CLAIMS

What is claimed is:

1. A method for obtaining a network slice, wherein the method comprises:

receiving, by a control device, a slice request sent by a user, wherein the slice request comprises an identifier, and the identifier is used to identify an isolation level of a slice requested by the user;

obtaining, by the control device, an isolation type of the slice based on the identifier; and

creating, by the control device, a network slice based on the isolation type of the slice and a resource topology, wherein the resource topology is used to describe a network topology and isolation capabilities of N elements in the network topology, the N elements comprise at least one of a node and 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 an isolation 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 an isolation 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 is used to describe 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 obtaining, by the control device, first resource information from the first node according to an isolation policy comprises:

generating, by the control device, first configuration data according to the isolation policy, wherein the first configuration data is used to describe the isolation capability of the first node;

sending, by the control device, the first configuration data to the first node; and

receiving, by the control device, the first resource information sent by the first node, wherein the first resource information comprises the isolation information provided by the first node and the topology of the first node, and the topology of the first node is used to describe the first node and a link on which the first node is located; and

the obtaining, by the control device, second resource information from the second node according to an isolation policy comprises:

generating, by the control device, second configuration data according to the isolation policy, wherein the second configuration data is used to describe the isolation capability of the second node;

sending, by the control device, the second configuration data to the second node; and

receiving, by the control device, the second resource information sent by the second node, wherein the second resource information comprises the isolation information provided by the second node and the topology of the second node, and the topology of the second node is used to describe the second node and a link on which the second node is located.

4. The method according to claim 3, wherein the generating, by the control device, first configuration data according to the isolation policy comprises:

obtaining, by the control device, the isolation capability of the first node according to the isolation policy, wherein the isolation capability of the first node comprises isolation capabilities of the first node and the link on which the first node is located; and

generating, by the control device based on the isolation capability of the first node and a data model, the first configuration data described by using the data model; and

the generating, by the control device, second configuration data according to the isolation policy comprises:

obtaining, by the control device, the isolation capability of the second node according to the isolation policy, wherein the isolation capability of the second node comprises isolation capabilities of the second node and the link on which the second node is located; and

generating, by the control device based on the isolation capability of the second node and the data model, the second configuration data described by using the data model.

5. The method according to any one of claims 2 to 4, wherein the generating, by the control device, a 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.

6. The method according to claim 5, wherein the generating, by the control device, a 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.

7. The method according to claim 5 or 6, wherein the first isolation type is fine-grained physical isolation, coarse-grained physical isolation, or logical isolation, 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

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

8. The method according to any one of claims 1 to 7, wherein the creating, by the control device, a network slice based on the isolation type of the slice and a resource topology comprises:

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

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

9. The method according to claim 8, wherein the creating, by the control device, a network slice based on the isolation type of the slice 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 is an isolation capability of the slice, an isolation capability of the egress TP is the isolation capability 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.

10. The method according to any one of claims 1 to 9, wherein after the creating a network slice, the method further comprises:

obtaining, by the control device, updated isolation information from the first node, wherein the updated isolation information is used to describe a newly added isolation capability in the first node or an invalid isolation capability in the first node; and

obtaining, by the control device, an updated resource topology based on the updated isolation information and the resource topology, wherein the updated resource topology is used to describe the network topology, an updated isolation capability of the first node, the isolation capability of the second node, and an updated isolation capability of the link between the first node and the second node.

11. The method according to any one of claims 1 to 10, wherein the isolation level 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; and

the isolation capability is an isolation function that is of an element and that corresponds to the isolation level.

12. A method for obtaining a resource topology, wherein the method comprises:

obtaining, by a control device, first resource information from a first node according to an

isolation 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 an isolation 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 is used to describe a network topology, an isolation capability of the first node, an isolation capability of the second node, and an isolation capability of a 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 method according to claim 12, wherein the obtaining, by the control device, first resource information from the first node according to an isolation policy comprises:

generating, by the control device, first configuration data according to the isolation policy, wherein the first configuration data is used to describe the isolation capability of the first node;

sending, by the control device, the first configuration data to the first node; and

receiving, by the control device, the first resource information sent by the first node, wherein the first resource information comprises the isolation information provided by the first node and the topology of the first node, and the topology of the first node is used to describe the first node and a link on which the first node is located; and

the obtaining, by the control device, second resource information from the second node according to an isolation policy comprises:

generating, by the control device, second configuration data according to the isolation policy, wherein the second configuration data is used to describe the isolation capability of the second node;

sending, by the control device, the second configuration data to the second node; and

receiving, by the control device, the second resource information sent by the second node, wherein the second resource information comprises the isolation information provided by the second node and the topology of the second node, and the topology of the second node is used to describe the second node and a link on which the second node is located.

14. The method according to claim 13, wherein the generating, by the control device, first configuration data according to the isolation policy comprises:

obtaining, by the control device, the isolation capability of the first node according to the isolation policy, wherein the isolation capability of the first node comprises isolation capabilities of the first node and the link on which the first node is located; and

generating, by the control device based on the isolation capability of the first node and a data model, the first configuration data described by using the data model; and

the generating, by the control device, second configuration data according to the isolation policy comprises:

obtaining, by the control device, the isolation capability of the second node according to the isolation policy, wherein the isolation capability of the second node comprises isolation capabilities of the second node and the link on which the second node is located; and

generating, by the control device based on the isolation capability of the second node and the data model, the second configuration data described by using the data model.

15. The method according to any one of claims 12 to 14, wherein the generating, by the control device, a 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.

16. The method according to claim 15, wherein the generating, by the control device, a 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.

17. The method according to claim 15 or 16, wherein the first isolation type is fine-grained

physical isolation, coarse-grained physical isolation, or logical isolation, 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

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

18. The method according to any one of claims 12 to 17, wherein the method further comprises:

obtaining, by the control device, updated isolation information from the first node, wherein the updated isolation information is used to describe a newly added isolation capability in the first node or an invalid isolation capability in the first node; and

obtaining, by the control device, an updated resource topology based on the updated isolation information and the resource topology, wherein the updated resource topology is used to describe the network topology, an updated isolation capability of the first node, the isolation capability of the second node, and an updated isolation capability of the link between the first node and the second node.

19. The method according to any one of claims 12 to 18, wherein the method further comprises:

receiving, by the control device, a slice request sent by a user, wherein the slice request comprises an identifier, and the identifier is used to identify an isolation level of a slice requested by the user;

obtaining, by the control device, an isolation type of the slice based on the identifier; and

creating, by the control device, a network slice based on the isolation type of the slice and the resource topology, wherein the resource topology is used to describe a network topology and isolation capabilities of N elements in the network topology, the N elements comprise at least one of a node and 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.

20. A control device, wherein the control device comprises:

a receiving unit, configured to receive a slice request sent by a user, wherein the slice request comprises an identifier, and the identifier is used to identify an isolation level of a slice requested by the user;

a first obtaining unit, configured to obtain an isolation type of the slice based on the identifier; and

a creation unit, configured to create a network slice based on the isolation type of the slice and a resource topology, wherein the resource topology is used to describe a network topology and isolation capabilities of N elements in the network topology, the N elements comprise at least one of a node and 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.

21. The control device according to claim 20, wherein the N elements comprise a first node, a second node, and a link between the first node and the second node, and the control device further comprises:

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

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

a generating unit, configured to generate a resource topology based on the first resource information and the second resource information, wherein the resource topology is used to describe 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.

22. The control device according to claim 21, wherein the second obtaining unit is specifically configured to: generate first configuration data according to the isolation policy, wherein the first configuration data is used to describe the isolation capability of the first node; send the first configuration data to the first node; and receive the first resource information sent by the first node, wherein the first resource information comprises the isolation information provided by the first node and the topology of the first node, and the topology of the first node is used to describe the first node and a link on which the first node is located; and

the third obtaining unit is specifically configured to: generate second configuration data according to the isolation policy, wherein the second configuration data is used to describe the isolation capability of the second node; send the second configuration data to the second node; and

receive the second resource information sent by the second node, wherein the second resource information comprises the isolation information provided by the second node and the topology of the second node, and the topology of the second node is used to describe the second node and a link on which the second node is located.

23. The control device according to claim 22, wherein the second obtaining unit is specifically configured to: obtain the isolation capability of the first node according to the isolation policy, wherein the isolation capability of the first node comprises isolation capabilities of the first node and the link on which the first node is located; and generate, based on the isolation capability of the first node and a data model, the first configuration data described by using the data model; and

the third obtaining unit is specifically configured to: obtain the isolation capability of the second node according to the isolation policy, wherein the isolation capability of the second node comprises isolation capabilities of the second node and the link on which the second node is located; and generate, based on the isolation capability of the second node and the data model, the second configuration data described by using the data model.

24. The control device according to any one of claims 21 to 23, wherein the generating unit is specifically configured 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.

25. The control device according to claim 24, wherein the generating unit is specifically configured 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.

26. The control device according to claim 24 or 25, wherein the first isolation type is fine-

grained physical isolation, coarse-grained physical isolation, or logical isolation, 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

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

27. The control device according to any one of claims 20 to 26, wherein the creation unit is specifically configured to:

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

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

28. The control device according to claim 27, wherein the creation unit is specifically configured 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 is an isolation capability of the slice, an isolation capability of the egress TP is the isolation capability 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.

29. The control device according to any one of claims 20 to 28, wherein the control device further comprises:

a fourth obtaining unit, configured to obtain updated isolation information from the first node, wherein the updated isolation information is used to describe a newly added isolation capability in the first node or an invalid isolation capability in the first node; and

an updating unit, configured to obtain an updated resource topology based on the updated isolation information and the resource topology, wherein the updated resource topology is used to describe the network topology, an updated isolation capability of the first node, the isolation capability of the second node, and an updated isolation capability of the link between the first node and the second node.

30. The control device according to any one of claims 20 to 29, wherein the isolation level 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; and

the isolation capability is an isolation function that is of an element and that corresponds to the isolation level.

31. A control device, wherein the control device comprises an orchestrator, and the orchestrator is configured to:

receive a slice request sent by a user, wherein the slice request comprises an identifier, and the identifier is used to identify an isolation level of a slice requested by the user;

obtain an isolation type of the slice based on the identifier; and

create a network slice based on the isolation type of the slice and a resource topology, wherein the resource topology is used to describe a network topology and isolation capabilities of N elements in the network topology, the N elements comprise at least one of a node and 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.

32. The control device according to claim 31, wherein the N elements comprise a first node, a second node, and a link between the first node and the second node, and the orchestrator is specifically configured to:

obtain first resource information from the first node according to an isolation 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 an isolation 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 is used to describe 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.

33. The control device according to claim 32, wherein the control device further comprises a first domain controller and a second domain controller;

the orchestrator is specifically configured to: generate first configuration data according to the isolation policy, wherein the first configuration data is used to describe the isolation capability of the first node; and generate second configuration data according to the isolation policy, wherein the second configuration data is used to describe the isolation capability of the second node;

the first domain controller is specifically configured to: send the first configuration data from the orchestrator to the first node; and receive the first resource information sent by the first node, wherein the first resource information comprises the isolation information provided by the first node and the topology of the first node, and the topology of the first node is used to describe the first node and a link on which the first node is located; and

the second domain controller is specifically configured to: send the second configuration data from the orchestrator to the second node; and receive the second resource information sent by the second node, wherein the second resource information comprises the isolation information provided by the second node and the topology of the second node, and the topology of the second node is used to describe the second node and a link on which the second node is located.

34. The control device according to claim 33, wherein the orchestrator is specifically configured to:

obtain the isolation capability of the first node according to the isolation policy, wherein the isolation capability of the first node comprises isolation capabilities of the first node and the link on which the first node is located; and generate, based on the isolation capability of the first node and a data model, the first configuration data described by using the data model; and

obtain the isolation capability of the second node according to the isolation policy, wherein the isolation capability of the second node comprises isolation capabilities of the second node and the link on which the second node is located; and generate, based on the isolation capability of the second node and the data model, the second configuration data described by using the data model.

35. The control device according to any one of claims 32 to 34, wherein the orchestrator is specifically configured 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.

36. The control device according to claim 35, wherein the orchestrator is specifically configured 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.

37. The control device according to any one of claims 31 to 36, wherein the orchestrator is further configured to:

obtain updated isolation information from the first node, wherein the updated isolation information is used to describe a newly added isolation capability in the first node or an invalid isolation capability in the first node; and

obtain an updated resource topology based on the updated isolation information and the resource topology, wherein the updated resource topology is used to describe the network topology, an updated isolation capability of the first node, the isolation capability of the second node, and an updated isolation capability of the link between the first node and the second node.

38. A system for obtaining a network slice, wherein the system comprises a first node, a second node, and the control device according to any one of claims 20 to 30; or

the system comprises a first node, a second node, and the control device according to any one of claims 31 to 37.

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.