## Claims

1. A cloud-based services exchange point (128) comprising:

a layer three (L3) autonomous system (301) located within a data center (300),

wherein the L3 autonomous system (301) is configured to receive, from each of a plurality of cloud service provider networks (320), cloud service traffic for at least one cloud service and for distribution to one or more customer networks (308);

a plurality of attachment circuits configured to connect, within the data center (300), the respective plurality of cloud service provider networks (320) to the L3 autonomous system (301); and

one or more attachment circuits configured to connect, within the data center (300), the respective one or more customer networks (308) to the L3 autonomous system (301),

wherein the L3 autonomous system (301) is configured to interconnect the plurality of cloud service provider networks (320) and the one or more customer networks (308) by establishing end-to-end L3 paths between the plurality of cloud service provider networks and the one or more customer networks (308), each end-to-end L3 path including one of the plurality of attachment circuits connecting the respective plurality of cloud service provider networks (320) to the L3 autonomous system and also including one of the one or more attachment circuits connecting the respective one or more customer networks (308) to the L3 autonomous system,

wherein the L3 autonomous system (301) is configured to forward cloud service traffic, received on the plurality of attachment circuits connecting the respective plurality of cloud service provider networks (320) along the end-to-end L3 paths, to the one or more attachment circuits connecting the respective one or more customer networks (308) to the L3 autonomous system (301).

2. The cloud-based services exchange point of claim 1, wherein the L3 autonomous system is configured with an autonomous system number that identifies the L3 autonomous system within an autonomous system path to a routing protocol.

3. The cloud-based services exchange point of claim 1,

wherein the L3 autonomous system is configured to aggregate, to form aggregated cloud service traffic, first cloud service traffic originating from a first cloud service provider network of the plurality of cloud service provider networks and second cloud service traffic originating from a second cloud service provider network of the plurality of cloud service provider networks, and

wherein the L3 autonomous system is configured to deliver the aggregated cloud service traffic to a customer network of the one or more customer networks.

4. The cloud-based services exchange point of claim 1,

wherein the L3 autonomous system is configured to aggregate, to form aggregated cloud service traffic, first cloud service traffic originating from a first customer network of the one or more customer networks and second cloud service traffic originating from a second customer network of the one or more customer networks, and

wherein the L3 autonomous system is configured to deliver the aggregated cloud service traffic to a cloud service provider network of the plurality of cloud service provider networks.

5. The cloud-based services exchange point of claim 1, wherein each of the one or more customer networks comprises one of a network service provider network and an enterprise network.

6. The cloud-based services change point of claim 1,

wherein the L3 autonomous system comprises an Internet Protocol network (301) interconnecting a plurality of provider edge (PE) routers (302, 304) by a plurality of tunnels, and

wherein each of the end-to-end L3 paths comprises one of the plurality of tunnels.

7. The cloud-based services exchange point of claim 6,

wherein the IP network comprises an IP / Multiprotocol label switching (IP/MPLS) fabric, and

wherein the plurality of PE routers are configured to obtain configuration data defining one or more virtual private network routing and forwarding instances (VRFs) for a cloud service of the at least one cloud service and provided by a cloud service provider network of the plurality of cloud service providers network.

8. The cloud-based services exchange point of claim 6,

wherein the IP network comprises an IP / Multiprotocol label switching (IP/MPLS) fabric,

wherein, to establish the end-to-end L3 paths, a first PE router (304) of the plurality of PE routers is configured to export a L3 route specifying a route to a cloud service of the at least one cloud service, the first PE router (304) coupled to an attachment circuit of the plurality of attachment circuits that is also coupled to the cloud service provider network,

wherein, to establish the end-to-end L3 paths, a second PE router (302) of the plurality of PE routers is configured to import the L3 route specifying the route to the cloud service, the second PE router (302) to an attachment circuit of the one or more attachment circuits that is also coupled to a customer network of the one or more customer networks, and

wherein the first PE router (304) is configured to forward cloud service traffic for the cloud service to the second PE router (302) according to the L3 route.

9. The cloud-based services exchange point of claim 8, wherein the first PE router is a hub router and the second PE router is a spoke router for a hub-and-spoke virtual private network for the cloud service.

10. The cloud-based services exchange point of claim 6,

wherein the IP network comprises an IP / Multiprotocol label switching (IP/MPLS) fabric,

wherein, to establish the end-to-end L3 paths, a first PE router (302) of the plurality of PE routers is configured to export a L3 route specifying a route to a customer network of the plurality of customer networks, the first PE router (302) coupled to an attachment circuit of the one or more attachment circuits that is also coupled to the customer network,

wherein, to establish the end-to-end L3 paths, a second PE router (304) of the plurality of PE routers is configured to import the L3 route specifying the route to the customer network, the second PE router (304) coupled to an attachment circuit of the plurality of attachment circuits that is also coupled to the cloud service provider, and

wherein the first PE router (302) is configured to forward cloud service traffic for the cloud service to the second PE router (304) according to the L3 route.

11. The cloud-based services exchange point of claim 10, wherein the first PE router is a spoke router and the second PE router is a hub router for a hub-and-spoke virtual private network for the cloud service.

12. The cloud-based services exchange point of claim 1,

wherein the one or more customer networks receive L3 routes for the plurality of cloud service provider networks only from one of an operator of the cloud-based services exchange point and the L3 autonomous system.

13. The cloud-based services exchange point of claim 12,

wherein the L3 autonomous system comprises a network address translation (NAT) service device (719) configured to apply a NAT service to the cloud service traffic,

wherein the cloud service traffic comprises destination L3 addresses that are L3 addresses advertised by the cloud exchange point to the plurality of cloud service provider networks,

wherein to apply the NAT service to the cloud service traffic the NAT service device is configured to modify the destination L3 addresses of the cloud service traffic to generate modified cloud service traffic that comprises destination L3 addresses that are L3 addresses advertised by the one or more customer networks to the L3 autonomous system, and

wherein to forward the cloud service traffic to the one or more attachment circuits connecting the respective one or more customer networks to the L3 autonomous system, the L3 autonomous system is configured to forward, based on the destination L3 address of the modified cloud service traffic, the modified cloud service traffic to the one or more attachment circuits connecting the respective one or more customer networks to the L3 autonomous system.

14. The cloud-based services exchange point of claim 13,

wherein the NAT service device is configured with an address pool that includes the L3 addresses advertised by the cloud exchange point to the plurality of cloud service provider networks, and

wherein the NAT service device is configured to automatically map, in response to receiving the L3 addresses advertised by the one or more customer networks, the L3 addresses advertised by the one or more customer networks to the L3 addresses advertised by the cloud exchange point to the plurality of cloud service provider networks.

15. A method comprising:

by a layer three (L3) autonomous system (301) of a cloud-based services exchange point and located within a data center (300), receiving, from each of a plurality of cloud service provider networks (320), cloud service traffic for at least one cloud service and for distribution to one or more customer networks (308),

wherein a plurality of attachment circuits is configured to connect, within the data center (300), the respective plurality of cloud service provider networks (320) to the L3 autonomous system (301),

wherein one or more attachment circuits are configured to connect, within the data center, the respective one or more customer networks (308)to the L3 autonomous system (301);

interconnecting, by the L3 autonomous system (301), the plurality of cloud service provider networks (320) and the one or more customer networks by establishing end-to-end L3 paths between the plurality of cloud service provider networks (320) and the one or more customer networks (308), each end-to-end L3 path including one of the plurality of attachment circuits connecting the respective plurality of cloud service provider networks (320) to the L3 autonomous system (301) and also including one of the one or more attachment circuits connecting the respective one or more customer networks (308) to the L3 autonomous system (301);

forwarding, by the L3 autonomous system (301), cloud service traffic, received on the plurality of attachment circuits connecting the respective plurality of cloud service provider networks (320) along the end-to-end L3 paths, to the one or more attachment circuits connecting the respective one or more customer networks (308) to the L3 autonomous system (301).