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Challenges to Support Mobile Data Growth

Popularity of smarthphones, tablets and other internet-enabled devices has led to an unprecedented growth in mobile data traffic over the last few years. Some of the key findings from the Cisco VNI Forecast have been summarized below.

- Mobile traffic data is expected to increase 18-fold in 2016 in comparison to 2011.
- Newer devices like tablets and M2Ms will account for a significant proportion of the traffic
- Usage per device is predicted to increase and high-definition video is going to be more prevalent.
- Mobile connection speeds are expected to increase 9 fold by 2016. Increase in moble connection speeds, will lead to more data usage as well.
- 4G is expected is to be more widely available over the next few years. A single 4G connection generates a huge amount of traffic as compared to a non-4G connection.

As mobile connection speeds increase and new innovative mobile devices keep coming out in the market, the usage of these devices and hence mobile data traffic is going to keep increasing**.** There are a lot of technical challenges involved in supporting growth at such an astounding rate and mobile operators need to define their strategy clearly if they are to thrive in this market.

Increased mobile data usage leads to an increase in bandwidth consumption, which will put a lot of pressure on mobile operators' networks. Operators need to come up with cost-effective ways to increase their network bandwidth otherwise the immense data traffic will clog their network. [1]

Increasing mobile data traffic leads to network congestion as well. [3] There is a need to increase network capacity. Mobile video applications are predicted to increase 25-fold in the next 5 years. Video applications are the most data intensive applications. Mobile operators need to come up with ways to increase network capacity in ways that improve the end-user experience, prevent user churn and are cost effective at the same time.

One of the techniques mobile operators can use to control mobile data traffic is to deploy online usage control to service access. [4] Using this technique, they can apply fair usage policies, which limit the maximum access speed and maximum data a user can use during the subscription period.

Mobile Operators should consider upgrading to Long Term Evolution (LTE) as it provides a lot benefits for both the subscriber and the operator. Some of the benefits for the subscriber are higher download rates and lower latency, whereas for the mobile provider it means lower cost per transmitted bit as LTE uses radio network resources efficiently. LTE is more flexible and it also minimizes power consumption. [5]

One of the biggest concerns for mobile operators is how they are going to monetize mobile data growth. Even though the demand for data has been growing at a

tremendous rate, this growth hasn't translated to Average Revenue Per User (ARPU). [6] The main reason for this problem is the flat rate charging employed by mobile networks, which leads to excessive data usage. One of the suggested ways to improve ARPU is the introduction of tiered pricing which supports network and traffic management. Some of the other ways mobile operators can use to improve revenues are introducing mobile ads in a non-intrusive and a non-distracting manner; enter into partnerships with content providers and maintaining their own app stores, which provide downloadable content. [7] Another way mobile operators can use to monetize user data is by creating personal application bundles based on the data and information they already have about their subscribers. [8]

As we have seen above, mobile data traffic is going to increase at an astounding rate in the next few years. The number of people owning a internet-enabled mobile device is going to increase as well. If the mobile operators are able to tackle the challenges, which come with this growth and are able to leverage this growth, the future of mobile data is going to be really interesting.

- Mobile cloud traffic, which includes applications and services like Netflix, YouTube and Pandora, is expected to grow 28-fold in the next 5 years. More applications can be expected to go in the same direction as the cloud compensates for the memory and speed limitations of these devices.
- A lot of mobile users are still not very comfortable using their mobile phone to make payments. More applications are expected to tackle this problem in the future. We will also see a lot of e-commerce sales happening over the phone.
- As the popularity of location based services increase with more mobile users willing to share their location, a lot of different and innovative applications are expected to take advantage of this feature of mobile devices.

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