

KanseiGenie:
GENI-fying and Federating
Autonomous Kansei Wireless Sensor Networks

Spiral 2 – Quarter 3 Report

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1. Major accomplishments

- KanseiGenie extension that enables fine-grained resource management using latest ORCA release
- Extended KanseiGenie Researcher Portal with stitched federated experimentation support
- Online experiment visualization prototype
- Collaboration with GMOC, exported KanseiGenie health meta data
- Layer 2/3 connection between Kansei and NetEye

2. Milestones achieved

- KANSEI: S2.a Remote access
 - Done
- KANSEI: S2.b Cluster plan for VLANs between testbeds
 - Done
- KANSEI: S2.c Extend researcher portal to support workflow management
 - Done
- KANSEI: S2.d Extend researcher portal for use with Kansei and NetEye
 - done
- KANSEI: S2.e Bring up NetEye testbed at WSU
 - done
- KANSEI: S2.f Connections from Kansei and NetEye to Internet2
 - done
- KANSEI: S2.g Import extended ORCA v2.1 (Due 07/20/10)
 - done
- KANSEI: S2.h Demo experiment using Kansei and NetEye (Due 07/20/10)
 - done
- KANSEI: S2.i Collaborate with GMOC (Due 08/31/10)
 - done
- KANSEI: S2.j POC to GENI response team
 - Done
- KANSEI: S2.k POC to GENI security team

- Done
- KANSEI: S2.I Contribution to GENI outreach (Due 08/31/10)
 - Work in progress

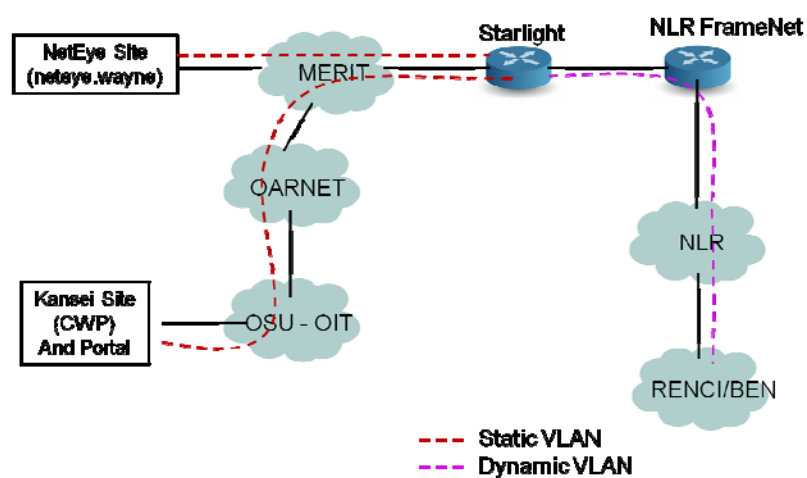
3. Deliverables made

- Stitching service that connects Kansei and NetEye
<http://kansei.cse.ohio-state.edu/KanseiGenieFed>
- Visualizer prototype
http://kansei.cse.ohio-state.edu/trac/wiki/gec8_demo_instructoins
- WSN DL draft released at GEC8
<http://groups.geni.net/geni/attachment/wiki/Gec8Workshops/KanseiGenie-RSpec-GEC8.pdf>
- KanseiGenie fine-grained resource management plugin for ORCA
<http://neteye2.cs.wayne.edu>

4. Description of work performed during last quarter

- Summary of accomplishments related to fine-grained resource management using latest ORCA release
 - Upgrade ORCA1.x to Bella-2.0
 - OSU: compatible KanseiGenie site authority (handler) and service manager (controller)
 - WSU: KanseiGenie site authority
 - RENCI:
 - KanseiGenie Broker cluster-D clearinghouse
 - KanseiGenie actors registered in the ORCA actor registry
 - fine-grained resource management plug-in in KanseiGenie broker
 - node-based resource management
 - ORCA broker policy, node inventory and new resource type for Kansei and NetEye resources
 - TelosB-Kansei, TelosB-NetEye, XSM, Stargate
- Summary of accomplishments related to extended KanseiGenie Researcher Portal with stitched federated experimentation support

- A message dispatching service is built to enable near real time message exchange between Kansei and NetEye so that resource in the two sites can be stitched together. The tested delay between the two sites is now 200ms one way. The service itself is extensible to connect any two sites. Details about the dispatching service can be found at http://kansei.cse.ohio-state.edu/trac/wiki/gec8_demo_instructoins.
- Summary of accomplishments related to experiment visualization prototype
 - A prototype visualizer that captures every packet exchanged between the two sites has been developed. The visualizer was used in the round-trip-delay measurement demo during the GEC8. Details about the dispatching service can be found at http://kansei.cse.ohio-state.edu/trac/wiki/gec8_demo_instructoins.
- Summary of accomplishments related to refining KanseiGenie RSpec
 - Defined the basic ontology for low-level wireless sensor network RSpec
- Summary of accomplishments related to assisting collaboration with GMOC
 - Provided point of contact to conduct 'emergency stop'
 - Exported the KanseiGenie health data as well as its schema to the GMOC team
- Summary of accomplishments related to layer 2/3 connection between Kansei and NetEye
 - L3 connection has been established between Kansei and Neteye
 - L2 connection is tested up to the campus edge. The topology is shown as follows:



5. Activities and findings

The following tasks are ongoing:

- Integrate the stitching service to the web portal
- Integrate the visualization service to the web portal
- Implement WSNDL in KanseiGenie
- GENI outreach

6. Project participants

Investigators:

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[Rajiv Ramnath](#)

[Hongwei Zhang](#)

[Vipul Gupta](#)

[Sami Ayyorgun](#)

Staff:

[Mukundan Sridharan](#)

[Wenjie Zeng](#)

Xi Ju

7. Publications (individual and organizational)

A paper on KanseiGenie has been accepted by TridentComm'10.

8. Outreach activities

- Demonstrate KanseiGenie to a delegation of 30 college students from Shanghai University, China

9. Collaborations

- Collaborate with GMOC, exported KanseiGenie health meta data

10. Other Contributions

- Helped the OKGem team to clone KanseiGenie