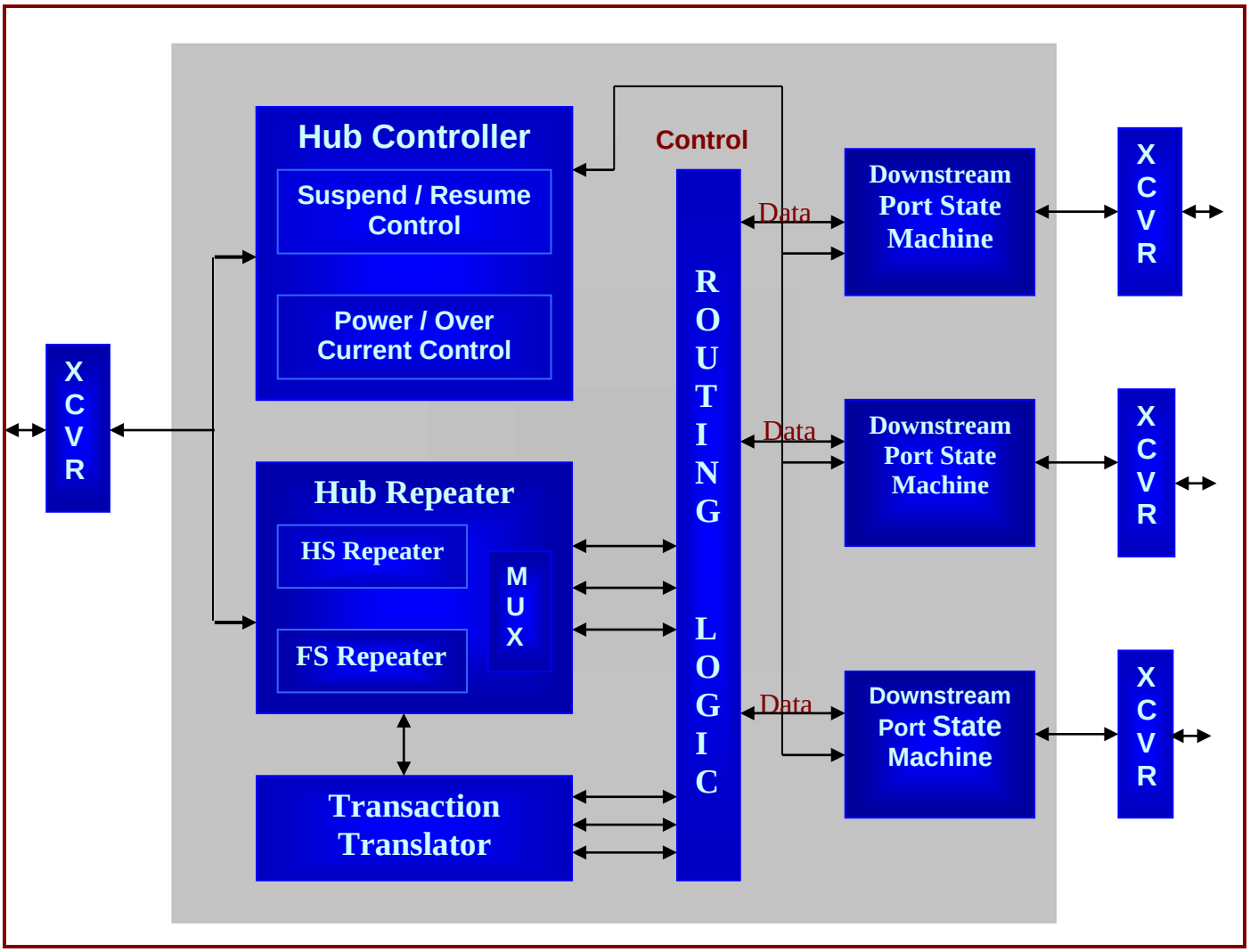
USB 2.0 Hub Core



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Overview

VinChip's USB 2.0 Hub core is designed for flexibility and ease of use and is technology independent. More information can be had from www.vinchip.com

Key Features

- USB 2.0 Compliant
- Parametrizable downstream ports
- All hub specific requests supported

- Easy to use VinAuto-configure ™ utility for wiring of downstream ports.
- VinAutogen ™ utility for generation of descriptors.
- Dedicated transaction translator for each of the downstream ports.
- Downstream device connect / disconnect detection.
- Philips and UTMI transceiver compatible upstream and downstream ports.
- Supports suspend / resume for power management.
- Provision of port indicators for the downstream ports.

Description

The USB 2.0 Hub core consists of Hub Controller, Repeater and Transaction Translator. The Hub Controller provides the mechanism for host to hub communication. Hub-specific status and control commands permit the host to configure a hub and to monitor and control its transaction translator and individual downstream ports.

Hub Controller Block
This block contains a transceiver interface block to compose / decipher the packet fields and a command interpreter block. The command interpreter block decodes both the USB standard commands as well as the HUB class specific commands and provides the necessary Hub/Port status information to the host.

Hub Repeater Block
The hub repeater block handles the connectivity between the root port and downstream ports and operates both in the high speed and in the full speed mode.

Port State Machine Block

This block detects the connect / disconnect events in the port and has the capability to enable, disable / suspend the port. This also reports the port status and change information to the Hub Controller block, and also determines whether the device attached is high speed or full speed.

Transaction Translator

Isolates the high speed bus from the full speed bus using data buffers. Split transaction wrappers of the transactions meant for the full speed bus are removed and both the token and data packet for the full speed bus are stored inside the data buffer. The data buffer houses the status information from the full speed bus.

Routing logic
For full speed devices, this routes the transactions from the repeater block to the downstream port state machine block through the transaction translator block and for high speed devices, transactions directly flow from the repeater to the downstream port state machine block.

Core Configurability
Auto-configure and Auto-wire are pre-compiled C language-based utilities. These utilities allow users to customize and configure the hub core in an error-free way. They offer the user a choice of the number of downstream ports along with the desired descriptor contents.

Products & Services

VinChip's suite of soft cores for SoCs includes USB, PCI, Bluetooth and Infiniband controllers. These soft cores come with comprehensive documentation, verifica-tion environment, test suite, Drivers and tech support. Please contact us at info@vinchip.com or at (408) 777 2922 for more information on our products and services.