# IBM Host on Demand Redirector V11.0.7
# Performance & Capacity Planning Benchmarking Guide
# on AIX for Pass-through Connection

# Table of Contents

## 1.0    INTRODUCTION

The Redirector is a Telnet proxy that is able to accept connections from clients and pass them on, through a different port, to the next stage in the link. The Redirector can serve as a barrier between clients and the target Telnet server. If you do not want a large number of clients connecting directly to your host system and creating a security risk, you can have the clients connect to one or more redirectors. The redirectors pass the connection on to the host, allowing you to hide the address of the host from the client users. On Windows, AIX, and Linux platforms, the Redirector provides the support for Transport Layer Security (TLS) or Secure Sockets Layer (SSL) security between clients and the server

The Figure below shows the working of the redirector.
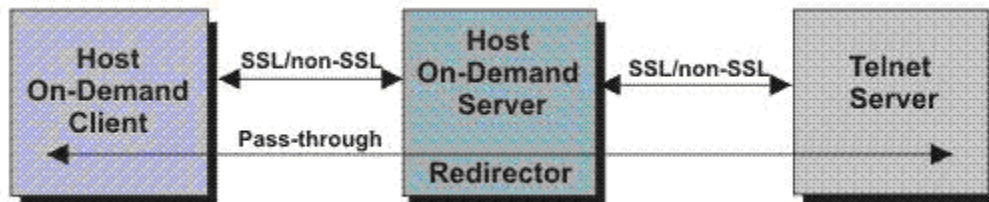


Secure connections are also possible between the client and the Host on Demand Server.

This is an IBM Host on demand (HOD) Redirector version 11.0.7 Performance publication.

The objective of this document is to provide end users with information on the scalability, responsiveness and throughput of HOD Redirector 11.0.7 under a given workload. This document covers the Performance test results of HOD Redirector configured with a default HOD server JVM, a single port and Pass-through connection mode on AIX. The results are depicted in terms of the maximum number of concurrent users along with the response time, throughput and CPU utilization allowed by this configuration.

**Disclaimer**

The information in this document is distributed AS IS. The use of this information or the implementation of any of these techniques is a customer responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While each item may have been reviewed by IBM for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environments do so at their own risk. Any pointers in this publication to external Web sites are provided for convenience only and do not in any manner serve as an endorsement of these Web sites. Any performance data contained in this document was determined in a controlled environment, and therefore, the results that may be obtained in other operating environments may vary significantly. Users of this document should verify the applicable data for their specific environment.
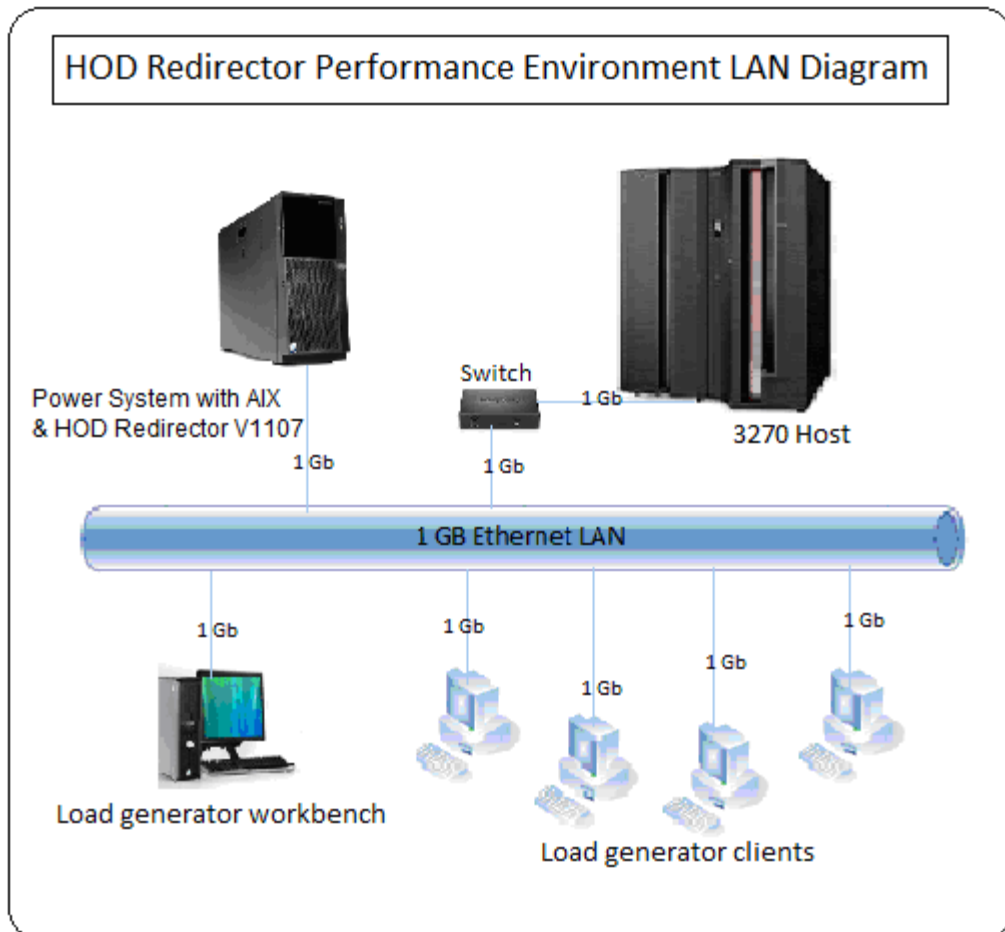
## 2.0    GENERAL MEASUREMENT INFORMATION

## 2.1    Test Environment

The performance tests are conducted in our in-house controlled lab with default settings for Server JVM heap and a single port (12173). Hence, the results obtained in other operating environments might vary significantly.
Performance will also vary by hardware, software, applications, user workload, networking environment, etc.

The performance test environment consists of a HOD Redirector installed on AIX, a host application installed in the CICS region of a 3270 Host interacting with DB2, a load generator workbench and multiple load generator clients.

The Power System (system p) with AIX as the Operating system and running HOD Redirector, 3270 Host, load generator workbench and load generator clients are all connected to a 1 GB Ethernet LAN as shown below:



HOD Redirector Performance Environment LAN Diagram

Power System with AIX & HOD Redirector V1107

Switch

3270 Host

1 Gb

1 GB Ethernet LAN

Load generator workbench

Load generator clients

The load generator workbench sends test scripts and run commands to the load generator clients. The load generator clients create equal load on all the single port of the HOD redirector and drives the HOST application, which is running on a CICS transaction server in an LPAR in z/OS and needs access to a DB2 database.

This is depicted in the figure below:
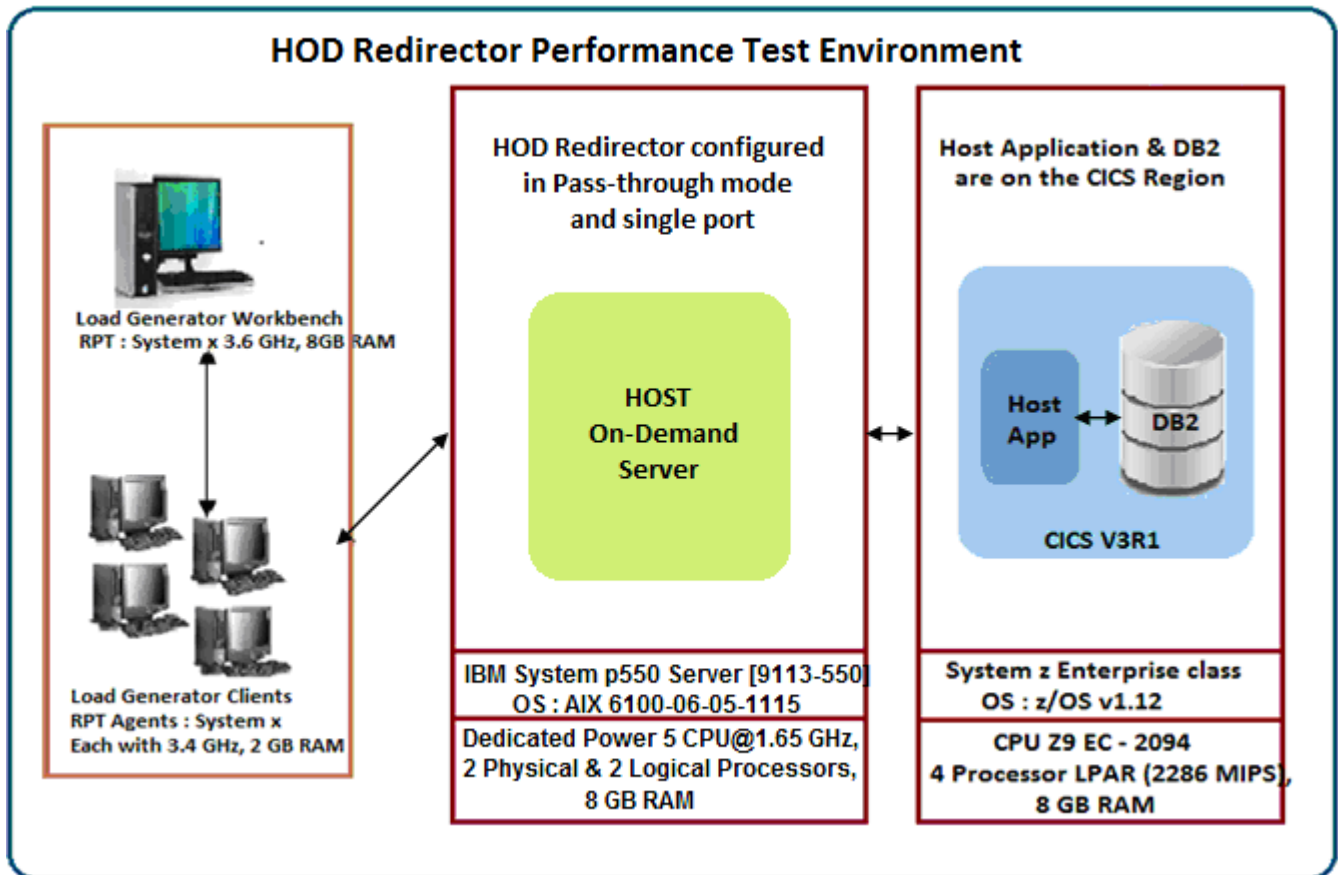
## 2.2    Hardware Configuration

The table lists the hardware used for the performance measurements in the lab:

| Role | Model | Hardware Architecture | Number of Processors (Total Cores) | Processor Speed | Memory (GB) |
|---|---|---|---|---|---|
| System p | IBM System p550 Server [9113-550] | PowerPC_Power5 | 4 | 1.65 GHz | 8 |
| 3270 Host | Mainframe | Z9 EC -2094 | 4 | 2286 MIPS | 8 |
| Load generator workbench | eServer 226 [8648PBE] | Intel® Xeon™ | 8 | 3 GHz | 4 |
| Load generator client 1 | eServer x226-[8488Z1H] | Intel® Xeon™ | 4 | 3.2 GHz | 4 |
| Load generator client 2 | eServer x226-[8488Z1H] | Intel® Xeon™ | 4 | 3.2 GHz | 4 |
| Load generator client 3 | eServer x226-[8648PBE] | Intel® Xeon™ | 4 | 3.0 GHz | 4 |
| Load generator client 4 | eServer x226-[8648PBE] | Intel® Xeon™ | 4 | 3.0 GHz | 4 |

The System p used is a Power 5 machine with 4 physical Processors & 4 Logical processors.

## 2.3    Software

The table lists the operating system and software used for performance measurements in the lab:

| Role | Operating System | Software |
|---|---|---|
| System p | AIX 6100-06-05-1115 | HOD Redirector |
| Host | z/OS V1.12 | Host Application |
| Load generator workbench | Windows Server 2003 Standard | RPT 8.2 |
| Load generator clients | Windows Server 2003 Standard | RPT 8.2 Agents |

**2.4    Workload Characterization**

The 3270 Host application used for performance measurements is called as "Global Auto Mall" (GAM).
The Global Auto Mall Application has 3 components: Login, Process & Logoff and Spawns over 28 Host Screens

During benchmarking measurements, users logon to a host system application (execute the logon component); do work for a significant amount of time that is navigate through screens (execute the process component), and then logoff from the host application (execute the logoff component). The details of the actions performed are as below:

Host Screen 1 – 3 : **Login**
    Connects to System z and prompts for CICS Application
    Connects to CICS region and prompts for user credentials to login to GAM
    Prompt to enter the name of the GAM application

Host Screen 4 - 27 :  **Process (GAM application interacts with DB2 to fetch the requested data)**
    Displays the Main Menu of the Global Auto Mall Application listing a set of cars
    Select one of the cars in the list say, Toyota / Chevrolet / Honda
    Displays the Variants of the selected car
    Select one of the variants say Toyota Camry / Chevrolet Silverado / Honda Accord
    The Camry models spawn over 10 Host Screens, Silverado over 2 and Accord over 6.

Host Screen 28 : **Logoff**
    Return to the Main menu of GAM and logoff from the application


**2.5    Test Methodology**

To simulate the user interactions described above and generate the desired user workload IBM Rational Performance Tester (RPT) was used. Each user executes the use case described above. The following steps are taken into consideration while simulating any specific user load (say 1000 users, 2000 users etc.):

- Each user is ramped up (added) in every 1 seconds
- Each user starts execution as soon as it is ramped up
- Once the desired user population has been reached, a system might still experience a period of flux in reaction to the change in user population. This is managed by setting the settle time to 10 seconds which allows the system to re-establish its steady-state equilibrium so that it can accurately reflect the user population.
- After all the users are ramped up, all of them will execute the above Use Case for about 10 minutes before they are stopped gracefully

## 3.0    TEST RESULT

The table below lists the number of successful connections that can be established along with the various performance parameters (Avg Response Time [ms], Page Throughput, CPU Utilization) measured with respect to the User Load.

| Type of Connection | No of Concurrent active Users | No of Successful Connections | Avg Response Time [ms] | Page Throughput [Terminal screens / sec] | CPU Utilization [% of system CPU time (Avg for Run)] |
|---|---|---|---|---|---|
| | 1000 | 1000 | 2.43 | 218.33 | 16.77 |
| | 2000 | 2000 | 4.12 | 393.75 | 20.73 |
| | 3000 | 3000 | 6.27 | 560.94 | 22.43 |
| PASSTHROUGH | 4000 | 4000 | 9.23 | 724.72 | 23.53 |
| | 5000 | 5000 | 12.7 | 888.98 | 24.21 |
| | 6000 | 6000 | 16.9 | 1051.80 | 24.72 |
| | 7000 | 7000 | 21.5 | 1210.92 | 25.14 |