PART I

NBT: NetBIOS over TCP/IP

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A Short Bio of NetBIOS

Groan + Grump = GroanUmp

— Me, speculating on the etymology
of the term "Grown-up" for my children

It all started back in the frontier days of the PC when Microsoft was a lot smaller, IBM seemed a whole lot bigger, and Apple owned personal computer territory as far as the eye could see. Back then, you didn't need no dang standards. If you wanted to sell LANs, you just went out and branded yourself a protocol. Apple had AppleTalk, Digital had DECnet, and, for their longhorn mainframes, IBM had **S**ystems **N**etwork **A**rchitecture (SNA). SNA was a mighty big horse for little PCs, so IBM hired on a company called Sytec and together they rustled up a product they called "PC Network." Not an inspiring name, but it was a simpler time.

PC Network was a Local Area Network (LAN) system designed to support about 80 nodes at best, with no provisions for routing. NetBIOS (**Net**work **B**asic **I**nput **O**utput **S**ystem) was the software interface to the PC Network hardware. It offered a set of commands that could control the hardware, establish and delete sessions, transfer data, etc.

1.1   NetBIOS and DOS: The Early Years

Starting with DOS version 3.1, Microsoft used the NetBIOS API to transport SMB file service messages. They created something called a *redirector*, and its job was to catch disk drive or port references (e.g. "`C:`" or "`LPT3:`") and look them up in a table. If the device was *not* in the table, the call was passed along to DOS. If the device *was* in the table, then the call would be *redirected*. For example:

- Using the `SUBST` command, a user could substitute a drive letter for a local path. This simple aliasing provided convenient shortcuts for long path names:

  ```
  subst S: C:\FILES\DEEP\IN\A\DIRECTORY
  ```

- Using the `NET` command, a drive letter could be mapped to a remote file service. So, if the redirector found a remote service entry in its table, it would convert the request into an SMB packet and send it out via NetBIOS:

  ```
  net use N: \\SERVER\SERVICE
  ```

  Note the double backslash preceding the server name. This syntax is part of Microsoft's "**U**niversal **N**aming **C**onvention" (UNC) for network services.

  These commands are still available from within the DOS shells of contemporary Windows products. It is worthwhile to fiddle with them a bit. At the DOS prompt, you can type `NET HELP` for a summary of the `NET` command and its options.[1]

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1. ...or, if you type the way I do, you can enter `NEWT KELP` to generate an error message.