

Making The Transition To Clustered Data ONTAP



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The Latest on Clustered Data ONTAP

Want to learn more about the latest features of clustered Data ONTAP 8.3? Be sure and check out the following links:

- [Clustered Data ONTAP 8.3: A Proven Foundation for Hybrid Cloud](#) (article)
- [Two Game-Changing \(and Underrated\) New Technologies](#) (blog)
- [Clustered Data ONTAP 8.3 Features](#) (blog)
- [Data ONTAP 8.3: ADP Root-Disk-Slice Deep Dive](#) (blog)

Many of you have already made the move from Data ONTAP® 7-Mode to clustered Data ONTAP®. For those who still have some or all of your NetApp systems running in 7-Mode, with the release of [clustered Data ONTAP 8.3](#), there has never been a better time to transition. Moving to clustered Data ONTAP will allow you to take full advantage of its advanced capabilities, including nondisruptive operations, and scale-out.

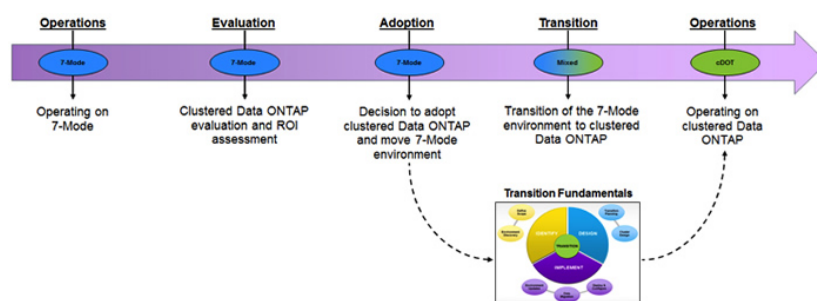


Figure 1) The journey from 7-Mode to NetApp clustered Data ONTAP. (Figure 2 shows an expanded view of Transition Fundamentals.)

If you read the May 2014 [Tech OnTap article on transitioning from 7-Mode to clustered Data ONTAP](#), youâ€™ll find in this article that weâ€™ve made significant improvements to our transition approach, support materials, and tools to make transitioning even clearer and easier. Our updated approach focuses on the "how to"—the tasks and activities needed to complete a successful transition.

In this article, we describe the fundamentals of transitioning. We also provide links to the most relevant resources, including technical reports, tools, service offerings, and training. Our [recently launched Transition Fundamentals](#)

[portal](#) makes it easy to find everything you need.

Transition Fundamentals Framework

Our earlier approach to transition lacked specific information on how to plan and execute a transition, and it had too much emphasis on the exact process to follow. Based on feedback and tooling improvements, the new approach is a framework that organizes the information needed for transition in a logical fashion (more akin to a table of contents for transition tasks and activities).

The transition fundamentals framework provides a structured set of activities and tasks that can be plugged into any existing process. This framework is fully documented in [TR-4052: Successfully Transitioning to Clustered Data ONTAP](#). Much of the framework is designed to address tasks related to specific use scenarios, particularly in the areas of disaster recovery, backup, and Qtrees. TR-4052 also defines all terminology, so there's no confusion about what each term means. Another valuable technical report, [TR-4336: Enterprise Application Transition to Clustered Data ONTAP](#), describes how various popular applications and hypervisors can be used to accomplish application data migration.

The previous transition approach assumed that you would be creating a new clustered Data ONTAP environment. Since many clustered Data ONTAP environments now exist, this framework also accommodates transition of 7-Mode systems into a pre-existing cluster.

The transition fundamentals framework is not a process. Rather, it is a logical organization of topics that covers all activities that need to occur and how to accomplish them. You likely already have your own workflows and processes to execute projects. These fundamentals are designed to plug into your existing process or workflow.

There is a logical flow to the activities involved with transitioning. The transition fundamentals framework presents information on three primary activities: Identify, Design, and Implement. Although it is natural to apply the three activities in this order, it is not required. Additionally, it is expected that when applying tasks to a workflow or process, iteration will be involved. For example, if multiple workloads are being migrated, many of the tasks will be iterated through multiple migrations.

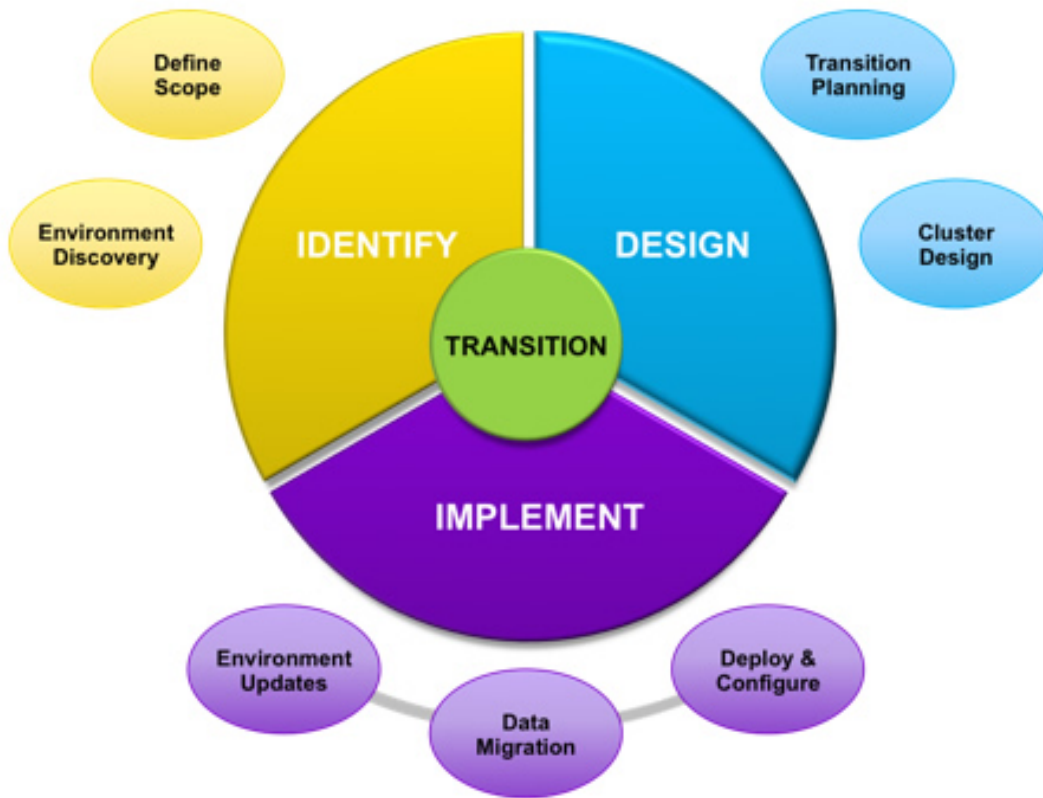


Figure 2) High-level view of the transition fundamentals framework.

Depending on your objectives, direction from management, environment complexity, and other factors you may decide that some of the activities or tasks detailed in the transition fundamentals framework are not required for your transition. Since the framework is not a process, deciding to apply a subset of the tasks to your transition is perfectly acceptable.

The following subsections describe the elements of the framework in more detail. A simple example based on a fictitious company, ACME, Inc., helps illustrate some of the points.

Identify

The Identify part of the framework is subdivided into two tasks: Environment Discovery and Define Scope.

Environment Discovery. During discovery you identify all existing storage systems, workloads, applications, constituent groups, and business requirements for your existing 7-Mode environment.

Objectives include:

- Create a complete list of applications and workloads, along with their dependent storage systems
- Understand business and cutover requirements for all applications and workloads

Practical Example 1

ACME, Inc. has three primary workloads: Microsoft Exchange, Oracle, and home directories. During environment discovery they determine that Microsoft Exchange and the home directory storage are currently located on two separate NetApp storage systems running 7-Mode. Oracle is hosted on non-NetApp storage. The NetApp systems are

identified, and business and cutover requirements are defined.

Define Scope. In this task you subdivide your 7-Mode environment into logical groupings and determine a priority order for transitioning each group.

Objectives include:

- Divide the 7-Mode environment into one or more groupings that you will transition to clustered Data ONTAP
- Identify the order in which you will transition groups (or at a minimum which group you will transition first)

Practical Example 2

ACME, Inc. decides that home directories will be moved to clustered Data ONTAP first for two reasons. 1) Exchange is on an older FAS system that is due for a tech refresh, while home directories are on a newer FAS3200 system that is cluster-capable and still under warranty; 2) there is more flexibility for home directory cutover from the user base. After home directories are moved off the existing system, they can become part of the new cluster environment. The Microsoft Exchange systems will be moved second, allowing for additional time for planning the cutover process, and aligning to existing maintenance windows.

Design

The Design part of the framework is also subdivided into two tasks: Transition Planning and Cluster Design.

Transition Planning. In this task you plan the detailed processes for moving a target group from 7-Mode to clustered Data ONTAP. This includes data migration, operating environment updates, and training.

Objectives include:

- Perform a detailed technical discovery:
 - Map existing 7-Mode storage containers to their clustered Data ONTAP equivalents
 - Perform a 7-Mode feature assessment
 - Identify existing disaster recovery and backup relationships
 - Choose a migration method for each storage container being moved
- Generate a list of management applications and other operational dependencies that require updates
- Plan necessary training for 7-Mode administrators
- Create a list of scripts using ZAPIs or 7-Mode commands requiring updates

Practical Example 3

ACME, Inc. uses the Collect & Assess functionality in the 7-Mode Transition Tool (7MTT) to create an automated and detailed discovery of storage objects, hosts, and applications running in the NetApp environment. (See the Resource section for details on 7MTT). Because 7MTT can migrate both NAS and SAN workloads, AcmeÂ plans to use it for migration.

Cluster Design. This activity is used to plan the target clustered Data ONTAP system architecture. This includes establishing forward-looking requirements so that you don't find yourself painted into a corner down the road.

Objectives include:

- Specify the configuration elements required for the destination cluster
- Characterize 7-Mode workloads and assess utilization
- Size the cluster (new cluster) or do a headroom assessment (pre-existing cluster)
- Design the cluster architecture (new cluster) or determine necessary configuration changes (pre-existing cluster)

Practical Example 4

ACME, Inc. decides on a new FAS8040 2-node cluster. Once home directories are migrated, the existing FAS3200 HA Pair will be added to the cluster, creating a 4-node cluster that can support load balancing as needed, additional workloads in the future (such as Oracle), and company growth. Home directories and Exchange will utilize separate storage virtual machines (SVMs), providing logical and operational separation between the two workloads.

Implement

The Implement part of the framework is where you actually perform the transition you planned during the Design phase. It is subdivided into three tasks: Deploy and Configure, Data Migration, and Environment Updates.

Deploy and Configure. In this activity you either deploy and prepare a new cluster environment or make the necessary configuration changes to a pre-existing cluster.

Objectives include:

- Deploy and configure the new cluster or execute configuration changes on the pre-existing cluster
- Test and verify cluster configuration and off-box dependencies

Practical Example 5

ACME, Inc. deploys the new FAS8040 2-node cluster and configures it in preparation for migration of the CIFS home directories and the future migration of Exchange.

Data Migration. In this activity you move data to the clustered Data ONTAP destination environment and transition your workloads.

Objectives include:

- Execute data migrations and perform cutover activity according to plan

- Verify data access and execute post-migration configuration

Practical Example 6

ACME, Inc. uses 7MTT to migrate its home directories as planned. 7MTT not only migrates the data, it has the ability to migrate almost all existing CIFS configuration options to the clustered environment. It is also able to support migration of all Exchange LUNs during the second migration phase.

Environment Updates. In this activity, you complete all necessary updates to your operating environment and finish necessary staff training.

Objectives include:

- Update management applications
- Update script dependencies
- Complete outstanding staff-training requirements
- Create new or update existing environmental procedures

Practical Example 7

One of the new features of clustered Data ONTAP that ACME, Inc. really needs is the ability to nondisruptively move volumes across the cluster to rebalance capacity and performance. A new environmental procedure is defined that describes how Acme will choose which node in the cluster is the best candidate for the movement of home directory and Exchange volumes.

Tools

NetApp has a number of tools designed to help you with your transition.

Transition Advisor. For those of you who are NetApp [AutoSupport](#) users, [My AutoSupport](#) (login required) now includes a Transition Advisor tool. This is a simple tool that lets you assess a single storage system or every system you own at once.

7MTT. The 7-Mode Transition Tool, or 7MTT, is designed to do a lot of the heavy lifting for you. It consists of both a “collect and assess” feature and full data migration capability. The collect and assess feature accesses your clients (hosts) and 7-Mode storage systems to discover key configuration information and identify important considerations for the transition to clustered Data ONTAP.

7MTT also automates much of the data migration process. Key benefits of the latest version (version 2.0) of 7MTT for data migration are:

- Migrates SAN volumes and MetroCluster configurations from 7-Mode to clustered Data ONTAP 8.3
- Enables you to apply 7-Mode configurations to a cluster prior to cutover

- Includes read/write testing so can test your destination storage containers prior to cutover
- Enables the performance of incremental updates and configuration changes
- Supports the migration of both CIFS and NFS volumes. Most data migration tools support CIFS or NFS, but not both.
- Conducts pre-checks to determine that the source 7-Mode storage system and volumes are ready for the data migration activity
- Migrates key 7-Mode storage system configuration information automatically to clustered Data ONTAP
- Migrates 7-Mode volume SnapMirror® replication relationships to clustered Data ONTAP
- Allows the coordination of the cutover phase by automating the cutover of storage while signaling for the disconnection and reconnection of clients
- Guides the user through the end-to-end data migration process

Additional Tools. A more detailed description of all tools available from NetApp is included in Section 3 of TR-4052. The new fundamentals framework is less centered on the tools you use to move data. You are free to use the tool or tools that you are most comfortable with.

Application Data Migration. In many cases, your applications may be the best choice for moving application-specific data with minimal or no disruption. This is covered in detail for popular enterprise applications including Oracle, Exchange, SQL Server, and more in [TR-4336: Enterprise Application Transition to Clustered Data ONTAP](#).

Resources

This section contains the most important resources for transitioning to clustered Data ONTAP. Don't forget to check out our clustered [Data ONTAP transition portal](#).

Technical Reports

- [TR-4052: Successfully Transitioning to Clustered Data ONTAP](#)
- [TR-4336: Enterprise Application Transition to Clustered Data ONTAP](#)

Training

A number of relevant clustered Data ONTAP classes are available through [NetApp University](#):

- [Clustered Data ONTAP Fundamentals](#) (web-based)
- [Clustered Data ONTAP Administration](#) (instructor-led)
- [NetApp Transition Fundamentals](#) (web-based)
- [Planning and Implementing Transition Using the 7-Mode Transition Tool](#) (web-based)

Professional and Support Services

NetApp offers a full range of services to support the transition process. You can find details on available services on the [transition portal](#).

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As a member of the NetApp Data ONTAP Group, Jay is responsible for clustered Data ONTAP maximum configurations and best practices. He has authored many technical reports and FAQs related to NetApp storage subsystems, resiliency, transition, performance, and more.

Roy has written technical papers on NetApp's core technologies including 32-bit and 64-bit aggregates, FlexClone®, enterprise application transition and data migration, platform sizing, and performance. He holds a bachelor of science in computer science from Cal Poly State University, and has more than 15 years of experience in engineering and technical sales. He is currently responsible for clustered Data ONTAP transition and best practices, Quality of Service, and high file count environments.

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