CLAIMS

1. A computer-implemented method for transmitting data from a source to a destination through a plurality of interconnected forwarding devices, comprising:

(a) receiving, at a forwarding device, on a common channel from the source to the forwarding device, a first packet in a first data stream, wherein the common channel has a common capacity;

(b) forwarding, on the common channel, the first packet from the forwarding device to the destination;

(c) determining whether the first data stream is a critical data stream based on information about the first packet in the first packet;

(d) when the first stream is determined not to be critical in (c), configuring the forwarding device to forward a second packet of the first data stream on the common channel from the forwarding device to the destination, wherein the common channel is shared with another non-critical data stream; and

(e) when the first data stream is determined to be critical in (c), configuring the forwarding device to forward a second packet of the first data stream on a first channel from the forwarding device to the destination, wherein the first channel has a first capacity, is dedicated to the first data stream and is different from the common channel.

2. The method of claim 1, further comprising:

(f) determining whether capacity is available on the first channel for forwarding a third packet of the first data stream;

(g) when the first data stream is determined to be critical in (c) and capacity is determined to be available in (f), configuring the forwarding device to forward, on the first channel, the third packet of the first stream from the forwarding device to the destination.

3. The method of claim 2, further comprising:

(h) when the first data stream is determined to be critical in (c) and free capacity determined to be unavailable in (f), configuring the forwarding device to

forward on the common channel the third packet of the first stream from the forwarding device to the destination.

4. The method of claim 2 wherein configuring in (e) further comprises:

when the first data stream is determined to be critical in (c) and capacity is determined to be unavailable in (f), configuring the forwarding device to drop the third packet.

5. The method of claim 1, further comprising:

forwarding, to a policing device, a copy of a portion of the first packet, wherein the portion includes the information about the first packet, and wherein determining (c) is by the policing device using a policy defined by a user generating the first data stream.

6. The method of claim 5, wherein the policy comprises using a source or a destination address of the first packet.

7. The method of claim 5, further comprising:

(f) receiving, at the forwarding device on the common channel from the source to the forwarding device, a first packet in a second data stream;

(g) forwarding, on the common channel, the first packet from the forwarding device to the destination;

(h) forwarding, to the policing device, a copy of a portion of the first packet, wherein the portion includes information about the first packet;

(i) determining, by the policing device, based on the information in the portion of the first packet, whether the second data stream is another critical data stream;

(j) when the second data stream is determined to be critical in (i), configuring the forwarding device to forward on a second channel, a second packet of the second data stream from the forwarding device to the destination, wherein the second channel has a second capacity and is dedicated to the second data stream and is different from the common channel.

8. The method of claim 7, further comprising:

assigning a bundle channel to all critical data streams belonging to the user, wherein the bundle channel has a bundle capacity that, when the first data stream is determined critical in (c), the bundle capacity comprises the first capacity of the first channel and, when the second data stream is determined critical in (i), the bundle capacity comprises the second bandwidth of the second channel.

9. The method of claim 8, wherein configuring in (e) further comprises:

when the first data stream is determined to be critical in (c) and when no free capacity is available in the first channel for transmitting a third packet of the first data stream:

(k) configuring the forwarding device to transmit the third packet of the first data stream on free capacity in the bundle channel; and

(l) when the second data stream is determined critical in (i) and the free capacity in (k) overlaps with the second capacity, assigning a lower priority to the third packet of the first data stream than a packet of the second data stream.

10. The method of claim 1, further comprising:

when the forwarding device receives a finish message indicating end of the first stream, terminating the configuration of the forwarding device in (e) to forward any other packet of the first stream on the first channel.

11. The method of claim 1, further comprising:

when the forwarding device does not receive any packet belonging to the first stream for a period of time, terminating the configuration of the forwarding device in (e) to forward any other packet of the first stream on the first channel.

12. The method of claim 1, further comprising determining a price quote for a user generating the first data stream based on the first capacity and an amount of time the first channel is used by the user.

13. A system for transmitting data from a source to a destination through a communication network, comprising:

a forwarding device comprising a processor and a memory configured to receive on a common channel from the source to the forwarding device, a first packet in a first data stream, and to forward on the common channel, the first packet from the forwarding device to the destination, wherein the common channel has a common capacity; and

a policing device comprising a processor and a memory configured to:

determine whether the first data stream is a critical data stream based on information about the first packet in the first packet;

when the first data stream is determined not to be critical, configure the forwarding device to forward a second packet of the first data stream on the common channel from the forwarding device to the destination, wherein the common channel is shared with another non-critical data stream;

when the first data stream is determined to be critical, configure the forwarding device to forward a second packet of the first data stream on a first channel from the forwarding device to the destination, wherein the first channel has a first capacity and is dedicated to the first data stream and is different from the common channel.

14. The system of claim 13, wherein

the forwarding device is further configured to determine whether capacity is available on the first channel for forwarding a third packet of the first data stream, and

the policing device is further configured to, when the first data stream is determined to be critical and capacity is determined to be available by the forwarding device, configure the forwarding device to forward the third packet of the first stream on the first channel from the forwarding device to the destination.

15. The system of claim 14, wherein the policing device is further configured to:

when the first data stream is determined to be critical and capacity is determined to be unavailable, configure the forwarding device to forward the third packet of the first stream on the common channel from the forwarding device to the destination.

16. The system of claim 13, wherein the policing device is further configured to:

when the first data stream is determined to be critical and capacity is determined to be unavailable on the first channel for transmitting a third packet of the first stream, configure the forwarding device to drop the third packet of the first stream.

17. The system of claim 13, wherein the policing device further comprises a policy table for storing a first policy defined by a user generating the first data stream for determining whether the first data stream is critical, and the policing device is further configured to:

receive a copy of a portion of the first packet, wherein the portion includes information about the first packet; and

configure the forwarding device to forward the second packet of the first stream using the policy in the first policy table.

18. The system of claim 17, wherein the forwarding device is further configured to:

receive, on the common channel from the source to the forwarding device, a first packet in a second data stream generated by the user;

forward on the common channel, the first packet to the destination; and

forward to the policing device a copy of a portion of the first packet, wherein the portion includes information about the first packet; and

the policing device is further configured to:

determine, based on the information in the portion of the first packet and the second policy, whether the second data stream is another critical data stream; and

when the second data stream is determined to be critical, configuring the forwarding device to forward on a second channel, a second packet of the second data stream from the forwarding device to the destination, wherein the second channel has a second capacity and is dedicated to the second data stream and is different from the common channel;

wherein the policy table further stores a second policy defined by the user for how to forward the second data stream

19. The system of claim 18, wherein the forwarding device is further configured to:

assign a bundle channel to all critical data streams belonging to the user, wherein the bundle channel has a bundle capacity that comprises the first capacity of

the first channel, when the first data stream is determined critical, and comprises the second capacity of the second channel when the second data stream is determined critical.

20. The system of claim 19, wherein,

the policing device is further configured to, when the first data stream is determined to be critical and if no free capacity is available in the first channel for transmitting a third packet of the first data stream, configure the forwarding device to transmit the third packet of the first data stream on free capacity in the bundle channel, and

the forwarding device is further configured to, when the second data stream is determined critical and the free capacity in the bundle channel overlaps with the second capacity, assign a lower priority to the third packet of the first data stream than a packet of the second data stream.

21. A program storage device tangibly embodying a program of instructions executable by at least one machine to perform a method for transmitting data from a source to a destination through a plurality of interconnected forwarding devices, the network including a plurality of interconnected switching devices, the method comprising:

(a) receiving, at a forwarding device, on a common channel from the source to the forwarding device, a first packet in a first data stream, wherein the common channel has a common bandwidth;

(b) forwarding, on the common channel, the first packet from the forwarding device to the destination;

(c) forwarding, to a policing device, a copy of a portion of the first packet, wherein the portion includes the information about the first packet;

(d) determining whether the first data stream is a critical data stream based on the information about the first packet in the first packet and a policy defined by a user generating the first data stream;

(e) when the first stream is determined not to be critical in (d), configuring the forwarding device to forward a second packet of the first data stream on the common channel from the forwarding device to the destination, wherein the common channel is shared with another non-critical data stream; and

(f) when the first data stream is determined to be critical in (c), configuring the forwarding device to forward a second packet of the first data stream on a first channel from the forwarding device to the destination, wherein the first channel has a first bandwidth is dedicated to the first data stream and is different from the common channel.

22. A computer-implemented method for transmitting data from a source to a destination through a plurality of interconnected forwarding devices, comprising:

(a) receiving, at a forwarding device, on a common channel from the source to the forwarding device, a first packet in a first data stream, wherein the common channel has a common capacity;

(b) forwarding on the common channel, the first packet from the forwarding device to the destination;

(c) determining whether the first data stream has a particular type based on information about the first packet in the first packet;

(d) when the first stream is determined not to have the particular type in (c), configuring the forwarding device to forward a second packet of the first data stream on the common channel from the forwarding device to the destination, wherein the common channel is shared with another data stream not having the particular type; and

(e) when the first data stream is determined to have the particular type in (c), configuring the forwarding device to forward a second packet of the first data stream on a first channel from the forwarding device to the destination, wherein the first channel has a first capacity dedicated to the first data stream and the first channel is different from the common channel.