BRPC SDK v3 – FAQ List

Category:	Question:	Answer:
INSTALL	Can I extend the distance between the radar and the PC / MFD?	Yes, standard Ethernet cabling rules must be followed. Maximum of 100m per section can be achieved depending on the environment and Ethernet cable used. Each 'section' must be separated by adding an Ethernet switch such as a GoFree unit.
INSTALL	NIC Interface details	Navico radars use 100mbit (100base-T) Ethernet
MARPA	MARPA limitations	• MARPA calculations are performed in the radar. It is not possible to access the MARPA engine • ARPA is not supported
MARPA	Target Tracking Limitations	The radars only support manual target acquisition (MARPA rather than full ARPA) – this means you must tell the SDK the relative location of the target you want the radar to track. Once the radar has recognized/acquired the target it will then track it and the SDK will periodically output the targets relative and absolute position (if an appropriate heading sensor is attached). A radar can track up to 10 targets per range (20 targets for a 4G and HALO with both ranges operating)
MARPA	When is Heading Information needed	Heading information is required for following: • Using MARPA • Using PPI over-lay Heading information can be provided via NMEA0183 or NMEA2000 format
MARPA	Why do I need heading information when using MARPA even on a stationary application	The Broadband™ Radar was designed to be mounted on a boat where significant heading changes can occur, which without a compass would cause targets to shift position unpredictably between scans
SDK	Are there any other communication choices other than Mulitcast when using the SDK to talk to the radar?	No, the radar itself only supports UDP on multi-cast Ethernet addresses so that's the only option supported by the SDK
SDK	Can I get RAW data from the radar?	Spoke data is processed by the radar internally. It is not possible to get truly raw radar data (video) from the radar but you can minimize the amount of processing the radar performs. This will require an LL2 unlock key. However, note: given the amount of specialized processing required we do not recommend this unless you already have expertise in this area. Minimizing the radar processing can be achieved by turning off spoke processing by the radar. • See "Minimising Spoke Processing" in the ImageClient documentation

SDK	I am getting intermittent communication with the radar especially with call back functions	• If the Windows Firewall is enabled, ensure access is allowed for the BRPC application. In particular, both Private networks and Public networks access must be enabled
SDK	I am getting multiple replies when I make an UpdateUnlockState() query request	This can occur when using a timed UnlockRadar message (ie. a non-zero wait_ms parameter) and the host PC is busy or low on resources. • Either ignore the extra messages, or • Use UnlockRadar without a timeout and generate your own retry method
SDK	I notice Nokia QT (http://qt.nokia.com/) is used in the demo application. Do I need QT installed to work with this SDK?	No • Navico only uses QT as a convenient way of generating a GUI such as that used in the supplied demo application
SDK	Is a BRPC Developers forum available	Not at this stage however, Navico is working to get one going
SDK	Navico Radar Protocol document	We do not provide any documentation that provide the radar definitions. This BRPC SDK is provided instead.
SDK	The radar does not seem to accept the hexadecimal unlock code	• Unlock keys consist of an array of bytes but are provided by Navico as text in the form of a hexadecimal string (e.g. “A23F683C02…”), making them much easier to deal with. But the SDK still requires the original raw byte array so you need to convert the hexadecimal string into back into raw bytes before giving it to the SDK – the FromHexString function is defined and used in “examples/GUIDemo/MultiRadar.cpp” which provides an example of how to do this
SDK	The SDK is written in C++; are any other languages supported?	Only C++ is supported, though it is possible to write a C# wrapper.
SDK	Why does the radar stop sending image data after about 15 seconds?	The function SendClientWatchdog() is not called regularly • See “Commands to the radar” section in the ImageClient documentation
SECTOR BLANKING	Is sector blanking supported?	Sector Blanking is supported only in the SDK v3.xx and above, but is radar dependent: • Sector Blanking is supported in HALO radar • Sector Blanking is NOT supported in Broadband Radar
UNLOCK KEY	How do I get an Unlock Key	• Follow the instructions at the end of this document. Unlock Keys must be requested via your assigned BRPC representative.

BRPC SDK v2 – FAQ List

Category:	Question:	Answer:
SDK	I purchased an unlock key but libraries still cannot access my radar	If using a BR24, the radar must be running BR24 RTM2 software (2.9.271) and above • Contact Navico for BR24 upgrade
SDK	Libraries don't work on my OS	Windows-XP (32-bit) is the only platform fully approved. Windows-7 (32-bit) and Windows-7 (64-bit) have been trialed with no issues.
SDK	My compiler cannot compile these libraries	The library has been built using Microsoft Visual-Studio 2005 and tested under Windows XP (32-bit) with Visual-Studio 2005, 2006 and 2008 • Please use a compiler compatible with one of the above suites
SDK	I can unlock the radar, but I don't receive spoke data via Ethernet	Serial comms may be active in which case Ethernet will be disabled – this will happen if a serial connection is detected by the radar (i.e. MFD connected via serial port). • Disconnect the serial MFD and re-start.
SDK **INSTALL**	I can connect to the radar, but when I click the Unlock button on the demo application, there is no dialog box displayed showing the Lock ID.	The BR24 must have RTM2 (v 2.9.271) or later software loaded. • Please check the BR24 software version and upgrade if necessary.
INSTALL	I am trying to interface a Broadband 3G™ Radar but having difficulty connecting via DHCP.	A recent radar release changes the way DHCP is supported by the radar. Please update the radar to the latest software version for your radar: • 3G – use 3.0.38 *or later* • 4G – use 4.1.57 *or later*

SDK	Problems using the SDK with VS2010	There are some known issues with using version 2.0.X of the SDK with VS2010. Firstly the following changes need to be made to SDK files to stop compilation errors: • remove the nullptr definition in NavDefines.h as it's a keyword in the latest C++ standard • #include <cmath> needs to be changed to <math.h> in the GUIDemo source file TabPPI.cpp • The SDK is built using VS2005 and so requires the appropriate VS2005 runtime dll's to have been installed. The README.txt file included with the prebuilt version of the GUIDemo test application includes information about the dll's the library is dependent on. Depending on your setup you may need to install the runtime library version installed by the “Visual Studio 2005 Service Pack 1 ATL Security Update” (VS80sp1-KB971090-X86-INTL.exe)

Additional information:

IP Addresses:

Radar image data and control information all uses Multicast IP addresses. If there is more than one radar on the network these addresses are negotiated dynamically between the radars.

If a radar has ***not*** been used on a multi-radar network it will normally use the following set of legacy addresses:

- 236.6.7.4:6768 radar negotiation
- 236.6.7.5:6878 radar services
- 236.6.7.8:6678 radar image data
- 236.6.7.9:6679 radar state information
- 236.6.7.10:6680 radar controls
- 236.6.7.18:6688 marpa target data
- 236.6.7.19:6689 marpa state information
- 236.6.7.20:6690 marpa controls

Additionally, a 4G radar would use the following addresses in addition to those above:

- 236.6.7.13:6656 radar-B image data
- 236.6.7.15:6658 radar-B state information
- 236.6.7.14:6657 radar-B controls

If a radar ***has*** been used on a multi-radar network it may have negotiated a different set of ports and addresses so as not to conflict with those used by another radar. In this case the addresses used will lie within the range 236.6.7.32:6000 to 236.6.9.255:7535.

Using a wireless router:

Some wireless routers do not work well with Multicast addresses, or the amount of data that can be output from a radar. The router may require model specific setups for the port the radar is attached to – usually to increase its priority and stop the wireless router from dropping information.

Fixed IP Addresses:

There is no support for being able to set a fixed IP address on any Radar. By default a radar will use the zeroconf protocol to pick an IP address in the 169.254.x.x range.

However, if your network has a DHCP server the radar will use the IP address allocated by the DHCP instead.

What are the radars data transfer requirements:

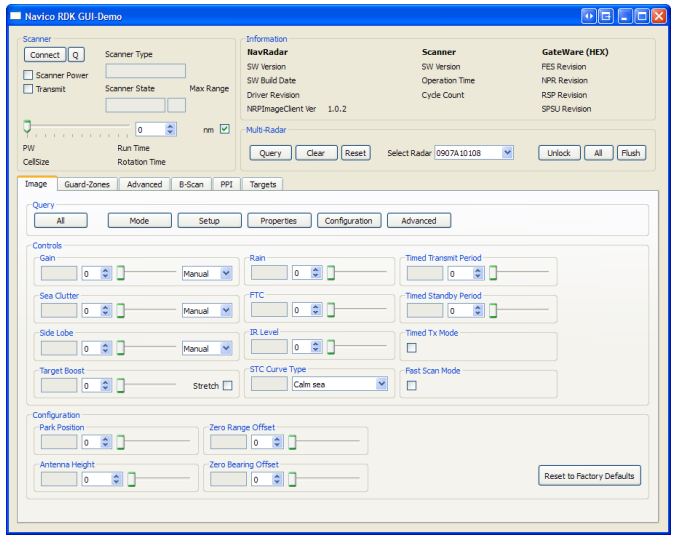
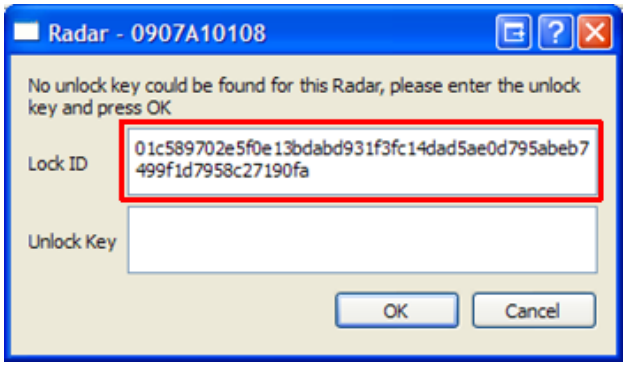
The radar output spokes at a rate of 2048 per revolution per range, with each spoke being 536 bytes long, and have a maximum rotation speed of 36 rpm (3G radar) or 48 rpm (4G radar) giving a worst case spoke data rate of 643.2 Kbytes/sec (~5.5Mbps) for 3G or 857.6 Kbytes/sec (~7.3Mbps) for 4G. The usual rate, using the default rotation speed of 24 rpm and a single range would be just 142.4 Kbytes/sec (~1.2Mbps). Some control and status data is also sent but this is insignificant compared to the spoke data.

Unlock Key process

Unlock keys are required to be purchased in order to unlock a particular Radar. Each and every Radar will require its own unique un-lock key.
A unique ***Lock-ID*** is generated by the Radar to be unlocked. This is to be sent in readable text format to Navico along with:

- Radar Lock-ID
- Your unique BRPC developer number
- The Radar Serial number
- Radar type (BR24, 3G, 4G, HALO)
- Payment

These are all required for Navico to generate the ***Un-Lock key***. To generate the Lock-ID, see following procedure:

Step-1:	**Step-2:**	**Step-3:**
The Radar must be connected to the PC – run the demo application that was provided with the libraries. At this stage, you will not be able to **Connect** to the Broadband Radar as it is not unlocked - an error message will result.	Click **Query** If the Radar is connected (wired) to the PC, the Serial Number of the Broadband Radar should show in the Select Radar drop-down box.	Click **Unlock** – a dialog box will display. Send the full text shown in the **LockID** field along with the additional details mentioned above to Navico. The Lock ID must be sent in editable text format (not graphic / screenshot).
		
• Navico will send the Unlock Key for this radar via email. Cut & Paste into the **Unlock Key** field.		

BRPC UNLOCK KEY REQUEST FORM

Use the following form when requesting an unlock key – all field are required:

Company Name:			
Unique ID:			
PO or reference:		**Radar type:** *(BR24, 3G, 4G, HALO, PULSE)*	
Radar Serial number:		**Unlock Level:** *(LL1 or LL2)*	
Lock ID: *(Text format)*			
Unlock Key: *(NAVICO to complete)*			

Navico Part Numbers:

000-10173-001 BRPC UNLOCK KEY - LL1

000-10174-001 BRPC UNLOCK KEY - LL2

000-10175-001 BRPC TECHNICAL SUPPORT BLOCK

000-10172-001 BRPC SOFTWARE DEVELOPMENT KIT