Executive Summary

Trend Micro had conducted a series of tests to obtain performance data of sizing Trend Micro™ SafeSync for Enterprise™ (SSFE) for customers' environments.

Trend Micro determines that the following variables can impact the capacity of a single SSFE server that controls file manipulation, synchronization, encryption/decryption without caching in the environment.

- CPU
- Memory
- Disk configuration
- Connected users

This document provides sizing guidelines only for traffic running through the HTTPS transmission protocol. The SSL acceleration network adaptor feature was disabled by default.

Assumptions

This document is based on the following assumptions:

- *Named user*: The total number of SSFE accounts within an organization
- *Concurrent user*: The total number of users currently connected to the system. These users may connect to the system via the web portal, Windows/Mac client, or iOS/Android mobile client.
- C*onnected user ratio*: The number of *concurrent users* to the number of *named users*. Trend Micro assumes this number to be 20% by default.
- The traffic pattern is different depending on the type of connected clients. The number of concurrent users is further analyzed by device type.
- *Web user ratio*: The number of users connected via the web portal to the number of concurrent users.
- *Client user ratio*: The number of users connected via clients to the number of concurrent users.
- *LAN connection*: Through gigabit network interface cards

- *Disk*: The disk type is fixed to SATA. RAID controller was disabled 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 users connect to the system, the heavier the CPU load. Each connected user would take up CPU resource for traffic encryption/decryption between the server and users.

Default Sizing Guidelines

The sizing guidelines provide reference information for organizations to evaluate and set up their environments. The guidelines below assume all SSFE features were enabled for end-users. Users may connect to the server via the web portal, Windows/Mac client, or iOS/Android client.

SSFE performance is affected by CPU numbers. For multi-core systems, Trend Micro considers each core as a separate CPU. 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 numbers does not equate to a linear increase in performance.

Sizing at a Glance – Software Appliance (Bare Metal)

Trend Micro had categorized the system into 3 groups: "small-scale," "mid-scale" and "large-scale". The number of maximum concurrent devices in the table below is based on a successful connection rate (90% by default).

For each system type, some applications' settings had been tuned to efficiently utilize the equipped resource and obtain better results.

Table 1 Sizing Guidelines for Software Appliance (Installed with Default Settings)

System Scale	CPU	Memory	Maximum Concurrent Devices
Small	**4 CPU Cores** (Intel(R) Xeon(R) CPU E5-2620)	**32GB**	**2000**
Mid	**12 CPU Cores** (Intel(R) Xeon(R) CPU E5-2620)	**64GB**	**5000**
Large	**24 CPU Cores** (Intel(R) Xeon(R) CPU E5-2620)	**96GB**	**12500**

Sizing at a Glance – Virtual Appliance (VMWare ESXi v5.1)

Trend Micro had categorized the system into 3 groups: "small-scale," "mid-scale" and "large-scale". The number of maximum concurrent devices in the table below is based on a successful connection rate (90% by default).

For each system type, some applications' settings had been tuned to efficiently utilize the equipped resource and obtain better results.

Table 2 Sizing Guidelines for Virtual Appliance (Installed with Default Settings)

System Scale	CPU	Memory	Maximum Concurrent Devices
Small	**4 vCPU Cores** GHz	**32GB**	**1800**
Mid	**12 vCPU Cores** GHz	**64GB**	**5000**
Large	**24 vCPU Cores** GHz	**96GB**	**10000**

Capacity Calculation

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

Table 3 Environment Variables for Sizing

Name	Variable	Description
Number of registered users	**REGISTERED_USER**	The total number of end-users who can access the service.
Number of users accessing the service concurrently	**CONCURRENT_USER**	The total number of end-users who are accessing the service concurrently. The number is obtained from each type of connected clients.
The chance of the registered users accessing the server simultaneously.	**ACCESSING_RATIO**	The ratio of *CONCURRENT_USER* to *REGISTERED_USER*. If unknown, the recommended value is 20%.

Capacity Calculation

$$\text{REGISTERED\_USER} = \frac{CONCURRENT\_USER}{ACCESSING\_RATIO}$$

ACCESSING_RATIO: Can range from 20% to 60%, depending on the deployment environment

CONCURRENT_USER: Refer to the tables above according to hardware specifications

For example, in a small-scale environment, CONCURRENT_USER is 560. Set ACCESSING_RATIO to the default value (20%). Then REGISTERRED_USER would be 2,800 based on the formula.