

MODELING THE INTERNET

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MODELING THE INTERNET

OUTLINE

WHAT SHOULD BE MODELED?

overlays and aspects of overlays

covering common functions across application, middleware, and network levels

HOW SHOULD IT BE MODELED?

using "lightweight modeling" tools

using the right language for each purpose

WHY SHOULD IT BE MODELED?

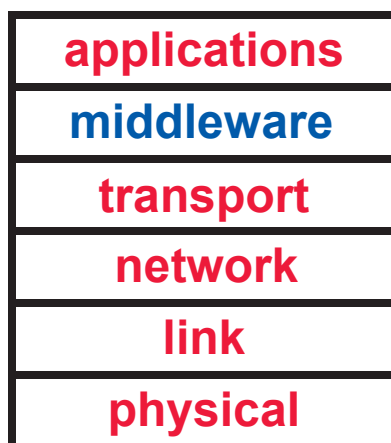
because functional modeling (as opposed to performance modeling) is almost unknown in networking . . .

. . . and is badly needed

THE STATE OF INTERNET ARCHITECTURE

THE "CLASSIC" INTERNET ARCHITECTURE

- defined in terms of layers with different functions



- designed to empower users and encourage innovation
- has succeeded beyond anyone's wildest dreams
- made obsolete by explosive growth in . . . users
. . . traffic
. . . applications
. . . security threats

THE REAL INTERNET

- does not meet current or future needs for . . .
 - . . . mobility,
 - . . . security,
 - . . . reliability,
 - . . . quality of service,
 - . . . scale,
 - . . . network management,
 - . . . balancing the interests of diverse stakeholders
- "classic" architecture is eroded badly by exceptions
- separation of concerns always loses to the desire for efficiency (or to tussles between stakeholders, or to anything else)
- as a result of all these factors, it is much too difficult to build, deploy, and maintain networked applications

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REFERENCES

- [Day 2008]** John Day, *Patterns in Network Architecture*, Prentice Hall, 2008.
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