

Altai's WiFi Technology Cuts East Palo Alto (U.S.) Project Cost by More than Half

East Palo Alto is a city in San Mateo County, California of U.S. It is situated roughly halfway between the cities of San Francisco and San Jose. It has a population of over 30 thousand, city area of 2.6 square mile and population density of over 7,100 per square mile.

In March 2005, the East Palo Alto Digital Village (EPADV) launched a Community Interact project which would provide wireless Internet access to community non-profit and faith-based organizations. The grantee organizations were excited about the opportunity to connect to the "Information Super-Highway" and being able to communicate and collaborate more with other non-profit sector leaders. Today, more non-profit organizations use computers and the Internet to help accomplish their missions. However, in East Palo Alto, networked computers and broadband Internet access were still not the norm due to funding cutbacks, limited resources, and insufficient technical capability.

Raven 21, a new Internet Service Provider (ISP), provides wireless access to East of Bayshore clients. Raven 21's parent company, Community Wireless, an organization that aims at promoting the

outdoor wireless broadband access in the community, was responsible for building the wireless network for the Community Interact project.

The initial approach in building this city-wide WiFi network was to use a mesh AP approach, but

major difficulties were encountered in gaining access to vertical assets. The ownership of street lights was spread across multiple organizations and in many cases vertical assets to support mesh approach did not exist. Moreover, the performance of the mesh AP trial was below expectation with the throughput problem.

Since this was a community project with participation from schools, churches, and other community based non-profit organizations, it was decided to look for alternative WiFi solution and finally confirmed to use the Altai A8 WiFi cellular network system approach. This approach not only addressed the vertical asset challenge, as will be shown, reduced considerable expenses and resulted in better performance.



Reference: http://www.epa.net/launch/comvcs/comrpts/item?item_id=585948

Requirements

- Build a city wide network that maximizes use of roof tops of schools, churches, and other city based non profits.
- Cover 70% of 2.6 square mile in the sub-urban residential area of East Palo Alto
- Provide 802.11 b/g wireless services for over 30,000 residents in the East Palo Alto
- Support triple play WiFi applications and bandwidth including VoIP, video streaming and other interactive applications
- Minimize the total investment costs

Solutions & Benefits

- Only 12 units of Altai A8 base stations are required to cover 1.6 square mile - an average of 8 units per square mile, whereas most of the mesh architecture systems require an average of 40 units per square mile.
- There is an 80% reduction in number of sites leading to 63% savings in radio equipment, 79% savings in engineering costs, 81% savings in site rental costs and 42% savings in backhaul costs. There is a saving of almost 60% in the total project investment by using Altai WiFi cellular system.
- Each Altai A8 covers 0.2 to 0.3 mile NLOS in distance, equivalent to an average coverage area of 0.125 square mile per base station, whereas typical mesh access point (AP) can cover 0.06 to 0.12 miles NLOS radius, equivalent to 0.027 square mile per AP.
- Therefore, the NLOS coverage distance of Altai base station is 2.7 times longer than that of mesh AP and the coverage area is 4.6 times larger.
- Altai A0 WiFi bridges are installed 1.24 to 1.86 mile away and acted as backhails. The throughput can go up to 35 Mbps.
- Users typically have 2 or 3 Mbps throughput, with low latency.
- With advanced smart antenna technologies used in the network, the local residents feel a more stable and higher throughput service during their Internet access.
- There are smooth transmissions of triple play services including interactive applications, VoIP and video streaming. Previously these services could not be implemented satisfactory.
- The total 3-year investment for city-wide WiFi networks can save almost 60% by using Altai system. The payback period is shortened substantially, the retail service subscription fees is more competitive and the whole city-wide WiFi investment is more financially viable.

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