Mobile Backhaul Planning and Engineering Considerations and Market Potential

Description: The popular vision of the mobile industry (beyond the devices) is one of cell towers, but the backbone of the industry is backhaul! Backhaul is the connection of every cell site to the network. Without backhaul, the cell sites are useless.

The word backhaul is somewhat misleading, as it brings up thoughts of double hauling of traffic. This of course is not the case. Backhaul is simply the name applied to the connection to the network. Backhaul has been around much longer than the cellular industry. It is the connection from any point of concentration (cell site, voice switch/concentrator, data switch/router, etc.) to the network. It is the facility that connects to the line side of the router. It is the facility that connects to the network side of a switch.

The cellular industry has grown from almost nothing in the last two decades to the most dominate communications service/technology in the world. However, as the forecasts in this report clearly show, that growth is far from over. Just to put the deluge of mobile devices in perspective here are some statistics:

- 87% of American adults own cell phones, but traffic continues to grow at a record pace, and many individuals now own multiple cellular devices and that is a growing trend.

- Over have of these are Smart Phones.

- It is estimated that in 2013 the number of owned mobile devices (phones, tablets, laptops, etc) exceeded the World's population.

- US mobile traffic is now 12 times the traffic on the entire Internet in 2000.

- Mobile data traffic grew 70% in 2012.

The traffic growth on mobile devices continues (in addition to the growth in raw numbers of devices and the movement from just phones to much more capable – and more data hungry – smartphones) as the devices have first embraced high data usage and now are embracing video delivery.

This report is a guideline for considerations for planning and engineering backhaul, as well as forecasts for the cellular industry market potential. It will provide a useful tool for anyone (novice to engineer in the field) to understanding the complexities and choices in planning and engineering a vast variety of telecommunications projects. It will also be invaluable as a guide to the growth that has occurred and is forecast to continue for the cellular industry. While the report is primarily aimed at the cellular industry, it is also intended as a guide for all types of projects requiring a connection to the network.

The report starts with a statistical view of the growth of mobile devices, with forecasts. The next several sections deal with the market potential of the cellular industry with an emphasis on the North American market, but also with information from worldwide sources. It then moves to a review of the various types of backhaul, i.e., facilities that can be used for backhaul. Next is a discussion of the general architecture of backhaul and its direct application to cellular architecture. The next section describes the various application scenarios that may require backhaul. Then there is a more detailed section on traffic considerations, and a very detailed discussion of the various engineering considerations in applying backhaul, (including cost and cost trade-off scenarios) with emphasis on the responsibilities of the backhaul engineer.

The last section lists a sampling of vendors of backhaul equipment. The Appendixes provide detailed information on the traffic engineering concepts referenced in the report.

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