

# **R-1**

## **Deployment Platform**

# **Clustering Guide**

**Software Version 4.1.1**

**For Windows operating systems**

**July 21, 2009**

Copyright © 2009 RepliWeb® Inc., All Rights Reserved

The information in this manual has been compiled with care, but RepliWeb, Inc. makes no warranties as to its accuracy or completeness. The software described herein may be changed or enhanced from time to time. This information does not constitute a commitment or representation by RepliWeb and is subject to change without notice. The software described in this document is furnished under license and may be used and/or copied only in accordance with the terms of this license and the End User License Agreement.

No part of this manual may be reproduced or transmitted, in any form, by any means (electronic, photocopying, recording or otherwise) without the express written consent of RepliWeb, Inc.

Windows, Windows XP, Windows Vista, Windows 2000, Windows Server 2003, and Windows Server 2008 are trademarks of Microsoft Corporation in the US and/or other countries. UNIX is a registered trademark of Bell Laboratories licensed to X/OPEN.

Any other product or company names referred to in this document may be the trademarks of their respective owners.

**Please direct correspondence or inquiries to:**

RepliWeb, Inc.  
6441 Lyons Road  
Coconut Creek, Florida 33073  
USA

Telephone: (954) 946-2274  
Fax: (954) 337-6424

Sales & General Information: [info@repliweb.com](mailto:info@repliweb.com)  
Documentation: [docs@repliweb.com](mailto:docs@repliweb.com)  
Technical Support: <http://support.repliweb.com>  
Website: <http://www.repliweb.com>

# Table of Contents

<b>1. INSTALLING R-1 IN WINDOWS CLUSTER ENVIRONMENT .....</b>	<b>1</b>
INSTALLATION STEPS.....	2
<i>Installation Prerequisites</i> .....	2
<i>R-1 Installation</i> .....	2
<i>Services Installation on Clusters</i> .....	3
Installation on Windows 2000 / Windows Server 2003 .....	3
Installation on Windows Server 2008 .....	5
<b>2. UPGRADING TO R-1 V4.1.1 (OR LATER).....</b>	<b>7</b>
UPGRADING TO R-1 64-BIT.....	8
<b>3. MONITORING AND SUBMITTING JOBS .....</b>	<b>9</b>
<b>4. UNINSTALLING R-1 FROM WINDOWS CLUSTERS.....</b>	<b>10</b>

# 1. Installing R-1 in Windows Cluster Environment

Since R-1 is by design a “stateless” application (i.e. it’s operation does not rely or depend on a given state of its host, nor does it maintain any run-time state information in RAM), it is ideally suited for installation and operation on high availability systems such as Advanced Servers and Datacenter Servers.

This enables the entire cluster to act as both a highly available source and target of any replication, deployment or consolidation operation.

When installed in this configuration, all running jobs on the cluster will resume operations from within the block within a file (if desired), guaranteeing 100% data integrity even in the event of corrupted disk write-caches and swap files.

**NOTE:** For more information about Windows 2000 Advanced Server and Datacenter Server, refer to the following Microsoft web site:  
<http://technet.microsoft.com/en-us/windowsserver/2000/default.aspx>

Interrupted R-1 operations are resumed through partially written files to find the point at which source and target data are identical, and then continue from that point within the file.

## Installation Steps

In order to run in a fully available, fault-tolerant mode on clustered Windows servers or NAS appliances, the following steps should be taken at installation time.

## Installation Prerequisites

Ensure that a fully functional cluster service with a shared cluster device is set up between two or more clusters.

## R-1 Installation

### To install R-1 v4.1.1:

1. Install the R-1 v4.1.1 kit according to the [R-1 Installation & Setup Guide](#) on both the Active and Passive servers, on a shared cluster device.
2. In the **Custom Setup** screen of the setup wizard, make sure the installation path points to your machine's shared storage area.

The same path should be used for R-1 installation on each cluster's shared storage area.

## Services Installation on Clusters

R-1 can be installed on clusters in the following environments: Windows 2000, Windows Server 2003 and Windows Server 2008.

In order to enable clustering R-1, you must configure the services in the table below.

### The Services List

Name	Service Name	Registry Key
RDS Server	repliweb_server.exe	SOFTWARE\RepliWeb
RDS Scheduler	repliweb_scheduler_service.exe	SOFTWARE\RepliWeb
RDS FASTCopy Server (fcopyd)	fcservice.exe	SOFTWARE\RepliWeb\SoftLink

## Installation on Windows 2000 / Windows Server 2003

**NOTE:** Before performing this procedure, make sure R-1 is installed in your shared storage area, as described in the [R-1 Installation](#) procedure.

Repeat steps 2-4 below for each service referenced in the [Services List](#).

### To install the services on a cluster:

1. On the cluster's active node, open **Cluster Administrator** and then open the **Active Resources** directory.
2. Right click anywhere in the right pane of the **Cluster Administrator**, select **New** and then select **Resource**.  
The **New Resource** wizard opens.
3. Using the **New Resource** wizard, add the services to the cluster as follows:
  - a. In the **Name** field, enter the resource's name that appears in the **Name** column in the [Services List](#). For example, RDS Server.
  - b. (Optional) In the **Description** field, enter a description for the resource.
  - c. In the **Resource type** drop-down list, select **Generic Service**.

**NOTE:** Using Windows 2000, select **General Service**.

- d. From the **Group** drop-down list, select the cluster group and click **Next**.
- e. From the **Available nodes** list, select the clusters on which you want to run R-1 and move them to the **Possible owners** column. Click **Next**.
- f. From the **Available resources** column, select the cluster's shared storage area and move it to the **Resource dependencies** column. Click **Next**.

- g. In the **Service name** field, enter the service name that appears in the **Service Name** column of the [Services List](#). For example, RDS Server.
- h. Click **Next**.
- i. In the **Registry Key** dialog box, click **Add**.
- j. In the **Registry replication path** field, enter the **Registry Key** column as it appears in the [Services List](#). For example, [SOFTWARE\RepliWeb].

**NOTE:** For **Windows 2000**, enter:  
[HKEY\_LOCAL\_MACHINE\SOFTWARE\RepliWeb]

If installing R-1 32 bit on a **64 bit** machine, enter:  
[SOFTWARE\Wow6432node\RepliWeb]

- k. Click **Finish** to complete the installation wizard.

The newly added service resource is offline and should be left as is for now.

4. To move the cluster to the next node, perform steps a-b for each node separately.
  - a. Open the **Active Groups** directory.
  - b. Right click an active group and select **Move group**.

The cluster is reactivated on the next node.

5. In the **Control Panel**, open **Administrative Tools** and then open **Services Manager**.
6. Verify that all of the services that appear in the [Services List](#) are installed.
7. Return to the **Cluster Administrator** window, right-click each offline resource and select **Bring Online**.

## Installation on Windows Server 2008

**NOTE:** Before performing this procedure, make sure R-1 is installed in your shared storage area, as described in the [R-1 Installation](#) procedure.

In order to install RepliWeb services on a Server 2008 cluster, you must first create a cluster service for R-1, register each service in the cluster separately, and activate the R-1 Cluster Service after installing all three RepliWeb services.

**NOTE:** RepliWeb services are referred to as resources once they have been installed on the cluster.

### Creating the R-1 Cluster Service

This process creates the R-1 Cluster Service container. This container connects the RepliWeb services to the relevant clusters.

#### To prepare a cluster:

1. Open the active cluster and access **Failover Cluster Management**.
2. Right click **Services and Applications**, select **More Actions**, and then select **Create Empty Service or Application**.
3. In the **Services or Applications** pane, right click the **New service or application** item.
4. In the **New Service or Application Properties** dialog box, change the name to **R-1 Cluster Service**.
5. From the **Preferred Owners** area, select the computers on which R-1 is installed and click **OK**.
6. From the **Actions** pane, select the **Add storage** link.
7. From the **Add Storage** dialog box, select the relevant shared cluster disk where R-1 is installed and click **OK**.

### Registering RepliWeb Resources

In order to enable clustering R-1, you must configure each RepliWeb resource that appears in the [Services List](#) by repeating this process for each service.

#### To register RepliWeb services on a cluster:

1. From the **Actions** pane, select the **Add a resource** link, and then select the **Generic Service** option.  
The **New Resource Wizard** opens.
2. From the wizard's **Services** table, select the relevant RepliWeb service as it appears in the [Services List](#) and complete the wizard.
3. In the left pane, right click **R-1 Cluster Service**, select the resource you have just added, and then select **Properties**.

- The resource's **Properties** dialog box appears.
4. In the **Registry Replication** tab, click **Add**, and enter the relevant **Registry Key** as it appears in the [Services List](#).
  5. In the **Dependencies** tab, click **Insert** and select the storage resource that appears.
  6. Click **OK**.

## Activating the RepliWeb Resources

Make sure all three RepliWeb resources are registered before activation.

### To activate the RepliWeb resources on a cluster:

- From the left pane, right click the **R-1 Cluster Service** and select **Bring this service or application** online.

## 2. Upgrading to R-1 v4.1.1 (or later)

This procedure upgrades your R-1 cluster settings to R-1 v4.1.1 (or later versions). You should perform this procedure for each R-1 cluster resource as it appears in the [Services List](#) table.

**NOTE:** In order to upgrade to R-1 (64-bit), refer to the [Upgrading to R-1 64-bit](#) section.

### To upgrade your cluster settings to R-1 v4.1.1 (or later):

On the cluster's active server, open **Cluster Administrator (Failover Cluster Management in Server 2008)**.

1. Open the **Active Resources** directory of the current active cluster.
2. Right click each resource appearing in the [Services List](#) and select the **Take offline** option.
  - If you are upgrading from R-1 v4.0 or older, right click **FASTCopy Server (fcopyd)** and select the **Delete** option.
3. Run the relevant R-1 installation kit on each cluster's shared storage area using the same path and directory name.
4. In the setup wizard's **Modify, Repair or Remove Installation** screen, click the **Repair/Update** button and continue according to the [R-1 Installation & Setup Guide](#).
  - If you are upgrading from R-1 v4.0, after installation completes, perform steps 3 - 4 in the [Services Installation on Cluster Nodes](#) section to add back **RDS FASTCopy Server (fcopyd)**.
5. Right click each offline resource in the [Services List](#), and select the **Bring Online** option.

## Upgrading to R-1 64-bit

This procedure upgrades an R-1 32-bit system to an R-1 64-bit system.

### To upgrade to R-1 64-bit:

1. Using the **Backup & Restore** feature, back up your current R-1 configuration settings and scheduled jobs to a directory on your computer.  
For more information about **Backup & Restore**, refer to the [R-1 User Guide](#).
2. Remove R-1 from your computer. For more information, refer to the R-1 Installation Guide.
3. Using the **Backup & Restore** feature, restore the R-1 settings and scheduled jobs you previously backed up.

## 3. Monitoring and Submitting Jobs

From a third machine (one that is located on the public network), you can connect to the cluster at its designated IP address or hostname using the R-1 Console.

When a an active cluster fails, it takes 60 seconds for a running program to time out and quit its operation. In this case, to continue monitoring or submitting new jobs, you must “reconnect” from the Console. Scheduled jobs that were halted due to failover will resume their operation as scheduled.

## 4. Uninstalling R-1 from Windows Clusters

Perform this procedure to uninstall R-1 from a cluster environment.

Repeat steps 2-4 for each service referenced in the [Services List](#).

### To uninstall R-1 from a cluster:

1. On the cluster's active server, open **Cluster Administrator/Failover Cluster Management**, and then open the **Active Resources** directory of the current active cluster.
2. Right click each resource appearing in the [Services List](#) and select the **Take offline** option.
3. From each cluster, uninstall R-1 according to the [R-1 Installation Guide](#).
4. From the **Cluster Administrator/Failover Cluster Management**, open the **Active Resources** directory of the current active cluster.
5. Right click each resource appearing in the [Services List](#) and select **Delete**.

For any additional information, contact us at [support.repliweb.com](http://support.repliweb.com)