

Towards evolution-based autonomy in large-scale systems

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The Problem

Issues/problems with Networks

- Unreliable connections
- Change in user needs
- Real-time unexpected events

How we plan to achieve this

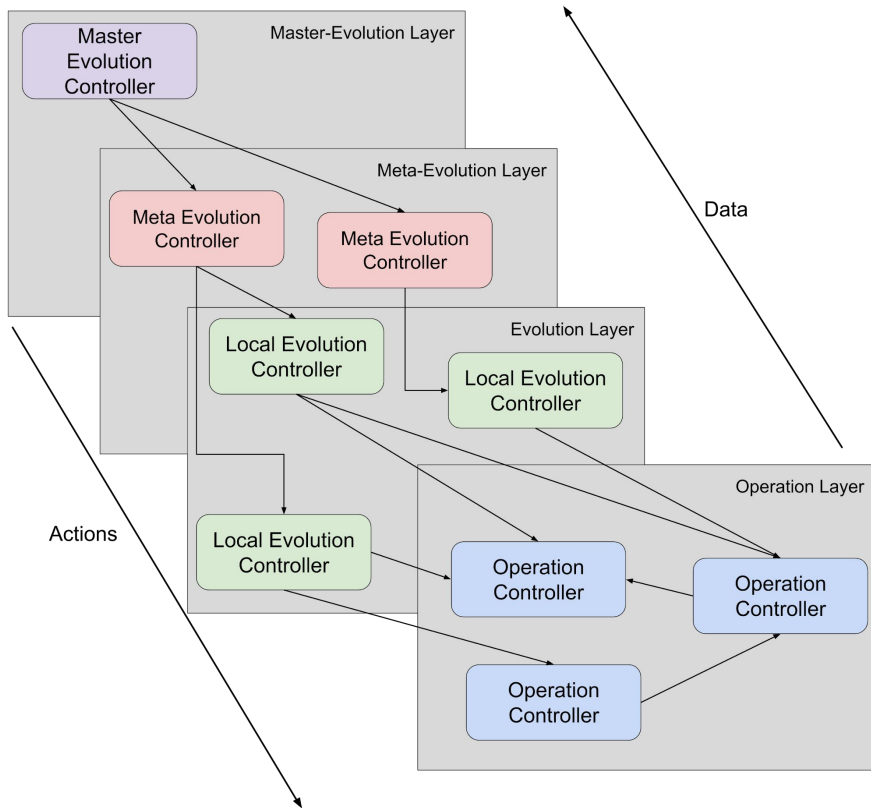
Evolution

- Adapt to unseen and unimagined scenarios
- Self optimising capabilities
- Efficient search space exploration for configurations
- Scalability

Challenges

- Generic architecture
- Decouple Evolution from Operational
- Fitness function decomposition
- Problem Encoding
- Generation of realistic traffic

Evolution-based Autonomy



- Evolution layer is platform agnostic
- Operation layer is tailored to the platform/technology

The Experimental Setup

Start with a simpler use case

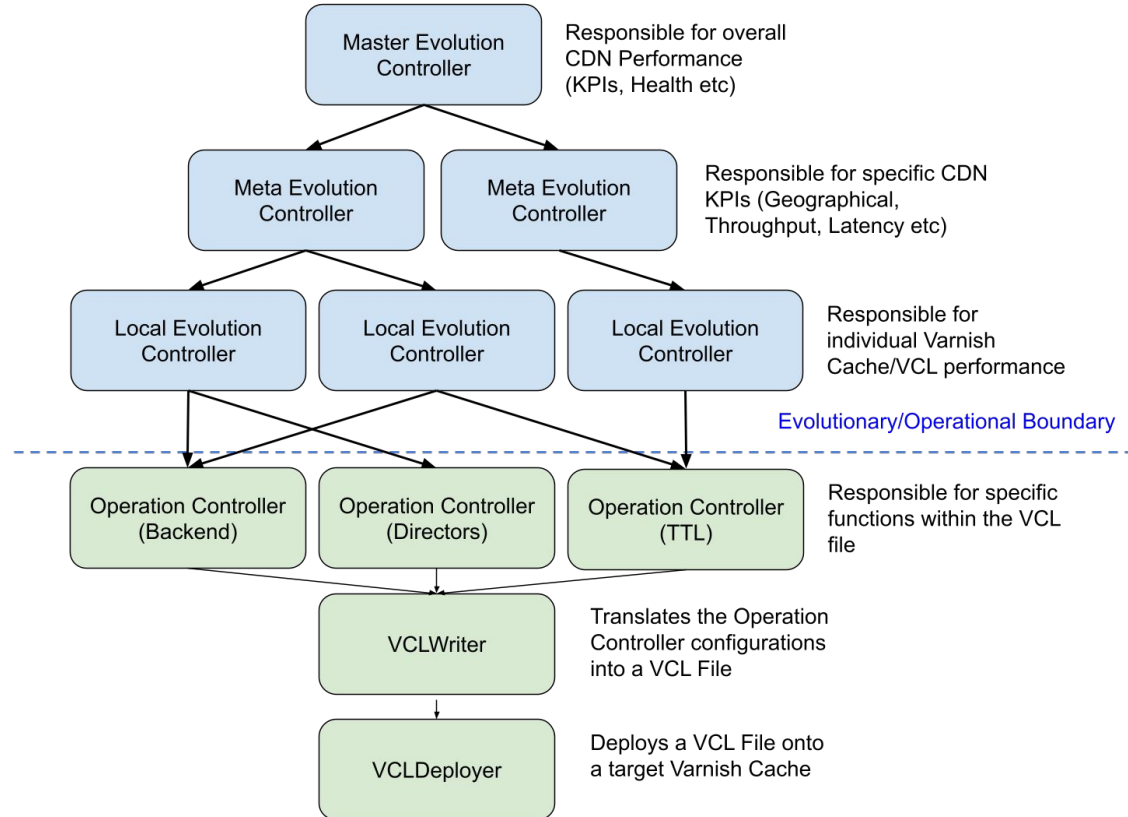
- Develop a working version of the system on a particular type of network
 - Content Delivery Network (CDN)

CDN optimisation is an ongoing area of research.

CDNs have many uses for a wide variety of content types.

Can we develop an autonomous CDN which can adapt itself for the particular type of content?

The Experimental Setup



Observations

- Granularity of Operation Controllers is challenging
- Dependencies between Operation Controllers
- Need to decouple the platform from the Operation Controllers

Future Work

- Build more use cases
- Different platforms
- Different Evolutionary approaches

Thank you for listening!

Any questions?

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