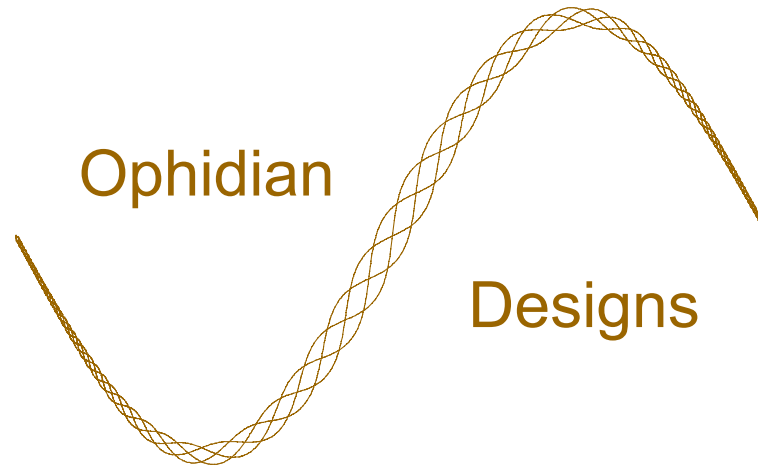
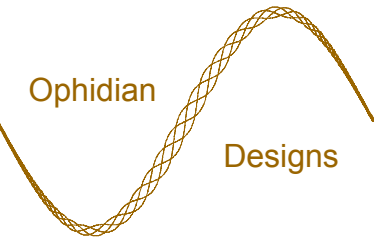


# Connecting to an Infiniband™ IO Device

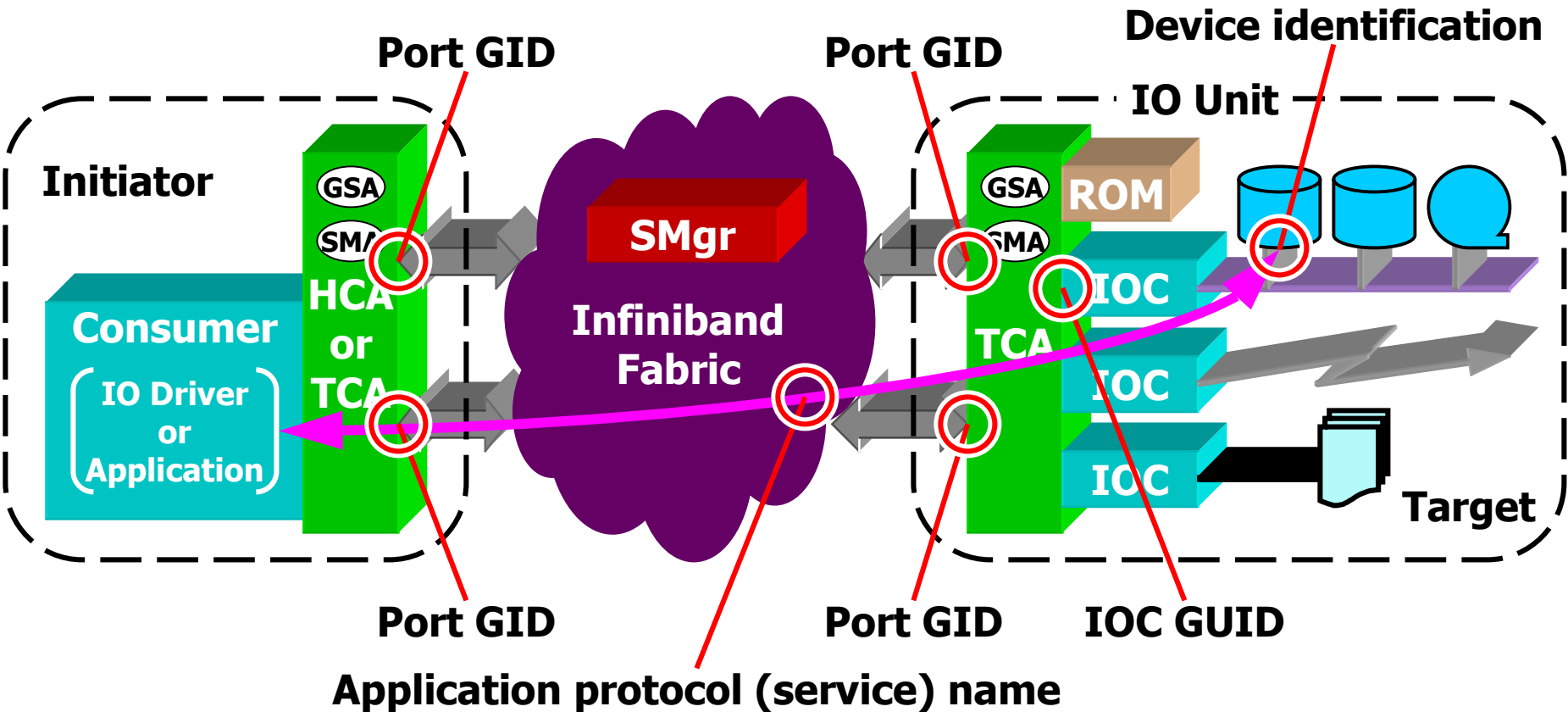
Edward A. Gardner, January 19, 2001

Based on presentations given at the Infiniband™ Developer's Conference, October 25, 2000



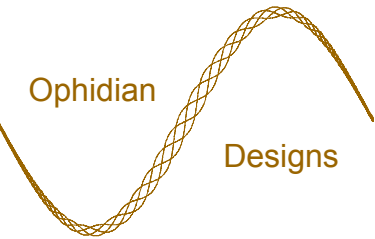


# What this talk is about



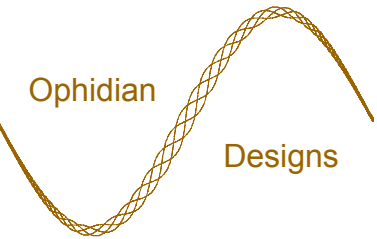
IOC - IO Controller  
GSA - General Service Agent

ROM - see Proprietary Boot presentation  
SMA - Subnet Management Agent



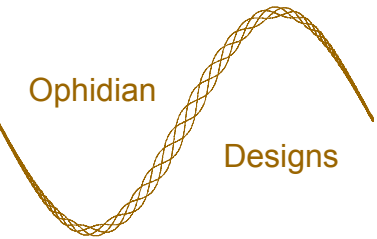
# Identifying an IO Device

- **IO Unit port GUID**
  - An IOC may be accessible with multiple port GUIDs, either due to multiple ports or a port having multiple GUIDs.
  - 128-bit IPv6 address format.
- **IOC GUID**
  - Uniquely identifies an IOC (IO Controller).
  - 64-bit EUI-64.



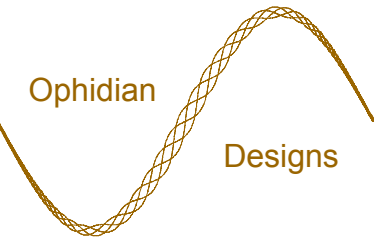
# Identifying an IO Device

- Application protocol (service) name
  - Identifies the application protocol used to access the IOC and its devices. An IOC may support multiple application protocols.
  - Often a fixed property of a driver stack.
  - A text string.
- Device identification
  - Protocol dependent identification of a specific device accessible behind an IOC.
  - Example: a unit number.



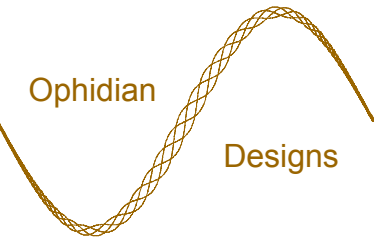
# Identifying an SRP device

- Port GUID of an IO Unit.
  - An IOC GUID on that IO Unit.
  - Service name to use (e.g. “SRP.T10.NCITS”).
  - Device identification: LUN.
  - An index (small integer) to indicate which service entry to use, if we allow an IOC to have multiple service entries supporting SRP (multiple SRP targets per IOC).
- } Identify an SRP target device



# Connecting to an IO Device

- 1: Obtain PathRecord(s) for the IO Unit.
- 2: Locate the IOC on the IO Unit.
- 3: Determine the protocol's service ID.
- 4: Establish communication.
- 5: Exchange parameters and begin operation.



# 1: Obtain PathRecord(s)

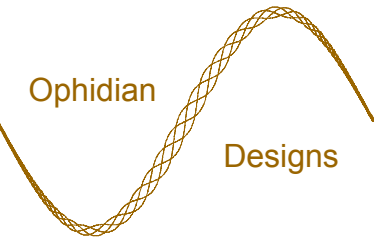
- Choose target IO Unit's port GID(s).
  - determines which IO Unit port(s) to use.
- Choose local initiator's port GID(s).
  - determines which local port(s) to use.
- Query SA for matching PathRecord(s).
  - Each PathRecord contains information (e.g. DLID) about one path to the IO Unit.
- Choose primary path, optional alternate path(s) to IO Unit.

SA - Subnet Administration

DGID - Destination GID, value is IO Unit's port GID

PathRecord - volume 1, clause 15.2.5.16

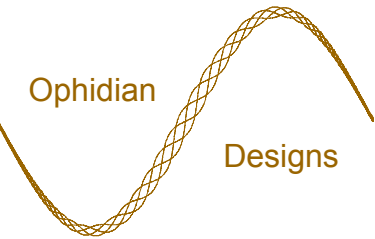
SGID - Source GID, value is local port GID



## 2: Locate the IOC

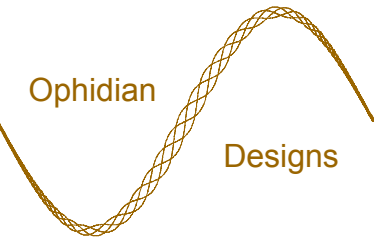
- Access the IO Unit's Device Management Agent using the well-known GSI QP and information from a PathRecord.
- Obtain list of valid IOC slot indices from the IOUnitInfo attribute.
- Search the IOControllerProfile attributes for one with a matching IOC GUID.
  - Determines IOC slot index of desired IOC.





## 3: Determine the service ID

- Still accessing the IO Unit's Device Management Agent.
- Obtain list of the IOC's ServiceEntries from IOControllerProfile attribute.
- Search ServiceEntries for one whose ServiceName field matches the desired application protocol name.
  - The corresponding ServiceID field contains the desired service ID.



## 4: Establish communication

- Invoke CM to send a communication request to the IOC.
  - Uses information from the primary and alternate PathRecords obtained in step 1.
  - Uses service ID determined in step 3.
  - Service type dictated by application protocol specification.

# Exchange parameters and...

- Use of the communication channel dictated by the application protocol specification.
- Many application protocols will begin by exchanging parameters.
  - Select options, transfer lengths, etc.
  - Might use either PrivateData during connection establishment or separate messages.
- Device identification passed inside protocol-specific messages.