CLAIMS:

1. A method for obtaining a network slice, comprising:

receiving, by a control device, a slice request sent by a user, wherein the slice request comprises an identifier, and the identifier identifies isolation information of a slice requested by the user; and

obtaining, by the control device, a network slice based on the identifier and a resource topology, wherein the resource topology describes a network topology and isolation information of N elements in the network topology, the N elements comprise a node and/or a link, N is an integer greater than or equal to 1, and the network slice comprises a node and a link that are required for implementing the slice.

2. The method according to claim 1, wherein the N elements comprise a first node, a second node, and a link between the first node and the second node, and the method further comprises:

obtaining, by the control device, first resource information from the first node according to a policy, wherein the first resource information comprises isolation information provided by the first node and a topology of the first node;

obtaining, by the control device, second resource information from the second node according to a policy, wherein the second resource information comprises isolation information provided by the second node and a topology of the second node; and

generating, by the control device, a resource topology based on the first resource information and the second resource information, wherein the resource topology describes the network topology, an isolation capability of the first node, an isolation capability of the second node, and an isolation capability of the link between the first node and the second node, and the network topology is a topology between the first node and the second node.

3. The method according to claim 2, wherein the generating, by the control device, the resource topology based on the first resource information and the second resource information comprises:

determining, by the control device, a first isolation type based on the isolation information provided by the first node and the isolation information provided by the second node; and

obtaining, by the control device based on the first isolation type and the network topology, a first resource topology matching the first isolation type, wherein an isolation capability of a node comprised in the first resource topology is the first isolation type, and an isolation capability of a link comprised in the first resource topology is the first isolation type.

4. The method according to claim 3, wherein the generating, by the control device, the resource topology based on the first resource information and the second resource information further comprises:

determining, by the control device, a second isolation type based on the isolation information provided by the first node and the isolation information provided by the second node; and

obtaining, by the control device based on the second isolation type and the network topology, a second resource topology matching the second isolation type, wherein an isolation capability of a node comprised in the second resource topology is the second isolation type, and an isolation capability of a link comprised in the second resource topology is the second isolation type.

5. The method according to claim 3, wherein the first isolation type is fine-grained physical isolation, coarse-grained physical isolation, or logical isolation; or

wherein the first isolation type is network isolation, link isolation, or node isolation.

6. The method according to claim 4, wherein the second isolation type is fine-grained physical isolation, coarse-grained physical isolation, or logical isolation, and the second isolation type is different from the first isolation type; or

wherein the second isolation type is network isolation, node physical isolation, or link isolation, and the second isolation type is different from the first isolation type.

7. The method according to claim 1, wherein the obtaining, by the control device, a network slice based on the identifier and a resource topology comprises:

selecting, by the control device from the resource topology based on the isolation information of the slice, a sub-resource topology matching the isolation information of the slice, wherein an isolation capability of a node comprised in the sub-resource topology matches the isolation information of the slice, an isolation capability of a link comprised in the sub-resource topology

matches the isolation information of the slice, and the isolation information of the slice is determined by the identifier; and

storing, by the control device, a correspondence between the sub-resource topology and the identifier.

8. The method according to claim 7, wherein the obtaining, by the control device, a network slice based on the identifier and a resource topology further comprises:

obtaining, by the control device based on the slice request, service information corresponding to the slice;

obtaining, by the control device, an ingress terminal point (TP) and an egress TP of a third node based on the sub-resource topology, wherein an isolation capability of the ingress TP matches the isolation information of the slice, an isolation capability of the egress TP matches the isolation information of the slice, the isolation capability of the ingress TP supports the isolation capability of the node comprised in the sub-resource topology and the isolation capability of the link comprised in the sub-resource topology, and the isolation capability of the egress TP supports the isolation capability of the node comprised in the sub-resource topology and the isolation capability of the link comprised in the sub-resource topology; and

sending, by the control device to the third node, a correspondence comprising the service information, the ingress TP, and the egress TP.

9. The method according to claim 1, wherein the isolation information comprises a user level, a service level, a tunnel level, a system level, a slot level, a wavelength level, a port level, a device level, or a network level.

10. The method according to claim 7, wherein the isolation capability is an isolation function that is of an element and that corresponds to the isolation information.

11. A control device, comprising:

at least one processor; and

a non-transitory computer-readable storage medium coupled to the at least one processor and storing programming instructions that, when executed by the at least one processor, cause the at

least one processor to:

receive a slice request sent by a user, wherein the slice request comprises an identifier, and the identifier identifies isolation information of a slice requested by the user; and

obtain a network slice based on the identifier and a resource topology, wherein the resource topology describes a network topology and isolation information of N elements in the network topology, the N elements comprise a node and/or a link, N is an integer greater than or equal to 1, and the network slice comprises a node and a link that are required for implementing the slice.

12. The control device according to claim 11, wherein the N elements comprise a first node, a second node, and a link between the first node and the second node, and the programming instructions further cause the at least one processor to:

obtain first resource information from the first node according to a policy, wherein the first resource information comprises isolation information provided by the first node and a topology of the first node;

obtain second resource information from the second node according to a policy, wherein the second resource information comprises isolation information provided by the second node and a topology of the second node; and

generate a resource topology based on the first resource information and the second resource information, wherein the resource topology describes the network topology, an isolation capability of the first node, an isolation capability of the second node, and an isolation capability of the link between the first node and the second node, and the network topology is a topology between the first node and the second node.

13. The control device according to claim 12, wherein the programming instructions further cause the at least one processor to:

determine a first isolation type based on the isolation information provided by the first node and the isolation information provided by the second node; and

obtaining, based on the first isolation type and the network topology, a first resource topology matching the first isolation type, wherein an isolation capability of a node comprised in the first resource topology is the first isolation type, and an isolation capability of a link comprised in the first resource topology is the first isolation type.

14. The control device according to claim 13, wherein the programming instructions further cause the at least one processor to:

determine a second isolation type based on the isolation information provided by the first node and the isolation information provided by the second node; and

obtain, based on the second isolation type and the network topology, a second resource topology matching the second isolation type, wherein an isolation capability of a node comprised in the second resource topology is the second isolation type, and an isolation capability of a link comprised in the second resource topology is the second isolation type.

15. The control device according to claim 13, wherein the first isolation type is fine-grained physical isolation, coarse-grained physical isolation, or logical isolation; or

wherein the first isolation type is network isolation, link isolation, or node isolation.

16. The control device according to claim 14, wherein the second isolation type is fine-grained physical isolation, coarse-grained physical isolation, or logical isolation, and the second isolation type is different from the first isolation type; or

wherein the second isolation type is network isolation, node physical isolation, or link isolation, and the second isolation type is different from the first isolation type.

17. The control device according to claim 11, wherein the programming instructions further cause the at least one processor to:

select, from the resource topology based on the isolation information of the slice, a sub-resource topology matching the isolation information of the slice, wherein an isolation capability of a node comprised in the sub-resource topology matches the isolation information of the slice, an isolation capability of a link comprised in the sub-resource topology matches the isolation information of the slice, and the isolation information of the slice is determined by the identifier; and

store a correspondence between the sub-resource topology and the identifier.

18. The control device according to claim 17, wherein the programming instructions further

cause the at least one processor to:

obtain, based on the slice request, service information corresponding to the slice;

obtain an ingress terminal point (TP) and an egress TP of a third node based on the sub-resource topology, wherein an isolation capability of the ingress TP matched the isolation information of the slice, an isolation capability of the egress TP matches the isolation information of the slice, the isolation capability of the ingress TP supports the isolation capability of the node comprised in the sub-resource topology and the isolation capability of the link comprised in the sub-resource topology, and the isolation capability of the egress TP supports the isolation capability of the node comprised in the sub-resource topology and the isolation capability of the link comprised in the sub-resource topology; and

send, to the third node, a correspondence comprising the service information, the ingress TP, and the egress TP.

19. The control device according to claim 11, wherein the isolation information is a user level, a service level, a tunnel level, a system level, a slot level, a wavelength level, a port level, a device level, or a network level.

20. The control device according to claim 17, wherein the isolation capability is an isolation function that is of an element and that corresponds to the isolation information.