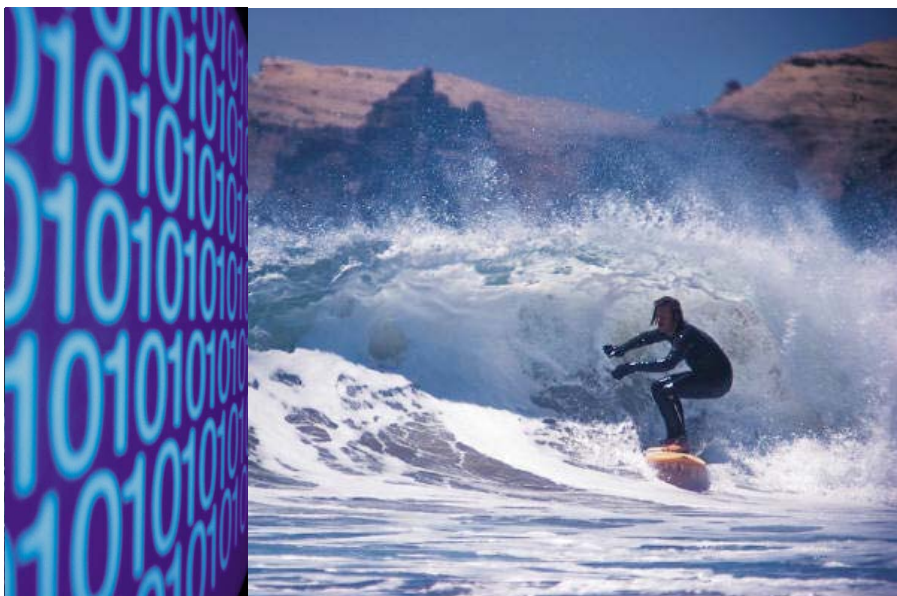


blue
tusk™
More Bytes for Bluetooth™

BLUETOOTH®
+
UWB

technology overview



- Fully Bluetooth compliant
- Uses standard Bluetooth profiles
- Transports audio/video with UWB
- Radio agnostic (any TCP/IP path)
- Also works with WiFi, WiMax, Ethernet
- Transparent to the end user

Bluetooth connectivity with the awesome power of a UWB pipeline.

Now you can utilize the bandwidth of UWB (or any TCP/IP-based technology) while running a standard Bluetooth application!

With more than ten million Bluetooth chips shipping each week, the tremendous success of Bluetooth wireless technology is obvious to anyone with a mobile phone. One of the main reasons for this commercial success is Bluetooth technology's unrivaled support for ad hoc networking, enabling devices from many different manufacturers to discover each other, determine their common features, and establish secure connections "on the fly".

But even the fastest Bluetooth 2.0 devices operate at data rates below 3 megabits per second, a rate that – while perfectly acceptable for many applications – is inadequate

for applications such as high resolution image transfer or music file synchronization.

Furthermore, this bandwidth limitation is completely inadequate for transmitting conventional video (at up to 8-10 megabits per second) or high definition video (at more than 20 megabits per second).

Other wireless technologies offer significantly higher data rates. WiFi, for example, supports data rates up to 50 megabits per second. Ultra-Wideband (UWB) technology supports up to 400 megabits per second, with a roadmap to 1 gigabit per second over short distances!

Open Interface North America developed BLUEtusk technology to allow Bluetooth applications to utilize the higher data rates of these other wireless technologies. Built as an extension to their industry leading BLUEmagic® protocol stack, BLUEtusk allows Bluetooth devices to exploit the bandwidth available with other technologies, without

requiring changes to application code or the user experience.

BLUEtusk software works with any TCP/IP-based technology, and is compatible with standard Bluetooth devices.

Open Interface North America

Open Interface North America is a leading supplier of Bluetooth technology products. The BLUEmagic protocol stack is used in tens of millions of mobile Bluetooth devices throughout the world.

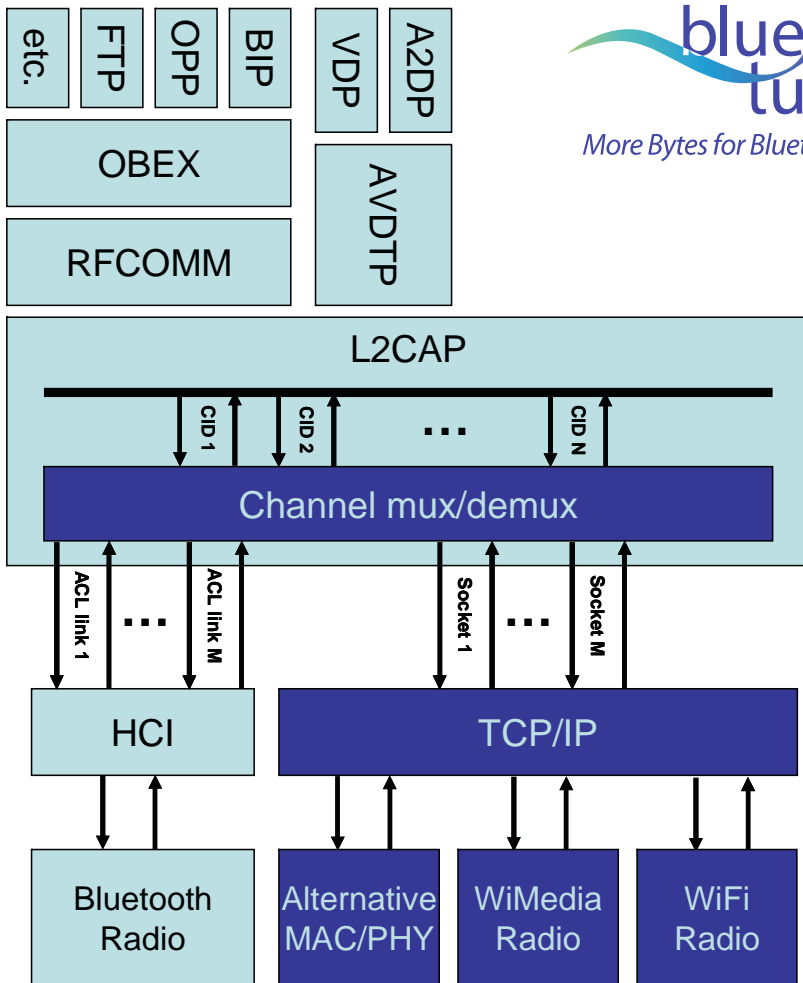
BLUEtusk is an innovative new technology developed by Open Interface North America that gives Bluetooth applications the ability to utilize high speed wireless technologies such as UWB, WiFi, and even proprietary solutions, while maintaining full compatibility with Bluetooth standards.

bigger than Bluetooth
2006

Open Interface North America
520 Pike Street, Suite 1770, Seattle WA 98101 USA
+1 206 315 5570 phone +1 206 315 5580 fax
info@openinterface.com / www.oi-us.com

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How BLUEtusk works

CONNECTION – Two devices establish a Bluetooth radio connection using the Generic Access Profile (GAP). Depending on how the devices are configured, PIN codes may be required. A secure, encrypted connection may also be established.

FEATURE DISCOVERY – After the two radios are connected, each device uses Bluetooth’s Service Discovery Profile (SDP) to discover the capabilities (i.e., the Bluetooth profiles) supported by the other device.

BLUETOOTH LINK – A Bluetooth data link is established between the applications running on each device. The devices begin exchanging data.

BLUETUSK LINK – During the Bluetooth link phase, an information request is sent to determine if the other device supports BLUEtusk. If it does, a dialog commences to determine if both devices support the same additional wireless technology (e.g., UWB, WiFi).

If a common technology is supported, a data link is established using that technology. After that, all data between the two devices is routed over the high speed wireless link.

If the other device does not respond to the initial request, the Bluetooth link is used for all communications, using standard Bluetooth wireless protocols.

BLUETUSK IN OPERATION – Once the high speed link is established between the devices, the original Bluetooth link enters a low power state. This keeps the Bluetooth link active, without continuously sending data.

If the high speed wireless link becomes unavailable – such as the case where two UWB devices move out of range – the BLUEtusk devices simply revert to using the Bluetooth link.

All of the BLUEtusk operations occur in the background, transparent to the user of the device. The user experience is identical to that of any other Bluetooth device.

Background

Bluetooth technology is extremely good at ad hoc networking. This enables portable wireless devices to quickly discover each other, establish secure connections, and determine a common set of functions and features. In Bluetooth terms, these functions and features are called “profiles.” Examples of profiles are: the Basic Imaging Profile (BIP) for sending digital image files to printers; the Advanced Audio Distribution Profile (A2DP) for streaming high quality stereo audio; and the related Video Distribution Profile (VDP).

Bluetooth profiles are standardized, and act as the foundation for application and device interoperability. They are specified and administered by the Bluetooth Special Interest Group (SIG). Any devices that implements a Bluetooth profile must pass conformance and interoperability testing, in accordance with a formal Bluetooth qualification program.

UWB and WiFi lack a comparable qualification program that specifies and mandates interoperability at the application level. In April 2006 – as a direct response to this – the WiMedia UWB consortium joined forces with the Bluetooth SIG to determine how to leverage mature Bluetooth interoperability standards and profiles.

BLUEtusk interoperability

Open Interface North America has designed BLUEtusk technology as an extension to their industry leading BLUEmagic embedded Bluetooth protocol stack. BLUEtusk technology specifically addresses the need for application level interoperability between devices that support both Bluetooth and another short-range wireless technologies such as UWB. Thus, BLUEtusk technology enhances but does not compete with Bluetooth technology. To use BLUEtusk technology, two Bluetooth devices must share at least one other common TCP/IP-based technology (wireless or wired).

BLUEtusk devices are backwards-compatible with standard Bluetooth devices, and can be simultaneously connected to BLUEtusk and non-BLUETusk devices. BLUEtusk devices that use UWB or WiFi for high speed data transfer use very little Bluetooth bandwidth.