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Python-BPF: Writing eBPF programs in pure Python

This talk aims to introduce the audience to Python-BPF, a project that enables developers to write eBPF programs in pure Python. We allow a reduced Python grammar to be used for the eBPF-specific parts of code.

This improves the following things in the eBPF ecosystem

- Both eBPF logic and userspace code is written in Python (and can be in the same file), so the Python dev-tools apply to the whole file instead of just the non-BPF parts (an improvement over BCC).
- This enables users to process eBPF data and visualize it using Python's ecosystem.
- Allows quick prototyping of BPF programs, and has a familiar and easy-to-learn syntax.

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This project is in its early stages, and work is being actively done to integrate most features required for observability use cases into Python-BPF right now.

PythonBPF currently supports a subset of map types and eBPF helpers; however, this list is expanding every week. Most examples given in the BCC tutorial have been ported to Python-BPF, and in some cases, have been modified slightly (such as using matplotlib and seaborn to create better visualizations than ASCII histograms). Python-BPF can also run on Jupyter notebooks.

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