Name: _____

Experiment 1.8

Create a Classifier Microblock

Purpose

Learn to analyze packets in microcode.

Background Reading And Preparation

Read Chapters 24 in Network System Design with Network Processors for an overview of microcode. See Chapter 26 for an example ACE. Also read the Intel IXP1200 Programmer's Reference manual for microcode specifics.

Overview

Create a microblock that classifies packets according to their network headers.

Procedure And Details (checkmark as each is completed)

_____ Create a microblock to examine a frame received using the Intel Dispatch Loop macros and classify the frame into one of five classes based on its headers. The microblock should consist of two macros : Classify_Init[] and Classify[]. The Classify[] macro should set its one parameter to the class of of each frame it inspects. The Classify_Init[] macro should initialize any global data structures needed for Classify[]. The classes are:

Class	Eth Src Port	IP?	TCP to Port 80?	SYN|FIN|RST?
1	1 or 2	X	X	X
2	0	NO	X	X
3	0	YES	NO	X
4	0	YES	YES	NO
5	0	YES	YES	YES

_____ Obtain a sample MicroACE from your lab instructor whose dispatch loop calls the Classify microblock you wrote, and whose StrongARM component prints the first 60 bytes of each frame along with the exception code for every frame it receives. Assemble the MicroACE with your microblock.

_____ Test your code by attaching ports 0, 1 and 2 of your IXP1200 to three separate Ethernet LANs and generating traffic on each. Check the specifications returned by Classify[] (and passed to the StrongARM) against the values in the frame headers.

Optional Extensions (checkmark options as they are completed)

_____ Extend the microblock to match against arbitrary patterns in the header of each frame. Have the microblock read the patterns from memory.

_____ Extend the microblock further to read the patterns from scratch memory before testing each frame header. Modify the StrongARM component to accept patterns via crosscalls to install into scratch memory at runtime.

Notes