

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

**DOTTORATO DI RICERCA / PhD PROGRAM IN  
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

## **Seminar announcement**

**Friday 30th June 2023, Time: 11:00 - 12:00**

**Aula Seminari, Floor 1, Building 3, DIETI - Via Claudio, 21 - NAPOLI**



### **Prof. Pascal Mérindol**

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## **BGP & Hot-Potato Routing: graceful and optimal convergence in case of IGP events**

**Abstract:** Interactions between the intra- and inter-domain routing protocols received little attention despite playing an important role in forwarding transit traffic. More precisely, by default, IGP distances are taken into account by BGP to select the closest exit gateway for the transit traffic (hot-potato routing). Upon an IGP update, the new best gateway may change and should be updated through the convergence of BGP, causing superfluous BGP processing and updates in many cases.

In this talk, I will present OPTIC (Optimal Protection Technique for Inter-intra domain Convergence), an efficient way to assemble both protocols without losing the hot-potato property. OPTIC pre-computes sets of

gateways shared by groups of prefixes. Such sets are guaranteed to contain the post-convergence gateway after any single IGP event for the grouped prefixes. The new optimal exits can be found through a single walk-through of each set, allowing the transit traffic to benefit from optimal BGP routes almost as soon as the IGP converges. Compared to vanilla BGP, OPTIC's structures allow to consider a reduced number of forwarding entries: it can be reduced by 99% for stub networks. The update of OPTIC's structures, which is not required as long as border routers remain at least bi-connected, scales linearly in time with its number of groups.

**Lecturer short bio:** *Pascal Mérindol is an associate professor in the network research group at the ICube laboratory of the University of Strasbourg, France. He received his PhD degree from the same University in 2008, and then spent two years as a Postdoctoral Researcher in the University catholique de Louvain, Belgium. His main research topics are Routing and Internet Measurements. He has co-authored more than 40 papers in highly visible international journals and conference proceedings.*

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