
P4P : Provider Portal for P2P Applications

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P4P Portal Services

- Location Portal Service
 - pDistance Portal Service
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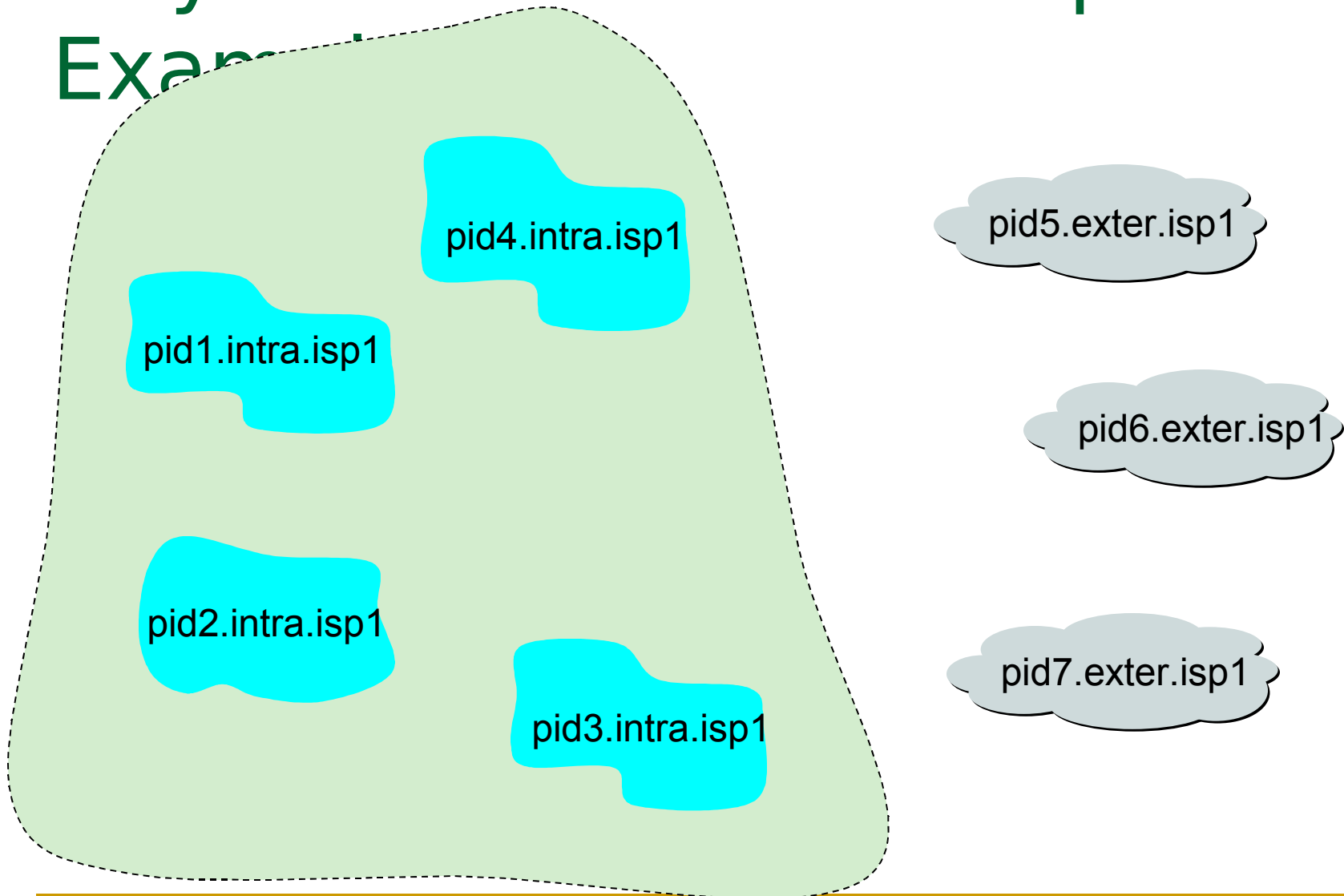
Location Portal Service

- Allows an ISP to aggregate the Internet address space to define its own “my-Internet” view
 - Highly preferred by ISPs during our field tests
 - The “my-Internet” view of an ISP consists of a set of PIDs (partition IDs)
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PID

- A PID denotes a set of network locations
 - A generalization of network aggregation concepts such as autonomous system (AS) or intradomain routing area
 - Can denote aggregation such as
 - a subnet, a point of presence (PoP), a type of customers (dsl vs fiber), an AS, or a set of ASes
 - May define hierarchical PIDs, but focus on one level so far
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“My-Internet” View of isp1: an Example



Implementation: Interfaces Defined in the Location Portal Service

- `GetPID` (MUST)
 - IP address → PID

 - `GetPIDMap` (SHOULD)
 - PID → list of IP prefixes/ASNs belonging to the PID
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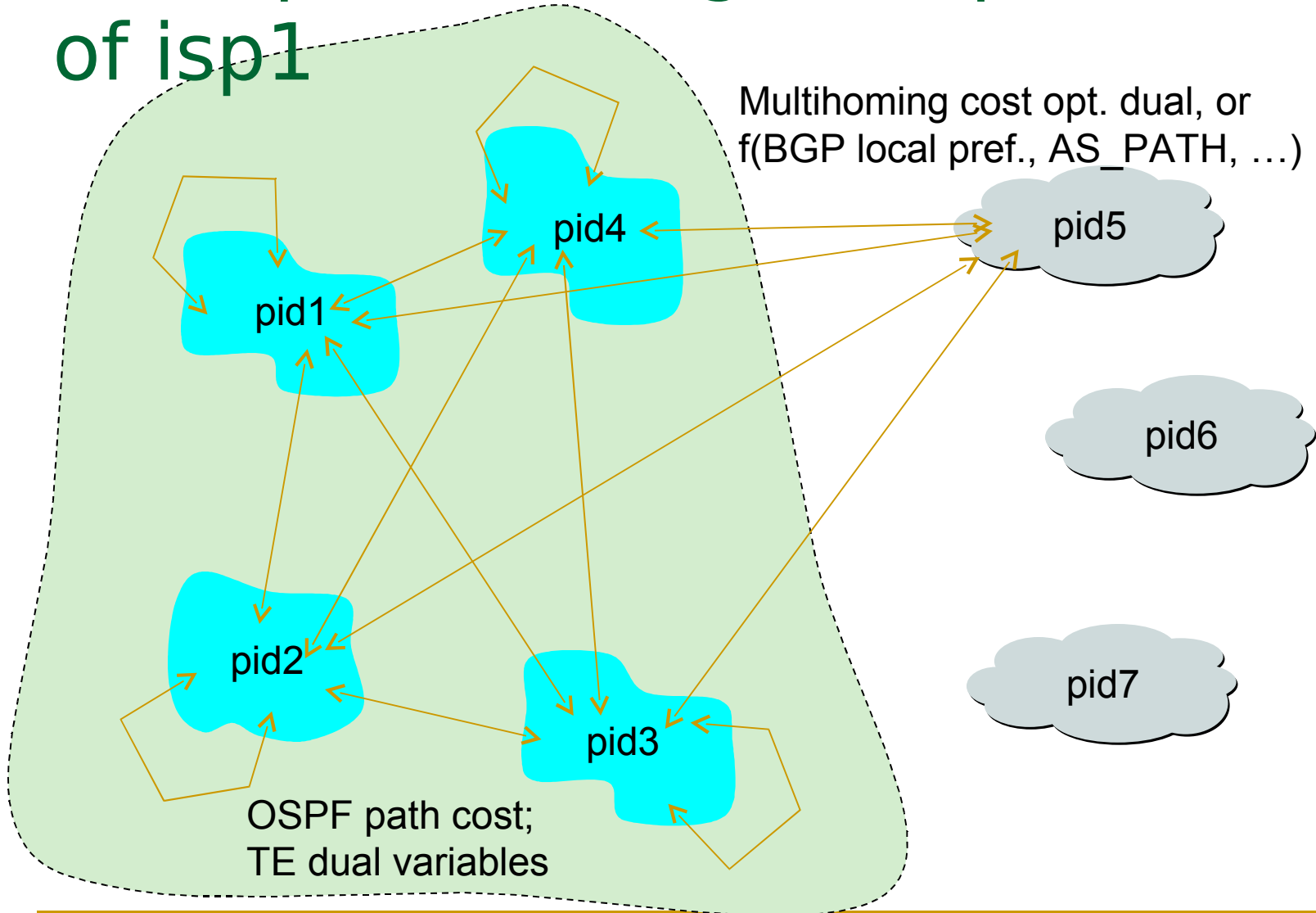
pDistance Portal Service

- The pDistance Portal Service allows an ISP to define the pDistance for any given pair of network locations
 - network location: IP address/PID
 - pDistance: path metric distance, provider distance
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pDistance

- Semantics of pDistance depends on
 - Ordinal or numerical (default) pDistance
 - Type of pDistance, e.g.,
 - Routing Hop-Count pDistance
 - Routing Air-Mile pDistance
 - Routing Cost pDistance (default if not indicated)
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Example: Routing Cost pDistance of isp1



Implementation: Interface Defined in the pDistance Portal Service

- `GetpDistance` (MUST)
 - [a pair of network locations, and optionally type of pDistance] → pDistance value



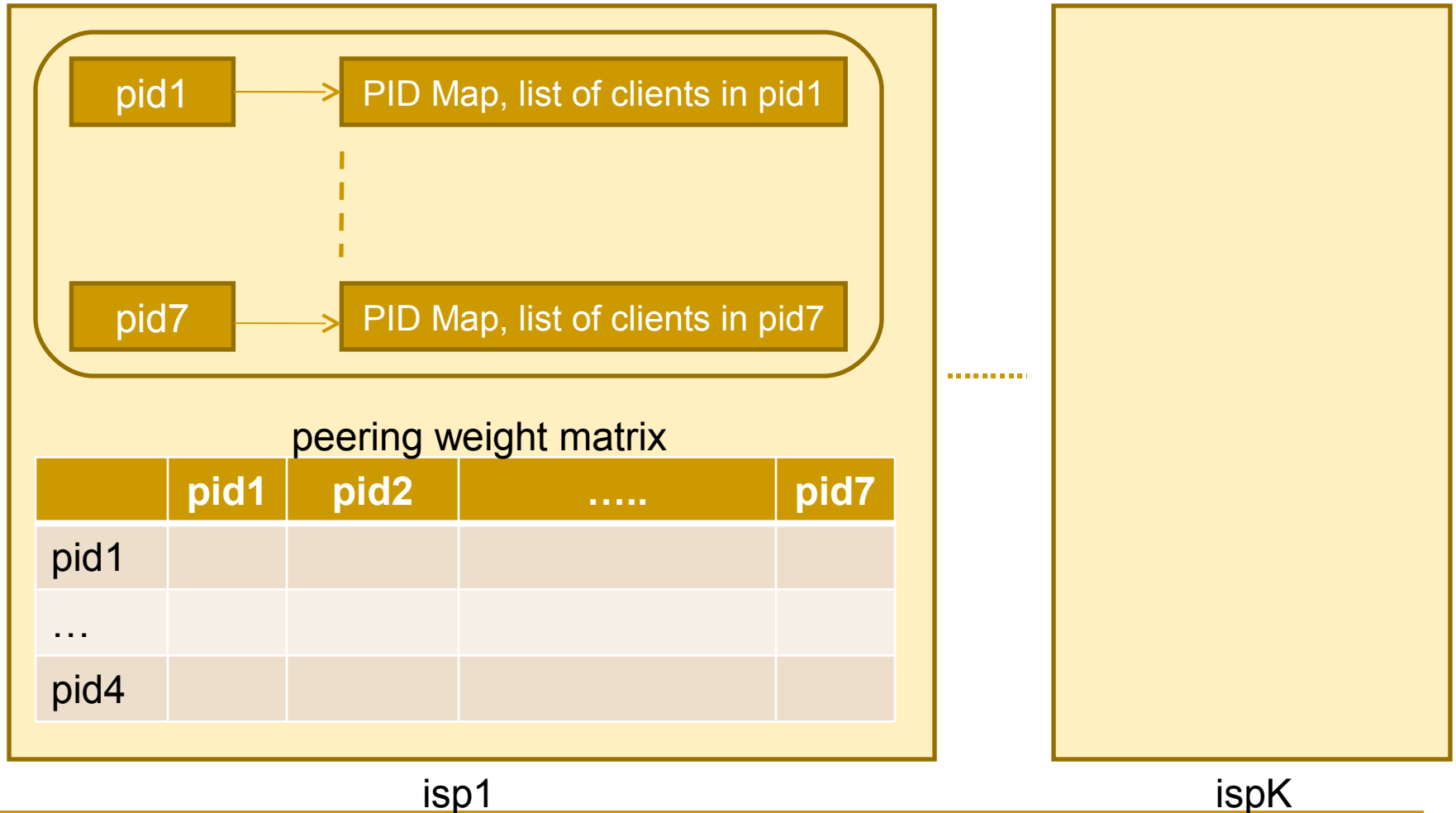
How May a P2P Application Use these P4P Portal Services?

- This depends on the applications
 - It is a place for application innovation
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Example: Tracker-Based File-Sharing P2P in July/August 2008

- The tracker resolves the PIDs of clients
 - By using PID Maps
 - The tracker uses a peering weight matrix to select initial peers for a new client
 - Peering weight matrix computed according to swarm state and pDistance matrix
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Application Tracker Data Structure



Additional and Contact Information

- Additional and contributor information:
 - <http://www-net.cs.yale.edu/projects/p4p/draft-p4p-frame>
 - <http://www-net.cs.yale.edu/projects/p4p/p4p-sigcomm2>
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