

DNS

Deployment Guide

UPDATED: 28 July 2023

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1 Introduction

Domain name system (DNS) servers match domain names like Kemptechnologies.com to their associated IP addresses, for example, 107.22.236.183. When you type kemptechnologies.com into your web browser's address bar, your computer contacts your current DNS server and asks what IP address is associated with kemptechnologies.com.

The Kemp LoadMaster is used to load balance the DNS workload. The LoadMaster offers advanced Layer 4 and Layer 7 server load balancing, SSL Acceleration and a multitude of other advanced Application Delivery Controller (ADC) features. The LoadMaster intelligently and efficiently distributes user traffic among the application servers so that users get the best experience possible.

1.1 Document Purpose

This document provides the recommended LoadMaster settings used when load balancing the DNS workload. The Kemp Support Team is available to provide solutions for scenarios not explicitly defined. The Kemp support site can be found at: https://support.kemptechnologies.com

1.2 Intended Audience

This document is intended to be read by anyone who is interested in configuring the LoadMaster to optimize the DNS server.

1.3 Template

Kemp has developed a template containing our recommended settings for this workload. You can install this template to help create Virtual Services (VSs) because it automatically populates the settings. You can use the template to easily create the required VSs with the recommended settings. For some workloads, additional manual steps may be required such as assigning a certificate or applying port following, these steps are covered in the document, if needed.

You can remove templates after use and this will not affect deployed services. If needed, you can make changes to any of the VS settings after using the template.

Download released templates from the following page: LoadMaster Templates.

For more information and steps on how to import and use templates, refer to the Virtual Services and Templates, Feature Description on the Kemp Documentation page.

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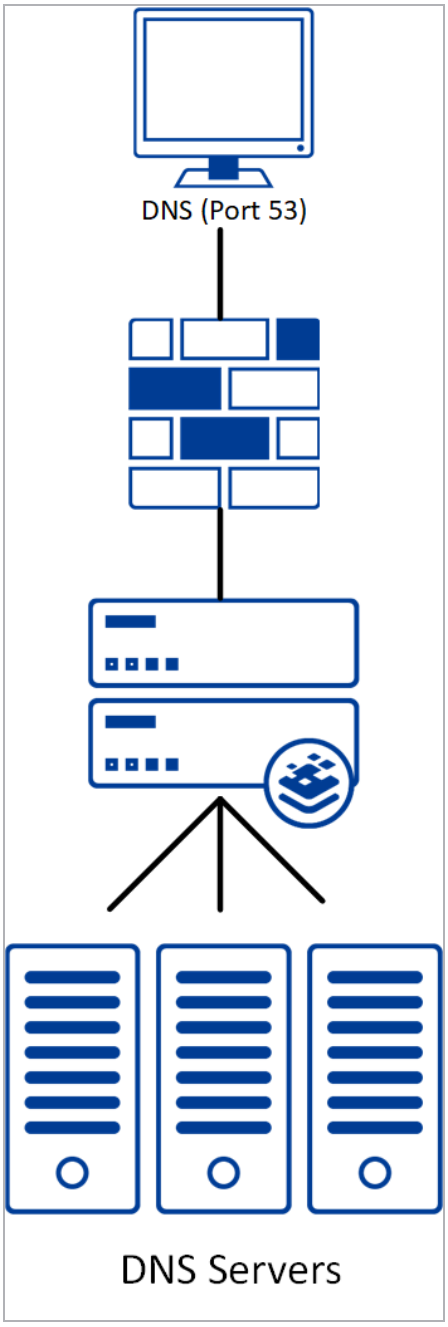
2 Architecture



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3 Configure the LoadMaster

The deployed DNS environment determines which of the following setups is used.

3.1 Enable Subnet Originating Requests Globally

It is best practice to enable the **Subnet Originating Requests** option globally.

In a one-armed setup (where the Virtual Service and Real Servers are on the same network/subnet) **Subnet Originating Requests** is usually not needed. However, enabling **Subnet Originating Requests** should not affect the routing in a one-armed setup.

In a two-armed setup where the Virtual Service is on network/subnet A, for example, and the Real Servers are on network B, **Subnet Originating Requests** should be enabled on LoadMasters with firmware version 7.1-16 and above.



When **Subnet Originating Requests** is enabled, the Real Server sees traffic originating from 10.20.20.21 (LoadMaster eth1 address) and responds correctly in most scenarios.

With **Subnet Originating Requests** disabled, the Real Server sees traffic originating from 10.0.0.15 (LoadMaster Virtual Service address on **eth0**) and responds to **eth0** which could cause asymmetric routing.

When **Subnet Originating Requests** is enabled globally, it is automatically enabled on all Virtual Services. If the **Subnet Originating Requests** option is disabled globally, you can choose whether to enable **Subnet Originating Requests** on a per-Virtual Service basis.

To enable **Subnet Originating Requests** globally, follow the steps below:

1. In the main menu of the LoadMaster User Interface (UI), go to **System Configuration > Miscellaneous Options > Network Options**.
2. Select the **Subnet Originating Requests** check box.

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3.2 Enable Check Persist Globally

It is recommended that you change the **Always Check Persist** option to **Yes – Accept Changes**. Use the following steps:

1. Go to **System Configuration > Miscellaneous Options > L7 Configuration**.
2. Click the **Always Check Persist** drop-down arrow and select **Yes – Accept Changes**.

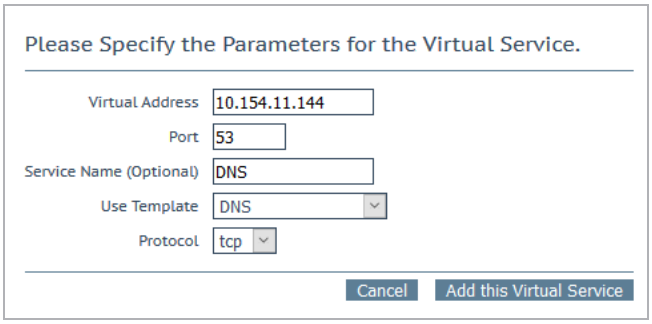
3.3 Create the DNS Virtual Services

The following sections describe the recommended settings for the DNS Virtual Services.

3.3.1 Create the DNS Virtual Services Using the Template

The following are the steps involved and the recommended settings to configure the DNS Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



2. Type a valid **Virtual Address**.
3. Select the **DNS** template from the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.

If adding a DNS Virtual Service on a network not associated with the interface containing the LoadMaster's global default gateway, a Virtual Service Default Gateway is required. It is not possible to set a default gateway on a UDP Virtual Service. To set the default gateway for a UDP Virtual Service, use this workaround:

1. Create a TCP Virtual Service with the same IP address (the port is irrelevant). Do not add any Real Servers.

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2. Set the **Default Gateway** for that Virtual Service. It will also affect the UDP Virtual Service (that is, the required one).

> Default gateways only work on IP addresses, so having two Virtual Services with the same IP address and different default gateways does not work.

3.3.2 Configure the DNS TCP Virtual Service

The following are the steps involved and recommended settings to configure the DNS TCP Virtual Service:

1. Select **View/Modify Services** under **Virtual Services** in the main menu on the left.



2. Click **Modify** on the **DNS TCP** Virtual Service.
3. Add the Real Servers:
   a) Expand the **Real Servers** section.
   b) Click **Add New**.
   c) Enter the address of the relevant Real Server.
   d) Confirm that port **53** is entered.
   e) Click **Add this Real Server**, then click **OK** to the pop-up message.
   f) Repeat the steps above to add more Real Servers as needed, based on your environment.

3.3.2.1 DNS TCP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Kemp application template. You can use these settings with scripts and automation tools.

API Parameters	API Value
port	53

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API Parameters	API Value
prot	tcp
VStype	gen
SubnetOriginating	1
Idletimeout	180
Schedule	lc
CheckType	tcp

3.3.3 Configure the DNS UDP Virtual Service

The following are the steps involved and the recommended settings to configure the DNS UDP Virtual Service:

1. Select **View/Modify Services** under **Virtual Services** in the main menu on the left.



2. Click **Modify** on the **DNS UDP** Virtual Service.
3. Add the Real Servers:
   a) Expand the **Real Servers** section.
   b) Click **Add New**.
   c) Enter the address of the relevant Real Server.
   d) Confirm that port **53** is entered.
   e) Click **Add this Real Server**, then click **OK** to the pop-up message.
   f) Confirm that port **53** is entered.
   g) Click **Add this Real Server**, then click **OK** to the pop-up message.
   h) Repeat the steps above to add more Real Servers as needed, based on your environment.

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3.3.3.1 DNS UDP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Kemp application template. You can use these settings with scripts and automation tools.

API Parameters	API Value
port	53
prot	udp
VStype	gen
SubnetOriginating	1
Idletimeout	3
Schedule	lc
CheckType	dns

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References

Unless otherwise specified, the following documents can be found at http://kemptechnologies.com/documentation.

Virtual Services and Templates, Feature Description

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Last Updated Date

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