SRM v3.0 specification changes from SRM v2.2

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SRM v2.2

- **The requirements of the LHC experiments need changes on SRM v2.1.2.**

- **WSDL was finalized on June 20, 2006.**

- **Deployment of implementations is on a fast track and scheduled by Oct. 2006.**

Major Changes (1)

- **Space Type is removed**
  - **Access Latency and Retention Policy are added**
    - Access latency describes how latency of files is improvable
    - Retention policy indicates the quality of the space where files are located

Major Changes (2)

- **Retention Policy: REPLICA, OUTPUT, CUSTODIAL**
    - **Quality of Retention (Storage Class) is a kind of Quality of Service. It refers to the probability that the storage system loses a file. Numeric probabilities are self-assigned.**
        - **Replica quality has the highest probability of loss, but is appropriate for data that can be replaced because other copies can be accessed in a timely fashion.**
        - **Output quality is an intermediate level and refers to the data which can be replaced by lengthy or effort-full processes.**
        - **Custodial quality provides low probability of loss.**
    - **The value will be used to describe retention policy assigned to the files in the storage system, at the moments when the files are written into the desired destination in the storage system. It will be used as a property of space allocated through the space reservation function. Once the retention policy is assigned to a space, the files put in the reserved space will be assigned the retention policy of the space.**

- **Access Latency: ONLINE, NEARLINE**
  - **Files may be Online, Nearline or Offline. These terms are used to describe how latency to access a file is improvable. Latency is improved by storage systems replicating a file such that its access latency is online.**
    - **The ONLINE cache of a storage system is the part of the storage system which provides file with online latencies.**
    - **ONLINE has the lowest latency possible. No further latency improvements are applied to online files.**
    - **NEARLINE file can have their latency improved to online latency automatically by staging the file to online cache.**
    - **For the SRM we only keep ONLINE and NEARLINE**
    - **For completeness, we also describe OFFLINE here: OFFLINE files need a human to be involved to achieve online latency**
  - **The value will be used to describe the access latency that can be requested at the time of space reservation.**

Major Changes (4)

- **srmBringOnline is added**

- **Transfer parameters**
  - In addition to the supported transfer protocol list, client access pattern, client connection type and array of client networks (IP addresses) are added
    - Access pattern: TRANSFER_MODE, PROCESSING_MODE
      - a hint from the client to SRM how the Transfer URL (TURL) produced by SRM is going to be used.
    - Connection type: WAN, LAN
      - indicates if the client is connected though a local or wide area network. SRM may optimize the access parameters to achieve maximum throughput for the connection type.
  - Changes in v3.0, as an array of key/value pair, such as access_pattern, connection_type and network_address may be defined as keys and passed as string of transfer hints

Minor changes

- **File locality is added to the file metadata info**
  - It describes a file property that indicates the current location or status in the storage system

- **File size is in bytes of unsigned long**

- **Life time is in seconds of int**
  - "0" (zero) or null indicates the site default lifetime
  - The value of -1 indicates "infinite" lifetime

- **srmReserveSpace is asynchronous**

- **Total Request Time**
  - srmPrepareToGet, BringOnline, PrepareToPut and Copy has totalRequestTime to indicate that all file transfers for the request must be completed within the designated time.

- **srmGetTransferProtocols and srmPing are added**

Others

- **"Pinning" is limited to the "copies" or "states" of SURLs and the Transfer URLs (TURLs)**
  - In v3.0, pinning is limited to the online state of SURLs