

AIX File System Resizing

File System Expansion in a SAN Environment

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TECHNICAL REPORT

Network Appliance, a pioneer and industry leader in data storage technology, helps organizations understand and meet complex technical challenges with advanced storage solutions and global data management strategies.

Abstract

This document provides recommendations on storage provisioning and detailed file system resizing procedures for use with Network Appliance™ storage used in an IBM AIX SAN environment.

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1) Scope and Purpose

This paper will provide recommendations on using the IBM Logical Volume Manager (LVM) included with the AIX operating system with Network Appliance storage systems. Specific examples for online file system resizing are also presented. This paper is designed to supplement recommendations provided by both companies.

2) Requirements and Assumptions

For the methods and procedures in this document to be useful to the reader, several assumptions are made:

The reader has at least basic AIX system administration skills and has access to the administrative login for the server

The reader has at least basic Network Appliance administration skills and has administrative access to the filer via the command-line interface

The filer and host have the licenses necessary to perform the activities outlined in this document

The target system has the required block-level and network protocol interconnects to perform the activities outlined in this document

In the examples in this report, all administrative commands are performed at the server or filer console for clarity. Web-based or other management tools such as Network Appliance FilerView® or the AIX System Management Interface Tool (SMIT) can also be used.

3) Storage Provisioning Recommendations

Choose a uniform LUN size to use with LVM An LVM volume group can be expanded only by adding additional LUNs or physical disks to it. For a Network Appliance storage system, it is recommended that a uniform LUN size be selected such that additional increments can be of the same size. While is not a requirement since LVM can aggregate disks of differing sizes, it will make storage configurations more intelligible and easily documented.

Resizing filer LUNs is not supported when using Logical Volume Manager LVM does not recognize additional space added to physical devices. If a logical volume needs additional capacity, a LUN should be created and added to the volume group to facilitate volume expansion.

Develop a naming convention for LUNs on the filer To make identifying LUNs easier, use descriptive names. For LUNs dedicated to a single host, the hostname, volume group name, and file system mount point would be good choices for components to use in the naming scheme. When LUNs are used as part of a clustered volume group, use the cluster or application name in place of the hostname.

4) File System Resize Example

This section will describe the basic process for resizing a file system using the AIX LVM and NetApp storage.

1. Create a new LUN on the filer to add to the LVM volume group and map it to the AIX host.

```
filer> lun create -t aix -s 100g /vol/vol1/ntapvg2.lun
filer> lun map /vol/vol1/ntapvg2.lun aixhost
lun map: auto-assigned aixhost=2
```

2. Run commands on the AIX host to recognize the LUN and make it available to LVM.

```
# cfmgr
# sanlun lun show
# setsp -a
```

The “sanlun” command is used to determine the path for the new LUN. The “setsp” command will return the device handles that the multipathing software will use.

3. Add the new LUN to an existing volume group using the appropriate device handle.

```
# extendvg ntapvg hdisk6
```

4. Extend the file system using the file system mount point as an argument.

```
# chfs -a size='102400000' /mnt
```

Note: The value 102400000 is the new size of the file system in 512-byte blocks.

5) Conclusions

The AIX Logical Volume Manager in concert with the expedient storage provisioning provided by Network Appliance affords organizations using AIX compelling benefits over conventional disk array technologies.

6) Caveats

This paper is not intended to be a definitive implementation guide. There are many factors that may not be addressed in this document. Expertise may be required to solve logistical problems when the system is designed and built. NetApp has not tested this procedure with all of the combinations of hardware and software options available on UNIX® variants. There may be significant differences in your configuration that will alter the procedures necessary to accomplish the objectives outlined in this paper. If you find that any of these procedures do not work in your environment, please contact the [author \(toby@netapp.com\)](mailto:toby@netapp.com) immediately.

7) References

Network Appliance Product Documentation and Support

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