



Automotive Telematics | Mobile Information Devices | Medical Devices

# CMatos

*Jini™ Network Technology for Non-Java Embedded Processors  
 For Cambridge Silicon Radio (CSR) BlueCore2*

## **CMatos, Jini Network Technology For Cambridge Silicon Radio (CSR) BlueCore™ Chip**

CMatos is an implementation of the Jini Lookup Service and related protocols that enables very small-embedded non-Java processors to offer Java based services. CMatos extends the reach of Java into non-Java devices and enables legacy devices to become Jini Network capable. Fully Jini Network Technology compliant, CMatos less than 60KB footprint lookup and discovery protocol enables resource constrained devices, to interconnect and spontaneously offer services on a network to any computing device that acts as a Jini client. Even smaller versions of CMatos are available for devices that need to only offer intrinsic data and not register external services.

BlueCore is *the* silicon engine driving the Bluetooth® market. Its revolutionary all-CMOS, single-chip architecture has captured the imagination of product developers worldwide, and it is employed in the majority of qualified Bluetooth enabled products on the market.

CMatos-BlueCore2 is a 32KB implementation of CMatos that executes on the BlueCore2 chip. Although CMatos-BlueCore2 does not accept registration of external services, it does allow BlueCore2-based devices to participate in a Jini network. CMatos-BlueCore2 makes possible a whole new aspect of embedded design for the CSR BlueCore Bluetooth products. CMatos combined with BlueCore2 enables single chip embedded devices such as sensors and actuators, to have their own self-contained Jini lookup service, and offer their intrinsic services and information as a Java object to other Jini clients, independent of wider area network availability. This powerful combination of CMatos and BlueCore2 opens the door for the multitude of computing embedded devices to participate in the next era of autonomous, machine-to-machine communications.

### **CMatos Key Benefits:**

- A very small non-Java processor can offer information and software services to any computing device that acts as a Jini client.
- Allows devices to have their own self-contained Jini lookup service, which can offer intrinsic services and information to other Jini clients independent of wider area network availability.
- The service could be anything from a simple driver to a full application complete with a Graphical User Interface.
- Extends Jini network functionality to non-Java devices on the edge of the net, making possible an end-to-end pervasive computing solution based on an open standard protocol.

## **CMATOS-BLUECORE2 FEATURES**

CMatos tested on:  
 Casira Development Kit  
 CMatos Lookup Code – 4KB  
 CMatos Service Registrar – 3KB  
 CMatos Client Download Code – 25KB  
 Data Memory – 160KB

### **System Requirements:**

Networking (PAN profile)  
 – this firmware requires 8 mega bits of Flash Memory

## **CMATOS NETWORK ARCHITECTURE**

APPLICATION	SERVICE
CMATOS SOFTWARE	
OPERATING SYSTEM	
NETWORK TRANSPORT	

### **CMatos Design Principals:**

1. Is not a surrogate or proxy implementation. It makes no assumptions about network accessibility. Highly mobile devices can form ad hoc personal area networks to share services among themselves, without requiring access to a wider area network.
2. Is not Remote Method Invocation (RMI) based. The computational and storage overhead associated with RMI services is avoided. At the same time, it is possible to support RMI client operations. Thus, CMatos is fully transparent to other Jini technology-enabled systems.
3. Can fit on very small devices, with limited processing power and storage.

### **Developer Benefits:**

- Save cost and time by developing on a single chip solution for many embedded networked applications. The highly integrated BlueCore IC combines radio and baseband DSP with a fully qualified Bluetooth protocol stack and an onchip RISC microcontroller capable of hosting CMatos-BlueCore2 and applications.
- CMatos-BlueCore2 utilizes the standard and ubiquitous TCP/IP network stack for communication, significantly simplifying application development for Bluetooth devices.
- Because CMatos-BlueCore2 can offer an API implementation as Java byte code, the implementation can be downloaded and executed by a Jini client when needed. This simplifies application development for Bluetooth devices and future proofs applications that are no-longer dependent on profile specifications.
- Jini applications are not restricted to the enterprise level, but can be developed and deployed across a broad range of platforms, from big-iron servers, PC's and laptops to PDA's or even embedded sensors, control systems and appliances.
- Developers can take advantage of leveraging standard Java and Jini building blocks as well as Jini technology's ability to function reliably in dynamic network environments.

### **What is Jini Technology?**

Jini Network Technology developed by Sun Microsystems Inc., defines mechanisms to support the federation of machines or programs into a single, dynamic distributed system. Devices participating in such a system can enter and leave at will, can tolerate network and system variability, and can offer "services" and resources to other devices and systems in the federation. A "service" refers to an entity that can be used by a person, group of people, organization, program or other service. The service can be anything that can be offered by a computational, networked device, including access to a network, computation, storage, information, access to hardware (such as a printer, access point, etc.) or another user.

### **Ordering Information:**

CMatos SDK for CMatos-BlueCore2 is available for download from PsiNaptic's Developer Community page at: [www.psinaptic.com/developer](http://www.psinaptic.com/developer)

For more information on commercial licensing arrangements contact [sales@psinaptic.com](mailto:sales@psinaptic.com) or call PsiNaptic at (403) 720-2531

### **ABOUT PSINAPTIC**

**PsiNaptic implements distributed computing frameworks such as Jini technology for use in very small microprocessors. By combining this technology with Java™ technology and standard wireless protocols such as Bluetooth®, PsiNaptic works with OEMs to add low cost, low power, wireless networking and spontaneous interaction capabilities to everyday objects.**

For more information on PsiNaptic and our pervasive computing technologies visit us at:

[www.psinaptic.com](http://www.psinaptic.com)

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