, and an electronic record must be provided by email. The record must include the S/N of the FRU, the S/N of the motherboard, the board configuration, the failing operation (test and subtest), the time to fail during verification, the ambient temperature and voltage at time of failure, the failing diag/corner, and an extract of the relevant error messages sufficient to isolate the failing databit and address on the failing component. These records must be provided from both the initial failure and the verification testing. The failure information described above may also be captured and obtained from the equivalent Fault Management Architecture (FMA) event logs or derived from TDMS.

## **5. TRACEABILITY**

The EM must be able to check current and historical linkages between memory FRUs and motherboards, and must record all reconfigurations. This must be a one-at-a-time capability, scalable to multiples of a thousand boards.

## 6. DEBUG

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## 7. SYSTEM TEST LOGS: ADHOC REPORTING AND MINING

Ad hoc reporting and mining of data is a requirement, and requires the capability to search test logs for events (like CEs), and associate those events with individual FRUs and slots.

## 8. DIMM SEGREGATION AND PART NUMBER CONTROL

Oracle requires a process and capability to isolate/segregate DIMMs by vendor within any given part number. For example, a specific DIMM supplier or die revision may be qualified on only a subset of products built by an EM, but all DIMM suppliers share the same Oracle manufacturing part number for all die revisions.

The process capability must ensure that only qualified DIMMs are used on any given platform.

## 9. COMPONENT REMOVAL/RE-INSERTION

Because components are removed and reinserted in the manufacturing process, the EM must have the following processes in place:

- An Oracle-approved flow of DIMMs after removal, depending upon the reason for removal
- The ability to track and record component movement within slots, boards or systems
- A non-destructive socket cleaning or dust removal process

## DOCUMENT HISTORY

| REV | DATE       | DESCRIPTION  |
|-----|------------|--|
| 02  | 08/07/2012 | Document required a full redraft to align it with current practices<br>Review Version A  |
| 03  | 10/24/2016 | Document 923-3522 amended to capture the use of a Team Collaboration Workspace and improved shipment of critical NCATs (added last bullets in Sections 1 and 2). |
| 04  | 11/05/2019 | 1.Remove references to NAND, FLASH, SSD<br>2.Changed monthly to weekly in section 3 for RMA frequency  |

|    |            |  |
|----|------------|--|
| 05 | 02/09/2022 | Reformat to Redwood Template   |
| 06 | 02/24/2022 | Remove “DRAFT” from document number and Revision                                   |
| 07 | 06/08/2022 | Remove RPM reporting section 1 (now done via CDP) and re-number remaining sections |

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