Introducing SEAN: Signaling Entity for ATM Networks

Sean Mountcastle¹, David Talmage¹, Spencer Marsh¹, Bilal Khan ¹,

Abdella Battou², Daniel C. Lee

Contact author: Prof. Daniel C. Lee

University of Southern California

Department of Electrical Engineering - Systems

3740 McClintock Avenue

Los Angeles, CA 90089-2565

dclee@usc.edu (213) 740-0882 (voice) (213) 740-8729 (Fax)

Abstract

SEAN is freely distributed, object-oriented, extensible software for research and develop-

ment in host ATM signaling. SEAN includes a complete source-level release of the host

native ATM protocol stack, and implements the ATM User Network Interface, compliant to

the ITU Q.2931 specification for point-to-point calls, the ITU Q.2971 extension for point-to-

multipoint calls, and the ATM Forum extension UNI-4.0 for leaf initiated join calls. SEAN

provides APIs to the programmers writing application programs that require ATM signal-

ing. Developers can easily modify and extend SEAN, using the framework library released

together. This paper briefly describes essential parts of SEAN's architecture and guides the

users and protocol developers.

Keywords: network signaling protocol, object-orientation, framework, simulators

Symposium Title: High-Speed Networks

General Conference Topics: Communications Software, Computer Communications

¹ITT Systems and Sciences, at the Center for Computational Sciences of the Naval Research Laboratory, Washington D.C.

²Center for Computational Sciences of the Naval Research Laboratory, Washington D.C.

- [2] M. T. Rose, The Simple Book: an Introduction to Internet Management. Englewood Cliffs, New Jersey: PTR Prentice Hall, second ed., 1994.
- [3] ATM Forum Technical Committee, "Integrated local management interface (ILMI) specification." Version 4.0n af-ilmi-0065.000, September 1996.
- [4] H. Hüni, R. Johnson, and R. Engel, "A framework for network protocol software," in Annual ACM Conference on Object-Oriented Programming Systems, 1995.
- [5] E. Gamma, R. Helm, R. Johnson, and J. Vlissides, Design Pattern, Elements of Object— Oriented Software. Reading, MA: Addison-Wesley, 1995.
- [6] L. P. Deutsch, "Design reuse and frameworks in the smalltalk-80 system," in Software Reusability, Volume II: Applications and Experience (T. J. Biggerstaff and A. J. Perlis, eds.), (Reading, MA), Addison-Wesley, 1989.
- [7] R. E. Johnson and B. Foote, "Designing reusable classes," Journal of Object-Oriented Programming, vol. 1, pp. 22–35, June/July 1988.
- [8] S. Mountcastle, D. Talmage, S. Marsh, B. Khan, A. Battou, and D. C. Lee, "CASiNO: A component architecture for simulating network objects," in *Proceedings of 1999 Symposium on Performance Evaluation of Computer and Telecommunication Systems*, (Chicago, IL), pp. 261–272, Society for Computer Simulation International, July 1999.