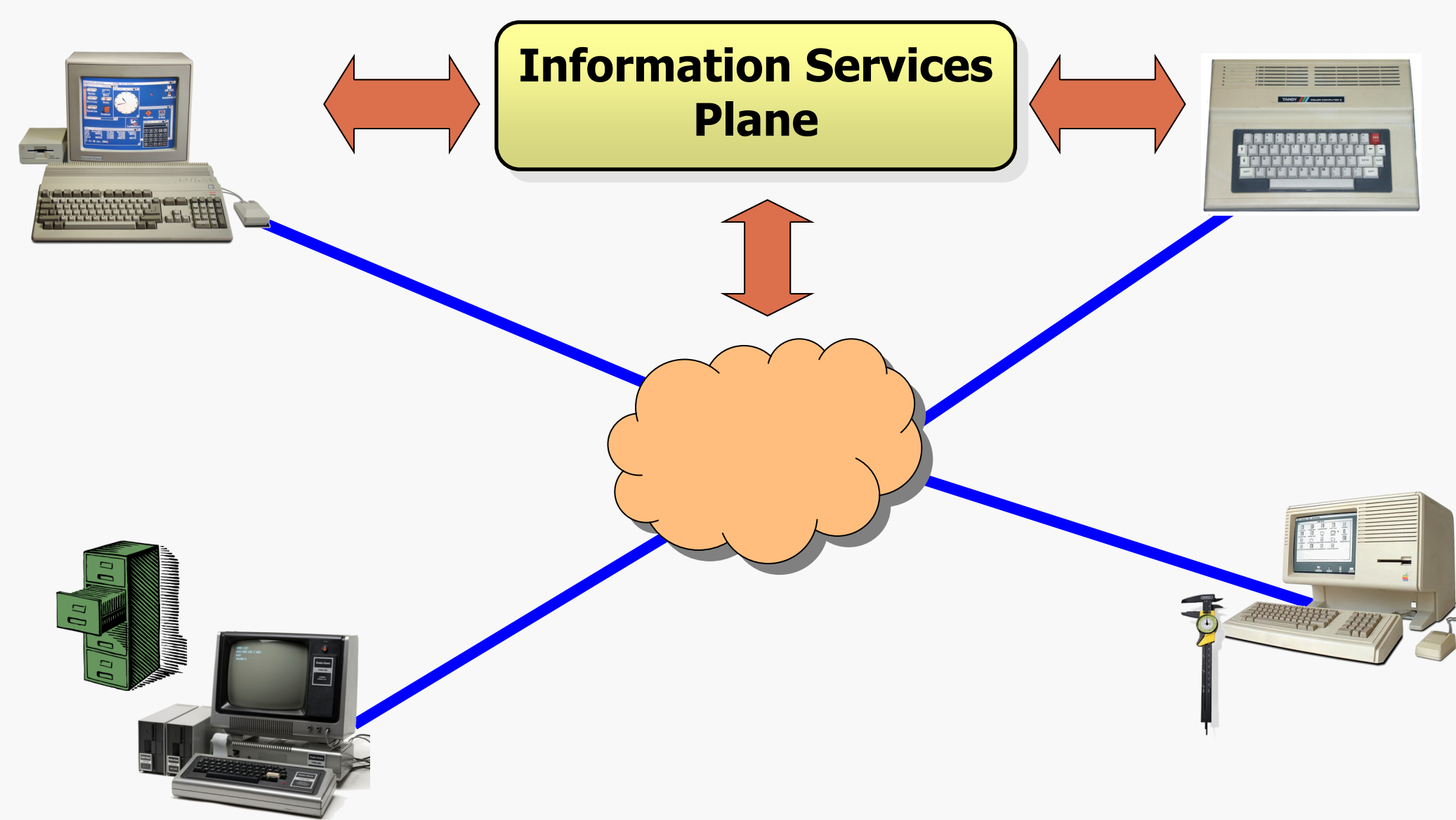


Unified Network Information Services (UNIS) allow users to discover network services and capabilities

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UNIS is an Information Services Plane

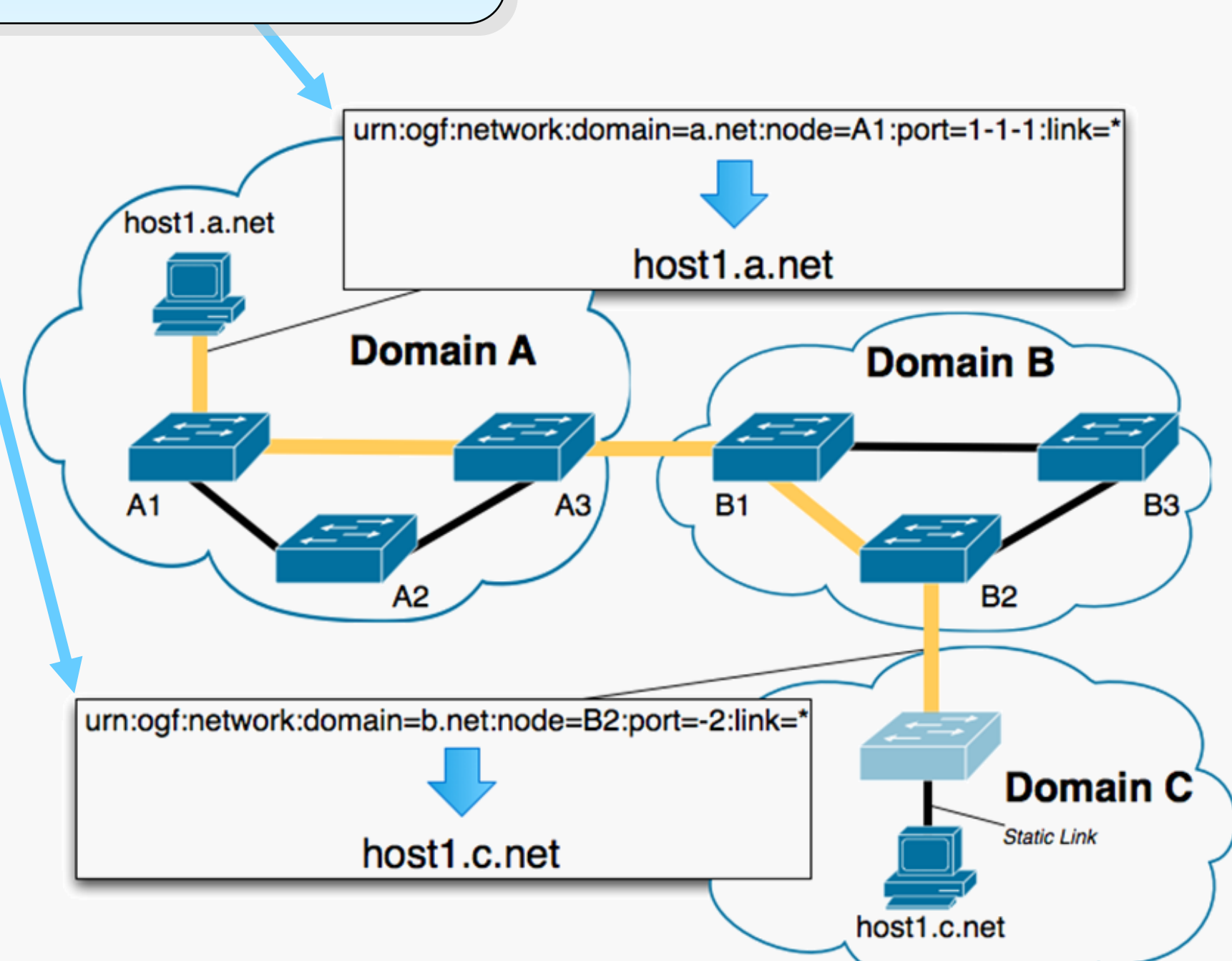
- . Distributed software architectures use the Information Services plane to discover "meta" information within the network.
- . This information services plane facilitates discovery of network topology, location, and capabilities of network services.
- . It is used in:
 - . Performance measurement infrastructures (perFSONAR);
 - . Dynamic circuit networks (ESnet SDN, Internet2 DCN, ION, GÉANT AutoBAHN);
 - . Experimental infrastructures (GENI).
- . Information Services Working Group (IS-WG) targets defining functionalities of the information services plane, and driving design and development.



Map human-readable names to NURNs

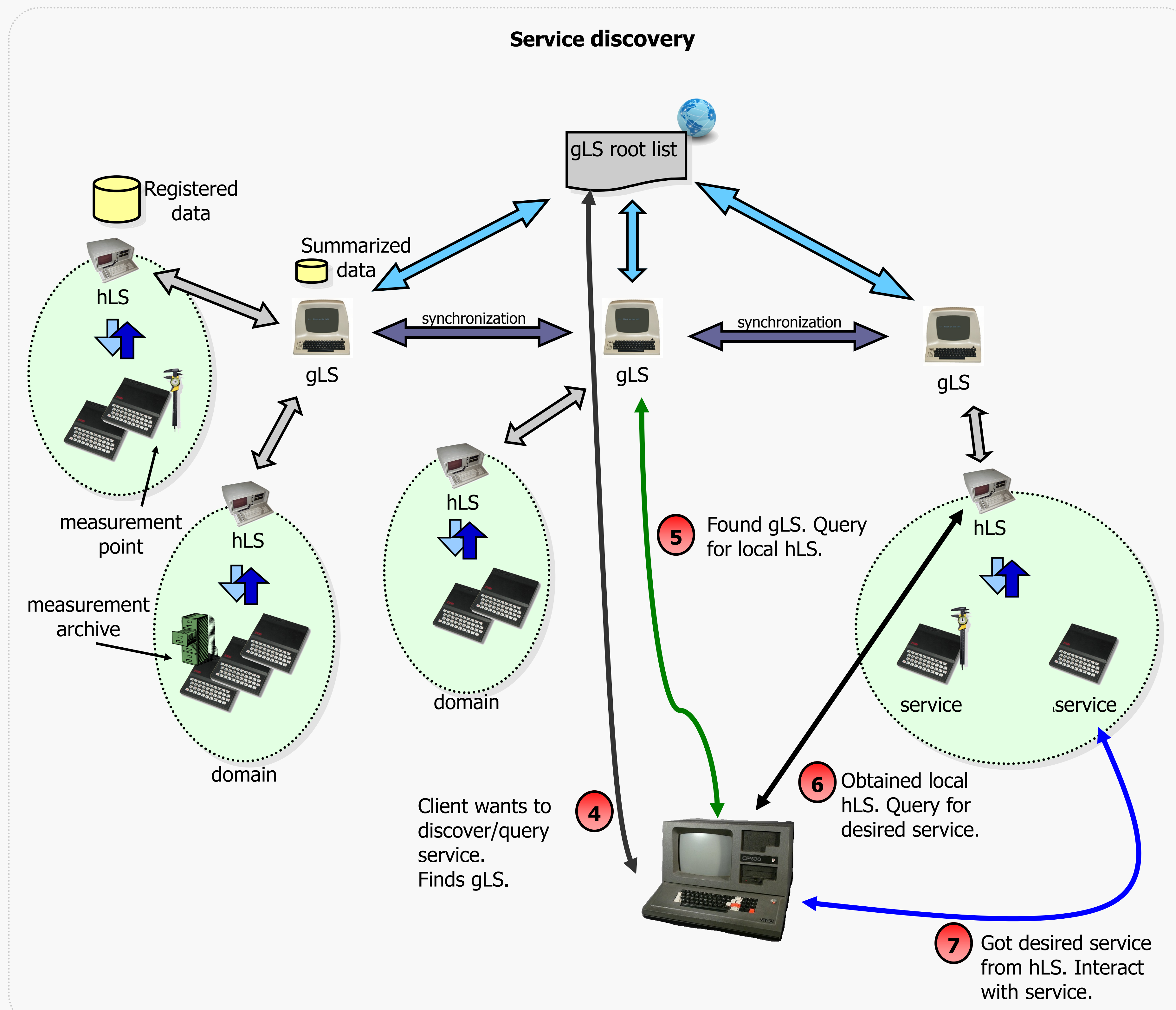
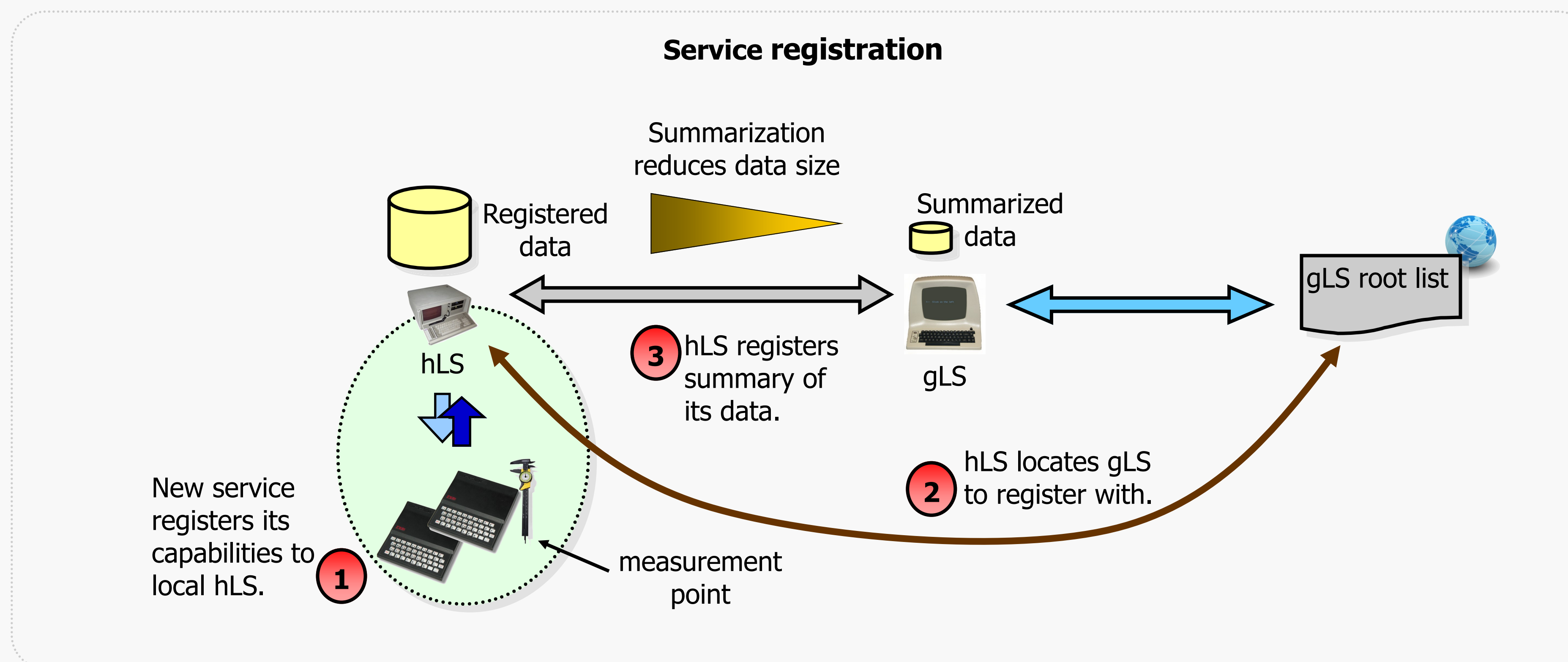
- . Dynamic circuit networks using Interdomain Controller (IDC) protocol require that edge links of connection be specified.
- . These links are described as NURNs (Network Uniform Resource Names).
- . NURNs are global hierarchical identifiers.
 - . Based on URN concept.
 - . Describe any network-related component.
- . NURNs can be very long; hard to remember, prone to typos.
- . UNIS can map human-readable names to NURNs.
- . The human-readable identifiers are registered with Information Services.

Information Service maps those long locators to names that humans can remember



Lookup Service conveys a distributed directory for services

- . The Lookup Service (LS) within UNIS is a distributed directory, composed of levels.
 - . Local directories (hLS): point to local services (measurement tools, archives).
 - . Global directories (gLS) of local directories (all gLSs are synchronized).
- . The hLS accepts registrations from services.
- . hLSs combine registration information into single summaries.
- . hLSs send summarized data to gLSs.
- . gLSs share information among other gLSs, and offer complete coverage.
- . Clients consult hLS/gLS to discover services.
- . Clients and services will use well-known API for communication.

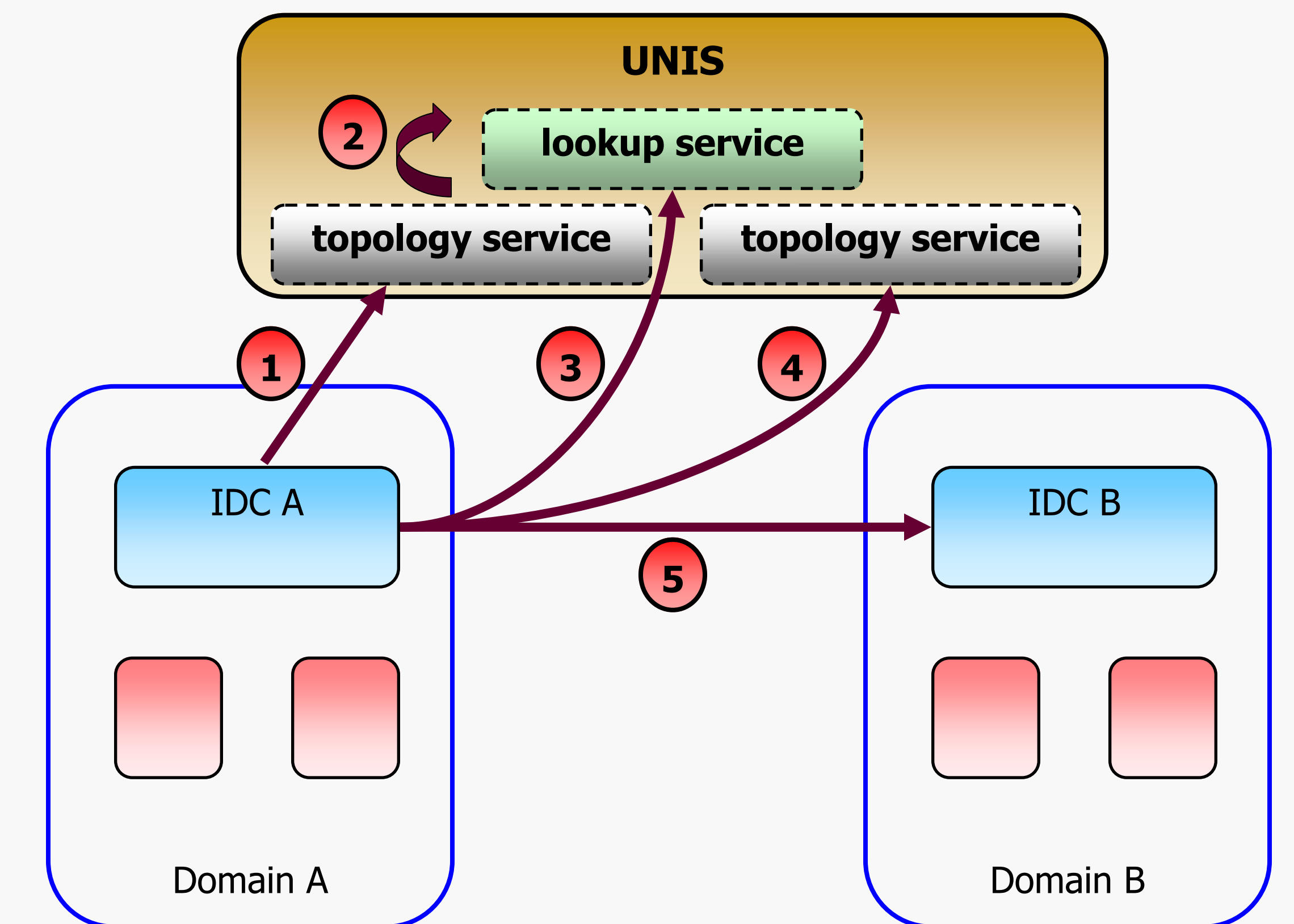


Find a path between two domains

- . OSCARS IDCs register their topologies with UNIS topology service.
- . IDCs can then query UNIS and download topologies to build an inter-domain graph.
- . This graph can be used to lookup the next domain along the network path.
- . Avoids configuring static routes for each possible destination domain.

Example below:

1. IDCs register their topology with UNIS topology services.
2. Topology services interact and registers with lookup service distributed infrastructure.
3. IDC A has message to IDC B; begins path finding, finds link to domain B. Queries Lookup Service to find instance of topology service that knows about domain B.
4. IDC A contacts topology service instance from domain B, downloads its topology.
5. IDC A connects to IDC B.



Find the closest Measurement Point

- . In a network measurement infrastructure (e.g. perFSONAR);
- . Measurement Points (MPs) are devices responsible for running tools to collect measurement data.
- . One or more MPs are activated to conduct measurement.
- . The MPs might lie totally inside the path between end points, or outside the path.
- . Appropriate located MPs must be chosen to obtain "good" measurements;
 - . typically, the MP closer to the end point in topology.
- . The Related MP service within UNIS facilitates discovery of MPs and their location in topology.

