WHAT IS CLAIMED IS:

1. An apparatus for providing a multi protocol label switching (MPLS)-based virtual private network (VPN) in a network including at least one MPLS switch, the apparatus comprising:

a label switched path (LSP) management unit for storing MPLS label switched path (LSP) information of the network;

a connection admission unit for receiving and processing a VPN establishment request message from an operator;

a topology/resource collection unit for collecting IP prefix information of a customer edge (CE) included in the VPN, the establishment of which is requested, from an MPLS edge switch (MES) within said at least one MPLS switch, and for creating a VPN topology table; and

an LSP computation unit for creating a VPN LSP for the VPN, the establishment of which is requested, by referring to the stored MPLS LSP information of the network and the created VPN topology table.

2. The apparatus according to claim 1, wherein the VPN establishment request message received by the connection admission unit comprises VPN establishment request information for VPN establishment.

3. The apparatus according to claim 2, wherein the VPN establishment request

information comprises at least one of a VPN establishment site, a VPN establishment LSP class, an LSP bandwidth, and performance conditions.

4. The apparatus according to claim 1, wherein the connection admission unit is responsive to reception of the VPN establishment request message for assigning a VPN identifier to the VPN, the establishment of which is requested, and for transmitting it to the MES.

5. The apparatus according to claim 4, wherein the connection admission unit transmits VPN configuration information, including the VPN identifier and establishment information for the VPN, to the MES.

6. The apparatus according to claim 1, wherein the IP prefix information which the topology/resource collection unit collects from the MES comprises information which the MES collects using an Internet protocol (IP) routing protocol.

7. The apparatus according to claim 1, further comprising a policy management unit for storing an operation policy of the network.

8. The apparatus according to claim 7, wherein the LSP computation unit creates the VPN LSP by referring to the stored MPLS LSP information stored by the LSP management

unit, the created VPN topology table, the policy stored by the policy management unit, and information included in the VPN establishment request message.

9. The apparatus according to claim 1, further comprising an LSP activation unit for transmitting, to the MPLS switch, information about the VPN LSP created by the LSP computation unit.

10. The apparatus according to claim 9, wherein the LSP activation unit transmits VPN topology information, EXP field mapping information, and label forwarding information base (LFIB) information to the MES, and transmits the LFIB information to an MPLS core switch (MCS) of the MPLS switch.

11. The apparatus according to claim 1, wherein the connection admission unit determines whether there are sufficient resources in the network to provide the VPN, the establishment of which is requested, and determines whether to admit the VPN establishment request based on sufficiency of resources in the network.

12. The apparatus according to claim 11, wherein the LSP management unit stores network establishment information and resource information which the connection admission unit refers to in determining whether there are sufficient resources in the network.

13. The apparatus according to claim 1, wherein the LSP management unit stores information relative to the VPN LSP created by the topology/resource collection unit.

14. A method for providing a multi protocol label switching (MPLS)-based virtual private network (VPN) in a network including at least one MPLS switch, the method comprising the steps of:

receiving a VPN establishment request message from an operator;

assigning a VPN identifier to the VPN, the establishment of which is requested, and transmitting it to an MPLS edge switch (MES) of said at least one MPLS switch;

receiving, from the MES, IP prefix information of a customer edge (CE) included in the VPN;

creating a VPN topology table using the received IP prefix information; and

creating a VPN label switched path (LSP) for the VPN, the establishment of which is requested, by referring to the created VPN topology table and preset MPLS LSP information of the network.

15. The method according to claim 14, further comprising the step of transmitting information about the created VPN LSP to said at least one MPLS switch.

16. The method according to claim 14, wherein the received VPN establishment request message comprises VPN establishment request information for VPN establishment.

17. The method according to claim 16, wherein the VPN establishment request information comprises at least one of a VPN establishment site, a VPN establishment LSP class, an LSP bandwidth, and performance conditions.

18. The method according to claim 14, wherein the IP prefix information received from the MES comprises information which the MES collects using an Internet protocol (IP) routing protocol.

19. The method according to claim 14, wherein the step of creating the VPN LSP is performed by referring to the created VPN topology table, policy stored in a policy management unit, and information included in the VPN establishment request message.