

NAS Management using Microsoft System Center 2012 Virtual Machine Manager and SMI-S

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- ❑ New feature in SCVMM 2012 SP1
- ❑ Bridges the gap between block and share
- ❑ Same management capabilities for Windows file servers and NAS

- Discovery
 - File Servers
 - File Systems
 - File Shares
- Creation / Removal
 - File Systems
 - File Shares

How We Got Here

- Big thanks to our partners
 - Kick-off engagement with EMC and NetApp
 - Expecting more NAS partners soon

- SNIA SMI-S Plugfests

DEMO

- ❑ Basic operations supported on SMI-S 1.4 and later
 - ❑ File server / file share / file system discovery
 - ❑ File share creation / removal

- ❑ ACL management operations require SMI-S 1.6
 - ❑ New sub-profile added to 1.6 (Simple Identity Management sub-profile)

SMI-S Support (Required Profiles)

- ❑ Profile Registration
- ❑ Computer System
 - ❑ Multicomputer Systems supported
- ❑ NAS Head
- ❑ Filesystem
- ❑ Filesystem Manipulation
- ❑ File Export
- ❑ File Export Manipulation

- ❑ “interop” namespace required
- ❑ “ElementConformsToProfile” association from NAS Head to Top-Level Computer System
- ❑ Some optional classes are now required
- ❑ Some optional elements are now required
 - ❑ CIM_LocalFileSystem.NumberOfFiles

Discovery (File Servers)

- ❑ “interop” namespace
 - ❑ CIM_RegisteredProfile instances for “NAS Head”

- ❑ Vendor namespace
 - ❑ Computer System Profile
 - ❑ Top-Level Computer Systems vs. Dedicated File Servers

- ❑ Protocol Support
 - ❑ CIFS is what we’re looking for
 - ❑ Protocol dialect

- File Shares
 - Associated to File Servers
 - Multiple capabilities for each File Server
 - Only CIFS shares are exposed by SCVMM

- Local File Systems
 - Reside on Logical Disks
 - Logical Disks allocated from Storage Pools

- ❑ Local File Systems exported as File Shares
 - ❑ 1:1 mapping in SCVMM
 - ❑ 1:many mapping supported for objects created outside SCVMM
 - ❑ SCVMM shares root of File System

- ❑ File Export Service
 - ❑ Creation / Removal of File Shares

- ❑ CIM_FileSystemConfigurationService
- ❑ File Systems created directly from Storage Pool
- ❑ SMI-S: two ways to create File Systems
 - ❑ From Extents (Logical Disks)
 - ❑ From Storage Pools - what SCVMM does

- ❑ File Shares “registered” to Hyper-V hosts/clusters
 - ❑ Host machine accounts need share access

- ❑ Integrated with Active Directory
 - ❑ NAS devices need to be AD-aware
 - ❑ SMI-S providers need to work with AD

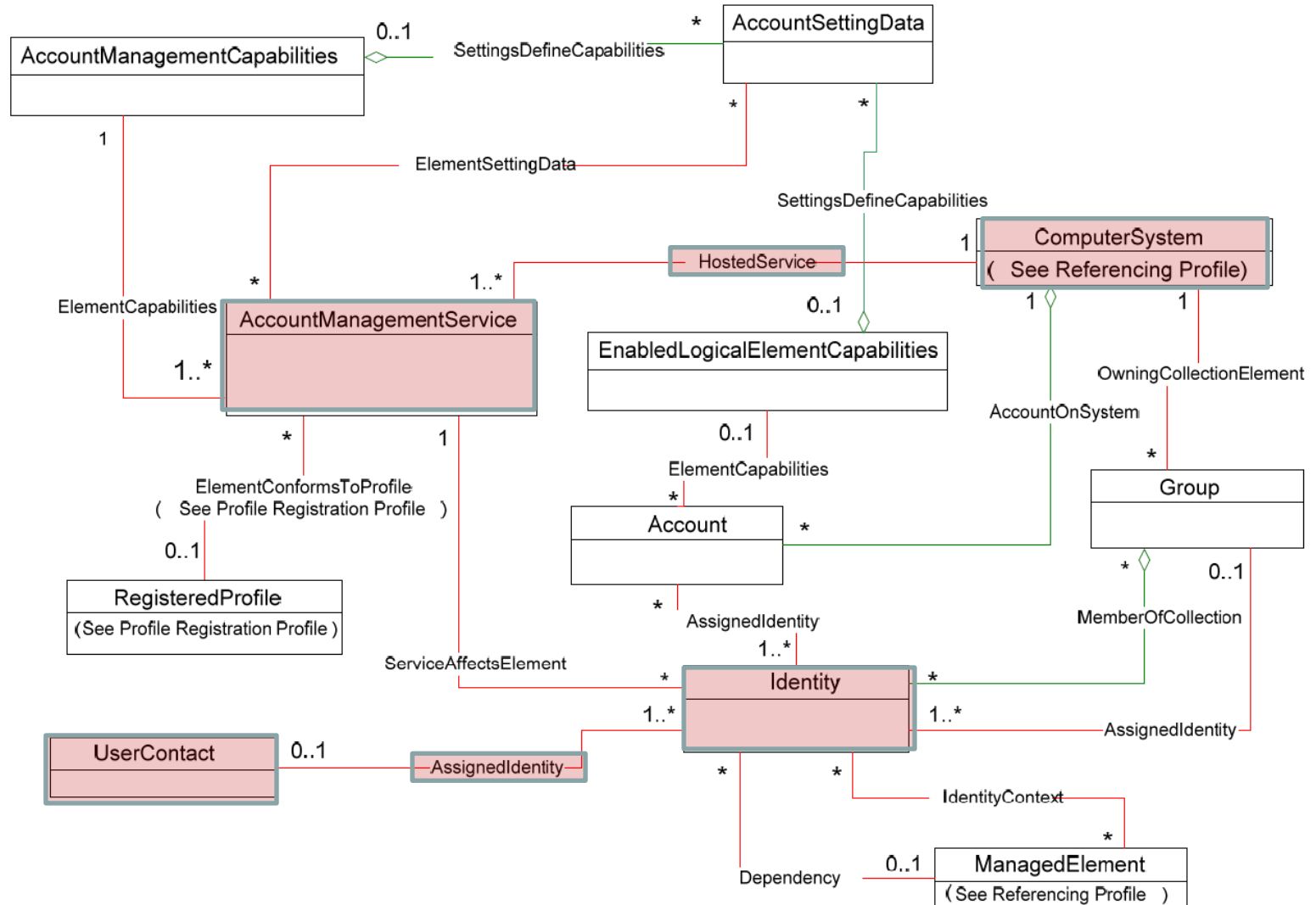
- ❑ Simple Identity Management Subprofile
 - ❑ DSP1034
 - ❑ Added to SMI-S 1.6
 - ❑ Mandatory for ACL management support
 - ❑ New methods added to the profile

- ❑ Integration with Active Directory

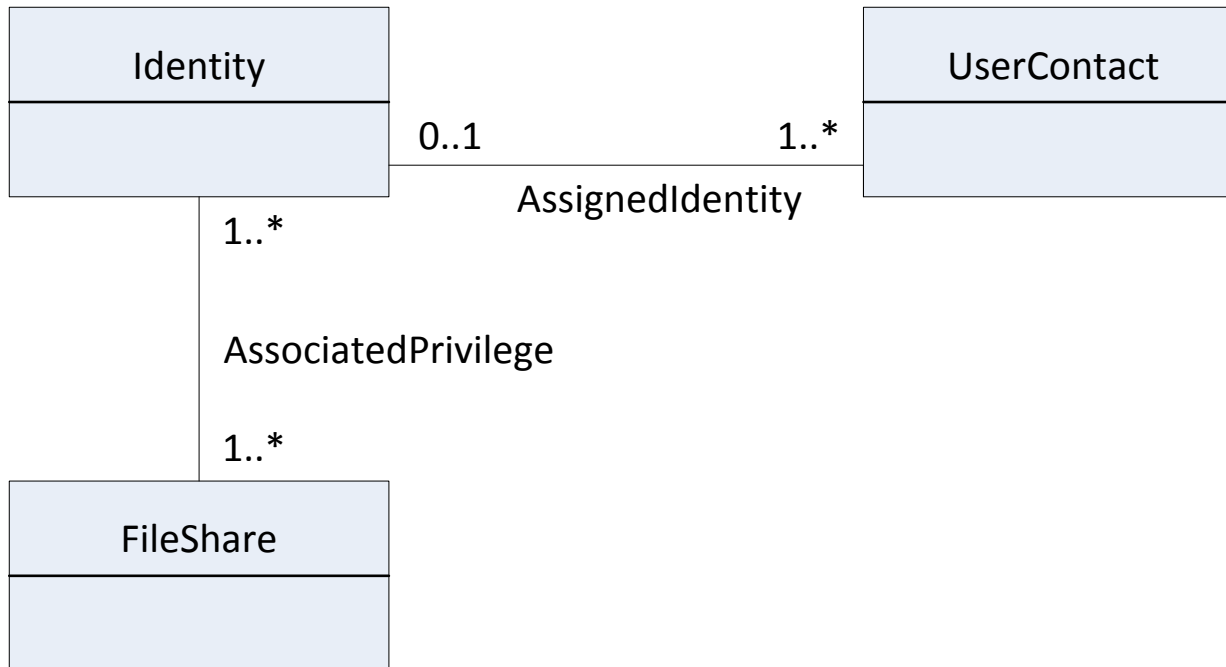
- ❑ Mandatory DSP1034 Classes
 - ❑ CIM_UserContact
 - ❑ CIM_Identity
 - ❑ CIM_AccountManagementService

- ❑ New Class added
 - ❑ CIM_AssociatedPrivilege

ACL Management



- ❑ CIM_AssociatedPrivilege class
 - ❑ Associates an Identity to a File Share
 - ❑ Activities[] property specifies actual privileges
 - ❑ Instances managed by FileExportService



- ❑ New Methods added to SIMP Profile
 - ❑ CIM_AccountManagementService.GetUserContact()
 - ❑ CIM_AccountManagementService.CreateUserContact()
 - ❑ CIM_FileExportService.AssignPrivilegeToExportedShare()

- ❑ Intrinsic methods for deletion/modification

- ❑ Block Storage Management (existing feature)
 - ❑ Done through Windows Standards-Based Storage Service
 - ❑ Storage Service exposes WMI classes

- ❑ Storage Service does not expose NAS classes

- ❑ Interaction with SMI-S provider through CIM Passthrough API

- ❑ WMI provider
- ❑ Root\Microsoft\Windows\Storage\PT
- ❑ Allows access to all classes exposed by a provider
- ❑ Uses same CIM transport layer as Windows Storage Service

- ❑ User Context contains connection information
 - ❑ Host / Port
 - ❑ User / Password
 - ❑ Namespace

DEMO

- ❑ How do I write a SMI-S provider for NAS?
 - ❑ “interop” namespace is mandatory
 - ❑ ElementConformsToProfile associations
 - ❑ NAS Head
 - ❑ Multiple Computer System supported
 - ❑ Associations and “Dedicated” fields critical
 - ❑ Additional profile (DSP1034) needed for ACL