

Assignment 3 Report

Using the `tcphdr` and `udphdr` I was able to extract information like the source and destination port. The sequence number, the acknowledgement number and the packet length. I used a series of if statements to check which flags were true, displaying only those that are. Using the “`getservbyport()`” function I was able to get the service name of the source and destination ports.

Code for TCP packets:

```
if(ip->protocol == IPPROTO_TCP) {
    // get tcp header
    tcp = (struct tcphdr*) payload;
    struct servent *tcp_service;
    // print service name of src and dest ports with getservbyport
    if (ntohs(tcp->source) < 1024) {
        tcp_service = getservbyport(tcp->source, NULL);
        if (tcp_service) {
            printf("Source Service Name: %s\n", tcp_service->s_name);
        }
    }
    if (ntohs(tcp->dest) < 1024) {
        tcp_service = getservbyport(tcp->dest, NULL);
        if (tcp_service) {
            printf("Destination Service Name: %s\n", tcp_service->s_name);
        }
    }

    // print tcp packet information
    printf("TCP packet\n");
    printf(" source Port: %u\n", ntohs(tcp->source));
    printf(" destination Port: %u\n", ntohs(tcp->dest));
    printf(" sequence Number: %u\n", tcp->seq);
    printf(" acknowledgement Number: %u\n", tcp->ack_seq);
    // print tcp packet flags if true
    printf(" Flags:\n");
    if (tcp->ack)
        printf(" ACK\n");
    if (tcp->syn)
        printf(" SYN\n");
    if (tcp->fin)
        printf(" FIN\n");
    if (tcp->rst)
        printf(" RST\n");
}
```

Code for UDP packets:

```
if(ip->protocol == IPPROTO_UDP) {  
    // get udp header  
    udp = (struct udphdr*) payload;  
    struct servent *udp_service;  
    // print service name of src and dest ports with getservbyport  
    if (ntohs(udp->source) < 1024) {  
        udp_service = getservbyport(udp->source, NULL);  
        if (udp_service) {  
            printf("Source Service Name: %s\n", udp_service->s_name);  
        }  
    }  
    if (ntohs(udp->dest) < 1024) {  
        udp_service = getservbyport(udp->dest, NULL);  
        if (udp_service) {  
            printf("Destination Service Name: %s\n", udp_service->s_name);  
        }  
    }  
    // print udp packet info  
    printf("UDP packet\n");  
    printf(" source Port: %u\n", ntohs(udp->source));  
    printf(" destination Port: %u\n", ntohs(udp->dest));  
    printf(" packet length: %u\n", ntohs(udp->len));  
}
```