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(54) **SYSTEM AND METHOD TO PROVISION MPLS/VPN NETWORK**

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(52) **U.S. Cl.** ..... **370/409; 370/254**

(58) **Field of Classification Search** ..... **370/254, 370/401, 230, 234, 223**  
See application file for complete search history.

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(57) **ABSTRACT**

The disclosed method and system provides a new service provision interface that allows operator use without requiring many of the specific technical network details, such as VRF, RT, SOO, route redistribution, etc. Further, the translation from a customer's requirements (including both VPN topology membership requirement and L2, L3 requirement from customer) into technical network configuration commands are handled using an automated method that is transparent to the operator.

In a particular illustrative embodiment of this patent disclosure, a high level table with reduced technical detail is generated by an operator and an automated provisioning system, without operator visibility or required operator interaction, creates intermediate data including network specific technical information in an automated process to generate a deployable network topology including VRF and RT assignments for use in network provisioning.

**23 Claims, 9 Drawing Sheets**

ON PE1 440	420	422	424	426	428	430
402	Full Mesh Both FM_1	Both FM_1	Both FM_1	Both FM_1	Both FM_1	
404	Full Mesh Both FM_2	Both FM_2				
406	Full Mesh		Both FM_3			
408	Central Service		Export CS_4_Server_Import			
410	HSS 2 VRFs	Export HSS_5_Hub	Import CS_4_Server_Import			
412	HSS 1 VRF		Export HST_5_Hub	Export HST_6_Hub	Export HST_6_Hub	
VRF on PE1 414	VRF_1	VRF_2	VRF_3	VRF_4	432	Import HST_5_Spoke

ON PE2 450	CE2	CE3	CEB	Both FM_1	
	Full Mesh				
	Full Mesh				
	Full Mesh Both FM_3	Both FM_3			Both FM_3
	Central Service		Export CS_4_Server_Import	Export CS_4_Server_Export	Export CS_4_Server_Import
	HSS 2 VRFs		Import CS_4_Server_Import	Import CS_4_Server_Export	Import CS_4_Server_Export
	HSS 1 VRF		Export HST_5_Hub	Import HST_5_Spoke	Export HST_6_Hub
VRF on PE2	VRF_1	VRF_2	VRF_3	VRF_4	Import HST_6_Spoke

ON PE3 460	Topology	CE5	CE6	CE7	CE8
	Full Mesh			Both FM_2	
	Full Mesh				Both FM_3
	Central Service				Both CS_4_Server
	HSS 2 VRFs	Export HSS_5_Hub	Export HSS_5_Spoke	Import HSS_5_Hub	Import CS_4_Server_Import
VRF on PE3	VRF_1	Import HSS_5_Spoke		Export HSS_5_Hub	Export HSS_5_Spoke
		VRF_2	VRF_3	VRF_4	Import HSS_5_Spoke

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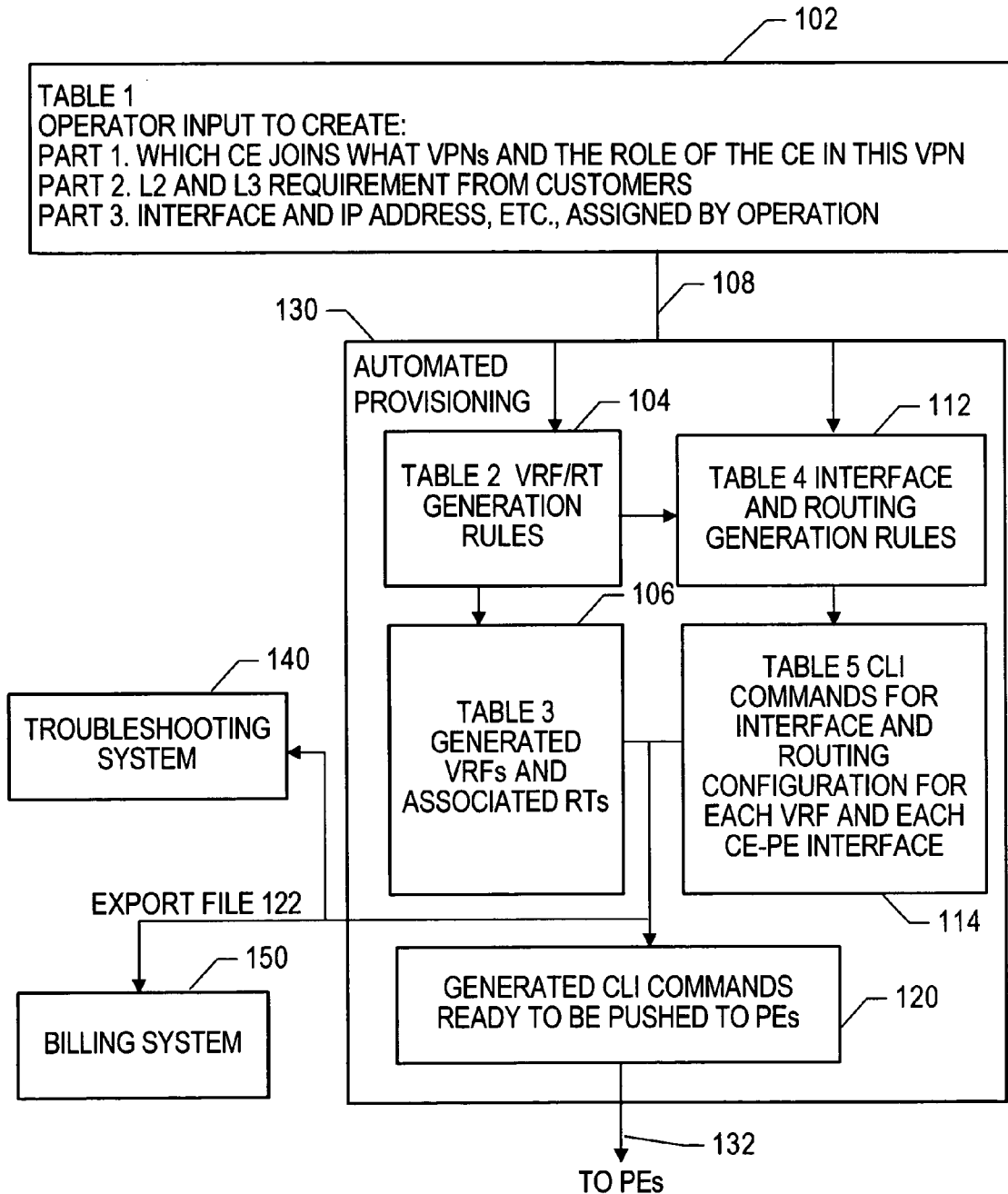


FIG. 1



**TABLE 2: LOGICAL MAPPING OF VRF AND ASSOCIATED RTs TO VPN FOR DIFFERENT TOPOLOGIES**  
 FM = FULL MESH HB1 = ONE VRF BASED HUB AND SPOKE HB2 = TWO VRF BASED HUB AND SPOKE  
 CS = CENTRAL SERVICE n = SEQUENCE NUMBER OF VPN m = SEQUENCE NUMBER OF CE

VPN TOPOLOGY	VRF (IN BOLD) AND RTs (IN ITALIC)			NOTES
FULL MESH <u>310</u>	<b>VRF_FM_n Both FM_n</b>			One VRF on Each PE One RT per VRF
H&S TWO BASED <u>312</u>	<b>VRF_HS2_HUB_Hub</b> Import <i>HS2_n_Hub</i>	<b>VRF_HS2_HUB_Spoke</b> Export <i>HS2_n_Spoke</i>	<b>VRF_HS2_Spoke_m</b> Export <i>HS2_n_Hub</i> Export <i>HS2_n_Spoke</i>	One VRFs for each CE (even on PE) One unique RT for HUB_Hub VRF One unique RT for HUB_Spoke VRF Two RTs for each spoke CE
H&S ONE VRF BASED (WITH DEFAULT ROUTE) <u>314</u>	<b>VRF_HS1_HUB</b> Export <i>HS1_n_Spoke</i> Import <i>HS1_n_Hub</i>		<b>VRF_HS1_Spoke_m</b> Export <i>HS1_n_Hub</i> Import <i>HS1_n_Spoke</i>	CE VRF on different PEs. One VRFs for each CE (even on PE) Two RTs for HUB VRF Two RTs for Spoke CE VRF but they are same for all CE VRF on different PEs.
CENTRAL SERVICE <u>316</u>	<b>VRF_CS_n_Server</b> Both <i>CS_n_Server</i> Import <i>CS_n_Server_Import</i>		<b>VRF_CS_n_Spoke_m</b> Export <i>CS_n_Server_Import</i> Import <i>CS_n_Server</i>	One VRF for each CE Two RTs for Server VRF Two RTs for each Spoke VRF

**FIG. 3**

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