Landmark Routing [Tsuchiya88a]

CSci551: Computer Networks SP2006 Thursday Section John Heidemann

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Context

- fairly early in the Internet life
 - before BGP-3
 - before CIDR

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• example of SIGCOMM "wild idea" paper

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Landmark Routing Disadvantages

• (see previous slide)

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LM Hierarchy Definition

- Each LM (L_i) associated with level (i) and radius (r_i)
- Every node is an L₀ landmark
- Recursion: some L_i are also L_{i+1}
 Every L_i is seen by at least one L_{i+1}
- Terminating state when all level j LMs see entire network

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LM self-configuration

- · Bottom-up hierarchy construction algorithm - goal to bound number of children
- Every router is L₀ landmark
- All routers advertise themselves over a distance
- All L_i landmarks run election to self-promote one or more L_{i+1} landmarks
- Dynamic algorithm to adapt to topology changes--Efficient hierarchy

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Other questions/comments? • why distributed vs. centralized ? - distributed can be more fault tolerant (no central point of failure) - some networks we don't know number of nodes or may not have a central authorty or know where it is overhead could be lower with distributed algorithm (don't send things long distances, just send to the radius) • why prefer centralized?

- easier maintence only go to one place
- changes could be consistent
- if something breaks, you know where to go
- sometimes easier to invest more in a central point and therefore make it very very reliable

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