



BY DAN PRICE

# TN3270: Not Just for SNA Anymore

The TN3270 standard allows MIS managers to mix and match 3270 emulators and servers.

MIS managers and 3270 connectivity vendors alike are relieved to note the growing library of RFCs as TN3270 emerges as the standard way for a 3270 emulator to communicate with its host, whether that host is the mainframe itself or a gateway device functioning as a TN3270 server. No longer do vendors have to code their emulators and/or comm servers for multiple interfaces between the client and server parts of the 3270 connectivity solution; and no longer are MIS managers locked into a particular micro-to-mainframe connectivity vendor. Instead, the TN3270 standard means they can mix and match 3270 emulators and servers to meet the needs of their users rather than the marketing strategies of vendors. Wanting to capitalize on this, vendors have

shown eagerness to develop according to and adhere to standards for TN3270 implementation, as evidenced in November 1997 and June 1998 at the TN3270E Interoperability Event(s) [TIE] hosted by Cisco Systems in Raleigh, N.C. Representatives from virtually every vendor providing TN3270 server and/or client software worked together to ensure the interoperability of their products while planning for enhancements to the TN3270 spec, all to the benefit of the user community and to no small benefit to the vendors themselves.

The TN3270 standard lets vendors do interesting things — and know that their great ideas will integrate with everyone else's. For example, Intermate from

Denmark and Praim, with development facilities in both Italy and New Hampshire, were taking advantage of the recent additions to the TN3270E specification that address host printing. IBM was able to allow vendors with one front end app, their TN3270 client, to access a mainframe via four different back office servers running AIX, Windows NT, Internetware for SAA, and OS/2. And it didn't matter what OS the TN3270 client was running. Another vendor, Open Connect Systems, showed how their web-to-TN3270 server could be a proxy server to any browser-

based Java emulator trying to access an upstream TN3270 server. The TN3270 servers themselves showed great flexibility, as users (client vendors in this case) could access the mainframe from any TN3270 client prod-

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uct through any TN server, regardless of whether that TN server was running DOS, NT, OS/2 AIX, or NetWare.

## TN3270: SNA AND NON-SNA HOSTS

The one area of connectivity not specifically explored at the TN3270 Interoperability Event was that of a TN3270 client to an IBM host over non-SNA protocols (bisync and non-SNA coax). Conventional understanding is that the TN3270 protocol is intended to provide client access to SNA hosts through some type of TN3270 server function, whether that function takes place in a gateway device, a combination of a gateway device and TN3270-to-web server, or on the

mainframe itself. However, the TN3270 specification is not an SNA-specific document. RFCs 1536 and 1647, the umbrella documents defining TN3270 and TN3270E implementation, include provisions for connecting TN3270 clients to non-SNA hosts. In fact, there is very little difference

in connecting a TN3270 client to a non-SNA host as opposed to an SNA host. The client software does not even need to be aware of which type of host it is connecting to, as long as the TN3270 server knows how to handle the back-end comms. As the background discussion of RFC 1536 states:

**The question for system administrators who are interested in using TN3270E to connect desktop devices to non-SNA mainframes is, "What new TN3270E features am I not able to take advantage of because I have a non-SNA host?"**

*Telnet servers that exist in non-SNA environments do not have to be concerned about providing TN3270 clients with support for the SNA functions described in this document....TN3270 does not support typical SNA responses and is classified as a non-SNA protocol. (RFC 1536, section 2. Background.)*

#### **RFC 1647: TN3270E**

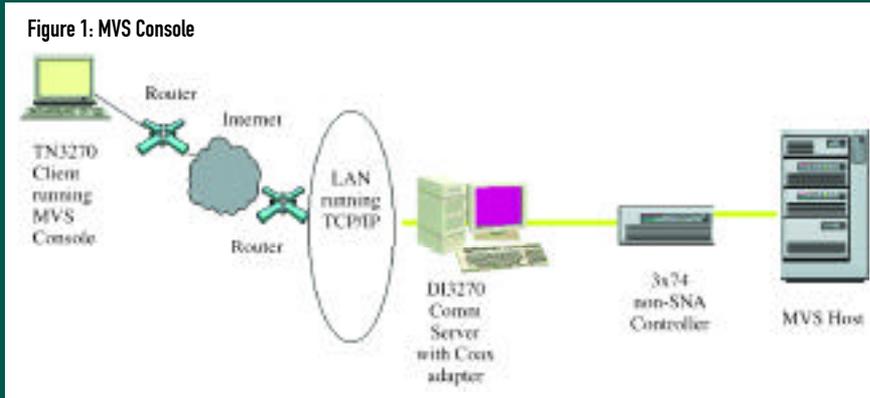
The real differences between the capabilities of TN3270 sessions connecting to SNA vs. non-SNA hosts are more apparent in RFC 1647, which endeavors to complete the TN3270 implementation by addressing issues of printing, LU naming, SNA BIND and UNBIND, SYSREQ and ATTN keys, and SCCP-LU session access. All of these enhancements to TN3270, aptly and collectively termed TN3270E(enhanced), are documented in RFC 1647 as well as carefully explained in other forums.

#### **WHAT DO NON-SNA USERS GIVE UP?**

The question for system administrators who are interested in using TN3270E to connect desktop devices to non-SNA mainframes is "What new TN3270E features am I not able to take advantage of because I have a non-SNA host?" The answer is "surprisingly little." Let's take a look at the TN3270E enhancements and which of them are supported in non-SNA server environments.

#### **IBM 3287 LU1 and LU3 Printing:**

Although there is nothing explicit in TN3270E that prohibits LU1 printing, because it uses SCS (SNA Character Stream) codes, the LU1 data stream would never be sent by a non-SNA host. LU3 DSC (Data Stream Control) printing is supported by non-SNA servers under TN3270E.



## **Who Needs Non-SNA Host Access Anyway?**

As the accompanying article explains, TN3270 host access is not limited to SNA mainframes but includes BTAM and DOS VSE machines accessible via non-SNA coax and binary synchronous connections. So why should those with SNA hosts concern themselves with the vagaries of the arcane world of non-SNA? Because deep down in the bowels of that MVS system, before any SNA is loaded, there is an operating environment accessible only via non-SNA coax. The application, MVS Console (see Figure 1), is required for initially bringing up the system and for disaster recovery should that become necessary. At the office it may not matter to you that the MVS Console function uses non-SNA coax, but try to run

that app from home or from the road without a non-SNA coax gateway and you will care a great deal. To run MVS Console via TN3270 you need two things: a TN3270 emulator and a non-SNA coax gateway. The non-SNA coax gateway connects to the host via a 3x74 controller. It connects to the local LAN via token ring or Ethernet. And if the LAN has Internet access, the gateway can be accessed via TN3270 from anywhere, depending on the level of security you impose. So the TN3270 to non-SNA capability examined in the article does have value to anyone toying with the notion of being able to perform MVS console functions from home or anywhere other than the system console.

**Device Pools:** Although in the SNA world it is referred to as “LU”pooling, logical units as such do not exist in the non-SNA world. However, devices and sessions do. All you really need to remember is that TN3270E allows device names to be associated with one another, whether the TN server is SNA or non-SNA. Device pooling is important when you want to associate a specific printer with a specific terminal device.

**SNA Bind, Unbind, SCCP-LU Data:** These are SNA-specific functions and are not supported by non-SNA servers.

**SYSREQ and ATTN Keys:** Neither the System Request key nor the Attention key is supported in a non-SNA environment. If these keystrokes are sent to a non-SNA server by a TN3270E client, they will be ignored.

**WHAT DOES IT ALL MEAN?**

Aside from a handful of SNA-specific functions that are not meaningful in the world of non-SNA host connectivity, non-SNA implementations of TN3270E are quite full-featured. The ability of TN3270 to support non-SNA server access extends the ease of access and simplicity of use of the most advanced TN3270 client software to the truly ancient world of SNA’s predecessor: binary synchronous communications. IBM shipped tens of thousands of

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mainframes throughout the ’60s and early ’70s that used binary synchronous protocol to communicate with remote controllers and their attached terminals. Many of these mainframes were migrated to SNA in the late ’70s and ’80s, but a good many customers chose to leave well enough alone. Experience teaches us that an MIS manager who has managed the development of an application suite that meets the needs of the organization and continues to do so, would do well not to meddle with the underlying technical foundation of that application simply for the sake of the technology itself. And so it is the case that many thousands of these bisync-speaking mainframes are still humming away at customer sites, doing their jobs, serving up 3270 data streams to green screened terminals or proprietary, PC-based gateway/emulator packages,

painfully watching the parade of Internet-enabling technologies pass them by. But TN3270 is not just for SNA anymore. Now all those banks and securities firms and other organizations requiring host access via bisync or non-SNA coax connection, can do so from a TN3270 client over the local LAN, the Internet or an intranet. The applications of the ’60s can now be accessed over the information highway of the ’90s. 



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