



CyberInova®

# INOVAMESH 2.0 – ZTNA MADE SIMPLE !

THE AGILE SECURITY SOLUTION FOR DYNAMIC ZTNA MESHES

MAR 2025

# INOVAMESH - AN INNOVATIVE APPROACH

- Never as today the increasing moving of data and information due to digitalization and remote working request high protection to the integrity and the access of a system. Threats like data theft, alteration of the structure or impossibility of access, for a company can mean risk to stop and block entire manufacturing process.
- It is necessary to delineate new defensive strategies from aggression on the network with a new concept, called Software Defined Perimeter (SDP). This is the Zero Trust Network Access (ZTNA) , a security framework where access is continuously verified.
- Based on SDP/ZTNA concepts and exclusive capabilities like mesh network with Dynamic Overlay Control (DYNOC®, a CyberInova Ltd patent pending Id #102023000017760 technology). InovaMesh is designed to improve how people connect, offering the most agile, secure, and efficient cybersecurity framework.
- This is the reason why we designed InovaMesh.

InovaMesh 1.0 is described in detail in the previous document “InovaMesh by CyberInova - At a Glance - Extended (EN).pdf”

# INOVAMESH 2.0 - THE AGILE SECURITY SOLUTION

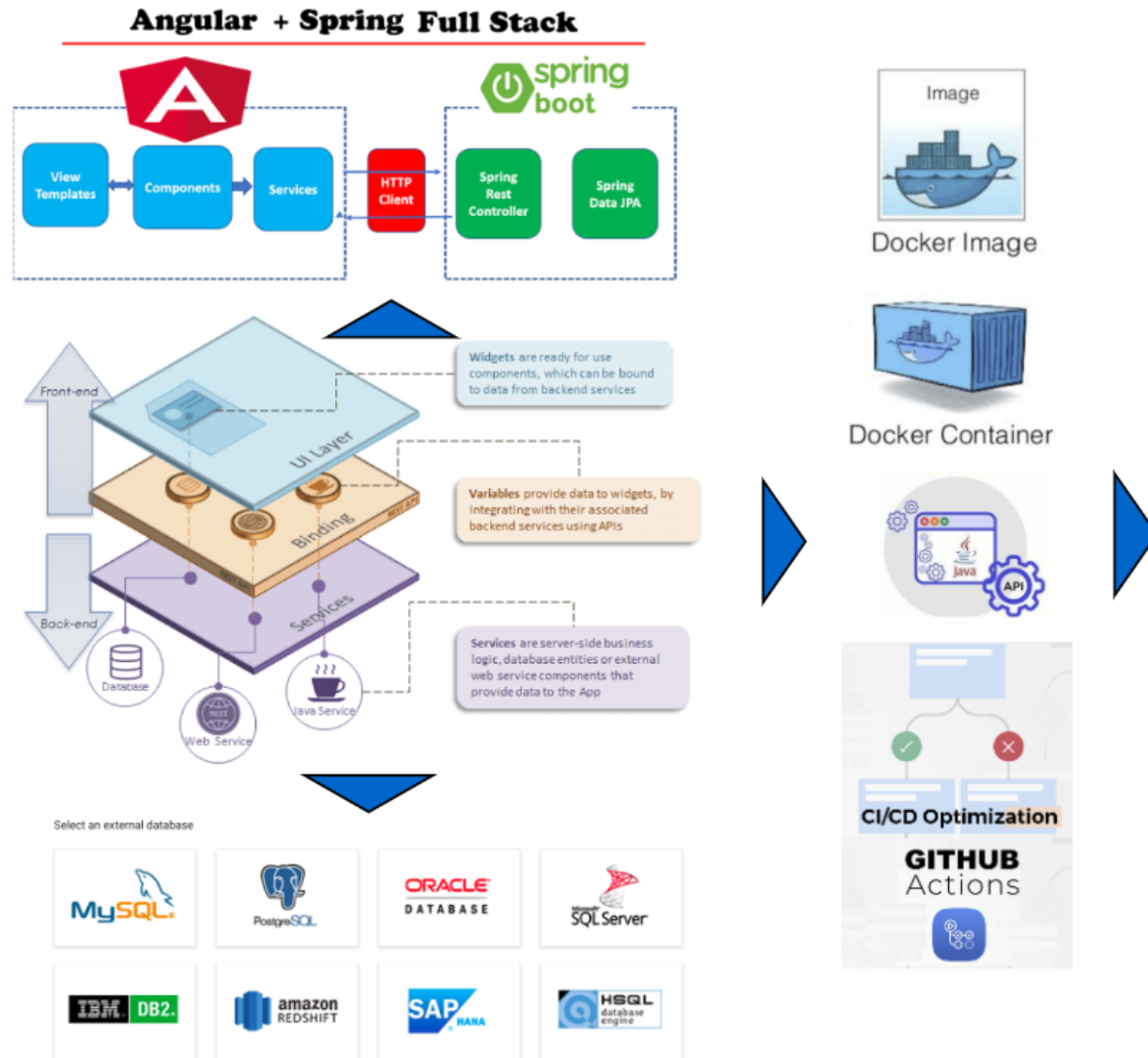
- The innovative cyber security strategy: Evolution of previous version, InovaMesh 2.0 now is a SaaS cloud system application . InovaMesh 2.0 replaces centralized security controls with distributed software agents that operate under the control of the web application manager. This will provide access to the application infrastructure only after identify verification.
- Security without compromise: Inovamesh 2.0 is a SaaS system developed with a VeraCode-certified Java architecture, using 'secure by design' software development techniques. More, is delivered on Amazon AWS, the leading cloud platform on the market.
- ZTNA made simple: ZTNA Mesh networks are recognized to be effective but very complex to implement. InovaMesh addresses this problem with auto-configuration agents wizard, graph representation of mesh device relationships, programmable security policies, orchestration. Device policies are deployed securely via a central repository, with no online exposure and full multi-customer, multi-mesh support.

InovaMesh 2.0 is the ZTNA Security SaaS Solution.

# INOVAMESH 2.0 - THE SW DEVELOPMENT ARCHITECTURE

Cloud-native architecture

InovaMesh 2.0 is built on a modern, resource-optimized software environment. Its architecture is designed **with a secure-by-design** approach and **VeraCode-certified Java Spring code**. This ensures high availability and native application scaling, leveraging Angular, Java Spring, and a Hibernate layer for database independence.

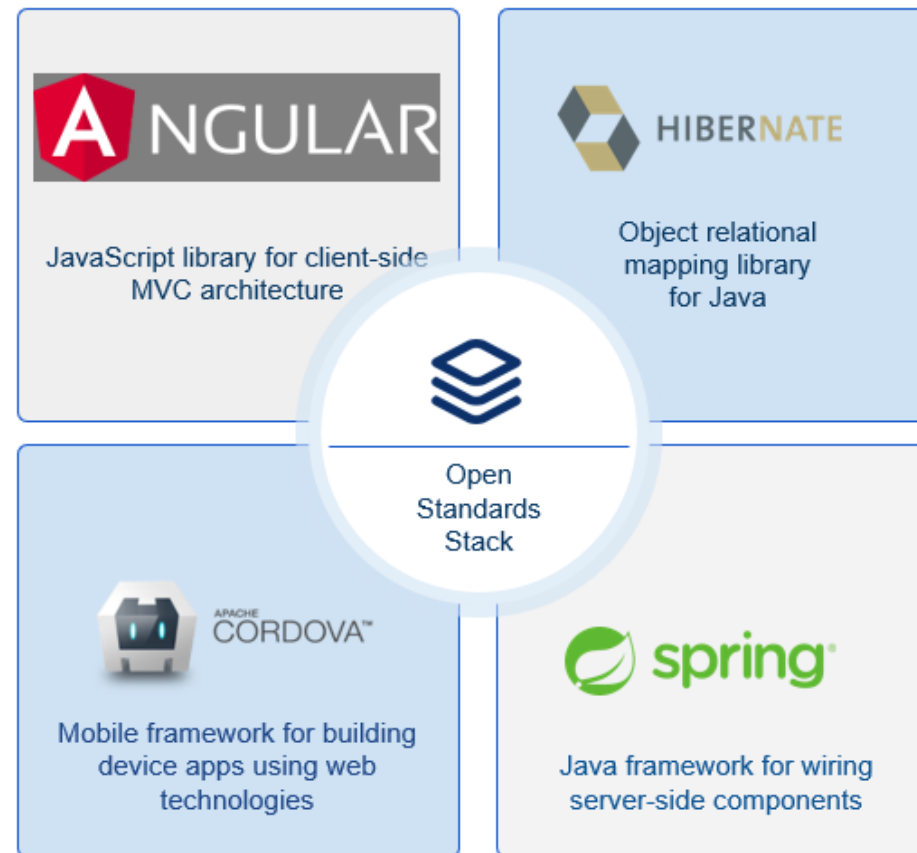




# INOVAMESH 2.0 - THE SW DEVELOPMENT ARCHITECTURE

## Open Technology Stack

InovaMesh 2.0 is built using an **open-standards** technology stack, **without any lock-in** to vendor-specific software frameworks. This allows, alongside the main SaaS version, the customization and deployment of InovaMesh 2.0 on partner platforms.



*1. Front-end:* Angular for user interface, data binding and events. Bootstrap provides responsive layouts for various form factors

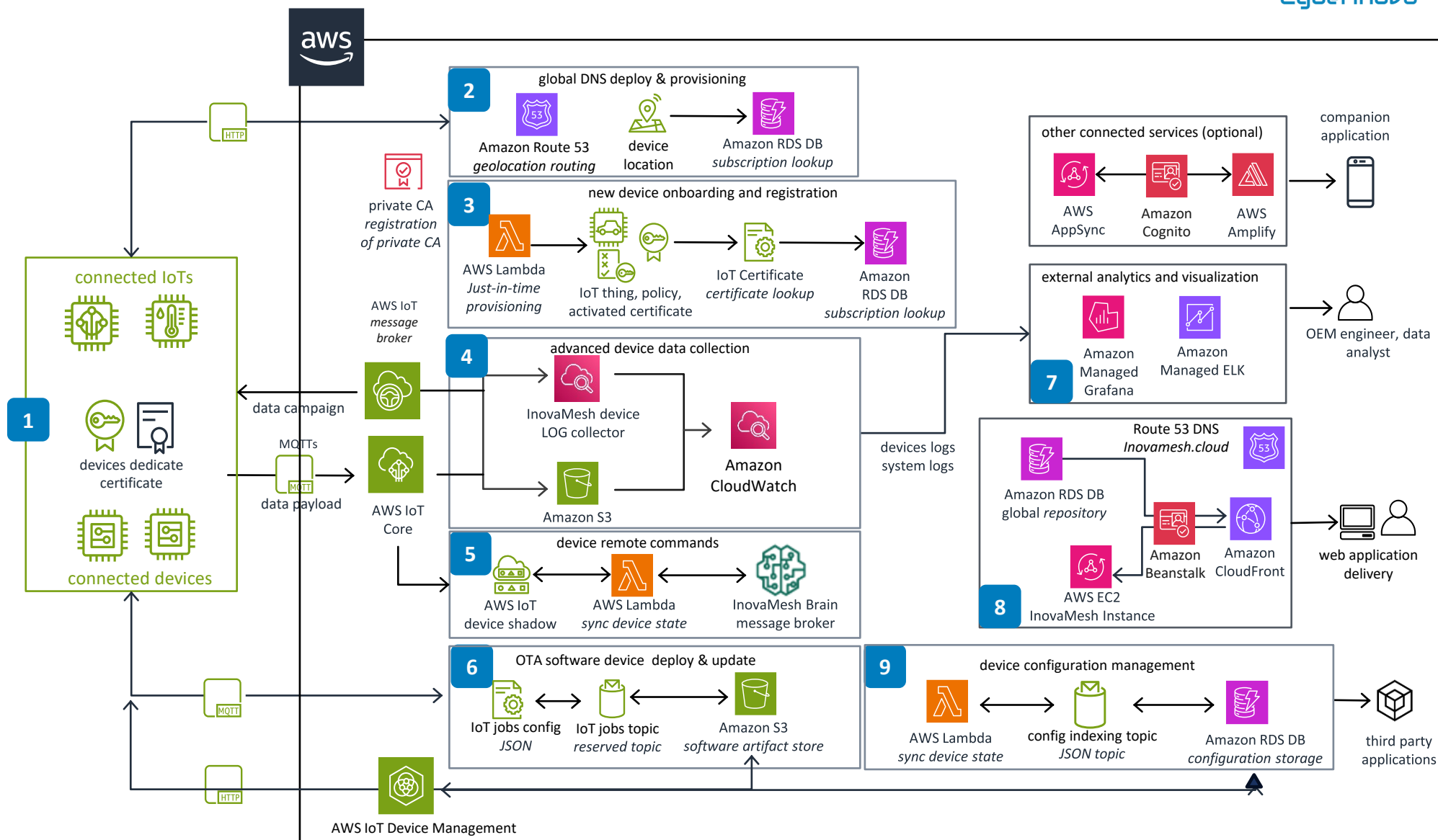
*2. Object Relational Mapping (ORM):* Hibernate and JPA provide standards based ORM layer and Entity model for database interaction and independence

*3. Back-end Services:* Spring framework provides the back-end service layer in Java with support for dependency injection, REST controllers, security etc.

*4. Hybrid Mobile:* Cordova framework is used for enabling access to mobile device features and native installer creation using the appropriate SDKs.



InovaMesh 2.0 is a cloud-native application built with advanced Amazon AWS services to ensure resilience, reliability, and compliance with leading security certifications.



# INOVAMESH 2.0 - THE MULTI-CUSTOMER SAAS WEB MANAGER



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Email: info@cyberinova.com B3 Kingfisher House Kingsway, Gateshead, UK

English Italian



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## Innovative Technologies For Cyber Security

Highly innovative methodologies, products and services to face the new challenges imposed by Cyber Security, guaranteeing the protection of your assets in a proactive manner.

News | InovaMesh, Our Solution For SDP/ZTNA And Dynamic Mesh, Has Been Released. More Info..

### Cyber Security & SDP/ZTNA

SDP/ZTNA & Dynamic Mesh  
Vulnerability Assessment  
Cyber Threat Protection

### Compliance

Compliance Assessment  
Incident Management & Data Breach  
Consulting & Regulatory Support

### Managed Service

Secure Cloud Services & IoT Devices  
AntiThreat and AntiMalware control  
Patching and Continuous Monitoring

*InovaMesh 2.0 Web  
Manager - User Frontend*

# INOVAMESH 2.0 – A MULTI-CUSTOMER SAAS APPLICATION



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## Users of Customers

EXPORT

| Search                                                                                                                                                                  |                | Select Field   |            |          |                       |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|------------|----------|-----------------------|--|
|                                                                                                                                                                         |                |                |            |          |                       |  |
| ACTIONS                                                                                                                                                                 | CUSTOMER       | DESCRIPTION    | FIRSTNAME  | LASTNAME | USER ID               |  |
|       | Customer Demo  | Customer Demo  | Customer   | Demo     | admin.customer.demo   |  |
|       | CyberInova Ltd | CyberInova Ltd | CyberInova | Ltd      | ettore@cyberinova.com |  |
|       | Customer Demo  | Customer Demo  | Customer   | Demo     | global.admin          |  |
|       | CyberInova Ltd | CyberInova Ltd | CyberInova | Ltd      | oscar@cyberinova.com  |  |
|       | CyberInova Ltd | CyberInova Ltd | CyberInova | Ltd      | sal@cyberinova.com    |  |
|   | Customer Demo  | Customer Demo  | Customer   | Demo     | user.customer.demo    |  |

Total records: 6

+ NEW

*InovaMesh 2.0 Web Manager – A multi-customer, multi-mesh SaaS application that provides complete management of customers, users, user roles, customer meshes, mesh security policies. More, customer-specific visibility on their meshes and devices.*



# INOVAMESH 2.0 – MESH MADE SIMPLE BY WIZARDS



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## Mesh Generation Wizard

Mesh ID

IoTMainSite

Mesh  
Description

IoT Network On Production Main Site

Mesh  
Dimension

255



Enter the identity for the Mesh ( max 20 char, no space or special characters)

Enter the description for the Mesh ( max 255 char)

Default mesh max dimension is 255 devices. Can be changed later as desired.

Cancel

Next >

*InovaMesh 2.0 Web Manager – The Mesh wizard for automatic generation of mesh...*

# INOVAMESH 2.0 – MESH MADE SIMPLE BY WIZARDS



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01

Define Mesh  
Naming and  
Description



02

Define Mesh  
Topology



03

Build and Save  
Mesh

## Mesh Generation Wizard

Mesh Topology

☒ FULL

☐ STAR

☐ TREE

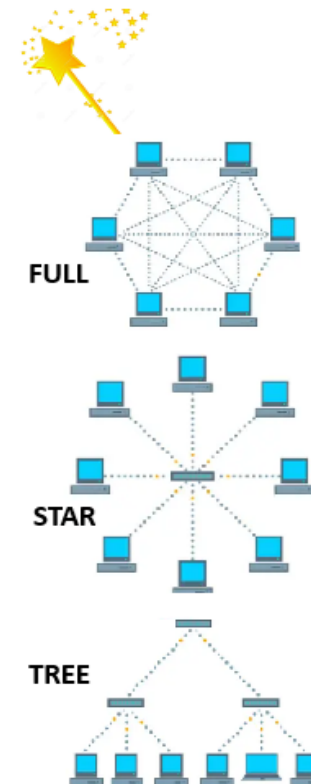


Gateway Device

If your mesh will need gateway functionality to reach other yours sub-network/s you need to declare below these sub-network/s with comma separated CIDR notation (192.168.0.0/24 , 172.16.0.0/16, ecc...)

Your network/s

192.168.1.0/24



Cancel

< Previous

Next >

*InovaMesh 2.0 Web Manager – The Mesh wizard for automatic generation of mesh ...*

# INOVAMESH 2.0 – MESH MADE SIMPLE BY WIZARDS

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01  
Define Mesh  
Naming and  
Description

02  
Define Mesh  
Topology

03  
Build and Save  
Mesh

## Mesh Generation Wizard

Mesh ID

IoTMainSite

Mesh  
Dimension

255

Your network/s

192.168.1.0/24

Mesh Description

IoT Network On Production Main Site

Mesh Topology

☐ FULL

Confirm to proceed with the creation of the mesh

Cancel

< Previous

✓ Done

*InovaMesh 2.0 Web Manager – The Mesh Wizard for automatic mesh generation: with just a few inputs, InovaMesh creates a new mesh for you. This includes all necessary services, security policies, and configurations based on the selected topology. A similar wizard is available for device registration.*

# INOVAMESH 2.0 – MESH CLARITY THROUGH CONNECTIONS GRAPH



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Device Network Graph

Search Select Field

| DEV CUSTOMER   | DEV MESH ID | DEV SN     | DEVICE TYPE | DEVICE MODE |
|----------------|-------------|------------|-------------|-------------|
| CyberInova Ltd | Alpha       | 1000000001 | LIGHTHOUSE  | PUBLIC      |
| CyberInova Ltd | Alpha       | 1000000003 | GATEWAY     | PUBLIC      |
| CyberInova Ltd | Alpha       | 1000000004 | NODE        | PRIVATE     |
| CyberInova Ltd | Alpha       | 1000000005 | NODE        | PRIVATE     |
| CyberInova Ltd | Alpha       | 1000000006 | DESKTOP     | PRIVATE     |
| CyberInova Ltd | Alpha       | 1000000007 | SERVER      | PUBLIC      |
| CyberInova Ltd | RealMesh    | 1016032256 | LIGHTHOUSE  | PRIVATE     |
| CyberInova Ltd | Beta        | 2000000001 | LIGHTHOUSE  | PUBLIC      |
| CyberInova Ltd | Beta        | 2000000003 | GATEWAY     | PUBLIC      |
| CyberInova Ltd | Beta        | 2000000004 | NODE        | PUBLIC      |

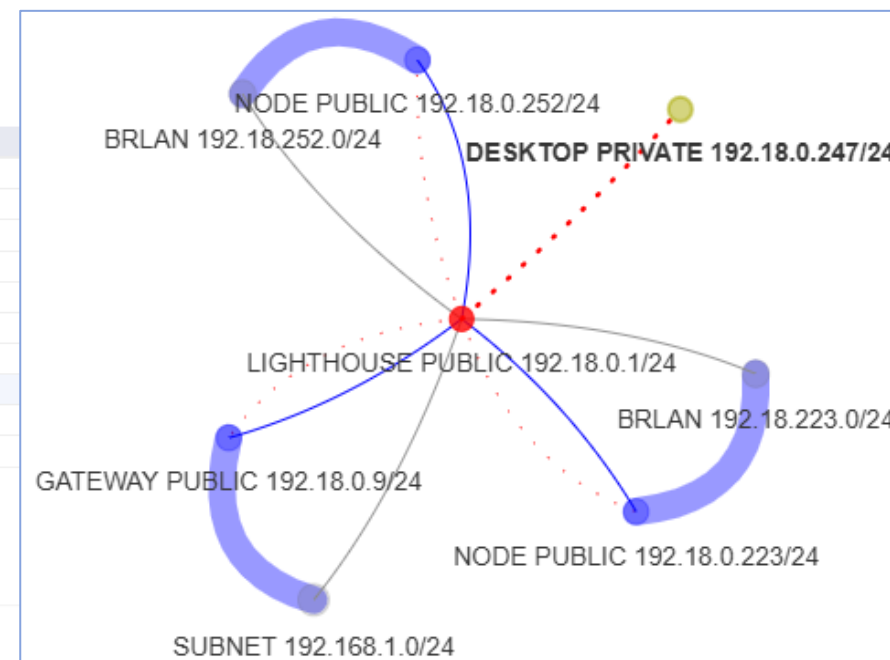
< 1 2 3 >

The object labeled **DESKTOP PRIVATE 192.18.0.247/24** with Serial Number: **2000000006** is connected to the selected device with Serial Number: **2000000001**.

Info: WAN UDP port: 4381

Note: The DESKTOP operates in firewall **PRIVATE** mode. It can initiate connections to any device, BRLAN, or SUBNET in **PUBLIC** mode on the mesh, but it cannot be contacted from the mesh.

Certified routes imported from security group(s): 1



*InovaMesh 2.0 Web Manager – Device graph with detailed information about the device as resulting from its configuration, its connections within the mesh and its relationships to other devices.*



# INOVAMESH 2.0 – MESH AND DEVICE ARE OBJECT DEFINED ON DBMS



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## Meshes

EXPORT

Search

Select Field



| ACTIONS | MESH CUSTOMER  | MESH ID  | MESH DESCRIPTION                                      | NET CIDR      | NET MAX DEV.S | SUB MAX ADDR.S | NET USABLE DEV.S | NET IP     | NET MASK LEN | SUB USABLE ADDR.S | SUB MASK LEN | DEV TYPE RANGE                |
|---------|----------------|----------|-------------------------------------------------------|---------------|---------------|----------------|------------------|------------|--------------|-------------------|--------------|-------------------------------|
|         | CyberInova Ltd | Alpha    | STAR default topology                                 | 192.18.0.0... | 256           | 256            | 254              | 192.18.0.0 | 24           | 254               | 24           | ("Lighthouse";{"PERCENTAGE":1 |
|         | CyberInova Ltd | Beta     | TREE default topology                                 | 192.18.0.0... | 256           | 256            | 254              | 192.18.0.0 | 24           | 254               | 24           | ("Lighthouse";{"PERCENTAGE":1 |
|         | CyberInova Ltd | Gamma    | FULLMESH default topology                             | 192.18.0.0... | 256           | 256            | 254              | 192.18.0.0 | 24           | 254               | 24           | ("Lighthouse";{"PERCENTAGE":1 |
|         | CyberInova Ltd | Omega    |                                                       | 192.18.0.0... | 256           | 256            | 254              | 192.18.0.0 | 24           | 254               | 24           | ("Lighthouse";{"PERCENTAGE":1 |
|         | CyberInova Ltd | PENDING  | Provisional mesh to manage devices in a pending state | n/a           | 0             | 0              |                  |            |              |                   |              | N/A                           |
|         | CyberInova Ltd | RealMesh | Real devices mesh                                     | 192.18.0.0... | 256           | 256            | 254              | 192.18.0.0 | 24           | 254               | 24           | ("Lighthouse";{"PERCENTAGE":1 |

Total records: 6

+ NEW

InovaMesh 2.0 Web Manager – Whether created through a wizard or manually, both meshes and devices are simple object definitions in the InovaMesh database, where you can refine configurations or create them from scratch. As a result, devices are remotely configured through AWS IoT Core without requiring any local configuration on them.

# INOVAMESH 2.0 – ACTIVE MONITORING OF DEVICES ON MESHES



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Active Devices

EXPORT

| ACTIONS                                  | DEV CUSTOMER   | DEV SN     | DEV ROLE           | DEV STATUS | DEV DATE TIME                | DEV WAN MAC | DEV MESH NUM | DEV MESH ID | DEV MESH ADDR | DEV MESH STATUS | DEV DSN LIST                                    | DEV NEIGH. LIST | DEV TICK SECONDS | DEV MESH AUTH. ID | DEV MESH AUTO ACT. | DEV MESH DL ID |
|------------------------------------------|----------------|------------|--------------------|------------|------------------------------|-------------|--------------|-------------|---------------|-----------------|-------------------------------------------------|-----------------|------------------|-------------------|--------------------|----------------|
| <input checked="" type="checkbox"/> EXEC | Cyberinova Ltd | 1016032256 | LIGHTHO... PRIVATE | READY      | 2025-04-28 10:53:45.2... UTC | 0634c970... | 1            | RealMesh    | 192.18.0.1... | UP              | 172.31.0.2 (ip-172-31-0-2.eu-north-1.compute... | null            | 10               | RealMesh          | false              | Alpha,Real...  |
| <input checked="" type="checkbox"/> EXEC | Cyberinova Ltd | 3144671602 | NODE PUBLIC        | READY      | 2025-04-28 10:36:07.5... UTC | 00155d01... | 202          | RealMesh    | 192.18.0.2... | UP              | 192.168.1.1 (vodafone...                        | null            | 10               | RealMesh          | false              | Alpha,Real...  |
| <input checked="" type="checkbox"/> EXEC | Cyberinova Ltd | 3695497216 | DESKTOP PUBLIC     | READY      | 2025-04-28 10:36:09.2... UTC | 00155d01... | 114          | RealMesh    | 192.18.0.1... | UP              | 192.168.1.1 (vodafone...                        | [["192.168....  | 10               | RealMesh          | false              | Alpha,Real...  |
| <input checked="" type="checkbox"/> EXEC | Cyberinova Ltd | 3825856800 | GATEWAY PUBLIC     | READY      | 2025-04-28 10:35:41.7... UTC | 00155d01... | 9            | RealMesh    | 192.18.0.9... | UP              | 192.168.1.1 (vodafone...                        | [["192.168....  | 10               | RealMesh          | false              | Alpha,Real...  |
| <input checked="" type="checkbox"/> EXEC | Cyberinova Ltd | 7596400704 | RELAY PUBLIC       |            | 2025-04-28 10:53:44.0... UTC | 06c39768... | 4            | RealMesh    | 192.18.0.4... | UP              | 172.31.0.2 (ip-172-31-0-2.eu-north-1.compute... | [["172.31.1...  | 10               | RealMesh          | false              | Alpha,Real...  |
| <input checked="" type="checkbox"/> EXEC | Cyberinova Ltd | 8474452582 | NODE PUBLIC        | UNKNOWN    | 2025-04-28 10:53:58.2... UTC | 46470d33... | 216          | RealMesh    | 192.18.0.2... | UP              | 192.168.1.1 (vodafone...                        | null            | 10               | RealMesh          | false              | Alpha,Real...  |

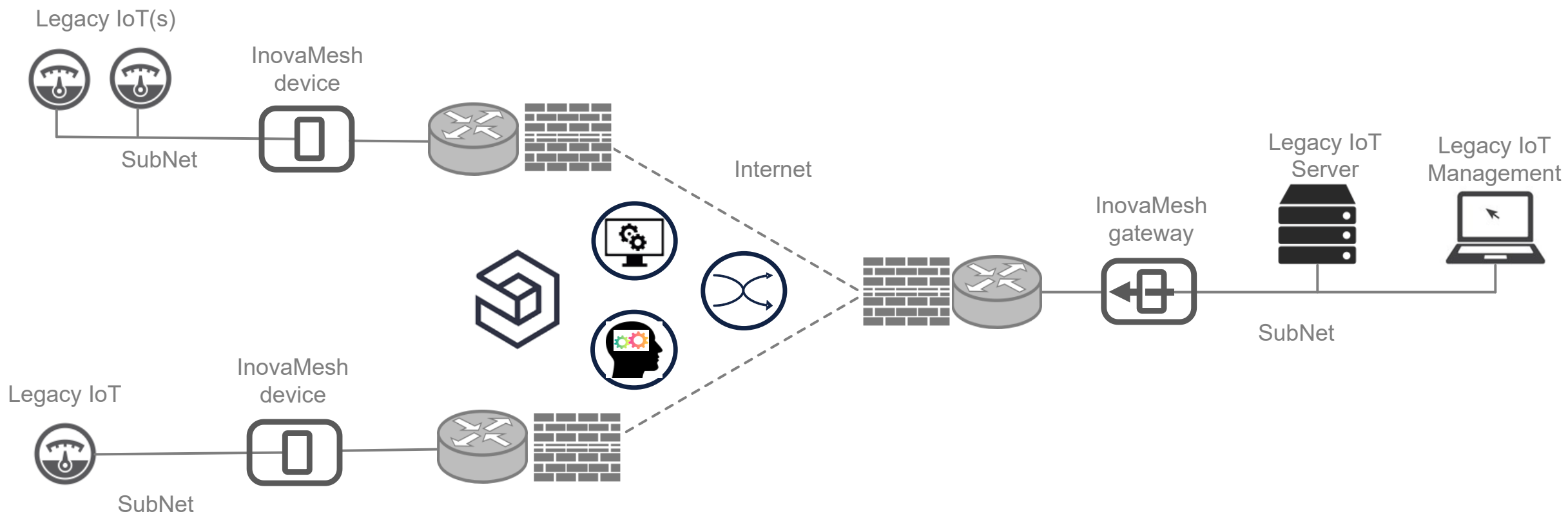
*InovaMesh 2.0 Web Manager – Last but not least, the Device Monitor offers remote user action capabilities, including ping, mesh set/reset, device information and statistics, remote command shell execution, and more.*

# INOVAMESH 2.0 - MAIN FEATURES

| Feature                                              | InovaMesh   |
|------------------------------------------------------|-------------|
| Network Segmentation                                 | Yes         |
| Private Virtual Network Mesh                         | Yes         |
| Active Mesh Isolation                                | Yes         |
| Running on amd64,arm,arm64,mips,mips64,riscv64,ppc64 | Yes         |
| Cloaking (hide device from rest network)             | Yes         |
| Mesh on Client: support any Linux, Unix and Windows  | Yes         |
| Mesh on Mobile: support Android and iOS              | In Progress |
| Isolation (blocking device internet access)          | Yes         |
| Layer 3 Filtering and Access Control                 | Yes         |
| User Portal                                          | Yes         |
| Active Directory Based Access Control                | Yes         |
| Support SAML, OpenID, OAuth2                         | Yes         |
| Code available for inspection and assurance          | Yes         |
| Self-hosted (private)                                | Yes         |
| Cloud-hybrid hosted                                  | Yes         |

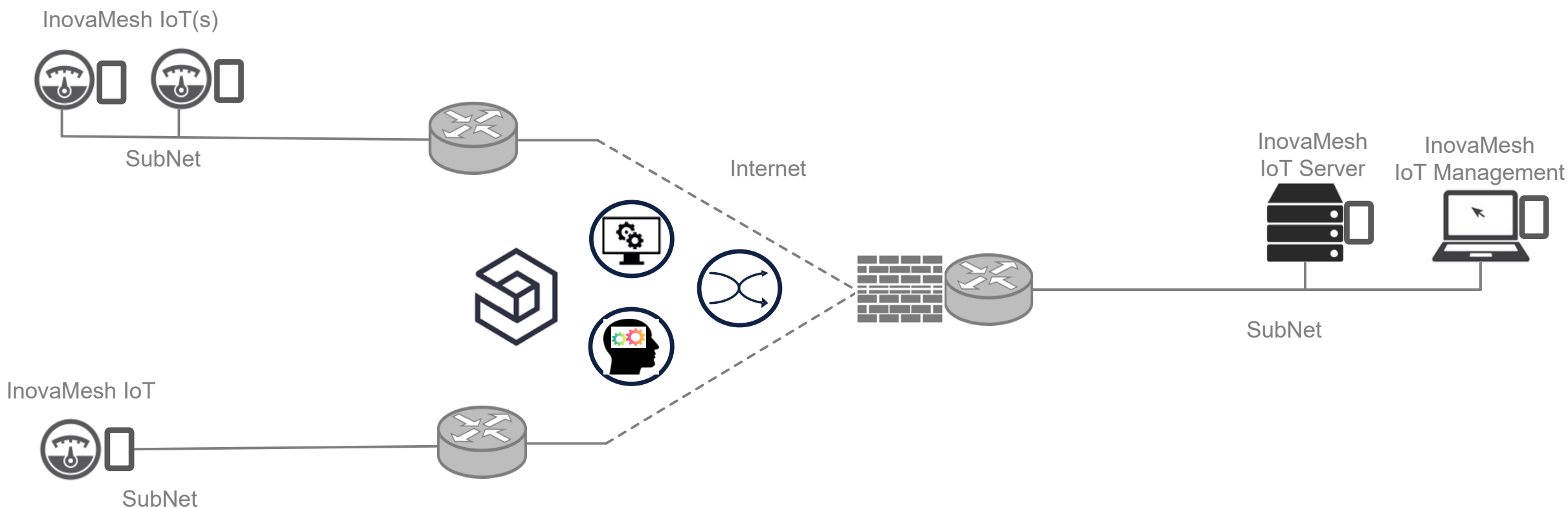
# INOVAMESH 2.0 - LEGACY IOT USE CASE

Possible use case of legacy IoT(s), InovaMesh devices and server(s)



# INOVAMESH 2.0 - EMBEDDED IOT USE CASE

Possible use case of Industry 4.0. IoT(s) with InovaMesh embedded and server(s)







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