Part 1 | 第一部分
Core Concepts | 核心概念

This Part | 这一部分

Part 1 introduces basic concepts and terminology and consists of the following chapters: 第一部分将介绍基本的概念和术语，由如下章节组成：

Chapter 1 – Basic Terms and Concepts.
第 1 章：基本术语和概念。
Chapter 2 – Intro to Attributes and Managers.
第 2 章：属性和管理器介绍。
Chapter 3 – QP: Message Transfer Mechanism.
第 3 章：QP:报文(消息)传输机制。
Chapter 4 – Intro to Transport Types.
第 4 章：传输类型介绍。
Chapter 5 – Intro to Send/Receive Operations.
第 5 章：发送/接收操作介绍。
Chapter 6 – Division of Labor.
第 6 章：劳动分工。
Chapter 7 – Subnet-Local Addressing.
第 7 章：子网局部寻址。
Chapter 8 – Global Addressing.
第 8 章：全局寻址。
Chapter 9 – Intro to the Managers.
第 9 章：管理器介绍。
Chapter 10 – Intro to Connection Establishment.
第 10 章：连接建立介绍。
Chapter 11 – PSN Usage.
第 11 章：包序列号(PSN)的用法。

The Next Part | 下一部分

Part 2 begins the portion of the book that provides detailed information about the InfiniBand technology. Part 2 provides a detailed description of the creation of, the management of, and the basic operations of the various types of Queue Pairs. Part 2 contains of the following chapters: 本书自第二部分起，开始对 IB 技术进行详细的介绍。第二部分将对各种类型的 QP(或译作"队列对")的创建，管理以及基本操作做出详细的描述。它包括如下章节：

Chapter 12 – QP Verbs and QP State Machine.
第 12 章：QP Verbs 和 QP 状态机。
Chapter 13 – WRs, WQEs, and CQEs.
第 13 章：WRs, WQEs 和 CQEs。
Chapter 14 – Asynchronous Events and Errors.
第 14 章：异步事件和异步错误。

Chapter 1
Basic Terms and Concepts
第 1 章
基本术语和概念

This Chapter | 这一章

This chapter provides 本章提供

- Advantages of the InfiniBand network architecture. IB 网络架构(体系结构)的优势所在。
- An introduction to basic terminology. 基本术语介绍。
- Packet addressing basics. 分组(包)寻址基础。
- The basic roles of channel adapters, routers, switches, and repeaters. 通道适配器(CA)， 路由器，交换机和中继器(转发器)的基本作用(角色)。
- An introduction to message passing. 报文(消息)传递介绍。

The Next Chapter | 下一章

The next chapter introduces the concept of device attributes, managers, management agents (MAs), and management datagrams (MADs). 下一章将介绍一些基本概念，包括设备属性，管理器，管理代理和管理数据报。

Chapter 2
Intro to Attributes and Managers
第 2 章
属性和管理器介绍

The Previous Chapter | 前一章

The previous chapter provided: 前一章提供

- Advantages of the InfiniBand network architecture. IB 网络架构的优势所在。
- An introduction to basic terminology. 基本概念介绍。
- Packet addressing basics. 分组(包)寻址基础。
- The basic roles of channel adapters, routers, switches, and repeaters. 通道适配器，路由器，交换机和中继器的基本作用。
- An introduction to message passing. 报文(消息)传递介绍。

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This chapter introduces the concept of device attributes, managers, management agents (MAs), and management datagrams (MADs). 本章介绍一些基本概念，包括设备属性，管理器，管理代理和管理数据报。

The Next Chapter | 下一章

The next chapter introduces the concept of the Queue Pair (QP), the message transfer engine that lies at the heart of the IBA technology. Request and response packets, Packet Sequence Numbers (PSNs), and the Verb Layer (a quasi-API used to control an IBA HCA) are introduced. The four IBA QP types are introduced and the concept of the QP Context and its contents are defined. Finally, there is a rather detailed example of a message transfer from one CA to another. 下一章将介绍队列对(QP)的概念，QP 作为消息传输引擎，是 IB 技术的核心所在。下一章还将介绍的内容包括：请求包和响应包，包序列号(PSN)，和 Verb 层(用以控制 IBA HCA 的准 API)以及四种 IBA QP 类型，QP 上下文概念及内容。下一章的最后，将会给出一个相当详细的例子(并结合插图)，把一条消息是如何从一个 CA 传送到另一个 CA 上去的全过程娓娓道来。

Chapter 3
QP: Message Transfer Mechanism
第 3 章
QP: 消息传输机制

The Previous Chapter | 前一章

The previous chapter introduced the concept of device attributes, managers, management agents (MAs), and management datagrams (MADs). 前一章介绍一些基本概念，包括设备属性，管理器，管理代理和管理数据报。

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This chapter introduces the concept of the Queue Pair (QP), the message transfer engine that lies at the heart of the IBA technology. Request and response packets, Packet Sequence Numbers (PSNs), and the Verb Layer (a quasi-API used to control an IBA HCA) are introduced. The four IBA QP types are introduced and the concept of the QP Context and its contents are defined. Finally, there is a rather detailed example of a message transfer from one CA to another. 这一章将介绍队列对(QP)的概念，QP 作为消息传输引擎，是 IB 技术的核心所在。这一章还将介绍的内容包括：请求包和响应包，包序列号(PSN)，和 Verb 层(用以控制 IBA HCA 的准 API)以及四种 IBA QP 类型，QP 上下文概念及内容。这一章的最后，将会给出一个相当详细的例子(并结合插图)，把一条消息是如何从一个 CA 传送到另一个 CA 上去的全过程娓娓道来。

The Next Chapter | 下一章

The next chapter provides an introduction to the four IBA transport service types (RC, UC, RD, and UD QPs), as well as the two non-IBA transport service types (Raw IPv6 and Raw EtherType QPs) that permit packets associated with virtually any other network protocol to be tunneled through an IBA network encapsulated in "raw" IBA packets. 下一章将介绍四种 IBA 的传输服务类型(RC, UC, RD, 和 UD QPs)和两种非 IBA 传输服务类型(Raw IPv6 和 Raw EtherType QPs)。这两种非 IB 传输服务类型，允许封装在"raw"IBA 数据包中的、几乎所有的其他网络协议的数据包在 IBA 网络中传输。

Chapter 4
Intro to Transport Types
第 4 章
传输类型介绍

The Previous Chapter | 前一章

The previous chapter introduced the concept of the Queue Pair (QP), the message transfer engine that lies at the heart of the IBA technology. Request and response packets, Packet Sequence Numbers (PSNs), and the Verb Layer (a quasi-API used to control an IBA HCA) were introduced. The four IBA QP types were introduced and the concept of the QP Context and its contents were defined. Finally, there was a rather detailed example of a message transfer from one CA to another. 前一章介绍了队列对(QP)的概念，QP 作为消息传输引擎，是 IB 技术的核心所在。前一章还介绍了这些内容：请求包和响应包，包序列号(PSN)，和 Verb 层(用以控制 IBA HCA 的准 API)以及四种 IBA QP 类型，QP 上下文概念及内容。前一章的最后，给出了一个例子(并结合插图)，把一条消息是如何从一个 CA 传送到另一个 CA 上去的全过程做了相当详细的介绍。

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The Next Chapter | 下一章

The next chapter provides an introduction to the five types of message transfer requests that can posted to and executed by a QP's SQ logic. It also introduces the single type of message transfer request that can be posted to and executed by a QP's RQ logic. 下一章将介绍五种消息传输请求，每一种消息传输请求都能够被提交到 QP 的 SQ Logic 然后被执行。下一章还将介绍一种简单的消息传输请求，该请求能够被提交到 QP 的 RQ Logic 然后被执行。

Chapter 5
Intro to Send/Receive Operations
第 5 章
发送/接收操作介绍

The Previous Chapter | 前一章

The previous chapter provided an introduction to the four IBA transport service types (RC, UC, RD, and UD QPs), as well as the two non-IBA transport service types (Raw IPv6 and Raw EtherType QPs) that permit packets associated with virtually any other network protocol to be tunneled through an IBA network encapsulated in "raw" IBA packets. 前一章介绍了四种 IBA 的传输服务类型(RC, UC, RD, 和 UD QPs)和两种非 IBA 传输服务类型(Raw IPv6 和 Raw EtherType QPs)。这两种非 IB 传输服务类型，允许封装在"raw"IBA 数据包中的、几乎所有的其他网络协议的数据包在 IBA 网络中传输。

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The Next Chapter | 下一章

The next chapter provides an introduction to the layers comprising the IBA stack that handles message transmission and reception. Those layers are: 负责处理消息发送和接收的 IBA 协议栈是由多层构成的，下一章将逐层予以介绍。IBA 协议栈分层如下：

- The ULP (Upper Layer Protocol). This is actually not part of the IBA stack. Rather, it is comprised of OS and application software that uses the stack to pass messages with remote CAs. 上层协议(ULP)。这一层实际上并非 IBA 协议栈的组成部分。相反，ULP 是由操作系统(OS)和应用软件构成的，应用软件使用 IBA 栈来与远端 CA 进行消息传递。
- The Verb Layer. Verb 层。
- The Transport Layer. 传输层。
- The Network Layer. 网络层。
- The Link Layer. 链路层。
- The Physical Layer. 物理层。

Chapter 6
Division of Labor
第 6 章
劳动分工

The Previous Chapter | 前一章

The previous chapter provided an introduction to the five types of message transfer requests that can posted to and executed by a QP's SQ logic. It also introduced the single type of message transfer request that can be posted to and executed by a QP's RQ logic. 前一章介绍了五种消息传输请求，每一种消息传输请求都能够被提交到 QP 的 SQ Logic 然后被执行。前一章还介绍了一种简单的消息传输请求，该请求能够被提交到 QP 的 RQ Logic 然后被执行。

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- The Network Layer. 网络层。
- The Link Layer. 链路层。
- The Physical Layer. 物理层。

The Next Chapter | 下一章

The next chapter defines how ports on channel adapters, switches, and routers are numbered. It then defines the Local ID (LID) address space, the purpose of the LID address, and the SM's assignment of a unique LID to each port. The SM may optionally assign a range of LID addresses to a port. This chapter defines how this is done as well as the value of assigning more than one address to a port. It describes how the QP indicates which of the local ports assigned LID addresses will be inserted into the LRH:SLID field when the QP sources a packet to the port for transmission. The concept of the SM's path database is introduced. 下一章将介绍是如何给 CA 端口，交换机端口和路由器端口编号的。紧接着，将介绍如何定义本地标识符(LID)的地址空间，使用 LID 地址的目的和子网管理器给子网内的每一个端口分配一个(在子网范围内)独一无二的 LID。可选地，SM 可给某一端口分配一组 LID 地址，下一章将定义这是如何做到的，同时介绍分配给端口的多个 LID 地址的值。下一章也将介绍当 QP 推送一个待传输的包到端口上的时候，QP 是如何指定被插入到 LRH:SLID 字段中的端口地址。下一章还将介绍关于子网管理器路由数据库的概念。

Chapter 7
Subnet-Local Addressing
第 7 章
子网局部寻址

The Previous Chapter | 前一章

The previous chapter provided an introduction to the layers comprising the IBA stack that handles message transmission and reception. Those layers are: 负责处理消息发送和接收的 IBA 协议栈是由多层构成的，前一章逐层给予了介绍。IBA 协议栈分层如下：

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- The Verb Layer. Verb 层。
- The Transport Layer. 传输层。
- The Network Layer. 网络层。
- The Link Layer. 链路层。
- The Physical Layer. 物理层。

This Chapter | 这一章

This chapter defines the addresses that are used to route a packet from its source port to its destination port within an IBA subnet. It defines how ports on CAs, switches, and routers are numbered. It then defines the Local ID (LID) address space, the purpose of the LID address, and the SM's assignment of a unique LID to each port. The SM may optionally assign a range of LID addresses to a port. This chapter defines how this is done as well as the value of assigning more than one address to a port. It describes how the QP indicates which of the local port's assigned LID addresses will be inserted into the LRH:SLID field when the QP sources a packet to the port for transmission. The concept of the SM's path database is introduced. 这一章将介绍是如何给 CA 端口，交换机端口和路由器端口编号的。紧接着，将介绍如何定义本地标识符(LID)的地址空间，使用 LID 地址的目的和子网管理器给子网内的每一个端口分配一个(在子网范围内)独一无二的 LID。可选地，SM 可给某一端口分配一组 LID 地址，这一章将定义这是如何做到的，同时介绍分配给端口的多个 LID 地址的值。这一章也将介绍当 QP 推送一个待传输的包到端口上的时候，QP 是如何指定被插入到 LRH:SLID 字段中的端口地址。这一章还将介绍关于子网管理器路由数据库的概念。

The Next Chapter | 下一章

The next chapter describes the 128-bit global address used to route a packet from its source CA port in one subnet to the destination CA port in another subnet. IPv6 (Internet Protocol version 6) addresses are introduced (both unicast and multicast) as well as the documentation convention used for IPv6 addresses. Each 128-bit global address consists of a 64-bit subnet prefix and a 64-bit globally unique ID (GUID). This chapter describes how each port in a subnet is assigned the same subnet ID as well as one or more GUIDs. The concept of a global multipathing is introduced. 下一章将介绍 128 位的全局地址，该地址用来给数据包做路由选择，从源 CA 所在的子网到目标 CA 所在的子网。用于 IPv6 地址的文档约定和 IPv6(互联协议第 6 版)地址也将被介绍(包括单播和多播)。每一个 128 位的全局地址包括一个 64 位的子网前缀和 64 位的全球唯一的标识符(GUID)。下一章将描述如何给子网中的每一个端口分配相同的子网标识符和一个或多个 GUID。下一章还将介绍有关全局多路径化的观念。