

A RELDAPA White Paper

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RELDAPA Data Migration

Extending the reach for enterprise data

Abstract

Data migration is becoming an essential part of the data center's storage services. Beyond providing access to corporate data, services are required to move data for testing, archive, backups, upgrades, and multi-site applications.

At RELDATA, we believe that a unified storage solution must include all the necessary transfer services to support easy-to-use, robust data migration. It must also provide the ability to support Fibre Channel SANs, NAS systems, and access to this data using a variety of communications protocols such as Fibre Channel, SAS, iSCSI, CIFS and NFS.

This paper describes the standard data migration features provided by the RELDATA 9240i storage system and how data is transferred from various sources to the 9240i and other systems. The strength and flexibility of these features will demonstrate the ease of data migration, whether it's a one-time effort or an ongoing process.

The use of the 9240i system for data access and management, with its data migration features provide a number of significant benefits that include:

- Reduction in the multiple solutions for data access, replication, and migration down to a single solution
- Savings in elimination of fees based on access, usage, capacity, or amount of data migrated
- Ease of use regarding all aspects of data management by reducing the number of applications to a single application
- Lower Total Cost of Ownership (TCO) through the use of a single administrative interface

Overview of the 9240i Storage System

The RELDATA 9240i storage system is a state-of-the-art unified storage solution that provides expandable data storage for both block- (Fibre Channel SANs) and file- (NAS with multi-protocol NFS and CIFS) based data. Access to data ranges from FC protocols and NAS protocols, through to the emerging new iSCSI protocols.

The 9240i system is modularly expandable to provide essentially unlimited scaling for storage to support for your high-performance OLTP applications as well as for high capacity data applications. Its cluster capability allows expansion beyond limits imposed by size, location, and distance.

Basic Data Migration Services

The RELDATA 9240i system migrates data between storage systems using standard data transfer features of the platform. Its ability to provide storage for block-level Fibre Channel access as well as file-level NAS access is ideal for migrating data to the 9240i. In addition, there are special 9240i algorithms that optimize the access of foreign block- and file-level systems for the express purpose of data migration.

Fibre Channel SAN Data Migration

Fibre Channel (FC) SANs run the bulk of storage applications in the data center. Its ability to support performance and capacity applications is tempered by its weakness in providing replication and migration services. In most cases, data migration requires an external solution. The 9240i provides two unique solutions to this problem.

Scenario 1: Data Migration from a FC SAN to the 9240i

Data from FC SANs can be migrated by using the 9240i with its direct FC access feature. This is a non-disruptive operation requiring nothing more than connecting a FC link from the 9240i to the existing FC SAN allowing access to the FC SAN by the 9240i acting as a host server initiator. Once connected, the 9240i is able to copy all the required data from the FC SAN to 9240i storage. At some convenient pre-arranged time, last-minute changes are captured and the data migration is complete. This copy of the data residing on the 9240i is then presented to the applications requiring a synchronized copy of the original data. This solution is ideal for one-time data migrations where the original system configuration cannot be

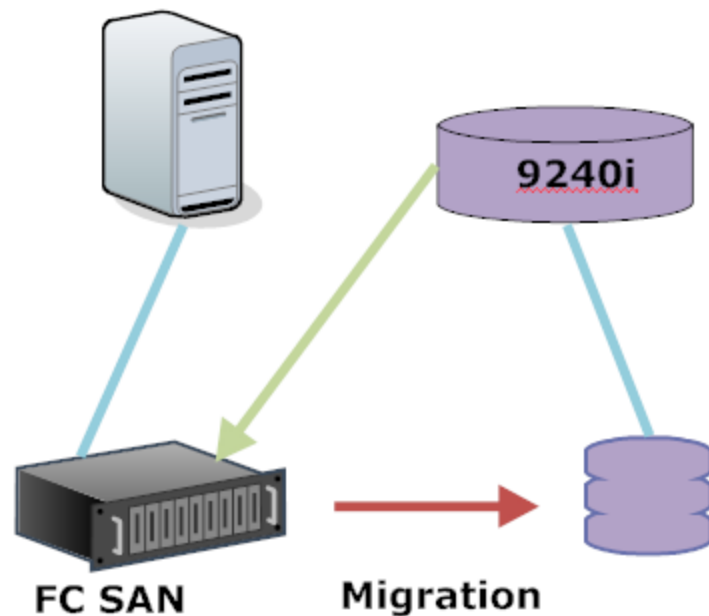


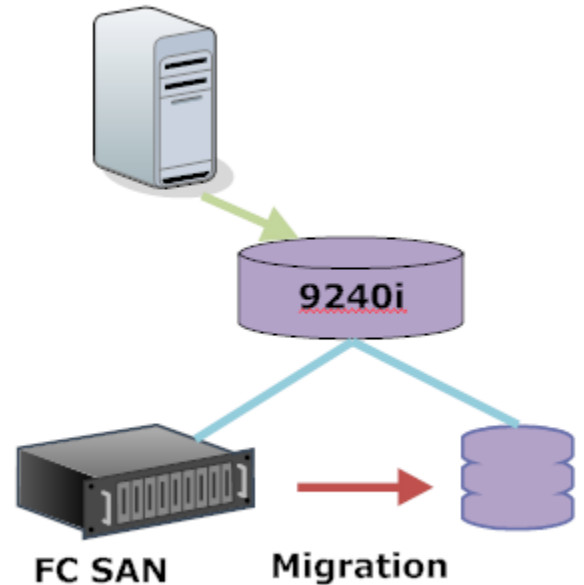
Figure 1: Migrating data from a Fibre Channel SAN.

disturbed, but some downtime is acceptable.

Scenario 2: Continuous Data Migration from a FC SAN

In some cases, the requirements may impose downtime constraints that exceed those available from scenario 1. Then data migration becomes an ongoing process of moving data from one system to another, even as the applications continue to alter stored data.

This second solution calls for the installation of the FC SAN to the 9240i system. Such reconfiguration takes minutes and provides the ability for the 9240i to continue to provide server access to the FC SAN data sets. This second solution allows an easier synchronization of data for migration purposes because the 9240i captures all I/O and simultaneously creates a second copy for data migration. Data migration becomes a continuous effort until an equivalence is achieved, then the original FC SAN could be disconnected. Multiple copies may be in progress for parallel data migrations of a large number of data sets.

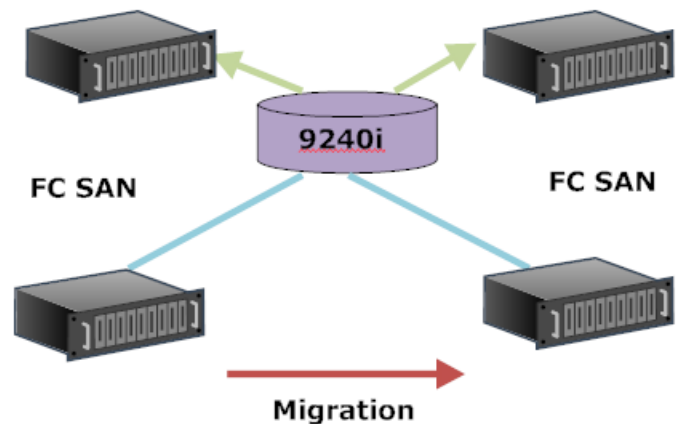


This solution is also ideal for migrating data off a FC SAN onto a 9240i system where only short disruption can be tolerated.

Figure 2: Continuous FC SAN data migration.

Scenario 3: Data Migration Across FC SANs

The general case for data migration also includes using the 9240i as a migration engine. This feature allows data migration from any system to any other system (including a 9240i). Over time, systems going out of service may migrate their data through the 9240i to other newly provisioned storage systems. The versatility of the 9240i makes it the best instrument for data



migration within the enterprise data center today and for the future.

Figure 3: Data Migration for foreign storage systems.

NAS Data Migration

The RELDATA 9240i storage system provides an easy, non-disruptive method of migrating data from NAS systems. The 9240i is simply connected to the source NAS system as a NAS client. Over a period of time, all the file shares on the NAS system will be migrated to the 9240i. The 9240i has special algorithms to completely replicate all shares and to capture last minute changes to shares.

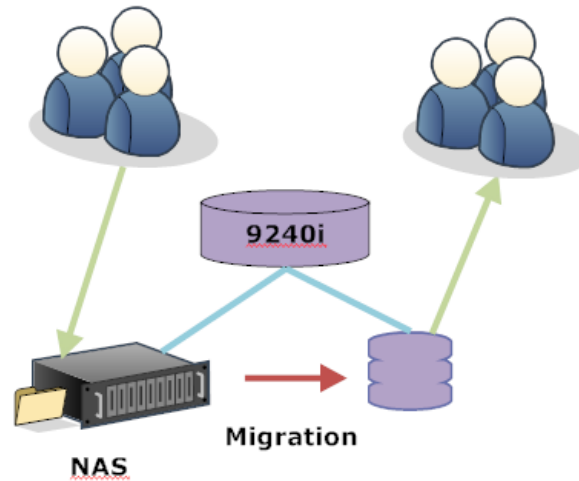


Figure 4: Migrating data from NAS to the 9240i.

Once the replication process is complete, the replicated data may be used as a new file share from the 9240i. This is a one-time data migration from the NAS system to the 9240i.

Extended Data Migration Scenarios

The power and flexibility of the 9240i system is not limited by distance. Using the 9240i's clustering, local mirroring, and remote replication features data migration possibilities are almost endless.

Figure 5 presents numerous possible data migration scenarios that address many of the issues and challenges for the enterprise data center. In many

environments, the number of different systems and access scenarios create data migration requirements that only a RELDATA 9240i can solve.

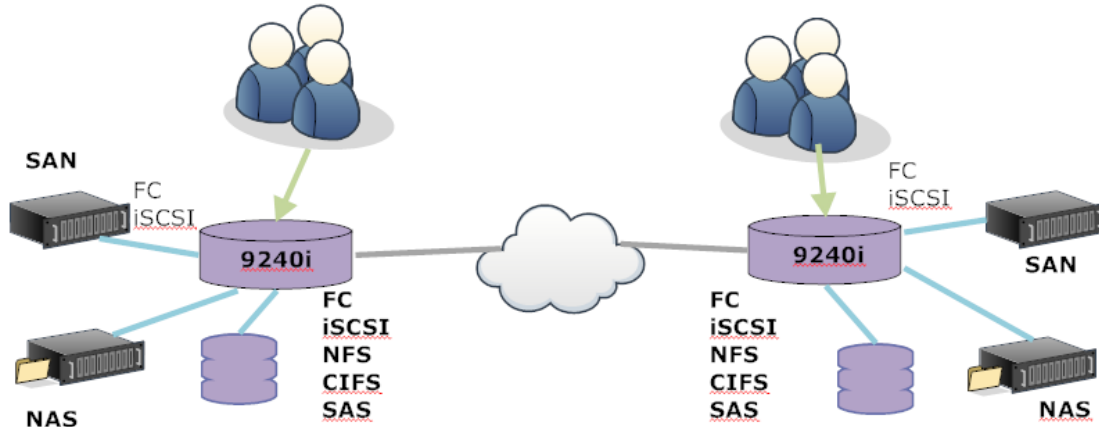


Figure 5: Migrating data to and from any system using the 9240i technology.

Long Distance Data Migration

The 9240i clustering capability allows data migration over distances that are not natively available to foreign storage systems. Extending the scenarios from Figure 5, the 9240i is able to migrate data from foreign FC SANs across geographically distant locations to either other foreign FC SANs or to a remote 9240i. Similarly, NAS systems may migrate data across distances to other NAS systems or to a remote 9240i.

Long distance data migration uses the 9240i 's remote replication features to capture data presented in the form of snapshots and send these consistent data streams to the remote 9240i for updating and synchronization.

Data migration solutions are not limited to a single target system. Replication of widely used data may be to multiple 9240i systems and even to multiple foreign storage systems.

iSCSI Data Migration

The 9240i is able to access iSCSI SAN storage systems and migrate data to any other system. This provides the ability to move data between iSCSI systems that

would normally not be possible natively. Data migrated to the 9240i is available for access by FC technology or by iSCSI.

The use of a remote 9240i for data access reduces the long distance costs of accessing a central site while optimizing the links between the 9240i systems.

Data Migration and Consolidation

The 9240i's ability to support multiple data migration streams from multiple source systems to any other system provides the cornerstone for consolidating storage. Once data has been migrated off older systems onto the 9240i's virtual volumes, the 9240i's ability to provide data access across a variety of protocols makes it ideal for consolidating storage. Older storage systems may be provisioned within the 9240i or simply retired.

Data Migration for Disaster Recovery

Ongoing data migration is only one step away from providing disaster recovery solutions. The 9240i's ability to migrate data from multiple sources to other sources using one or more 9240i systems provides the replication functionality for synchronizing data across multiple locations. This forms the foundation for extending data migration scenarios to disaster recovery solutions.

Summary

The 9240i storage system is ideally suited for storage applications using block and file level access. Its native ability to replicate from foreign storage systems to any other system solves the problems of moving data within the enterprise. For the enterprise storage applications, the 9240i offers services to support data migrations across long distance. Its ability to provide one-time or ongoing data migrations yields the maximum benefits to the enterprise data center in its search for a single, easy-to-use solution to its daily data management needs.