Linux Firewalls & IPV 6 Protocols

Unit l

Preliminary Concepts underlying Packet-Filtering firewalls- The TCP/IP reference networking model, Service ports, packets. Packet filtering concepts- A packet filtering firewall, Choosing a default packet- filtering policy, rejecting versus denying a packet, filtering incoming packets, filtering outgoing packets, private versus public network services; Building and installing firewalls- The Linux firewall administration program, initializing the firewall, filtering ICMP control and status messages, protecting services on assigned unprivileged ports, enabling basic, required internet services, enabling common TCP services, enabling common UDP services, logging denied incoming packets, denying access to problem sites up front, enabling LAN access, installing the firewall .

Unit 2

LAN security issues, multiple, firewalls, and perimeter networks :- LAN, Configuration options for a trusted home LAN, configuration options for a larger or less trusted LAN, A formal screened-subnet firewall. Debugging the firewall rules-general firewall development tips, listing the firewall rules .Checking the input, output, and forwarding rules, testaing an individual packet against the firewall rules. System level security and monitoring- Checking die network interfaces with ifconfig, checking die network connection with ping, checking the network process with netstart, checking all process with ps-ax, interpreting the system logs, Security tools, Firewall tools;

Unit 3

IPV 6 Protocols:-Ipv6 versus Ipv4, history of Ipv6, overview of Ipv6, The Structure of the Ipv6 Protocol, Ipv6 header format, Extension Headers: extension header order, options, hop-by-hop option header , routing header, fragment header, destination option header, no text header; Packet size issues, Ipv6 Addressing, address format, address notation, address types, international registry services, and prefix allocation. ICMPv6, ICMPv6 message format, the ICMPv6 Error messages, Informational Messages, the ICMPv6 header in a trace file.

Unit 4

Security in Ipv6:- security concepts, requirements, and current solutions; IPSEC framework, security elements available in Ipv6 for authentication and encryption, Quality of Service in Ipv6, basic requirements and types of QoS ; different QoS architectures, resource reservation; Networking Aspects, Layer 2 support for Ipv6 (Ethernet, Token Ring, ATM, Frame Relay etc), multicast support and multicast routing, Mobile Ipv6; Routing Protocols, advanced routing features with Ipv6 , RIPng, OSPFvS for Ipv6, BGP extensions for Ipv6, IS-IS, and EIGRPv6

Unit 5

Upper Layer Protocols:- changes for TCP and UDP & DHCPv6, DNS extensions for Ipv6, SLPv2 in Ipv6 networks, FTP, Telnet and Web servers.

Reference books:

1. Robert L. Ziegler, Linux Firewalls, New Riders 2001
2. Silvia Hagen ,Ipv6 Essentials , O'Reilly & Associates 2002.
3. Marcus Goncalves, Kitty Niles, Hands-On Ipv6, McGraw-Hill 2002