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Intelligent Connected Secure

IGX Advanced Fast Roaming/CCX for Qualcomm QCA98xx (Peregrine Chipset)

Solution Overview

Maintaining connectivity to monitoring, management, and resource planning systems is critical for both operational efficiency and safety. Making the transition from wired connections to wireless requires solutions that ensure assets can reliably communicate to host systems, and rapidly switch between access points. Many applications also require wireless systems that can easily integrate with legacy infrastructures, and operate in extreme environments.

IGX has developed the base Windows OS drivers for Qualcomm's Peregrine Series of chipsets (QCA98xx). IGX extended the base driver with Advanced Fast Roaming and CCX features for the Qualcomm®Atheros QCA98xx chips based WiFi PCIe Adapters to deliver the most powerful, flexible, and integrated Wi-Fi solutions. The IGX advanced wireless driver provides fast, seamless roaming, enabling your wireless devices to stay connected to host systems and tight security features to help keep your Wi-Fi network protected .A wide range of industries including Internet of Things (IoT), manufacturing, distribution and warehousing, medical, transportation, and security applications can all benefit from the features Advanced Fast Roaming delivers.

Key Features

- High-performance PCIe based Wi-Fi

- Dual Band, 2T2R (2x2) 3T3R (3x3) MIMO (2.4 GHz)

- 20/40/80-MHz channels

- 802.11a/b/g/n/ac 2.4GHz & 5GHz Radio/Baseband/MAC

- Intelligent cross-band roaming

- Up to Data rate of
  - 867 Mbps of throughput for 2x2 MIMO
  - 1300 Mbps of throughput for 3x3 MIMO

- Industrial grade operating range

- Enhanced wireless security

- Cisco Compatible Extensions (CCX) v4

- Roam timing:
  - wpa2/psk< 125 milliseconds
  - Enterprise(OKC/PMK/CCKM) < 125 milliseconds

- Easy-to-use configuration GUI

- Windows 7, Windows8, Win 8.1, Win10, WEC7, WEC2013, WES7, WES8, WES2009 and Linux

- Supported Chipsets
 - 3x3 - QCA9880, QCA9890
  - 2x2 – QCA9882, QCA9892

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Advanced Wireless Technology – Only From Intelligraphics

Seamless, Intelligent Roaming

IGX Advanced Fast Roaming provides innovative wireless features that enterprises need to expand their Wi-Fi-enabled operations into the future. IGX intelligent roaming changes the way wireless roaming is delivered by providing a vastly improved end-user experience. Pre-emptive signal loss detection and scan optimization reduce reconnection time to less than 125 milliseconds (wpa2/psk, OKC, PMK Caching, CCKM), ensuring the device selects the optimal access point (AP). Intelligent roaming helps prevent applications from detecting a network drop, thus improving overall reliability and Quality of Service (QoS).

Flexible, Intuitive Configuration GUI
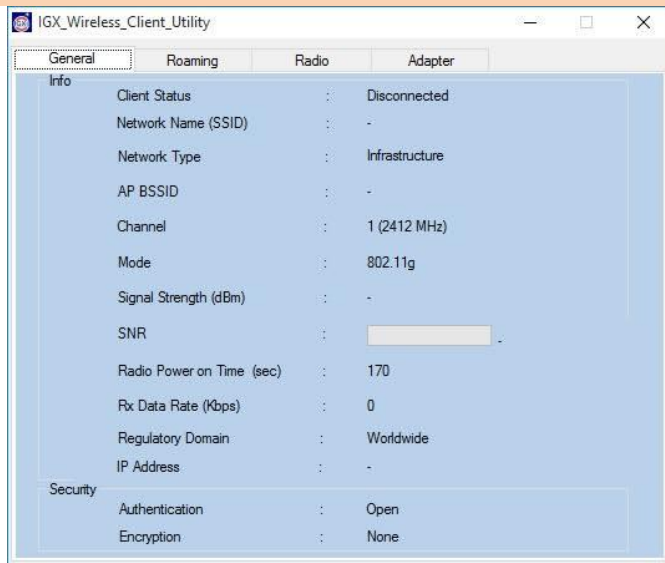
Wi-Fi Support

802.11a/b/g/n/ac, 2X2 & 3/x3 MIMO (2.4 & 5GHz)

STA Mode, SoftAP Mode

WMM

DFS

Power save modes (CAM, PSP, UAPSD)

Security – Open

Security – WEP 64/128 bits

Security – WPA

Security – WPA2-Enterprise

Security – WPA2-Personal

PMK-Caching

Opportunistic PMK-Caching

CCKM and CCXv4 compliance

Intelligent Roaming

Feature	Description
Background scan optimizations	List of channels to scan.
	Roam scan interval.
Background scan triggers	Background scan trigger on detection of low RSSI from current connection and on detection of consecutive number of missed beacons exceeding the threshold value.
Roaming triggers	Triggers based on data rate, RSSI, missed beacons.
AP selection criteria	AP selection based on signal strength, AP load (station count), and hysteresis (stickiness) to avoid AP ping pong effect.
Connection maintenance	The driver will not send a "Disconnect notification" event to the OS during the roaming process.

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Advanced Diagnostics and Debug Logging

Category	Description
Debug Logging	Debug message zones will be created based on: • Functionality (roaming, rate control, BG scan). • Driver state (initialize, de-initialize, transmit, receive, shutdown, configuration). Dynamic control of debug message zones to optimize log capture. Mapping of timestamps from driver and firmware logs to timestamps from independent sniffer captures.
Network Diagnostics	Ping (IP address, start/stop). Check network status (method, on/off, IP address).
Configuration UI	Logging parameters are configured using the IGX Configuration UI. • Enabled/Disable driver and firmware level logging. • Selection Log level including error, warning, etc.

CCXv4 Support

Category	Description
Key Features	AP-assisted roaming (Mobility) Fast 802.1x re-authentication using CCKM (Mobility) Radio measurement CCX IE support Traffic stream metrics Call admission control UAPSD WEP 64/128, WMM, WMM WPA2
Security	EAP-FAST CCKM With EAP FAST PEAPv1/EAP-GTC PEAPv0/EAP-MSCHAPv2 PEAP-TLS
IGX Configuration UI	CCX enable/disable CCX QOS parameters CCX test triggers CCKM configurations
Pre-Certification Testing	Wi-Fi Alliance* CCXv4* *3rd party certification lab fees are not included and must be paid directly by the customer.

Additional Security

Security	Feature
Enterprise Security (802.1x)	EAP-TTLS
	EAP-FAST*
	PEAPv1*/EAP-GTC (PEAP-GTC)
	LEAP*
	SHA2 certificates support
	*Included only with CCXv4. Additional Security parameters are configured via the IGX Configuration UI

Regulatory Certificates

Category	Supported Item
Regulatory Certificates	FCC
	ETSI
	TELEC
Wi-Fi Alliance	Wi-Fi Certificate
Windows	HCK, HLK
Cisco Compatible	CCXv4

About Intelligraphics, Inc.

Intelligraphics, an industry leader in advanced wireless and intelligent roaming solutions, helps enterprises realize the most value from their mobility-enabled infrastructure. A charter member of the Qualcomm Authorized Design Center (ADC) program, Intelligraphics delivers a diverse portfolio of fast roaming solutions that include optimized wireless drivers and integrated firmware.

Take your Wi-Fi-enabled and Internet of Things (IoT) applications farther and faster, visit: www.intelligraphics.com.

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