BGP Destination Preference Attribute
DPA

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Motivation

- Need for the NLRI originator to have some say in the route decision process in a manageable way
  - Symmetry
  - load-sharing
  - TOS, QoS
- Everyday multi-provider problem
- Many drawbacks to current practices (as-path manipulation, NLRI based preference, splitting AS)
- Manageable means AS-based preference at provider level if possible
- Simple solution: a globally understood metric

Proposed BGP Attribute

- Destination Preference Attribute (DPA)
  - optional transitive path attribute
  - fixed length, 6 octets
  - <AS#, DPA value>
  - type code 10
- Revised route selection
  1. LOCAL_PREF value
  2. **DPA value**
  3. AS-path length ("de-facto")
  4. MULTI_EXIT_DESC value
  5. IGP Metric

DPA Criteria

- Selection Criteria
  - The higher the DPA value, the more preferred
  - Comparable only if all routes have DPA set and set by same AS
- Operation
  - Not a replacement for MED
  - DPA should only be set when needed
  - DPA value can be overridden (coordination recommended)
- AS based LOCAL_PREF can be used to override DPA in route selection, if necessary

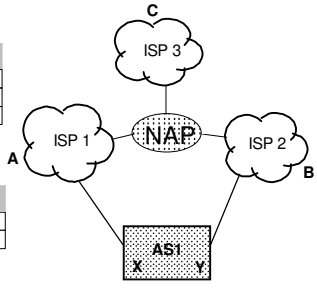
Application of DPA

- **Complete load-sharing**

	DPA set by AS1	
Route	To ISP1	TO ISP2
X	20	10
Y	10	20

- **Limited load-sharing**

	DPA set by AS1	
Route	To ISP1	TO ISP2
all	10	20



- DPA set on AS basis
- ISP1 would configure AS based LOCAL_PREF for AS1 > others

Application of DPA

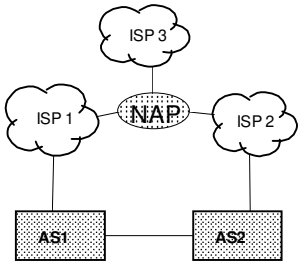
- **Used solely as backup**

	DPA set by AS1	
Routes	To ISP1	TO AS2
all	20	10

- **Limited load-sharing**

	DPA set by AS1	
Routes	To ISP1	TO AS2
all	20	10

- AS1 and AS2 configure AS based LOCAL_PREF to override DPA
- No involvement by ISP1 or ISP2



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Summary

- Simple attribute for BGP
- Little change to current practice of BGP
- Originator has more influence on route selection
  - only the originator has complete knowledge of policy
  - more manageable if set by originator
  - only originator may need to configure at the NLRI level
- Autonomy is maintained
  - LOCAL_PREF not changed
- Lets implement it !

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Documents

- Three Internet-drafts
- Analysis and critique of current practices of symmetric routing

  draft-ietf-idr-symm-multi-prov-01.txt

  With revision publish as informational RFC
- BGP DPA attribute

  draft-ietf-idr-bgp-dpa-01.txt

  With revision publish as Proposed Standard RFC
- Application of the DPA attribute

  draft-ietf-idr-dpa-application-01.tx

  With revision publish as Best Current Practice RFC