Progress®
Kemp® LoadMaster®

# Deployment Guide PaperCut

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# 1

# Introduction

## Introduction

PaperCut is a full print management solution providing simplicity, visibility, and availability. With a portfolio of products such as PaperCut NG, PaperCut MF, PaperCut Hive, and PaperCut Pocket, organizations can finally take full control of all the printing infrastructure.

The LoadMaster delivers an exceptional, cost effective, and easy to use solution which by employing High Availability (HA), Global Server Load Balancing (GSLB), intelligent load balancing, and intelligent server health checking can support an always-on application experience.

**Related Links**

- Document Purpose
- Intended Audience

# Document Purpose

## Document Purpose

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

# Intended Audience

## Intended Audience

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

# 2

# Template

## Template

Progress 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.

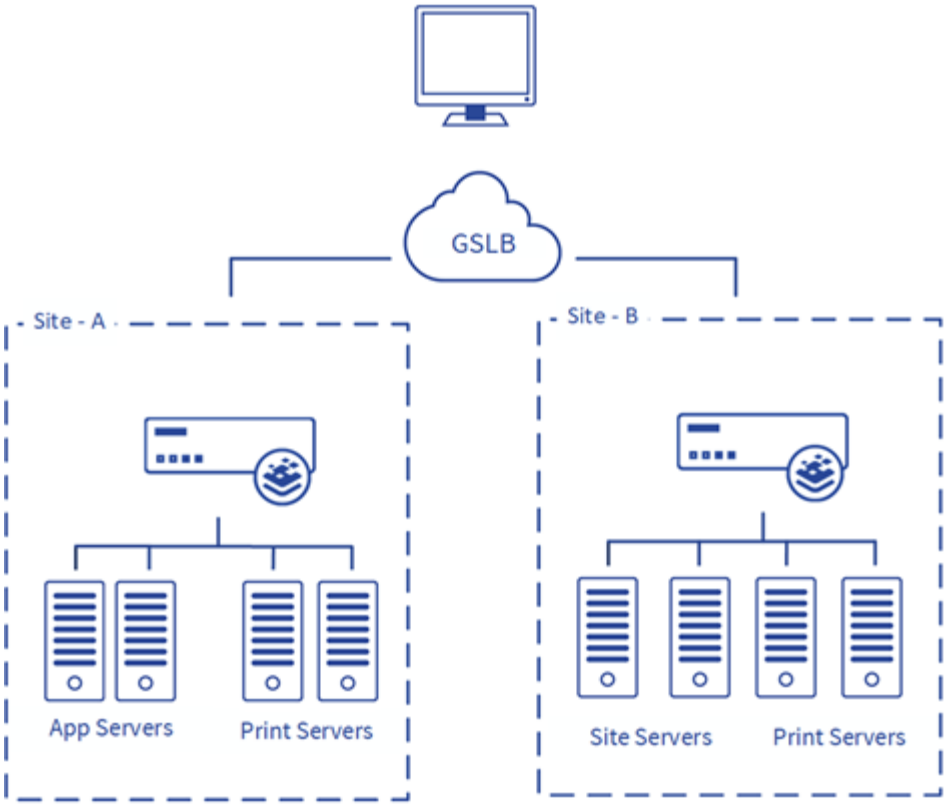
For more information and steps on how to import and use templates, refer to the Virtual Services and Templates, Feature Description.

# 3

# Architecture

## Architecture

PaperCut consists of several print server roles including an Application Server, Print Server, and Site Server. Site Servers can be leveraged when multiple site reliability is required as illustrated in the diagram.


GSLB
Site - A
App Servers
Print Servers
Site - B
Site Servers
Print Servers

# 4

# Configure the LoadMaster

## Configure the LoadMaster

Refer to the sections below for details on some recommended global settings.

**Related Links**

- Enable Subnet Originating Requests Globally
- Enable Check Persist Globally

# Enable Subnet Originating Requests Globally

## 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.

# Enable Check Persist Globally

## 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**.

# 5

# Virtual Services

## Virtual Services

PaperCut consists of several components that can be load balanced and optimized depending on the environment in which it is deployed. PaperCut Mobility Print, Print Provider, and the PaperCut Application Server (Web Interface) can leverage the LoadMaster to provide the necessary high availability and failover to ensure an always-on application experience.

This step-by-step setup of Virtual Services (VSs) leverages the Progress Kemp application template for PaperCut. This template configures the Virtual Services to leverage Layer 4 and Direct Server Return. This approach will allow the real servers to see the source IP address of the client or system accessing the PaperCut resources. Using Direct Server Return (DRS) will require some additional configuration on the real services. Steps for setting up the real servers to use Direct Server Return (DSR) can be found here: Configuring DSR Technical Note.

The table in each section outlines the settings configured by the application template. You can use this information to manually configure Virtual Services or use the LoadMaster Application Programming Interface (API) and automation tools.

**Related Links**

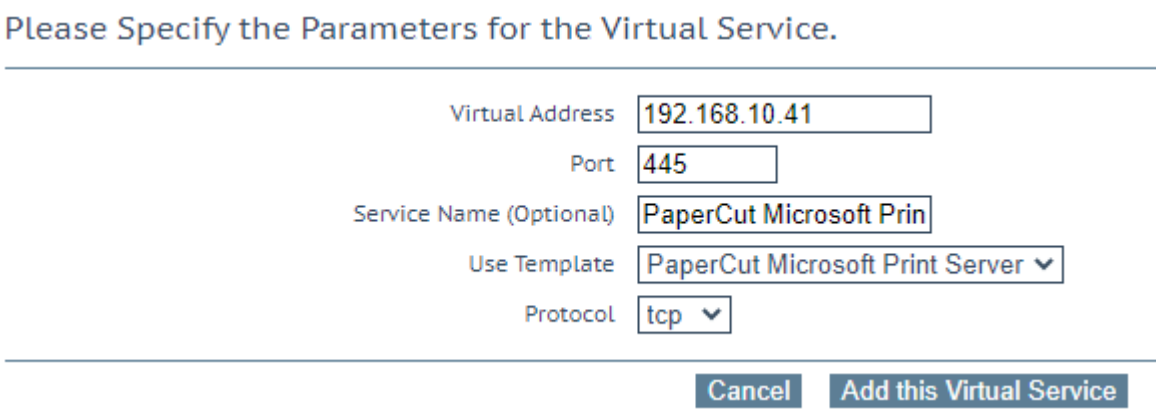
- Create the PaperCut Microsoft Print Server Virtual Service
- Create the PaperCut Mobility Virtual Services
- Create the PaperCut Mobility DNS Offloaded Virtual Services
- Create the PaperCut Mobility mDNS Virtual Services
- Create the PaperCut Application Server Virtual Services

# Create the PaperCut Microsoft Print Server Virtual Service

## Create the PaperCut Microsoft Print Server Virtual Service

The following are the steps involved and the recommended settings to configure the PaperCut Microsoft Print Server Virtual Service:

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




2. Type a valid **Virtual Address**.
3. Select the **Papercut Microsoft Print Server** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address**.
8. Select **Direct Return** for Forwarding Method.
9. Click **Add This Real Server**.
10. Repeat these steps to add more Real Servers as needed.

**Related Links**

- PaperCut Print Provider Virtual Service Recommended API Settings (optional)

# PaperCut Print Provider Virtual Service Recommended API Settings (optional)

## PaperCut Print Provider Virtual Service Recommended API Settings (optional)

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

| API Parameter | API Value |
|---|---|
| port | 445 |
| prot | tcp |
| VStype | gen |
| Schedule | lc |
| Persist | none |
| CheckType | tcp |
| CheckPort | 445 |

# Create the PaperCut Mobility Virtual Services

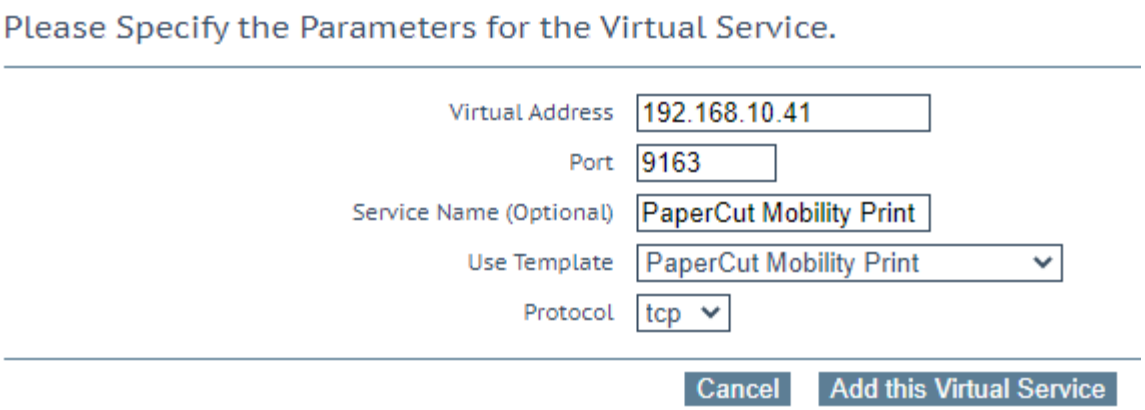
## Create the PaperCut Mobility Virtual Services

Some additional steps are required with the JSON Web Tokens (JWT) to support PaperCut Mobility Print behind a load balancer. The configuration step for Mobility Print can be found at the following link.

https://www.papercut.com/help/manuals/mobility-print/set-up/configure/advanced-configuration/network-load-balancers/

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

1. In the main menu of the LoadMaster UI, go to **Virtual Services > Add New**.




2. Type a valid **Virtual Address**.
3. Select the **PaperCut Mobility Print** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.
5. Click **View/Modify Services** in the left-hand navigation.
6. Select **Modify** for **PaperCut Mobility Print – HTTP 9163** Virtual Service.
7. Expand the **Real Servers** section.
8. Click **Add New**.
9. Type the **Real Server Address**.
10. Select **Direct Return** for Forwarding Method.
11. Click **Add This Real Server**.
12. Repeat these steps to add more Real Servers as needed.
13. Click **View/Modify Services** in the left-hand navigation.
14. Select **Modify** for **PaperCut Mobility Print – HTTP 9164** Virtual Service.
15. Expand the **Real Servers** section.
16. Click **Add New**.
17. Type the **Real Server Address**.
18. Select **Direct Return** for Forwarding Method.
19. Click **Add This Real Server**.
20. Repeat these steps to add more Real Servers as needed.

**Related Links**

- PaperCut Mobility Print – HTTP 9163 Virtual Service Recommended API Settings (optional)
- PaperCut Mobility Print – HTTP 9164 Virtual Service Recommended API Settings (optional)

# PaperCut Mobility Print – HTTP 9163 Virtual Service Recommended API Settings (optional)

## PaperCut Mobility Print – HTTP 9163 Virtual Service Recommended API Settings (optional)

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

| API Parameter | API Value |
|---|---|
| port | 9163 |
| prot | tcp |
| VStype | http |
| Schedule | lc |
| CheckType | tcp |
| CheckPort | 9163 |

# PaperCut Mobility Print – HTTP 9164 Virtual Service Recommended API Settings (optional)

## PaperCut Mobility Print – HTTP 9164 Virtual Service Recommended API Settings (optional)

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

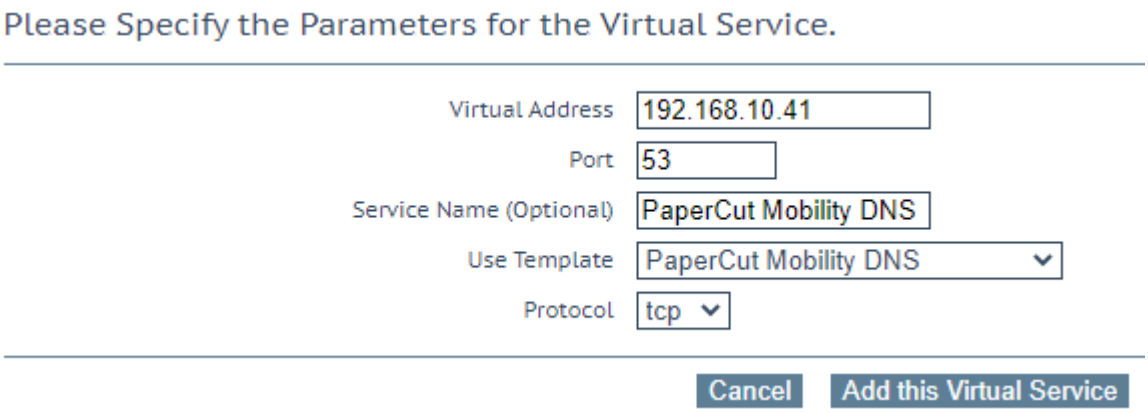
| API Parameter | API Value |
|---|---|
| port | 9164 |
| prot | tcp |
| VStype | http |
| Schedule | lc |
| CheckType | tcp |
| CheckPort | 9164 |

# Create the PaperCut Mobility DNS Offloaded Virtual Services

## Create the PaperCut Mobility DNS Offloaded Virtual Services

The PaperCut Mobility DNS template creates two Virtual Services - one TCP and one UDP. Each of these Virtual Services must be populated with Real Servers. The following are the steps involved and the recommended settings to configure the PaperCut Mobility DNS Virtual Service:

1. In the main menu of the LoadMaster UI, go to **Virtual Services > Add New**.




2. Type a valid **Virtual Address**.
3. Select the **Papercut Mobility DNS** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.
5. Click **View/Modify Services** in the left-hand navigation.
6. Click **Modify** on the **Papercut Mobility DNS TCP** Virtual Service.
7. Expand the **Real Servers** section.
8. Click **Add New**.
9. Type the **Real Server Address**.
10. Select **Direct Return** for Forwarding Method.
11. Click **Add This Real Server**.
12. Repeat these steps to add more Real Servers as needed.
13. Click **View/Modify Services** in the left-hand navigation.
14. Click **Modify** for the **Papercut Mobility DNS UDP** Virtual Service.
15. Expand the **Real Servers** section.
16. Click **Add New**.
17. Type the **Real Server Address**.
18. Select **Direct Return** for Forwarding Method.

19. Click **Add This Real Server**.
20. Repeat these steps to add more Real Servers as needed.

**Related Links**

- PaperCut Mobility DNS TCP Virtual Service Recommended API Settings (optional)
- PaperCut Mobility DNS UDP Virtual Service Recommended API Settings (optional)

# PaperCut Mobility DNS TCP Virtual Service Recommended API Settings (optional)


# PaperCut Mobility DNS TCP Virtual Service Recommended API Settings (optional)


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

| API Parameter | API Value |
|---|---|
| port | 53 |
| prot | tcp |
| VStype | gen |
| Schedule | lc |
| CheckType | tcp |

# PaperCut Mobility DNS UDP Virtual Service Recommended API Settings (optional)


# PaperCut Mobility DNS UDP Virtual Service Recommended API Settings (optional)


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

| API Parameter | API Value |
|---|---|
| port | 53 |
| prot | udp |

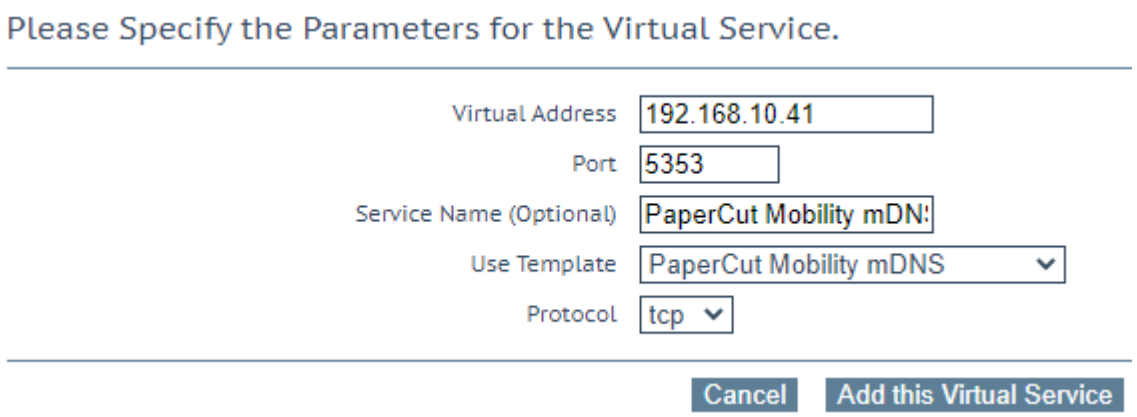
| API Parameter | API Value |
|---|---|
| SubnetOriginating | 1 |
| Forcel7 | 1 |
| Schedule | lc |
| CheckType | Dns |
| CheckPort | 53 |

# Create the PaperCut Mobility mDNS Virtual Services

## Create the PaperCut Mobility mDNS Virtual Services

The following are the steps involved and the recommended settings to configure the PaperCut Mobility mDNS Virtual Service:

1. In the main menu of the LoadMaster UI, go to **Virtual Services > Add New**.




2. Type a valid **Virtual Address**.
3. Select the **Papercut Mobility mDNS** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address**.
8. Select **Direct Return** for Forwarding Method.
9. Click **Add This Real Server**.
10. Repeat these steps to add more Real Servers as needed.

**Related Links**

- PaperCut Mobility mDNS Virtual Service Recommended API Settings (optional)


## PaperCut Mobility mDNS Virtual Service Recommended API Settings (optional)


## PaperCut Mobility mDNS Virtual Service Recommended API Settings (optional)


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

| API Parameter | API Value |
|---|---|
| port | 5353 |
| prot | udp |
| VStype | gen |
| Schedule | lc |
| CheckType | dns |
| CheckPort | 5353 |

# Create the PaperCut Application Server Virtual Services

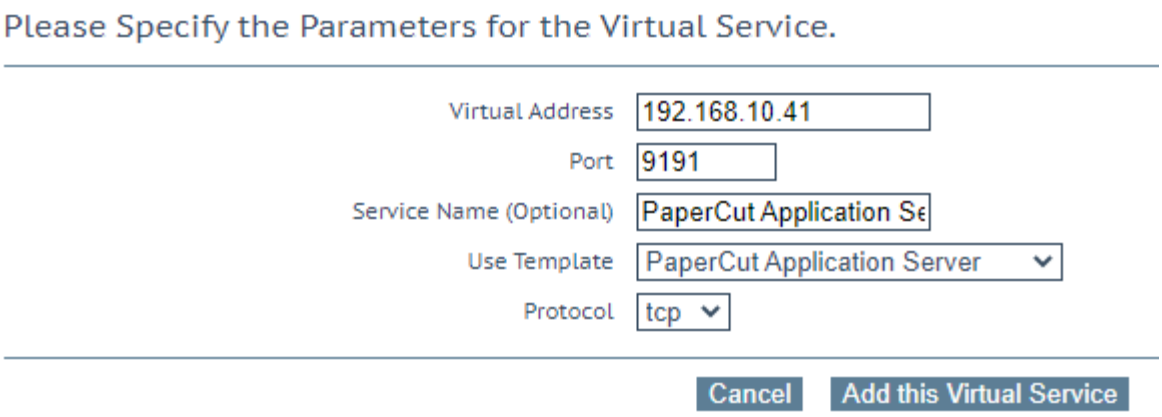

## Create the PaperCut Application Server Virtual Services


The Progress Kemp Application Template will configure 3 Virtual Services (Port 9191,9192,9193). There are some PaperCut environment which will require additional ports to support some multi-function devices. In the event extra ports are required you can modify an existing Application Server Virtual Service and in the top right-hand corner click duplicate VIP and enter the new port. The below link provides details on these extra ports.

https://www.papercut.com/kb/Main/FirewallPorts#multi-function-devices

The following are the steps involved and the recommended settings to configure the PaperCut Web Interface Virtual Service:

1. In the main menu of the LoadMaster UI, go to **Virtual Services > Add New**.




2. Type a valid **Virtual Address**.
3. Select the **Papercut Application Server** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.
5. Click **View/Modify Services** in the left-hand navigation.
6. Select **Modify** for **PaperCut Application Server – HTTP 9191** Virtual Service.
7. Expand the **Real Server**s section.
8. Update Health Check **Authorization Key** (the Authorization Key for health checking can be found on the PaperCut Application Server under **Web User Interface > Options > Advanced**) in the **URL** field.
9. Click **Add New**.
10. Type the **Real Server Address**.
11. Select **Direct Return** for Forwarding Method.
12. Click **Add This Real Server**.
13. Repeat these steps to add more Real Servers as needed.
14. Click **View/Modify Services** in the left-hand navigation.
15. Select **Modify** for **PaperCut Application Server – HTTPS 9192** Virtual Service.
16. Expand the **Real Server**s section.
17. Update Health Check **Authorization Key** (the Authorization Key for health checking can be found on the PaperCut Application Server under **Web User Interface > Options > Advanced**) in the **URL** field.
18. Click **Add New**.
19. Type the **Real Server Address**.
20. Select **Direct Return** for Forwarding Method.
21. Click **Add This Real Server**.
22. Repeat these steps to add more Real Servers as needed.
23. Click **View/Modify Services** in the left-hand navigation.
24. Select **Modify** for **PaperCut Application Server –9193** Virtual Service.
25. Expand the **Real Server**s section.
26. Update Health Check **Authorization Key** (the Authorization Key for health checking can be found on the PaperCut Application Server under Web User Interface > Options > Advanced) in the URL field.
27. Click **Add New**.
28. Type the **Real Server Address**.
29. Select **Direct Return** for Forwarding Method.

30. Click **Add This Real Server**.
31. Repeat these steps to add more Real Servers as needed.

**Related Links**

- PaperCut Application Server – HTTP 9191 Virtual Service Recommended API Settings (optional)
- PaperCut Application Server – HTTPS 9192 Virtual Service Recommended API Settings (optional)

# PaperCut Application Server – HTTP 9191 Virtual Service Recommended API Settings (optional)


# PaperCut Application Server – HTTP 9191 Virtual Service Recommended API Settings (optional)


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

| API Parameter | API Value |
|---|---|
| port | 9191 |
| prot | tcp |
| VStype | http |
| Schedule | lc |
| CheckType | http |
| CheckPort | 9191 |
| CheckURL | /api/health/application-server/status?disk-threshold-mb=1&Authorization=<AUTHORIZATION KEY> |

# PaperCut Application Server – HTTPS 9192 Virtual Service Recommended API Settings (optional)


# PaperCut Application Server – HTTPS 9192 Virtual Service Recommended API Settings (optional)


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

| API Parameter | API Value |
|---|---|
| port | 9192 |
| prot | tcp |
| VStype | http |
| Schedule | lc |
| CheckType | http |
| CheckPort | 9191 |
| CheckURL | /api/health/application-server/status?disk-threshold-mb=1&Authorization=<AUTHORIZATION KEY> |