Datasheet
IGX Intelligent Fast Roaming for QCA SoC (QCA953x, QCA9558,QCA956x)

IGX Intelligent Fast Roaming Solution for Qualcomm SoCs (QCA953x, QCA9558, QCA956x)

Solution Overview

In this highly competitive world with ever changing needs of wireless requirements, time to market is the most important and crucial factor that contributes to the success of any product. We at IGX after lot of research and analysis of the market and understanding the need for different products and their success/failure stories felt the need of implementing a stable advance roaming solution to cater to quick product Proof of Concept (POC) development.

To address this issue and to deliver end customer applications/services to people faster and in a robust way, IGX has developed a complete system level solution using QCA SoC, that allows customers with a “ready to use Wi-Fi platform”, without the need for looking for an expensive Host CPU. This also allows the customer to add/migrate new/existing applications to the newer platform with faster wireless connectivity that provides low latency as low as 100ms even while product is moving.

IGX has developed an Intelligent Fast roaming solution for various Qualcomm’s SoC based chipsets QCA953x, QCA9558, QCA956x. IGX extended the base QCA driver with value add features like stable base station functionality, PMK caching, support for OKC and BSS fast transition specification of 802.11r, intelligent channel sorting algorithm to deliver the most powerful, flexible, and integrated Wi-Fi Roaming solutions. The IGX advanced wireless solution 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, warehousing, medical, transportation and security applications can all benefit from the features that Intelligent Fast Roaming delivers.

Our solution provides the customer the following to either productize or do a quick Proof of Concept (POC)

- A powerful MIPS CPU to run end user application
- A fully functional wireless 802.11N client with dual band support
- Advanced and seamless roaming builtin to the system.

Key Features

- High-performance PCIe based Wi-Fi
- Single Band / Dual Band, 2T2R (2x2) MIMO
- 20/40 MHz channels
- 802.11a/b/g/n 2.4GHz & 5GHz Radio/Baseband/MAC
- Intelligent cross-band roaming
- Up to Data rate of 300 Mbps of throughput for 2x2 MIMO
- Industrial grade operating range
- Enhanced wireless security
- Roam timing: 11r < 100 milliseconds PSK/Enterprise(OKC/PMK) < 100ms
- Linux/OpenWRT
- Supported Chipsets
  2x2 – QCA9558, QCA9561,QCA9563
  1x1 – QCA9531, QCA9533

Advanced Wireless Technology – Only From Intelligraphics

Seamless, Intelligent Roaming

IGX Advanced Fast Roaming provides innovative wireless features that enterprises need today 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 50 milliseconds (11r), 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).

Wi-Fi Support

User space control for Roaming parameters.
802.11a/b/g/n/ac, 2X2 MIMO (2.4 & 5GHz)
STA Mode, AP 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
802.11r

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.

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	Logging parameters are configured using the IGX Configuration Framework. • Enabled/Disable driver and firmware level logging. • Selection Log level including error, warning, etc.
Key Features	802.11r (Mobility) Fast 802.1x re-authentication (Mobility) UAPSD WEP 64/128, WMM, WMM WPA2
Pre-Certification Testing	Wi-Fi Alliance* *3rd party certification lab fees are not included and must be paid directly by the customer.

Security

Security	Feature
Enterprise Security (802.1x)	EAP-TLS EAP-PEAP/MSCHAPv2 (both PEAPv0 and PEAPv1) EAP-PEAP/TLS (both PEAPv0 and PEAPv1) EAP-PEAP/GTC (both PEAPv0 and PEAPv1) EAP-PEAP/OTP (both PEAPv0 and PEAPv1) EAP-PEAP/MD5-Challenge (both PEAPv0 and PEAPv1) EAP-TTLS/EAP-MD5-Challenge EAP-TTLS/EAP-GTC EAP-TTLS/EAP-OTP EAP-TTLS/EAP-MSCHAPv2 EAP-TTLS/EAP-TLS EAP-TTLS/MSCHAPv2 EAP-TTLS/MSCHAP EAP-TTLS/PAP EAP-TTLS/CHAP EAP-SIM EAP-AKA EAP-AKA' EAP-PSK EAP-FAST EAP-PAX EAP-SAKE EAP-IKEv2 EAP-GPSK EAP-TTLS LEAP SHA2 certificates support

Regulatory Certificates

Category	Supported Item
Regulatory Certificates	FCC
	ETSI
	TELEC
Wi-Fi Alliance	Wi-Fi Certificate

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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