

## Claims

1) A method of transmitting data from a first node to a second node via a channel of a communication network, said method comprising:

receiving data at said first node;

encoding a first portion of said data at a first bit rate to generate a first encoded data stream;

monitoring an indication of the capacity of the channel;

transmitting to the second node a padded data stream via said channel, wherein padding bits are added to the first encoded data stream, in dependence on the indication of the capacity of the channel, to generate the padded data stream;

determining if transmitting said padded data stream exceeds the capacity of the channel, and

if it is determined that transmitting the padded data stream does not exceed the capacity of the channel, determining if the bit rate of the padded data stream is substantially equivalent to a higher bit rate than the first bit rate, wherein the padding bits are added to the first encoded data stream by incrementally increasing the number of padding bits added to the first encoded data stream, thereby incrementally increasing the transmitted bit rate of the transmitted padded data stream, in response to determining that the capacity of the channel is not exceeded until the bit rate of the padded data stream is substantially equivalent to the higher bit rate such that the bit rate of the transmitted padded data stream gradually approaches the higher bit rate;

if it is determined that the bit rate of the padded data stream is substantially equivalent to the higher bit rate, encoding a second portion of said data at a ~~the~~ higher bit rate than the first bit rate, to generate a second encoded data stream, if it is ~~determined that transmitting the padded data stream does not exceed the capacity of the channel;~~ and

transmitting the second encoded data stream to the second node via said channel.

2) A method as claimed in claim 1 wherein if it is determined that transmitting the padded data stream exceeds the capacity of the channel, the second portion of said data is encoded at the first bit rate.

~~3) A method as claimed in claim 1 or 2, further comprising the step of: responsive to determining that transmitting the padded data stream does not exceed the capacity of the channel, determining if the bit rate of the padded data stream is substantially equivalent to the higher bit rate.~~

~~4) A method as claimed in claim 3 wherein the second portion of said data is encoded at a higher bit rate only if it is determined that the bit rate of the padded data stream is substantially equivalent to the higher bit rate.~~

53) A method as claimed in any preceding claim wherein the step of monitoring an indication of the capacity of the channel comprises monitoring if the capacity of the channel is exceeded.

64) A method as claimed in any preceding claim wherein the step of monitoring an indication of the capacity of the channel comprises determining a target bit rate.

~~7) A method as claimed in any preceding claim wherein the step of adding padding bits to the first encoded data stream in dependence on the indication of the capacity of the channel comprises: incrementally increasing the number of padding bits added to the first encoded data stream in response to determining that the capacity of the channel is not exceeded until the bit rate of the padded signal is substantially equivalent to the higher bit rate.~~

85) A method as claimed in any preceding claim 7 wherein the number of padding bits is incrementally increased by a predetermined amount.

96) A method as claimed in claim ~~7-4~~ when dependent on claim 6 wherein the number of padding bits is incrementally increased by an amount dependent on the target bit rate.

407) A method as claimed in any preceding claim wherein the step of adding padding bits to the first encoded data stream comprises adding padding blocks to the first encoded data stream, wherein each padding block comprises a plurality of padding bits.

418) A method as claimed in any preceding claim wherein padding bits comprise zeros.

429) A method as claimed in any preceding claim wherein the padding bits comprise forward error correction data.

4310) A method as claimed in any preceding claim wherein the step of encoding the first portion of said data at the first bit rate comprises encoding the first portion of said data using either a fixed low bit rate encoding method or a low rate mode of an adaptive bit rate encoding method.

4411) A method as claimed in any preceding claim wherein the step of encoding the second portion of said data at the higher bit rate comprises encoding the second portion of said data using either a fixed high bit rate encoding method or a high rate mode of an adaptive bit rate encoding method.

4512) A method as claimed in any preceding claim wherein the step of adding padding bits to the first encoded data stream comprises inserting padding bits into data packets of the first encoded data stream.

4613) A method as claimed in claim ~~46-12~~ wherein a payload of a padded data packet comprises an odd number of bytes.

4714) A method of determining at the second node if a data packet transmitted according to the steps of claim 4613, comprises padding, said method comprising:

- receiving said data packet at said second node;
- determining the number of bytes in the payload of the data packet; and
- determining that the data packet comprises padding bits if the number of bytes in the payload of the data packet is an odd number.

4815) A method as claimed in any preceding claim wherein the number of padding bits added to data packets of the first encoded data stream is indicated according to an RTP (Real-time Transport Protocol) standard.

4916) A method as claimed in any preceding claim wherein the communication network is a voice over internet protocol (VoIP) network.

2017) A method as claimed in any preceding claim wherein the data is audio data.

2418) A transmitter arranged to transmit data to a node via a channel of a communication network, said transmitter comprising:

- an input module arranged to receive data to be transmitted;
  - an encoding module arranged to encode said received data at either a first bit rate or a second bit rate to generate an encoded data stream, wherein the second bit rate is higher than the first bit rate;
  - an output module arranged to transmit the encoded data stream to the second node via the channel;
  - a bandwidth management module arranged to monitor an indication of the capacity of the channel; and
  - a padding module arranged to add padding bits to the encoded data stream when encoded at the first bit rate, in dependence on the indication of the capacity of the channel, to generate a padded data stream;
- wherein the bandwidth management module is arranged to determine if transmitting said padded data stream exceeds the capacity of the channel, to control the padding module to determine if the bit rate of the padded data

stream is substantially equivalent to the second bit rate if it is determined that transmitting the padded data stream does not exceed the capacity of the channel, and to control the encoding module to encode said received data at the second bit rate, if it is determined that the bit rate of the padded data stream is substantially equivalent to the second bit rate transmitting the padded data stream does not exceed the capacity of the channel,

wherein the padding module is arranged to add the padding bits to the first encoded data stream by incrementally increasing the number of padding bits added to the first encoded data stream, thereby incrementally increasing the transmitted bit rate of the transmitted padded data stream, in response to determining that the capacity of the channel is not exceeded until the bit rate of the padded data stream is substantially equivalent to the second bit rate such that the bit rate of the transmitted padded data stream gradually approaches the second bit rate.

2219) A computer program product comprising code arranged so as when executed on a processor to perform the steps of any of claims 1 to 2017.