Dispatcher Suite High Availability
Failover White Paper

Dispatcher Suite

White Paper

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Introduction

As our premier print management and workflow automation solution, Dispatcher Suite allows companies to effectively manage and reduce their printing costs, while increasing their document workflow productivity and security. Konica Minolta's Dispatcher Suite platform integrates Dispatcher Paragon for print management and Dispatcher Phoenix for automated workflows. This feature-rich platform simplifies print and scan operations, maximizes office efficiencies, and provides businesses of all sizes with the flexibility they need.

With Dispatcher Suite's single sign-on capabilities and dynamic toolset, users have the ability to easily create powerful, automated document workflows for capturing, indexing, processing, and routing documents with zero manual effort. In addition, for organizations who mainly deal with project-based work, you can assign billing codes to individual projects, including support for multi-level project structures. Thanks to its complete modularity, Dispatcher Suite is highly scalable and can be configured exactly to varying corporate needs.

This White Paper provides guidance and best practices for using HAProxy for Failover in conjunction with Dispatcher Suite, Konica Minolta's comprehensive print management and workflow automation solution. In this configuration, servers are clustered, so that when a server fails, it no longer receive requests to do work and will resume working when it is available again. By employing Failover with Dispatcher Suite, organizations will ensure that their system remains available for use when a server or application failure occurs.

Dispatcher Suite Key Features

Authentication

User authentication is simple, convenient, and fast with the entry of a username and password, PIN, or ID card right at the output device for reliable and secure device access.

Rules-Based Engine

Save money while driving team engagement. With provided access, the administrator can set individual print conditions for different users, such as limiting access rights to B&W printing or making duplex printing obligatory.

Print Roaming

Modernized and convenient printing capabilities. Users can submit their print jobs to any managed printer in any location within the network and release the prints whenever and wherever they need them.

Credit & Billing

This is essential for educational institutions and project-based environments that need to charge print, scan and copy costs back to originators.

Workflow Automation

Scan, capture, process, and route your documents automatically. Users can build simple to complex workflows easily, using a powerful and intuitive workflow designer with drag-drop functionality.

Reporting

In order to optimize cost efficiencies, companies can enable the tracking and accounting of all print jobs. Keep track of the "who, what, where & when" throughout the print environment.

Benefits of High Availability

Konica Minolta understands that your data must be as accessible as possible. While disaster recovery back-up solutions can be effective for large-scale data recovery, disaster recovery needs to also include High Availability solutions, such as Failover, to prevent service interruptions and enable real time service restoration. Benefits of a Failover system include:

Protection from Downtime

Unexpected downtime can cripple operations, prevent sales, and impact productivity. By using HAProxy for failover, operations migrate seamlessly to another server if one server fails.
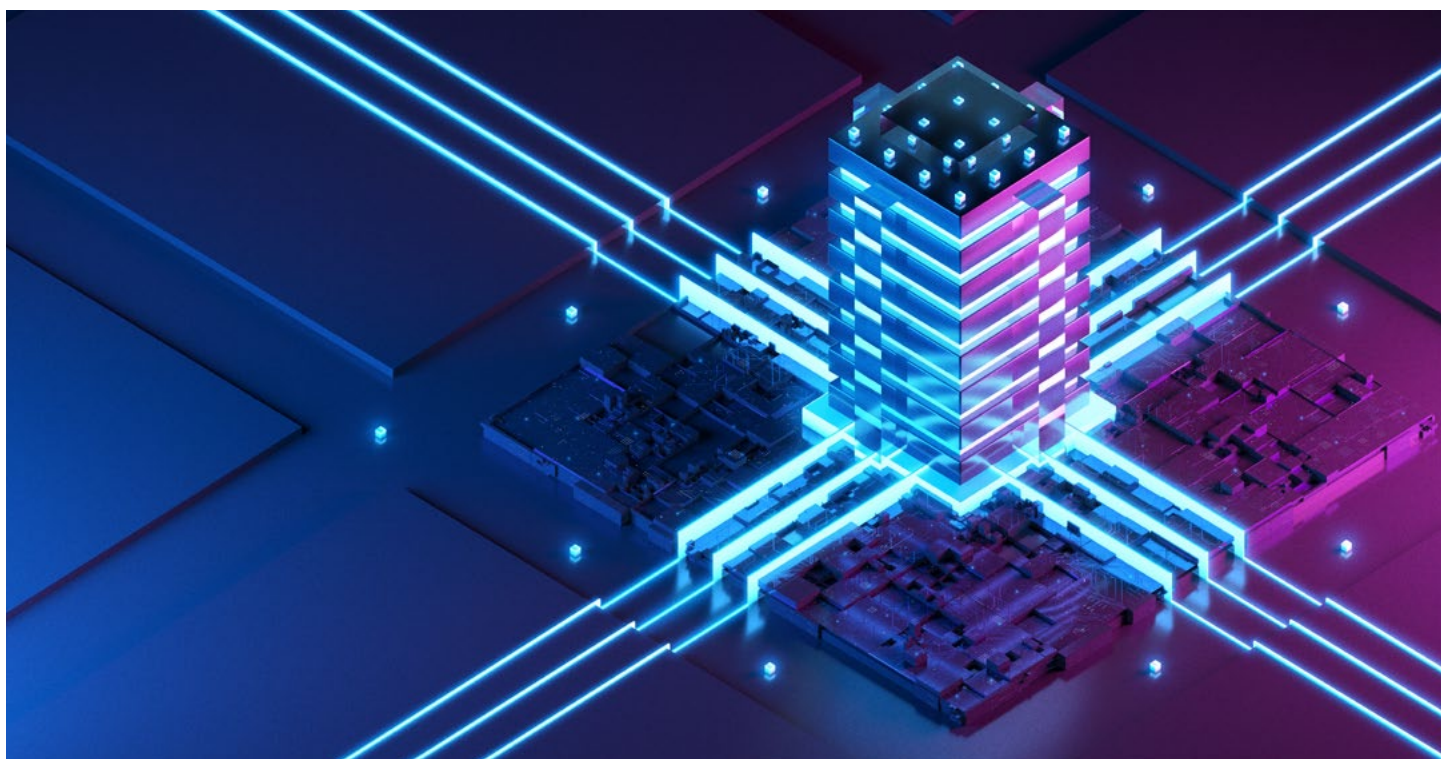
Simplify Maintenance

Reduce the impact to your customers and users whenever you need to take systems or data offline for maintenance, such as software updates or upgrades, backups and more.

Maximize Flexibility, Resilience and Agility

Failover solutions excel in distributing your organization's workload across multiple servers and are the preferred solutions for high-profile environments that need to prioritize scalability, resilience, and flexibility.

Terminology

Backend

A backend is a set of servers that receives forwarded requests. Backends are defined in the backend section of the HAProxy configuration. A backend can contain one or many servers within it; generally speaking, adding more servers to your backend will increase your potential load capacity by spreading the load over multiple servers.

Clustering

Clustering allows groups of computers or servers that support applications to be reliably utilized with a minimum amount of down-time. Clusters operate by using high availability software to harness redundant computers or servers to provide continued service when system components fail.

Failover

Failover is a method of protecting computer systems from failure, in which standby equipment automatically takes over when the main system fails.

Frontend

A frontend defines how requests should be forwarded to backends. Frontends are defined in the frontend section of the HAProxy configuration. A frontend can be configured for various types of network traffic and accepts requests from clients.

High Availability

A quality of a system or component that assures a high level of operational performance for a given period of time.

Listener

A listener is a process that waits for connection requests. You define a listener when you create your Load Balancer, and you can add listeners to your Load Balancer at any time.

Server Weight

Similar to setting priority, server weights indicate how much traffic a device will receive. A server that has greater network capacity or is at a primary data center location that is more central to the user base may have a high weight. All weight settings will deliver traffic to a device at some point.

X-Forward

A common method for identifying the originating IP address of a client connecting to a web server through an HTTP proxy or Load Balancer.

Planning & Considerations

Environmental Overview

In order to provide Failover to a Dispatcher Suite installation, the environment must meet the minimum requirements for Dispatcher Paragon regarding authentication and for Dispatcher Phoenix regarding workflow processing. Requirements for both products are found in the Dispatcher Suite online help system.

Server count for configuration is determined using the following information:

- Number of locations.
- Number of MFP devices.
- Number of workflow processes.
- Network design of multi-site environments.

Overall hardware requirements should be scoped in relation to server count and scaled using the Dispatcher Suite hardware requirements as a baseline.

Clustering

A Dispatcher Suite configuration for Failover begins with the installation and configuration of Dispatcher Paragon and Dispatcher Phoenix clustering. Each product should be configured in their respective cluster configurations. Each product's cluster provides necessary High Availability functionality for the overall solution.
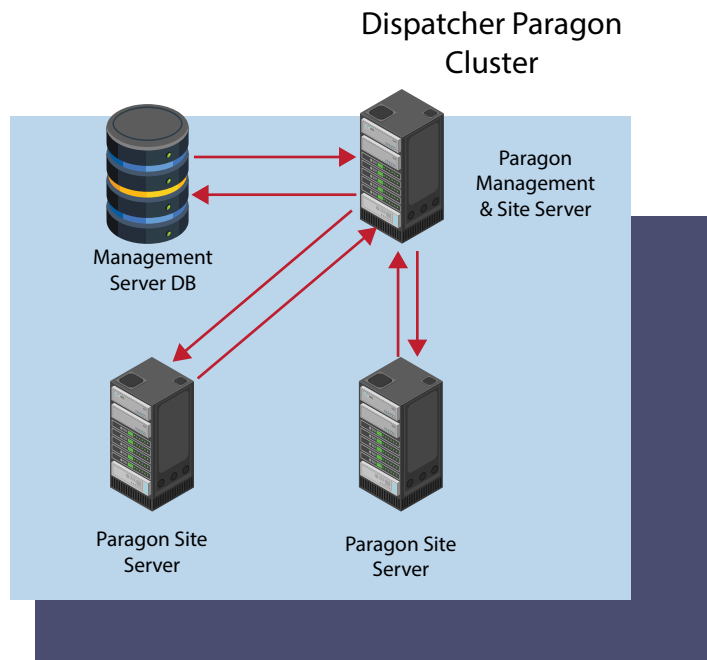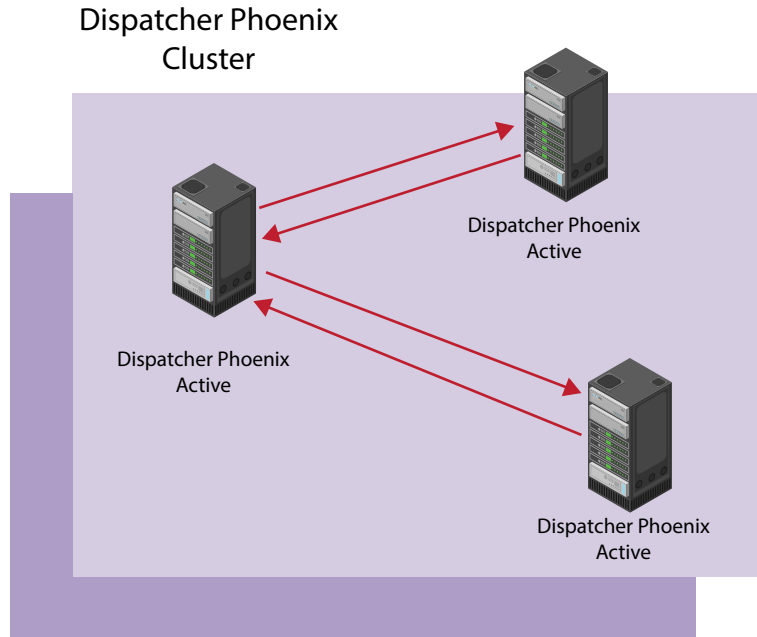
Dispatcher Paragon Clustering - Provides replication between site servers to support degraded cluster scenarios such as a down server, failed or stopped service components.

Dispatcher Phoenix Clustering - Provides replication of workflow engine processing between active nodes to support degraded cluster scenarios such as a down server, failed or stopped service components.

> *Please note: Clustering of the respective product components is required for HA when an environment requires multiple servers in the configuration. In the case of a single instance environment (One Dispatcher Phoenix instance and One Dispatcher Paragon Management Site Server), no product level clustering is required.*

Example Configurations

Dispatcher Phoenix
Cluster

Dispatcher Phoenix
Active

Dispatcher Phoenix
Active

Dispatcher Phoenix
Active

Dispatcher Paragon
Cluster

Paragon
Management
& Site Server

Management
Server DB

Paragon Site
Server

Paragon Site
Server

Prerequisites

- All servers should be part of an Active Directory Domain.
- Windows Authentication using LDAP lookup must be enabled.
- A Network Time Protocol (NTP) or time synchronization must be activated between the separate servers for the two applications to communicate effectively.
- As part of the Paragon configuration, all spooler controllers must be in the same Spooler controller group.
- All MFPs must support OpenAPI setup version 4.1 or higher.

Dispatcher Suite Integration

Dispatcher Suite's integration provides a single point of registration for devices being added and updated for authentication, release, and workflow. Once component clusters have been established with their necessary size and specification, the Dispatcher Phoenix primary active server is integrated with the Dispatcher Paragon Management Server to provide integration functionality. This process should be executed after each cluster is configured for all necessary site and active node servers.

The overall steps for integration are:

1. **Configure Dispatcher Phoenix System Settings**
   Using Dispatcher Phoenix Web, Dispatcher Phoenix must be configured to successfully send and receive MFP and user information from Dispatcher Paragon.

2. **Configure Dispatcher Paragon System Settings**
   To properly share MFP user information with Dispatcher Phoenix, the Dispatcher Paragon System Settings must also be configured.
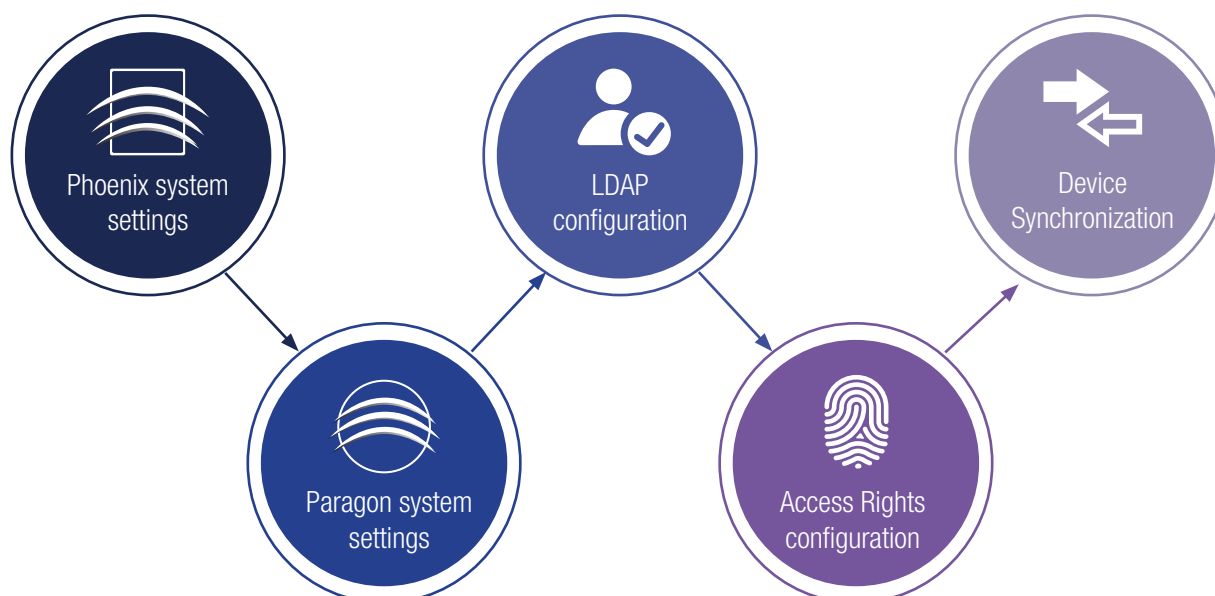
3. **LDAP Configuration**
   Configuring LDAP for Dispatcher Suite enables user synchronization as well as single sign-on capabilities at the MFP.

4. **Access Rights Configuration**
   Within Dispatcher Paragon, a single user needs to be configured as the API user in order to facilitate communication between Dispatcher Paragon and Dispatcher Phoenix.

5. **Device Synchronization**
   In order to allow Dispatcher Phoenix and Dispatcher Paragon to share information about devices, device synchronization must be enabled.

For more information on configuring Dispatcher Suite, please refer to the Dispatcher Phoenix Online Help.

Configuring for Failover

This Dispatcher Suite configuration utilizes HAProxy to provide Failover to the clustered/integrated Dispatcher Suite environment. This solution provides a single point of failure in the configuration of Dispatcher Suite. While it is possible to provide redundancy to HAProxy this document does not address this additional configuration.

Additional information about HAProxy can be found here: https://haproxy.org

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Configuring Failover for Dispatcher Suite using HAProxy

This configuration creates a Layer 4 (TCP) load balanced environment that utilizes affinity and persistence to maintain performance while providing high availability.

In this configuration, HAProxy does not perform any decryption/encryption. As this uses Layer 4, the HAProxy is not modifying the communication and is transferring it to the selected server. There is no need for a certificate in HAproxy as the device sees and uses the certificate of the Dispatcher Paragon Terminal Server directly.
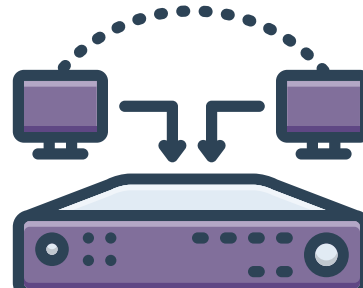
Dispatcher Paragon Requirements:
- Three site servers in a Spooler Controller Group.
- The first server also acts as a Management server.

Frontend listeners for Dispatcher Paragon:
- Secure listener for port 5022 (most common secure communication port for Paragon).
- Secure listener for port 5014-5019 (additional secure port options).
- Listener for port 5012 (HTTP traffic).

Backend server configurations for Dispatcher Paragon:
- Utilize TCP checking (Layer 4 load balancing) for state awareness.
- Server-close logic.
- Source balanced algorithm.
- Hash-type consistent.
- Balancing option: Round robin.
- 30-minute persistent sessions.
- Server identifier.
- Server IP address.

Dispatcher Phoenix Requirements:
- Three active servers in a cluster.
- MFP (bEST) services hosted within Internet Information Services.
- Dispatcher Phoenix web services hosted within Internet Information Services.

Frontend listeners for Dispatcher Phoenix:
- Secure listener for port 50809 (secure bEST server port for MFP communication).
- Listener for port 50808 (HTTP bEST server port).

Backend server configurations for Dispatcher Paragon:
- Utilize TCP checking (Layer 4 load balancing) for state awareness.
- Utilize TCP checking (Layer 4 load balancing) for state awareness.
- Server-close logic.
- Source balanced.
- X-forward for options enabled.
- Hash type: consistent
- Server identifier.
- Server IP address.

Deployment

Sample Deployment Using HAProxy

The following is an example of a Dispatcher Suite Failover deployment. This deployment utilizes HAProxy configuration and a group of three servers to host multiple services per server. If necessary, the Dispatcher Phoenix and Dispatcher Paragon components of Dispatcher Suite can be separated into their own servers.

HAProxy Dashboard View (Configured with All Listeners)

The HAProxy Dashboard allows you to monitor frontend connections between the client and HAProxy as well as connections between HAProxy and the backend servers. Using this dashboard, you receive a near real-time feed of information that can be used to troubleshoot proxied services, get insights about your traffic, and watch the load placed upon your servers.

auth

	Queue			Session rate			Sessions				
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot
Frontend				0	0	-	0	0	262 116	0	

auth

	Queue			Session rate			Sessions					
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last
primary-1	0	0	-	0	0		0	0	-	0	0	?
primary-2	0	0	-	0	0		0	0	-	0	0	?
primary-3	0	0	-	0	0		0	0	-	0	0	?
Backend	0	0		0	0		0	0	26 212	0	0	?

best

	Queue			Session rate			Sessions				
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot
Frontend				2	2	-	2	3	262 116	2	

best

	Queue			Session rate			Sessions					
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last
primary-1	0	0	-	0	0		0	0	-	0	0	?
primary-2	0	0	-	0	0		0	0	-	0	0	?
primary-3	0	0	-	0	0		0	0	-	0	0	?
Backend	0	0		0	0		0	0	26 212	0	0	?

Dispatcher Suite Failover (3 Server Configuration)

This configuration illustrates the use of Redundancy for facilitating Failover. In engineering, Redundancy is the duplication of critical components or functions of a system with the intention of increasing the reliability of the system, usually in the case of a backup or fail-safe.

This N+2 Redundancy configuration includes 3 servers, 1 primary, or the amount required for operation, plus two backups.

As illustrated above, each of the servers is configured with the following:

Server 1
- Dispatcher Phoenix Node (Active)
- Dispatcher Paragon Site Server
- Dispatcher Paragon Management Server (Primary Server)
- Dispatcher Paragon Database

Server 2
- Dispatcher Phoenix Node (Active)
- Dispatcher Paragon Site Server

Server 3
- Dispatcher Phoenix Node (Active)
- Dispatcher Paragon Site Server

Server 4
- HA Proxy (Load Balancer)

Frequently Asked Questions

Q   *What is HAProxy?*

A   HAProxy is a free, fast and reliable open-source solution offering High Availability, failover, load balancing, and proxying for TCP and HTTP-based applications.

Q   *Are Professional Services required to configure Failover or HA for Dispatcher Suite?*

A   Yes, professional services are recommended to configure Failover for Dispatcher Phoenix. Please contact sec@kmbs.konicaminolta.us for more information.

Q   *Does the configuration specific to either Dispatcher Phoenix or Dispatcher Paragon need to change to support Failover or HA?*

A   No, Dispatcher Suite needs to be completely configured and clustered appropriately to support Failover. There are no additional configuration recommendations.

Q   *Who can control the Failover or HA environment?*

A   The customer will maintain control of the High Availability environment.

Q *Will any license of Dispatcher Phoenix work in a Failover or HA configuration?*

A The configuration described in this White Paper will support all existing Dispatcher Phoenix licensing modules including perpetual and subscription/term licensing. The customer should still be licensed for the features and functionality they will require.

Q *Is this type of Failover included as part of the Dispatcher Phoenix license?*

A There is no additional licensing required for Dispatcher Suite when configuring Failover using HAProxy.

Q *How are these High Availability and Failover options different from the HA options offered as separate licenses for Dispatcher Phoenix?*

A You may purchase licenses for specific High Availability functions, such as Load Balancing and Failover, for Dispatcher Phoenix. These licenses provide built-in capabilities for routing traffic between single servers. Using a solution such as HAProxy, you can route traffic between multiple servers and clusters.

Q *Will Dispatcher Suite work with other HA or Failover solutions?*

A The Konica Minolta Solutions Engineering Center (SEC) has currently tested and confirmed that the necessary features for creating a highly available Dispatcher Suite system are functional using HAProxy. Other solutions that provide similar functionality are not officially supported by SEC at this time. As additional solutions are tested, this White Paper will be updated to reflect the additional options.

The Failover configuration for Dispatcher Suite will be different for each customer. For specific configuration recommendations or to inquire about professional services for Dispatcher Phoenix, please contact:
sec@kmbs.konicaminolta.us.

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KONICA MINOLTA BUSINESS SOLUTIONS U.S.A., INC.
100 Williams Drive, Ramsey, New Jersey 07446
CountOnKonicaMinolta.com

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