Preface

The management of complex, intracompany, intercompany, and international computer networks containing different communication links and nodes made by any number of public and private suppliers, is itself a complex task. The introduction of IBM's network management strategy and allied network management architectures and products is the focus of this issue. An initial essay, a broad overview paper, and 11 papers that follow present this significant body of work. We are indebted to K. D. Gottschalk of IBM Networking Systems in Research Triangle Park, North Carolina, for his considerable efforts in the planning and preparation of this issue.

The IBM strategy is called SystemView*, and it spans what is required for Open Systems Interconnection (OSI), Systems Network Architecture (SNA), and Transmission Control Protocol/Internet Protocol (TCP/IP). It also describes the network management common system framework across Systems Application Architecture* (SAA*) platforms, with a similar framework being considered for the Advanced Interactive Executive* (AIX*) platform.

The first contribution is an essay by Szabat and Meyer outlining the network management directions inherent in the SystemView strategy. The four key initiatives in that strategy are covered: integrated applications and services, broad scope, open system access, and the delivery and support of complete solutions for customer requirements.

Cypser, author of the recent and related book *Communications for Cooperating Systems: OSI, SNA, and TCP/IP*, provides an overview of the evolution of computer communications and networks, with an emphasis on IBM's directions and strategies. He discusses a wide variety of topics, including evolution of heterogeneous networks, integration of such networks, system management, programming interfaces, distributed data, gateways, directories, and Advanced Peer-to-Peer Networking (APPN).

NetView* is the comprehensive network management platform for the SystemView IBM System/390* environment. The paper by Stevenson is the first of several in this issue that describe aspects of NetView. The author presents the NetView management approach to multivendor networks, with emphasis on resource management, the NetView Extra turnkey suite of offerings, the management of network failure, and examples of failure management situations.

It is usually more efficient to manage large, complex computer networks from one or a few attended locations, using automated control and remote system operation and with many network facilities unattended. But the critical importance of these networks to a business require that such network management be effective and responsive. Irlbeck shows how this is accomplished in NetView.

The complexity of modern computer networks and their remote operation in a few locations means that each network operator is in charge of a vast and complex web of network resources. Gottschalk presents the NetView Graphic Monitor Facility that provides visual understanding and graphics-based control of the network for the operator of SNA and non-SNA networks.

Finkel and Calo describe the NetView Resource Object Data Manager (RODM), which is designed to support the coordination, management, and storage of network status information. In complex networks, automated control of the amount and diversity of such information makes it possible for fewer operators to effectively manage

large portions of the network. RODM provides a structured data model for a computer network, which reflects the organization of the network. RODM also collects and manages network status information, updating the model with current data.

The management of a local area network (LAN) that is based on TCP/IP is the task of IBM's AIX NetView/6000, which in addition provides a bidirectional connection to mainframe-based NetView products. AIX NetView/6000 runs on IBM RISC System/6000* processors and manages the simple network management protocol (SNMP), which is similar to the OSI network management framework. Chou et al. present this flexible network management system for TCP/IP in their paper.

Beyond the collection of status information and the control of a network of resources lies the subject of session performance: the effective use of devices and applications in support of a session at a terminal. Temoshenko discusses the use of the NetView Performance Monitor (NPM), with its varied facilities for the collection, correlation, and presentation of session performance measurements.

Program performance, whether in a single processor or a computer network, can be dramatically affected by paging. Jennings describes a method for estimating the fault rate function that relates storage allocation and page faults for a given workload. A simplification based on groups of pages helps reduce the complexity of the method. These estimates can be used to make design decisions and to anticipate storage requirements.

Janson, Molva, and Zatti show how their architectural framework has been used to integrate the OSI Reference Model with that of SNA, and how the use of this framework in general allows for integration of other network architectures, such as TCP/IP and Network Basic Input/Output System (NetBIOS). The result is an opening of IBM networks to the opportunity for connection with other networks, which is necessary for successful interconnection of the heterogeneous networks that exist today.

Advanced Peer-to-Peer Networking (APPN) has been made a part of SNA by modification of the SNA Management Services (SNA/MS) architecture, as described in a paper by Allen and Benedict. To reflect the needs of APPN, the former relationship between physical units and control points has been fundamentally altered by the introduction of a new infrastructure for handling the new focal-point/entry-point relationship and the use of a transport mechanism based on LU 6.2. The result is greater flexibility and strength, economy of resources, and potential for growth in a dynamic network management system.

An important challenge for communications across complex, distributed computer networks is the identification and registration of objects and resources in a way that leaves users with understandable names. Zatti et al. propose a naming scheme, based mainly on OSI Distinguished Names. Scenarios are presented that show how subsets of current standards can create a whole-network naming system for heterogeneous networks, and the proposed approach has the advantage of easy migration from today's naming environment.

In the final paper for this issue, Voss describes the evolutionary changes to Multiple Virtual Storage (MVS) that have occurred because of the introduction of Advanced Program-to-Program Communication (APPC/MVS). APPC implements LU 6.2 and supports peer-to-peer and client/server communications applications. The author discusses the facilities and structures that are new in APPC/MVS.

The next issue of the *Journal* will present papers on SAA topics and on IBM's Distributed Data Management architecture.

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