



LORIoT

Private Network Server



LORIIOT Private Network Server

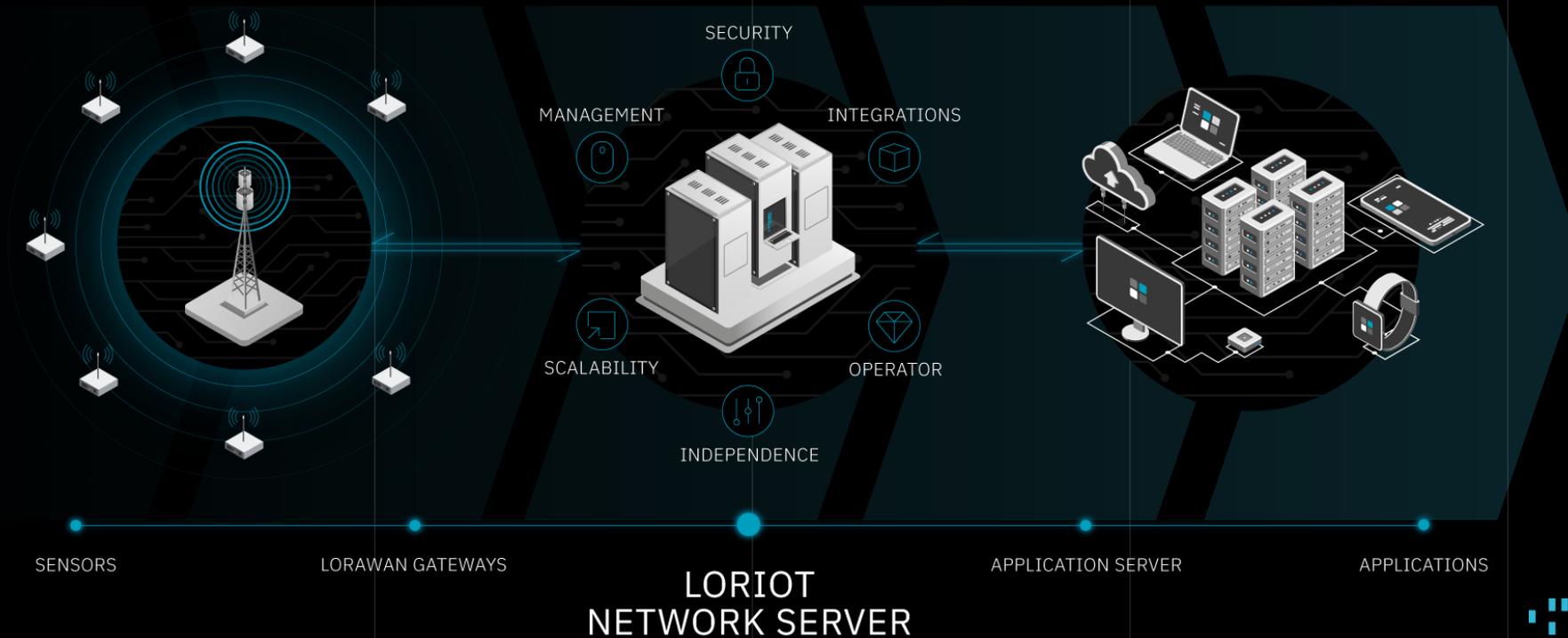
- Purpose and Motivation
- Network Server Models
- Network Server Deployment
- Three Pillars: Security, Reliability, Scaling
- Our Promise
- Deployment Scenarios
- Leverage your LoRaWAN[®] Infrastructure

Purpose and Motivation

A Private Network Server is the **premier deployment model** to ensure the highest security standards, control, flexibility and scalability for your LoRaWAN® services. Our core business is providing Private Network Servers for governments, telecoms operators, blue chip organizations and small to medium sized enterprises, which run our **industry leading** network server software.

It provides the **long-term environment** to build and run a LoRaWAN® network at any scale, and it is flexibly designed to meet the highly dynamic and evolving business models and use cases in the internet of things.

One of the most significant advantages of the LORIoT Private Network Server is that you can build and operate a **carrier-grade** private LoRaWAN® network under **your ownership and control**. While also benefiting from the expertise at LORIoT to handle the complexity of **developing and maintaining** the network server software and deployment process.



Purpose and Motivation



CARRIER-GRADE PERFORMANCE

The LORIOT Private Network Server is built for carrier-grade networks. It has a proven track record with a wide portfolio of clients operating national, regional and site-specific networks across the globe. Every Private Server shares the same software design built upon our expertise and experience.



NO LIMITATIONS UNLIMITED CAPACITY

We do not impose restrictions, you can use any device or gateway model, and we do not have forced certification requirements, message limitations, or other red lines. It's your server, without us dictating utilization, fully operated by you, and we are there to provide dedicated support when required.



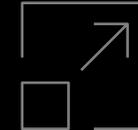
MAXIMUM NETWORK CONTROL

A Private Server enables the highest possible grade of independence and control over the network and all connected components. No third-party network operator is dictating terms or coverage. Gateways can be deployed where needed and you fully control the network and services which can be deployed.



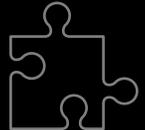
INFORMTATION SECURITY & PRIVACY

Information security is the number one concern in IoT, and we build security into every layer of our software. A Private Server also ensures you have full knowledge of the data path, who can access the server and which devices and users are operating on the network. This ensures maximum privacy of your services and client data.



LONGTERM SCALABLE STATERGY

A Private Network Server provides an immediate and long-term environment for your deployments, regardless if it's an initial PoC or straight into production services. By starting with the best possible server model and no limitations on the capacity, you will never need to migrate to another network server which requires repeating work that can be a blocker.



FLEXIBLE TAILORED MODELS

We recognize that there are many business models and use-cases across the internet of things. We don't impose rigid technical or commercial requirements; we provide an agile network server service that can be tailored to meet your business and technical demands. If we don't have a required feature, for example, we will build it.

Network Server Models

The LORIOT Private Server is available in three models which can be customized and are designed to meet the [scaling](#), [redundancy](#) and [pricing](#) requirements of the many diverse use-cases and business models across the internet of things.

We have several server models available to meet a client's current needs while also providing a seamless upgrade path if higher [capacity](#) or [redundancy](#) is needed at any stage.

All models benefit from our carrier-grade network server software, and as the server operator, you have full access, control and flexibility [without limitations](#).



MONOLITHIC STARTER

ENTERPRISE ADVANCED

FULL FAIL SAFE ENTERPRISE

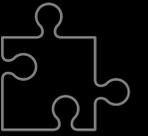
No redundancy
Single server deployment

No single point of failure
Storage and computing redundancy

No single point of failure
Storage and computing redundancy
Application distributed across several network layers

	MONOLITHIC STARTER	ENTERPRISE ADVANCED	FULL FAIL SAFE ENTERPRISE
Service Level Agreement*	99.50%	99,95%	99.99 %
Includes Installation	✓	✓	✓
Software License	✓	✓	✓
Server Redundancy	-	✓	✓
Single Point of Contact Person	-	-	✓

*Service Level Agreement - applies to LORIOT Hosted Private Cloud



REQUIREMENT DRIVEN MODELS

- ✓ REGIONAL / NATIONAL / GLOBAL DEPLOYMENT
- ✓ FULL SERVER REDUNDANCY / NO REDUNDANCY
- ✓ PRODUCTION SYSTEM OR PRIVATE POC ENVIRONMENT
- ✓ PRIVATE NETWORK / PUBLIC NETWORK / HYBRID NETWORK
- ✓ PRE-STAGING SERVER / PRODUCTION SERVER
- ✓ SOLUTION CONNECTIVITY / NETWORK OPERATOR
- ✓ FIXED FEES OR VARIABLE FEES
- ✓ CAPEX OR OPEX
- ✓ SINGLE ORGANISATION OR MULTIPLE ORGANISATIONS
- ✓ ARCHITECTURE UPGRADE PATH



Network Server Deployment

The LORIOT Private Server is deployed either as a [SaaS model](#) hosted by LORIOT or [On-premise](#) and professionally [installed and licensed](#) within the client's server infrastructure.

LORIOT handles the installation for all deployment models and [full end to end testing](#) before server handover. Included is also our on-going [software warranty](#), maintenance and free technical support for any software related issues.

Server deployment is [available worldwide](#), and if hosted by LORIOT, we select a cloud provider within the country of your choice for low latency access. We can perform worldwide server installation in a client's infrastructure via SSH/remote access or physically on-site.



LORIOT HOSTED PRIVATE SERVER

ON-PREMISE PRIVATE SERVER

Managed server hosting provided by LORIOT

Server hosted within client's infrastructure

Includes LORIOT SLA & Maintenance

Client Handles Server SLA & Maintenance

Service Level Agreement

✓

-

Installation Included

✓

✓

Worldwide Hosting

✓

✓

Technical Support

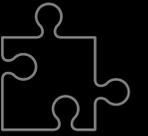
✓

✓

Warranty Included

✓

✓



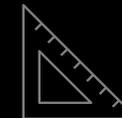
FLEXIBLE HOSTING



[LORIOT Hosted Private Server](#) - is a managed cloud network server as a service. The network operator can entirely focus on building the network without worrying about hosting and maintenance. LORIOT can host the server in any country worldwide for low latency access.



[On-Premise Private Server](#) - the LORIOT network server is installed within the client's private server infrastructure via temporary remote access. This deployment ensures full control over the hosting environment and operator access.



[Installation Specialist](#) - the LORIOT team are specialist at installing our network server software in a wide variety of systems. We are flexible and can adapt the installation and hosting requirements to meet even the most stringent corporate requirements.



Security – The Pillars of Protection



CONTROL

Dedicated Private Server

- Exclusive installation and hosting
- Managed the server utilisation

Centralized Management Platform

- Maximum control and efficiency
- Full network overview of all components

Maximum Independence

- Independence from third-party network operators
- No network operator limits or restrictions

Flexible Server Deployment

- LORIOT hosted or self-hosted
- Cloud or In-house
- Localised hosting available

Server Operator Access

- Top tier server permissions
- Monitor every API call, user login, hardware connection, radio metadata and more

Network Ownership

- Fulfil data responsibilities
- Control the network infrastructure
- Leverage the network

SECURE

Information Security

- Private data and resources
- Secure data pathing
- Routing via trusted network / server

HSM Join Server

- LORIOT Join Server integration with a world leading digital security firm
- Managed service or self-hosted

Corporate Security Policy

- Flexible security/technical requirements
- Tailored service built in-line with your practices
- New feature requirement development

Secure Hosting

- Server counter-measures against malicious actors
- Host within a trusted infrastructure

Penetration Tested

- Independently vulnerability and penetration tested
- Verification documentation

Secure Connections & Integrations

- Secure integrations and API's
- Gateway PKI, TLS 1.2 Encryption, 2FA
- Secure Packet Forwarder and more...

PRIVATE

User Management & Security

- Hierarchical user structure and permissions
- Full control and management over server tenants

Advanced Multitenancy

- Multitenant private user segregation
- Unlimited number of private Organisations
- Collaborative public/private environment

Server Monitoring & Log Analyser

- Full server event and traffic logs with time and unique event filtering
- Monitor all REST API calls, logins, data events etc...

Private Access

- No shared instance with unknown additional tenants
- Managed invitation only server

Private Deployments

- Deploy across your internal infrastructure
- No public internet access required
- Per site network server available

Data Confidentiality

- Dictate data responsibility and ownership
- No unknown siphoning or snooping of data by third parties / network providers



Reliability – Best Practices as Standard

In enterprise LoRaWAN® networks, a critical requirement is **guaranteed bi-directional data** across the whole network. We provide our services to government, military, petrol-chemical, industrial and other sectors that required the **highest standards**.

With a LORIOT managed cloud service, we handle the server hosting and provide a Service Level Agreement for the guaranteed server uptime. If self-hosted, you can trust our network server software and architecture which is **professionally installed** and includes detailed documentation for operation.

The Private Network Server also includes our **software warranty** which is a guarantee that if any software related issues arise, we will fix it at no additional cost within a specified timeframe. We also offer additional support packages for anything else.



BEST PRACTICES FOR RELIABILITY

- ✓ DISTRIBUTED ARCHITECTURE & REPLICA SETS
- ✓ SECURE CONNECTIONS AS STANDARD
- ✓ DETAILED OPERATOR & USER DOCUMENTATION
- ✓ SSH TUNNELING REMOTE GATEWAY ACCESS
- ✓ SEAMLESS & RELIABLE INTEGRATIONS
- ✓ SERVER LOG EVENT MONITRING & SYSTEM ALERTING



Reliability – Best Practices as Standard

To support building your LoRaWAN® network, we provide complementary products and services to **maximize your operational effectiveness** and eliminate possible pain points or lack of insight.

These products are designed to **bring added value** and **ensure best practices** are followed at every stage and that operators have the data and tools to manage a LoRaWAN® network a scale.

We do not settle for the status quo when it is not up to standard, for example, the basic UDP packet forwarder, and is why we build additional products such as the **free LORIIOT Gateway Software**.

We go above and beyond to deliver industry-leading products and standards.



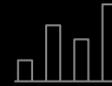
CUSTOM BINARIES

Industry-leading **LORIIOT Gateway Software** ensures reliable data delivery from Gateway to a Network server over TCP. Plus many additional security and management layers.



LOW OPERATIONAL COSTS

Guaranteed **professional services** ensure no disruptions, downtime or client penalties. Our service is transparent and minimises on-going operational and support costs.



LOG ANALYSER

The **LORIIOT Log Analyser** provides an integrated platform to monitor and visualize through dashboards all server event logs.



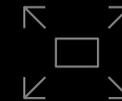
TEST SERVER

The **LORIIOT Test Server** provides a pre-staging environment to test any new products or services before deploying to a production environment.



SOFTWARE WARRANTY

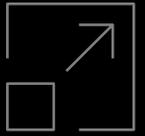
The **LORIIOT software warranty** is our promise that we only deliver a fully tested and **reliable** solution to ensure no disruptions to your services.



GROW WITH SCALE

We guarantee reliability at every scale to provide a **long-term network server** for any LoRaWAN® use-case. As the network scales, there is always a capable network server to meet requirements.

Scaling – Built for the Long-term



The LORIoT Private Server software and component architecture are **proven at scale** supporting multiple large **national LoRaWAN® networks** and handling millions of events.

By providing additional management and monitoring tools, valuable features, our user-friendly platform, and enabling requests through REST API, operators can realistically manage their network at any scale.

All server models benefit from the software developed for large scale network requirements, and for every network size and use case we have the appropriate server model.

To ensure the server and costs scale with your network, we provide a **seamless upgrade path** from one server model to the next, ensuring the flexibility to select a server model that suits current requirements without sacrificing long-term needs.

✓ FLEXIBLE SERVER MODELS

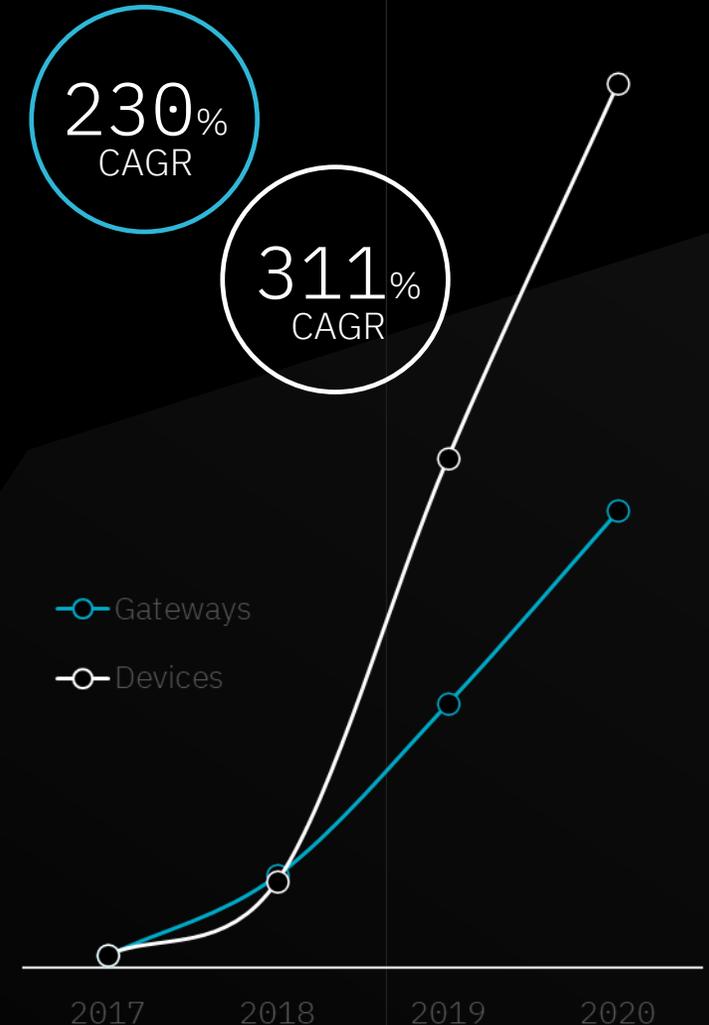
✓ FULL REST API CONTROL FOR SCALED OPERATIONS

✓ TOOLS AND FEATURES FOR MANAGING AND PROVISIONING AT SCALE

✓ LONG-TERM NETWORK SERVER FOR THE FUTURE

✓ WORLDWIDE DEPLOYMENT WITH MULTIPLE REGIONAL SERVERS

✓ LOW COST ENTRY MODEL AND DEVICE CONNECTIVITY AS YOU SCALE



The LORIIOT Promise - Warranty, Support and Update Services



The LORIIOT Private Server comes included with our [software warranty as standard](#), and our [reputation](#) is built on the software stability and support services we deliver.

To ensure your network runs with minimal downtime and that an expert is available should it be needed, we provide a standard maximum response and fix time should a software-related issue cause any interruptions in service. We also offer additional packages for [premium](#) warranty and support services with [carrier-grade](#) metrics.

Our support team are [seasoned LoRaWAN®](#) & networking experts with years of experience supporting clients deploy their LoRaWAN® networks. We look after the [complexity](#) of developing and maintain industry-leading network server software so you can focus on services.



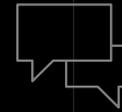
SUPPORTED BY TEAM OF
LORAWAN® AND
NETWORKING [EXPERTS](#)



TARGETTED AND
EXPERIENCED BASED
[DIAGNOSTICS](#) AND
[DEBUGGING](#)



[GARANTEED](#) RESPONSE
AND FIX TIME AS STANDARD



CLIENT FEEDBACK LED
SOFTWARE DEVELOPMENT
PROVIDES [VAULABLE](#)
FEATURES



[PREMIUM](#) WARRANTY,
SUPPORT AND LICENSING
AGREEMENTS AVAILABLE



The LORIoT Promise - Stable & Up To Date Software

LORIoT has a [unique position in the market](#) as both a network server operator, across our [17](#) Community and Professional Public Servers, and a Private Network Server software provider.

We leverage this advantage within our deployment staging process for new major server updates, which we roll out a minimum twice per year. These updates include keeping in-line with the LoRaWAN® Specification and new features. To ensure the stability of all releases, only once we have validated a server update across our servers, will we update your server.

THE FIVE PHASE PROCESS



Network Deployment Scenarios



The LORIoT Private Network server can be deployed in a **wide variety** of use-case scenarios, and below are few, but not limiting, examples of current LORIoT Network Server use-cases and operators:

USECASES

USERS

OPERATORS

PRIVATE NETWORK

- ORGANISATIONS PRIVATE LORAWAN® NETWORK
- DEPLOY IOT SOLUTIONS FOR B2B/B2C CUSTOMERS
- ONBOARD 3rd PARTY SOLUTIONS FOR INTERNAL USE-CASE REQUIREMENTS
- SINGLE ORGANISATION NETWORK
- MULTITENANCY FOR DIFFERENT USERS WITHIN THE SAME ORGANISATION
- NOT FOR 3RD PARTY USERS



PUBLIC NETWORK

- PROFESSIONALLY OPERATED PUBLIC LORAWAN® NETWORK
- RESELL GATEWAY COVERAGE AND SERVER CONNECTIVITY FOR B2B CUSTOMERS
- PROVIDE A COMMERCIAL OR COMMUNITY NETWORK
- MULTIPLE ORGANISATIONS AND USERS ON THE NETWORK
- MULTITENANCY FOR DIFFERENT ORGANISATIONS, RESELLERS & USERS
- DESIGNED FOR 3RD PARTY USERS



HYBRID NETWORK

- PRIMARILY A PRIVATE NETWORK AND ALSO PROVIDES ACCESS TO 3rd PARTY ORGANISATIONS AND/OR COMMUNITY ACCESS
- TO FACILITATE PROFESSIONAL, COMMERCIAL AND COMMUNITY USECASES ON SINGLE NETWORK
- MULTIPLE ORGANISATIONS AND USERS SHARING A NETWORK
- MULTITENANCY FOR DIFFERENT ORGANISATIONS, RESELLERS & USERS
- PRIMARILY FOR SINGLE ORGANISATION BUT ALLOWS 3RD PARTY USER ACCESS





Leverage your LoRaWAN® Infrastructure

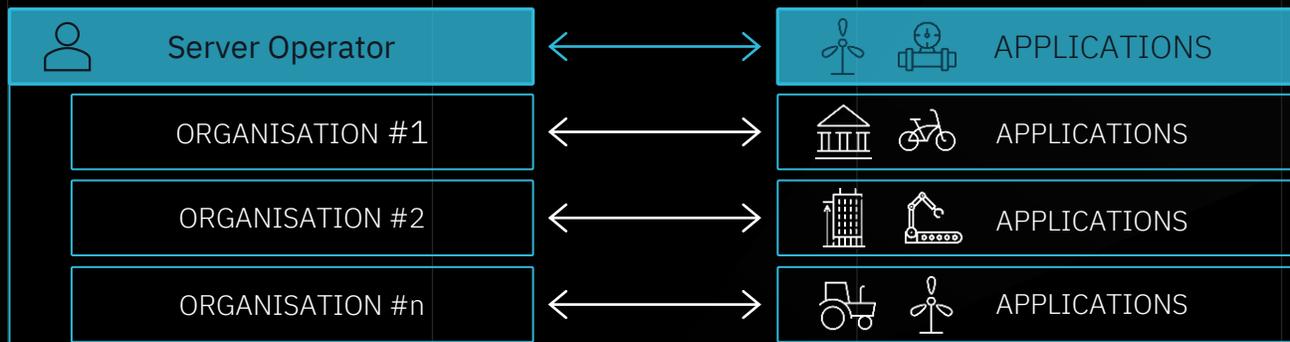
A Private Server enables you to become a **LoRaWAN® Network Operator** and join in LORIIOT Passive Roaming

The LORIIOT Network Server platform enables a Server Operator to create an infinite number of Organisations with **sub-accounts** within the same network.

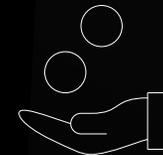
All the users share the same infrastructure, but each one can manage their own private environment and applications independently. By leveraging your LoRaWAN® network, you can potentially add additional revenues by inviting other organisations to the network and billing for this service.

With a network of gateways on your server, you can join in roaming with other LORIIOT Private Network Servers and benefit from connectivity across multiple networks and their gateways.

ONE NETWORK
MULTIPLE ACCOUNTS
MULTIPLE APPLICATIONS



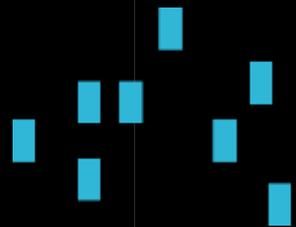
BUILD ON THE NETWORK FOR ADDITIONAL REVENUES



ADVANTAGES

- Increase network coverage without additional hardware
- Resell gateway/server connectivity
- Reduce costs by scaling the network of devices
- Additional business model and revenue stream

- ...
- Join in Passive Server roaming & Leverage your network
- Increased scaling via third parties
- Resell server connectivity
- Expand the network
- Primary use-case



LORIoT

Connecting the Internet of Things

Private Network Server

Information and pricing contact:

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