

## **A METHOD FOR SHARING FUNCTIONALITY AND/OR DATA BETWEEN TWO OR MORE LINKED ENTITIES**

### **ABSTRACT**

A method for forming a secure virtual private network (VPN100) is described. The secure  
5 virtual private network consists of two or more linked entities having internet  
connectability where each entity has links with at least one other device on the VPN. The  
method characterised by the steps of: providing a lookup device (104,246) having a known  
address with an updatable index of entities known to be connectable to the VPN. Causing  
at least one pre-designated contact entity on the VPN to periodically poll the lookup device  
10 for received joining requests. The look up device accepts requests from known entities  
("joining entity") wishing to link to the VPN. The lookup device receives a request from a  
joining entity to connect to the VPN. In response to a poll for joining requests the lookup  
device notifies the polling contact entity of at least the address of each joining entity. If the  
contact entity permits a connection to the VPN, the contact entity supplies at least its  
15 address to the lookup device which passes this to the joining entity. The joining entity and  
contact entity establish a first link between them. The joining entity and the contact entity  
conduct an authentication process over the first link. If the authentication process is  
successful the contact entity notifies the joining entity of at least the status of other entities  
belonging to the VPN and notifies all entities on the VPN that the joining device is joining  
20 the VPN. The joining device uses the status of other entities belonging to the VPN to  
calculate its node position in the VPN including the one or two neighbour entities it will  
connect to. The one or two neighbour entities initiating a process of the type specified  
above to connect with the lookup entity to establish one or more second links with the  
joining entity and terminating the first link. The joining entity and at least one neighbour  
25 entity conducting a mutual authentication process which if successful sustains the one or  
more second links.

Figure 1