CLAIMS

What is claimed is:

1. A trusted-state attesting method, wherein the method is applied to a network device comprising a first trusted attestation proxy for proxying an attestation server, the network device is connected between an upstream device and a downstream network device, the upstream device is the attestation server or one or more devices connected between the network device and the attestation server, the downstream network device is one or more devices that need to be indirectly connected to the attestation server via the network device, and the method comprises:

measuring the first trusted attestation proxy for the network device to obtain a first proxy measured value, wherein the first proxy measured value is for enabling the upstream device to attest a trusted state of the first trusted attestation proxy;

sending the first proxy measured value to the upstream device; and

receiving at least one baseline value from the upstream device if the upstream device determines that the first trusted attestation proxy is in the trusted state, wherein at least a part of the at least one baseline value is used to attest a trusted state of the downstream network device.

2. The method according to claim 1, wherein the network device comprises at least one first to-be-attested object connected to the first trusted attestation proxy, and the method further comprises:

obtaining a first measured value of each of the at least one first to-be-attested object, wherein the first measured value is used to attest a trusted state of the first to-be-attested object; and

the at least one baseline value comprises a first baseline value corresponding to the first to-be-attested object, and after the receiving at least one baseline value from the upstream device, the method further comprises:

attesting the trusted state of the first to-be-attested object based on the first baseline value corresponding to the first to-be-attested object and the first measured value.

3. The method according to claim 1, wherein after the obtaining a first measured value of each of the at least first to-be-attested object, the method further comprises:

sending the first measured value to the upstream device.

4. The method according to any one of claims 1 to 3, wherein the at least one baseline value comprises a second baseline value, the second baseline value corresponds to a second trusted attestation proxy for the downstream network device, and after the receiving at least one baseline value from the upstream device, the method further comprises:

receiving a second proxy measured value from the downstream network device, wherein the

second proxy measured value is used to attest a trusted state of the second trusted attestation proxy; and

attesting the trusted state of the second trusted attestation proxy based on the second baseline value and the second proxy measured value.

5. The method according to any one of claims 1 to 3, wherein the method further comprises:

receiving a second proxy measured value from the downstream network device, wherein the second proxy measured value is used to attest a trusted state of a second trusted attestation proxy; and

sending the second proxy measured value to the upstream device.

6. The method according to any one of claims 1 to 5, wherein the at least one baseline value comprises a third baseline value, the third baseline value corresponds to a second to-be-attested object of the downstream network device, and after the receiving at least one baseline value from the upstream device, the method further comprises:

receiving a second measured value from the downstream network device, wherein the second measured value is used to attest a trusted state of the second to-be-attested object; and

attesting the trusted state of the second to-be-attested object based on the third baseline value corresponding to the second to-be-attested object and the second measured value.

7. The method according to any one of claims 1 to 5, wherein the at least one baseline value comprises a third baseline value, the third baseline value corresponds to a second to-be-attested object of the downstream network device, and after the receiving at least one baseline value from the upstream device, the method further comprises:

sending the third baseline value to the downstream network device.

8. The method according to claim 2 or 3, wherein the first to-be-attested object and the first trusted attestation proxy are two cards; or the first to-be-attested object and the first trusted attestation proxy are two virtual machines; or the first to-be-attested object and the first trusted attestation proxy are any two of a virtual machine, a network functions virtualization management and orchestration system, or a network functions virtualization infrastructure layer.

9. A trusted-state attesting method, wherein the method is applied to a system including an upstream device, a network device, and a downstream network device, the upstream device, the network device, and a downstream network device are sequentially connected, wherein the network device comprises a first trusted attestation proxy for proxying an attestation server, the upstream device is one or more devices connected between the network device and the attestation server, or the attestation server itself, the downstream network device is one or more devices that need to be indirectly connected to the attestation server via the network device, and the method

comprises:

receiving a first proxy measured value from the network device, wherein the first proxy measured value is used to attest a trusted state of a first trusted attestation proxy for the network device;

attesting, based on the first proxy measured value, whether the first trusted attestation proxy is in the trusted state; and

sending at least one baseline value to the network device when it is determined that the first trusted attestation proxy is in the trusted state, wherein at least a part of the at least one baseline value is used to attest a trusted state of the downstream network device.

10. The method according to claim 9, wherein the at least one baseline value comprises a first baseline value corresponding to a first to-be-attested object of the network device.

11. The method according to claim 9 or 10, wherein after the sending at least one baseline value to the network device, the method further comprises:

receiving a first measured value from the network device, wherein the first measured value is used to attest a trusted state of the first to-be-attested object of the network device; and

attesting the trusted state of the first to-be-attested object based on the first baseline value corresponding to the first to-be-attested object and the first measured value.

12. The method according to any one of claims 9 to 11, wherein the at least one baseline value comprises a second baseline value, and the second baseline value corresponds to a second trusted attestation proxy for the downstream network device.

13. The method according to any one of claims 9 to 11, wherein after the sending at least one baseline value to the network device, the method further comprises:

receiving a second proxy measured value from the network device, wherein the second proxy measured value is used to attest a trusted state of a second trusted attestation proxy for the downstream network device; and

attesting the trusted state of the second trusted attestation proxy based on a second baseline value corresponding to the second trusted attestation proxy and the second proxy measured value.

14. The method according to any one of claims 9 to 13, wherein the at least one baseline value comprises a third baseline value, and the third baseline value corresponds to a second to-be-attested object of the downstream network device.

15. A network device, wherein the network device is connected between an upstream device and a downstream network device, the upstream device is an upstream network device of the network device or an attestation server, the network device comprises a first trusted attestation proxy, and the first trusted attestation proxy is configured to perform the trusted-state attesting

method according to any one of claims 1 to 8.

16. An upstream network device, wherein the upstream network device, a network device, and a downstream network device are sequentially connected, and a trusted attestation proxy for the upstream network device is configured to perform the trusted-state attesting method according to any one of claims 9 to 14.

17. An attestation server, wherein the attestation server, a network device, and a downstream network device are sequentially connected, the attestation server comprises a processor, a memory, and an optical transceiver, and the processor is separately interconnected with the memory and the optical transceiver;

the optical transceiver is configured to receive a first proxy measured value from the network device, wherein the first proxy measured value is used to attest a trusted state of a first trusted attestation proxy for the network device;

the processor invokes program code in the memory to perform the following step:

attesting, based on the first proxy measured value, that the first trusted attestation proxy is in the trusted state; and

the optical transceiver is further configured to send at least one baseline value to the network device, wherein at least a part of the at least one baseline value is used to attest a trusted state of the downstream network device.

18. A computer-readable storage medium, comprising instructions, wherein when the instructions are run on a computer, the computer is enabled to perform the trusted-state attesting method according to any one of claims 1 to 14.

19. A computer program product comprising instructions, wherein when the computer program product runs on a computer, the computer is enabled to perform the trusted-state attesting method according to any one of claims 1 to 14.