Evaluating a Framework for Different Networking Paradigms
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Evaluation Methodology

How to evaluate (Framework) Architecture?
• Concept Evaluation → Use Cases
• Determine Invariants [2]

Criteria for Use Cases
• C1 – Basic Communication Services usable?
• C2 – Advanced Options/Services usable?
• C3 – Naming with URIs suitable?
• C4 – Services transparent to applications?

Implemented Use Cases for Evaluation

Applications
• Web-Browser, Chat/IM, Video, Fileserver

Network Protocols & Paradigms
• CCNx – Content-Centric
• BitTorrent – Non-Sequential Download
• XIA – eXtensible Internet Architecture
• DTN – High Delay, Intermittent Connectivity
• MQTT (Pub/Sub) – Network Services
• Today’s Protocols – TCP-like, HTTP-like, Video-Transport

Evaluation Results and Conclusion

API Usage & Criteria

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<thead>
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<th>API Usage</th>
<th>Criteria</th>
<th>TCP-like</th>
<th>Video</th>
<th>HTTP-like</th>
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Evaluation Results

API Usage

Benefits
• Intuitive usage

Costs
• Additional implementation necessary

Future Work
Definition of suitable Requirements & Properties for matching protocols to application requests

Invariant

Network Protocol Implementations
• Query Interfaces
• Netlets, Multiplexers & Servlets
• Network Attachment
• Flow Identification & Flow Control
• User Feedback & Session Management

Decoupling of Applications and Protocols
Beneficial for Application Programmers

Framework for Network Protocols and Paradigms
Minimal Design Contraints for Protocols