Datasheet

Rakuten Symphony

# Symworld™ Orchestrator

Bare metal-to-service orchestration with massive scale using closed-loop automation - day 0/1/2 life-cycle management

Symworld™ Orchestrator's hyperautomation orchestrates and manages the life-cycles of your bare-metal infra, 3rd party appliances, Virtual Network Functions (NVFs), Cloud-Native Network Functions (CNFs) and service chains, with built-in logging, monitoring and policy engine, for closed loop automation that is managed through a single pane of glass. All of this is driven by any intuitive, context-aware and easy-to-use work-flow manager.

Symworld™ Orchestrator provides 1-click application & Network Function (NF) onboarding, pulled from a large, pre-integrated, vendor ecosystem encompassing telco, cloud and enterprise applications. Ingest any scripting, such as helm charts, to automate Methods Of Procedures (MOPs), orchestrating any network element, application or process.

Our customers now do in minutes, what took days and weeks in the past, by integrating multiple layers of orchestration and workflows into a single platform - ideal for rapid scale-out of 5G, Open RAN and Multi-access Edge Computing (MEC) applications, such as Content Delivery Network (CDN) streaming, gaming and more.

## KEY BENEFITS

- Accelerates infrastructure and service turn-up timeliness
- Eliminates integration touch-points and orchestration silos
- Improves performance and utilization of services
- Enables truly shared resource pools, with containers and VMs deployable in the same cluster
- Small footprint and scales to over a million appliances
- Single pane management and large scale orchestration of wide variety of elements and functions ranging from infrastructure, network to applications and services

## CUSTOMER VALIDATED EFFICIENCIES

- First in-production containerized 5G stack with millions of subscribers - full stack deployment and in-service Open RAN
- 40% reduction in Opex scalable orchestration and automation for RAN and Core
- 50% reduction in Capex by enabling Open RAN and Core on commercial hardware
- Reduced deployment times - from weeks to minutes
- When combined with Robin Cloud Native Platform (CNP) - 30% faster when running VNFs and 3x faster storage performance

## SOLUTION HIGHLIGHTS

**Full stack orchestration & lifecycle management - bare metal to service orchestration**

Manages lifecycles and turn-up of your HW infrastructure, cloud platform, NFs, supporting applications and services, on one platform. This includes remote turn-up of completely bare servers.

**Orchestration simplification and agility**

Remove orchestration and MOPs silos with a single, unified engine for the entire stack, with access to all of the workflows, packaged with an easy-to-use interface utilizing programmable, context-aware and reusable elements simultaneously across the entire landscape. Combine multiple layers of orchestration and MOPs into 1-click workflows.

**Harmonized container and virtual machine (VM) support**

You are no longer tied to your vendor's containerization roadmap, licensing or support contracts. Realize sharable resource pools today. Deploy CNFs and VNFs on the same or separate high availability clusters, reusing and sharing resources.

**Applicable to any network element or application**

No vendor or technology lock-ins. Configuration management support for not only computer/storage/network infrastructure, but also proprietary 3rd party equipment including top of rack switches, 5G radio, security, content delivery appliances and other Physical Network Functions (PNFs).

**New paradigm in monitoring that reduces outages**

Go beyond simple lists, logs and utilization graphs. Our clusters and the policies they enforce are application-aware, calculating placement based on detailed resource policy models with topology awareness, affinity/anti-affinity rules and service composition, to name just a few. Symworld™ Orchestrator's multi-cluster, multi-data-center monitoring and policy engine drives workload scaling, healing and migration anywhere in any cloud. It intuitively relates the dependencies and how they impact services. This enables the operator to better understand the system as a whole and make more informed decisions, For example, service impacts due to the addition of new service types, server migrations, OS upgrades, security patches, database rebuilds, etc. These capabilities help the operator plan quicker, easier, and with better confidence, reducing service-impacting events and human error.

## Unified Day 0/1/2 Lifecycle Management

# Quickly combine any of the lifecycle management domains into a 1-click operation

### Advanced Inventory & Service Management

Our inventory management goes beyond comprehensive dashboards for health/usage/alarms and focuses on dependencies. Sym**world**™ Orchestrator's multi-cluster monitoring and closed-loop automated policy engine intuitively relates those layers of dependencies and how they impact services. Drill down into a flagged cluster, or hardware nodes and see the impacted services and exactly what elements have failed or degraded. Perform blast-radius analyses to model the impact of any device, node or process.

- Action center: Visualize multi-data center, multi-cluster resource-aware dependencies
- Fault domain detection and blast radius service impact mapping
- Data drill-down
- Service-mesh and resource visibility mesh

### Bare Metal Lifecycle Management

Manage your HW hardware infrastructure with numerous, intent-driven and contextually aware checks that guide your exacting declarations. Transform a bare server, without configuration or an operating system via a remote Baseband Management Controller (BMC) Ethernet or Serial connection.

- Verify, install, upgrade, patch and configure the OS
- Support Intel- and AMD-based vendors and SKUs including HP, SuperMicro, Quanta Cloud Technologies (QCT) and Dell
- Add and configure supporting drivers, services and software packages
- Upgrade and configure OS and BIOS settings
- Upgrade, configure and patch different firmware components including NIC, SSD, FPGA, NVMe, RAID

### Cloud Platform/Kubernetes Cluster Life Cycle Management

Zero-touch automation of Kubernetes cluster deployments across thousands of edge locations. Sym**world**™ Orchestrator + Sym**world**™ CNP enable a huge feature boost. Sym**world**™ CNP is based on open source Kubernetes, with value added features including, resource modeling, advanced placement algorithms, providing NUMA-awareness, CPU Pinning, HugePages support, affinity/anti-affinity rules, multi-CRIs (Containers, VMs). Furthermore, CNP ships with built-in application-aware enterprise-grade storage and numerous carrier-grade virtual networking options. See the Sym**world**™ CNP data-sheet for more details.

- Verify, install, upgrate, patch and configure Kubernetes clusters
- Design cluster, configure roles based access via user: element parameters, as well as per cluster, site and Kubernetes name-space
- Centralized policy and resource inventory management
- Supports numerous Kubernetes distributions including Sym**world**™ CNP on prem, CNP for AWS/GCP/Azure

### Network Function Lifecycle Management

Manage both CNFs and VNFs, even on the same cluster, for high density, reusable, resource pooling. The NF lifecycle manager works with Sym**world**™ CNP to take advantage of advanced workload placement, networking and application-aware storage.

- Onboard, monitor, start, stop, add, delete, scale, heal and migrate with easy to config and intuitive rules engine
- Supports bundles, helm charts, operators, YAML, 3rd party scripts
- NFs can leverage Sym**world**™ CNP's advanced compute, network and storage placement directly from helm charts, without writing a single line of code

### Application Life Cycle Management

Application management focuses on software that is not considered to be an NF, but is still necessary as part of the overall solution databases, big data solutions, AI/ML, analytics stacks, load balancers, message queues, controllers etc. The application life cycle manager works with Sym**world**™ CNP to take advantage of advanced workload placement, networking and application-aware storage.

- Onboard, monitor, start, stop, add, delete, scale, and heal with easy-to-configure and intuitive rules engine
- 1-click migration of the entire application to/from other clusters
- Data management, including snapshot, clone, backup, restore, import, for entire applications, not just storage volumes
- Supports bundles, helm charts, operators, YAML, 3rd party scripts

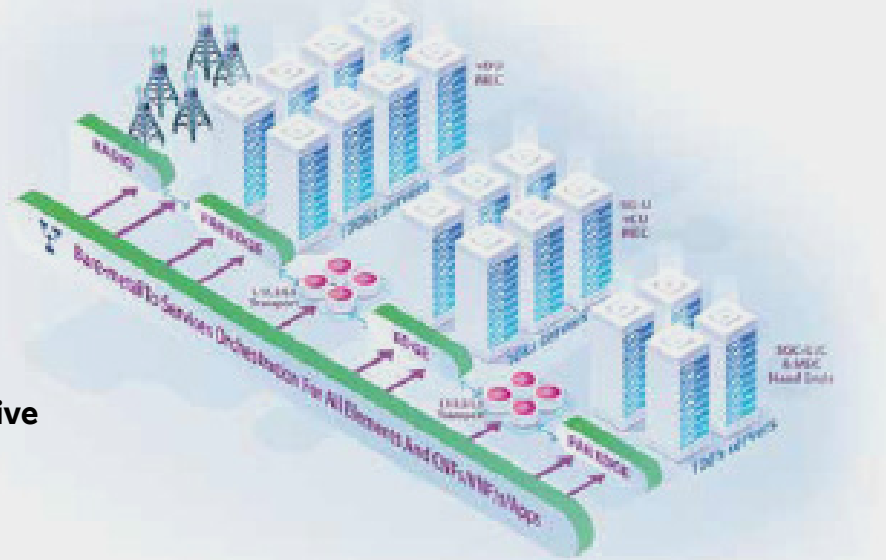
### Methods of Procedures Management (MOPs) And 3rd Party Appliances Lifecyle Management

- Configure and create custom processes for 3rd party appliances, supporting applications such as load balancers, databases and analytics stacks
- Create workflows that extend beyond that of typical infrastructures, platforms and services
- For example, raising alarms, sending texts or amending logs when a 5G radio or MEC application initializes, fails or reaches a user-defined threshold

### Network (NS) Service Life Cycle Management

Design and manage complete services chains comprised of VNFs, CNFs, PNFs and other application elements, mixing and matching, using programmable, contextual and state aware work-flows. Deploy one-by-one in automated batches. The NS life-cycle manager works with Sym**world**™ CNP to take advantage of advanced placement, networking and application-aware storage. Network services can be monitored using complete observability stacks that include policy dependencies, resource metrics, event logs, alerts and statistical drill down.

- Create, monitor, start, stop, add, delete, heal, migrate and scale service chains
- Design NSs distributed in different clusters contextual, readiness aware, serial and parallel NS turn-up
- Supports bundles, helm charts, operators, YAML, custom NS policy pinning



### Intuitive & Declarative Day 0/1/2 Lifecycle Management

Rakuten Symphony

For more information, visit **symphony.rakuten.com** or email **rsi-info@mail.rakuten.com**
3rd Floor, C21 Business Park, C21 Square, Opposite Radisson Blue Hotel, MR-10, Indore MP 452010 IN