

Data Transport Service (DTS)

Franco, Tiziana, George, Peter, Krishna



The Data Transport Service ...

- is one of N services through which clients deal with the network resource
 - data transport service
 - network advance reservation service
 - network QoS (DSCP-based services)
 - network information service
 - network monitoring service
 - connectivity service
 - network-based optimization service (e.g. anycasting)
 - AAA service
- GHPN-RG is actively charting this new territory
 - What's the inter-play amongst these svcs.?
 - How many svcs. need to interface with Schedulers and Directories?
 - How many svcs. need to be OGSI-fied?
 - Where does it make sense to apply WS-A as a design pattern?



Requirements for a DTS

>philosophy<

- MUST conform to the end-to-end principle
 - Client is where context is
 - Service just doesn't know
 - when a client works properly or stops to function
 - whether it's a good client (legitimate key) or a worm (stolen key)
 - Service does know what's in or out of SLA
- MUST conform to the "fate-sharing" principle
 - It's acceptable to lose the state information associated with an entity if, at the same time, the entity is lost

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in IETF RFC-2119 ... while recognizing this is a *discussion* tool only ☺



Requirements for a DTS (cont'd)

>basics<

- MUST act as a SLA-capable data mover
 - and SHOULD turn high level SLAs into lower level SLAs
- MUST support 2- and 3-party transfers
 - 3-party: client is neither source nor sink
- MUST virtualize end-to-end resources and allow dynamic introspection of the virtualized resources
- MUST isolate a client from net idiosyncrasies

Requirements for a DTS (cont'd)

>help me to help you<

- There **SHOULD** be mechanisms for the client to communicate with the underlying substrate factors like data rate profile (time Vs rate), total data amount remaining (estimation or actual) and other characteristics of the data stream to help the underlying fabric to optimize and predict load

Requirements for a DTS (cont'd)

>feedback<

- MUST notify a client of those events that the client has negotiated and registered for
- MUST tell client if s/he's admission-controlled out (be it a capacity or policy issue)
- MUST timely notify client of SLA violations

Requirements for a DTS (cont'd)

>scaling up<

- MUST seamlessly work across intervening administrative boundaries
- MUST implement, MAY use client/service authentication

Requirements for a DTS (cont'd)

>hi-touch<

- SHOULD handle advance reservations
- SHOULD expose options for gang-processing of client's requests
- MAY support any-casting
- ...



A new draft coming soon near you

(editor: George Clapp)

-00.txt due by GGF10 cutoff date

- - 1. Introduction
 - 2. Overview of Grid Network Services
 - 2.1. Conceptual Description
 - 2.2. Relationship with Other Standards
 - 2.3. Case Studies
 - 2.3.1. High throughput file transport (bit-blasting a large data set) with variations
 - 2.3.1.1. With a scheduled connectivity service
 - 2.3.1.2. With optical by-pass
 - 2.3.2. Visualization session
 - 2.3.3. Point-to-multipoint session, e.g., update of replicated database
 - 2.3.4. Transparent optical channel
 - 3. Technical Specification of Grid Network Services
 - 3.1. Interface Design Principles
 - 3.2. Related Standards
 - 3.3. Service Specifications
 - 3.3.1. Data Transport Service (with Network QoS)
 - 3.3.2. Network Advance Reservation Service
 - 3.3.3. Network Information Service
 - 3.3.4. Network Monitoring Service
 - 3.3.5. Connectivity Service
 - 3.3.6. Network-based Grid Optimization Service
 - 4. Security Considerations
 - 5. Conclusions

