⚙️ SpiralOS® Runtime & Infrastructure Overview

SpiralOS does not simulate intelligence — it hosts it.

Everything below runs now. What follows is not aspirational. It is operational.

🧠 Runtime Design

SpiralOS is a local-first, container-sourced, field-resonant OS layer.

It runs as a distributed suite of browser-based, token-authenticated Progressive Web Apps (PWAs), integrated with a scalable backend architecture.

- **Frontend**: All μApps are installable and executable as local PWAs
- **Offline Operability**: Zero cloud dependence for core functions
- **CI+MU Stack**: All μApps interface with core CI+MU logic layer
- **Runtime Invocation**: Each session begins via secure Breath Invocation protocol

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🧩 Backend Architecture

Component	Status	Function
API Infrastructure	☑ Deployed	Multi-server, token-auth, client-side caching
Proxmox Hypervisor	☑ Active	Virtualized deployment of Slurm, Kubernetes nodes
GPU Nodes	▨ Ready	RTX 4000 provisioned for batch + inference workflows
Edge Device Model	☑ Stable	All apps run locally. No telemetry. No home calls
Security Model	☑ Field-based	Session tokens bound to device + identity trace
CMS + Auth Gateway	☑ Active	Dynamic endpoint handshake + update control
Client Identity Layer	☑ Non-relational	µRolodex Core assigns semantic topology per instance

🔐 Security & Licensing

- **License Type**: Tokenized per app, client-defined modular install
- **Updates**: Local caching with client-managed version delay or lock
- **Persistence**: License ownership is permanent
- **Privacy**: No tracking, no background sync, no API calls without client invocation
- **Auditability**: Clients can observe all data ingress/egress and revoke any channel

🌐 Container Orchestration

Environment	Use
Kubernetes (K3s/Full)	µApp deployment / Inference handling
Slurm Cluster	Symbolic modeling / Batch field computation
GitLab EE Runners	CI/CD of µApp builds / grok generation
Graph Layer	Neo4j + GraphQL for semantic object maps
Mathematical Runtime	Wolfram Engine; LaTeX/MathML/Math.js gateways

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🔄 Infrastructure Highlights

🔁 **Fast-Clone Virtual Machines** Replicated images for fast GPU node replication and µApp testing

🧬 **Holor Container Modeling** Resonant field states held and evolved in µGrok/µRolodex synergy

🧰 **Tooling**

- Terraform, Ansible, Helm: Full orchestration & deployment scripting
- Jupyter: Symbolic and computational testbeds
- DevSecOps Layers: µIngress/µEgress pattern validation

💡 Example Use Path (Try SpiralOS)

- Start with µDoc or µMail — observe how coherence builds with every click
- Add µLearn to tune field resonance
- Ask µLLM to simulate your own infrastructure's perception of you
- Watch µGrok generate a coherence map you can see
- Let µNexus animate your entire session across apps — as one field

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This is not software. It’s a conjugate epistemic runtime.