Abstract Text for a section on system profiles.

Purpose
Allow reduced scope, yet still standards compliant systems

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System Profiles
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Background
The 802.16 Draft Air Interface Specification for Fixed Broadband Wireless Access Systems is evolving to cover a wide range of possibilities, from systems carrying predominantly ATM traffic to systems carrying predominantly IP traffic, and from systems with wide channels at high frequencies to systems with narrower channels at lower frequencies. This causes the specification to contain a plethora of features. This overabundance of features causes 2 main problems for implementers of standards compliant systems.

First, is the issue of what is mandatory versus optional. This question does not have a clear cut answer. For instance, it may be obvious that it is mandatory to support the convergence sublayer for the user data a system is carrying. But, due to system differences, it is not obvious that there is any one particular convergence sublayer that is mandatory (with the exception of enough of the packet sublayer to implement the secondary management connections). It would be reasonable for devices for a system that is IP based to not implement the ATM convergence sublayer if they are being sold to a market that will never see ATM cells. Similarly, it would be reasonable for an ATM system to not be required to implement the VLAN portion of the packet convergence sublayer. Similar issues arise in the physical layer. If devices are designed for PHY mode B with 20 MHz channels they need not be required to also work with 28 MHz channels.

The second issue arises from the first. If it is accepted that the set of mandatory versus optional features is situationally dependent, then there must be a concise method of specifying which situation a device was designed to accommodate, i.e., which feature set is implemented.

The concept of system profiles, actually pairs of profiles for the convergence sublayer and the physical layer, solves both of these problems. First it defines the set of mandatory and optional features for a given situation. Second, it guarantees interoperability by ensuring that multiple devices, from any combination of vendors, will interoperate if they have implemented the same profiles.

The following section gives text for a profile section to be added to the 802.16 air interface specification, as well as a first convergence sublayer profile.

Text for New Document Section
The following text should be inserted on page 376, line 32 as a new section.

x. System Profiles
This section defines system profiles. There are two categories of profiles, those dealing with the convergence sublayer features and functions, and those dealing with physical layer features and functions. Unless otherwise stated, any convergence sublayer profile may be combined with any physical layer profile.

x.1. Convergence Sublayer Profiles
Convergence sublayer profiles define the mandatory and optional features for the convergence sublayer aspects of a system intended for a particular networking scenario.

x.1.1. Basic ATM System Profile
The basic ATM system profile is intended to address the requirements of a basic ATM interfacing to an ATM backhaul on the BS side and carrying ATM cells across the air interface between the BS and SSs. It differs from a full implementation of ATM in that it assumes all data is carried in VC-switched PVCs. As such, it has the following feature sets.
For the convergence sublayers:

- PVCs are mandatory, SVCs and soft PVCs (i.e., ATM signaling support) are optional.
- VC-switched connections are mandatory, VP-switched connections are optional.
- ATM payload header suppression is mandatory as a capability, but may be turned on or off on a per connection basis.
- Only enough of the packet convergence sublayer need be implemented to support the secondary management channel.

For the MAC layer itself:

- Packing of multiple ATM cells into a single MAC PDU is mandatory as a capability, but may be turned on or off on a per connection basis.
- Fragmentation of SDUs on ATM traffic connections is not required although fragmentation on the primary and secondary management channels is still required. (Note that fragmentation and packing on the same ATM connection requires that the ATM connection be treated as a variable length packet connection.)
- ARQ is optional.
- MAC layer CRC is optional.

x.2. Physical Layer Profiles
Physical layer profiles define the mandatory and optional features for the physical layer aspects of a system intended for a particular channel scenario.

x.2.1. Profiles for 10-66 GHz PHY
For future study.