CLAIMS

1. A computer-implemented method comprising:

determining, by one or more computer processors, a maximum writing frequency, MWF, for an interconnected distributed network;

iteratively processing, by one or more computer processors, values of data flow writing frequency, DFWF, for a plurality of edge devices of the interconnected distributed network, the method in accordance with an optimization algorithm based on the MWF to identify convergence in the values of DFWF, wherein each iteration of processing values comprises, at each edge device in the plurality of edge devices, determining a value of DFWF based on an associated utility function of the respective edge device, wherein the utility function is a measure of utility of the device as a function of DFWF; and

responsive to identifying a convergence, determining, by one or more computer processors, the converged values of DFWF to be optimal values of DFWF for the plurality of edge devices.

2. The method of claim 1, further comprising:

at each edge device in the plurality of edge devices, determining, by one or more computer processors, a utility function for the device and associating the determined utility function with a respective edge device.

3. The method of claim 1, wherein the step of iteratively processing is undertaken, in part, at a non-edge device of the interconnected distributed network and, in part, at each edge devices in the plurality of edge devices of the interconnected distributed network.

4. The method of claim 1, wherein a first edge device in the plurality of edge devices has an associated utility function that comprises a continuously differentiable, non-decreasing concave function.

5. The method of claim 4, wherein the associated utility function of the first edge device is modelled as a cluster of weighted logarithm functions.

6. The method of claim 1, wherein the optimization algorithm comprises an Alternating Direction Method of Multipliers, ADMM, algorithm.

7. The method of claim 1, further comprising:

communicating, by one or more computer processors, the optimal values of DFWF to respective edge devices.

8. The method of claim 1, further comprising:

responsive to an operational parameter of interconnected distributed network changing: iteratively processing, by one or more computer processors, values of DFWF for the plurality of edge devices in accordance with an optimization algorithm based on the MWF to identify a new convergence in the values of DFWF; and responsive to identifying a new convergence, determining the new converged values of DFWF to be new optimal values of DFWF for the plurality of edge devices.

9. A computer program product comprising:

one or more computer readable storage media and program instructions stored on the one or more computer readable storage media, the stored program instructions comprising:

program instructions to determine a maximum writing frequency (MWF) for the distributed network;

program instructions to iteratively process values of data flow writing frequency (DFWF) for a plurality of edge devices of an interconnected distributed network in accordance with an optimization algorithm based on the MWF to identify convergence in the values of DFWF, wherein each iteration of processing values comprises, at each edge device, determining a value of DFWF based on the edge device's associated utility function, the utility function defining a measure of utility of the device as a function of DFWF; and

program instructions to, responsive to identifying a convergence, determine the converged values of DFWF to be optimal values of DFWF for the edge devices.

10. A system comprising:

a processing component configured to determine a maximum writing frequency, MWF, for the distributed network;

a plurality of edge devices of an interconnected distributed network, wherein each edge device in the plurality of edge devices is configured to determine a value of data flow writing frequency, DFWF, based on the associated utility function of the respective edge device, the utility function defining a measure of utility of the device as a function of DFWF; and

an optimization arrangement configured to iteratively process values of DFWF for the plurality of edge devices in accordance with an optimization algorithm based on the MWF to identify convergence in the values of DFWF and, responsive to identifying a convergence, to determine the converged values of DFWF to be optimal values of DFWF for the edge devices.

11. The system of claim 10, wherein each edge device is configured to determine a utility function for the device and to associate the determined utility function with the device.

12. The system of claim 10, wherein the optimization arrangement comprises a non-edge device of the interconnected distributed network and the edge devices of the interconnected distributed network.

13. The system of claim 10, wherein a first edge device of the plurality of edge devices has an associated utility function that comprises a continuously differentiable, non-decreasing concave function.

14. The system of claim 13, wherein the first edge device's associated utility function is modelled as a cluster of weighted logarithm functions.

15. The system of claim 10, wherein the optimization algorithm comprises an Alternating Direction Method of Multipliers, ADMM, algorithm.

16. The system of claim 10, wherein the optimization arrangement is further configured to:

responsive to an operational parameter of interconnected distributed network changing: iteratively process values of DFWF for the plurality of edge devices in accordance with an optimization algorithm based on the MWF to identify a new convergence in the values of DFWF; and

responsive to identifying a new convergence, determine the new converged values of DFWF to be new optimal values of DFWF for the plurality of edge devices.