Distributed Overlay Anycast Table using Space Filling Curves

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Presentation structure

- Project
- Anycast
- Distributed Anycast
- Space filling curves
- Routing
- Evaluation
- Conclusions and future work

UCL

Peerlive

Near real-time P2P video distribution

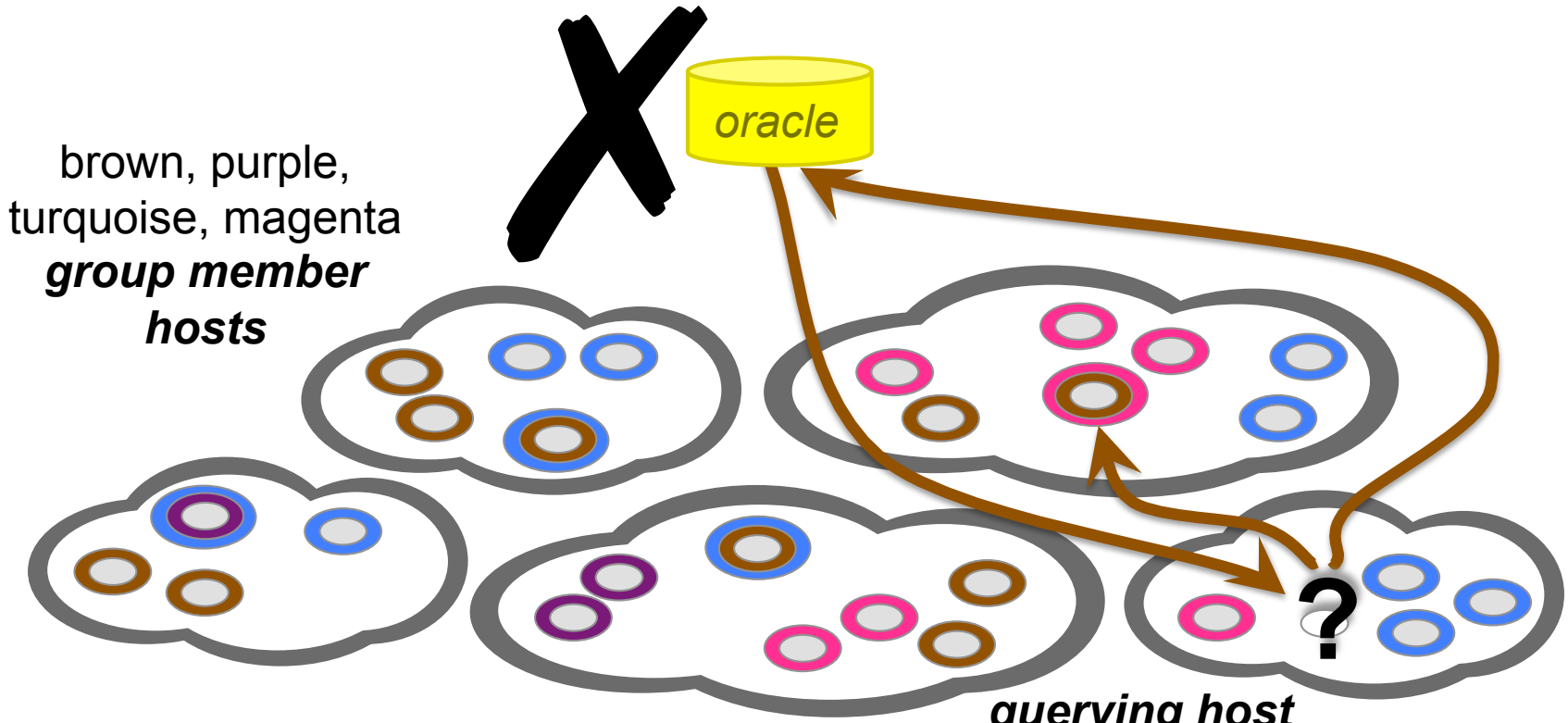
Areas of research

- Peer discovery
- Incentive mechanisms
- Delay optimised swarming

More information, publications and talks at : www.peerlive.org

Application-Layer Anycast

- Large number of Anycast groups
- Popular (lots of member nodes), and unpopular groups
- High membership churn, high arrival/departure churn
- Find the closest member quickly and accurately



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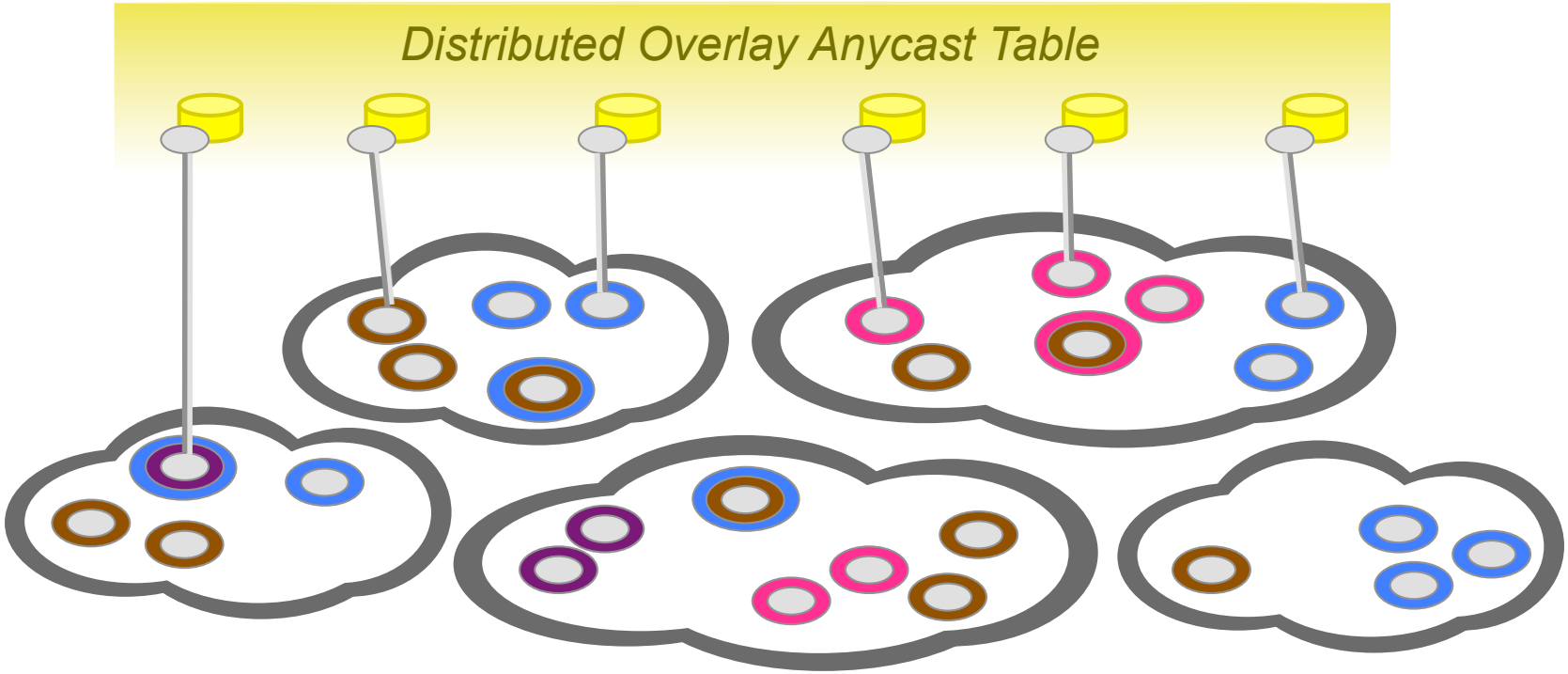
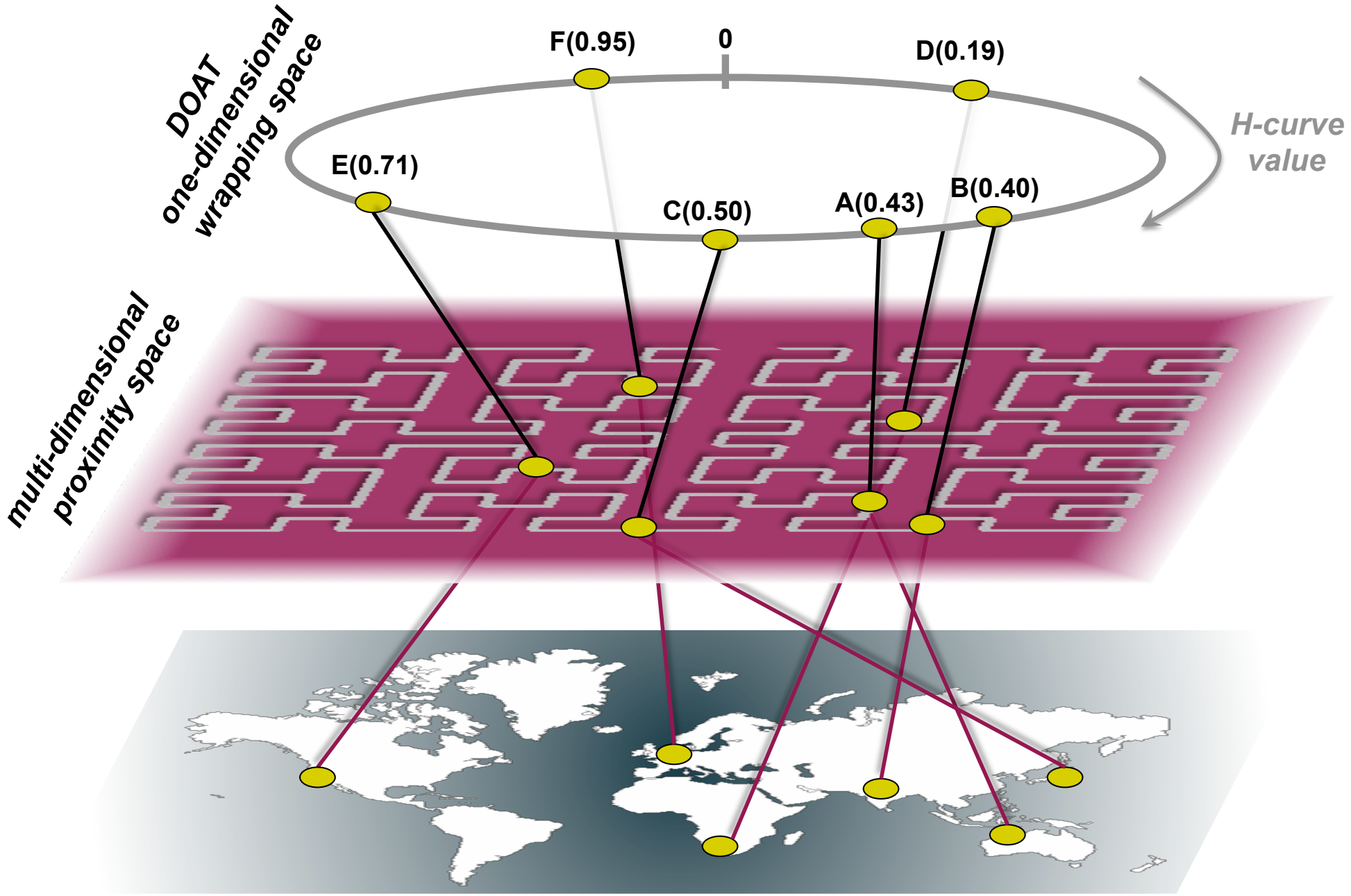
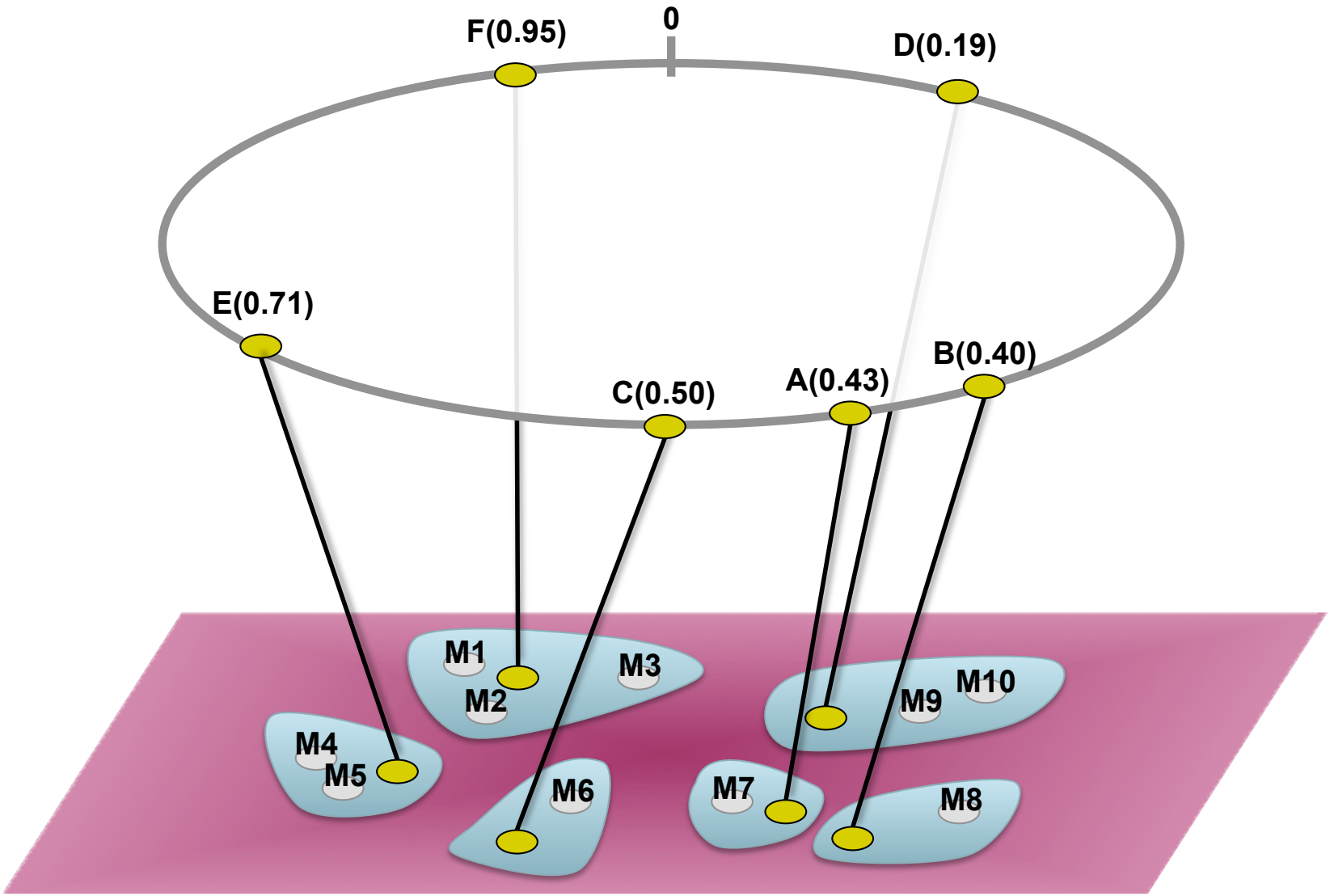


Space Filling Curves



Bloom Filters and routing



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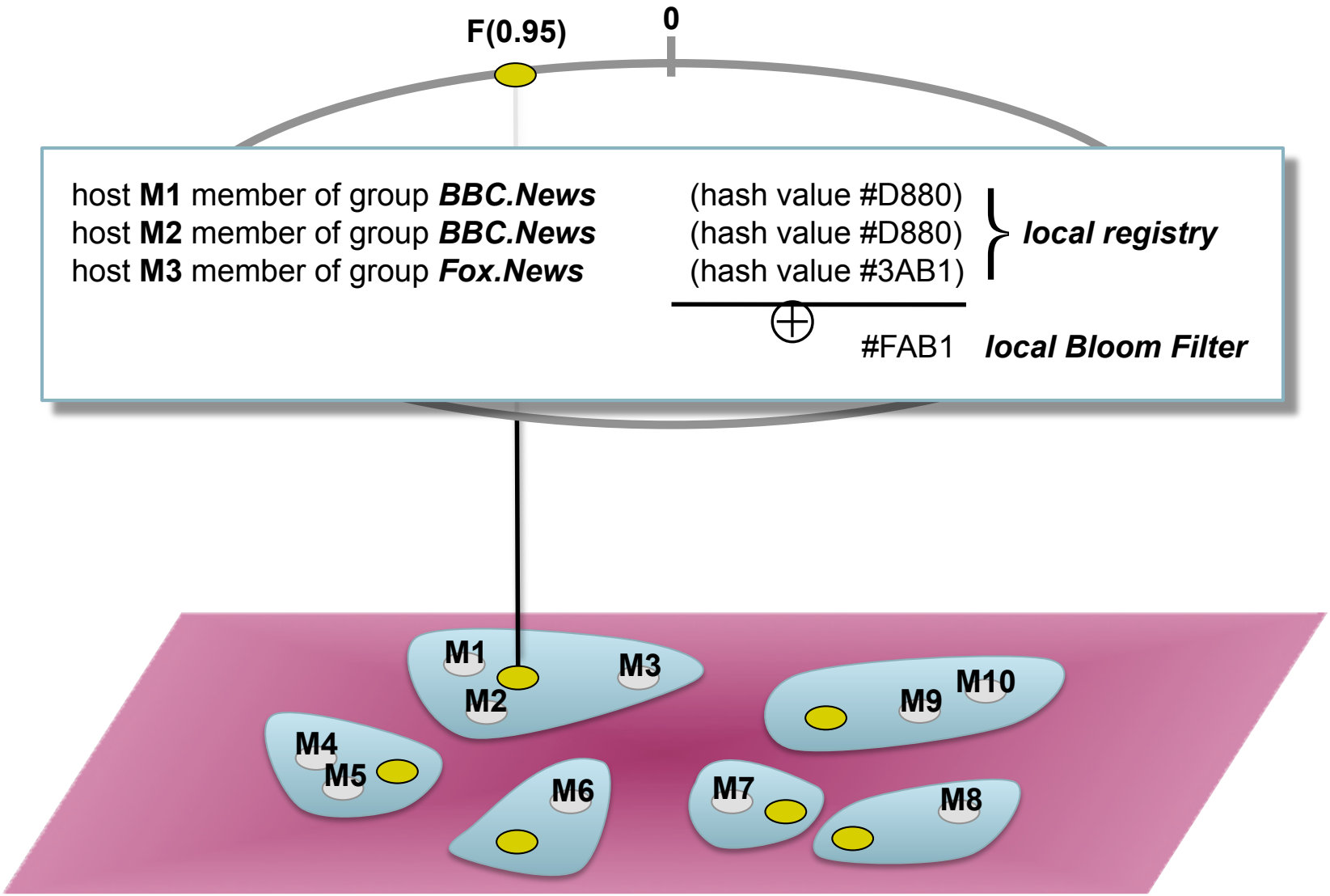

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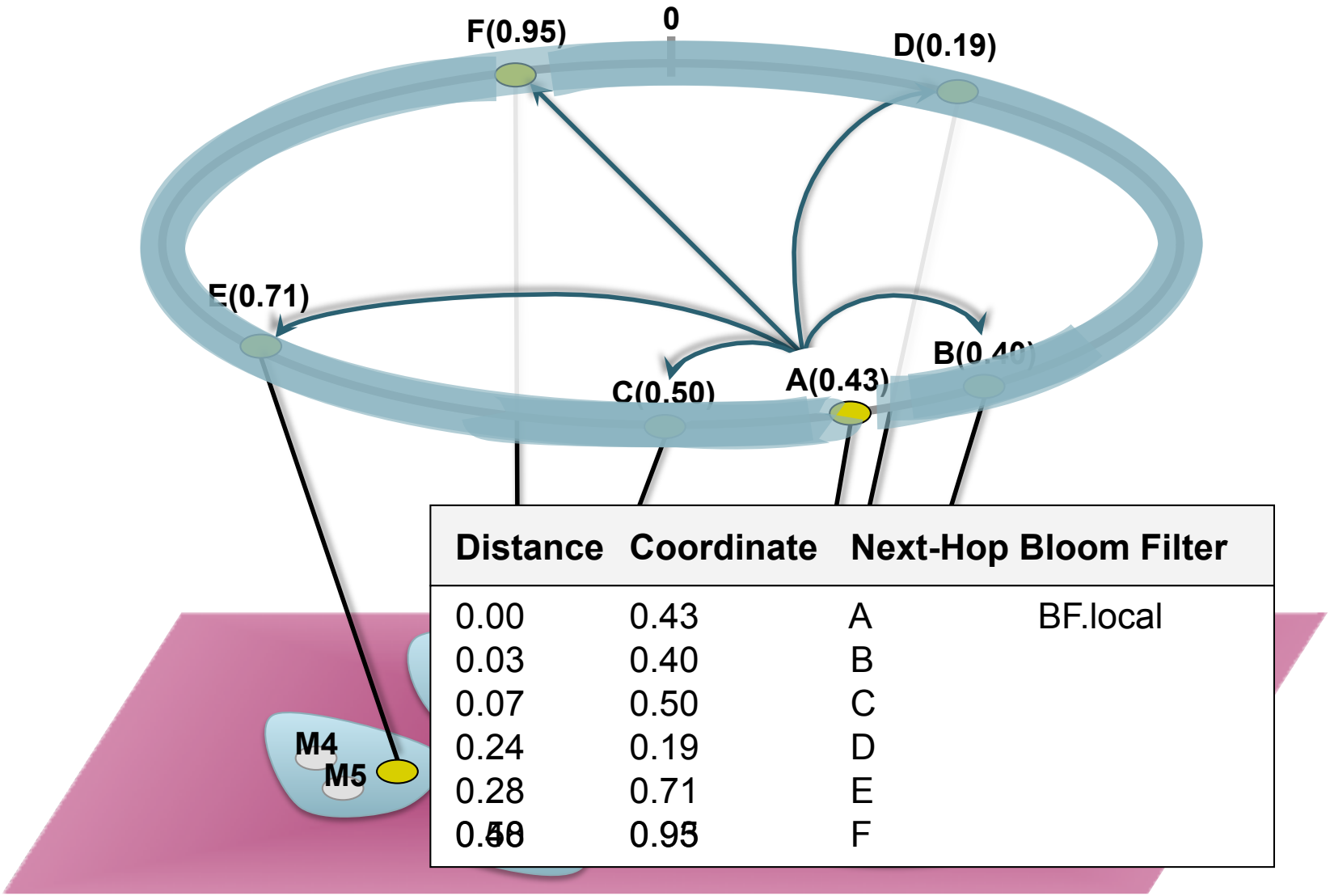

Distance	Coordinate	Next-Hop	Bloom Filter
0.00	0.43	A	BF.local
0.03	0.40	B	
0.07	0.50	C	
0.24	0.19	D	
0.28	0.71	E	
0.48	0.95	F	

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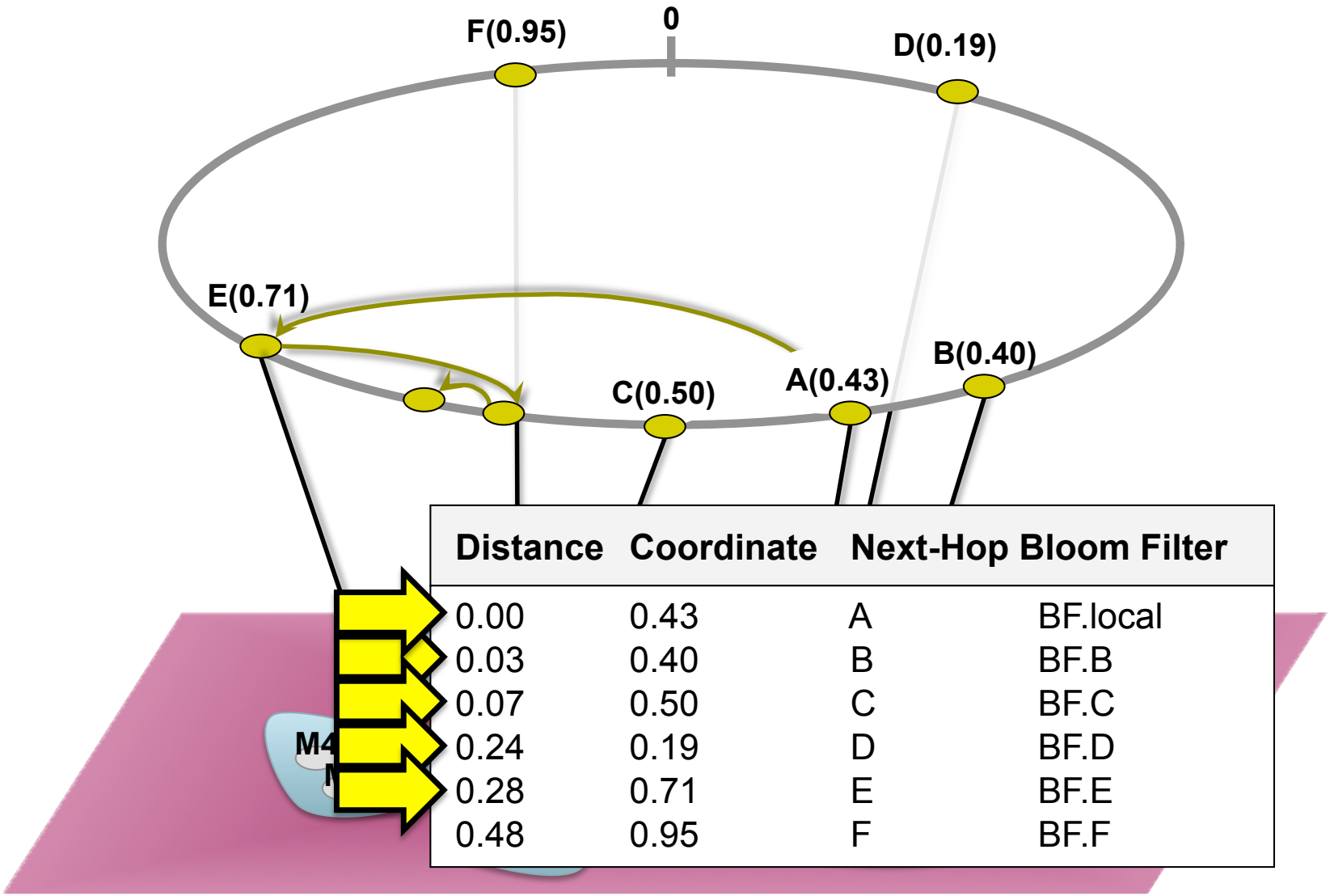

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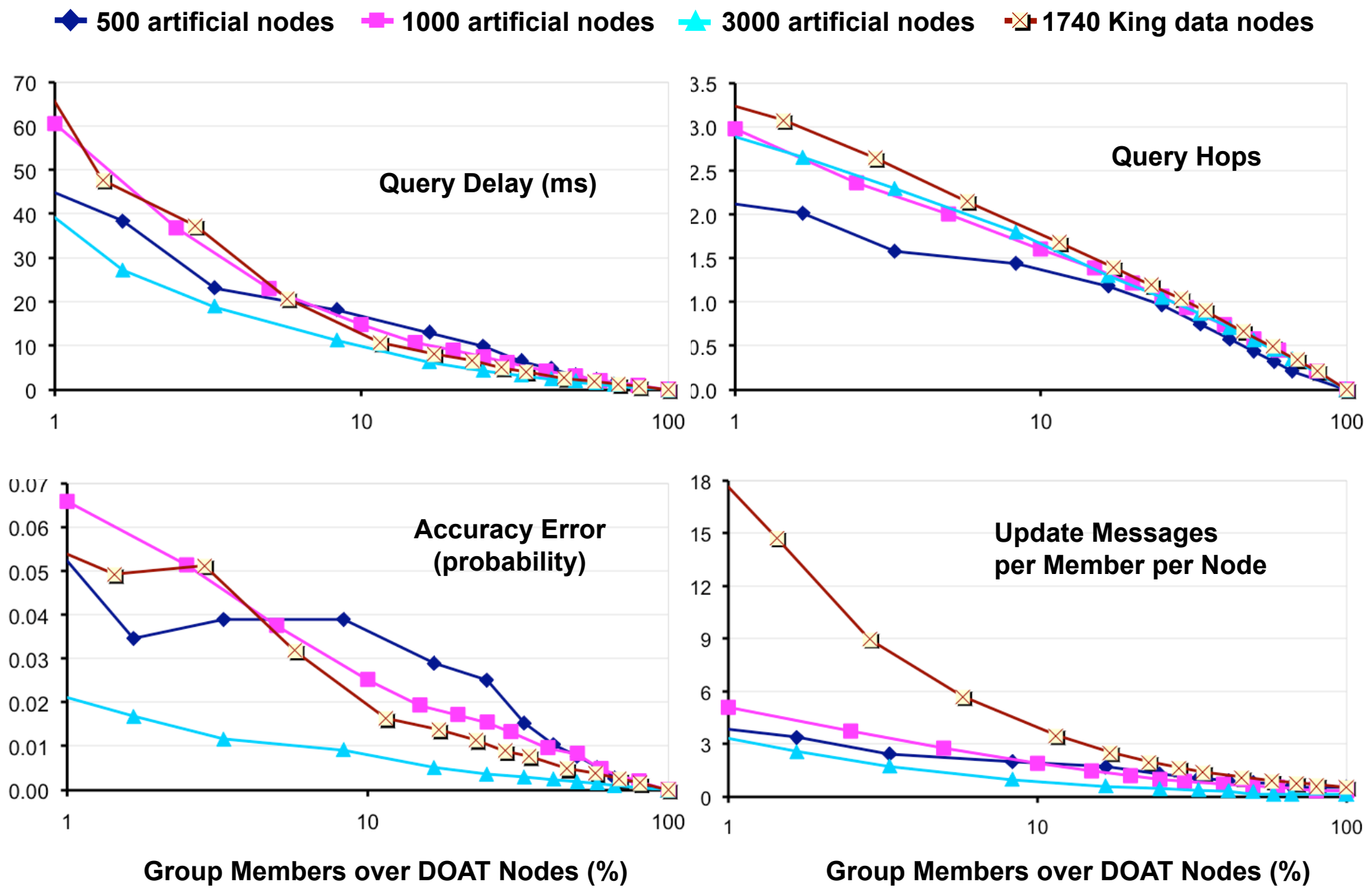
Evaluation, synchronous updates



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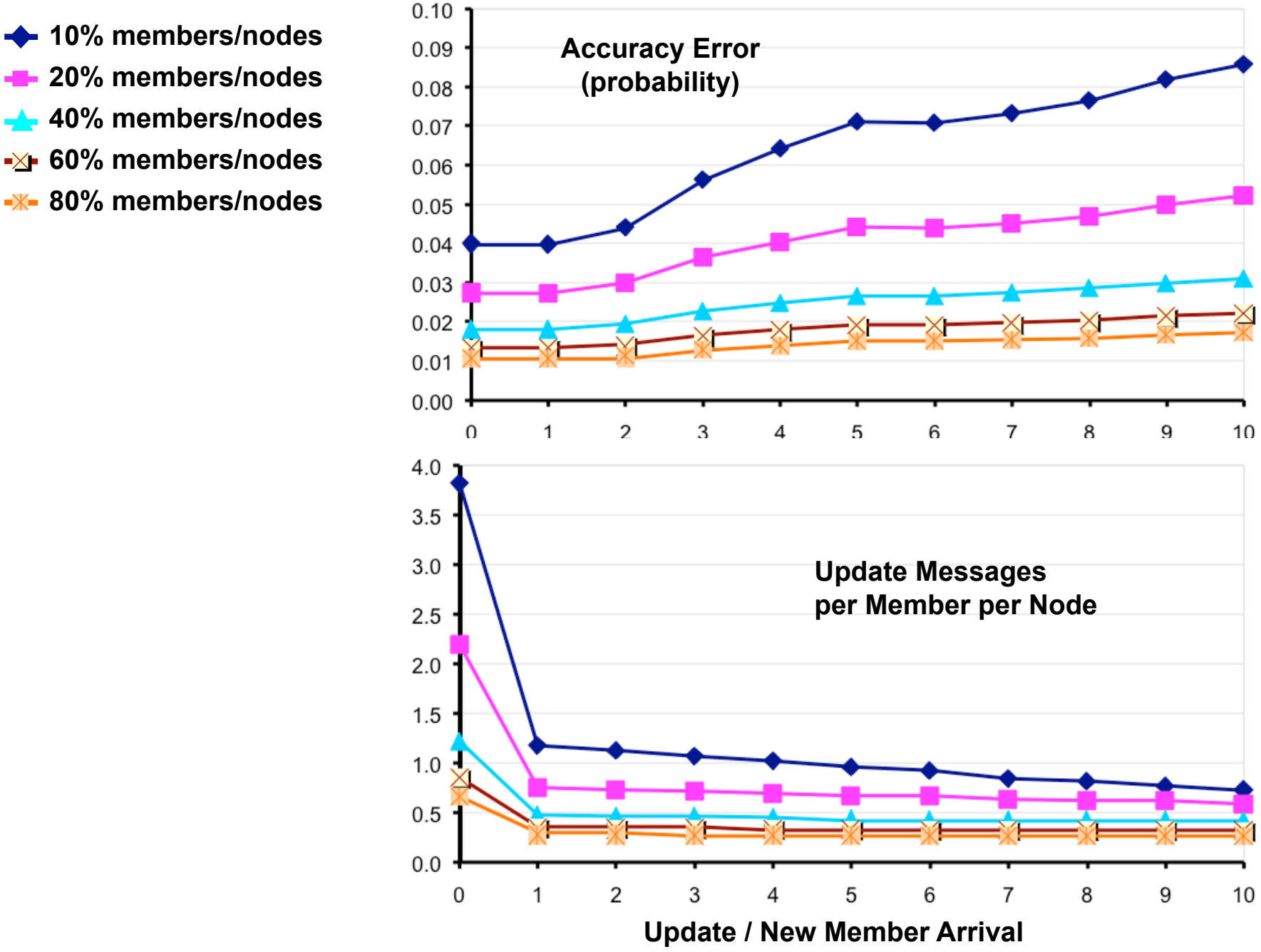

Conclusions and Future Work

- ✓ Scalable Application-Layer Anycast, supporting any number of small and very large groups
- ✓ Minimum querying delays, highly accurate results subject to proximity coordinates accuracy, low sensitivity to coordinates drift
- Investigate false positive impact on performance
- Prototype evaluation

Thank you!

For more information about the Peerlive project, of which DOAT is a core technology of please visit www.peerlive.org