

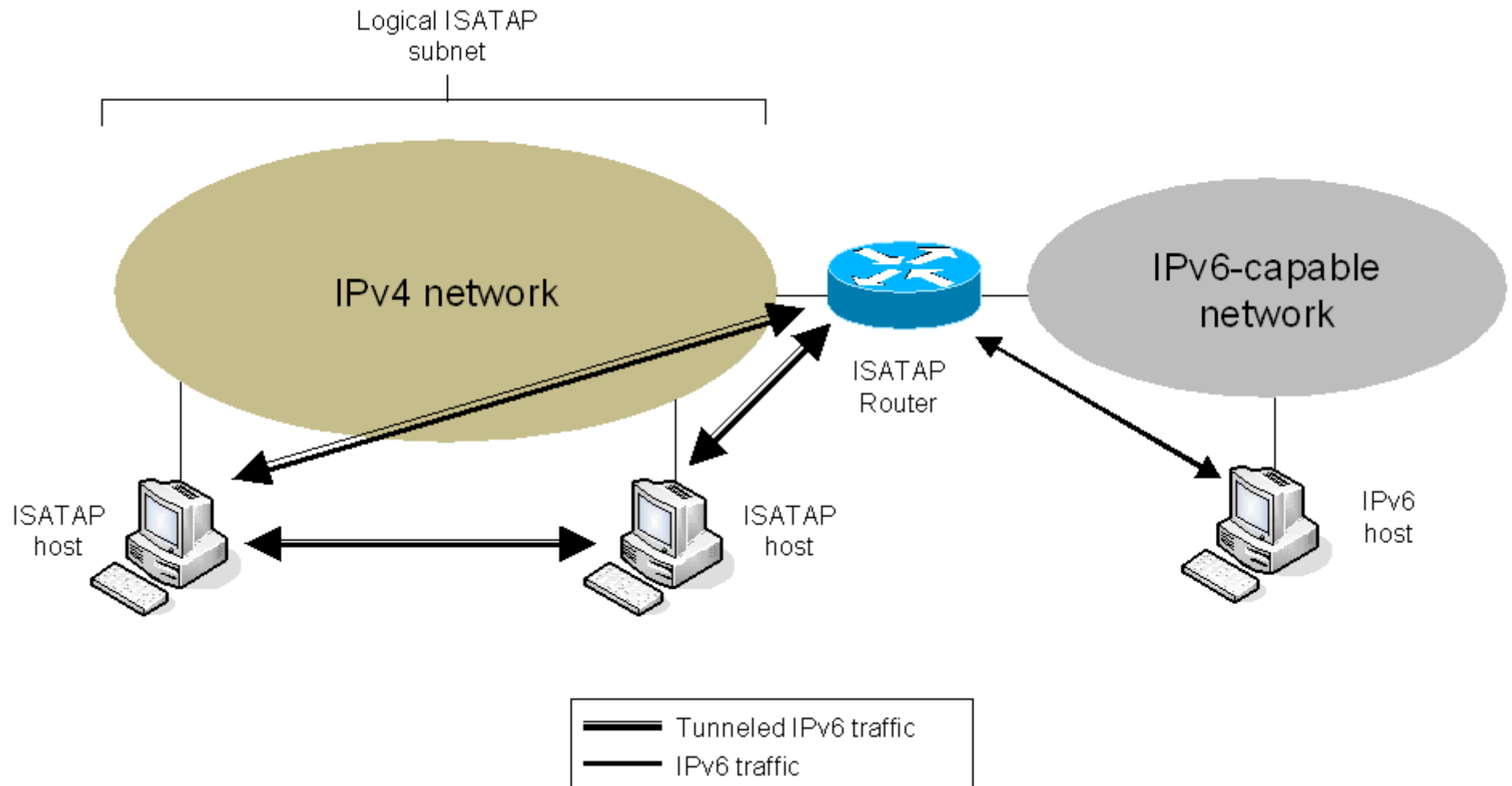
ISATAP

Intra-Site Automatic Tunnel Addressing Protocol

Objective:

Deployment of IPv6 connectivity on an existing IPv4 network without having to configure or upgrade existing routers to support native IPv6.

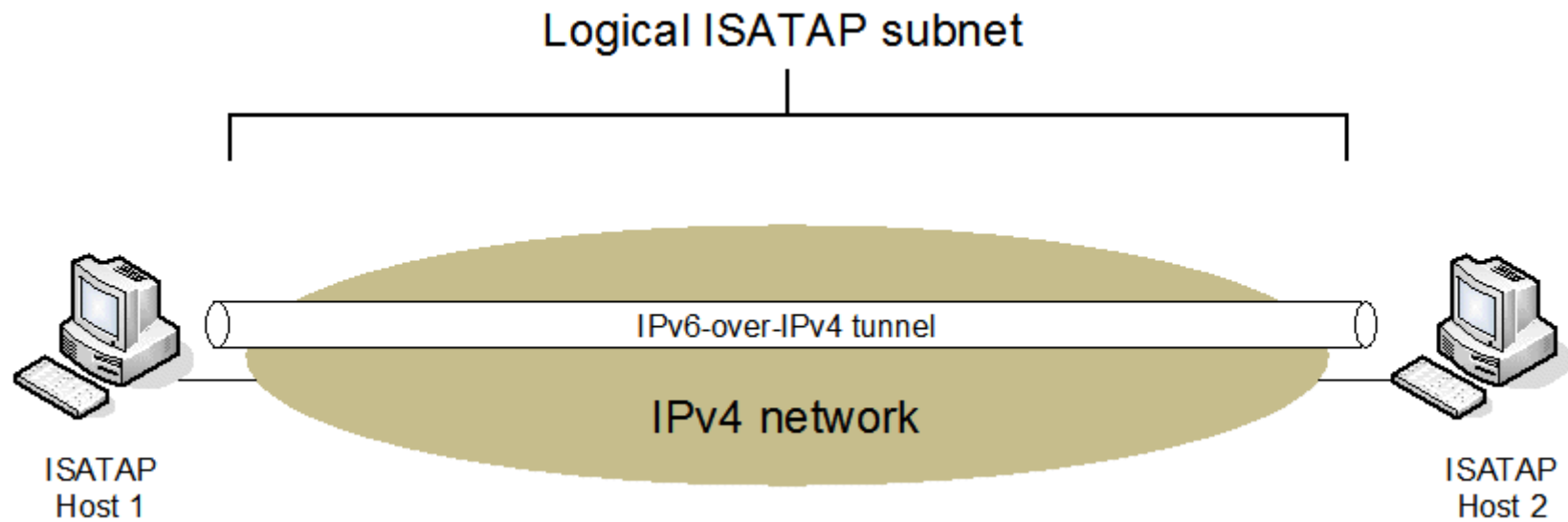
ISATAP Tunneling



Requirements and Limitations

- With ISATAP, IPv4-dependent applications can continue to utilize IPv4 while newer IPv6-capable applications can be developed, tested, and deployed.
 - The traffic of both types of applications will share a single common IPv4 infrastructure.
- The DNS servers must be able to support registration and querying for IPv6 AAAA resource records.
- DNS servers are also required to support DNS queries over IPv6.
- The ISATAP router must either support IPsec or it must be exempted from IPsec traffic protection.
- ISATAP traffic cannot traverse firewalls or NATs that are transport layer port dependent (such as TCP, UDP, etc.).

Logical ISATAP Subnet



ISATAP Addressing

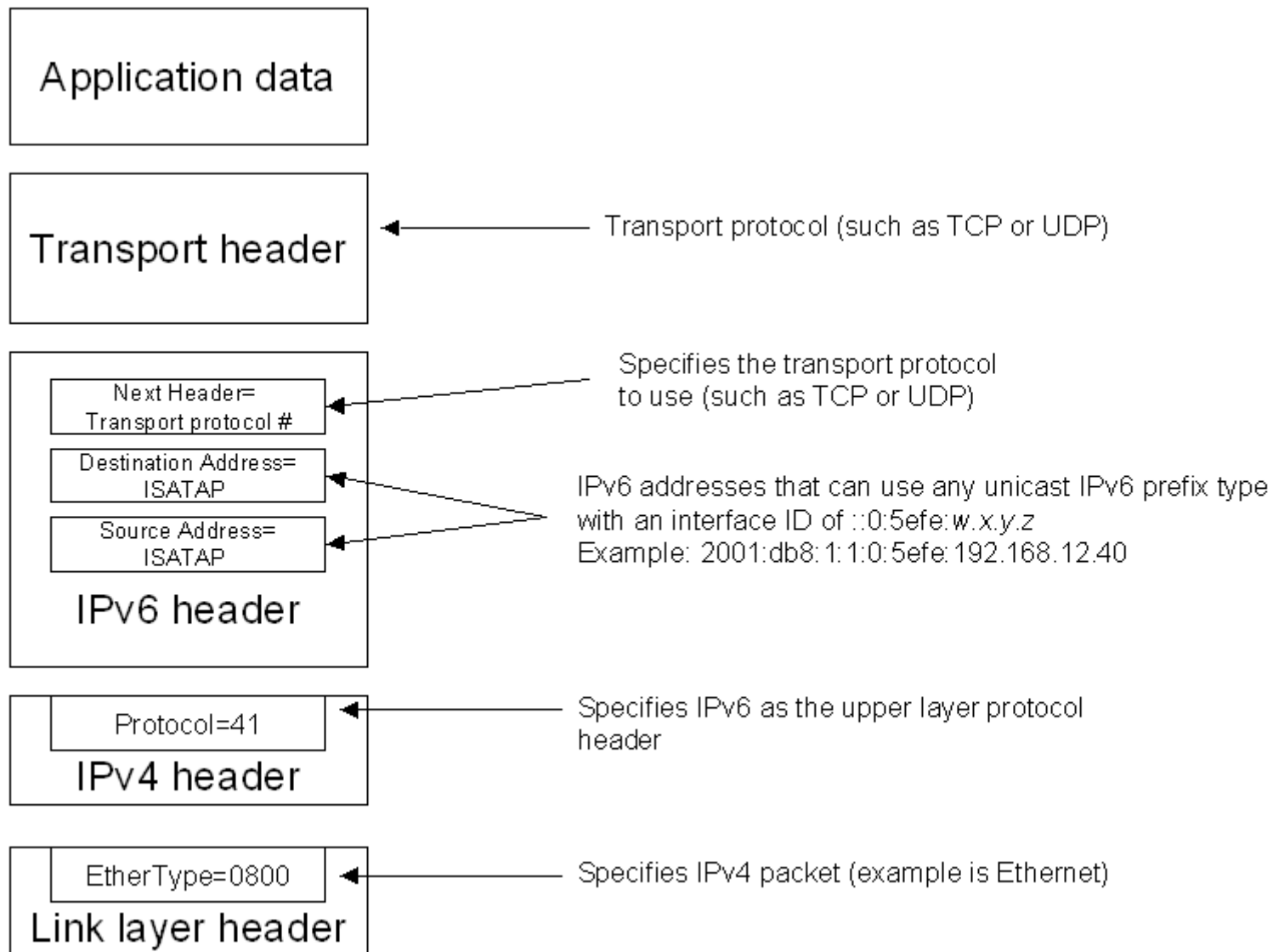
- The IPv4 address of an ISATAP host is stored as part of the IPv6 address so that an ISATAP node can determine the IPv4 address of the IPv6-over-IPv4 tunnel endpoint without having to utilize some other process or protocol.
- The ISATAP address format is the following:

64-bit_Unicast_Prefix:0:5efe:w.x.y.z

- *64-bit_Unicast_Prefix* can be a link-local, global, site-local (deprecated, but still used in existing IPv6 implementations), or unique local unicast address prefix.
 - *w.x.y.z* is a public or private IPv4 address that is assigned to an interface of an ISATAP node.
- An example of a link-local ISATAP address is:

fe80::5efe:172.30.98.204.

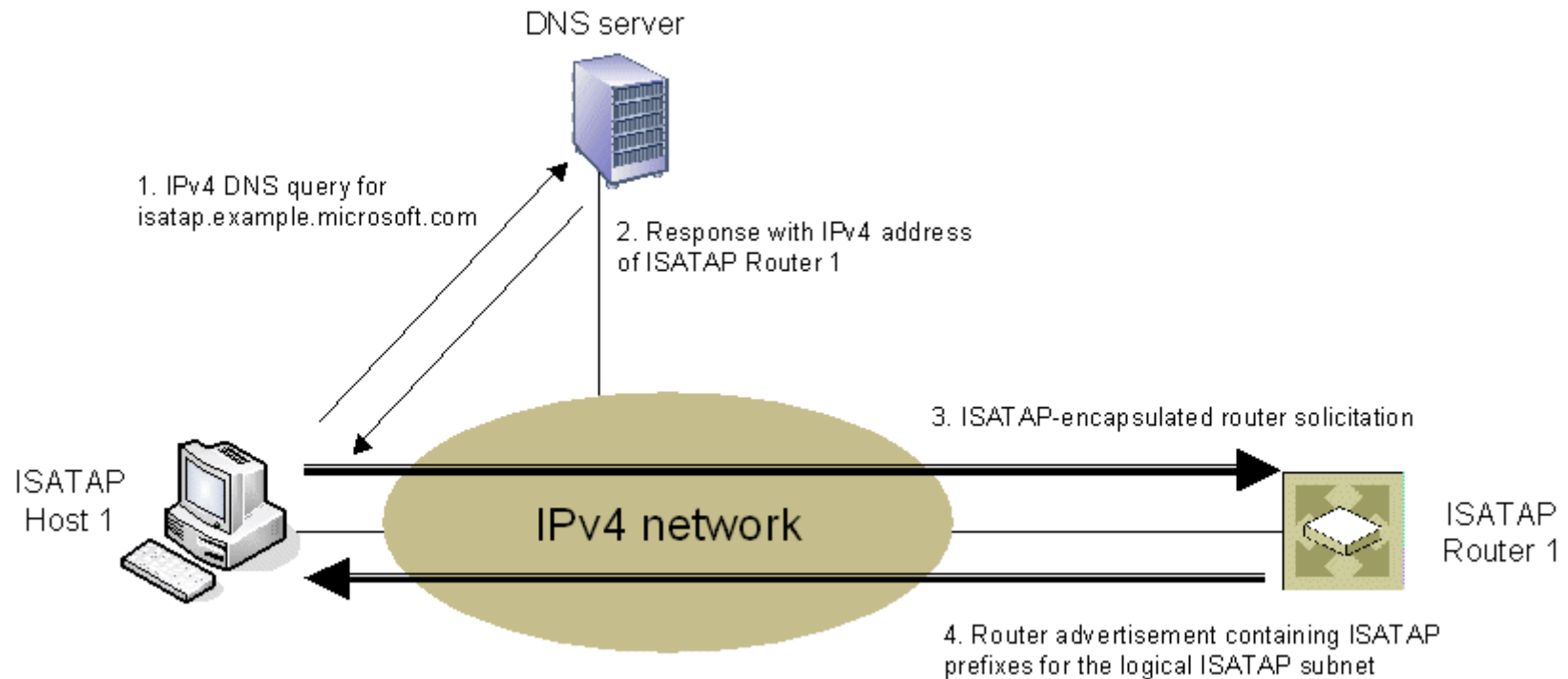
Protocol Layering



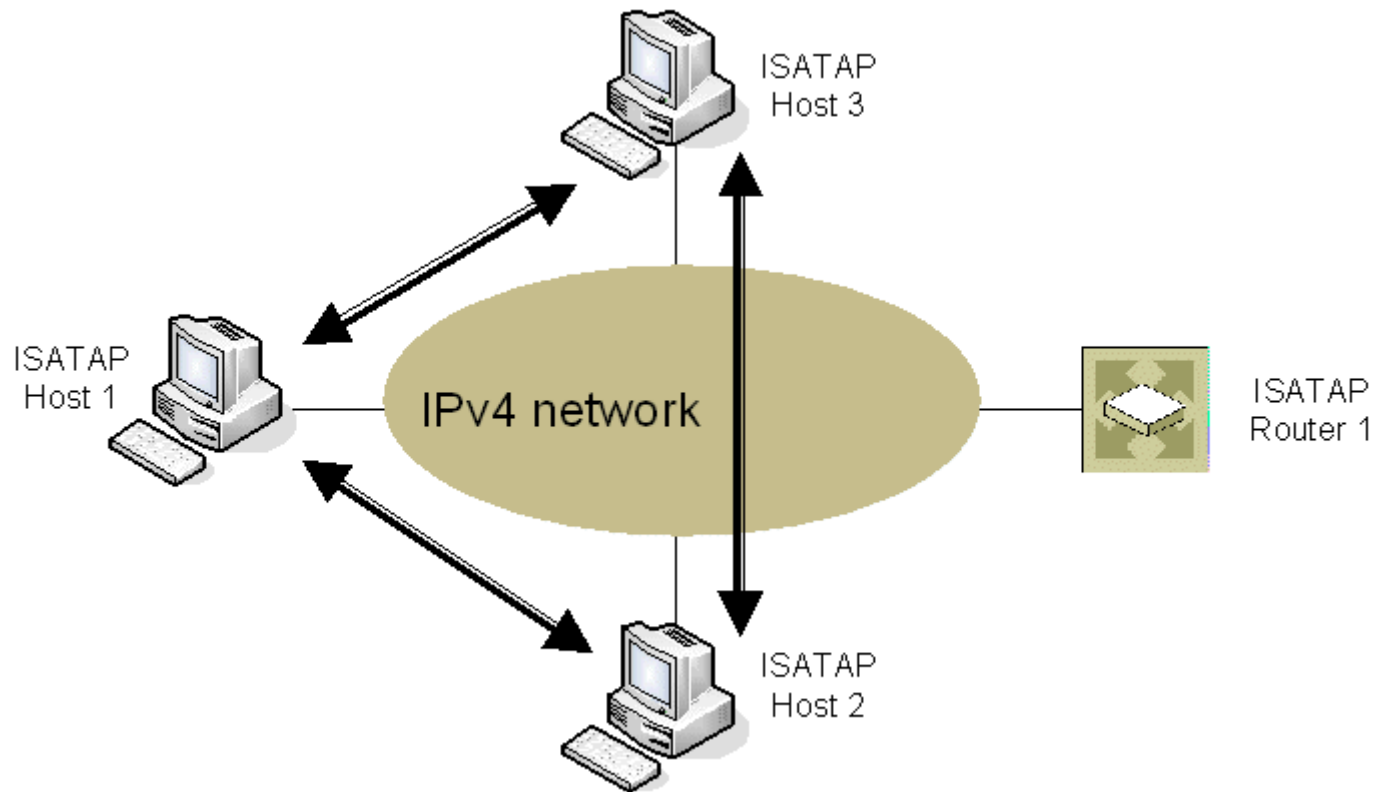
ISATAP Router Determination

- A computer running Windows by default determines the IPv4 address of the ISATAP router by attempting to resolve the name "ISATAP" using the following name resolution techniques:
 - Check the local host name.
 - Check the DNS client resolver cache, which includes the entries in the Hosts file in the *SystemRoot\system32\drivers\etc* folder.
 - Form fully qualified domain names (FQDNs) and send DNS name queries.
- For example, if the computer is using **example.microsoft.com** domain as its primary DNS suffix (and there are no other domain names in the search list), the computer by default sends DNS queries to resolve the names **isatap.example.microsoft.com** and **isatap.microsoft.com**.

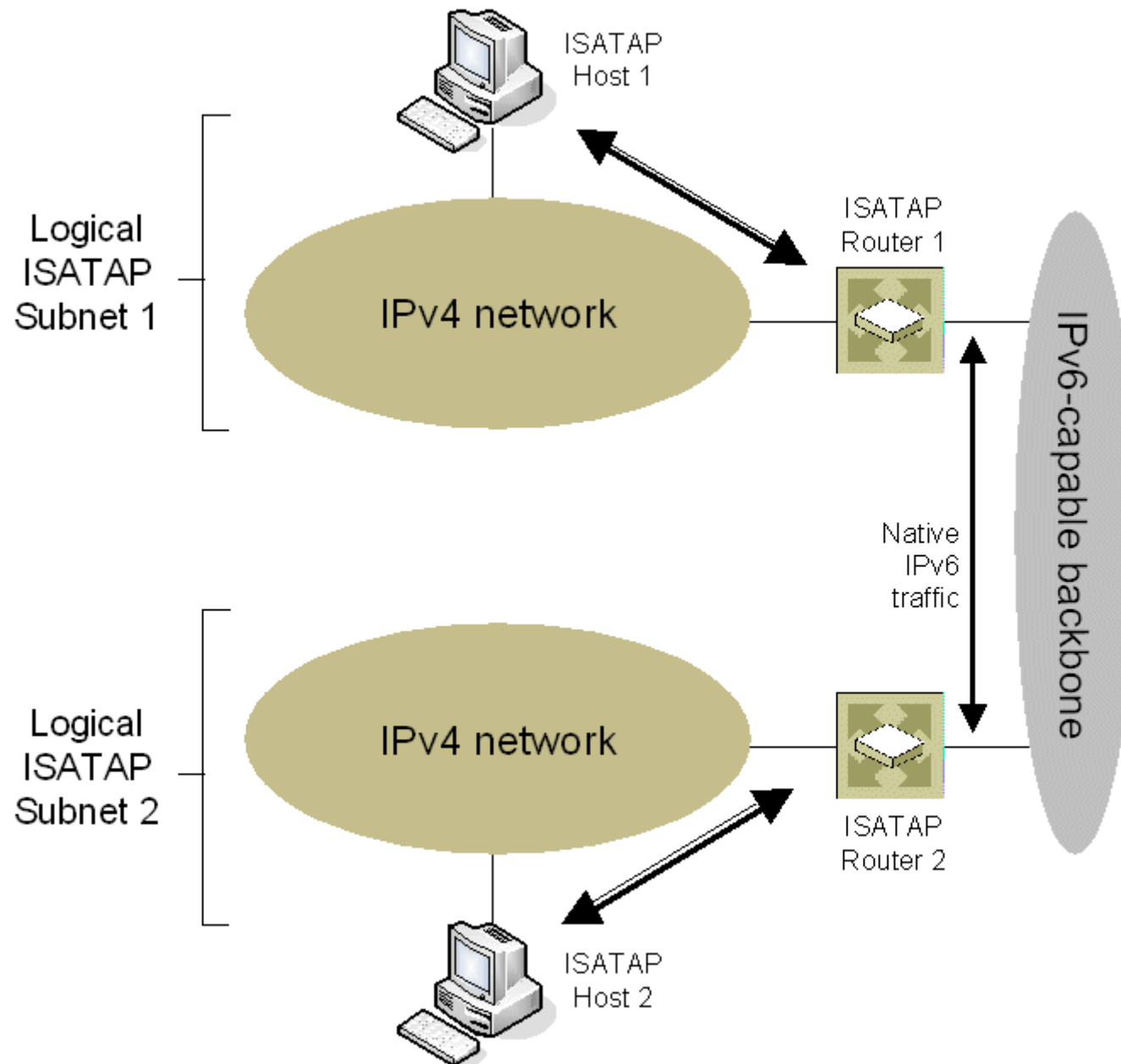
ISATAP Router Determination and Initial Config



Intra-ISATAP Subnet Routing



Inter-ISATAP Subnet Routing



ISATAP Host and IPv6 Host Communication

