The Outlook for APPN: A Business Perspective

November 8, 1993

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Introduction

Some people believe SNA networks are declining in size and importance, and that the availability of Advanced Peer-to-Peer Networking (APPN) support on IBM and non-IBM products will do little or nothing to slow this decline. These people are mistaken. APPN will succeed because of the sheer size and nature of the SNA install base, and because of the needs of customers to migrate to more modern computing models. This is not to say that APPN will succeed because alternative networking solutions will fail. APPN will succeed because of its own merits and because customers will want and need it.

To justify this statement, we analyze the SNA install base, discuss why customers will need APPN, and then present some predictions for the future deployment of APPN end nodes and network nodes in SNA networks. Note that APPN opportunity is not limited to the SNA install base; we focus here on SNA networks because it is the single largest opportunity.

The SNA Install Base

Licenses, Boxes, and Endpoints

The worldwide SNA install base is vast. Table 1-1 lists a portion of this base. Data for the table come from IBM public statements and publicly available consultant reports.

Table 1. A Sampling of The SNA Install Base

Product	Number Shipped	Comments
VTAM	Over 42,000 licenses on MVS,VM,VSE	VTAM V4R1 for MVS/ESA supports APPN. IBM has not announced plans for future releases of VTAM.
3745	Not available	NCP V5R2 supports APPN.
AS/400	Over 225,000	All support APPN. Roughly half are connected to machines other than PCs.
3174 Controller	Over 300,000	3174s with Configuration Support-C provide APPN support.
S/36 and S/38	Over 170,000	S/36 supports APPN. S/38 supports a limited set of APPN functions as a LEN node.
Endpoints	Over 30 million	Includes PCs, terminals, printers etc. in networks where SNA is the dominant protocol. Eleven million of these are PCs; the majority of the other endpoints are terminals running 3270 applications. Three million copies of OS/2 have been shipped; it is not known how many of these are connected into SNA networks. Because competitive data is not available, it is also not known how many PCs currently support APPN.

Applications

According to a 1993 InfoCorp estimate based on 150,000 end user sites, customers in the U.S. have invested $2.35 billion in SNA hardware and software to support mission-critical applications. InfoCorp further estimates that total customer investment in these types of applications is $3.8 billion. The portion that is SNA-based therefore represents about 62% of the total customer investment.

With the trend toward client/server (distributed) computing, total customer investment in these kinds of applications is expected to increase over the next several years. The expected effect of this trend on SNA's share of the mission-critical market is dependent on factors discussed in the section on customer demand.

Network Traffic and Protocols

Estimates of total worldwide network traffic differ, depending on the consultant, country, or network type considered. Despite the variability of these estimates, as a whole they support two conclusions:

- SNA is the dominant protocol if all types of networks are taken into account.
- SNA is even more dominant if only WANs are considered. Conversely, SNA is not the dominant protocol if only LANs are considered.

It has become fashionable in the trade press, in consultant reports, and in IBM surveys to do "protocol" surveys. These surveys are supposed to indicate customers' future use of networking protocols. Here are a few examples of the results of these surveys:

- SNA customers were asked by IBM in 4Q92 what their primary growth protocol would be for the next two years; 21% said SNA, 13% said TCP/IP.
- A 1993 IDC survey indicated that the percentage of users who rated SNA as "critical" or "moderately important" to their enterprise networking strategy was expected to decline from now until 1996; TCP/IP was expected to rise and eclipse SNA in relative importance in 1994 or 1995.
- Forrester asked MIS executives and network planners in 1993 whether they favored running SNA traffic over LAN internetworks; 84% said yes, and indicated their answers were based on expectations of improved management, increased performance, and lowered cost.
- Dataquest asked in a 1993 survey what protocols MIS directors expected to use in the future to interconnect LANs. Of the 301 people interviewed, 35% said SNA, 62% said TCP/IP, 46% said IPX (sum does not equal 100 because multiple answers were allowed and given).

We assert that surveys like these are of little or no value and are misleading. Our reasons:

- Customers buy products; they don't buy technologies. It is highly questionable to conclude that because a customer expresses interest in a technology he or she will necessarily buy one or more products that support that particular technology or only that technology.
- Customers frequently don't do what they said they were going to do. This has been substantiated in numerous follow-up surveys of earlier surveys on customer intentions.
- Customers frequently don't know what they are going to do. For example, MIS directors are frequently called in surveys. A 1993 Dataquest study suggests that 40% of them do not yet have a strategy in place for LAN interconnection. This study suggests that MIS directors may be susceptible to altering their opinions and directions one way or the other.
- Most surveys are conducted in the U.S. and do not necessarily represent the rest of the world.
- Survey results are highly dependent on sample choice. These samples cannot be generalized across industries, company size, network size, or types of networks. Frequently, surveys do not even distinguish between these variables.
- Questions asked are often ambiguous. Answers are usually limited to a fixed list of choices that may also be ambiguous. Respondents may choose to pick any answer rather than admit they do not really know. More important, respondents may inflate their influence or ability to mandate specific networking solutions within their own companies.
- Contradictory results are common among surveys. This is reflected in the survey results presented earlier, and is caused by one or more of the factors listed above.

If surveys on intended protocol usage are contradictory and unreliable, is there a better indicator available? We have already stated that customers buy products, not

technologies. How do SNA, TCP/IP, and IPX compare when evaluated in terms of products that support them?

- We have already established that there are over 30 million endpoints in networks where SNA is the dominant protocol. Note that this does not mean that SNA is the only protocol - there could be other protocols supported on some of these endpoints. No one to our knowledge has published data on multiprotocol support on network endpoints.
- IDC estimated that, in 1992, there were 1.5 million workstations supporting TCP/IP, and 1.1 million PCs with TCP/IP support. IDC predicted that this would grow to 4.0 million by year-end 1993. Again, this does not mean that TCP/IP is the only protocol supported on these endpoints.
- Novell's share of the worldwide LAN market, expressed as the ratio of Novell LAN operating systems to total LAN operating systems, is typically estimated to be between 50% and 60%. At year-end 1992, IDC estimated that Novell had installed 18.8 million nodes (PC clients, not servers). This does not mean that these PCs support only IPX.

We turn now from a factual discussion of the SNA install base to the question of the future of APPN. Given the SNA install base, what factors will influence the acceptance rate of APPN, that is the rate at which customers will deploy end nodes and network nodes in support of their applications?

Customer Demand and APPN

Three trends will affect APPN acceptance: 1) the growing popularity of client/server computing 2) rates of PC attachment and 3270 replacement, and 3) the needs of SNA customers to migrate critical applications to distributed networks that retain the strengths of existing SNA subarea networks.

Client/Server Computing

Numerous surveys indicate the trend toward client/server solutions is accelerating. This trend is expected to continue throughout the rest of this century.

Interest in client/server computing is increasing due to user requirements for increased database access. These requirements are satisfied by distributed processing implementations that have the effect of "flattening" hierarchical network structures. Networking solutions that are peer-oriented, such as APPN, will become increasingly popular as users migrate their hierarchical networks to distributed networks.

PC Attachment and 3270 Replacement

Industry analysts have identified three trends:

1. PCs will be attached to networks at a faster rate than PCs are being sold. In a 1993 report, InfoCorp estimated that, at year-end 1992 there were 31 million PCs on LANs out of a total of 134 million. By year-end 1996, the estimate is 67 million (an increase of 116%) PCs on LANs out of a total of 191 million (a 43% increase).
2. The percentage of PCs that are attached in networks where SNA/SDLC is the principal transport protocol is lower than in networks where TCP/IP or SPX/IPX is the principal protocol. According to Cowen & Co.'s latest annual survey for *Datamation*, this is not expected to change in 1994. In 1993, less than 50% of PCs are attached in SNA/SDLC environments. Respondents from

all three environments (SNA, TCP/IP, and IPX) indicated they planned to dramatically increase the number of PCs attached to their networks in the next twelve months.

3. PCs are replacing 3270s, but these PCs are still running 3270 applications. In a 1992 report titled *Outlook for SNA: Market Directions*, International Data Corporation (IDC) documents the transition of network endpoints that support 3270 communications. IDC predicts that, by 1996, 65% of all users of 3270 applications will be running these applications from LAN-based PCs.

We draw three conclusions:

1. Increasing numbers of PCs being attached to SNA networks will guarantee the continued growth of SNA networks.
2. Replacement of 3270 terminals with PCs is not yet affecting the large installed base of 3270 applications. In the future, customers will need these applications to access multiple hosts or they will wish to rewrite them as distributed applications. The availability of APPN support for the routing of these applications will facilitate their migration.
3. The rate of migration of these applications will depend on other factors such as the depreciation schedules for installed equipment, and the willingness to invest dollars in retraining personnel.

SNA Strengths and Customer Requirements

Perhaps the greatest factor that will influence APPN demand is the established strengths of SNA and the need to retain these strengths in migrating to non-hierarchical networks. Simply stated, acknowledged SNA strengths are end-to-end reliability, predictability and consistency in performance, network manageability, and security. APPN retains these strengths because it provides a logical migration path from SNA subarea; APPN can coexist with SNA as well. In addition, APPN will transparently support future technologies such as High-Performance Routing (HPR), and Asynchronous Transfer Mode (ATM). APPN is therefore a good choice for customers who need to maintain these existing strengths and who need to position themselves well for the future.

One factor that may inhibit demand is customer perception of cost. Customers will weigh the costs of moving to APPN against the costs of alternative solutions. The perceived value of existing SNA and APPN strengths will vary from customer to customer and may be difficult to measure in dollars. If APPN is perceived to be a more costly solution, its acceptance will be slowed.

APPN vendors must clearly recommend specific networking solutions with clearly defined advantages for specific customer problems and environments. Vendors who try to position themselves as “all things to all people” will only succeed in increasing the already widespread confusion in the networking marketplace.

The Outlook for APPN

To the best of our knowledge, only two external organizations have looked at the future of APPN in depth. IDC has surveyed user interest in adopting APPN as a networking technology. CIMI Corporation has projected how the deployment of APPN end nodes and network nodes will change the SNA install base.

IDC on User Intentions

Users at 202 IBM mainframe sites were questioned on their intentions regarding APPN. Results were summarized in a 1992 report titled *APPC/APPN User Survey*. Forty-three percent (43%) of the interviewees (representing 87 sites) said they were planning to implement APPN based on the following schedule:

- 9% said they expected widespread implementation in 1993
- 13% said they expected widespread implementation in 1994
- 21% said they expected widespread implementation in 1995
- 16% said they expected widespread implementation in 1996 or later
- 41% said they didn't know when they expected widespread implementation.

CIMI Corporation on APPN Migration

CIMI Corporation has just published a report titled *SNA and High Performance Network Services*. Here are two predictions from this report:

- By 1999, the percentage of SNA networks that are predominantly APPN-routed will grow to represent over half the SNA install base. More than half the SNA logical units (LUs) that are dependent now will be independent then.
- By the year 2000, over 200,000 SNA routing nodes will have been sold, with a market opportunity of $4.5 billion.

Our View

We have no definitive way to answer the question of the expected rate of APPN deployment. However, we can identify major factors that will affect it:

- Senior IS management is increasingly reluctant to venture into "bleeding edge" technologies. If APPN is perceived as one such technology this reluctance will slow its acceptance.
- Centralized MIS organizations and decentralized functional departments battle over issues of buying authority and power to choose networking technologies. APPN vendors have not targeted either group very well with marketing efforts.
- Long-term planning for networks that are considered corporate assets often conflicts with short-term outlooks in which networks are looked upon as a means to get data from one place to another. APPN acceptance will be slowed unless APPN vendors clearly explain how their solutions best fit these outlooks.
- MIS managers are pressured to keep costs down and, at the same time, retrain personnel and address lengthening application backlogs. If APPN is perceived to be a relatively costly solution, its acceptance may be slowed.
- Lastly, the barrage of networking products and accompanying marketing information has led to customer confusion and a reluctance to move too fast in choosing long-term solutions. If APPN is positioned as a long-term solution, its acceptance may be slowed.
- The Multiprotocol Transport Network architecture (MPTN) allows non-SNA traffic to run over APPN networks; it also allows SNA traffic to run over TCP/IP networks. By separating the application layer from the underlying transport layer, MPTN encourages the integration of multiple network backbones into a single network backbone. Network managers must choose one backbone to standardize on. We have already stated the inherent strengths of SNA: reliability, consistency, manageability, and security. Customers who wish to retain these strengths as they migrate applications and move to distributed

computing models will find APPN to be a logical choice. This will have two results: it will tend to preserve the SNA install base, and it will accelerate the acceptance of APPN.

- Applications such as multimedia, integration of voice and data, and fax are becoming more prevalent. These applications, along with requirements for increased database access, are necessitating greater bandwidth and end-to-end reliability. High-Performance Routing (HPR) is a good choice for meeting these requirements. APPN is a logical migration path to HPR. Those customers who have or anticipate having these requirements will accelerate the acceptance of APPN.

While we are uncertain about the future deployment rate for APPN, we assert with greater certainty that the opportunity for APPN has been understated:

- The sheer size of the SNA install base, with 30 million endpoints and over half a million potential network nodes, suggests that 200,000 routing nodes (network nodes) with 1.2 million attached end nodes by the year 2000 is a conservative estimate, even if the install base showed no growth whatsoever.
- Customers plan to add large numbers of PCs to this install base. The base will grow, not decline or remain static.
- The number of router vendors that support SNA routing is growing, and the number of platform vendors that support or have committed to support APPN is growing. Increasing vendor support should lead to greater connectivity within networks and increased growth of networks. Larger networks with greater connectivity increase the opportunity for APPN.

Summary

We have defined a sizable opportunity for APPN products in terms of end nodes and network nodes in SNA networks. We have established that there are compelling reasons for customers to migrate to these products. We have asserted that APPN will succeed because of its own merits; its success will not be based on the assumption that alternative networking solutions will fail. We have recommended that vendors clearly define advantages for their networking solutions, and that they communicate these advantages to customers by relating them to specific customer problems and environments.

In the end, customers will determine the success or failure of APPN. We encourage them to demand from all vendors the best possible information and assistance in choosing the right solutions for their networking needs.