Intel® Network Builders
Winners' Circle Titanium
Rakuten Symphony

Solving the Challenges in Edge Service Delivery for operators

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Rakuten Symphony

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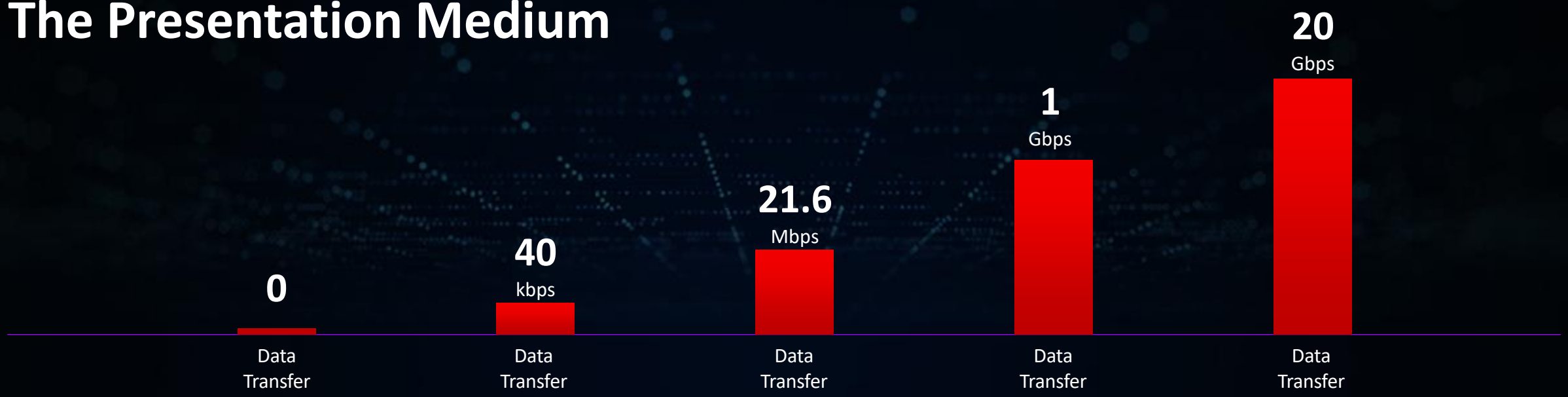
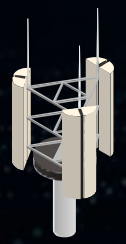
The Presentation Medium





40 Years – 5 Generations

BUT

The fundamental way we build networks **has not changed**

Custom-built proprietary HW

- Very limited number of vendors
- BBU as non-accessible ‘black box’

Strong HW dependency & long lead times

- No or low elasticity / scalability
- New HW required with every generation driving CAPEX

High operational complexity

Low degree of automation – mostly manual efforts

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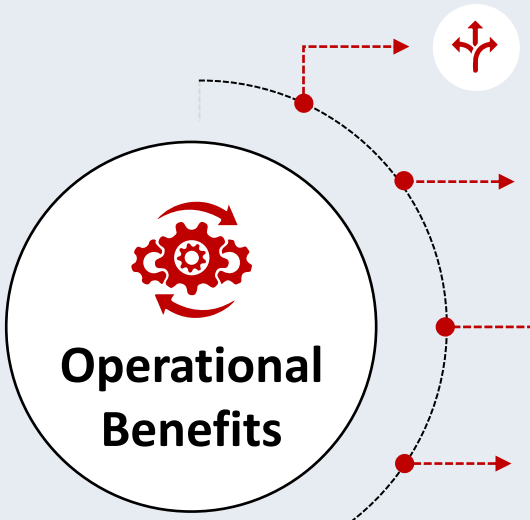
Why Network Modernization



Flexibility – Industry-wide standardization to eliminate vendor lock-in

Innovation – Opening the market for accelerated innovation

Software first – Reducing dependency on HW & opening up new possibilities

Agility – Accelerating time-to-market for new services & applications

Automation – Minimizing manual efforts during deployment & operations

Unprecedented Efficiency

True TCO Reduction

New Business Opportunities

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What is Driving Modernization

Faced with slow ARPO growth and the need for scale and speed Telco operators need to innovate to reduce cost & **offer edge services to expand revenue**

Technology Drivers

Hardware as means to an end
Use commodity hardware & limit number of SKUs

Software-first approach
Prioritize SW development over HW investments

Automate whereever possible
Minimize manual intervention to increase efficiency

Design systems to be elastic
Quickly scale up and down based on demand

Implement open standards & interfaces
Use open and non-proprietary interfaces

Off-the-Shelf Hardware
Use readily available hardware and standard Operating systems to ride technology & cost cures

Cloud-Native
Use cloud-native infrastructure for greater flexibility, efficiency and scalability

Hardware-Software Disaggregation
Separates hardware and software by virtualization of network functions for lower cost & flexibility

Automation & Orchestration
Deploy E2E, metal to service Orchestration to automate deployment and Day 2 Operations

Business Drivers

Focus on maximizing efficiency
Seek ways to reduce true costs continously

Embrace change & quickly adapt
Take risks, decide quickly and execute fast

Continously innovate
Software-driven innovation in frequent cycles

Open and monetize the platform
Turn the tech platform into a hub of value creation by including 3rd parties through APIs, SDKs etc.

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How long does it Take to onboard a new application/Edge Services today?

Opportunity

- Evaluate the requirements
- Identify solutions
- RFP and vendor Selection

Onboarding

- Solution design
- Qualification and testing
- Service delivery design and costing

Service Availability and Lifecycle Mgt.

- Operations staffing and design
- LCM management
- Customer support

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Solving the Challenges in Edge Service Delivery

Diverse Industry specific Devices, Interfaces and Use Cases	Complex Infrastructure and Service Delivery Requirements	Monetization and Service Management	Time to Market	Service Delivery Operations Cost and Complexity
Integrated set of **baseline capabilities (Lego Blocks)** and interfaces	**Pre-configured** and **tested** service delivery stack	**Usage** data integration and **multi-tenancy**	**As a Service** Ready solutions supporting high-value use cases	Hyper-automation for **App-as-a-Service** delivery, with low TCO

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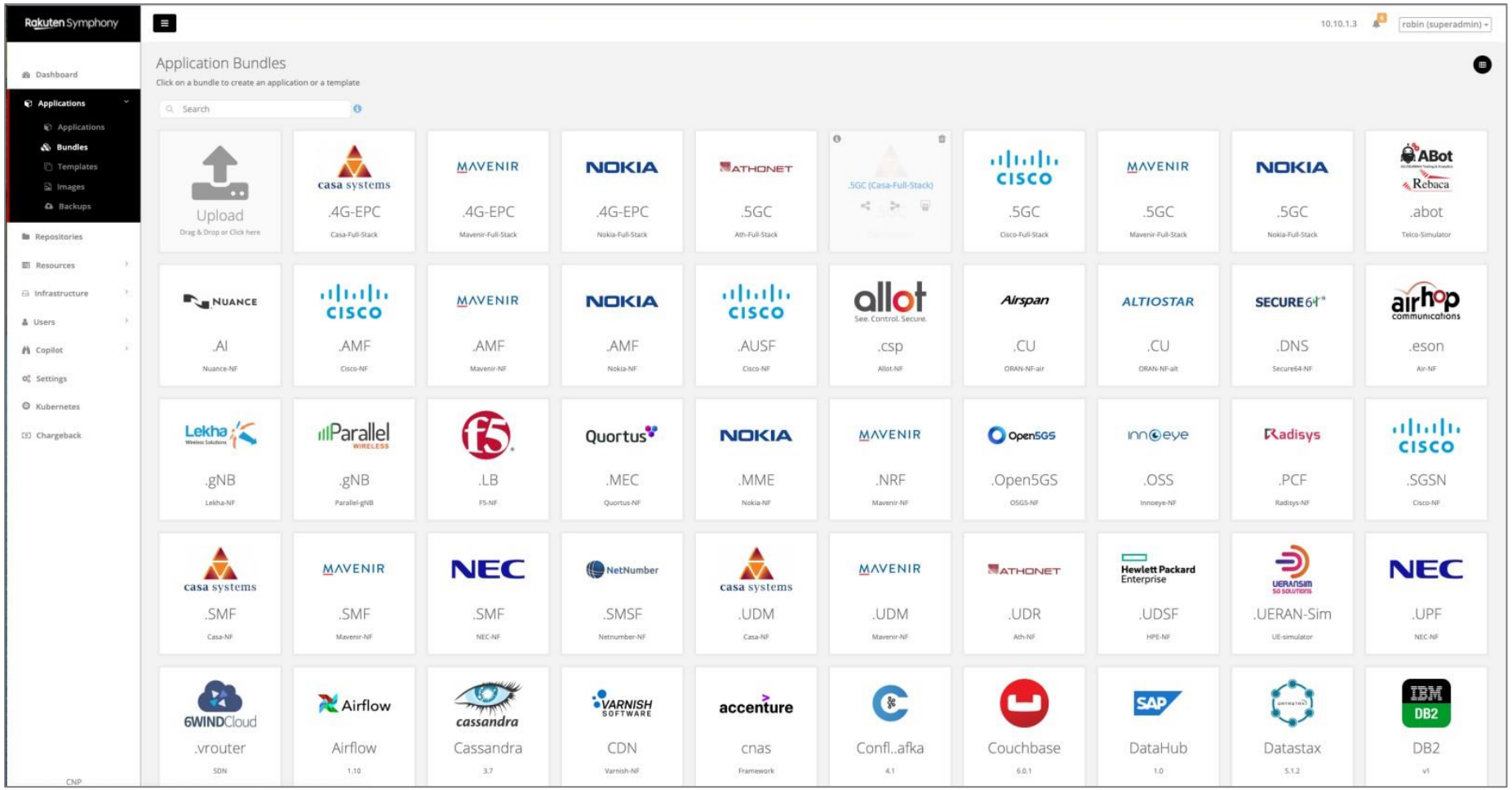
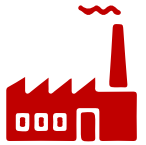
Delivering Edge applications on Demand





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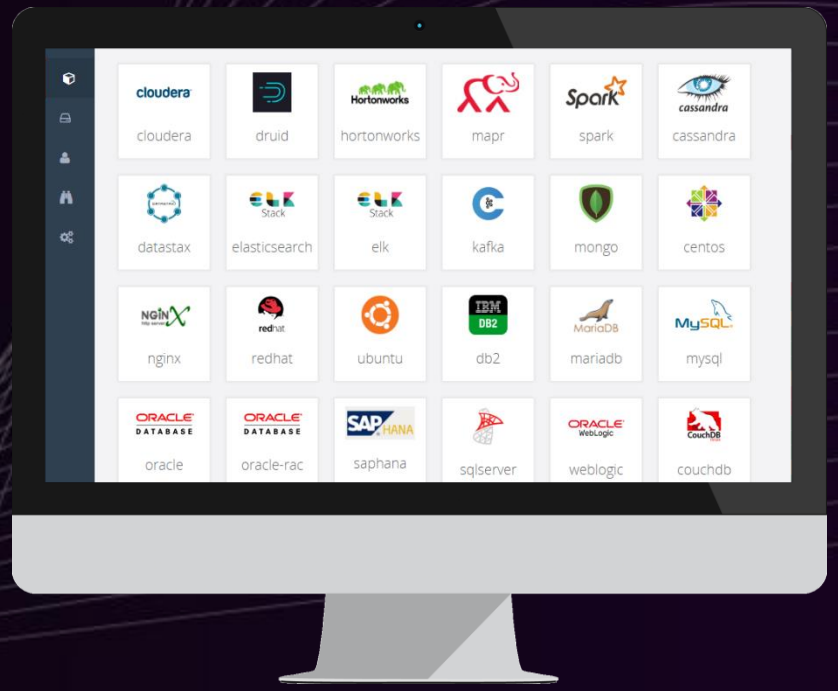

Edge Applications Delivery Automation Benefits

- App Store Experience
- Automated deployment, delivery, and LCM
- As a Service cost model
- Quickly add new applications
- Multi-tenancy and As a service delivery automation
- Common service delivery and LCM infrastructure

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Symcloud Platform – Architecture

Advanced Visibility & Diagnostics

Sherlock

Advanced Scheduler

Observability

Monitoring

Application Workflow Manager

Advanced Declarative Workload Placement

High-performance App-aware Storage

App-aware Storage

Kubernetes

Enhanced Networking

Advanced networking

- Intel network Acceleration
- SRIOV, DPDK & MULTIS support
- IPV4/IPv6

Runs on Intel Processor standard servers

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Typical Edge Use Cases

Industrial: Semiconductor/Food Factory Automation

- Quality assurance
- AI enabled Video Analytics
- Plant maintenance and operations
- Security and access control

Process Manufacturing: Petrochemical Plant Automation

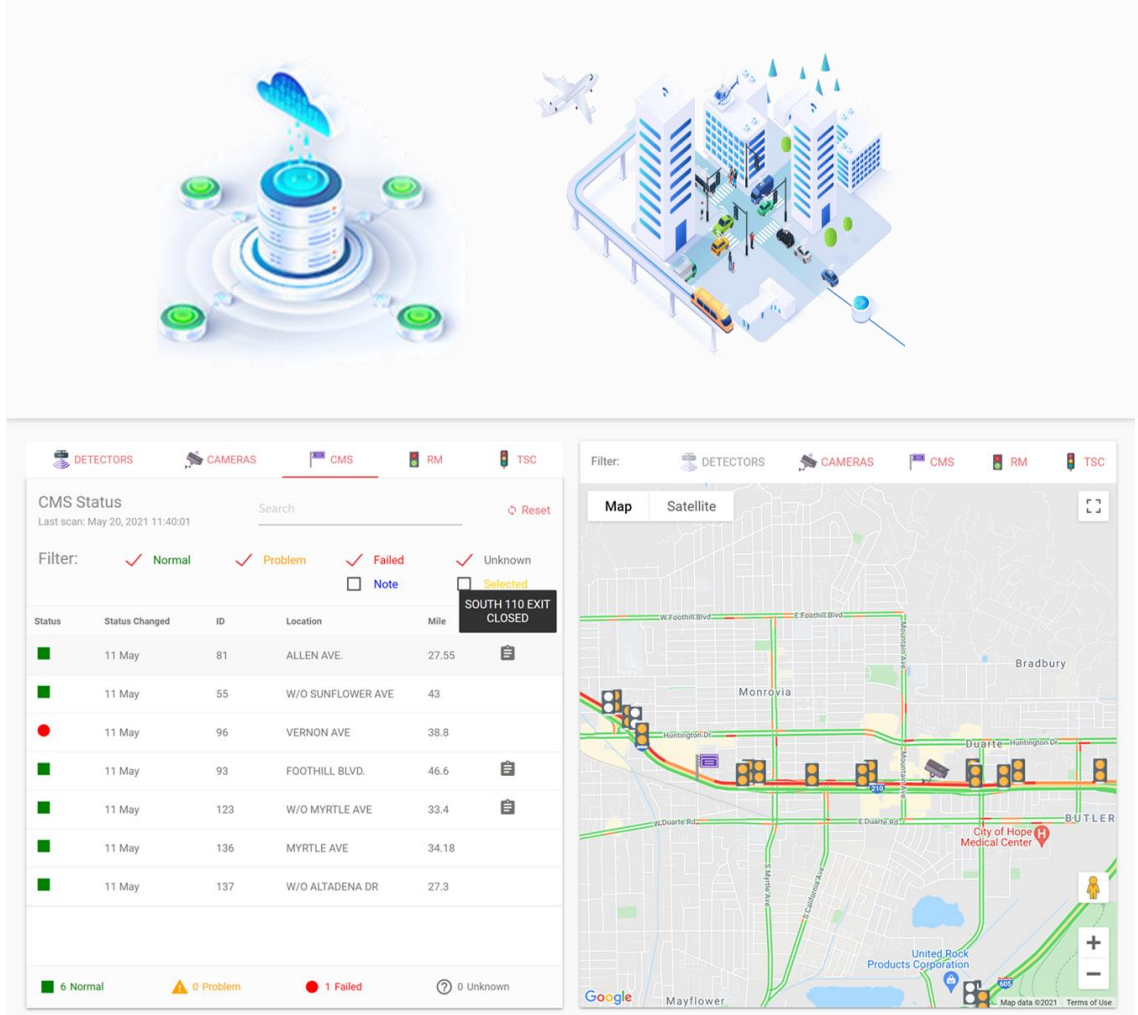
- Process control, sensors, temperature and control functions
- Plant maintenance and operations
- Quality control, video analytics

Transportation: Container Port Use Case

- Automated logistics
- Security and access control
- Container tracking and release
- Intelligent parking systems

Smart City (Local Government Unit) Use case

- Monitoring water levels
- Traffic management, Video analytics
- Ramp metering and signal control, Incident management
- Bus, Taxi and public transportation intelligent scheduling



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E2E Edge Service Delivery Model

- Fast time to MKT: Application-as-a-Service model
- Lego Block approach: Basic, Intermediate & Advanced
- Independent of Connectivity Solutions and the Network Vendors
- With pre-packaged solutions for targeted use cases

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Benefits for the Operator

- New revenue opportunities
- Market leadership for edge service delivery
- Rapid Delivery of services with lowest TCO and operations cost
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- Flexible App as a service model to accommodate new use cases

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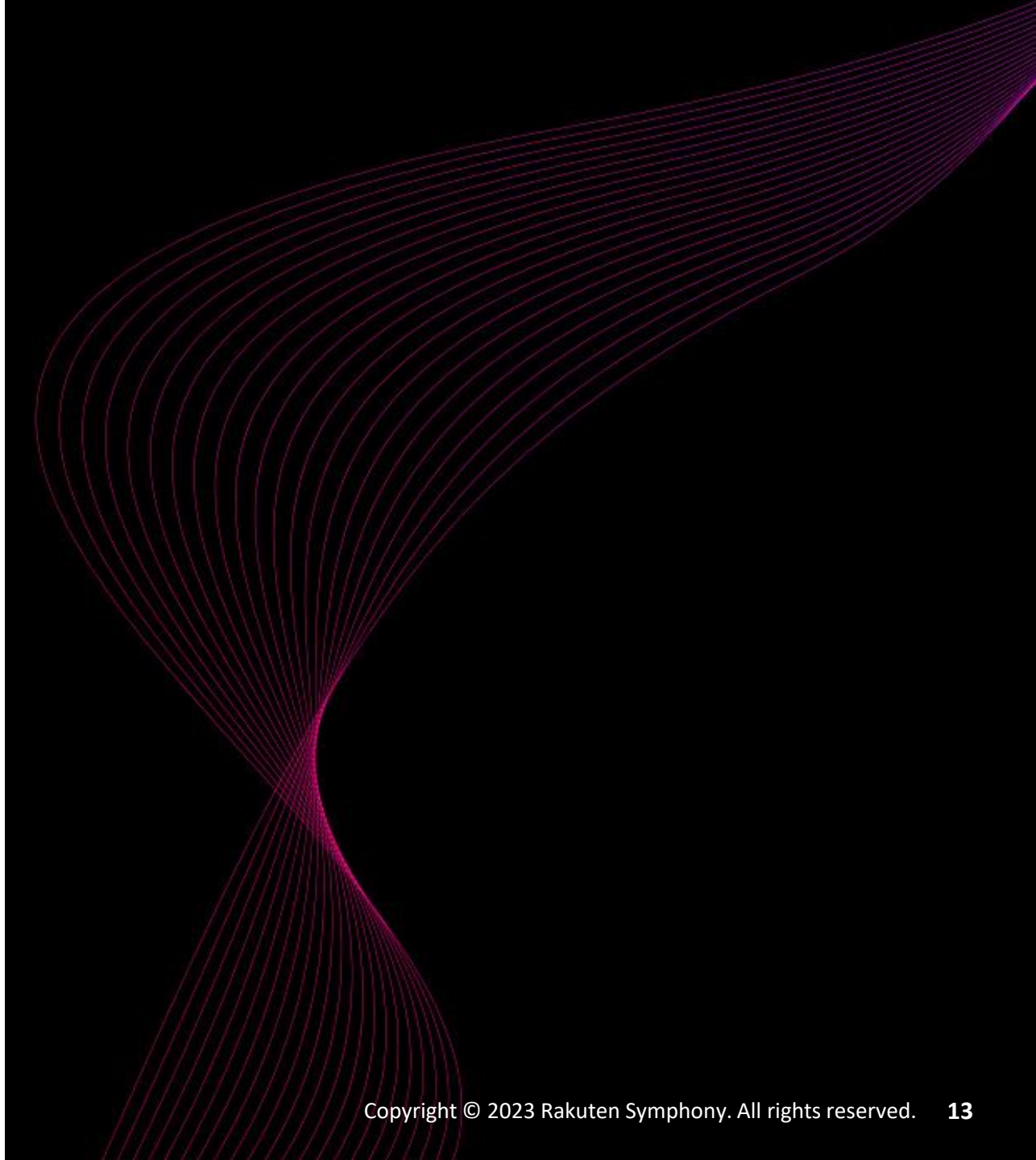
Technology benefits for Edge Applications as a Service

- Support for standard Intel-based Edge hardware
- Low footprint
- Automation and Orchestration, metal to service, at scale
- Edge-enabled Kubernetes platform for containerized and non-containerized applications
- Single Pane of glass for management of Edge applications and infrastructure
- App portal for Application delivery automation
- Low footprint with the lowest TCO and operations cost
- Service delivery Life cycle management automation
- Telco and Edge Expertise



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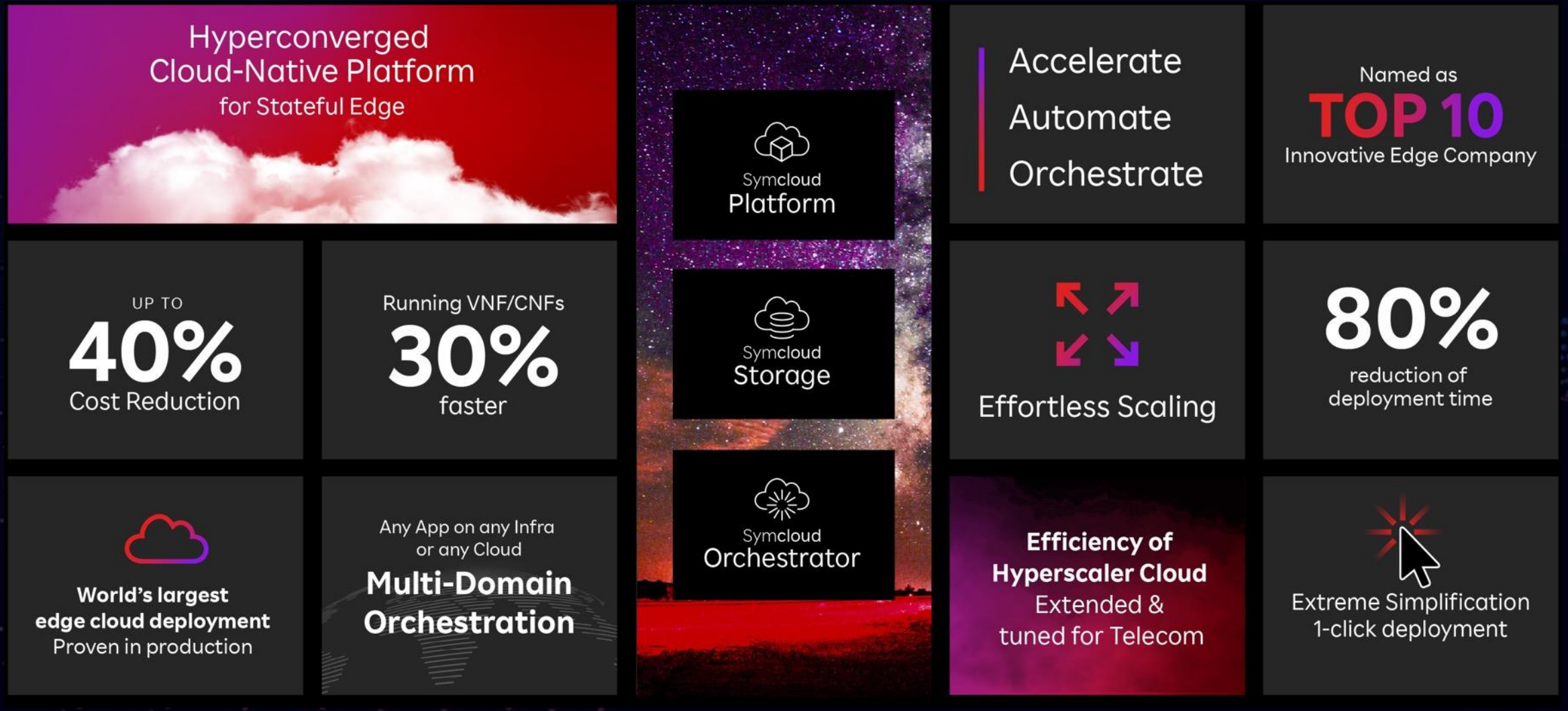
Symcloud™ : Cloud Native Platform designed for the Edge



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Success Story

Enabling the industry's first fully cloud-native 5G architecture for Rakuten Mobile

Horizontal Cloud

4 x
Central DC

Running the core applications, like AMF, SMF, and EMS

50+
Edge DC

UPF, CU, and the CU component of the RAN and MEC applications

4,600+
Far edge

Close to the radio tower RU and DU instance of radio

Key outcomes

1.77 GBPS
Download speed

40%
Lower CAPEX

30%
Lower OPEX

99.83%
Service availability

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Thanks

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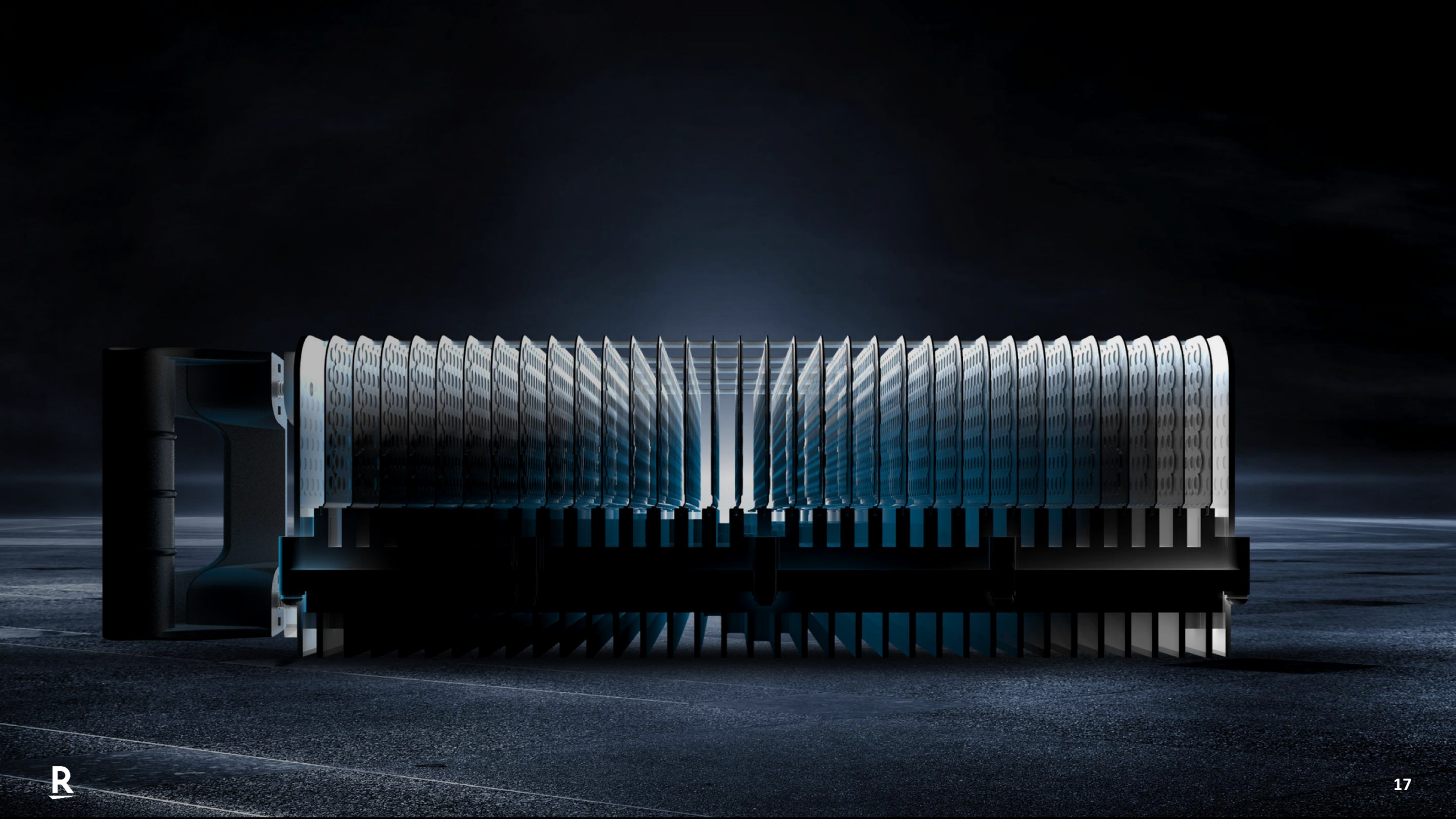

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