Wolters Kluwer Financial Services
2013.1.4

Disaster Recovery

Operational Guide

April 2013

Wolters Kluwer
Financial Services

Preface

This publication was written for Wolters Kluwer Financial Services

Publication Information / Version
Document Title: Disaster Recovery
Release Date: April 2013

Distributed Subject to Terms of a License or other Agreement
The contents of this publication, including its appendices, exhibits, and other attachments, as updated or revised, are highly confidential and proprietary to Wolters Kluwer Financial Services, Inc. or its subsidiaries or affiliates ("Wolters Kluwer Financial Services"). This publication is distributed pursuant to a Non-Disclosure Agreement, Evaluation Agreement, License Agreement and/or other similar agreement(s) with Wolters Kluwer Financial Services, Inc. or its subsidiary or affiliate. Unless otherwise specifically provided in such agreement(s), the reproduction of this publication is strictly prohibited. Use and distribution of this publication are also subject to the responsibilities and obligations of such agreement(s), which require confidential treatment of this publication and its contents.
Information in this guide is subject to change without notice and does not represent a commitment on the part of Wolters Kluwer Financial Services.

Do Not Reproduce or Transmit
Unless otherwise specifically authorized in the agreement or license under which this publication has been provided, no part of this publication may be posted, played, transmitted, distributed, copied or reproduced in any form or by any means, electronic or mechanical, including photocopying, recording, or retaining on any information storage and retrieval system, without prior written permission from Wolters Kluwer Financial Services.
Requests for permission to reproduce content should be directed to Wolters Kluwer Financial Services, Inc., Corporate Legal Department, by telephone at 1-800-397-2341.

Not a Substitute for Legal Advice
This publication is intended to provide accurate and authoritative information about the subject matter covered based upon information available at the time of publication. Examples given in this publication are for illustrative purposes only. Development of this publication and the software (including forms, disclosures, reports, and other documents generated by the software) or other products that it describes was based on Wolters Kluwer Financial Services' understanding of various laws, regulations and commentaries. Wolters Kluwer Financial Services cannot and does not guarantee that its understanding is correct.
This publication is not intended, and should not be used, as a substitute for legal, accounting, or other professional advice. Wolters Kluwer Financial Services is not engaged in providing legal, accounting or other professional services. If legal or other professional assistance is required, you should seek the services of a competent professional. We encourage you to seek the advice of your own attorney concerning all legal issues involving the use of this publication and any products described in this publication. If your interpretations or your counsel's interpretations are contrary to those expressed in this publication, you should of course, follow your/your counsel's interpretations.

The following notice is required by law:

Wolters Kluwer Financial Services' PRODUCTS AND SERVICES ARE NOT A SUBSTITUTE FOR THE ADVICE OF AN ATTORNEY.

Warranty Disclaimer
Except only for the warranties (if any) expressly set forth in the agreement(s) under which this publication is provided (i.e., your agreement or license for the described product), this publication is provided "as is", and Wolters Kluwer Financial Services makes no warranty, express, implied, by description, by sample or otherwise, and in particular and without limitation, makes no implied warranties of merchantability or fitness for purpose. No modifications to this Warranty Disclaimer are authorized unless in writing and signed by the President or a Vice President of the Wolters Kluwer Financial Services entity licensing the product described in this publication.

Attributions and Acknowledgements

TSoftPlus is a registered trademark of Wolters Kluwer Financial Services, Inc.All other trademarks are the property of their respective owners.

Copyright Information

©2014 Wolters Kluwer Financial Services, St. Cloud, Minnesota
This publication is the confidential information of Wolters Kluwer Financial Services. Distribution of this publication is subject to restrictions in the license or agreement under which this publication is provided to authorized Wolters Kluwer Financial Institution customers.
All rights reserved.

Wolters Kluwer
Financial Services

Table of Contents

Wolters Kluwer
Financial Services

Disaster Recovery Site

Welcome to the Disaster Recovery site operations documentation.

This documentation provides information describing the process engaged in declaring a disaster recovery event, activating the disaster recovery site, and recovering the production environment. Also described are some key technical and infrastructure details of the disaster recovery site.

The documentation discusses the following topics:

Wolters Kluwer
Financial Services

About the Guide

The *Disaster Recovery Operational Guide* provides a high-level overview of the disaster recovery planning process. Detailed procedures are defined for each stage in the process and documented in a collection of procedure guides maintained by the Customer Support and Application and Systems Management organizations.

The pertinent procedure guides include:

- Site Outage Escalation Guide
- Disaster Recovery Procedures

Wolters Kluwer
Financial Services

What's New

The following release history describes modifications to established procedures and technical changes made to the disaster recovery site.

Release	Date	Module	Description

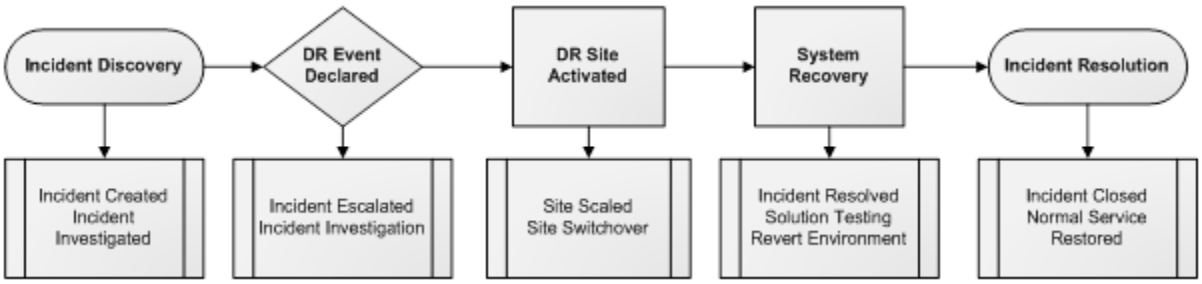
Disaster Recovery Process Overview

The disaster recovery process is geared towards identifying the key activities required to recover the production environment within the defined recovery time objective (RTO). The RTO is the duration of time and the service level within which the solution must be restored following an outage or service disruption. The recovery time objective (RTO) is 4 hours, 24 hours per day and 7 days per week.

The process for declaring a disaster recovery event, from incident reporting through to resolution, is managed by Wolters Kluwer Financial Services in a collaborative fashion engaging several teams including product management, product development, Application and Systems Management (ASM), and Customer Support.

- **Product Management:** Responsible for timely input, decisions, escalation (if needed) and monitoring of issue resolution.
- **Product Development:** Responsible for issue escalation including troubleshooting and solution Implementation.
- **Application and Systems Management:** Responsible for overall response coordination, troubleshooting, and issue resolution including internal issue reporting, discovery, and disaster recovery site configuration and activation. ASM will lead DR testing but will collaborate with others as necessary in that process.
- **Customer Support:** Responsible for conducting the outbound customer communication. For hours of coverage for Customer Support, refer to: On/After Hours Outage Reporting.

At a high-level, the process begins when an incident impacting normal service is reported and continues through to a successful resolution of the incident and return to normal service.



On/After Hours Outage Reporting

The disaster recovery process provides both on and after hours coverage. It is important to note that certain steps and communication channels vary depending on if the initial outage is reported during normal business hours or outside normal business hours. Customer Support hours of operation are from 7 a.m. to 7 p.m. CST, Monday-Friday.

- **On Hours Outage:** An outage that occurs during normal Customer Support hours of operation.
- **After Hours Outage:** An outage that occurs after normal Customer Support hours of operation.

Important:

After Hours Outage:

An after-hours outage is detected by the ASM team through the monitoring process in place for the solution. The monitoring process is configured to page the ASM on-call representative in the event of a hardware or application failure. ASM will assess and rule out any system configuration or hardware failures before escalating the issue to the product development on-call representative.

About the Disaster Recovery Site

The Disaster Recovery site provides the technology infrastructure to ensure data protection for the product solution in the event of a crisis, unexpected outage, or other event where the production environment is not available. The site is hosted and professionally managed by Savvis ® , Inc.

About Savvis

Savvis is a leading worldwide provider of Managed Cloud Services, Managed Application Services, Managed Messaging Services, & Enterprise Hosting. All Savvis cloud enabled data centers are SOC II compliant, and undergo rigorous voluntary reviews of policies, practices and security measures. SOC II Certification is an internationally recognized auditing standard of the American Institute of Certified Public Accountants and is further assurance that Savvis follows stringent controls and safeguards in the cloud computing environment. For more information, visit Savvis online at http://www.savvis.com/.

Defining a Disaster Recovery Event

A disaster recovery event is triggered through a defined set of circumstances leading to the activation of the DR site as the host for the production environments. Activating the disaster recovery site entails certain hard and soft costs, above and beyond the base cost to maintain the site in its standby state. Due to these costs, the disaster recovery site is activated only when Wolters Kluwer Financial Services has initiated a disaster recovery event.

Wolters Kluwer Financial Services defines a disaster recovery event for the product solution as follows:

```
Any software, infrastructure or operational issue that renders the production
environment unusable for all customers. The scale of the issue(s) must exceed
the expected recovery time objective. When it is apparent that the issue will
not be resolved within the expected recovery time, the disaster recovery
process is initiated.
```

An issue resulting in an outage in the production environment does not always result in a disaster recovery event. The decision to engage the disaster recovery process is based, in part, on whether switching to the DR site will allow for resumption of business processing.

Customer Support is responsible for communicating any outages discovered by their team or by a customer to the ASM team for research using ServiceNow. The ASM resource is responsible for coordinating internal resources to confirm that a reported outage meets the criteria of a disaster recovery event and alerting impacted internal parties that an event has occurred and DR site will be activated in response. Once Customer Support receives this communication from ASM, they will complete the outbound customer communication.

> **Attention:**
> The DR site is used exclusively for the production environment; the site is not used to support non-production environments such as software quality control (SQC) or user acceptance testing (UAT) environments.

Activating the Disaster Recovery Site

Once a disaster recovery event has been declared, the next step is to activate the disaster recovery site.

> **Important:**
> Activation, and the subsequent switchover to the disaster recovery site, is absolute and results in all traffic and all customers being redirected to the disaster recovery site. The activation process, therefore, is not engaged as a workaround for a single customer issue.

Recovering the Production Environment

Once the product solution is activated and running on the disaster recovery site, the timing and decision to revert back to the production environment is based on confirming the following decision points:

- The root cause of the DR Event has been resolved.
- Full functionality of all impacted production environments has been restored.
- Each component of the production environment has been tested to ensure it is operating as expected.
- The switchover time (planned to occur in the next available off-peak hours) has been communicated to customers .

Workflow

This section provides a high-level overview of the Disaster Recovery planning process. Specific procedures and steps are documented in the Customer Support process documentation; *Site Outage Escalation Guide* and the *Disaster Recovery Procedures Guide*.

In the event of an outage in the production environment, Wolters Kluwer Financial Services initiates the following workflow.

The workflow steps include:

1. Incident Recovery Procedures
2. Declaring a Disaster Recovery Event
3. Activating the Disaster Recovery Site
4. Recovering the Production Environment
5. Incident Resolution Procedures

Incident Recovery Procedures

Pre-requisites

Wolters Kluwer Financial Services has been notified, through internal monitoring or by other means, that the production environment is experiencing problems.

Context

The incident discovery stage involves initial incident (outage) reporting, creation of an incident report, and initial investigation of the issue.

1. The originating agent performs initial incident investigation. This may include confirming the site availability by submitting a test transaction in the production environment and attempting to replicate the issue.
2. The originating agent creates an incident in the Service Now system alerting ASM of the issue.
3. The originating agent sends an e-mail message to the application outage and Customer Support distribution lists to communicate the nature and scope of the incident.
4. The ASM team researches the issue.
5. ASM submits status updates and any known workarounds related to the issue every 30 minutes until the issue is resolved.
6. If the problem exceeds 30 minutes in length, the Customer Support agent pulls customer email list and sends an e-mail message to customers as notification of the issue.
7. **During normal business hours:** If the problem continues 30 minutes after the initial customer notification e-mail was sent, the Customer Support agent sends a follow up e-mail message to impacted customers providing an issue status update. This step repeats every 30 minutes until the problem is resolved.

   After business hours: No communications are currently provided after business hours, as described in On/After Hours Outage Reporting.
8. The incident is monitored and if the duration of the outage is expected to exceed the RTO time duration, a determination is made to declare a disaster recovery event.

Outcome

The reported issue has been resolved or a determination to declare a disaster recovery event has been made.

Next steps

If the issue is not resolved in accordance with the defined criteria, a disaster recovery event is declared.

Declaring a Disaster Recovery Event

Pre-requisites: The incident discovery process resulted in a determination that a disaster recovery event is warranted.

Context: The ASM team, in consultation with product management and product development teams, initiates the activation process. The declaring a disaster recovery event stage involves a consensus decision to declare an event, internal and outbound customer communication for the event, and continued investigation of the issue.

1. If the disaster recovery event criteria have been met, the ASM team declares a disaster recovery event through consultation with, and consensus between, product stakeholders.
2. ASM notifies the appropriate internal contacts that a disaster recovery event has been declared.
3. Customer Support notifies the appropriate customer contacts that a disaster recovery event has been declared.

Outcome: A disaster recovery event has been declared and the appropriate Wolters Kluwer Financial Services parties and impacted customers have been notified accordingly.

Next steps: The next step in the workflow is to activate the disaster recovery site.

Activating the Disaster Recovery Site

Pre-requisites: A disaster recovery event has been declared and the activation criteria have been met.

Context: The ASM team initiates the activation process.

1. The Application and Systems Management team creates a Sev1 incident to handle the required DNS modifications to the DR domain.
2. The Application and Systems Management team contacts the Savvis support desk notifying them that a disaster recovery event has been declared and the DR site is being activated and switched to the effective production site.
3. This notifies the hosting service to expect increased traffic and data loads on the site and ensures that the hosting service doesn't report changes to the environment as unexpected activity.
4. When the switchover is complete, a test transaction is processed against the DR domain and validated through the Manual Center to verify that the tested transaction was submitted to the DR site servers.

Outcome: The disaster recovery environment has been activated and successfully tested.

Next steps: The next step in the workflow is to recover the production environment.

Recovering the Production Environment

Pre-requisites: The production environments have been restored and the disaster recovery incident resolved.

Context: Recovering the production environment stage involves implementing and testing the issue resolution and reverting back to the production environment.

1. The ASM team sends notification that the production system is restored and operating in disaster recovery mode. The notification recipients are to include the internal distribution list.
2. Customer Support sends notification to impacted customers that the production system is restored and operating in disaster recovery mode.
3. The ASM team creates a Sev1 incident requesting the DNS host name be reverted back to the production environment.
4. When the reversion back to production is complete, a test transaction is processed to verify that the tested transaction was submitted to the production environment.

Outcome: The production environment has been restored and successfully tested.

Next steps: The next step in the workflow is to close the issue and notify customers.

Incident Resolution Procedures

Pre-requisites: The disaster recovery event is resolved and the production environments are restored.

Context: The incident resolution stage involves closing all incidents and outbound customer communications.

1. The ASM team notifies Customer Support that the problem has been resolved.
2. The ASM team notifies software quality control, product development.
3. The Customer Support agent forwards the e-mail message confirming the issue resolution (step 1) to the appropriate distribution list to communicate issue status as resolved.
4. The Customer Support agent closes any open/related service requests(s).
5. The Customer Support agent sends a follow up e-mail message to impacted customers communicating the issue resolution.

Outcome: The reported issue has been closed and customer notification completed.

Next steps: None

Wolters Kluwer
Financial Services

Infrastructure and Configuration

The DR site is hosted in Savvis's SOC II certified data center located in New Jersey, NJ. The site is configured in two tiers: the front end (Web tier) and the back end (application tier).

The front end, or Web, tier contains the IIS Web servers which are directly accessible from the public internet through the Savvis maintained SOC II compliant firewall and are configured as VMWare virtual machines. The back end application tier contains Microsoft SQL database Servers and Raven database servers and are configured on physical servers.

Web Tier (Front end)

The Web tier is secured through the SOC II compliant firewall and allows only port 443 to the IIS Web servers. The port is configured with least connections load balancing to allow distribution of client requests across multiple servers, particularly the Web tier. The firewall also manages session persistence once a connection is made to the servers.

The current configuration for the Web tier consists of Windows 2008 R2 Servers running Internet Information Services (IIS).

Application Tier (Back end)

The application tier has additional firewall protection from the Web tier. Only necessary communications between the Web and application tiers are permitted.

The current configuration consists of MSSQL servers running MSSQL 2012, Windows 2008 R2 Server, and Raven DB.

Maintaining the Disaster Recovery Site

The disaster recovery site is maintained in parallel with all other environments. All releases applied to the production environment are released to the DR environment within 48 hours.

Patches and Updates

The disaster recovery environment may require patch and software updates supporting the operation system or system hardware. These events are performed by the services provider, Savvis, as part of routine system maintenance. Occasionally, Savvis may request a maintenance window in order to apply system patches or updates after testing each patch in the DR environment.

About Wolters Kluwer Financial Services - Whether complying with regulatory requirements or managing financial transactions, addressing a single key risk, or working toward a holistic enterprise risk management strategy, Wolters Kluwer Financial Services works with more than 15,000 customers worldwide to help them successfully navigate regulatory complexity, optimize risk and financial performance, and manage data to support critical decisions. Wolters Kluwer Financial Services provides risk management, compliance, finance and audit solutions that help financial organizations improve efficiency and effectiveness across their enterprise. With more than 30 offices in 20 countries, the company's prominent brands include: FRSGlobal, FinArch, *ARC* Logics®, TeamMate®, Bankers Systems, VMP® Mortgage Solutions, AppOne®, GainsKeeper®, Capital Changes, NILS®, AuthenticWeb™ and Uniform Forms™. Wolters Kluwer Financial Services is part of Wolters Kluwer, a leading global information services and solutions provider with annual revenues of (2012) €3.6 billion ($4.6 billion) and approximately 19,000 employees worldwide. Please visit our website for more information.

Wolters Kluwer Financial Services
6815 Saukview Drive
St Cloud, MN, 56303
Toll-free: 800.274.2711

To learn more visit **WoltersKluwerFS.com.**

© 2014 Wolters Kluwer Financial Services, Inc. All Rights Reserved.

Wolters Kluwer
Financial Services