Tapestry: An Infrastructure for Fault-tolerant Wide-area Location and Routing

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CSE-498 (Adv. Networks)
2003-02-04
A paper presentation on
Plaxton Node

Object Location Pointers
<ObjID, NodeID>

Hotspot Monitor
<OID, NID, Freq>

Object Store

Neighbor Map in Memory
2 secondary neighbors (not all pointers shown)

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Plaxton Mesh
Plaxton Issues

- Low memory usage
- Route round errors
- Decentralized
- Uses locality
- Relatively efficient
- Construction a problem
- Root not vulnerability
- Lack of adaptability (e.g. hotspots)
The Data

RDP vs Object Distance (TI5000)

- Locality Pointers
- No Pointers
The Data

Time to Coalesce in Presence of Failures

- LinkFailure=0%
- LinkFailure=2%
- LinkFailure=4%

Average Time to Coalesce (Hop Units)

Fragments Requested (32 total, threshold 16)
The Data

Effect of Multiple Roots on Latency

Latency (Hop Units) vs. Client Distance to Object

- 1 Root
- 2 Roots
- 3 Roots
- 4 Roots
- 5 Roots
The Data

System-wide Throughput Under Heavy Load

Average Response Time Under Heavy Load

Varying External Load

Varying External Load