



**icaste JCommUSB 3.0 API for Windows XP,
Windows Server 2003, Windows 2000
and Windows Vista.
Tutorial**

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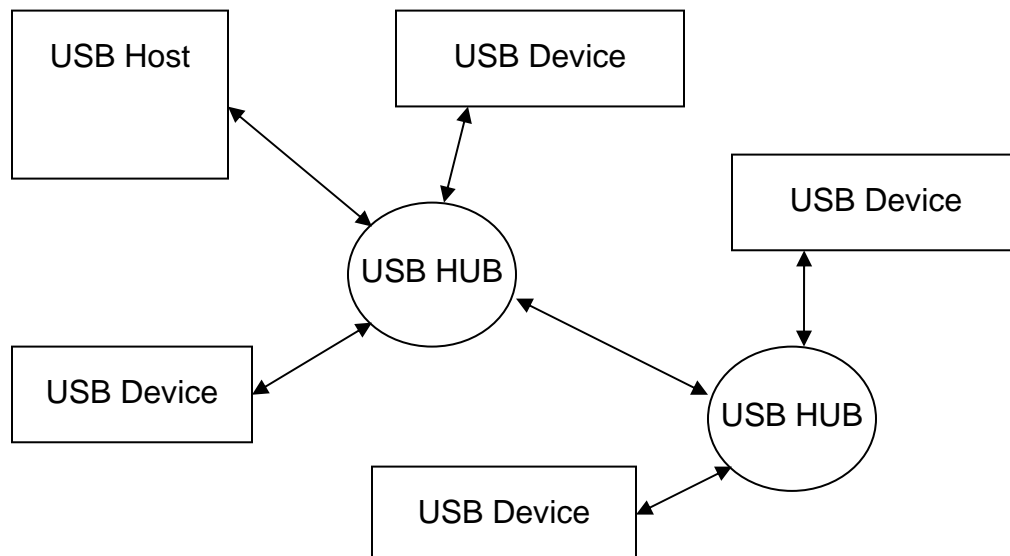
Overview

The JCommUSB API provides application access to the USB on Windows based PCs. The API provides USB device setup and configuration along with endpoint read/write methods.

Briefest Overview of USB

It is strongly recommended that the Java developer familiarize themselves with the USB specification. The USB specification can be obtained at <http://www.usb.org>.

The USB standard uses a hub and star configuration extending from the USB host controller.



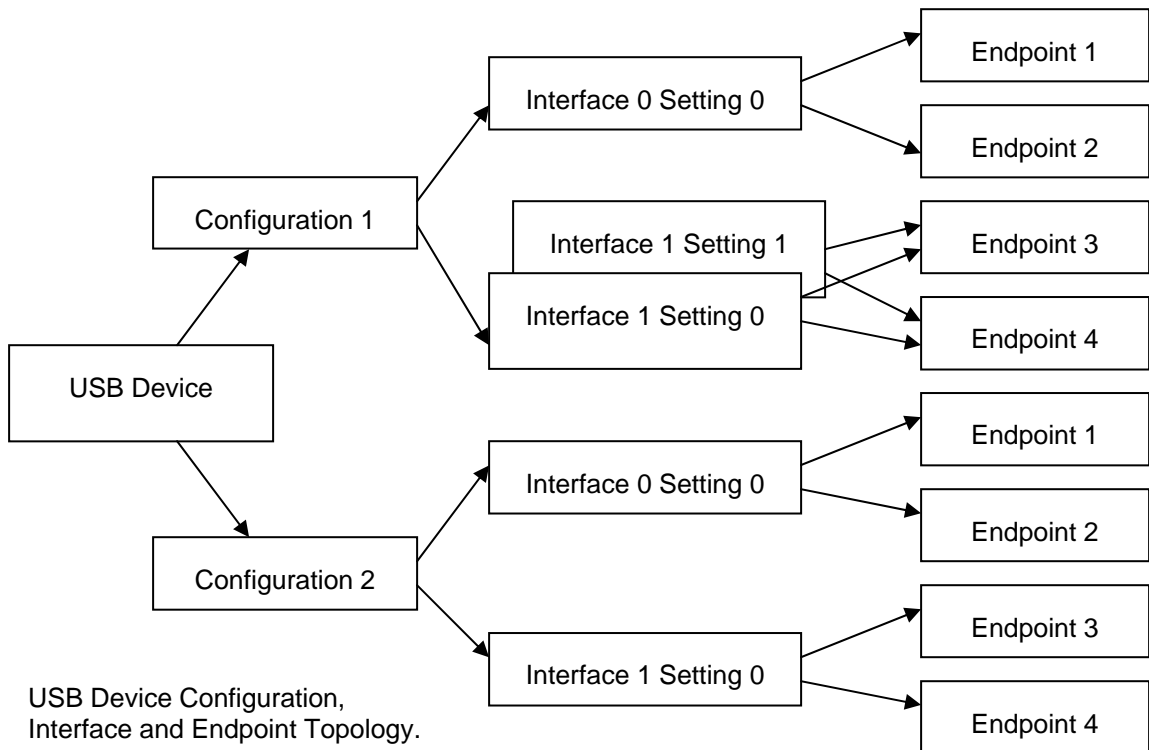
USB Topology

Each USB device supports 1 or more Configurations, an example would be a Bus Powered Configuration and a Self Powered Configuration.

Every Configuration can support 1 or more Interfaces, an Interface is a collection of Endpoints. An Interface can support several Alternate Settings. The Alternate Settings may alter the behavior of the Endpoints. The terms

“Interface Setting” and “Interface Alternate Setting” are the same and will be used interchangeably throughout this document.

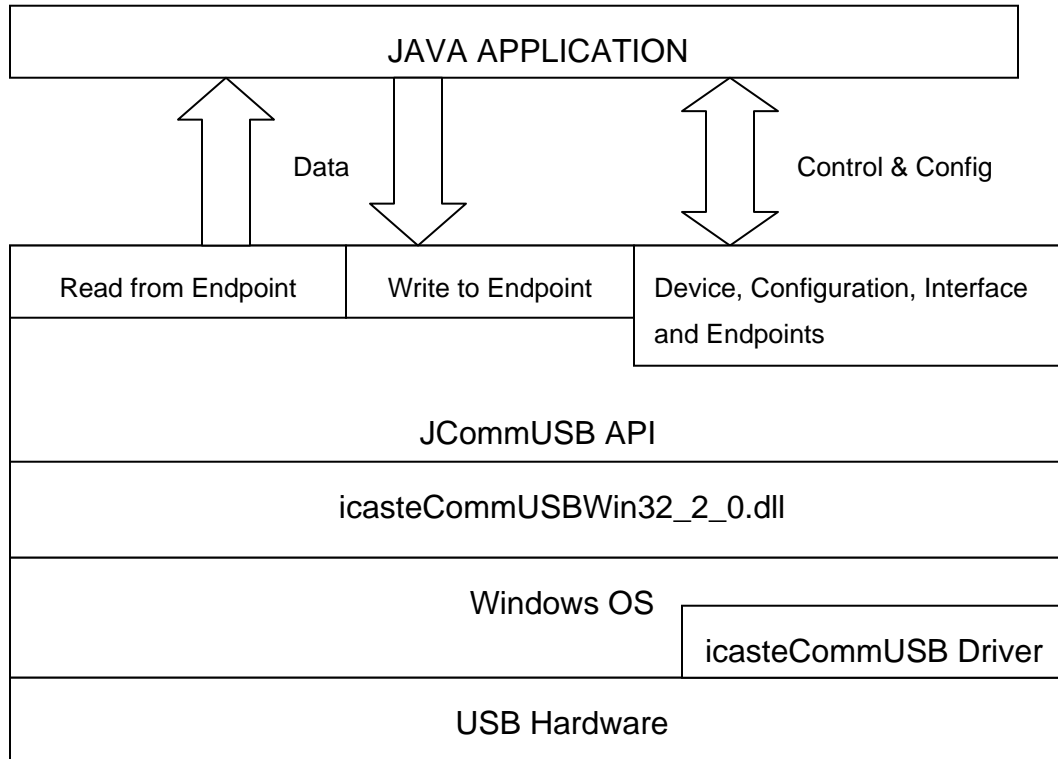
Every USB device has an Endpoint at address 0x00. This is the default control pipe and may or may not be part of an interface. Also note that Bulk, Interrupt and Isochronous Endpoints (or Pipes) are uni directional (ie read or write only). The msb of the 8 bit Endpoint address may be set to indicate a read pipe or cleared to indicate a write pipe. For example the read Endpoint whose address is 0x08 will actually be displayed as 0x88 when using the API.



JCommUSB API Model

API Overview

The JCommUSB API aims to deliver the highest level of abstraction for the Java developer, providing a simple yet powerful interface to the USB.



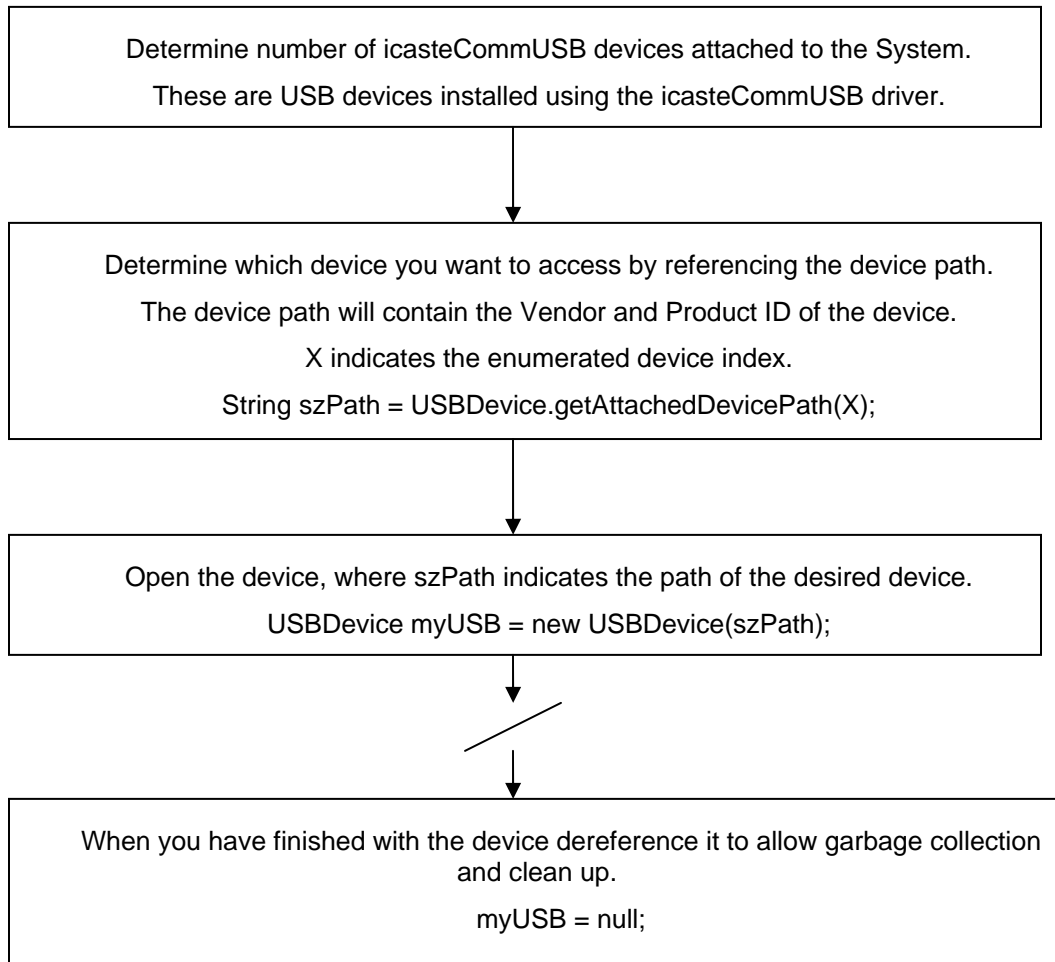
JCommUSB API Modal.

JCommUSB API USB Modal

The API uses the USBDevice class to represent a USB device and the USBException class to handle any Exceptions. Both USBDevice and USBException belong to the com.icaste.JCommUSB_X_Y package, where X and Y refer to the version of JCommUSB.

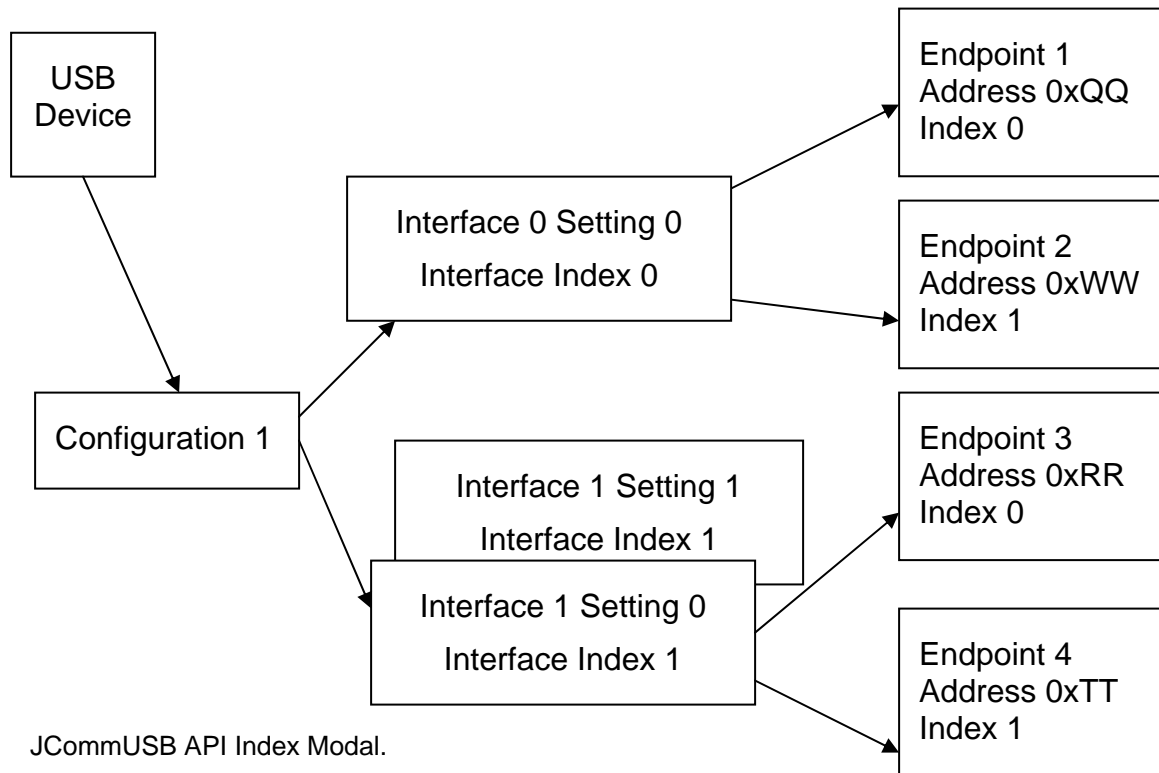
Before you can use the JCommUSB API you must have followed the installation instructions, installing a USB device with the icasteCommUSB driver, installing the icasteCommUSB dll and JCommUSB jar file. See the install instructions that are appropriate for your system.

The USBDevice is instantiated in the following manner:



Accessing and using the USB device.

When working with JCommUSB it is important to note that the API interfaces with the USB components using base 0 indexes. This is explained in the following diagram.



JCommUSB API Index Modal.

To request the number of endpoints in Interface 1 setting 0,
`myUSB.getInterfaceNumEndpoints(X,Y);`

where X is the interface index 1 and Y is the setting index 0.

To request the MaxPacketSize of Endpoint at address 0xWW,
`myUSB.getEndpointMaxPacketSize(X,Y,Z);`

where X is the Interface index 0, Y is the Setting index 0 and Z is the Endpoint index 1.

For further examples see the USBTester source code included with the JCommUSB distribution.

Introduction to USBTester

The USBTester class included in the API provides a simple configuration reader application to the USBDevice found at index 0. USBTester can be initialized directly from the JCommUSB jar using, “java -jar JCommUSB.jar”. Be sure to have followed the Installation Instructions!

Upon initialization the USBTester will attempt to open the USBDevice at index 0 and print out all its related information. This is a simple test application designed to test the installation of a USB device using the icasteCommUSB drivers.

Limitations

The JCommUSB API only allows use of the first Configuration. There is no method to select an alternate configuration if one exists. This is a limitation of the Microsoft USB Port Driver.

Further Information

Be sure to read the API JavaDoc, it contains a lot of useful info. The source code for USBTester has been included with the distribution and can be “butchered” to fit your needs. Also you may contact support@icaste.com for best effort support.