10. INTERIOR GATEWAY PROTOCOL

a. Interior Gateway Protocols (IGP) allow routers within the autonomous system to share routing information to facilitate end-systems communication within the enterprise network. Industry standard IGPs are limited to Routing Information Protocol (RIP) and the Open Shortest Path First (OSPF). Router vendors who are not utilizing one of these two IGPs will provide a proprietary solution with similar functionality. RIP has major shortcomings for major networks of SIGNET proportions, and while these are currently being addressed in an IAB RIP Version 2 Working Group they will not be commercially available in time for SIGNET deployment. The primary solution for an open, industry standard IGP today is OSPF.

10.1 OSPF Routing Protocol

a. The Open Shortest Path First (OSPF) routing protocol is an Internet Architecture Board (IAB) standard developed by the Internet Engineering Task Force (IETF). OSPF Version 2 is defined by the Network Working Group in Request for Comments (RFC) 1247. John Moy, author of OSPF, has published a draft update to RFC 1247, as of April, 1992. Current versions based on the RFC 1247 will operate within the SIGNET enterprise network. OSPF is commercially available by the major router vendors.

10.2 OSPF Backbone/Area Configuration

a. OSPF provides a method of splitting an entire Autonomous System (AS) into groups called Areas. An OSPF Area is a contiguous collection of hosts and networks within the AS including any routers which have interfaces connecting to the networks.

b. Each OSPF area maintains a copy of the network topology and associated metrics for each network or host within the area. The remaining topology of the AS is not known within the area and connectivity to other areas is through Area Border Routers which are routers connecting more than one area. Area Border Routers maintain multiple sets of tables, one for each area that it is connected to.

c. The utilization of areas within SIGNET AS will:

   i. Reduce "routing update" traffic between routers as area routing tables are summarized before propagating throughout the AS,

   ii. Provide security such that no exterior routes will enter the AS routing tables