CLAIMS

WHAT IS CLAIMED IS:

1. A method to maintain a blockchain, comprising:

receiving, by operation of a first device participating in the blockchain, an indication of an error in the blockchain being maintained by the first device;

determining, by operation of the first device, a defective block of the blockchain;

receiving, by operation of the first device, a hash value of the defective block from each of a plurality of devices;

requesting, by operation of the first device, a replacement for the defective block from a device from among the plurality of devices whose hash value matches hash values provided by others of the plurality of devices;

receiving, by operation of the first device, the replacement for the defective block from a second device;

determining, by operation of the first device, a recalculated blockchain that includes the replacement for the defective block; and

verifying the recalculated blockchain, by operation of the first device, by creating and comparing a hash value of an entire portion of the blockchain.

2. The method of claim 1, wherein the indication of the error in the blockchain is received from a head end device.

3. The method of claim 1, further comprising:

sending, by operation of the first device, an indication of the recalculated blockchain to a head end device.

4. The method of claim 1, wherein:

determining the recalculated blockchain includes at least determining the hash value corresponding to the blockchain that includes the replacement for the defective block.

5. The method of claim 1, further comprising:

requesting, by operation of the first device, the replacement for the defective block from the second device.

6. The method of claim 1, wherein:

the first device and the second device are nodes in a mesh network.

7. The method of claim 1, wherein:

the first device and the second device are nodes in a mesh network and are configured to communicate with a head end device via an internet access point.

8. A network communication device, comprising:

a radio configured to communicate with a plurality of other network communication devices;

one or more processors communicatively coupled to the radio; and

a memory device communicatively coupled to the one or more processors, wherein the memory device stores one or more instructions that, when executed by the one or more processors, cause the one or more processors to perform operations comprising:

sending, to a remote device, a hash value of at least part of a blockchain being maintained by the network communication device;

receiving, from the remote device, an indication of an error in the blockchain being maintained by the network communication device, wherein the error is indicated by the hash value being different from hash values sent to the remote device by other network communication devices;

determining a defective block of the blockchain;

receiving a replacement for the defective block from a second network communication device;

determining a recalculated blockchain that includes the replacement for the defective block; and

verifying the recalculated blockchain by creating and comparing a hash value of an entire portion of the blockchain.

9. The network communication device of claim 8, wherein the indication of the error in the blockchain is received from a head end device.

10. The network communication device of claim 8, the operations further comprising:

sending an indication of the recalculated blockchain to a head end device.

11. The network communication device of claim 8, wherein:

determining the recalculated blockchain includes at least determining a hash value corresponding to the blockchain that includes the replacement for the defective block.

12. The network communication device of claim 8, the operations further comprising:

requesting the replacement for the defective block from the second network communication device.

13. The network communication device of claim 8, wherein:

the network communication device and the second network communication device are nodes in a mesh network.

14. The network communication device of claim 8, wherein:

the network communication device and the second network communication device are nodes in a mesh network and are configured to communicate with a head end device via an internet access point.

15. One or more computer-readable non-transitory media storing computer-executable instructions that, when executed, cause one or more processors of a network communication device to perform operations comprising:

receiving an indication of an error in a blockchain being maintained by the network communication device;

determining a defective block of the blockchain;

requesting a hash value of the defective block from each of a plurality of network communication devices;

requesting a replacement for the defective block from a network communication device from among the plurality of network communication devices whose hash value matches hash values provided by others of the plurality of network communication devices;

receiving the replacement for the defective block from a second network communication device;

determining a recalculated blockchain that includes the replacement for the defective block; and

verifying the recalculated blockchain by creating and comparing a hash value of an entire portion of the blockchain.

16. The one or more computer-readable non-transitory media of claim 15, wherein the indication of the error in the blockchain is received from a head end device.

17. The one or more computer-readable non-transitory media of claim 15, the operations further comprising:

sending an indication of the recalculated blockchain to a head end device.

18. The one or more computer-readable non-transitory media of claim 15, wherein:

determining the recalculated blockchain includes at least determining a hash value corresponding to the blockchain that includes the replacement for the defective block.

19. The one or more computer-readable non-transitory media of claim 15, the operations further comprising:

requesting the replacement for the defective block from the second network communication device.

20. The one or more computer-readable non-transitory media of claim 15, wherein:

the network communication device and the second network communication device are nodes in a mesh network.