SoftIntel ZenLoadBalancer

Integration Guide

CryptoServer HSM

SafeGuard SecurityServer 3.01.3

utimaco®

Imprint

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1 Introduction

The present document provides an integration guide for configuring Zen Load Balancer with Utimaco's SafeGuard CryptoServer Hardware Security Module (HSM).

1.1 Overview

Zen Load Balancer is an Open Source Load Balancer Appliance Project and provides a complete solution for load balancing to give high availability for TCP and UDP services and data line communications, targeted to turn a professional open source product in networking for distributed systems. Zen Load Balancer is a very highly productive and effective tool for the load balancing, we are going to show you how one can use it with HSM as per his/her requirements.

SafeGuard CryptoServer is a hardware security module developed by Utimaco Safeware AG, i.e. a physically protected specialized computer unit designed to perform sensitive cryptographic tasks and to securely manage and store cryptographic keys and data. It can be used as a universal, independent security component for heterogeneous computer systems.

1.2 Requirements

You should have prepared an installed Ubuntu or Microsoft Windows operating system. If you are using a PCI(e) card, you also have to compile and install the necessary driver for that card. We assume that you successfully installed the Zen Load Balancer on your system. If not, please follow *Zen Load Balancer* website to download and install the Zen Load Balancer software.

HSM Model	SafeGuard CryptoServer CS-Series/S-Series/Se-Series LAN
HSM Firmware	SafeGuard SecurityServer 3.01.3
Software	Zen Load Balancer

Table 1: Software and hardware requirements

2 Installation of Zen Load Balancer

As mentioned, we assume that you successfully installed the Zen Load Balancer in your system. If not, please download Zen Load Balancer from the official website, and follow the installation steps when prompted.

Zen Load Balancer offers four different types of load balancing algorithms.

1. Round Robin - equal sharing. It distributes an equal balance of traffic to all active real servers. For every incoming connection the balancer assigns the next round robin real server to deliver the request.
2. Hash - sticky client. The Farm will create a hash string for each IP client and send each connection from that hash to the same real server. A hash table is created with the real servers, and the requests are assigned through the following algorithm: `index = cli % nServers`.

Where `index` is the index of the real server hash table, `cli` is the integer representation of the IP address and the `nServers` is the number of real servers available. This algorithm is a way to create persistence through the IP address, but it is more powerful if you have a variety of subnets clients accessing your service.

1. Weight - connection linear dispatching by weight. One can balance connections depending on the weight value using Weight algorithm, you must edit this value for each real server. The requests are delivered through an algorithm to calculate the load of every server using the actual connections to them, and then to apply a linear weight assignation.
2. Priority - connections to the highest priority available. This algorithm is balance all connections to the same highest priority server. If one server is down, the connections switch to the next highest server. With this algorithm you can build an Active-Passive cluster service with several real servers.

3 Zen Load Balancer Configuration and Demo

Before we proceed through integration steps, we need to configure the main network configuration by setting up physical IP and virtual IP. You can set the IP addresses in **Settings → Interfaces** section. In this document, we considered 10.17.4.16 as virtual IP. Now we are ready to add farm using configured virtual IP address. **Farm** is a set of servers that offer the same service over a single-entry point defined with an IP address and a port, which is normally called virtual service. The main farm work is to deliver the client virtual service connection to the real backend service and back. Meanwhile, the farm definition sets up the delivery policies to every real server.

To create a new Farm, you can add it in **Manage → Farms** section. One can create a new Farm using virtual IP (e.g. 10.17.4.16). After successfully creating a Farm, one can add the HSM server IP addresses to this Farm and add some global parameters as per requirements like load balancing algorithms, backend response timeout, virtual port etc. If you see the green circle symbol in the Status field, you are ready to run the demo on Zen Load Balancer using the HSM.

Please open the multiple windows of the command prompt (CMD) and run below command on each of the CMD instance: `cxitool dev=10.17.4.16 logonpass=ZenLB,utimaco test`.

Now, you can visualize the current established connections (progress) by clicking on **View backend status** in actions field in **Manage → Farms**. There is one more feature offered by Zen Load Balancer which is that you can visualize the performance of your system by viewing different charts and logs in **Monitoring → Graphs** or **Logs**.

4 Further Information

This document forms a part of the information and support which is provided by Utimaco Safeware. Additional documentation can be found on the product CD in the documentation directory.

5 Contact and Support Information

You can reach us from Monday to Friday, 09.00 a.m. to 05.00 p.m., Central European Time (CET).

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RMA Query

If you need to send the device back to Utimaco IS GmbH, please open a new RMA case (Return Merchandise Authorization). We request that you use the following web address. RMA cases cannot be opened by email or phone.

https://support.hsm.utimaco.com/support/rma/new

Other Support Queries

- Mail (preferred contact method)
  support@utimaco.com
  Attach the diagnostic information to your email.
- Web portal
  https://support.hsm.utimaco.com/support/cases/new/
  The diagnostic information will be requested in our response if necessary.
- By phone
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