sectors and distribute the resources to a plurality of digital remote units (DRUs). Each DRU can serve as an antenna, receiving and transmitting signals, and thereby providing network coverage to a local geographic area surrounding the physical DRU. The DAS may be physically coupled to the base station and to the plurality of DRUs, e.g., through an optical fiber link. Thus, resources provided by one base station may be distributed to a plurality of DRUs, thereby providing coverage over a larger geographical area.

A DAS may be coupled (e.g., through another optical fiber link) to one or more other DASs. Therefore, the DAS may also: (1) allocate part of the resources associated with another base station (which may be referred to as a sector) to the DRUs physically coupled to the DAS; and/or (2) allocate resources from the sector physically coupled to the DAS to serve DRUs physically coupled to another DAS. This may allow a system to dynamically allocate resources from a plurality of sectors to a network of DRUs (e.g., responding to geographic and temporal patterns in device usage), thereby improving the efficiency of the system and meeting desired capacity and throughput objectives and/or wireless subscriber needs.

According to the first aspect of the present invention, there is provided a system for managing resource use in a Distributed Antenna System, the system comprising: a plurality of Digital Remote Units (DRUs) configured to send and receive wireless radio signals; a plurality of sectors, each configured to send and receive wireless radio signals; a plurality of inter-connected Digital Access Units (DAUs), each configured to communicate with at least one of the DRUs via optical signals, and each being coupled to at least one of the sectors; and an algorithm for determining both of, and gradually changing at least one of: the power of a signal from one of the plurality of DRUs to one of the plurality of sectors and the power of the same signal from the same one of the plurality of DRUs to another of the plurality of sectors.

The algorithm may be a nonlinear algorithm. The at least two of the sectors may be associated with different carriers, and the power of each carrier supplied to each DRU of the plurality of DRUs is independently controlled. The DRUs may be connected in a loop to a plurality of DAUs. A single DAU port may be coupled to a plurality of the sectors. The system may further include a server configured to route signals between the plurality of DAUs. The plurality of sectors may include multiple sectors from one Base Transceiver Station. Each of the plurality of DAUs may be configured to communicate with the at least one of the DRUs by sending and receiving signals over at least one of an optical fiber, an Ethernet cable, microwave line of sight link, wireless link, or satellite link. Each of the plurality of DAUs may be further configured to convert a radio signal received from the at

least one sector to an optical signal. Each of the DAUs may be co-located with the at least one sector. Each of the

WHAT IS CLAIMED IS:

1. A system for managing resource use in a Distributed Antenna System, the system comprising:

a plurality of Digital Remote Units (DRUs) configured to send and receive wireless radio signals;

a plurality of sectors, each configured to send and receive wireless radio signals;

a plurality of inter-connected Digital Access Units (DAUs), each configured to communicate with at least one of the DRUs via optical signals, and each being coupled to at least one of the sectors; and

an algorithm for determining both of, and gradually changing at least one of: the power of a signal from one of the plurality of DRUs to one of the plurality of sectors and the power of the same signal from the same one of the plurality of DRUs to another of the plurality of sectors.

2. The system of claim 1 wherein the algorithm is nonlinear.

3. The system of claim 1 wherein the at least two of the sectors are associated with different carriers, and the power of each carrier supplied to each DRU of the plurality of DRUs is independently controlled.

4. The system of claim 1 wherein the DRUs are connected in a loop to a plurality of DAUs.

5. The system of claim 1 wherein a single DAU port is coupled to a plurality of the sectors.

6. The system of claim 1 further comprising a server configured to route signals between the plurality of DAUs.

7. The system of claim 1 wherein the plurality of sectors comprises multiple sectors from one Base Transceiver Station.