This presentation covers the Component Destination Table structure. This structure is used by Requester and Responder components to manage peer component communications including multipath support.
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The Component Destination Table structure is required for all components that support explicit OpClasses. It is used to select an egress interface and/or to select the VC to use in transmitted packets.

The table is composed of pointers to a set of tables based on the component’s use.
SSDT / MSDT tables use the same table format. Each table consists of a set of rows.

- The SSDT is directly accessed using the packet’s DCID.
- The MSDT is directly accessed using the packet’s DSID.

Each row contains set of one or more route entries (enables multipath / adaptive routing). Each route entry contains:

- Valid bit indicates if the route is valid. Routes can become valid / invalid based on connectivity to the destination through a given route.
- Hop Count indicates the number of link hops to reach the destination through a given interface. This can be the actual or relative number of hops. This provides the component a sense of distance to reach a destination through a given egress interface.
- VC Action Table entry is used to identify the set of VCs that can be used if a given route is taken. This is used to enable VC remapping.
- Egress Interface Identifier indicates the egress interface is used to relay the packet.
The VC Mask is configured by management software to reflect the set of enabled VCs on the egress interface associated with a given route. A Requester or Responder applies implementation-specific logic to select a VC, e.g., it might consider the number of available flow-control credits, VC arbitration state, etc.

Each row contains a threshold value. The threshold is used by some routing algorithms as an input to select the egress interface.
Responder VCAT contains only a set of VM masks that indicate which VC to use when transmitting a response packet. As with the Requester VCAT, the Responder applies implementation-specific policies to select a VC if more than one is configured.

<table>
<thead>
<tr>
<th>Responder VC Action Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC 0 &gt;</td>
</tr>
<tr>
<td>Action 0</td>
</tr>
<tr>
<td>TH, VCM</td>
</tr>
<tr>
<td>TH, VCM</td>
</tr>
<tr>
<td>TH, VCM</td>
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<tr>
<td>TH, VCM</td>
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</tbody>
</table>

- Responder VCAT contains N entries that are indexed by the request packet’s VC field
  - Number of entries equals the maximum number of supported VCs on any Responder interface
- Each row contains one field:
  - VCM — VC Mask is a bit mask that indicates which VCs may be used to reach the destination
If a Responder supports multiple egress interfaces, then it uses the RIT to identify the egress interface to use when transmitting a response packet to a given Requester.
Single-Subnet Requester Egress Selection (1 Route)

- The Requester accesses the SSDT, and uses the Responder’s CID to directly index and locate the corresponding SSDT route entry row.

- Since the Requester supports a single route entry (Max Routes = 0), the following applies:
  - MHC, HC, and VCA fields are ignored.
  - If V = 1b, then the packet is relayed to the E1 (egress interface), else it is handled as a component-local error.

- The Requester uses the Traffic Class corresponding to the Responder’s addressable resource to index the REQ-VCAT and selects a VC Mask entry.
  - If a Requester supports a Requester ZMMU, then the Traffic Class from the corresponding Requester PTE entry is used; if not, then the Requester uses a component-specific method to derive the Traffic Class.

- The Requester selects a valid VC and copies this to the request packet’s VC field.
Single-Subnet Requester Egress Selection (N Route)

- The Requester accesses the SSDT, and uses the Responder’s CID to directly index and locate the corresponding SSDT route entry row.
- The Requester uses the Traffic Class corresponding to the Responder’s addressable resource to index the REQ-VCAT and selects a row.
- If a Requester uses random or adaptive route selection with no regard to the remaining hops to the destination component or subnet, then the MHC and HC fields are ignored.
- If a Requester uses adaptive non-minimal routing, then the following applies to each SSDT route entry row:
  - Requester calculates the UHL (computed hop count).
  - If V = 1b, then the route entry can be used to determine the egress interface, else the route entry is ignored.
  - The Requester uses the VCA route entry to access the selected REQ-VCAT entry and derives a VCM (VC mask) and associated threshold (TH).
  - For each route entry, the VCM is compared to Th:
    - If CHC ≥ Th, then this VCM may be used.
    - If CHC > Th, then this VCM shall be treated as 0x0. This removes the associated route from further consideration.
  - If the Requester’s Threshold Enable — 1b, then the VCM may be used.
- The Requester selects an egress interface and VC. The VC is copied to the request packet’s VC field.
1. The Responder uses the request packet’s VC field to index the RSP-VCAT to locate the VC Mask. The VC Mask indicates the set of VCs that can be used in the corresponding response packet’s VC field.

2. If the Responder supports a single egress interface, then it selects a VC to use in the corresponding response packet’s VC field, and schedules response packet transmission.

3. If the Responder supports multiple egress interfaces, then the Responder uses the ingress interface identifier on which the request packet arrived to index the RIT to locate the Egress Interface Mask. The Egress Interface Mask indicates the set of egress interfaces that may be used to transmit the corresponding response packet.

4. If multiple VC and/or egress interfaces can be used, the Responder applies a component-specific selection process, e.g., selection is based on the least-congested egress interface.
Essentially, the same steps used in the prior examples are used in this depending upon generating a request or a response packet destined for a subnet-local or remote subnet component.
Thank you

This concludes this presentation. Thank you.