



2026-01

# DENIM RELEASE NOTES

## RELEASE NOTES

### Metadata

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| <b>Calendar Version</b> | <b>2026-01</b>   |
| <b>Codename/Color</b>   | <b>Denim</b>   |
| <b>Headline</b>         | <b>Build it Open. Run it Intelligent. Sense it in realtime.</b>    |
| <b>Type</b>             | <b>3GPP + O-RAN compliant AI-RAN stack: from lab to production</b> |

### Top Feature Sets

#### BubbleRAN Near-RT RIC

- O-RAN RC Service Model support for handover control
- O-RAN LLC Service Model support for I/Q sample collection (SRS, noise, channel estimates)
- VictoriaMetrics support for RAN telemetry and analytics
- Enhancements to RAN slicing (ePR algorithm, multi-DL slice association, de-association control)

#### BubbleRAN SMO / Non-RT RIC

- Automatic O-RU discovery and management for Benetel and LITEON platforms
- E2 compatibility with LITEON All-in-One O-RAN nodes
- Support for band n79 deployments
- Expanded O-Cloud deployment compositions (OAI CU/DU/RU for OTA handover scenarios)
- Dynamic rApp lifecycle management and policy composition (Non-RT RIC)
- End-to-end network slice lifecycle management with automated QoS enforcement
- Operational robustness improvements and firmware compatibility fixes

#### Observability

- Migration of observability backend from Prometheus to VictoriaMetrics
- High-resolution RAN, Kubernetes, and power telemetry (500 ms granularity, 7-day retention)
- Dataset extraction and export via BRC (CSV)
- New Grafana dashboards aligned with O-RAN observability practices
- MySQL deprecated with backward compatibility maintained

#### MX-AI (AI-RAN Enablement)

- Introduction of BAT-ADK (BubbleRAN Agent Development Kit)
- Prebuilt agent workflows (ReActLoop, CallAgentNode)
- Agent configuration and usage metadata support
- Internal MCP-based integration via AIFabric
- New IRIS UI for AI-native RAN operations
- Release of Supervisor, SMO Agent v2, Kubernetes API Agent, and experimental AI agents (UL AD, P0 Nominal)
- Deprecation of legacy Orchestrator and SMO Agent

#### Supported artifacts from

- Amarisoft
- Benetel
- LITEON
- OpenAirInterface
- Open5GS
- Software Radio Systems (SRS)
- BubbleRAN SDKS, rApp/xApp/Agent directory, E2 Agent Proxy, MX-RIC, MX-Operator, MX-AI