Progress®
Kemp® LoadMaster®

Deployment Guide Progress DataDirect Hybrid Data Pipeline

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Table of Contents

Chapter 1: Introduction 5

Chapter 2: Template 6

Chapter 3: Architecture 8

Chapter 4: Enable Subnet Originating Requests Globally 10

Chapter 5: Virtual Services 12

Create the DataDirect Hybrid Data Pipeline – HTTPS Offloaded Virtual Service 12

Modify the DataDirect Hybrid Data Pipeline Default Sub Virtual Service 13

Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service 14

Modify the DataDirect Hybrid Data Pipeline OPA – Node 1 Sub Virtual Service 14

Modify the DataDirect Hybrid Data Pipeline OPA – Node 2 Sub Virtual Service 15

Modify the DataDirect Hybrid Data Pipeline OPA Content Rules 15

DataDirect Hybrid Data Pipeline HTTPS Offloaded Virtual Service Recommended Settings (optional) 15

Create the DataDirect Hybrid Data Pipeline – HTTPS Reencrypt Virtual Service 18

Modify the DataDirect Hybrid Data Pipeline Default Sub Virtual Service 19

Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service 20

Modify the DataDirect Hybrid Data Pipeline OPA – Node 1 Sub Virtual Service 20

Modify the DataDirect Hybrid Data Pipeline OPA – Node 2 Sub Virtual Service 21

Modify the DataDirect Hybrid Data Pipeline OPA Content Rules 21

DataDirect Hybrid Data Pipeline HTTPS Reencrypt Virtual Service Recommended Settings (optional). 21

1

Introduction

Progress DataDirect® Hybrid Data Pipeline provides simple, secure, and scalable access to universal data connectivity.

The Progress LoadMaster delivers an exceptional, cost effective, and easy to use solution which by employing intelligent server health checking, load balancing, high availability, and security can support an always-on application experience for DataDirect Hybrid Data Pipeline.

Document Purpose

This document provides the recommended LoadMaster settings used when providing load balancing for DataDirect Hybrid Data Pipeline. The Progress Support team is available to provide solutions for scenarios not explicitly defined. For further details, refer to the: LoadMaster Support and Learning Hub.

2

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.

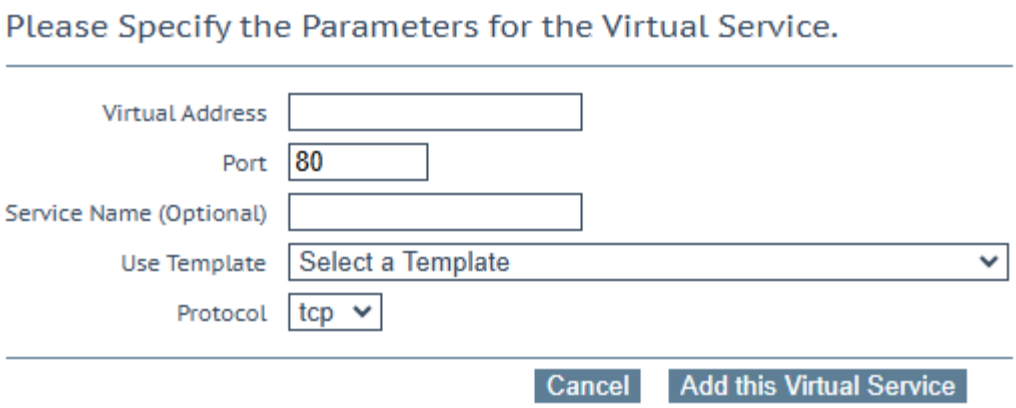
You can remove templates after use and this will not affect deployed services. If needed, you can make changes to any of the VS settings after using the template.

Download released templates from the following page: LoadMaster Templates.

You can import templates to the LoadMaster through the **Manage Templates** page under **Virtual Services** in the main menu of the LoadMaster User Interface (UI).

Click **Choose File**, select the template to install and click **Add New Template**. The template will then be available to select when you are adding a new Virtual Service.

To begin the process of creating a new Virtual Service, click **Virtual Services** and **Add New** in the main menu.



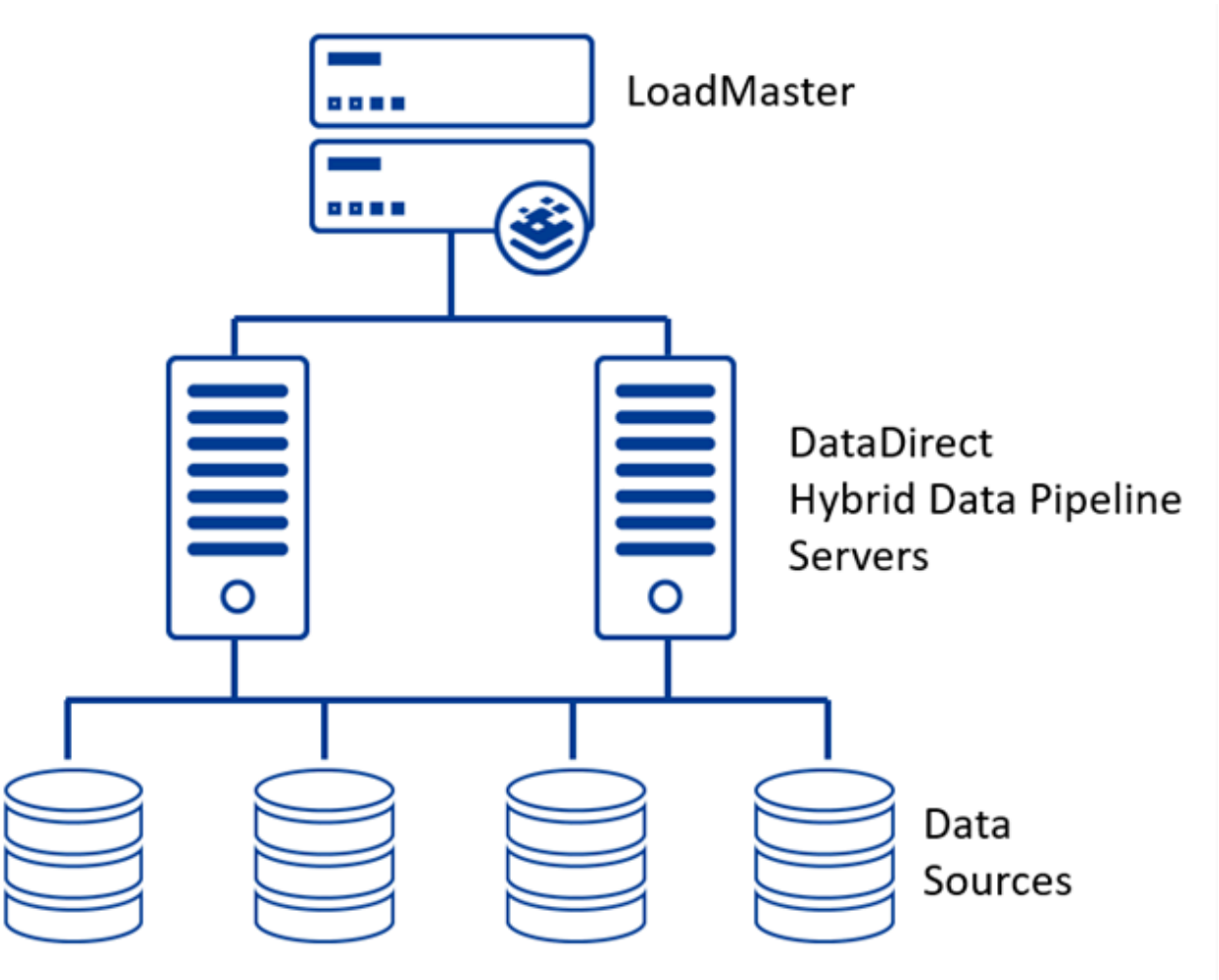
This opens the Virtual Service parameters page which prompts to enter the Virtual IP (VIP) address of the Virtual Service, the port, and the name to give the service and the protocol. You can select a previously-imported template in the **Use Template** drop-down list.

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

3

Architecture

Progress DataDirect deployments consist of multiple servers running Hybrid Data Pipeline behind a load balancer.


LoadMaster
DataDirect
Hybrid Data Pipeline
Servers
Data
Sources

4

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.

5

Virtual Services

This step-by-step setup of Virtual Services (VSs) leverages the Progress Kemp application template for DataDirect Hybrid Data Pipeline. This template configures the Virtual Services to publish DataDirect with HTTP, HTTPS with TLS/SSL Offloading or HTTPS with TLS/SSL Reecryption.

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 Progress LoadMaster Application Programming Interface (API) and automation tools.

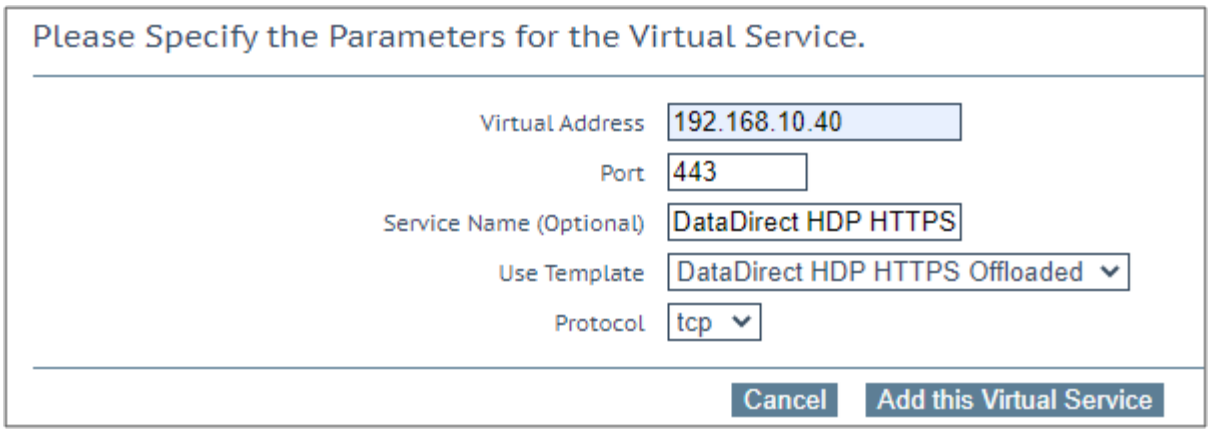
Contents

- Create the DataDirect Hybrid Data Pipeline – HTTPS Offloaded Virtual Service
- Create the DataDirect Hybrid Data Pipeline – HTTPS Reencrypt Virtual Service

Create the DataDirect Hybrid Data Pipeline – HTTPS Offloaded Virtual Service

The following are the steps involved and the recommended settings to configure the DataDirect Hybrid Data Pipeline HTTPS Offloaded 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 **DataDirect HDP HTTPS Offloaded** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.

Contents

- Modify the DataDirect Hybrid Data Pipeline Default Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline OPA – Node 1 Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline OPA – Node 2 Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline OPA Content Rules
- DataDirect Hybrid Data Pipeline HTTPS Offloaded Virtual Service Recommended Settings (optional)

Modify the DataDirect Hybrid Data Pipeline Default Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Offloaded** Virtual Service on port 443.
3. Expand the **SSL Properties** section.
4. Select the certificate to use from **Available Certificates** and click the arrow (>) to move it to **Assigned Certificates**.
5. Expand the **SubVSs** section.
6. Click **Modify** for the **HDP Offloaded Default** Sub Virtual Service.
7. Expand the **Real Servers** section.
8. Click **Add New**.
9. Type the **Real Server Address**.

10. Enter **8080** for the **Port**.
11. Click **Add This Real Server**.
12. Repeat these steps to add more Real Servers as needed.

Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service

Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Offloaded** Virtual Service on port 443.
3. Expand the **SubVSs** section.
4. Click Modify for the **HDP Offloaded Notification** Sub Virtual Service.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address**.
8. Enter **11280** for the **Port**.
9. Click **Add This Real Server**.
10. Repeat these steps to add more Real Servers as needed.

Modify the DataDirect Hybrid Data Pipeline OPA – Node 1 Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Offloaded** Virtual Service on port 443.
3. Expand the **SubVSs** section.
4. Click Modify for the **HDP Offloaded OPA Node 1** Sub Virtual Service.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address**.
8. Enter **40501** for the **Port**.

9. Click **Add This Real Server**.

Modify the DataDirect Hybrid Data Pipeline OPA – Node 2 Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Offloaded** Virtual Service on port 443.
3. Expand the **SubVSs** section.
4. Click **Modify** for the **HDP Offloaded OPA Node 2** Sub Virtual Service.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address** for the second DatatDirect Hybrid Data Pipeline Server.
8. Enter **40501** for the **Port**.
9. Click **Add This Real Server**.
10. Repeat these steps to add more Real Servers as needed.

Note: Additional OPA Sub Virtual Services can be created if more than two servers are in the environment.

Modify the DataDirect Hybrid Data Pipeline OPA Content Rules

Content Rules are created to direct traffic based on the path of the URL. The OPA Content Rules have unique paths for each environment and must be modified.

1. Click **Rules and Checking** and **Content Rules**.
2. Click **Modify** on the **opa_Node1_xxxxx** Content Rule.
3. Change the **ADD_NODE_SERVER_IP** to the unique path for the OPA Node 1 server.
4. Click **Modify Rule** to apply changes.
5. Repeat steps for remaining OPA Content Rules.

DataDirect Hybrid Data Pipeline HTTPS Offloaded Virtual Service Recommended Settings (optional)

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

API Parameter	API Value	WUI Field Name	WUI Field Value
Root Virtual Service			
port	443	Port	443
prot	tcp	Protocol	tcp
VStype	http	Service Type	HTTP-HTTP/2-HTTPS
Schedule	lc	Scheduling Method	least connection
Persist	none	Persistence Options	None
SubnetOriginating	1	Subnet Originating Requests	Enabled
Forcel7	1	Force L4	Disabled
SSLAcceleration	1	SSL Acceleration	Enabled
TLSType	3	Supported Protocols	TLS1.1, TLS1.2, and TLS1.3 (Enabled)
CipherSet	BestPractices	Cipher Set	BestPractices
HDP Offloaded Default - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection

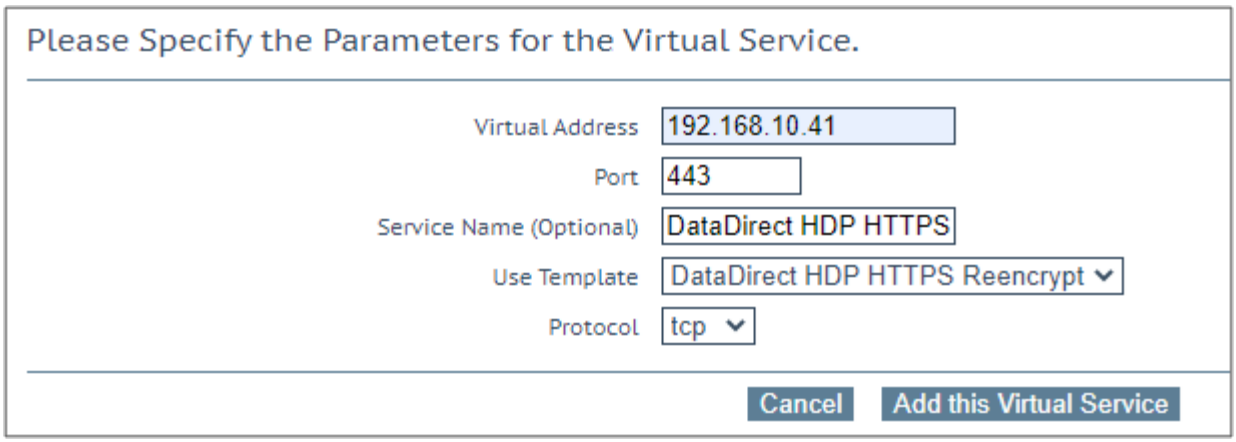
API Parameter	API Value	WUI Field Name	WUI Field Value
Persist	src	Persistence Options	Source IP Address
PersistTimeOut	300	Timeout	5 Minutes
CheckType	http	Real Server Check Method	HTTPS Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	8080	Checked Port	8080
CheckUrl	/api/healthcheck	URL	/api/healthcheck
HDP Offloaded Notification - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection
Persist	src	Persistence Options	Source IP Address
PersistTimeOut	300	Timeout	5 Minutes
CheckType	http	Real Server Check Method	HTTP Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	11280	Checked Port	11280
HDP Offloaded OPA Node 1 - Sub Virtual Service			

API Parameter	API Value	WUI Field Name	WUI Field Value
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection
CheckType	http	Real Server Check Method	HTTP Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	40501	Checked Port	40501
HDP Offloaded OPA Node 2 - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection
CheckType	http	Real Server Check Method	HTTP Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	40501	Checked Port	40501

Create the DataDirect Hybrid Data Pipeline – HTTPS Reencrypt Virtual Service

The following are the steps involved and the recommended settings to configure the DataDirect Hybrid Data Pipeline HTTPS Reencrypt 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 **DataDirect HDP HTTPS Reencrypt** template in the **Use Template** drop-down list.
4. Click **Add this Virtual Service**.

Contents

- Modify the DataDirect Hybrid Data Pipeline Default Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline OPA – Node 1 Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline OPA – Node 2 Sub Virtual Service
- Modify the DataDirect Hybrid Data Pipeline OPA Content Rules
- DataDirect Hybrid Data Pipeline HTTPS Reencrypt Virtual Service Recommended Settings (optional)

Modify the DataDirect Hybrid Data Pipeline Default Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Reencrypt** Virtual Service on port 443.
3. Expand the **SSL Properties** section.
4. Select the certificate to use from **Available Certificates** and click the arrow (>) to move it to **Assigned Certificates**.
5. Expand the **SubVSs** section.
6. Click **Modify** for the **HDP Reencrypt Default** Sub Virtual Service.
7. Expand the **Real Servers** section.
8. Click **Add New**.
9. Type the **Real Server Address**.

10. Enter **8443** for the **Port**.
11. Click **Add This Real Server**.
12. Repeat these steps to add more Real Servers as needed.

Modify the DataDirect Hybrid Data Pipeline Notification Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Reencrypt** Virtual Service on port 443.
3. Expand the **SubVSs** section.
4. Click Modify for the **HDP Reencrypt Notification** Sub Virtual Service.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address**.
8. Enter **11443** for the **Port**.
9. Click **Add This Real Server**.
10. Repeat these steps to add more Real Servers as needed.

Modify the DataDirect Hybrid Data Pipeline OPA – Node 1 Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Reencrypt** Virtual Service on port 443.
3. Expand the **SubVSs** section.
4. Click Modify for the **HDP Reencrypt OPA Node 1** Sub Virtual Service.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address** for the first DataDirect Hybrid Data Pipeline Server.
8. Enter **40501** for the **Port**.
9. Click **Add This Real Server**.

Modify the DataDirect Hybrid Data Pipeline OPA – Node 2 Sub Virtual Service

1. Click **Virtual Services** and **View/Modify Services**.
2. Click **Modify** on the **DataDirect HDP HTTPS Reencrypt** Virtual Service on port 443.
3. Expand the **SubVSs** section.
4. Click **Modify** for the **HDP Reencrypt OPA Node 2** Sub Virtual Service.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Type the **Real Server Address** for the second DataDirect Hybrid Data Pipeline Server.
8. Enter **40501** for the **Port**.
9. Click **Add This Real Server**.
10. Repeat these steps to add more Real Servers as needed.

Note: Additional OPA Sub Virtual Services can be created if more than two servers are in the environment.

Modify the DataDirect Hybrid Data Pipeline OPA Content Rules

Content Rules are created to direct traffic based on the path of the URL. The OPA Content Rules have unique paths for each environment and must be modified.

1. Click **Rules and Checking** and **Content Rules**.
2. Click **Modify** on the **opa_node1_xxxxx** Content Rule.
3. Change the **ADD_NODE_SERVER_IP** to the unique path for the OPA Node 1 server.
4. Click **Modify Rule** to apply changes.
5. Repeat steps for remaining OPA Content Rules.

DataDirect Hybrid Data Pipeline HTTPS Reencrypt Virtual Service Recommended Settings (optional)

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

API Parameter	API Value	WUI Field Name	WUI Field Value
Root Virtual Service			
port	443	Port	443
prot	tcp	Protocol	tcp
VStype	http	Service Type	HTTP-HTTP/2-HTTPS
Schedule	lc	Scheduling Method	least connection
Persist	none	Persistence Options	None
SubnetOriginating	1	Subnet Originating Requests	Enabled
Forcel7	1	Force L4	Disabled
SSLAcceleration	1	SSL Acceleration	Enabled
SSLReencrypt	1	Reencrypt	Enabled
TLSType	3	Supported Protocols	TLS1.1, TLS1.2, and TLS1.3 (Enabled)
CipherSet	BestPractices	Cipher Set	BestPractices
HDP Reencrypt Default - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled

API Parameter	API Value	WUI Field Name	WUI Field Value
Schedule	lc	Scheduling Method	least connection
Persist	src	Persistence Options	Source IP Address
PersistTimeOut	300	Timeout	5 Minutes
CheckType	https	Real Server Check Method	HTTPS Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	8443	Checked Port	8443
CheckUrl	/api/healthcheck	URL	/api/healthcheck
HDP Reencrypt Notification - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection
Persist	src	Persistence Options	Source IP Address
PersistTimeOut	300	Timeout	5 Minutes
CheckType	https	Real Server Check Method	HTTPS Protocol
CheckUseGet	0	HTTP Method	HEAD

API Parameter	API Value	WUI Field Name	WUI Field Value
CheckPort	11443	Checked Port	11443
HDP Reencrypt OPA Node 1 - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection
CheckType	https	Real Server Check Method	HTTPS Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	40501	Checked Port	40501
HDP Reencrypt OPA Node 2 - Sub Virtual Service			
SubnetOriginating	1	Subnet Originating Requests	Enabled
Schedule	lc	Scheduling Method	least connection
CheckType	https	Real Server Check Method	HTTPS Protocol
CheckUseGet	0	HTTP Method	HEAD
CheckPort	40501	Checked Port	40501