CLAIMS

WHAT IS CLAIMED IS:

1. A method of wireless communication, the method comprising: evaluating channel conditions of a first radio frequency channel and a second radio frequency channel for an access point operating on the first radio frequency channel; analyzing content of data packets handled by the access point; determining whether at least one online game is running on a set of devices connected to the access point based on the analyzing of the content of the data packets; determining whether the first radio frequency channel is able to support a bandwidth and latency requirement of the at least one online game; and when the first radio frequency channel is able to support the bandwidth and latency requirement of the at least one online game: delaying switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel when the at least one online game is running on the set of devices connected to the access point; determining that the at least one online game is inactive or terminated by tracking the data packets associated with the at least one online game; and switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel when an absence of the data packets associated with the at least one online game is tracked for a threshold length of time; and when the first radio frequency channel is unable to support the bandwidth and latency requirement of the at least one online game, switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel.

2. The method of claim 1, wherein the determining of whether the at least one online game is running on the set of devices connected to the access point based on the analyzing of the content of the data packets comprises: searching the content of the data packets to look for a unique signature of each online game of the at least one online game.

3. The method of claim 2, wherein the unique signature of each online game comprises at least one of a host Internet Protocol address of the online game or a name of the online game.

4. The method of claim 1, wherein the threshold length of time is unique for each online game.

5. The method of claim 1, further comprising: immediately prior to evaluating the channel conditions of the first radio frequency channel and the second radio frequency channel, determining whether a radar signal in the first radio frequency channel is detected, wherein when the radar signal in the first radio frequency channel is detected, the method proceeds directly to switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel.

6. The method of claim 4, wherein the threshold length of time is firstly determined by a calibration process and subsequently machine learnt by a server by studying requirements in accordance with actual games played by users.

7. The method of claim 4, wherein the threshold length of time is adjusted dynamically through the server.

8. An apparatus for wireless communication, the apparatus comprising: a background scanning engine configured to evaluate channel conditions of a first radio frequency channel and a second radio frequency channel, the apparatus operating on the first radio frequency channel; a quality of service engine configured to determine whether a particular category of application is running on a set of devices connected to the apparatus based on analyzing content of data packets by the apparatus; and a channel switching engine configured to determine to switch the apparatus from operating on the first radio frequency channel to operating on the second radio frequency channel based on outputs from the background scanning engine and the quality service engine, wherein the apparatus is configured to determine whether the first radio frequency channel is able to support a bandwidth requirement of the particular category of applications, when the first radio frequency channel is able to support a bandwidth and latency requirement of the at least one online game: the channel switch engine is further configured to delay switching the apparatus from operating on the first radio frequency channel to operating on the second radio frequency channel when the particular category of applications is running on the set of devices connected to the apparatus; and the quality of service engine is further configured to track data packets

associated with the particular category of applications, and the channel switch engine is further configured to switch the apparatus from operating on the first radio frequency channel to operating on the second radio frequency channel when an absence of the data packets associated with the particular category of applications is tracked for a threshold length of time; and when the first radio frequency channel is unable to support the bandwidth and latency requirement of the at least one online game, the channel switch engine is further configured to switch the apparatus from operating on the first radio frequency channel to operating on the second radio frequency channel.

9. The apparatus of claim 8, wherein the particular category of applications is online gaming.

10. The apparatus of claim 8, wherein, when determine whether the particular category of applications is running on the set of devices connected to the apparatus based on analyzing content of data packets by the apparatus, the quality of service engine is configured to: search content of data packets handled by the apparatus to look for a set of unique signatures.

11. The apparatus of claim 8, wherein each unique signature comprises at least one of a host Internet Protocol address of an application of the particular category or a name of the application.

12. The apparatus of claim 8, further comprising: a dynamic frequency selection channels scanning engine configured to detect a radar signal in the first radio frequency channel, wherein when the radar signal in the first radio frequency channel is detected, the channel switching engine proceeds directly to switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel.

13. A method of wireless communication, the method comprising: evaluating channel conditions of a first radio frequency channel and a second radio frequency channel for an access point operating on the first radio frequency channel; determining whether a particular category of applications is running on a set of devices connected to the access point; determining whether the first radio frequency channel is able to support a bandwidth and latency requirement of the at least one online game; and when the first radio frequency

channel is able to support a bandwidth and latency requirement of the at least one online game: delaying switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel when the particular category of applications is running on the set of devices connected to the access point, determining that the particular category of applications is inactive or terminated by tracking data packets associated with the particular category of applications; and switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel when an absence of the data packets associated with the particular category of applications is tracked for a threshold length of time; and when the first radio frequency channel is unable to support the bandwidth and latency requirement of the at least one online game, switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel.

14. The method of claim 13, wherein the particular category of applications is online gaming.

15. The method of claim 13, wherein the determining of whether the particular category of applications is running on the set of devices connected to the access point comprises: analyzing content of data packets handled by the access point.

16. The method of claim 13, further comprising: immediately prior to evaluating the channel conditions of the first radio frequency channel and the second radio frequency channel, determining whether a radar signal in the first radio frequency channel is detected, wherein when the radar signal in the first radio frequency channel is detected, the method proceeds directly to switching the access point from operating on the first radio frequency channel to operating on the second radio frequency channel.