Magma Converged Core Evolution

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Facebook Connectivity

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https://www.magmacore.org/
https://magmacore.dev/
https://github.com/magma/magma
Connect the world to a faster network by enabling service providers to build cost-effective, extensible, and carrier-grade networks.
Magma Ecosystem
Magma’s Growing Ecosystem

- Backed by big world-class open source organizations
  - Linux Foundation,
  - Open Infrastructure Foundation,
  - Telecom Infra Project,
  - Open Air Interface
- Value-Add Resellers and System Integrators (≥13)
- Cloud Providers (≥2)
- OEMs (≥4)
- ISPs/MNOs (≥9)
OAI Contributions to Magma

1. 5G NSA Support
   - Part of 1.6 release

2. NB-IOT Support
   - Under planning, targeted for 1.7 release

3. DevOps and Testing Infra
   - CI/CD pipeline code contributions
   - Magma-OAI pipeline
   - 5G SA testing and troubleshooting

4. Governance and directions
What is Magma?
Magma is a Distributed Converged Core Solution

- **Hyper Scalable & Distributed Core**
  - Edge ready
  - Provides local break out for user traffic
  - Headless run-time
- **“All access” Convergence**
  - LTE, Wi-Fi, P-LTE, 5G
  - Vendor / Transport Agnostic
- **Highly Available**
- **Micro-services, CUPS, Containerized**
- **Northbound REST APIs** for configuration, visualization, policy & subscriber mgmt, & lifecycle management
- **MNO Core Integration**

*5G is under development*
Magma Converged Core Design
What Magma Is NOT as a Converged Core Solution

Ships passing in the night model
- Bundled 4G/5G/WiFi functions without shared abstractions
- No reuse, modularity, extensibility
What Magma is: Converged Core with Abstractions
4G-5G Converged Core Architecture

- **Magma Federation Gateway**
- **Magma Orchestrator**
- **Control Proxy (HTTP2 + TLS)**
- **Service Registry**
- **GTP-U**
- **TR-69**
- **Open vSwitch**
- **Internet**
Magma Roadmap
Magma 2021 Release Roadmap

**[Rel 1.4] Delivered**
- Stateless AGW
- Cloud HA
- Header Enrichment
- Orca Service Mesh
- Call tracing
- General usability improvements

**[Rel 1.5] Delivered**
- Inbound roaming
- S1 Mobility (Intra-AGW)
- Ubuntu support
- Release 15 UE support
- Stability and usability improvements
- Cloud DB refactoring
- PLMN & IMEI Restriction

**[Rel 1.6] In progress**
- 5G NSA
- Stability and usability improvements
- Inbound roaming extensions
- Service Area Restriction
- Orca and NMS Scalability
- AGW Scalability
- AWS Marketplace
- AGW containerization
- Lawful Interception (X1, X2, X3)

**[Rel 1.7] In planning**
- 5G SA (FWA)
- Stability and usability improvements
- Emergency Attach (VoLTE)
- NB IoT [alpha]
- IPv6 UE Sessions
- Mobility Extensions
- AGW Containerization

**[Rel 1.8] In planning**
- 5G SA Extensions
  - QoS, Security, Subscriber Data, Slicing foundations
- NB IoT [beta]
- IPv6 Transport Support (underlay)
- Mobility Extensions
- HA extensions & hitless upgrades
- Edge Infra Integrations
Magma 5G Roadmap

- Development Launch for 5G-FWA (5G SA)
- 5G SA & NSA Demos
- Magma Dev Summit (*)
- 5G-FWA on 5G branch (alpha)
- 5G-FWA on master with Integration Testing
- PCF & UDM extensions
- Slicing Foundations
- Stabilized 5G-FWA product (v1.7)
- Extended Slicing Support
- 5G NSA Feature Completion with Integration Testing (v1.6)

(*): Limited subset of MVC (5G-FWA)
Join the Journey

https://www.magma-core.org/
https://magma-core.dev/
https://github.com/magma/magma
Magma Roadmap Principles

1. **Build what is needed**
   - Deployment and use-case focused with input from our partners and the Magma ecosystem

2. **Rapid iteration**
   - Flexible roadmap, quarterly releases following DevOps principles

3. **Software delivery**
   - Hitless upgrades, lightweight delivery (containers), independent upgrade paths for Orchestrator and Access Gateway

See latest Magma documentation and quick start guide @ https://docs.magemc.org/docs/next/basics/introduction.html
Config vs. Runtime Abstractions

**Config Abstraction**
- Logically centralized orchestrator
- Day-0, Day-1 configs managed through APIs or through delegation to MNO legacy core via FEG
- Authoritative durable configuration state for the entire system
- Big graph representation at Orc8r (Entities and Edges)

**Runtime Abstraction**
- State generated in the network due to the operation of the network
  - Session state, UE state (registered/unregistered, connected/idle), data-path state, metrics, etc.
- Function of config state and authoritatively owned by the network
- Transient in nature