
Embedding Real-Time Substrate Measurements for Cross-Layer Communications (ERM)

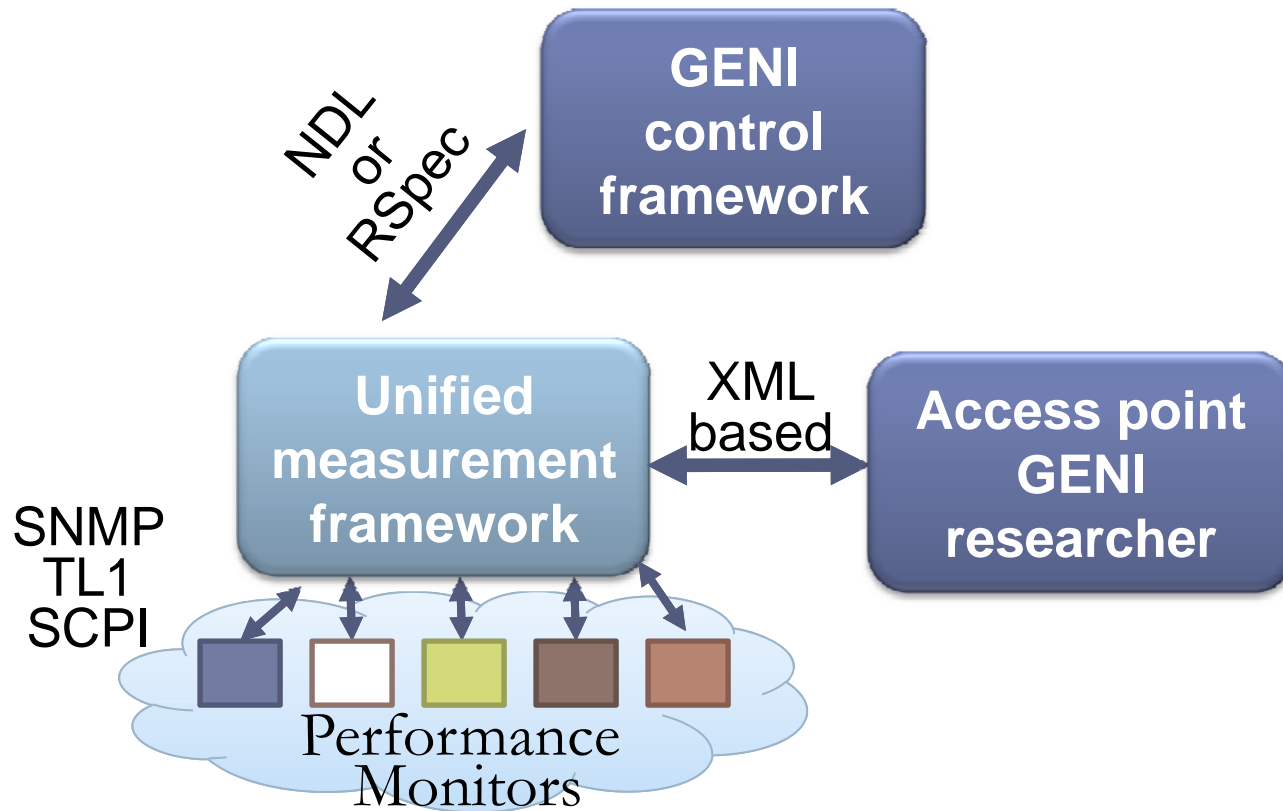
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Instrumentation and Measurement Working Group Meeting at GEC6
11/16 – 11/18/2009

Our Involvement in Cluster-D

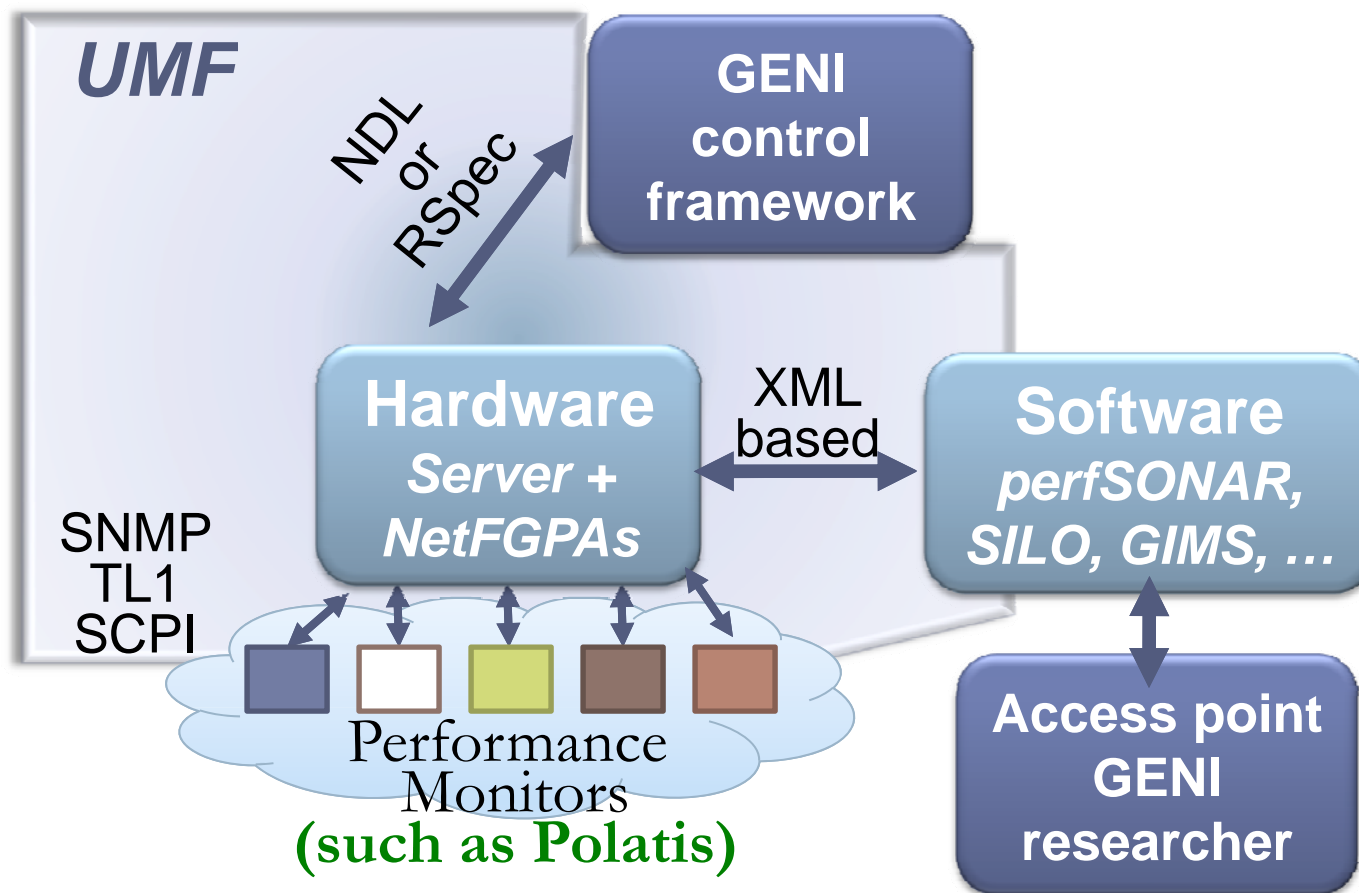
- Starting from Spiral 1
 - Embedded Real-Time Measurement (*ERM*)
- Starting from Spiral 2
 - Integrated Measurement Framework and Tools for Cross Layer Experimentation (*IMF*)
 - Programmable Measurements over Texas-based Research Network (*LEARN*)

Year 1: Unified Measurement Framework Interface Specifications



Milestone 3, [http://groups.geni.net/geni/wiki/Embedded Real-Time Measurements](http://groups.geni.net/geni/wiki/Embedded%20Real-Time%20Measurements)

Year 1: Unified Measurement Framework Implementation (Example)



Milestone 3, [http://groups.geni.net/geni/wiki/Embedded Real-Time Measurements](http://groups.geni.net/geni/wiki/Embedded%20Real-Time%20Measurements)

ERM Spiral 2 - Objectives

- Draft the data file format for the transfer of measurement data between the Infinera DTN and the IMF (**LEARN**, due 11/16/09)
- Prototype UMF implementation by means of a NetFPGA (**ERM**, due 12/03/09)
- Demo working interface from UMF to embedded measurement system, e.g. monitor power with Polatis switch (**ERM**, due 03/04/10)
- Integrate the IMF and UMF with devices in BEN that include performance monitoring capabilities, and demonstrate gathering measurements from these devices. (**IMF** / **LEARN**, due 03/16/10)
- Demo UMF in an experimental use-case with Lightwave Research Lab test-bed at Columbia University (**ERM**, due 06/03/10)
- Integrate the IMF and UMF with SILO, and demonstrate a simple cross-layer experimental use-case, e.g., where an optical layer measurement influences routing.
 - Version 0.5 of IMF-SILO software. (**IMF**, due 07/20/10)
 - Version 0.8 of IMF-SILO software (**ERM**, due 08/31/10)
 - Version 1.0 of IMF-SILO software (**IMF**, due 09/30/10)
- GENI Outreach - Plan to integrate UMF and IMF within another infrastructures (**ERM** / **IMF**, due 09/30/10)

ERM Spiral 2 - Challenges

- Interfacing NetFPGA implementation of UMF with different performance measurement devices (Polatis, Infinera DTN, etc)
- Interfacing UMF with intermediate measurement software architecture (SILO, perfSONAR, GIMS)
- Interfacing UMF with BEN network and its performance monitoring devices

ERM Spiral 2 - Approach

