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Using test and development environments for disaster recovery

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Introduction

The demand for protecting critical information continues to drive the need for greater disaster recovery capability. When addressing this need, many alternatives provide the ability to protect the data that is essential to business processing, as well as the key infrastructure, networks and peripherals that are needed to maintain or resume processing after a disruptive event. One of these options is the identification of a second site that is not only dedicated to test and development, but is also used for disaster recovery activity as required.

On the surface, using a development test environment for recovery seems very logical. Areas such as reduced investment and expense, hardware flexibility for dual purposes, capacity on demand for scaling, integrated production design for data sharing and the maximization of facility space all lend credence to making this type of decision.

However, despite these somewhat obvious benefits, using a secondary site that combines development testing with disaster recovery can present numerous challenges to ensuring adequate business protection. Before embarking on this type of strategy, a much deeper analysis is required that includes careful focus on potential impacts to production, single points of failure, adequate recovery testing, the ability to repurpose and recover an active development test environment and the accurate sizing of the mutual second site facility.

Preliminary Assumptions

Prior to establishing the details involved in the design and implementation of such an approach, several key assumptions need to be considered:

- It is strongly recommended that before engaging in a second site strategy that leverages a development test environment for disaster recovery, organizational disciplines must be in place to ensure that test and development resources are not integrated into the production environment. This is critical in preventing outages to production that may occur during any switching or reconfiguration of the environment for recovery purposes.

Highlights

Plan for a recovery environment that is capable of performing at peak production levels.

- The development test environment should be configured equal to or with greater capacity than the production systems. During the early stages of recovery, systems resources will be used to maximum capacity as data is restored and backlog is brought forward. In addition, the recovery environment must be capable of performing at peak production levels once business processing has been resumed.

- The test and development environment will be regularly suspended during recovery exercises, typically running approximately 24 to 48 hours in duration. Depending on business requirements, this may include two or more test cycles per year. Additional time should be considered to allow for pre-exercise setup time, post-exercise time for system reconfiguration, data cleanup and any switching of infrastructure, storage and networks required to resume development test workload.

- Test and development resources being used for disaster recovery need to reside in the secondary site, with all production residing in the primary site. Given the fact that the secondary site is now the primary recovery facility, it is critical that all interfaces from production to the development test site be monitored frequently to avoid any single points of failure.

Benefits of a combined strategy

Using development testing resources for your primary disaster recovery is a strategy that has seen a lot of traction in recent years. The design concept is to use a secondary processing facility to run all development activity on a day-to-day basis. This would include initial development, integrated testing and, quite often, quality assurance of newly designed workloads before they are released into the production environment.

Highlights

Repurpose development workloads at the time of a recovery event and reconfigure resources to handle the production workloads.

These same resources would then be used in a secondary mode for disaster recovery-related activities such as periodic validation of the capability or for the support of an actual disaster event. At the time of a recovery event, development testing workloads would be repurposed, with the resources being reconfigured to handle the recovery of the production environment. This would include the activation of dormant processing capabilities, the provisioning of standby equipment or the acquisition of additional hardware, infrastructures and networks to respond to the demand of the recovery effort.

Benefits of using the development test environment for disaster recovery include the following:

- IT costs are reduced because hardware, software, network and maintenance are used daily for development and testing in addition to serving a second purpose in supporting disaster recovery requirements.
- Flexibility is increased in provisioning technology resources for various levels of disaster recovery validation, including system, function, and enterprise-level testing.
- Resources can be quickly repurposed for disaster recovery using the various capabilities that are part of the hardware design. For example, with IBM Capacity BackUp offerings, processors and storage can be turned on to increase overall capacity required at the time of need for recovery processing.
- The integrated design enables the sharing of data and infrastructure to accommodate daily operations support, development, testing and disaster recovery.
- Facility space can be maximized with resulting cost savings being realized as a single physical footprint is used for multiple IT needs.

These benefits provide reasonable rationale for embarking on a joint development and recovery strategy. Each benefit supports the business and IT cases that are required to justify a fairly substantial capital outlay for the procurement, design and fit-up of a second site that will be used for developing a dual-purposed environment.

Highlights

Closely monitor and manage potential impacts to any production-related activities to prevent problems.

Challenges associated with a combined strategy

Further investigation may be required to fully understand the more detailed ramifications of such a strategy. Consideration should be given to the impacts of what the combined effort entails, with focus on how each function interrelates with the other in daily operations as well as how a specific event such as disaster recovery testing will be managed. Most importantly, the potential impact to any production-related activity must be closely monitored and managed to prevent any adverse situation that may result from any interaction between the development environment and disaster recovery-related activities.

Areas of additional focus include the following:

- A detailed understanding of all application dependencies is required to ensure that any changes to the development test environment for recovery purposes do not have any direct impact on production.
- The design of the secondary facility must remove all single points of failure, with a detailed mapping of all technology, infrastructure and networks that include all linkages from production to the development test environment.
- The ability to provide a recovery environment in various stages—from component through full enterprise-level exercises—is paramount to the design and structure of the dual-purposed environment.
- A detailed plan must be put in place to manage the movement of workloads for recovery-related events. This includes backing up all storage for the applications and data used for development to allow for the enablement of the production data for recovery processing.
- At the time of the recovery event, it is critical that the complete environment be made available in accordance with the recovery time objectives set forth in the business continuity plan. This includes enabling additional capacity, switching backup copies of storage and redirecting network connections for business resumption.

Highlights

- A detailed disaster recovery plan needs to be put in place to protect the development testing workload that will be offset for recovery purposes. This includes periodic testing (coordinated with the disaster recovery testing) to ensure recoverability for extended periods should an actual disaster event occur.
- Capacity, storage, infrastructure and networks must all be accurately sized within the combined second site facility to ensure adequate business protection for all production and development testing related activities.

Addressing these challenges will go a long way towards developing an integrated second facility that cannot only provide a development and test environment, but also be in a position to leverage the same facilities, infrastructures, assets and networks for disaster recovery usage. The key is to identify the ramifications of how this combined strategy can support nonproductive-use scenarios while maintaining maximum business protection at all times.

Suggestions for successful design and implementation

Establish a baseline before the initial design and implementation to plan for a successful combined-use strategy.

Enabling a combined use, dual-purposed strategy requires that a strong baseline be in place before the initial design and implementation of the second site effort. This is critical not only to the success of the development effort, but also to ensure that ongoing growth and support efforts can sustain the daily changes associated with the production, development, testing and disaster recovery initiatives.

The following are recommended actions for building a strong foundation for a dual-purposed usage strategy:

- Stringent systems management disciplines, including problem, change, incident, configuration, and asset management, must be in place to guide future design and implementation efforts. This is critical in sustaining continuous operations while exercising the various aspects of development, testing and disaster recovery activities with minimal impact to production processing.

Highlights

- A detailed view of business process flows through the application and technology tiers is required to ensure that all interdependencies are defined and communicated prior to any switching or reconfiguration to the secondary site.
- Business-driven validation criteria for exercising the recovery capability need to be in place to validate that the time, efforts and funding for the disaster recovery program are meeting the stated business objectives.
- Formal agreements for resource allocation, scheduling and time sharing of resources must be negotiated before implementation to ensure that all parties agree to the use of the secondary facility. This is especially important for periodic testing of the recovery program because development testing will basically need to cease during extended recovery events.

Ensure that recovery configurations — including technology, infrastructure and networks — stay in alignment with production requirements.

- Detailed capacity, performance and scalability planning must be in place to make certain that the recovery configurations are continuously in line with production requirements. This includes technology, infrastructure and networks that are necessary to support ongoing production running in the secondary facility in recovery mode.

Summary

Using a secondary facility that houses the development test environment on a full time basis and that can be reconfigured and scaled for disaster recovery use at the time of an event, is an approach that many firms are considering. A detailed analysis is required to comprehend the challenges and benefits of such a design and to ensure a complete understanding of all of the variables that go into a very complex, integrated model.

This dual-purpose design can provide financial, operational and technical benefits across the business and can be used to support multiple functions housed within a single facility. To be successful, the effort must be built upon a strong foundation with formal disciplines to drive the initial development as well as to monitor and manage program progress in the future.

For more information

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