



Top Ten Advantages

AGPS Server and Worldwide Reference Network™

TECHNICAL BRIEF



GLOBAL COVERAGE

All the satellites, all the time... Broadcom's WorldWide Reference Network (WWRN) uniquely provides this, with worldwide redundant coverage of the GPS satellite constellation. Global coverage ensures seamless roaming between markets, and between continents. Global coverage ensures that there is a single interface for all national networks belonging to a multinational carrier. Furthermore, in tough AGPS environments such as urban canyons and indoors, global coverage (with all possible satellites in assistance data) boosts fix speed and accuracy, and often means the difference between success, and no fix at all, compared to a local reference station that can leave out assistance data for low elevation satellites.

RELIABILITY AND REDUNDANCY

Broadcom owns and operates a robust network infrastructure that supports the WWRN and AGPS Server products. The worldwide redundant network of receiving stations on all continents (except Antarctica) and dual-redundant Hub Data Centers make the WWRN uniquely impervious to downtime. Proprietary SW enables load balancing and geocustering of AGPS Servers, inside of (or remotely hosted for) carrier networks. In its sixth year of uninterrupted commercial operation, WWRN reliability continues to fulfill and exceed Service Level Agreements for 99.999% uptime. Hurricanes Isabel, Wilma and Katrina, multiregion power

outages, and internet virus epidemics have compromised networks where Broadcom AGPS solutions are installed, but never the Broadcom solutions themselves. Subscriber availability is never compromised. Maintenance, upgrades, and repairs enjoy the utmost flexibility, a boon to both Broadcom's customers and their subscriber bases.

LOWEST LATENCY, FASTEST THROUGHPUT

It is not enough to offer all the satellites, all the time. Satellites' data must be delivered rapidly enough that real-time data types (valid for seconds, not minutes) never expire. Broadcom's WWRN and AGPS Server architecture, infrastructure and operational excellence ensure real-time data streaming. Point-to-point terrestrial latency is under 300ms, from receipt at a Broadcom reference station through delivery at an AGPS Server within a carrier's network.

Broadcom's AGPS Servers offer fast, reliable throughput. This applies to position computations in MS-Assisted mode systems, as well as assistance data.

PLATFORM INDEPENDENCE

Unique among AGPS network and service providers, Broadcom's AGPS Server is productized for Solaris™, Linux®, and Unix® platforms. Broadcom's interoperability, technology licensing and reseller agreements with Network

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Equipment Vendors (NEVs) ensure that Broadcom technology is also independent of whatever other location infrastructure a carrier customer owns, or plans to acquire. Ongoing technological collaboration and agreements with all major NEVs ensures Broadcom's ability to deliver AGPS solutions, on any platform, and in any environment.

STANDARDS COMPLIANCE

WWRN and AGPS Server products are fully UMTS/GSM compliant, with support for RRLP (TS 44.031), PCAP (TS 25.453) and RRC (TS 25.331) and OMA SUPL v1.0. The products support all standards compliant AGPS devices, all air interfaces, and all major NEV infrastructures.

SUPL SERVER AND CLIENT

Broadcom's unique technologies and products span the entire AGPS space. With Broadcom's SUPL technology, this breadth of competence is forged into an end-to-end solution. Broadcom's SUPL-client handset products, and SUPL server, have been commercially available since 2005. With Broadcom technologies, and especially the new SUPL products, ease of integration derives from a single-supplier simplicity that's unattainable when multisupplier conglomerations are attempted. A broad array of solution configurations (onsite, remotely hosted, and fully scalable) make flexible, optimal solutions easily achieved, regardless of carrier environment, system specifications and budget.

COMMERCIAL HISTORY

Broadcom's WWRN and AGPS Server products were at the core of the first US nationwide AGPS-enabled mobile network in 2002. In 2005, we served approximately 10 million subscribers worldwide. Broadcom continues to deliver operational excellence, and exceed customer expectations. Customer testimonials are available under NDA, and include references from the world's largest iDEN carrier and the

world's premier supplier of mobile handsets. Broadcom has spent five years creating and perfecting our WWRN, supporting infrastructure, and AGPS Server products. Proposals for networks yet-to-be-built, market-local reference networks and research networks of government origin (where 99% reliability is celebrated) are not substitutes for the commercially hardened solutions Broadcom offers.

FAST DEPLOYMENT, FLAWLESS SUPPORT

Carriers worldwide will soon need to provide Emergency Call Location and enhanced Location Based Services in a short period of time, as forced by government mandates and customer demand. The WWRN delivers fast and reliable setup of an AGPS network, without the risk and burden to a carrier of deploying, operating and maintaining a network of reference receivers of their own. AGPS Servers offer turnkey installation, with options for immediate connectivity to the WWRN. From America's first nationwide E911 systems to today's cutting edge LBS applications, the engineers of Broadcom's 24x7 Support Services have fifty man-years of joint operational experience. The Support teams, collocated in San Jose with the R&D group, continue to deliver flawless AGPS services to the world's most demanding carriers. Broadcom's 24x7 Call Centers ensure live operator response to any time zone. Broadcom's worldwide support and sales offices also provide fast onsite assistance, wherever and whenever it is required.

LONG TERM ORBITS

Broadcom's Long Term Orbits (LTO™) provide assistance data valid for up to 10 days, as opposed to four hours or less for standard orbit data. Broadcom's patented GEODYN-based astrodynamic algorithms and infrastructure compute LTO from WWRN tracking data. Broadcom has launched an LTO commercial infrastructure that today provides LTO to carriers through secure frame relay, and to handsets

through subscriber-direct geoclusters. LTO fix accuracy is equivalent to fixes made with standard orbit data. LTO enables AGPS, even without network access for several days. With LTO, roaming subscribers can navigate with an AGPS device as they step off the jetway into a terminal, anywhere in the world. LTO eliminates the need for knowledge of (or connectivity to) local wireless networks. Available now in numerous network installations and consumer handsets, LTO is empowering a breakthrough new class of AGPS devices and services.

TECHNOLOGY LEADERSHIP

For eight years, Broadcom has pushed the boundaries of AGPS technology, while focusing on commercializing that technology for wireless devices and networks. Both the WWRN and AGPS Server products are built on powerful technology leadership, as documented by our dozens of issued US Patents. As Broadcom semiconductor solutions expand the boundaries of AGPS performance in mobile devices, our WWRN and AGPS products contribute to superior performance of all standards compliant AGPS handsets through mobile networks.

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