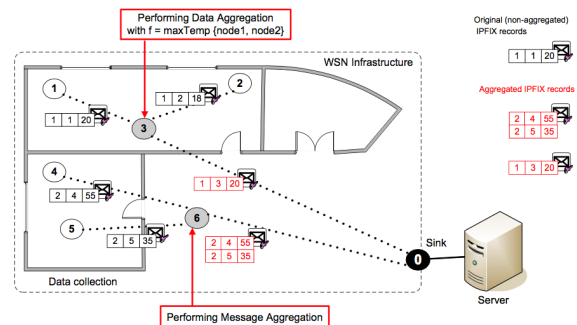


Aggregation Support by RIOT OS Devices under SecureWSN (BA/MA)

Over several years a big IoT network called [SecureWSN](#) was established and continuously expanded towards a trustworthy environmental monitoring framework for constrained networks. The network itself consists of 3 parts: (1) Data collection via constrained devices, (2) gateway component handling incoming data and managing the network called CoMaDa, and (3) a framework realizing backend and front-end for the end-user called WebMaDa. Several theses are available in those parts of SecureWSN.

This thesis looks on the extension of the data collection part via constraint devices running RIOT OS and the application protocol TinyIPFIX (RFC 8272) for data gathering. Depending on the application a preprocessing of data in the collecting network makes sense, especially to reduce the network traffic in total. Thus, powerful devices within the network on designated location should preprocess the data by supporting message and data aggregation as requested by the network owner. The protocol itself should follow the TinyIPFIX message format in order to allow easy integration into the running infrastructure (CoMaDa and WebMaDa) at the same time.



Here the following things are requested to be designed, implemented, and evaluated (most likely via proof-of-concept):

- Aggregation support following TinyIPFIX message format under RIOT OS
- Integration and support into CoMaDa and WebMaDa
 - Configuration and deployment
 - XML integration for template translation
 - Integration into logging system
 - Integration into privilege management
 - Accessibility via front-end for end-user

Finally, the complete solution needs to be evaluated and the report needs to be written. Further, a detailed documentation on how to install the solution in the Computing Cloud is required including how to create new testing-instances assuming several groups are developing new features in parallel. Depending on the chosen thesis type the content will be adapted in its complexity. Depending on the results we will try to publish it on high ranked conferences and workshops.

As this work is based on different works and research results, a willingness to familiarize oneself with the existing system is expected. Knowledge in C programming and little bit SQL, PHP, Javascript for CoMaDa/WebMaDa integration would be an advantage.

We will offer you:

- Access to existing installations of SecureWSN's components
- Access to written theses of SecureWSN
- Smart working environment
- Deep contact to supervisors and a lot of discussions and knowledge exchange

If you are interested in this thesis, contact us and let's discuss:

- PD Dr. Corinna Schmitt (UniBW, Examiner at the LMU), Email: corinna.schmitt@unibw.de