

Profile Based Compliance Testing of CDMI: Overcoming challenges & best practices

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Since SNIA addresses lack of interoperability issue of Cloud Storage by Cloud Data Management Interface specification. SNIA is processing and including new prospects day by day basis in CDMI specification. With continuous effort from the SNIA and their member organization, they light upon with new characteristics. This characteristic is CDMI profile based specification. It helps in moving data from one cloud vendor profile to another cloud vendor profile. There is a growing trend where organizations are adopting profile based CDMI in their products and hence interoperability becomes extremely important. TCS is working on `CDMI Profile based Automated Test Suite`, which focuses on testing compliance to CDMI Basic Service Based Profile, ID Based Service Profile and Self Storage Management profile .

In this proposal we will share our observations/challenges during the development of test suite and challenges while testing products for CDMI profile based compliance. This will benefit the organizations to adopt best practices while developing CDMI compliant products.

- ❑ Profile's Overview
- ❑ Profile Based Testing Key challenges
- ❑ Profile based CDMI Automated Test Suite
- ❑ Challenges in Development of Profile Based CDMI Test Suite
- ❑ Challenges while testing products for Profile Based CDMI compliance
- ❑ Best Practices
- ❑ Conclusion

Profile : It is a subset of CDMI Specification, representation of a limited number of object, functionality and capability.

❑ Profile Details

- ❑ Basic Storage Management : intended to allow CDMI to be used as a simple data path interface to store and retrieve data .
- ❑ Self Storage Management : intended to allow CDMI to be used as a self-service interface to provision storage and manage data for offerings .

- ❑ Profile Based CDMI Compliance testing consist subset of CDMI and Non CDMI test specification and test suite .
- ❑ CDMI Profiles help vendors to develop their servers in rapid manner because of limited number feature and capability consist in the profiles.

Challenges in Development of Profile Based CDMI Test Suite

Challenges in development of Profile based CDMI Test Suite

- ❑ Challenges
 - ❑ Requirement of Profile Based CDMI Servers/Simulators.
 - ❑ Profile based CDMI and Non CDMI Specification are being added and extracted continuously.
 - ❑ Scenario creation and modification.

Challenges in development of Profile Based CDMI Test Suite

Requirement of CDMI Server and Profile Based Server / Simulators :

1. Requirement of all available Profile Based servers to test successful implementation of concepts.
2. Requirement of CDMI test server to test successful implementation of test script
3. Requirement of at least two CDMI servers to test successful implementation of test script for interoperability testing

Challenges in development of Profile Based CDMI Test Suite

Profile based CDMI and Non CDMI Specification continue adding and extracting :

4. Multiple Profile based Specification Available

- ❑ Supporting different capability.

Example :

- ❑ Basic Storage Service profile use minimal support REST/HTTP data path is used to store and retrieve data.
- ❑ Self storage management profile is not supported data path.

5. Removed the ID Based Service Profile.

Challenges in development of Profile Based CDMI Test Suite

Profile Based CDMI Specifications Challenges:

6. All Objects not supported in profile based CDMI Specification document

Example :

- Domain Object not supported in Basic Storage Service profile .

Challenges in development of Profile Based CDMI Test Suite

Test Case Scenario Creation :

7. In Profile's both CDMI and Non CDMI supported.

Example

Basic Storage Service profile supports CDMI and Non CDMI.

Challenges in testing Profile Based CDMI Compliant product

Challenges while testing products for Profile Based CDMI compliance

Need to create different number of Test Scenario :

1. To test different profile need to create test case scenario

Example:

- ❑ Basic Storage Service profile supports CDMI and Non CDMI . To test this profile need to create combination of CDMI/Non CDMI scenario.
- ❑ Self storage management profile support all CDMI capability it requires different test case scenario.

Challenges while testing products for Profile Based CDMI compliance

No Guide line available for Profiles Implementation on Server:

2. Sever support profiles .

Example :

- ❑ Server would implement Basic Storage Profile and Self storage management profile both.
- ❑ Server would support one profile at a time.

3. No guide line available for future profile will introduce.

Challenges while testing products for Profile Based CDMI compliance

Multi Version implementation:

4. Same server implemented with two version CDMI version and Profile

Example

- ❑ Server implemented with 1.0.1 , also implemented some part of CDMI spec 1.0.2 , Basic Storage Management profile and Self Storage Management Profile

Solution Provided

Solution Provided For Profile Based Testing

- ❑ TCS provides Profile Based CDMI Compliance Testing Tool which can be leveraged to validate CDMI profile based implementation.
- ❑ TCS has developed a CDMI Simulator which provides the simulation of CDMI Server and helpful in Profile Based CDMI Compliance Testing and tool implementation .

Best Practices

- ❑ Vendors should adopt/leverage Profile based compliance testing tool to validate their implementation .
- ❑ Profiles Capability object should be properly implemented by CDMI servers
 - ❑ This would ensure execution of all required test cases based on Profile's capability.
- ❑ Use Profile based Simulator's

Conclusion

- ❑ Cloud Storage is a hot Industry trend and as we move forward CDMI is the right step towards addressing end customer's requirements.
- ❑ There are challenges in Testing CDMI Compliance, e.g. due to evolving nature of CDMI, these can be mitigated by adopting some of the proposed best practices.
- ❑ Use of Vendor agnostic Compliance Test Tool for testing of Cloud Storage Products for conformance to CDMI, will enable implementation of the CDMI standard in right manner.
- ❑ This can help in building interoperable client and server.

Questions ?

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