Report on IAB Information Infrastructure Workshop

John Romkey

Purpose of the Workshop

- Investigate architecture of “information infrastructure”
- Includes existing Internet applications:
  - » gopher
  - » worldwide web
  - » WAIS
  - » archie
  - » whois
  - » anonymous FTP

Background

- IESG Applications AD requested that IAB hold architecture workshop
- Better understand architecture of information applications
- Facilitate communication between communities

Workshop Invitations

- Invitation-only workshop held Oct 12-14, 1994 in McLean, VA at MCI
- Issued call for white papers
- Invited selected experts
- Invited IAB and certain IESG members

Attendees

Abel Weinrib
Barry Leiner
Cecilia Preston
Chris Wedier
Christian Huitema
Cliff Lynch
Clifford Neuman
Dan LaLiberte
Dave Sincoskie
Elise Gerich
Erik Huizer
Jill Foster
John Curran
John Klensin
John Romkey
Joyce Reynolds
Karen Sollins
Larry Masinter
Lixia Zhang
Mark McCahill
Michael Mealling
Mike Schwartz
Mike St. Johns
Mitchell Charity
Mitra
Paul Mockapetris
Steve Crocker
Tim Berners-Lee
Ton Verschuren
Yakov Rekhter

Organization

- Split into three focus groups meeting for 2.5 days
- Each group explores issues and writes report
- Recommendations for further work
- RFC - to be published

Caching and Replication

- Important problem in distributed databases
- Existing systems can benefit:
  - » DNS
  - » WWW
  - » Gopher
  - » DHCP
  - » White pages

Caches & Replicas

- Cache models: club and centralized
- Cache management issues
- Functional interface
- Different performance characteristics

C & R Summary

- Important pieces of “Internet Middleware”
- Unlikely that one implementation can satisfy everyone
- Should specify a common protocol to provide framework for future protocols

Information Infrastructure Architecture

- Accepted architecture model
- Explored services that instantiate this architecture
- Explored functional interfaces between components

Insert Karen's transparency

Insert Erik's transparency

Layer Model

- Retail
- Wholesale
- Raw Materials

Infrastructure Components

- Resource Discovery
- Naming/Identification
- Name/Identification Resolution
- Object Retrieval
- Object Publication
- Definitions
- Attribute Management
- Accounting
- Pricing, Billing, Payment
- Storage, Caching, Replication
- Translation
- Server & Service Location
- Adaptive Glue
- Security
- Bootstrapping

Lower Layer Wish List

- Connectivity forecast
- Bandwidth availability and reservation
- Latency availability and reservation
- Reliability availability and reservation
- Burstiness support
- Security availability
- Cost
- Policy Routing

Initial Wholesale Services

- Object retrieval
- Name Resolution
- Caching and Replication

Recommendations to the IESG

- develop and communicate a security model **usable** by designers of information applications - current models are not considered usable

- prepare guidelines for writing security considerations sections in RFCs

Recommendations to the IESG (con't)

- Proposed Standard's should not be accepted by the IESG unless they really consider security - (after the first two recommendations have been fulfilled)

Recommendations to the IESG (con't)

- develop security modules usable by the implementors of information clients and servers - reusable across many different, heterogeneous applications and platforms

- make clear what security services you can expect from the lower layers

Recommendations to the IESG (con't)

- that the key distribution infrastructure is reviewed for usablity by information applications

- that there needs to be a process inside the IETF for scheduling a joint meeting between two working groups - for example, so that the key distribution WG can meet jointly with IIIR

More Information

- Workshop information on WWW: http://www.elf.com/pub/romkey/ii-workshop/home.html
- Workshop information via anonymous FTP: ftp.elf.com:/pub/romkey/ii-workshop
- Reports published in RFC's - Internet Draft followed by real RFC

Summary

- Relationships between components more complex than layering
- Component architecture important for current and future designers and implementors
- Security considered too difficult and complex

Summary (con't)

- IETF should develop component functional interfaces and specify services that provide these functions

Acknowledgements

- MCI for hosting the workshop
- John Klensin