

v4.1 Quick Start

Interniche Legacy Document

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1 Process

Do the following:

1. Unzip the contents of the release into a new directory
2. Verify that the Windows-based desktop on which you will execute the reference port is running "WinPcap". More information on this can be found later in this document.
3. Verify that you have Microsoft's Visual Studio Express installed on your computer. If you do not, Visual Studio Express is available as a free download (as of October 2014) from <http://www.visualstudio.com/products/visual-studio-express-vs>.
4. In the `src4.1/ReferencePorts` directory, "cd" into a subdirectory beginning with "w32" and execute `gmake`.
5. Invoke "iniche.exe" without parameters and notice the list of interfaces available on your system
6. Invoke "iniche.exe" using the index of the desired interface as its parameter (e.g. "iniche.exe 2" to use the second interface presented in the previous step.)
7. Enter the "help" command from the "-->" prompt.

Notes:

- A copy of `gmake.exe` can be found in the `utils/bin` directory and more current versions can be freely downloaded from <http://www.gnu.org/software/make>
- As provided, the "w32" reference ports for NicheStack (IPv4) constructs an Ethernet MAC address by performing a simple arithmetic operation on the MAC address of the Ethernet adapter identified on the invocation line. To modify this transformation:
 1. edit the file "windrv_pkt.c"
 2. locate the string "Mutate the mac address"
 3. modify the next few lines to better fit your needs

This scheme allows your local DHCP server to provide a local IP address unique to the Windows Simulation port.

2 Notes

2.1 A note about startup scripts

As delivered by InterNiche, the reference port assumes the existence of a local file system and looks in the current directory for two initialization scripts: `boot_rc` and `iniche_rc`.

The `boot_rc` file supports a small number of commands (see the struct `cli_cmd boot_cmds[]` in `netmain_nt.c`) and is executed quite early in the initialization process. The `iniche_rc` file can be used to call any CLI command configured in the system.

It should also be noted that the CLI supports the invocation of scripts at any time once the system is "up" (see the call manpage.)

2.2 A note about system configuration

In general, all of the high-level decisions concerning the system capabilities are determined at compile-time and controlled by a single include file: `ipport.h`. The file is organized by 'module', where modules roughly match the directories found in your source code distribution. Located within each module's configuration section are the most important `#defines`, most of which are located in `"#ifdef NOT_USED"` blocks.

Features are enabled by moving the desired option out of the `NOT_USED` block. Similarly, to deactivate a feature it should be moved out of the compiler's sight.

IMPORTANT NOTE: InterNiche code looks for whether these options are set, not at their value. This means that settings an option from "1" to "0" will not disable the feature.

2.3 A note about running the reference port on your Windows desktop

The "w32" reference ports you have been provided can run TCP/IPv4 in parallel with the Windows stack, with packets being cloned/separated at the NDIS Layer by a facility called "WinPcap" (also provided and available from <http://www.winpcap.org>). This means that you can run the stack as a console application and interact with it using the applications installed on your same Windows desktop system. However, if your Ethernet card is capable of performing TCP/IP checksum calculations and that feature is enabled, then the NicheStack will reject all inbound traffic from your local system due to a bad or missing checksum. This is because the packet is "looped back" at the NDIS layer and the lower MAC layer never has an opportunity to inject the proper checksum values.

To work around this situation, you must determine whether this feature is exposed by your Windows Ethernet driver and if it is, disable it. Unfortunately, there are no instructions that work with every version of Windows or with every driver, but the following steps may offer some insight into how to do this on your system:

1. Go to your system's "Control Panel" and open the "System" icon.
2. Choose the "Hardware" tab and then "Device Manager".
3. Locate your "Network adapters" group and select the Ethernet card you intend to use; right click on the card and open the "Advanced" tab.
4. Find a parameter named something like "IPv4 Checksum Offload" and set its value to "disable".

This one-time step will have the effect of slightly decreasing your Windows network performance, but will allow you to do a significant amount of work on your own system. Without making this change, running our Windows-based reference port may require use of a second system to interact with NicheStack.