



What's New in VMware vCenter™ Site Recovery Manager 5.0

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Table of Contents

Introduction	3
Technology Changes And New Features	4
vSphere Replication.....	4
Site Recovery Manager Scalability	5
Workflow Changes	6
Planned Migration.....	6
Reprotection.....	7
Failback	8
Disaster Recovery Event	8
User Interface.....	9
Technical Improvements	10
IPv6	10
Single UI.....	10
IP Customization Enhancements.....	10
In-Guest Callouts.....	10
API	10
Virtual Machine Dependency Enhancements	11
Conclusion	13

Introduction

VMware vCenter™ Site Recovery Manager (Site Recovery Manager) is the premier tool to enable you to build, manage and execute reliable disaster recovery plans for your virtual environment. Taking full advantage of the encapsulation and isolation of virtual machines, Site Recovery Manager enables simplified automation of disaster recovery. It helps meet recovery time objectives, reduces costs traditionally associated with business continuance plans and achieves low-risk and predictable results for recovery of a virtual environment.

With the new version 5.0 release, VMware has expanded the capabilities of Site Recovery Manager to provide unprecedented levels of protection. New use cases have been made possible through the addition of the following capabilities:

- vSphere Replication
- Increased scalability
- Planned migration
- Failback
- Reprotection
- Enhanced dependency definition

In this paper, we will provide an overview of the new capabilities of Site Recovery Manager 5.0.

Technology Changes and New Features

vSphere Replication

When used in conjunction with VMware vSphere™ 5.0 (“vSphere”), Site Recovery Manager 5.0 introduces a new capability to utilize the vSphere 5.0 host to perform replication of powered-on virtual machines over the network to another vSphere 5.0 host without the requirement of storage array-based native replication.

vSphere Replication is a VMware® proprietary replication engine that copies only changed blocks to the recovery site, ensuring both lower bandwidth utilization and more aggressive recovery point objectives compared with manual, full-system copies of virtual machines.

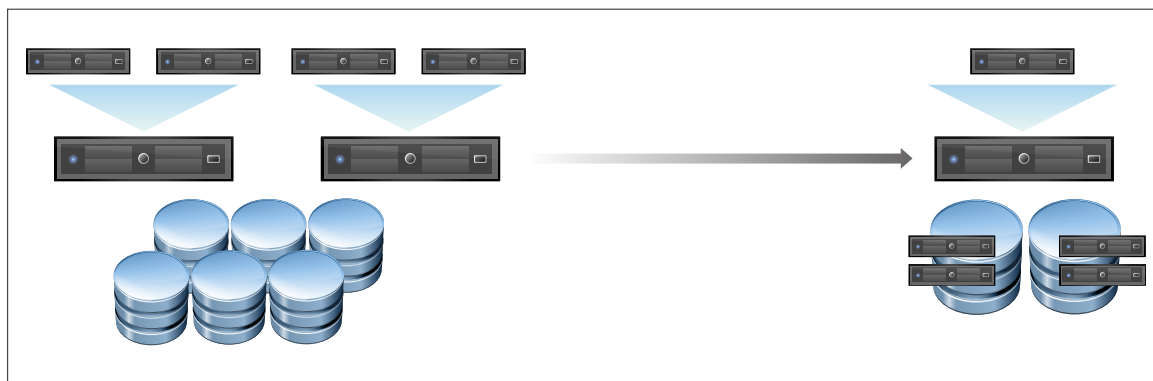


Figure 1. vSphere Replication Enables Virtual Machines to Be Replicated by the vSphere Host to a Recovery Site Without the Need for Array-Based Replication

This new capability unlocks the capacity to use Site Recovery Manager for unprecedented levels of protection, enabling full replication of the entire set of virtual machines in the vSphere environment while maintaining full interoperability with array-based replication engines.

vSphere Replication can be enabled through Site Recovery Manager as a property of the virtual machine itself, independent of the underlying datastore type or capabilities, facilitating replication between heterogeneous storage types and datastores.

vSphere Replication with Site Recovery Manager includes the following features:

- Guest operating system (OS) Microsoft Volume Shadow Copy Service (VSS) integration to ensure OS file system consistency of the replica
- Parallel operation with array-based replication via storage replication adaptors to enable tiered replication offerings
- No requirement for change to existing workflows or replication technologies
- Ability to remap protected site virtual machine disks to alternate datastores at the recovery site
- Granular configuration of replication – choose all or a subset of a running virtual machine’s disks to replicate to the recovery site using vSphere Replication
- The ability to choose individual virtual machine disk files, entire virtual machines or groups of virtual machines to protect through a graphical user interface

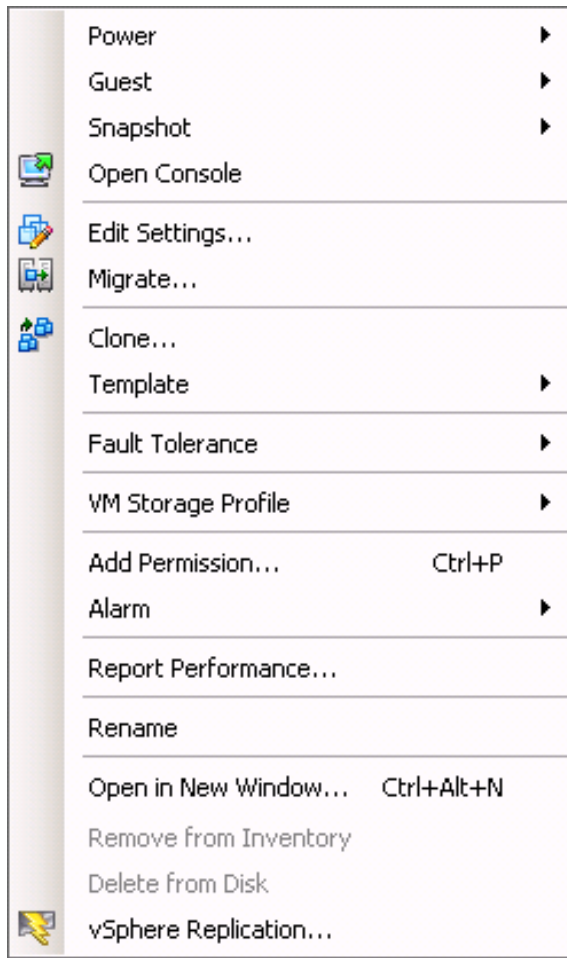


Figure 2. vSphere Replication Can Be Accessed Through the Same User Interface As All Other vSphere Management Capabilities

Site Recovery Manager Scalability

Site Recovery Manager 5.0 has introduced some changes to the scalability limits of previous versions, offering a larger ceiling of protected systems per instance, as detailed in Table 1. Although many of these limits are not enforced, they should be adhered to because support cannot be guaranteed if these numbers are exceeded in practice.

FEATURE	MAXIMUM	ENFORCED
Total number of allowed protected virtual machines	1,000	No
Number of allowed virtual machines in a single protection group	500	No
Protection groups	250	No
Simultaneous running recovery plans	30	No
vSphere Replication protected virtual machines	500	No

Table 1. Site Recovery Manager 5.0 Scalability Limits

Workflow Changes

Site Recovery Manager 5.0 includes three major additions to the workflow capabilities:

- Planned migration
- Reprotection
- Failback

Planned Migration

Prior to Site Recovery Manager 5.0, workflow capabilities included both execution and testing of a recovery plan. With version 5.0, VMware has introduced a new workflow designed to deliver migration from a protected site to a recovery site through execution of a planned migration workflow. Planned migration ensures an orderly and pretested transition from a protected site to a recovery site while minimizing the risk of data loss.

Planned migration runs in a highly controlled fashion. It will halt the workflow if an error occurs, which differs from a traditional disaster-event recovery plan.

With Site Recovery Manager 5.0, all recovery plans, whether they are for migration or recovery, run as part of a planned workflow that ensures that systems are properly shut down and that data is synchronized with the recovery site prior to migration of the workloads. This ensures that systems are properly quiesced and that all data changes have been completely replicated prior to starting the virtual machines at the recovery site. If, however, an error is encountered during the recovery plan execution, Planned migration will stop the workflow, providing an opportunity to fix the problem that caused the error before attempting to continue.

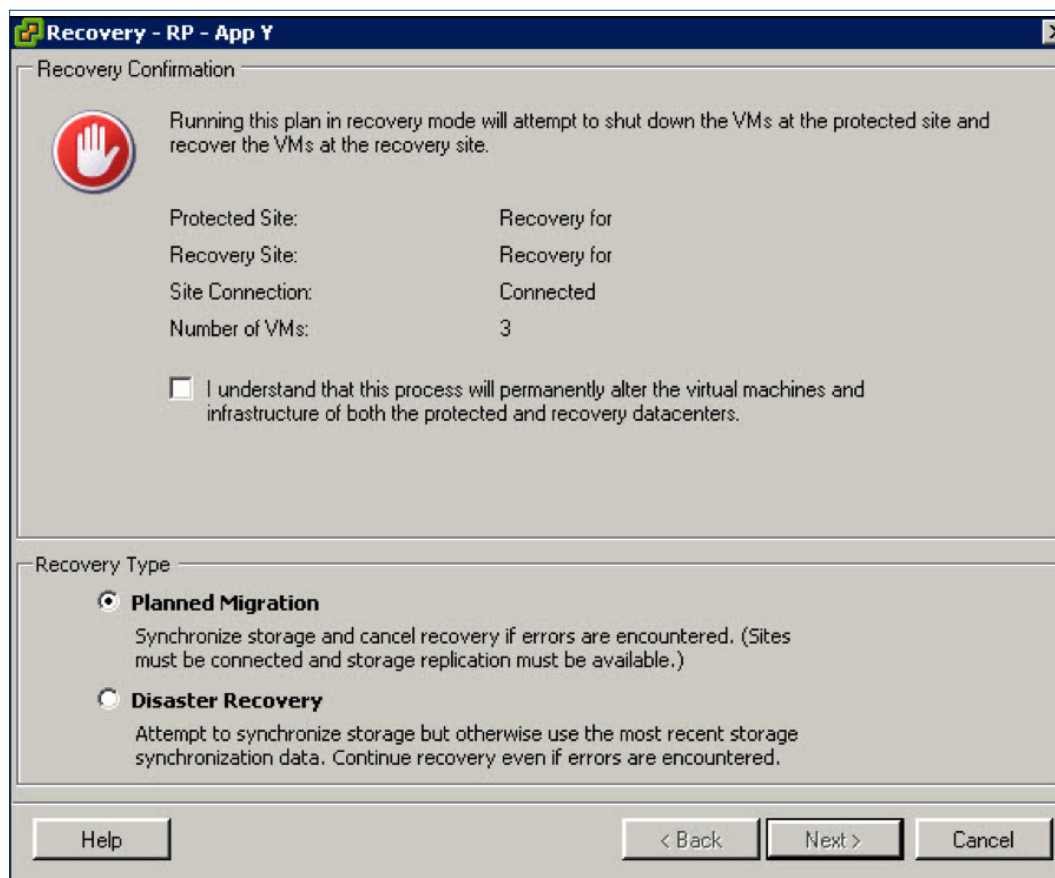


Figure 3.

With planned migration, systems are “application consistent” when started at the recovery site, rather than “file-system consistent” as is seen when systems are started after a crash. This enables new uses of Site Recovery Manager, including workflows such as the following:

- Coordinated application migration between sites
- Partial site migration
- Datacenter relocation
- Disaster avoidance

Reprotection

After a recovery plan or planned migration has run, there are often cases where the environment must continue to be protected against failure, to ensure its resilience or to meet objectives for disaster recovery.

With Site Recovery Manager 5.0, reprotection is a new extension to recovery plans for use only with array-based replication. It enables the environment at the recovery site to establish synchronized replication and protection of the environment back to the original protected site.

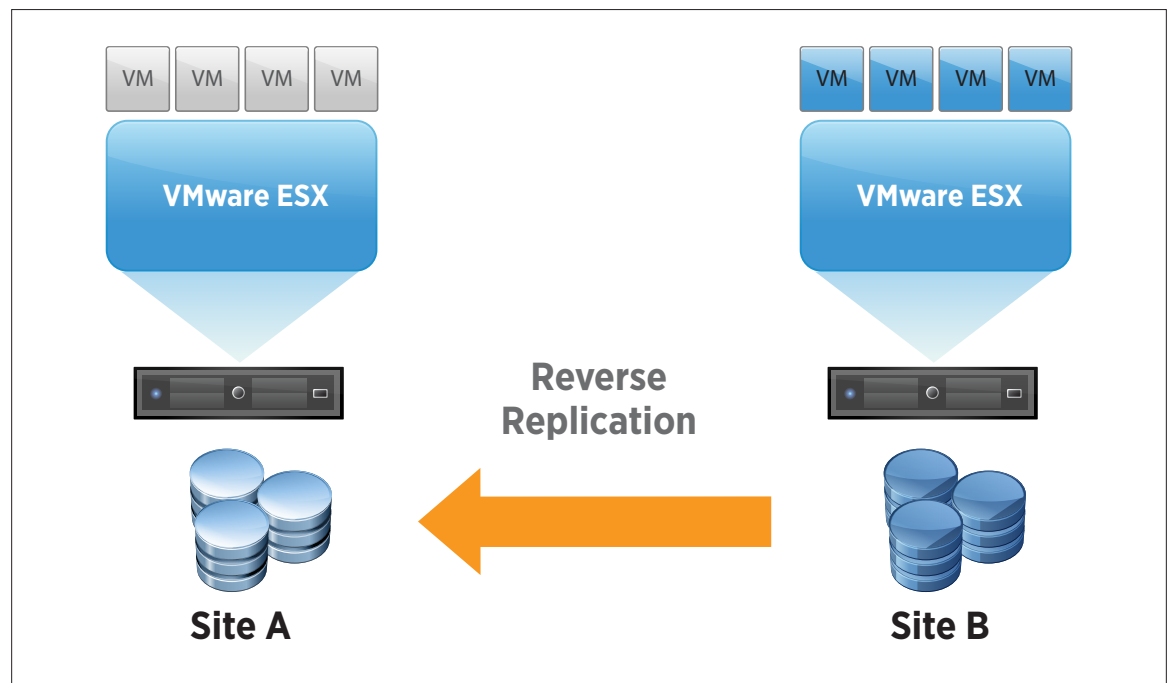


Figure 4.

After failover to the recovery site, selecting to reprotect the environment will establish synchronization and attempt to replicate data between the protection groups now running at the recovery site and the previously protected, primary site.

This capability to reprotect an environment ensures that environments are protected against failure even after a site recovery scenario as well as enabling automated failback to a primary site following a migration or failover.

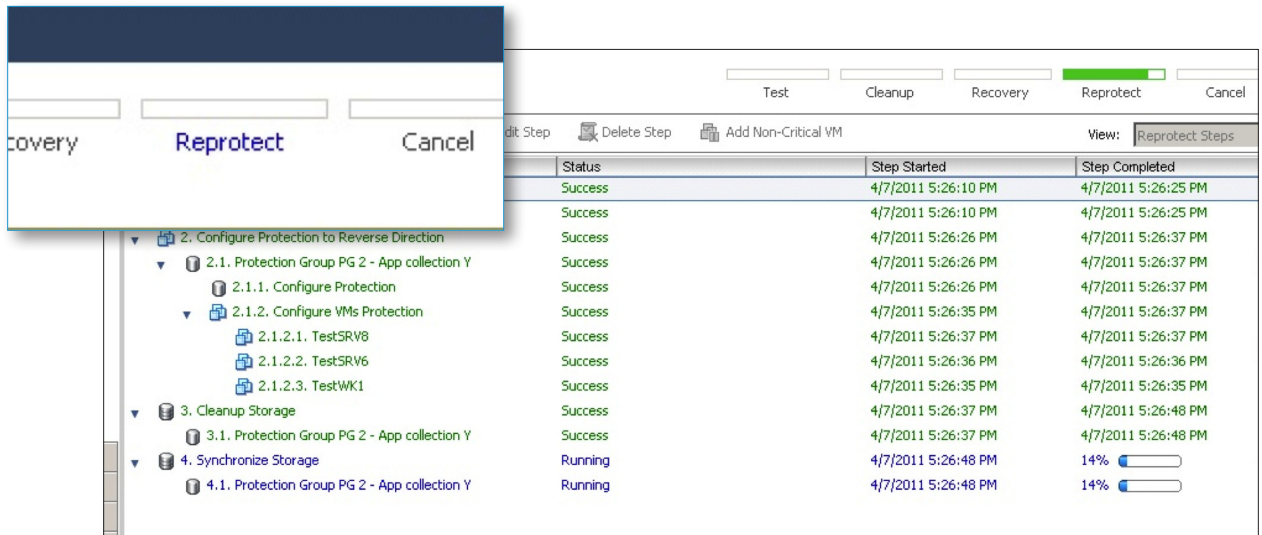


Figure 5.

Failback

An automated failback workflow can be run to return the entire environment to the primary site from the secondary site. This will happen after reprotection has ensured that data replication and synchronization have been established to the original site.

Failback will run the same workflow that was used to migrate the environment to the protected site. It will guarantee that the critical systems encapsulated by the recovery plan are returned to their original environment. The workflow will execute only if reprotection has successfully completed. Failback is not available for use with vSphere Replication-protected virtual machines.

Failback ensures the following:

- All virtual machines that were initially migrated to the recovery site will be moved back to the primary site.
- Environments that require that disaster recovery testing be done with live environments with genuine migrations can be returned to their initial site.
- Simplified recovery processes will enable a return to standard operations after a failure.
- Failover can be done in case of disaster or in case of planned migration.

Disaster Recovery Event

As previously noted, all recovery plans in Site Recovery Manager 5.0 now include an initial attempt to synchronize data between the protection and recovery sites, even during a disaster recovery scenario.

During a disaster recovery event, an initial attempt will be made to shut down the protection group's virtual machines and establish a final synchronization between sites. This is designed to ensure that virtual machines are static and quiescent before running the recovery plan, to minimize data loss where possible during a disaster. If the protected site no longer is available, the recovery plan will continue to execute and will run to completion even if errors are encountered.

This new attribute minimizes the possibility of data loss while still enabling disaster recovery to continue, balancing the requirement for virtual machine consistency with the ability to achieve aggressive recovery-point objectives.

User Interface

The user interface for Site Recovery Manager 5.0 has been significantly redesigned to deliver easier and more efficient administration. It also includes numerous enhancements for reporting.

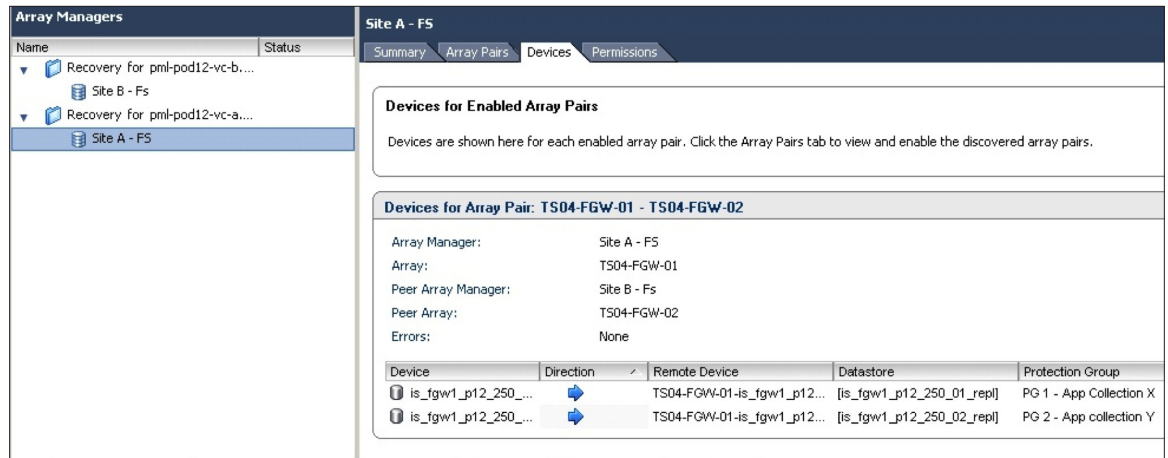


Figure 6.

The following are among the changes:

- Both protected and recovery site VMware vCenter Server and Site Recovery Manager information is visible without the requirement for linked mode.
- Enhanced information is available about arrays and array managers.
- Virtual machine IP settings are visible and editable through the user interface, enabling IP customization to be specified when running in protected or recovery sites.
- New icons for shadow virtual machines easily distinguish “real” virtual machines from shadow virtual machines.
- Enhanced reporting, including “started by” information, is in the summary section of recovery plan reports.
- More detailed information is included in reports, such as datastore and device-specific findings.

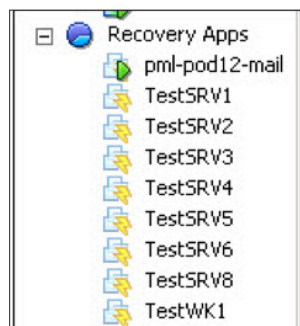


Figure 7.

Technical Improvements

A number of changes focused on improving the integration and manageability of the product have been included in the Site Recovery Manager 5.0 release.

IPv6

Site Recovery Manager now supports IPv6 for all network links.

Single UI

Both protected and recovery site installations of Site Recovery Manager are visible and manageable through a single Site Recovery Manager interface. Regardless of which site a user is logged in to, both sites are visible and all management tasks are available for the administrator. This eliminates the need to manage the protected and the recovery site through separate interfaces.

VMware vCenter Servers are not required to be installed in Linked Mode for this functionality because the Site Recovery Manager instances communicate directly with each other to share management information and present it through a single user interface. Linked Mode is still recommended, however, to ensure that license, permission and state information about the environment is correctly shared between VMware vCenter Server instances and to ease administration of the virtual environment.

IP Customization Enhancements

IP customization has been dramatically improved in terms of speed of execution. It can now be specified within the properties of individual virtual machines within Site Recovery Manager. The process for bulk imports has not changed. The dramatic improvement, however, in the speed of the IP customization execution itself will speed the process of recovery, enabling a faster recovery time.

In-Guest Callouts

Site Recovery Manager has traditionally enabled script callouts to be run from a recovery plan to execute custom actions. With Site Recovery Manager 5.0, VMware has enhanced this capability, enabling scripts to be run from a location on the Site Recovery Manager server itself as well as running custom script callouts to locations that reside within individual virtual machines.

Callout capabilities now include the following:

- Commands can be run on the recovered virtual machine.
- Commands can be run on the Site Recovery Manager server.
- A user-prompt pop-up requires user interaction before continuation.

A timeout policy can be attached to the callout to ensure that automated recovery is continued.

API

The API for automation of Site Recovery Manager activities at the recovery site has been preserved with the move to version 5.0. It has been further enhanced with the addition of a new SOAP-based API that enables automation of tasks at both the protected and the recovery site.

The protected-site API includes the following capabilities:

- List replicated datastores, protection groups, resources and virtual machines.
- Query the status of protection for one or more virtual machines.
- Protect or unprotect one or more virtual machines.
- Query the status of a protection group.

The recovery-site API includes the following capabilities:

- Query recovery plan information.
- Start or cancel a recovery plan.
- List or answer prompts.
- Present an XML representation of a historical run of a recovery plan.
- Retrieve basic result information of a recovery plan.

Virtual Machine Dependency Enhancements

Site Recovery Manager 5.0 enables users to manage multitier applications and virtual machine dependencies at an enhanced level of control, with the addition of more priority groups and the ability to set virtual machine dependencies within a priority group.

With previous releases of Site Recovery Manager, priority groups were described as high, medium or low priority. In version 5.0, this has changed with an expansion to five priority groups, labeled numerically. Priority group 1 will start first, and all virtual machines in the priority group must start before priority group 2 virtual machines begin their power operations. This process continues until virtual machines in group 5 have completely started.

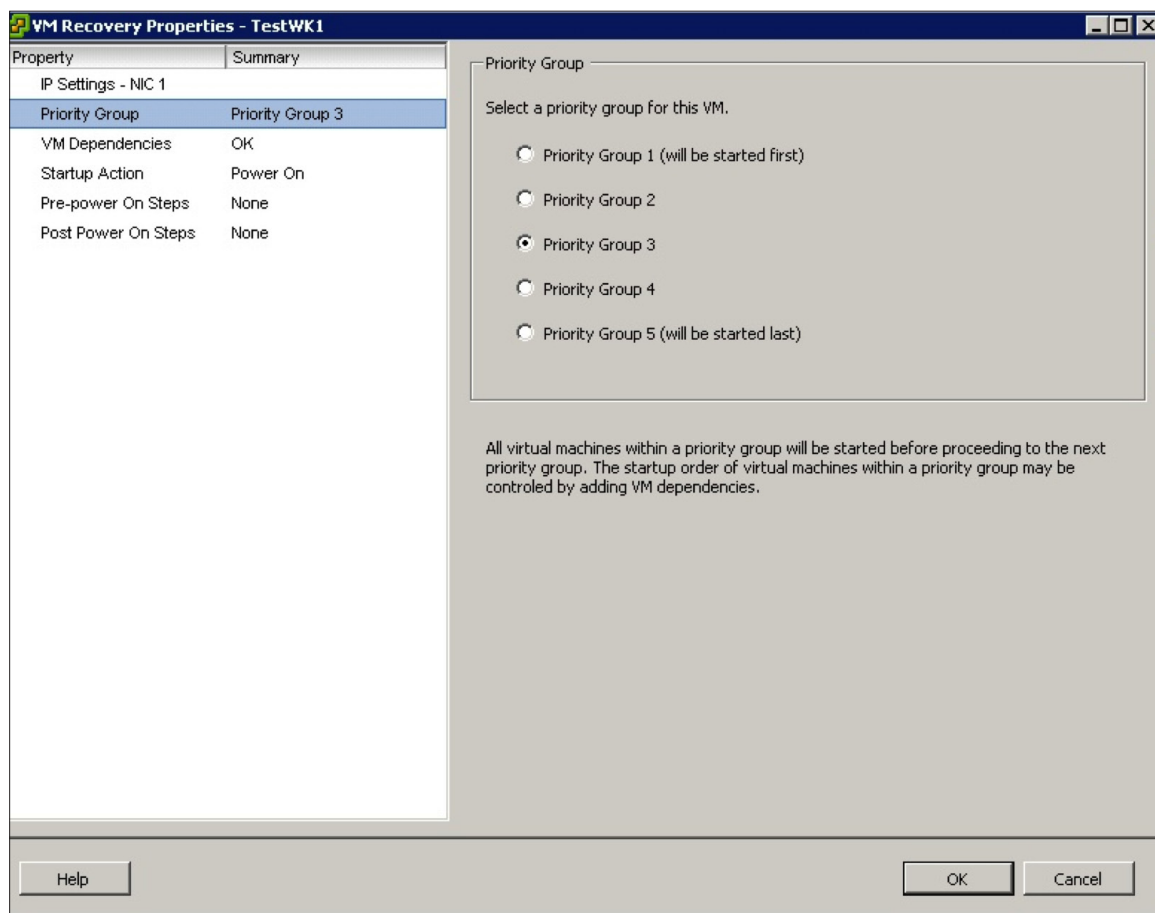


Figure 8.

Within each priority group, virtual machine dependencies can be defined so as to be certain that required systems are available first, before dependent virtual machines are powered on.

The combination of priority groups and virtual machine dependency definitions within the priority groups enables highly organized workflow control, ensuring that required services are available before subsequent virtual machines are powered on.

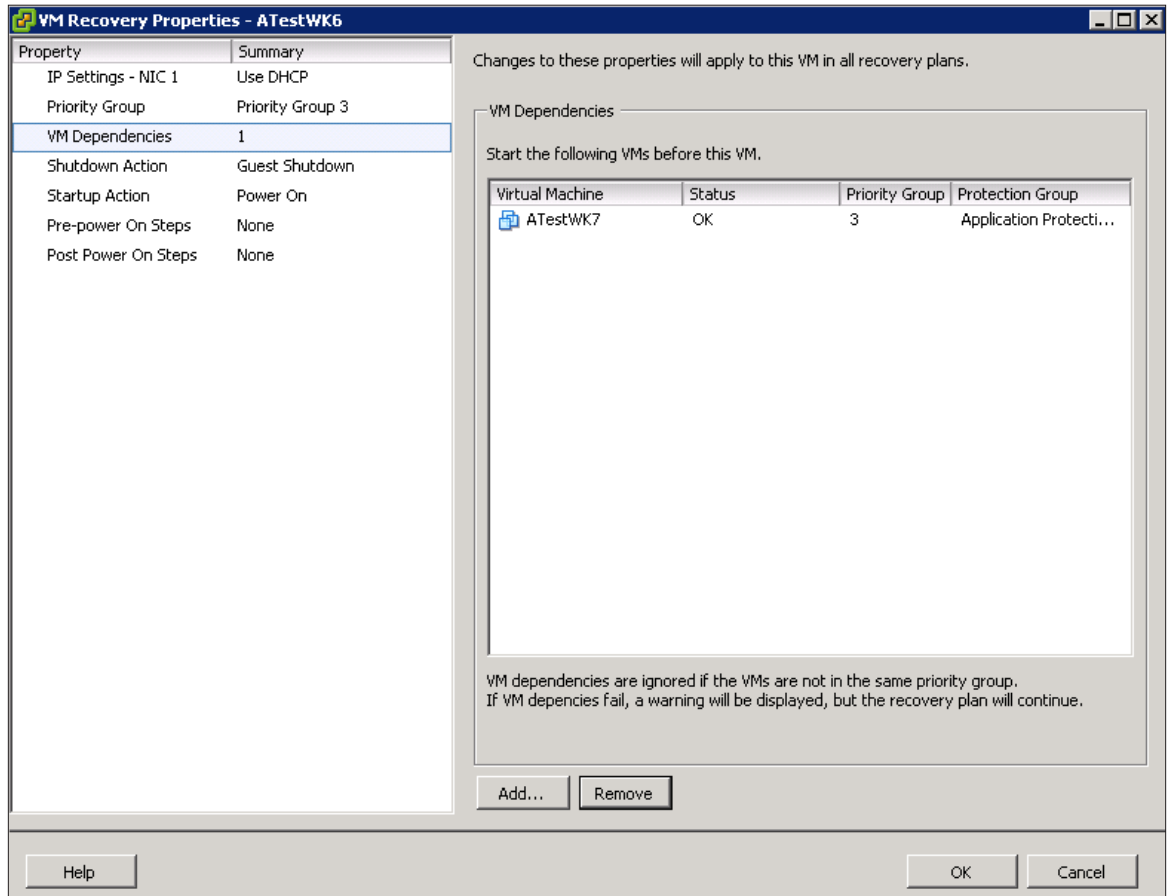


Figure 9.

Conclusion

VMware vCenter Site Recovery Manager 5.0 has introduced a set of enhancements and features that enable new levels of control and protection, ranging from a dramatic user interface change to the ability to use a new native VMware ESXi™ 5.0 replication engine.

The following are among the significant improvements in Site Recovery Manager 5.0 over 4.1:

- A completely new user interface includes the ability to manage both protected and recovery sites from one interface, as well as more intuitive graphical representations of protected objects.
- A new workflow enables planned migration of protection groups from one site to another without data loss. Failover will stop if errors are encountered.
- There is now the ability to reprotect a recovery site after failover or migration and to automate the failback process for all virtual machines that have relocated.
- The enabling of vSphere Replication offers a new host-based protection of virtual machines, independent of array replication technologies.
- There is now a faster recovery time if IP customization is required at the recovery site.
- There is now the capability to run callout scripts from within protected virtual machines during a failover.
- There is now the capability to manage the startup of virtual machines at a more granular level as well as to manage their dependent relationships.

These new features establish VMware vCenter Site Recovery Manager 5.0 as the preeminent technology for the protection and recovery of a virtual environment. Using it enables aggressive recovery time objectives through easy testing and rapid automation of recovery plans while it helps you eliminate the complexity of managing disaster recovery. VMware vCenter Site Recovery Manager removes the risk and worry from disaster recovery.

