



**LOAD TESTING PROCESS  
VERSION 1.1**

**MAY 5, 2009**

---

**Information and Technology Management Branch**

**❖ IM / IT Standards & Guidelines ❖**

<b>1.</b>	<b>INTRODUCTION</b> .....	<b>3</b>
<b>2.</b>	<b>DOCUMENT PURPOSE</b> .....	<b>3</b>
<b>3.</b>	<b>LOAD TESTING PROCESS</b> .....	<b>3</b>
	3.1 LOAD TESTING STANDARDS AND GUIDELINES .....	3
	3.2 LOAD TESTING ROLES AND RESPONSIBILITIES.....	4
	3.3 LOAD TESTING CHECKPOINTS IN THE MINISTRY ADE-SDLC .....	4
	3.3.1 <i>New Application development</i> .....	5
	3.3.2 <i>Maintenance of existing applications</i> .....	5
	3.3.3 <i>Infrastructure Migration Projects</i> .....	5
	3.3.4 <i>Emergency Fix</i> .....	5
	3.4 LOAD TESTING TOOLING OPTIONS .....	5

## 1. Introduction

**Load testing** (also known as *Stress testing*) is primarily used to test the capacity of the infrastructure. The goal of Load testing is to ensure that the infrastructure can cope with the anticipated peak demand for the application along with the peak demands of the other production applications. Load testing identifies problems in the infrastructure that can occur when applications are subjected to peak demands.

## 2. Document Purpose

The purpose of this document is to define and describe standards and process for Load (Stress) Testing of Ministry's applications. This document also describes Load testing roles and responsibilities, check points, etc. The main intended audience for this document is the Development organizations and AMS Service providers (such as CGI) who will be conducting the load testing for Ministry applications. Other audiences are : Ministry Client Services Team/BAs, IMG Team Leads and any other Ministry staff who are involved in Load Testing process.

## 3. Load Testing Process

The following sections describe the standards and process for Load Testing of Ministry Applications in the Ministry environments.

### ***3.1 Load Testing Standards and Guidelines***

Ministry ADE process recommends the following guidelines for Load Testing of Ministry Applications :

- Load Testing must not be done in any other internal or external environments except TST and EFX.
- **Load Testing must always be done in Ministry TST environment for new developments and for Application change requests. For Emergency Fixes the load testing must always be done in the EFX environment.**
- **Load Testing must be repeated if there are any changes to Application code and executables after the Load testing was done and before migration into Production.**
- *During Load testing, always create data volumes and concurrent user volumes much higher than the expected target loads of the application. Load Testing Team must simulate the load expected when the application is at its peak as well as the peak load for other production applications. For approx. peak loads of other production applications as a whole, please consult Ministry IMG Middle Tier Team.*

- Always create a Load Test plan (a set of test cases arranged in the sequence of chronological execution) for the application before starting the actual testing.
- Always create Load Test data before starting the actual testing.
- Load test cases should cover the functional, input, output, and function interaction for any functions in the application that are expected to see peak demands.
- Load test should specify the anticipated or target load for the application.
- Use already existing test cases wherever possible.
- Conduct the load tests as specified in the test cases.
- Start with lower than target loads (or even a single pass through of the test cases) and increase until infrastructure changes are needed or the target has been met.
- Re-run the necessary tests after every change to the infrastructure.
- Load Test Plan will need to be updated if it is determined that the Test Plan is not correct or no longer up-to-date.
- Use live or representative data as much as possible in order to provide realistic test scenarios.

### ***3.2 Load Testing Roles and Responsibilities***

The Ministry ADE process recommends that the whole process of Load Testing (which includes Test Plan creation, Test cases design, Test execution, Test results review and action) is the responsibility of the Development Organization (such as CGI) for the Application. **It is highly recommended that the Testing team be different than the development team.** Ministry Technical Team (IMG) will provide necessary access to the Load Testing environments for the Load Testing team. Ministry IMG may be monitoring the CPU and other resource consumptions during the entire Load Testing process as it takes place. The load testing team must coordinate with the Ministry IMG DBA and Middle Tier teams so they can be available to monitor and identify potential problems during the load testing period.

The Ministry ADE process recommends that pre-established Load Test cases are preserved and saved in a readable format and at an accessible location, so that the test cases could be re-used for doing re-testing in future during application changes, infrastructure migrations, etc. without having to re-design the test cases from scratch.

### ***3.3 Load Testing Checkpoints in the Ministry ADE-SDLC***

The Ministry ADE process recommends the Load testing be performed for all Ministry applications (regardless of category, roadmap and technology) at the following checkpoints in the Application's life cycle:

### **3.3.1 New Application development**

All new applications must ensure that full Load testing of the application is done as per these Load Testing standards defined by the Ministry ADE process. Load test results and log files (if any) must be submitted along with the request for promotion of the application from UAT to PROD environment. Ministry staff at their discretion may do the auditing of the load test results and log files and/or randomly re-run the test cases prior to promoting the application to PROD environment.

### **3.3.2 Maintenance of existing applications**

During the implementation of post-production changes to the Application, the application must undergo Load Testing as per the ADE testing standards. The AMS service provider (or the organization in charge of application change implementation) is responsible to do the Load Testing with help/support from the Ministry.

### **3.3.3 Infrastructure Migration Projects**

Load Testing is mandatory for infrastructure upgrade projects such as 10g to 11g migration project. All applications identified as impacted by the migration project must be subjected to full Load testing in the TST environment with test cases that were previously established.

### **3.3.4 Emergency Fix**

Load Testing is mandatory for the completion of Emergency Fix process. Emergency fixes must not be applied directly to the Production environment. They must be applied first in the Emergency Fix environment (EFX). Load testing of impacted applications must be conducted in the EFX environment with the previously established test cases before promotion of the system from EFX to PROD. After the migration from EFX to PROD, the emergency fix must be uniformly applied and tested in the other environments as well (DEV, TST, UAT, TRN).

## ***3.4 Load Testing Tooling Options***

Since the Load Testing is the responsibility of the project team, Ministry ADE process does not enforce any specific tool(s) in particular for load testing. Grinder tool has been used in the past by Ministry teams and found to be satisfactory. Load Testing teams may also explore using any other tools that they deem fit.