Remote Units (DRUs) coupled to the plurality of DAUs and operable to transport signals between DRUs and DAUs. The system further includes a plurality of sectors formed from the plurality of DRUs comprising a first sector and a second sector different from the first sector, each sector comprising a subset of the plurality of DRUs; one or more Base Transceiver Stations (BTSs) and one or more traffic monitoring units coupled to the plurality of DAUs, wherein each traffic monitoring module of the plurality of traffic monitoring modules is configured to: determine a key performance indicator (KPI) and a quality of service (QoS) of a network traffic for the plurality of DAUs; and reconfigure the DAU network based on the KPI and QoS by allocating at least one DRU from the first sector to the second sector; and a network optimization goal and optimization algorithm.

[0004] ~~[0004]~~ According to another aspect of the present invention, a system for dynamically routing signals in a Distributed Antenna System is provided. The system includes a plurality of Digital Access Units (DAUs). The plurality of DAUs are coupled and operable to route signals between the plurality of DAUs according to a DAU network. The system also includes a plurality of Digital Remote Units (DRUs) coupled to the plurality of DAUs and operable to transport signals between DRUs and DAUs and a plurality of Base Transceiver Stations (BTS). The system further includes a plurality of traffic monitoring modules coupled to the plurality of DAUs, wherein each traffic monitoring unit of the plurality of traffic monitoring units is configured to: determine a key performance indicator (KPI) and a quality of service (QoS) of a network traffic for the plurality of DAUs; and reconfigure the DAU network based on the KPI and QoS.

[0005] ~~[0005]~~ In an ~~embodiment~~aspect, a system for dynamically routing signals in a Distributed Antenna System is provided and includes a plurality of Digital Access Units (DAUs). The plurality of DAUs are coupled and operable to route signals between the plurality of DAUs. The system also includes a plurality of Digital Remote Units (DRUs) coupled to the plurality of DAUs and operable to transport signals between DRUs and DAUs; a plurality of sectors formed from the plurality of DRUs comprising a first sector and a second sector different from the first sector, each sector comprising a subset of the plurality of DRUs and one or more Base Transceiver Stations (BTSs). The system further includes a traffic monitoring unit coupled to the plurality of DAUs, wherein each traffic monitoring unit of the plurality of traffic monitoring units is configured to: determine a key performance indicator (KPI) and a quality of service (QoS) of a network traffic for the plurality of DAUs; and reconfigure the DAU network based on the KPI and QoS by allocating at least one DRU from the first sector to the second sector.

[0006] ~~[0006]~~ Numerous benefits are achieved by way of the present invention over conventional techniques. For example, embodiments of the present invention provide for traffic monitoring in a DAS network, improving network performance and user experience. These and other embodiments of the invention along with many of its advantages and features are described in more detail in conjunction with the text below and attached figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] ~~[0007]~~ FIG. 1 is a block diagram according to one embodiment of the invention showing the basic structure and an example of the transport routing, traffic monitoring and network optimization based on having a single 3 sector BTS with 3 DAUs and 7 DRUs daisy chained together for each cell.

[0008] ~~[0008]~~ FIG. 2 is a block diagram according to one embodiment of the invention showing the basic structure for a frequency reuse pattern of N=1 and an example of the transport routing, traffic monitoring and network optimization based on having a single 3 sector BTS with 3 DAUs and 7 DRUs daisy chained together for each cell.

WHAT IS CLAIMED IS:

1. A system for dynamically routing signals in a Distributed Antenna System, the system comprising:

a plurality of Digital Access Units (DAUs), wherein the plurality of DAUs are coupled and operable to route signals between the plurality of DAUs according to a DAU network;

a plurality of Digital Remote Units (DRUs) coupled to the plurality of DAUs and operable to transport signals between DRUs and DAUs;

a plurality of sectors formed from the plurality of DRUs comprising a first sector and a second sector different from the first sector, each sector comprising a subset of the plurality of DRUs;

a plurality of Base Transceiver Stations (BTS); and

a plurality of traffic monitoring modules coupled to the plurality of DAUs, wherein each traffic monitoring module of the plurality of traffic monitoring modules is configured to: determine a key performance indicator (KPI) and a quality of service (QoS) of a network traffic for the plurality of DAUs; and

reconfigure the DAU network based on the KPI and QoS by allocating at least one DRU from the first sector to the second sector; and

a network optimization goal and optimization algorithm.

2. The system of claim 1 wherein the Base Transceiver Station comprises a plurality of small cells.

3. The system of claim 1 wherein the wherein the network optimization goal comprises a percentage of users associated with each of a plurality of sectors.

4. A system for dynamically routing signals in a Distributed Antenna System, the system comprising:

a plurality of Digital Access Units (DAUs), wherein the plurality of DAUs are coupled and operable to route signals between the plurality of DAUs according to a DAU network;

a plurality of Digital Remote Units (DRUs) coupled to the plurality of DAUs and operable to transport signals between DRUs and DAUs;

a plurality of sectors formed from the plurality of DRUs comprising a first sector and a second sector different from the first sector, each sector comprising a subset of the plurality of DRUs;

one or more Base Transceiver Stations (BTSs); and

one or more traffic monitoring units coupled to the plurality of DAUs, wherein each traffic monitoring unit of the plurality of traffic monitoring units is configured to:
determine a key performance indicator (KPI) and a quality of service (QoS) of a network traffic for the plurality of DAUs; and

reconfigure the DAU network based on the KPI and QoS by allocating at least one DRU from the first sector to the second sector.

5. The system of claim 4 wherein the one or more traffic monitoring units is external to the plurality of DAUs and coupled to each of the plurality of DAUs.

6. The system of claim 4 wherein the one or more traffic monitoring units comprise a plurality of traffic monitoring units each provided as a component of each of the plurality of DAUs.