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Abstract

SDN-WISE is a Software Defined Networking solution for Wireless Sensor Networks (WSNs). This work shows the peculiarities of SDN-WISE, and how easy it is programming the behavior of a WSN by exploiting the SDN-WISE features.

Features

SDN-WISE introduces some novel functions which are particularly convenient in WSNs:
▶ Statefulness
▶ Flexible definition of rules
▶ Support of duty cycles
▶ Support of multitenancy
▶ Lots of deployment options and programming languages
▶ Integration with simulation environments

Design and Implementation

Downloads

The source code of the controller and the firmware are available under GPL 3.0 licence on GitHub. For more information please visit http://sdn-wise.dieei.unict.it.

Use Case

Testbed

▶ Sensor nodes:
  ▶ Embit IEEE 802.15.4 boards (EMB-Z2530PA)
  ▶ Memory: 8 kB RAM + 256 kB Flash memory
  ▶ 40 kB of memory used for MAC (TIMAC v.1.4.0)
  ▶ 10 kB of memory used for SDN-WISE
▶ Control plane:
  ▶ WISEVisor + Controllers hosted in the same PC
  ▶ Controllers implemented in Java

Conclusions

SDN-WISE reduces the amount of information exchanged between sensors and the SDN controllers by using a stateful approach and provides a new level of abstraction which allows several logical WSNs to coexist over the same set of sensor nodes.

Acknowledgement

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<th>Matching Rule</th>
<th>Matching Rule</th>
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</table>

Figure: WISE Table for use case 1.