



Virtual Mobile Infrastructure Version 5.0

# **Server Deployment Best Practice Guide**

## Product Architecture

Trend Micro™ Virtual Mobile Infrastructure™ (TMVMI) adapts a typical deployment model that includes the TMVMI server and a TMVMI Secure Access. This document provides the sizing guide and the best practices that the administrators can observe while deploying TMVMI server and Secure Access.

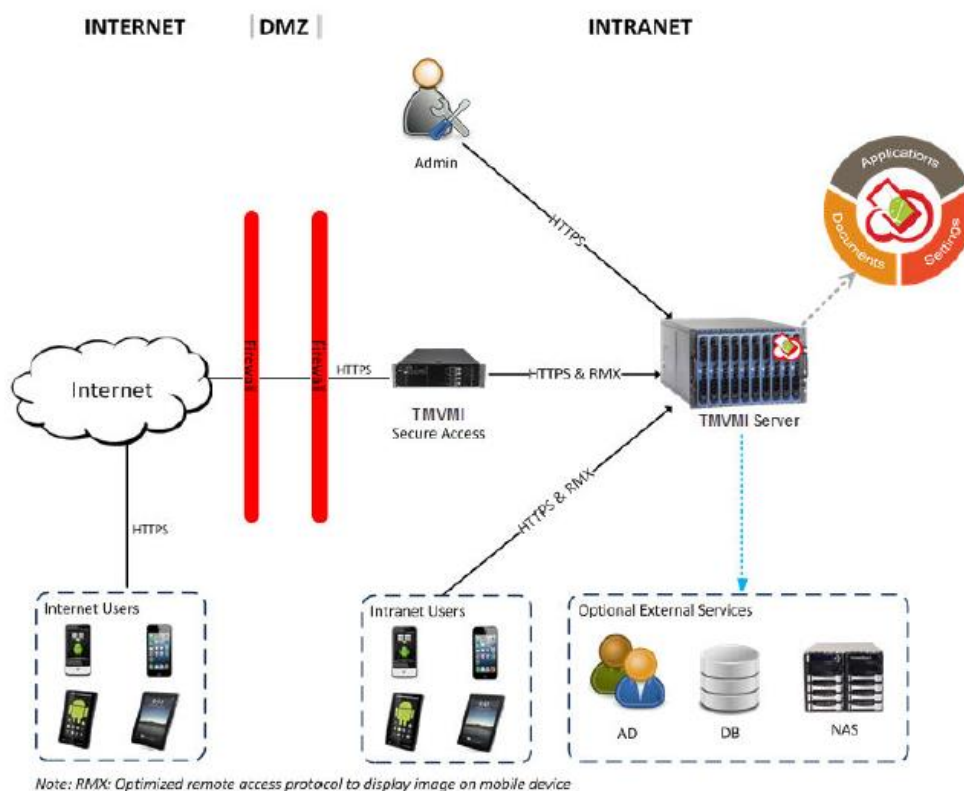


Fig.1 Trend Micro Virtual Mobile Infrastructure Typical Deployment Model

## Executive Summary

Trend Micro has conducted a series of tests to obtain performance data of sizing TMVMI server and TMVMI Secure Access for customers' environments.

Trend Micro determines that the following variables can impact the capacity of a single TMVMI server and TMVMI Secure Access that hosts user workspaces based on Android mobile operating system.

This document discusses the following requirements for the TMVMI server and TMVMI Secure Access:

- CPU
- Memory
- Disk configuration

This guide assumes that each client has enough bandwidth to perform normal Virtual Mobile Infrastructure functions. Refer to the Virtual Mobile Infrastructure Bandwidth Requirement Guide for the detailed requirements.

## Assumptions and Recommendations

This document is based on the following assumptions:

- **Named users**: The total number of Virtual Mobile Infrastructure accounts within an organization.
- **Concurrent users**: The total number of users currently connected to their workspaces. These users may connect to the system via iOS/Android TMVMI mobile client.
- **Connected user ratio**: The number of *Concurrent users* to the number of *Named users*. Trend Micro assumes this number to be 20% by default.

This document provides the following recommendations:

- All hardware must meet Trend Micro's minimum system requirements.
- The system must have enough memory to hold the database, Web server, and cached memory. If there is not enough memory, the system performance or functionality may be restricted.
- Trend Micro recommends medium to large enterprise environments to reserve room for CPU expansion. The more applications running in the workspace, the heavier will be the CPU load.

## Best Practices in Deployment

This section provides the best practices in deploying TMVMI server and TMVMI Secure Access. These recommendations are based on the performance test data.

Trend Micro recommends organizations size their servers according to the guidelines, leave room for expansion, and not underestimate the systems.

**Note:** A linear increase in CPU count does not equate to a linear increase in performance.

The number of CPUs affects TMVMI performance. For multi-core systems, especially if the number of CPU cores is equal or more than 16, Trend Micro recommends multiple server deployment model. This is because, switching between too many CPU cores bring heavy load on TMVMI system. In case of multiple servers, TMVMI balances the load between servers to achieve maximum efficiency.

Furthermore, Trend Micro recommends Hyper-Threading Technology (HTT) to be disabled when multi-core system has more than 16 CPU cores. This is because the TMVMI system is NOT specifically optimized for HTT.

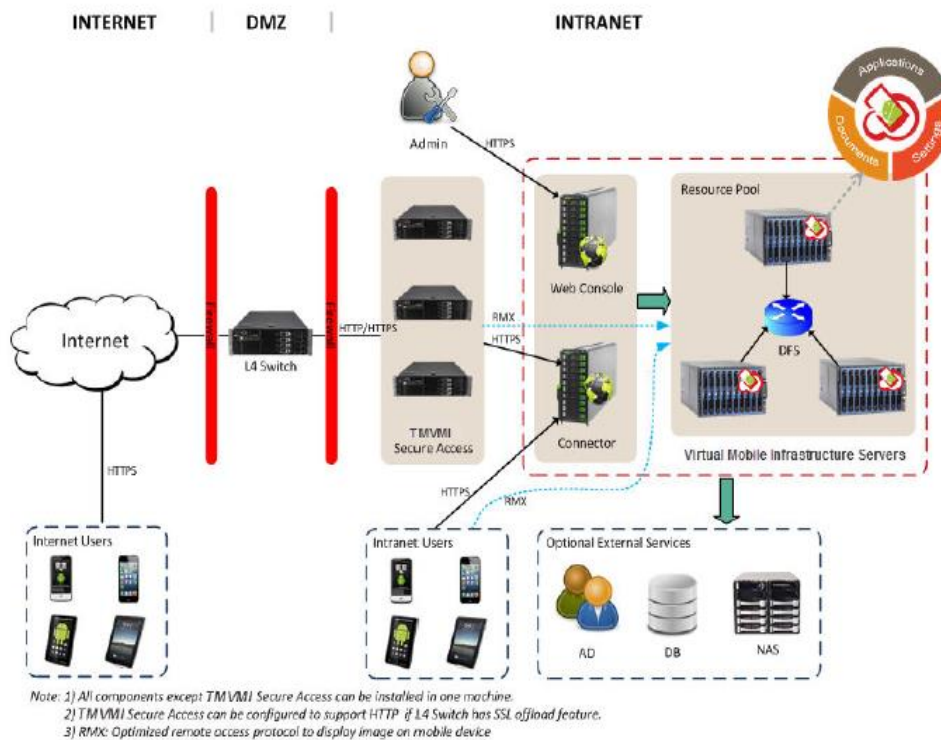


Fig.2 Trend Micro Virtual Mobile Infrastructure Multiple Server Deployment Model

### Example 1:

If you want to support **600** concurrent users, Trend Micro recommends deploying two (2) TMVMI servers and one (1) TMVMI Secure Access with the following configuration:

TMVMI server	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
TMVMI Server 1	16	64	180	300
TMVMI Server 2	16	64	180	300

TMVMI Secure Access	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
TMVMI Secure Access 1	4	12	60	800

**Example 2:**

If you want to support **1200** concurrent users, Trend Micro recommends deploying four (4) TMVMI servers and one (1) TMVMI Secure Access with the following configuration:

TMVMI server	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
TMVMI Server 1	16	64	180	300
TMVMI Server 2	16	64	180	300
TMVMI Server 3	16	64	180	300
TMVMI Server 4	16	64	180	300

TMVMI Secure Access	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
TMVMI Secure Access 1	8	24	60	1600

## Sizing at a Glance – Software Appliance (Bare Metal) or Virtual Appliance (VMware ESXi v5.1)

Trend Micro categorized the system into five (5) groups: “Trail-scale”, “Small-scale”, “Mid-scale”, “Large-scale” and “Extra-large-scale”. The number of maximum concurrent users in the table below is based on a successful connection rate (90% by default).

### ***TMVMI Server Sizing Guidelines for Software Appliance or Virtual Appliance (Installed with Default Settings).***

***Scenario 1: The administrator has deployed the Default policy, and all the users have started all the built-in apps (that is, Web Browser, Email, Calendar, Contacts, Calculator, Download, Camera, Gallery).***

System Scale	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
Trial	2	4	30	5
Small	4	16	60	75
Medium	8	32	100	150
Large	16	64	180	300
Extra Large	28	128	270	600

***Scenario 2: The administrator has deployed the default built-in applications (that is, Web Browser, Email, Calendar, Contacts and Calculator, Download, Camera, Gallery) and two new applications, Evernote and OfficeSuite, and all the users have started all the applications.***

System Scale	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
Trial	2	4	30	5
Small	4	16	60	50
Medium	8	32	100	100
Large	16	64	180	200
Extra Large	28	128	270	300

**TMVMI Secure Access Sizing Guidelines for Software Appliance or Virtual Appliance.**

**TMVMI Secure Access sizing was independent of the application numbers in TMVMI server. So the table was same on the two scenarios.**

System Scale	CPU (Core)	Memory (GB)	Storage (GB)	Maximum Concurrent Users
Trial	2	3	30	100
Small	2	4	30	200
Medium	2	6	30	400
Large	4	12	60	800
Extra Large	8	24	60	1600

## Capacity Calculation

This procedure allows organizations to calculate the system capacity for specific environments.

### Environment Variables for Sizing

Name	Description
<b>Named users</b>	The total number of Virtual Mobile Infrastructure accounts within an organization.
<b>Concurrent users</b>	The total number of users currently connected to their workspaces. These users may connect to the system via iOS/Android/Windows TMVMI mobile client.
<b>Connected user ratio</b>	The number of <b>Concurrent users</b> to the number of <b>Named users</b> . Trend Micro assumes this number to be 20% by default.

### Capacity Calculation

$$\text{Concurrent users} = \text{Named users} * \text{Connected user ratio}$$

**Connected user ratio:** Can range from 20% to 60%, depending on the deployment environment.

**Concurrent users:** Refer to the table [Sizing Guidelines for Software](#)

[Appliance or Virtual Appliance \(Installed with Default Settings\)](#) for the concurrent users based on the hardware specifications.

**Example:**

For example, in a large-scale environment, the number of **Concurrent users** is 300. To calculate **Named users**, consider **Connected user ratio** default value (20%). Then number of **Named users** would be 1500 ( $300/20\%=1500$ ) based on the formula.

*Note: This document is based on performance test report of Virtual Mobile Infrastructure Version 5.0. Trend Micro Virtual Mobile Infrastructure product team keeps developing and testing the product for server performance optimizations. The performance will be improved with the later versions.*