

Open Source Cloud Managed Enterprise WiFi

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Abstract : Wifi solutions come in two major classes. Small Office/Home Office (SOHO) WiFi, characterized by inexpensive WiFi routers, with one or two service set identifiers (SSIDs), and a single shared passphrase. These access points provide no significant user management or monitoring, and no aggregation of monitoring and control for multiple routers. The other solution class is managed enterprise WiFi solutions, which involve expensive Access Points (APs), along with (also costly) local or cloud based management components. These solutions typically provide portal based login, per user virtual local area networks (VLANs), and sophisticated monitoring and control across a large group of APs. The cost for deploying and managing such managed enterprise solutions is typically about 10 fold that of inexpensive consumer APs. Low revenue organizations, such as schools, non-profits, non-government organizations (NGO's), small businesses, and even homes cannot easily afford quality enterprise WiFi solutions, though they may need to provide quality WiFi access to their population. Using available lower cost Wifi solutions can significantly reduce their ability to provide reliable, secure network access. This project explored and created a new approach for providing secured managed enterprise WiFi based on low cost hardware combined with both new and existing (but modified) open source software. The solution provides a cloud based management interface which allows organizations to aggregate the configuration and management of small, medium and large WiFi solutions. It utilizes a novel approach for user management, giving each user a unique passphrase. It provides unlimited SSID's across an unlimited number of WiFi zones, and the ability to place each user (and all their devices) on their own VLAN. With proper configuration it can even provide user local services. It also allows for users' usage and quality of service to be monitored, and for users to be added, enabled, and disabled at will. As inferred above, the ultimate goal is to free organizations with limited resources from the expense of a commercial enterprise WiFi, while providing them with most of the qualities of such a more expensive managed solution at a fraction of the cost.

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