Autonomic setup of fog monitoring agents

draft-bernardos-anima-fog-monitoring-04

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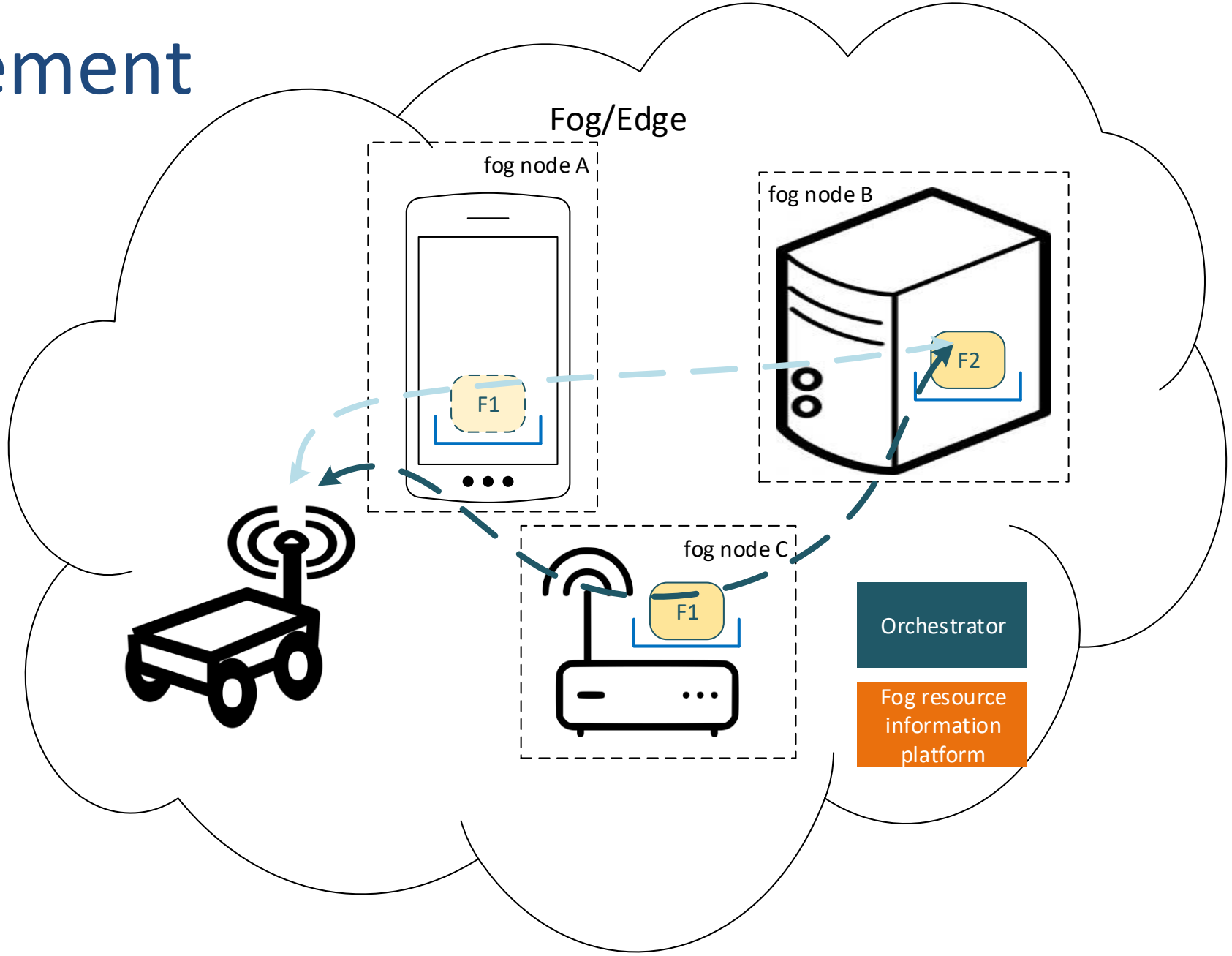
Motivation for this presentation

- We did a first presentation already at IETF 105, 2 years ago
  - We received some feedback from Michael
- We would like to resume this effort now, under the charter item:
  - "The scope of possible work items are (additional works are subject to extra approval from the responsible AD): […]
    - Generic use cases of Autonomic Network and new GRASP extensions/options for them […]"
  - Goal of today's presentation is to present again what we did in the draft and see if there is interest in the WG to explore this further

Fog computing

- Virtualization is now present in all domains of E2E networking
- The edge virtualization substrate has been largely assumed to be fixed or stationary
  - But it is now being extended to scenarios where the edge computing substrate is on the move, distributed further down the edge, and even integrating resources from different stakeholders → the fog
- Functions might be organized in service function chains (SFCs), hosted on resources that are inherently heterogeneous, volatile and mobile
  - This calls for new orchestration solutions able to cope with dynamic changes in runtime or even ahead of time

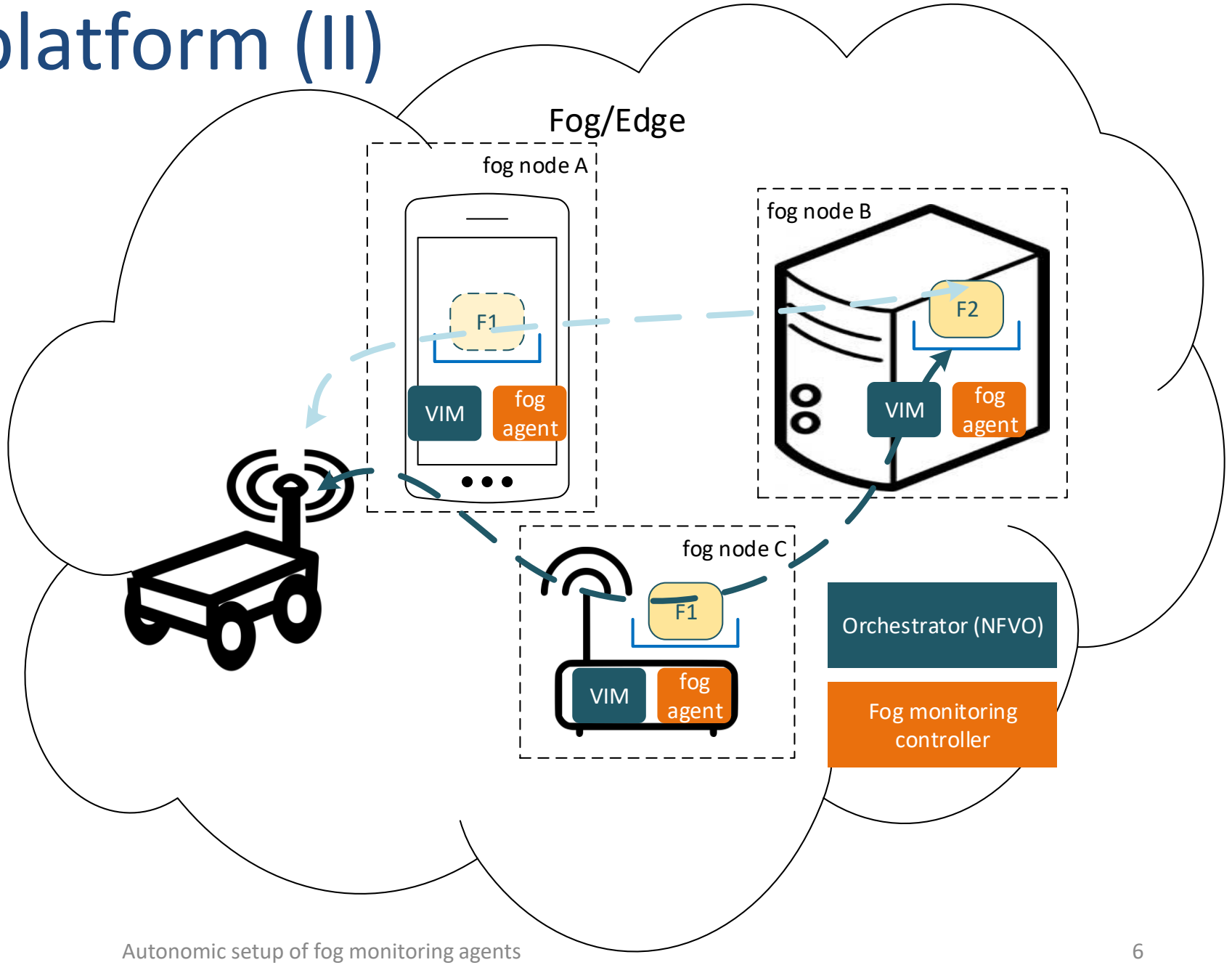
Problem statement



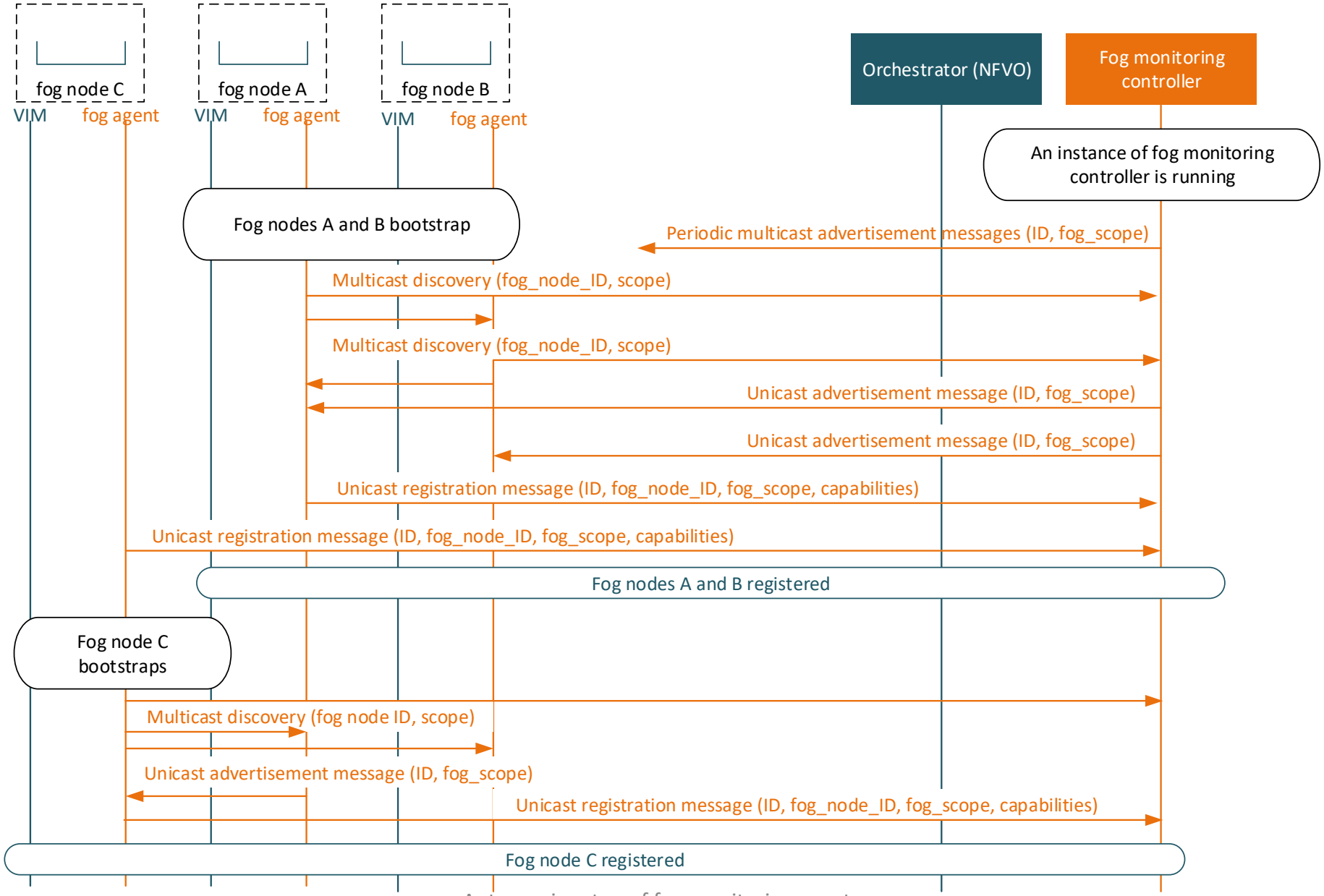
Fog monitoring platform (I)

- Fog environments differ from data-center ones on three key aspects:
  - heterogeneity, volatility and mobility
- We propose a monitoring framework, based on 2 components:
  - Fog agents running at each node, responsible for sending information to a fog monitoring controller
  - A fog monitoring controller, interacting with orchestration logic to coordinate and trigger orchestration events

Fog monitoring platform (II)



Autonomic setup of fog monitoring framework



Use of GRASP

- M_DISCOVERY messages are used, with new objectives and objective options:
  - FOGNODERADIO: used to specify a given type of radio technology, e.g.,: WiFi (version), D2D, LTE, 5G, Bluetooth (version), etc.
  - FOGNODECONNECTIVITY: used to specify a given type of connectivity, e.g., layer-2, IPv4, IPv6.
  - FOGNODEVIRTUALIZATION: used to specify a given type of virtualization supported by the node where the agent runs. Examples are: hypervisor (type), container, micro-kernel, baremetal, etc.
  - FOGNODEDOMAIN: used to specify the domain/owner of the node. This is useful to support operation of multiple domains/operators simultaneously on the same fog network.
- Different multicast scopes defined, i.e.: All-resources of a given manufacturer, of a given type, of a given administrative domain, of a given user, etc

Next steps

- Is this use case of interest to ANIMA WG?
- Provide feedback to authors about the draft