A Reference Framework for DC Migration to IPv6
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IETF84 – v6ops

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Reference Framework for IPv6 in DCs

• Scheme for evaluating different products and architectures
  – Addressed to DC operators and tenants
  – And to manufacturers and solution providers

• Focused on the DC infrastructure itself
  – Orthogonal to mechanisms for hosted services

• Highlight potential advantages
  – But not a compelling motivation beyond the general one
A General DC Model

- General model for the reference framework
- Not all layers or elements present in many real deployments
  - Combined
  - Virtualized
Maturity Levels

• The framework is structured through three maturity levels
  – Degree of penetration of IPv6 in the infrastructure

• Maturity levels do not imply progression
  – No need to start at level 1
  – No requirement in going from 1 to 2 to 3

• Intended to adapt to different
  – Traffic patterns
  – User and service requirements
  – Risk assessments
Maturity Level 1

- Native IPv4 infrastructure
  - Gateway routers
  - Application gateways if services require them
- Suitable for off-shore (ISP-based) operation
  - Concerns on the loss of source addresses
Maturity Level 2

- Internal dual stacks
  - Up to a certain layer in the infrastructure
  - Keep transparency to (non-)migrated elements

- Flexibility with additional complexity
  - Traffic patterns
  - Tenant decisions
  - Partial infrastructure migration
Maturity Level 2
Dual Stack at the Aggregation Layer

- Take advantage of additional functions at the aggregation element
  - Firewalls
  - Load balancers
  - Overlay edges
Maturity Level 3

- Native IPv6 infrastructure
  - Converse translation to ML 1
- Suitable for off-shore (ISP-based) operation as well
  - Loss of original source address is not a concern
The Coming Steps

• Go into more details in some aspects
  – Additional deployment modes
  – Addressing issues
  – Security considerations
  – Traffic and usage patterns
  – IPv6 load balance (NAT66 or Anycast or...?)

• Seek WG adoption