Who needs semantic addressing, anyway?

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Die-hard requirements, more services.

- Service continuity under various constraints
  - User is in motion, degraded communication environment
- Service-inferred traffic engineering
  - Route computation must accommodate various requirements and constraints
- Service-inferred performance and scalability
  - Deterministic network programmability, dynamic resource allocation and policy enforcement schemes to address various, flexible user/operator demands
- Privacy preservation and augmented robustness to attacks of any kind
  - Route computation to take the sensitive nature of data into account
- Sustainable designs and massive digital inclusion
  - Energy as a metric, ubiquitous connectivity with relevant QoS and security levels, …

Information, please.

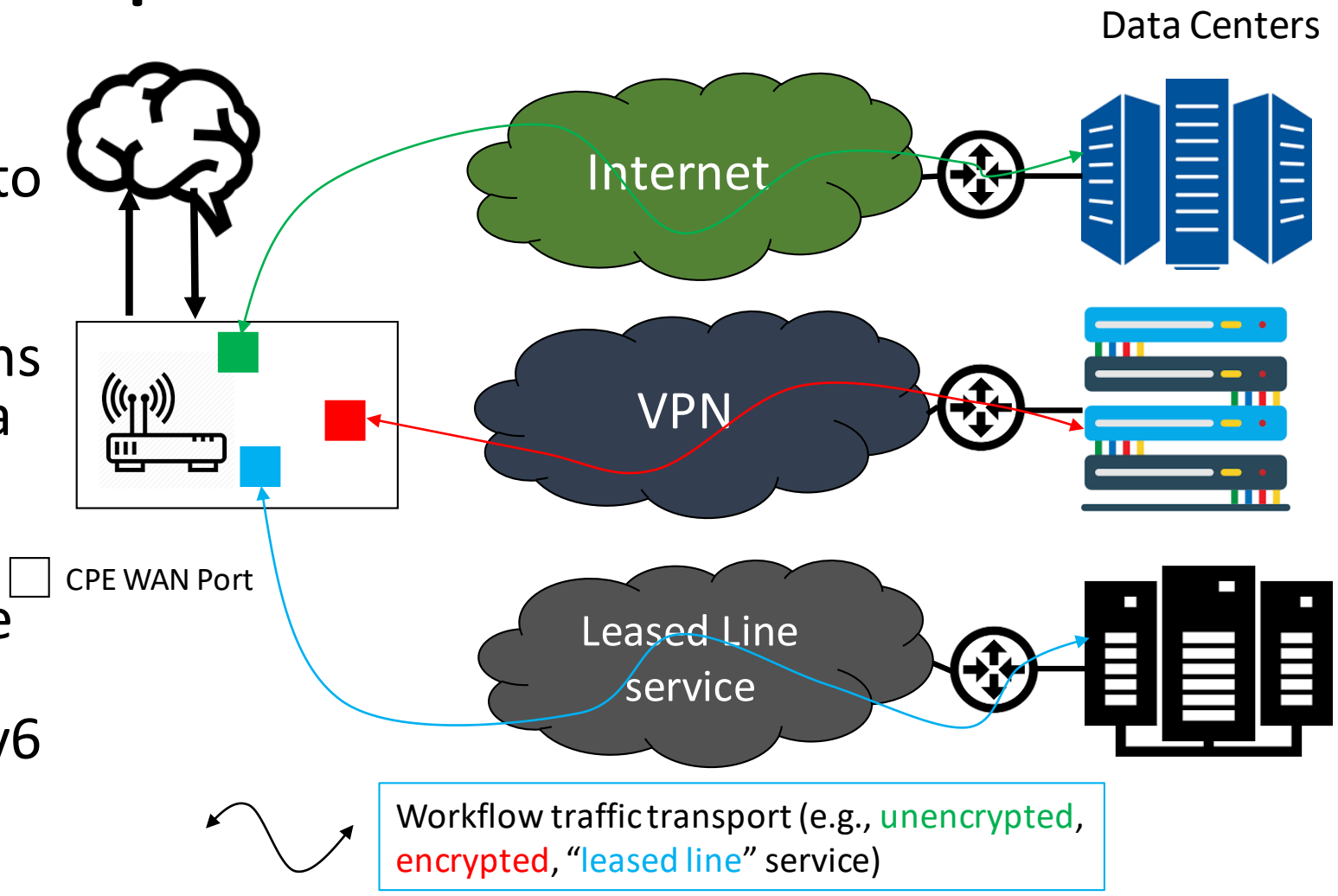
- What kind of traffic is this?
- What to do with incoming packets?
- Is there any route (that can accommodate traffic pattern)?
- Is such route safe?
- All paths lead to Rome: is this applicable? If so, how?
- …

Who and where?

- IP addresses provide some indication about who (Identifier) you are and where (Locator) you are
  - Protocols like LISP or HIP explicitly distinguish both
- Identification schemes may vary, depending on the technology, e.g.,:
  - Geographic coordinates can be carried in the IPv6 header's Flow Label field or as a specific EH or use LISP's LCAF encoding, etc.

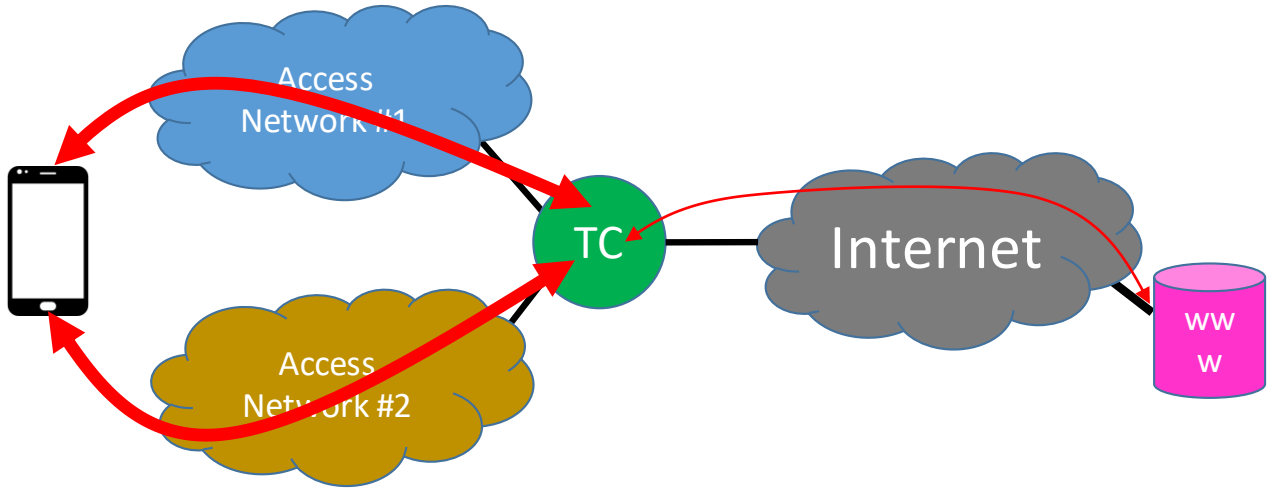
What to do with packets?

- Service Function Chaining is conceived to enforce differentiated forwarding policies based upon instructions described by metadata
- Such metadata can be can be carried in a specific header like the NSH or use IP or MPLS mechanics (e.g., an IPv6 EH)



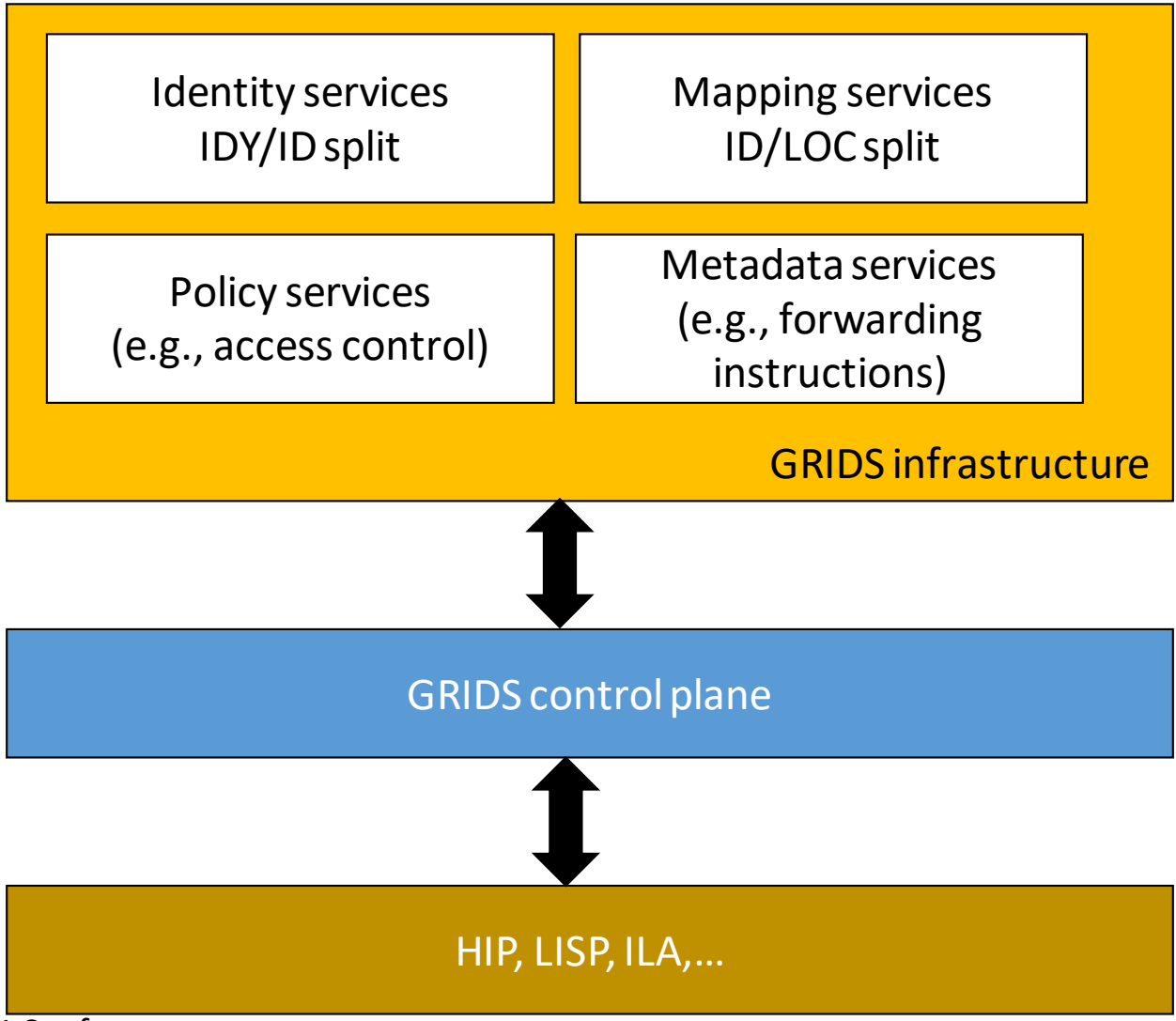
Is there any route?

- Traffic-engineered paths can be computed by means of the CSPF/MPLS-TE/PCE alchemy or the IPv6 Flow Label field for that matter (see RFC 6294) or SR, etc.
- MPTCP option (and its forthcoming QUIC equivalent) can be used to establish communications over multiple paths



Of course, privacy matters.

- IDentity-EnAbled networkS (IDEAS) was one attempt to preserve privacy
  - An IP address is decomposed into an identity, an identifier and a locator
  - Identity is never revealed over the network
  - Identifiers are used as session IDs, and thus have a limited lifetime
  - The identity is unique per entity, whereas multiple identifiers can be associated with a single identity
- Introducing the Generic IDentity Services (GRIDS) architecture
  - See use cases in this draft



Who needs semantic addressing?

- Many (standard) design options already exist to accommodate current and foreseeable requirements
  - Reading "Security considerations for transient numeric identifiers employed in network protocols" draft and "Challenges in routing" draft might be a good start to apprehend the landscape and the issues
- Any change that may dramatically question decades of IP network operation will undoubtedly make operators pretty nervous
  - Need for graceful coexistence with legacy gear and robust standardization effort

Thank You!