The Bowler RPC
A zeroconf protocol for creating PC-microcontroller networks

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1 Discovery

1.1 Packet Format

1.1.1 General Discovery Packet Format

Figure 1 shows what the PC sends the device to initiate a discovery operation. Any additional operation-specific data is sent in the Payload section. The entire packet is 64 bytes.
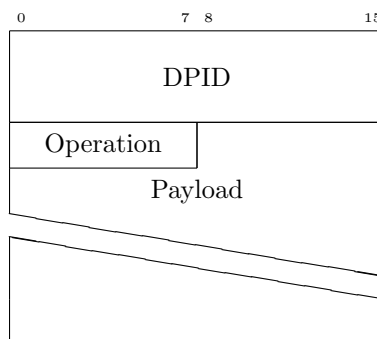

Figure 1: Discovery-time send packet format.

- DPID (Discovery Packet ID): 4 bytes
    - The DPID field is typically filled by SimplePacketComs and contains the ID for the packet it is contained in.
- Operation: 1 byte
    - The Operation field states the operation the packet performs.

Figure 2 shows what the device sends the PC to complete a discovery operation. Any additional operation-specific data is sent in the Payload section. The entire packet is 64 bytes.
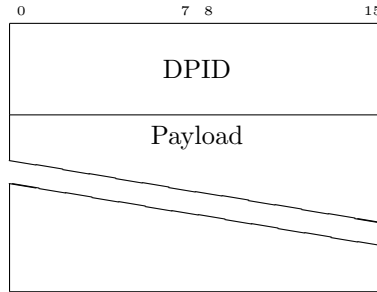
Figure 2: Discovery-time receive packet format.

- DPID (Discovery Packet ID): 4 bytes

    - The DPID field is typically filled by SimplePacketComs and contains the ID for the packet it is contained in.
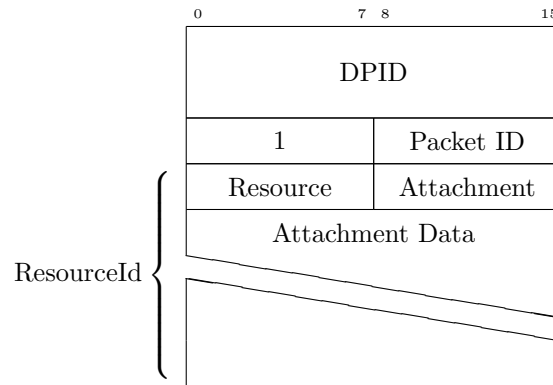
1.1.2 Discovery Packet

Figure 3: Discovery send packet.

- DPID (Discovery Packet ID): 4 bytes

    - The DPID field is typically filled by SimplePacketComs and contains the ID for the packet it is contained in.

- Packet ID: 1 byte

    - The Packet ID field is a new ID for the Packet being discovered.

- Resource: 1 byte

    - The Resource field is the type of the resource. It is the `ResourceId.resourceType.type`.

- Attachment: 1 byte
  - The Attachment field is the type of the attachment point. It is the `ResourceId.attachmentPoint.type`.

- Attachment Data: 1+ bytes
  - The Attachment Data field is any data needed to fully describe the Attachment. It is the `ResourceId.attachmentPoint.data`.
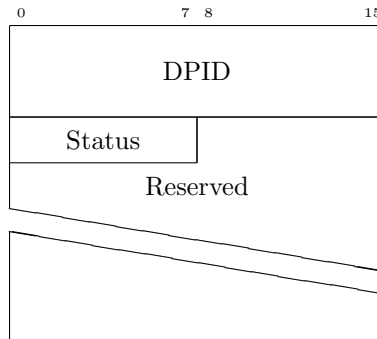

Figure 4: Discovery receive packet.

- DPID (Discovery Packet ID): 4 bytes
  - The DPID field is typically filled by SimplePacketComs and contains the ID for the packet it is contained in.

- Status: 1 byte
  - The Status field encodes the status of the discovery operation. 1 = Accepted, 2 = Rejected.
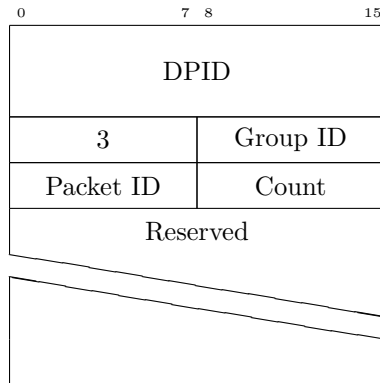
1.1.3 Group Discovery Packet

Figure 5: Group discovery send packet.

- DPID (Discovery Packet ID): 4 bytes

  – The DPID field is typically filled by SimplePacketComs and contains
    the ID for the packet it is contained in.

- Group ID: 1 byte

  – The Group ID field is the ID for the group being made. Future Group
    Member Discovery Packets will need this ID to add Resources to the
    correct group.

- Packet ID: 1 byte

  – The Packet ID field is the ID for the packet the Group will use. All
    Resources in the Group get packed into one packet.

- Count: 1 byte

  – The Count field is the number of Resources that will be added to the
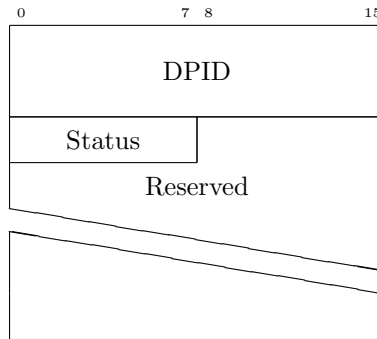   group.

Figure 6: Group discovery receive packet.

- DPID (Discovery Packet ID): 4 bytes

  - The DPID field is typically filled by SimplePacketComs and contains the ID for the packet it is contained in.

- Status: 1 byte

  - The Status field encodes the status of the discovery operation. 1 = Accepted, 2 = Rejected.

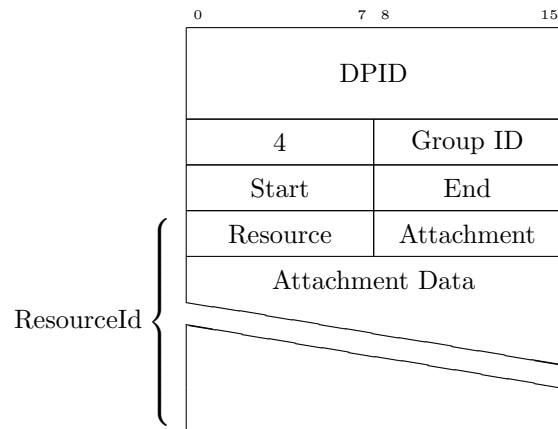### 1.1.4   Group Member Discovery Packet

Figure 7: Group member discovery send packet.

- Group ID: 1 byte

  - The Group ID field is the ID for the Group that this Resource will be added to.

- Start: 1 byte

  - The Start field is the starting byte index in the response Payload for this Resource's response data.

- End: 1 byte

  - The End field is the ending byte index in the response Payload for this Resource's response data.

- Resource: 1 byte

  - The Resource field is the type of the resource. It is the `ResourceId.resourceType.type`.

- Attachment: 1 byte

  - The Attachment field is the type of the attachment point. It is the `ResourceId.attachmentPoint.type`.

- Attachment Data: 1+ bytes

  - The Attachment Data field is any data needed to fully describe the Attachment. It is the `ResourceId.attachmentPoint.data`.
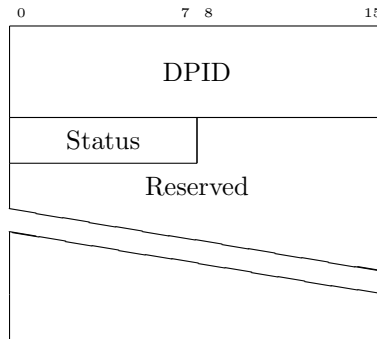

Figure 8: Group member discovery receive packet.

- DPID (Discovery Packet ID): 4 bytes

  - The DPID field is typically filled by SimplePacketComs and contains the ID for the packet it is contained in.

- Status: 1 byte

  - The Status field encodes the status of the discovery operation. 1 = Accepted, 2 = Rejected.