LISP Multiprovider VPN

draft-shen-lisp-multiprovider-vpn-00

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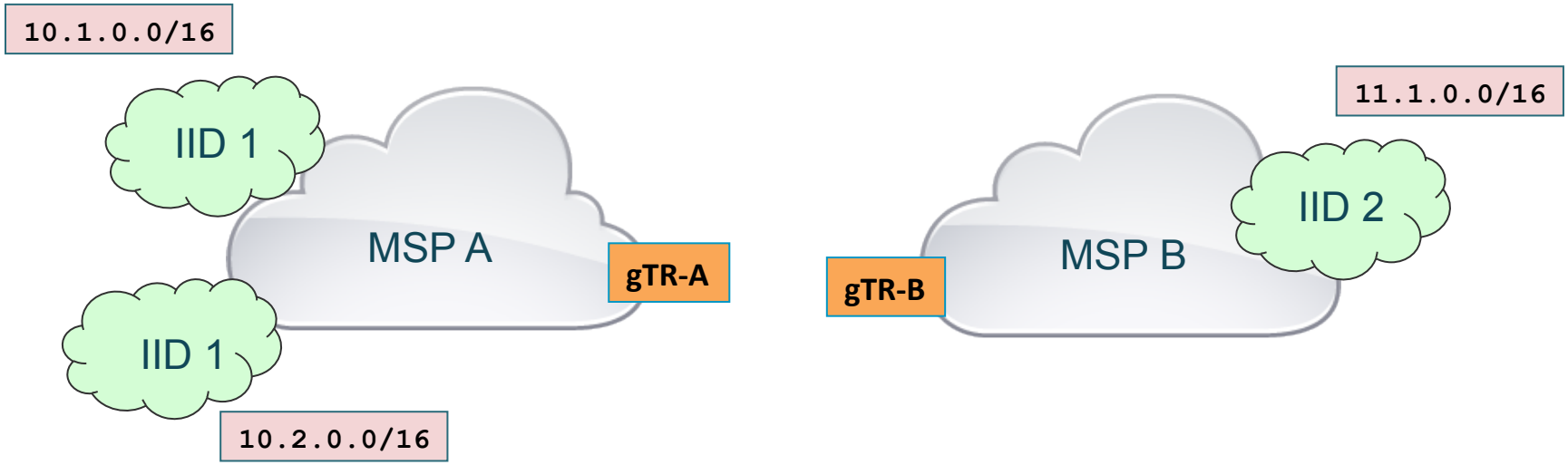
Multi-Provider Use Case

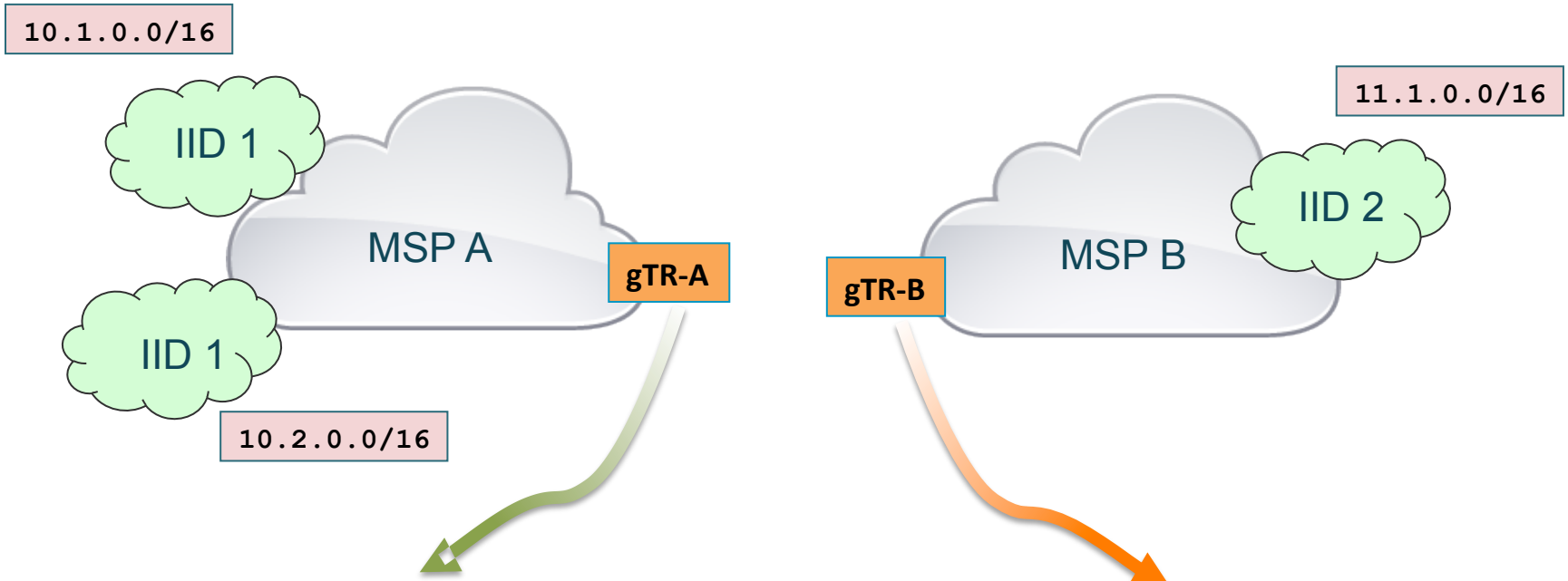
- With multiple LISP providers each maintain their own mapping database system (MSP)
- Providers have their own crypto mechanisms and encryption keys over LISP tunnels
- VRF and LISP Instance ID may be used with the LISP tunnels
- One VRF site of one provider wants to communicate with another VRF site of a different LISP provider (Inter-Provider VPN) in a secure way
- The communication may involve multi-providers

A Simple Two MSP Case



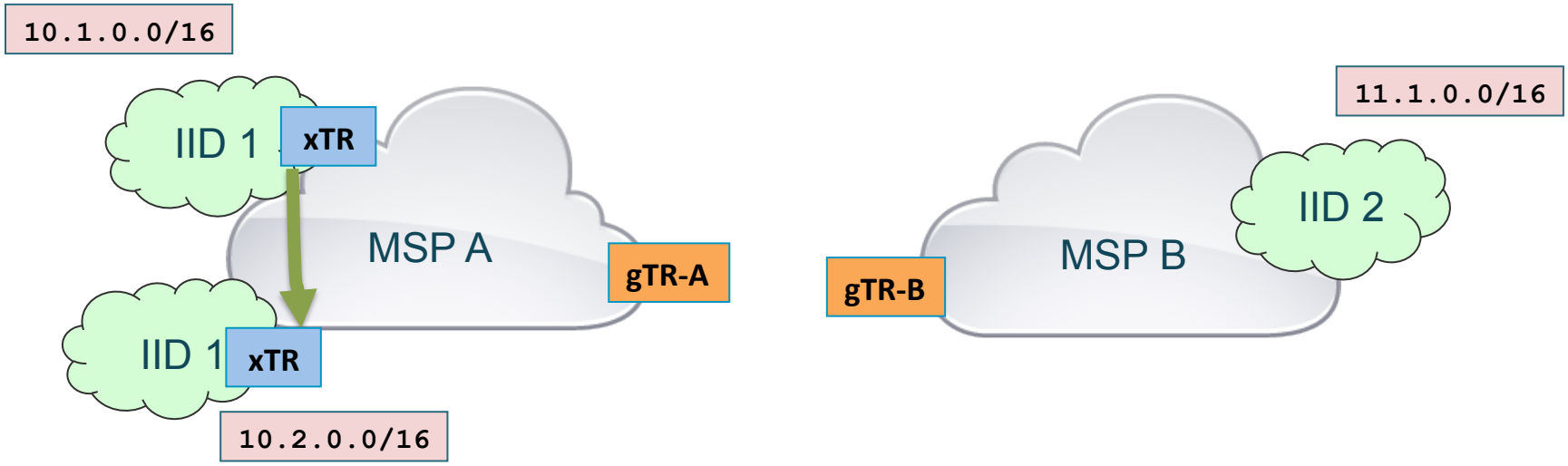
- 3 LISP sites of two MSP (Mapping Service Provider) wants to be part of the same VPN
- Each MSP manages their own mapping database
- Each MSP allocates IIDs to local LISP sites, no global IID coordination among MSPs

MSP Mapping Databases



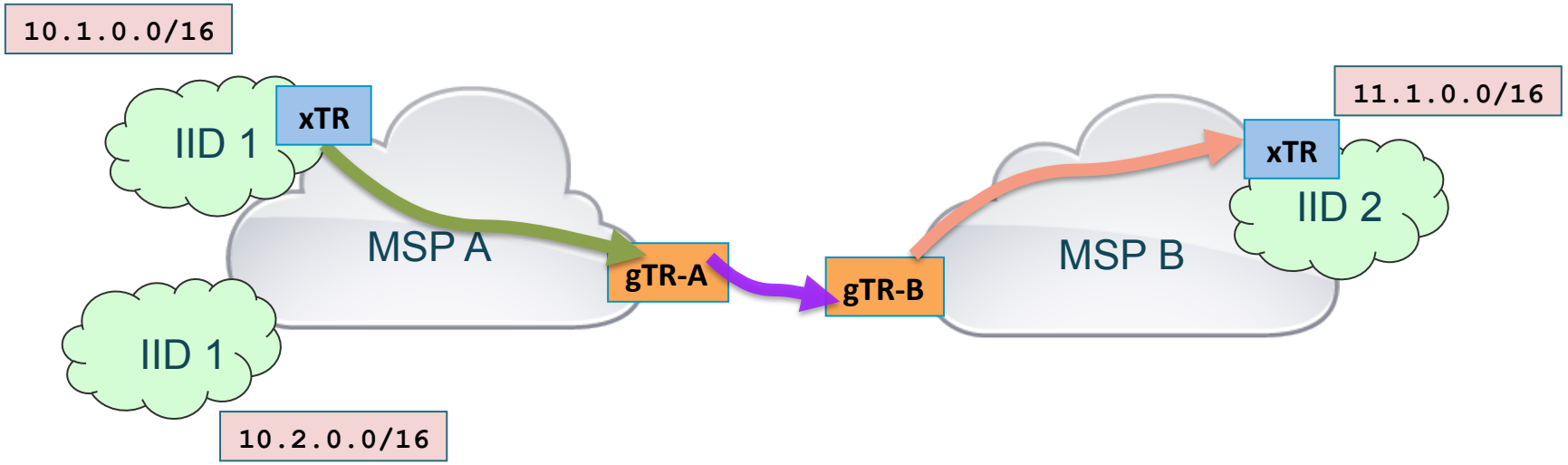
- **MSP A (registered by gTR-A):**
  (IID1, 11.1.0.0/16) -> ELP: [gTR-A, (IID2, gTR-B)]
- **MSP B (registered by gTR-B):**
  (IID2, 10.1.0.0/16) -> ELP: [gTR-B, (IID1, gTR-A)]
  (IID2, 10.2.0.0/16) -> ELP: [gTR-B, (IID1, gTR-A)]

Intra-MSP Traffic



- **Packet flow from site 10.1 to site 10.2**
  - Traditional LISP VPN
  - Each site registers (IID1, <eid-prefix>)
  - Each site encapsulates directly to xTR at destination site (with encryption)

Inter-MSP Traffic



- **Packet flow from site 10.1.1.1 to site 11.1.1.1**
  - xTR in 10.1 sends Map-Request for (IID1, 11.1.1.1) to MSP A's local mapping database
  - It gets (IID1, 11.1.0.0/16) -> ELP: [gTR-A, (IID2, gTR-B)]
  - xTR in 10.1 encapsulates to gTR-A with IID1 in header (with MSP-A's encryption)
  - gTR-A does lookup on (IID1, 11,1,1,1) to MSP A's local mapping database
  - gTR-A encapsulates to gTR-B with IID2 in header (encrypted with shared key)
  - gTR-B decapsulates and looks up (IID2, 11.1.1.1) in MSP B's local mapping database
  - RLOC of xTR at site 11.1/16 is return
  - gTR-B encapsulates to that RLOC with IID2 in header (with MSP-B's encryption)