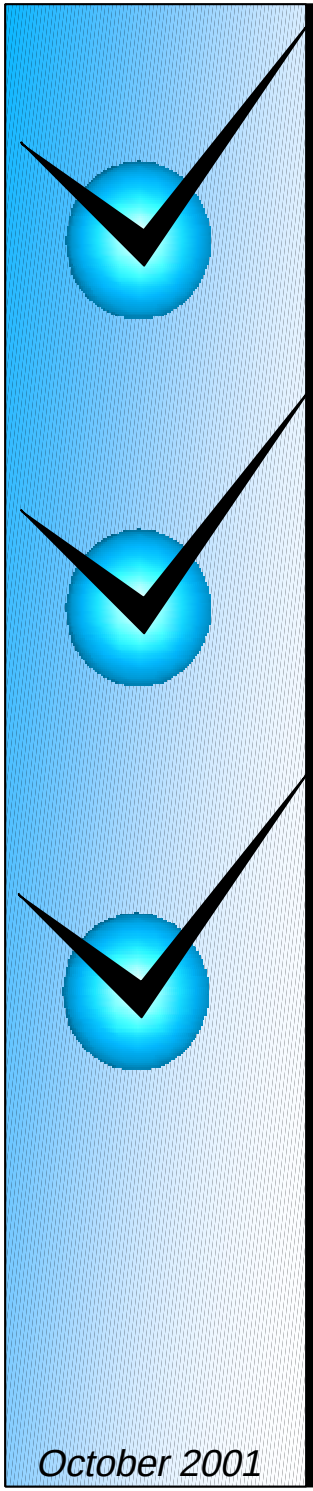


Managing Data Resources using CIM/WBEM

Doug McCallum

Senior Staff Engineer

Sun Microsystems, Inc.

Doug.McCallum@Sun.COM

Introduction

- History
- What is CIM/WBEM?
- How Does CIM/WBEM Relate to NFS?

History

- WBEM Initiative started in 1996
- Incorporates some ideas from earlier Desktop Management Interface (DMI) and Simple Network Management Protocol (SNMP)
- Architecture neutral

What is CIM/WBEM?

- Web-Based Enterprise Management
- Common Information Model
- Protocols
- Standarization through the DMTF

Web-Based Enterprise Management

Set of management and internet standard technologies.

- CIM used to define managed objects
- Operations over HTTP
- Data encoded in XML (cimXML)

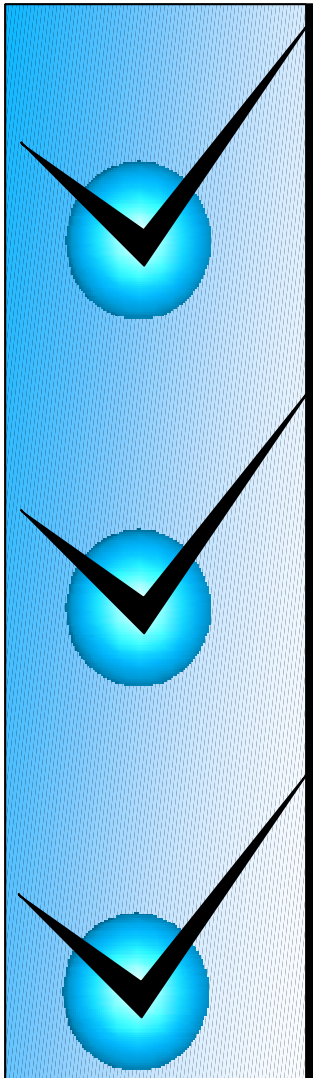
Common Information Model

- Object-oriented system modeling
- Language for describing management data
  - Managed Object Format
  - UML
- Extensible

CIM

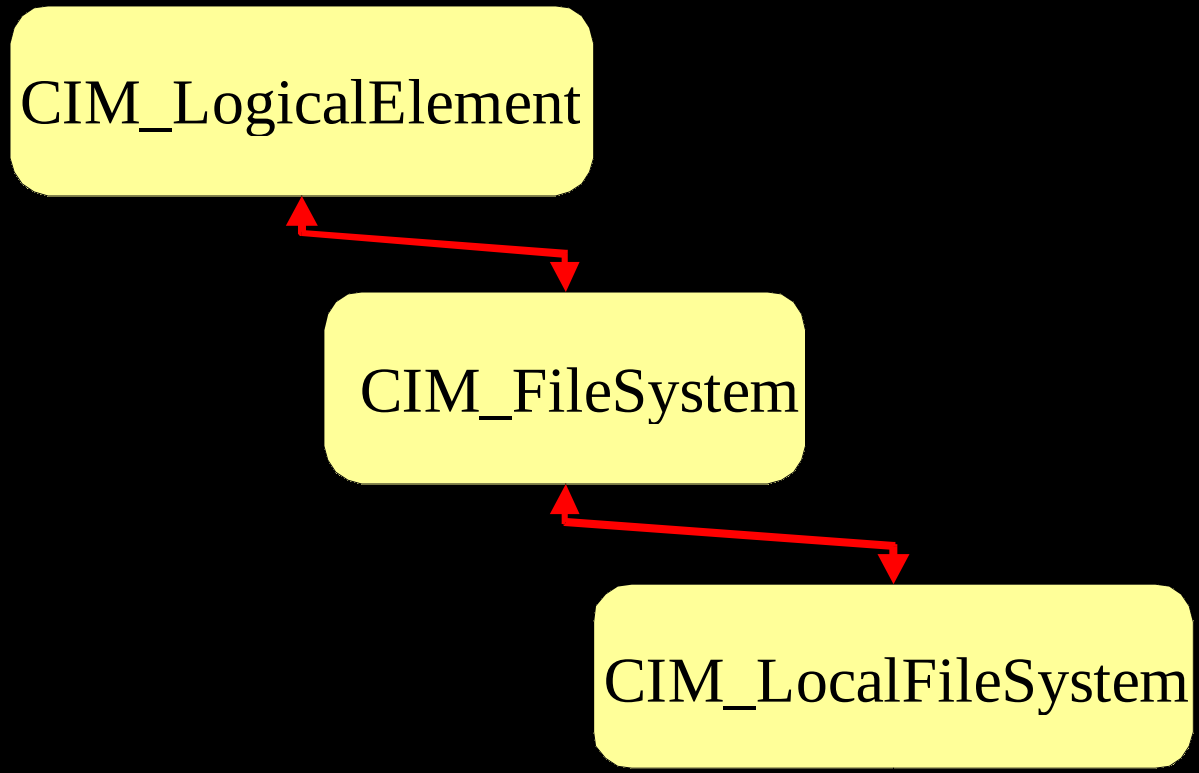
- CIM Objects
- CIM Schema
- The CIMOM
- Events

CIM Objects



- Have properties
- Have methods
- Have associations
- Grouped into classes

CIM Objects



CIM Schema

- Core
  - Manageable components
  - Stable
- Common
  - Address specific management areas
- Extension
  - Technology specific

CIMOM

- Has providers for objects
- Instantiates objects
- Provides secure, remote access

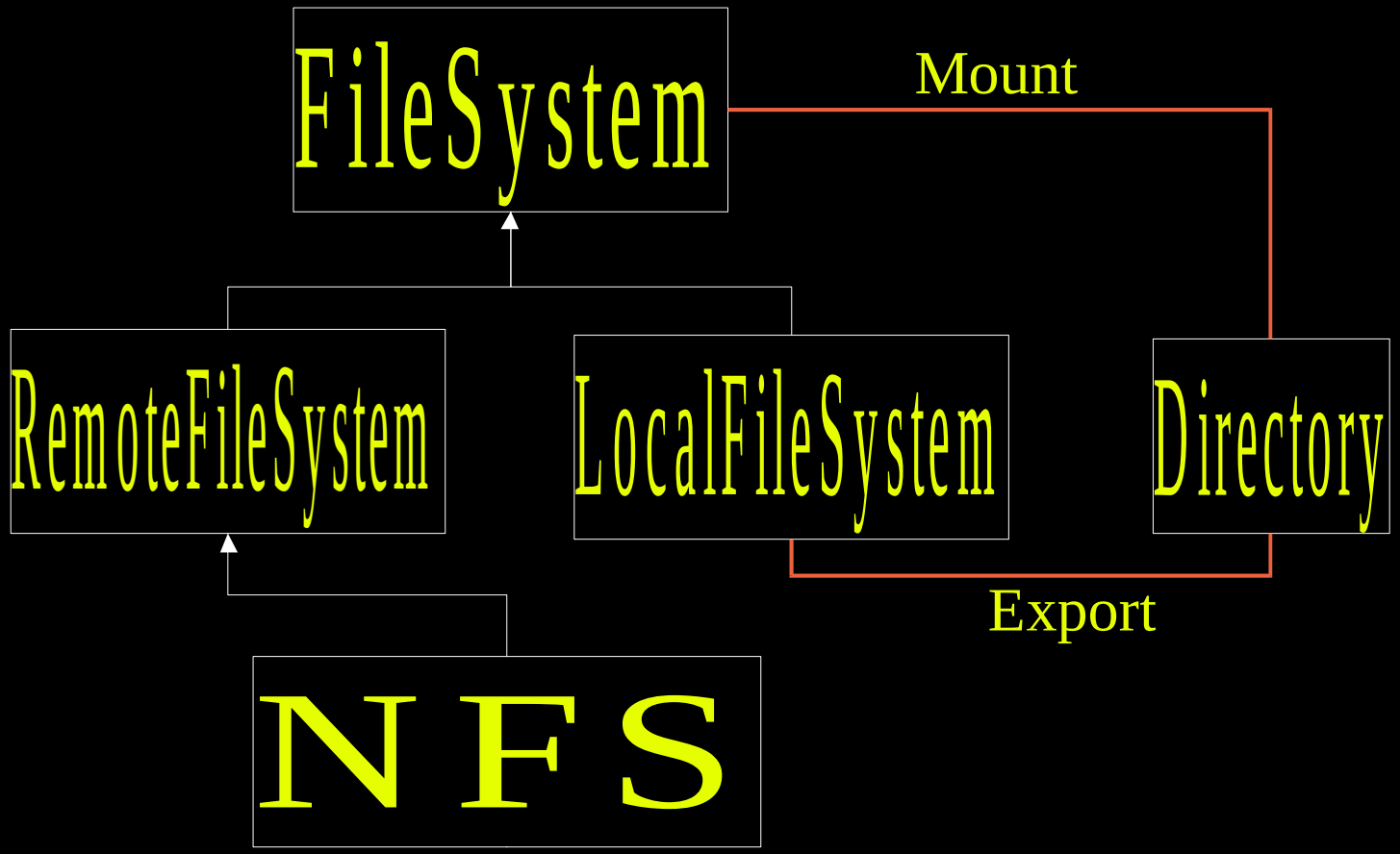
Events/Indications

- Standard events
- Class change events
- Process or instrument level events
- Subscription based

How Does CIM/WBEM Relate to NFS?

- The CIM Common schema defines an NFS object
- CIM_NFS derived from CIM_RemoteFileSystem
- Models both client and server

NFS


FileSystem
Mount
RemoteFileSystem
LocalFileSystem
Directory
Export
NFS

NFS

HardMount: boolean
ForegroundMount: boolean
Interrupt: boolean
MountFailureRetries: uint16
RetransmissionAttempts: uint16
RetransmissionTimeout: uint32
ReadBufferSize: uint64
WriteBufferSize: uint64
ServerCommunicationPort: uint32
AttributeCaching boolean
AttributeCachingForRegularFilesMin: uint16
AttributeCachingForRegularFilesMax: uint16
AttributeCachingForDirectoriesMin: uint16
AttributeCachingForDirectoriesMax: uint16

FileSystem

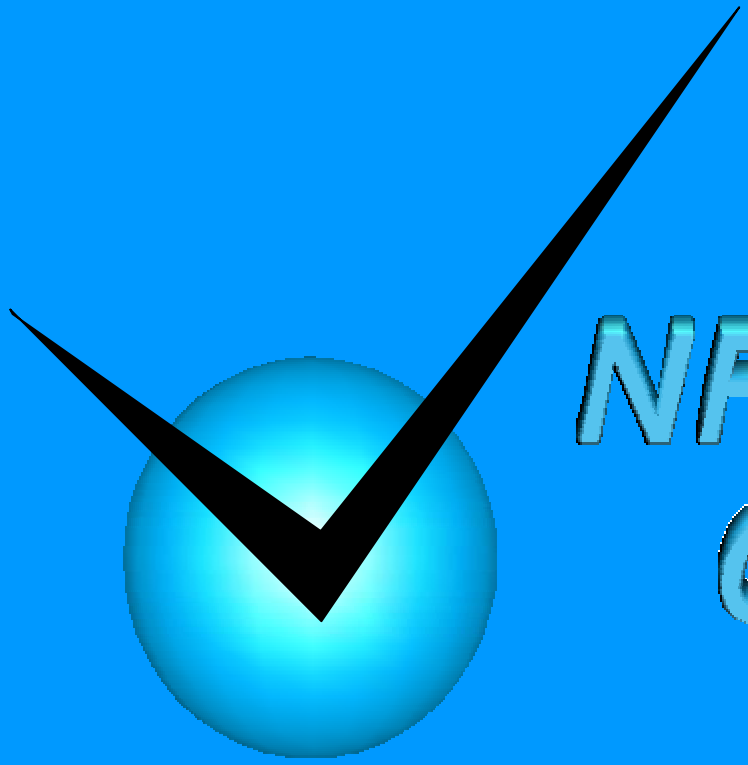
CreationClassName: string [key]
Name: string [key]
Root: string
BlockSize: uint64
FileSystemSize: uint64
AvailableSpace: uint64
ReadOnly: boolean
EncryptionMethod: string
CompressionMethod: string
CaseSensitive: boolean
CasePreserved: boolean
CodeSet: uint16 []
MaxFileNameLength: uint32
ClusterSize: uint32
FileSystemType: string

CIM vs. SNMP
Summary

- CIM provides a more detailed model
- CIM could use SNMP as a provider
- CIM could be used as a data provider to an SNMP implementation

Links to Additional Info

- http://www.dmtf.org/
  Distributed Management Task Force
- http://www.dmtf.org/standards/standard_cim.php
  CIM Standards and whitepapers.
- http://www.opengroup.org/wbemsource/
  WBEM Source Initiative



NFS Vendors Conference