## **Product Brief**

# LightLocker Node

#### **The Confidential Blockchain Server** (Model LLN-1300)

The LightLocker<sup>™</sup> Node is an acceleration server for enterprise-grade deployments of confidential blockchain services using Fully Homomorphic Encryption (FHE). Integrating Optalysys hardware acceleration technology via an industry-standard Dell PowerEdge and AMD Alveo platform, LightLocker<sup>™</sup> provides a turnkey acceleration solution for EVM-compatible FHE implementations. It is configurable to support throughput in excess of 100 cERC-20 transactions per second (TPS) with outstanding energy efficiency and flexibility.

Optalysys



#### Benefits

- Simplified enterprise adoption: pre-integrated hardware solution for complex FHE workloads reduces deployment friction and accelerates time-to-value
- Peerless performance, better value: surpasses throughput, energy and cost performance of GPU-based solutions
- Excel today, evolve tomorrow: upgradable software, firmware, and hardware ensures ongoing confidentiality and peak performance
- Maximum flexibility: integrates with multiple software libraries and solution providers
- Strategic future-proofing: combat postquantum threat and align with the growing trend towards inherent data privacy and secure computation

#### **Key Features**

- Complete solution for deployment in public cloud, private data-centre and co-location
- Hardware acceleration of Zama's TFHE-rs library as co-processor
- Compatible with multiple vendor solutions, including:
  - fhEVM co-processor from Zama
  - CoFHE co-processor from Fhenix
  - fhEVM L1 from Inco
- Supports throughput of >100 cERC-20 transactions per second (TPS)
- PBS error probability down to 2<sup>-128</sup>
- Deterministic compute NTT-based
- Supports common parameters used by TFHE-rs
  Polynomial size 2048
  - Tweaked uniform noise distributions (Gaussian also supported)
- AMD Alveo V80 FPGA-based accelerator cards and custom server software
- Regular SW updates provide ongoing support and performance improvements

#### Use Cases

LightLocker™ Node can be deployed on any EVM-compatible blockchains to support use-cases including:

- Confidential ERC-20 Token Transfer
  - Stablecoins
  - Confidential RWA and Tokenisation
  - MEV Protection for Central Limit Order Books
- Blind Auctions

- Automated Market Makers (AMMs)
- Confidential Voting
- Private Lending
- Confidential Decentralised Identity



For further information, visit optalysys.com/lightlocker-node/ ©2025 All Rights Reserved Optalysys Ltd

### LightLocker<sup>®</sup>



#### Specification

Technical Specification	
FHE Hardware Acceleration	
FPGA	3 x AMD Alveo V80 accelerator cards
Bitstream	Optalysys TFHE-rs bootstrap acceleration bitstream pre-installed Supports common TFHE parameters Polynomial size: 2048 PBS Error probability 2 <sup>-64</sup> : supports 2 <sup>-128</sup> via modular switched noise reduction Tweaked uniform noise distributions (Gaussian also supported) NTT-based for deterministic compute
Application Software	Optalysys custom build of Zama TFHE-rs library (commercial license available from Zama)
Dell PowerEdge R7615 Server	
Processor	AMD EPYC 9654P 2.40GHz, 96C/192T, 384M Cache (360W) DDR5-4800
Memory	12x 16GB RDIMM, 5600MT/s Single Rank
Storage	2x 3.2TB Data Center NVMe Mixed Use AG Drive U2 Gen4 with carrier
Operating System	Canonical Ubuntu Server LTS
Networking	Dual-port 1GbE LOM; Dual Port 10/25GbE NIC
Power Supply	Dual, Hot-Plug, Fully Redundant Power Supply (1+1), 1400W
Cooling	Air cooling
Form Factor	2U rack server with ReadyRails Sliding Rails (B21)
Embedded Management	iDRAC9 Enterprise 16G

# For more information, including pricing and access to the Optalysys testnet, contact us at: sales@optalysys.com