

Market Guide for IT Resilience Orchestration

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The orchestration of IT DR processes is integral to improving DR operations and can improve recovery outcomes while lowering costs for exercises. I&O leaders focused on improving their IT resilience should use this research to scrutinize products that can be of value to their organizations.

Overview

Key Findings

- IT resilience orchestration (ITRO) software products, originally built to automate disaster recovery (DR) run books, continue to evolve to support application resilience, as well as migrating workloads from on-premises data centers to public clouds.
- ITRO software products are most relevant for organizations with more than 150 workloads or vendors offering DRaaS, both of which strive to lower current DR costs or improve recovery time objective capabilities.
- Not every ITRO software product fits all use cases, as there are differences in core capabilities, including data replication, monitoring and dependency mapping functionality.
- ITRO is currently nascent in the areas of DevOps or site reliability engineering (SRE), and recovery functionality in those arenas are often built in-house using a combination of cloud infrastructure provisioning and configuration tools.

Recommendations

I&O leaders who want to improve their organization's disaster recovery posture should:

- Ensure alignment before procuring ITRO tools by gaining consensus with operational constituencies on issues to be addressed, budget number, and type of workloads and whether there is a preference for product, service or building in-house.
- Augment existing DR capabilities by utilizing new ITRO products for recovery management, using this Market Guide and listed associated markets to understand the scope of available solutions.
- Assess the evolution of individual ITRO tools by evaluating vendor roadmaps, as the tools add ML/AI and cybersecurity capabilities to have more proactive IT resilience capabilities.

- Evaluate and compare ITRO products and vendors by using a comparative selection process of each of their candidate vendors, referencing the Market Direction or other sections of this research.

Strategic Planning Assumptions

By 2025, 60% of I&O leaders who have demonstrably developed fiscally rightsized traditional disaster recovery capabilities will expand their role to address as-yet-unclaimed or newly emerging areas of IT resilience.

Through 2025, 20% of enterprises will go beyond SRE by adding IT resilience roles to improve resiliency posture between product teams and traditional DR, up from less than 1% today.

Market Definition

ITRO solutions are chiefly aimed at helping to improve the reliability, speed and granularity of workload recovery due to unplanned outages by automating disaster recovery (DR) processes while lowering the costs of application dependency mapping, DR run book creation, exercise efforts and reporting.

Gartner's ITRO definition focuses on tools that support a majority of these capabilities:

- Automated failover, failback and availability
- Replication and orchestration
- Discovery, dependency mapping and workload analysis
- DR management and run book creation
- Reporting and validation of recovery capability

Market Description

COVID-19, economic uncertainty, business model pressures, civil unrest, cybersecurity concerns and geopolitical strife have continued to amplify the usage of the term "resilience."

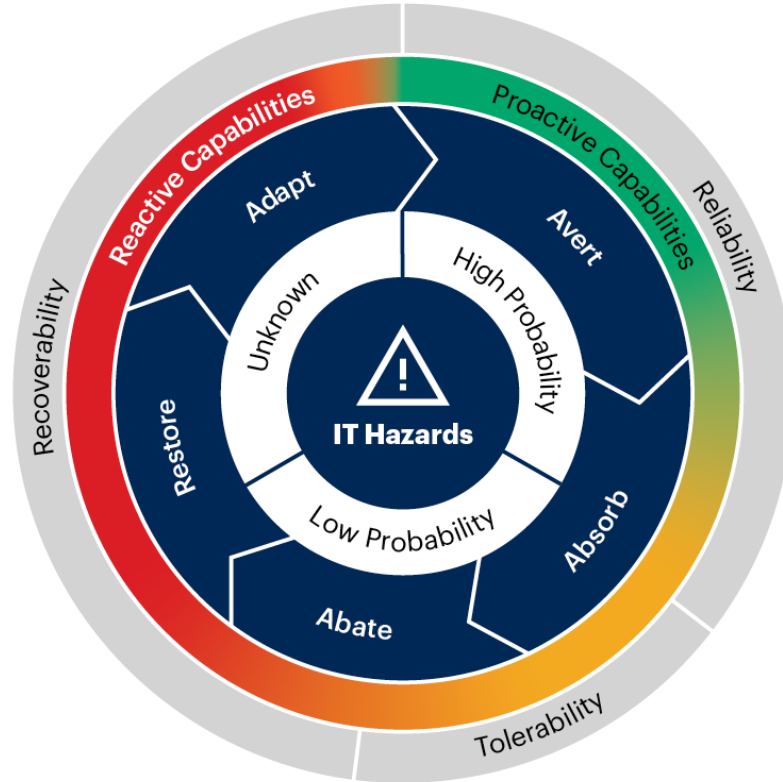
From an IT perspective, stakeholder and client expectations have gone beyond "always on" to where even application slowness is often perceived as an outage. Thus, there is a desire for most enterprises to improve IT resiliency via a proactive posture focused on reliability and systematic tolerance. As a result, resilience is manifested from nearly every facet of the IT organization — from cybersecurity to application development, IT service management, platform and MASA architects, and DevOps and site reliability engineering teams.

IT resilience is the organization's ability to avert, absorb, abate, restore and adapt to IT-related hazards such as application defects, performance thresholds, security vulnerabilities, single point

of failures and service provider outages and to continuously improve end-to-end posture so systems are reliable, tolerant and recoverable (see Figure 1).

Figure 1: IT Resilience – Reliable + Tolerant + Recoverable

Gartner’s IT Resilience Framework



Source: Gartner
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But given the breadth and depth of IT resilience, there are hundreds of other terms, practices and tooling that are often paired with the subject. And because resilience is aspirational in nature, so too are vendor products marketed under a resilience moniker. Consequently, there is no one product alone that will ensure IT resilience.

To that end, this ITRO Market Guide focuses on resiliency more so through an IT disaster recovery lens because even if an organization was able to theoretically avert, absorb and abate 100% of known hazards, unknown hazards persist, which would require recovery. Hence, although “always on” is the ideal, the ability to recover is an absolute imperative. On this front, proactive IT DR teams look to ITRO in order to address recovery complexity, improve recovery execution confidence, attain faster recovery times, lower the costs of exercises, industrialize reporting, and better prepare for various hazards, including cyber attack recovery. Figure 2 includes words most commonly associated with IT resilience in the context of this Market Guide.

Figure 2: IT Resilience With an IT Disaster Recovery Focus

IT Resilience Orchestration (ITRO) Key Terms



Source: Gartner
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The overall ITRO market and the associated functionality is still maturing. Currently, there are hundreds of different vendors that offer choices of tools that would at least be part of the market definition. As clients begin their evaluation and selection process to address their ITRO needs, it is useful to define a specific scope of capabilities that are desired in a product.

Although “always on” is the ideal, the ability to recover is an absolute imperative.

Market Direction

Historically, ITRO products have focused on recovery management functionality, more so than traditional run book automation or data backup products. These capabilities included application or workload transition from a production data center into a public cloud, from a public cloud to a production data center and/or between production data centers. This is often consistent with a cloud migration, which resembles a one-time DR event involving failing over to a cloud provider.

As this market matures, products that help organizations understand their status and capabilities in terms of managing the resilience of hybrid IT platforms will be utilized to ensure that systems

can survive events of both small and large scale. Future products look to offer additional capabilities in these areas:

- More low-code/no-code-esque GUI
- Enhanced public cloud support
- Increased data portability and container support
- Continued convergence of backup and DR solutions
- Enhanced monitoring and reporting
- Shift-left via enhanced integration across DevOps and SRE teams

More Low-Code/No-Code-Esque GUI

Customers interested in ITRO tools desire extensivity but also simplicity. For the latter, more drag-and-drop functionality is likely in terms of both workflow and reporting functionality. Buyers of the products typically want to perform as little scripting as possible.

Enhanced Public Cloud Support

For many clients, the question of how to increase the speed of recovery without incurring the additional costs of building out and maintaining dedicated secondary or DR equipment has been answered by using the public cloud as that DR location. As a result, additional capabilities to support failover, failback and recovery management capabilities are supported within multiple public cloud services, including Amazon Web Services (AWS), Google Cloud, IBM Cloud, Microsoft Azure and Oracle Cloud, among others. But given the number of services involved, cloud-to-cloud orchestration will likely remain limited beyond existing cloud management platform (CMP) functionality, cloud-native APIs, and support for containers and microservices architectures (MSAs).

Continued Convergence of Backup and DR Solutions

Backup and DR solutions, which have been separate products focused on delivering independent copies of data and fast data replication, respectively, have started to deliver overlapping capabilities and use cases. Backup vendors are increasingly adding DR orchestration, while DR orchestration vendors are adding granular restore capability and longer-term data retention periods.

Enhanced Monitoring and Reporting

ITRO tools already have built-in monitoring and reporting capabilities, which are often specific to RTO and RPO targets. These capabilities will broaden over time, driven by technology advances in AIOps or IT operations platforms that combine big data and machine learning. The goal of the

additional monitoring and reporting is to provide validation and actionable intelligence on the status of various service-level states. This capability includes:

- Monitoring and reporting on availability, performance and/or service cost metrics for application flows that span one or more production data centers and one or more public clouds.
- Dashboard support for the likelihood of specific applications and workloads achieving their recovery time objectives (RTOs) and recovery point objectives (RPOs).
- Consistency and integrity monitoring of system image and nondatabase production data.
- Timely detection and alerting of the unauthorized deletion, modification or corruption of production data.
- Evolution due to the introduction of both machine learning and artificial intelligence to find trends in the data patterns and enable automated responses to them.
- Enhanced IT service management (ITSM), application performance monitoring (APM) and security integration.
- Increased functionality related to business continuity and risk management.

Shift-Left via Enhanced Integration Across DevOps and SRE Teams

Historically, ITRO has been more focused on improving traditional disaster recovery capabilities and less about proactive measures to absorb or avert hazards. And few DR programs are sufficiently integrated with SRE to understand risks identified, risks mitigated or to what extent validated by SRE teams (for example, AWS GameDays or Google DiRT). To date, organizations with more complex cloud deployments and embedded automation teams typically leverage a combination of:

- Cloud provider orchestration tools such as AWS CloudFormation, Google Cloud Deployment Manager and Microsoft Azure Resource Manager, or VMware Cloud Assembly.
- Non-cloud-specific software such as Cloudify EaaS, HashiCorp Terraform, Pulumi Platform and VMware vRealize Suite.
- These are augmented by configuration automation (for example, configuration of OS and software installation) such as Chef Enterprise Automation Stack, Puppet Enterprise, Red Hat Ansible (Ansible Tower) and SaltStack Enterprise.

Market Analysis

In the current hybrid IT environment with IT architectures and business processes spanning internal and external systems, organizations should look for tools to allow the automation and

orchestration for the recovery of IT systems across a wide range of scenarios. We have called these tools “IT resilience orchestration.”

Automated failover, failback and recovery management. The scope may be between any combination of data centers or public cloud offerings for:

- Virtual or physical server image
- Individual applications operations
- Database systems
- Application groups/entire workload (a workload being a combination of servers, applications and databases, often know as an application consistency group)

Replication and orchestration. The approach differs by vendor. Some examples include:

- Perform orchestration for only the workloads that leverage the embedded data replication capabilities of the ITRO solution.
- Perform orchestration of other data replication products, with no data replication performed by the tool itself.
- Perform replication and provide orchestration for both what it replicates as well as what other tools replicate.

Discovery, dependency mapping and analysis for intra/interworkloads.

- Service dependency mapping tools discover, snapshot and track configuration relationships by creating blueprints to map dependencies among infrastructure components (for example, servers, networks and storage) and applications in physical, virtual and cloud environments to form an IT service view.
- Data dependency mapping analyzes the consistency of data and reports on the likelihood of achieving specified recovery targets, based on analyzing and correlating data from applications, databases, clusters, OSs, virtual systems, networking and storage replication mechanisms.

DR management and run book creation. Definition, execution and critical-path analysis of predefined workflows (that is, run books) that support either more traditional DR exercising or production operations failover and failback, or a combination of the two.

- This analysis may be supported as a visual analysis (PERT chart-like) of portions of a run book flow that may adversely impact the realization of an RTO or RPO target.

- It may also be supported in the form of a log-based report of the results of the most recent recovery exercises. Such results include the elapsed time to complete the exercises and the deviation (plus or minus) of that time relative to defined recovery time targets.

Reporting and validation of recovery capability.

- Data consistency checks and integrity validation via data replication processes or management of data replication tools.
- Automated, recurring recovery exercises.

ITRO tools support user-developed recovery plans and run books and/or built-in recovery and continuity management mechanisms for specific virtual machine or physical system image types. Data in the form of server images or application datasets are replicated by the ITRO tools themselves, or they monitor data replication processes, thus validating the integrity of the replication process. They do this using functionality enabled by software directly developed by the ITRO vendor. Supported IT systems components include individual system images, applications and/or entire application group components between internal production data centers, public cloud services or combinations thereof.

Most ITRO products evolve from these sources:

- Backup, replication and recovery tools (see [Magic Quadrant for Data Center Backup and Recovery Solutions](#) and [Market Guide for Backup as a Service](#)) – many of which have embedded orchestrated recovery capabilities.
- HCI vendors that have built-in automated recovery capabilities (see [Magic Quadrant for Hyperconverged Infrastructure](#)) for workloads residing on the platform.
- Tools focused on cloud migration and cloud DR.
- Business continuity management and risk management platforms (see [Magic Quadrant for Business Continuity Management Program Solutions, Worldwide](#) and [Magic Quadrant for Integrated Risk Management Solutions](#)) either directly or in concert with IT service management tools (see [Magic Quadrant for IT Service Management Tools](#)) or other IT process automation tools.
- Continuous availability (or high-availability clustering) tools.
- Cloud management platforms, which support the operations management for both on-premises and public cloud-based workloads (see [Magic Quadrant for Cloud Management Platforms](#)).
- Software-defined infrastructure products, which extend infrastructure management into public clouds.

- To a lesser degree to date, application performance monitoring (see [Magic Quadrant for Application Performance Monitoring](#)).

ITRO functionality can be actualized through many of the above channels. This Market Guide homes in on the ones Gartner most frequently encounters among clients with a singular purpose of enterprise orchestrated recovery for “DIY DRaaS.”

End-user organizations using ITRO software products can own and manage their DR processes to obtain high levels of recovery effectiveness without the requirements of using external service providers. Alternatively, many ITRO products are built and marketed as the backbone of DRaaS providers, with every participant of the [Market Guide for Disaster Recovery as a Service](#) utilizing one or more ITRO products in their service offerings. In an effort to offer further levels of differentiation, growing numbers of managed service providers are using ITRO products and a combination of internally developed software, custom scripts and service delivery methodologies, rather than purely one or more standardized product offering (see Note 1).

Representative Vendors

Market Introduction

All the below representative products support efforts by infrastructure and operations teams to build out ITRO platforms and contribute to the mission-critical priorities for IT availability and recovery management. They have been segmented into two groups based on the level of orchestration.

Group No. 1: Orchestrators of Multiple Replication Products

This segment offers holistic support for multiple replication tools, with orchestration across heterogeneous applications, storage and compute platform architectures. They don’t tend to have replication capabilities built within, as that is not typically the core focus. More often the focus is helping clients avoid extensive scripting by providing prefabricated application run book templates across a variety of platforms with real-time dashboards for showing the overall status for recoverability in an environment (see Table 1).

Table 1: Orchestrators of Multiple Replication Products

Vendors	Products

CA Technologies, a Broadcom Company	CA Automic Enterprise Disaster Recovery Automation and Monitoring
Geminare	Resiliency Management Platform
IBM	IBM Resiliency Orchestration
Micro Focus	Operations Orchestration
Perpetuuti	Continuity Patrol
Transitional Data Services (TDS)	TransitionManager
Veritas Technologies	Resiliency Platform ¹
VMware	Site Recovery Manager ²
¹ Includes native replication capabilities ² For products that replicate VMware workloads	

Source: Gartner (September 2020)

Group No. 2: Replication-Oriented Orchestration Products

This segment provides replication but typically only provides orchestration for the workloads for which it replicates. Many of these products originated from backup and recovery vendors. In fact, most backup and replication tools have some level of built-in workflow recovery capabilities and feature extensible, programmatic interfaces that allow recovery processes to be scripted and orchestrated by other platforms. The [Magic Quadrant for Data Center Backup and Recovery Solutions](#) and [Market Guide for Backup as a Service](#) research notes cover these products at great length.

Others in group two are vendors whose products have historically focused on use cases specific to disaster recovery or enabling portability and lift-and-shift migrations. Examples most common among Gartner clients when deciding between either choosing a DRaaS provider or acquiring a replication-oriented tool for “DIY DRaaS” are listed in Table 2.

Table 2: Replication-Oriented Orchestration Products

Vendors	Products

CloudEndure, an AWS Company	CloudEndure Disaster Recovery
Microsoft	Azure Site Recovery
RackWare	Disaster Recovery
Zerto	IT Resilience Platform
VMware	VMware Site Recovery (for VMware Cloud on AWS)
Veeam	Veeam Availability Orchestrator

Source: Gartner (September 2020)

The vendors listed in this Market Guide do not imply an exhaustive list. This section is intended to provide more understanding of the market and its offerings.

Market Recommendations

Organizations evaluating ITRO products should scrutinize whether their shortlisted tools address their specific requirements or deliver superfluous functionality that is unlikely to be used, resulting in a higher license cost. In other words, the needs of organizations that require only replication, failover and failback support for VMware-based VMs are very different from those that require more general-purpose recovery workflow automation for a diverse set of physical and virtual servers.

Capabilities like production database failover and failback, data dependency mapping, recovery critical path analysis, and production data consistency and integrity assurance are much more applicable to large data center operations that support several hundred, if not thousands, of servers. The target benefit, in addition to improved operations efficiency and effectiveness, should be to significantly reduce recovery management complexity.

In addition, products that support resilience orchestration can provide greater implementation flexibility and reduced recovery service provider dependency in support of an IT application portfolio that has deployment spanning more traditional data centers and one or more public clouds.

Questions the team should consider:

- Given the resources we have and time-to-value needed, would selecting a DRaaS vendor who provides ITRO functionality as part of its service offering be more appropriate?

- Do we need to improve our RPO and potentially derive value from a tool that provides both replication and orchestration?
- Do we have a relatively heterogeneous environment where we need an orchestrator of many different platforms and replication tools?
- Have we already invested in platforms (for example, HCIS) or backup/replication products that now have some or all the functionality embedded for both replication and automated recovery?
- To what extent do we have a desire to address public cloud workloads versus on-premises?
- What strategic bets have we made at the macro level in terms of investments in automation teams, platforms and tooling (for example, ITSM, cloud management and automation)? And what is the appetite to leverage those resources for automation?

Shop around: Pricing and feature bundling is highly variable between vendors, and the problem is exacerbated by the fact that some vendors apply different licensing mechanisms among their individual tools or modules. Plan for the next three years in terms of systems and functionality covered, and get a pricing commitment for not only the initial phase, but also the subsequent phases. Gartner clients should also use inquiry privileges to “sanity check” product pricing quotations.

Note 1

Representative Vendor Selection

As discussed in the Market Analysis section, hundreds of vendors have viable capabilities related to ITRO. This is especially true for replication and backup tools, general automation tools, and IaaS orchestration software. The 13 vendors profiled here are those most common among Gartner clients when deciding between either choosing a DRaaS provider or acquiring a tool for “DIY DRaaS.”

Document Revision History

[Market Guide for IT Resilience Orchestration - 19 October 2018](#)

[Market Guide for IT Resilience Orchestration Automation - 14 December 2017](#)

[Market Guide for IT Resilience Orchestration Automation - 13 December 2016](#)

Recommended by the Author

[Market Guide for Disaster Recovery as a Service](#)

[Magic Quadrant for Data Center Backup and Recovery Solutions](#)

[Reduce Costs and Piggyback DR Investments](#)

Recommended For You

[Hype Cycle for ITSM, 2020](#)

[Critical Capabilities for IT Service Management Tools](#)

[Magic Quadrant for IT Service Management Tools](#)

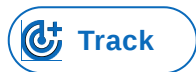
[Innovation Insight for Observability](#)

[Hype Cycle for IT Performance Analysis, 2020](#)

Supporting Initiatives



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