



QUANTUM

RUDDER®

Network and Services Controller

DATASHEET



BENEFITS

Scalable Architecture

Quantum® RUDDER is Ultra-scalable. Depending on the device type, it can manage multiple APs, Switches and Gateway. On premise RUDDER with HA (Active-Passive).

Graphical Dashboards

It provides comprehensive, APIs that enable applications configuration and real-time monitoring of Quantum Networks devices. Build separate dashboards for individual administrators.

The dashboard provides a summary of events occurring on Quantum Networks devices. It gives summarize detail of total sites, devices information, connected clients and critical alarm, and warning if any.

Multi-tier tenancy

The multi-tier hierarchy provides flexibility to service providers to allow administrators and operators to manage, create and reuse.

Administrative dashboard

A controller dashboard is a platform that reduces the time required to support and configure large-scale networks. Consistent menus plus consolidated and streamlined navigation shortens time to perform routine tasks such as Access Point, Switch configuration. The administrator can view health and traffic analysis, network alerts and statistics.

PRODUCT OVERVIEW

Unified Management Platform to manage entire networking stack of Wi-Fi, Switching, Gateways, and VPN.

Quantum® RUDDER provides ease of administration to manage and monitor multi-site heterogeneous networks.

Micro services -driven architecture to provide resilient and scalable architecture.

Quantum® RUDDER is a wireless network management user interface for Deploying, Monitoring, Managing and Troubleshooting Access Points, Switches and Gateway devices.

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Scalability, Reliability

Quantum[®] RUDDER is SSL certified to provide secure, encrypted communications between Access Point / Switches / Gateway and Cloud controller. Quantum[®] RUDDER, designed from the ground up as a cloud application, ensures the highest possible availability and uninterrupted service. Web-scale database design for responsive performance even when working with a huge amount of data.

Role-based administration

Role-based access control with pre-grouped administration permissions makes common roles easier to set up. Users can define read-only or modify permissions that apply across zones, add new administrator profiles and set permissions. It allows the administrator to access Quantum[®] RUDDER and site management such as QIM. Its MSP module allows the partner domain to create its clouds that may contain the site data.

Partner domain (MSP)

The Partner domain enables operators to separate tenants with their own unique set of configurations, profiles, and system object which are not shared with other tenants. It creates a wall between tenants to ensure privacy and alleviate operational headaches associated with tenant management. Also, service providers can personalize the administrative dashboard for their tenants with unique logos and text.

External integrations

RUDDER supports external integrations using industry standard protocols like TR-069, SNMP v2/v3 and API.





Network Health Monitoring and Troubleshooting

AP, Switch and Gateway health

Keep an at-a-glance summary of the entire network health through an intuitive dashboard, designed to allow drill down for more information on the go.

Client health

Client connection diagnostics for wireless client's speeds and simplifies troubleshooting and client problem resolution. The administrator can focus on a specific client device and its connection status with this troubleshooting tool. An intuitive interface tracks and monitors the progress of the user's connection through 802.11stages, EAP authentication, RADIUS, captive portal redirects, encryption key setup, DHCP, and roaming.



Reporting

Enhance reporting structure to provide the data on daily, weekly and monthly schedule which can be export or send to the administrator. The administrator can check on real-time client performance metrics, connections, and traffic, track client SNR (signal-to-noise ratio) and data rate, as well as historical traffic, to overcome troubleshoot connectivity problems.

Configuration and login audits

Administrator can keep the logs of activities and login records with time duration.

Monitoring

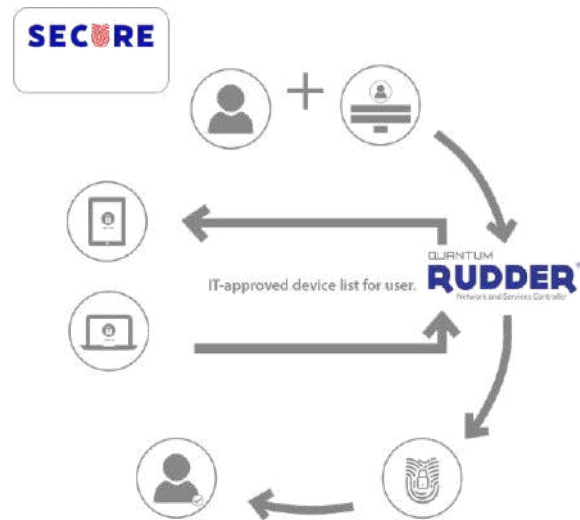
Track individual Wi-Fi client records such as Hostname, IP Address, uptime, wireless details, bandwidth, noise level, signal strength, speed, association history, and device name.

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HIGHLIGHTS

Quantum[®] SECURE

Quantum[®] SECURE jumbles WPA/WPA2 key, pre-configured MAC address and user password to allot an automated randomized passkey and provide access for the device. This device access cannot be used on another device, even by the same user. It ensures client security even in case of a lost device or password compromise.



Quantum[®] SECURE+

Quantum[®] SECURE+ allows users to get authenticated before getting access to the Internet through the Internet Browser. Every user will get web-authenticated by using individual user credentials. Once the user discovers the WLAN(SSID) on their wireless device or laptop or desktop or any other device, they will get a popup to enter the required login information.

Quantum[®] Guest Pass

Provides guest passes for the guest users to allow temporary access. The guest users will get authenticated to access by the administrator.

Quantum[®] COLLAB

Quantum[®] COLLAB is Quantum Networks platform for delivering custom-made solutions that are industry-specific. It is a platform that can integrate with non Quantum software or services. It uses the integration to onboard Wi-Fi clients and makes the task easier for the administrator.





HIGHLIGHTS

Wi-Fi mesh management

Mesh Wi-Fi is a Wi-Fi system built to eliminate dead zones and to provide uninterrupted Wi-Fi throughout the entire area. Mesh features enable devices in the network to have faster speeds, greater coverage, and a more reliable connection. Mesh Wi-Fi is faster and more efficient at delivering Wi-Fi signals.

Flexible deployment

Quantum Networks offers flexible deployment options using Quantum® cloud, On-premises, and Virtual platforms without compromising security, data privacy, or administrative control.

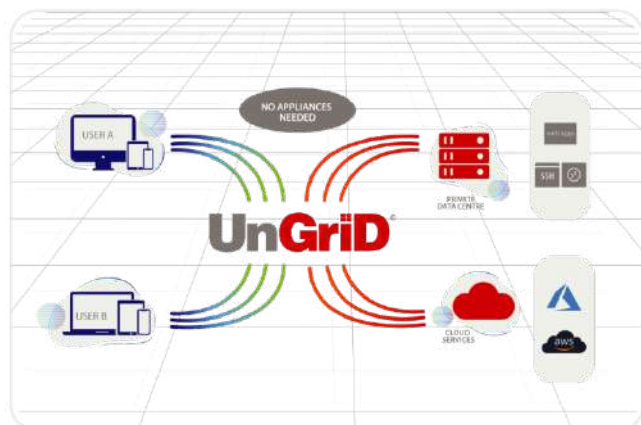
Theft protection

Software-based theft protection functionality protects assets from misuse. Access Point will be locked for deployment in any other network until decommissioned from the existing network.

VPN CONNECTIVITY

UnGrid

UnGrid offers an ultra-scalable solution to onboard Trusted Users, Devices, and Applications on the same network. It's highly scalable and comes with a secure infrastructure to provide reliable performance. It is elastic to scale from a small workforce to thousands of users on the go. UnGrid ensures seamless connectivity of the entire team from anywhere, anytime. Since no hardware infrastructure is required to invest in and manage, it reduces the total cost of ownership.



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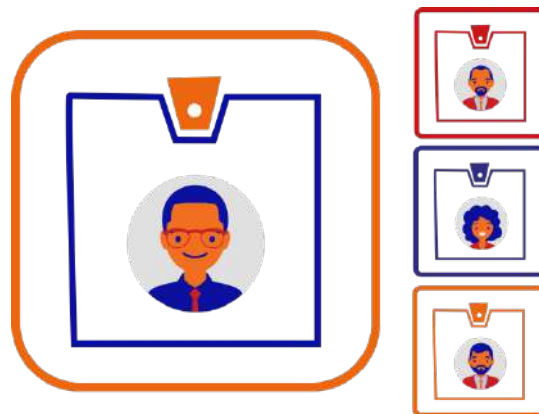
URL filtering

URL filtering for wireless and gateway clients allows businesses to create and enforce access policies that protect users from inappropriate and harmful websites while maintaining access to allowed URLs. Policies are granularly applied at a wireless LAN or user group level with override whitelist/blacklist options.



Quantum[®] Identity Management

With Quantum[®] Identity Management, users can be granted multiple services access with a single user name and password.



Quantum[®] Identity Management

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Parameter	Quantum RUDDER
Device management	Unified controller for Quantum Access points (Wi-Fi 5 and Wi-Fi6), Switches, Gateways and services
	Super scalable and resilient architecture. High availability/Elastic Clustering
Device enrollment	Manual on boarding
	Auto Enrollment Pre provisioning Controller Auto Discovery/Authentication
Device monitoring	Monitor device status (Up/Down)
	Monitor device resources
	Integrated with external monitoring via SNMP/API
	Various analytics dashboard for device insights
Client monitoring	Monitor clients across your entire network stack on wired and wireless network
	Classify device type using various classification modes
Logging / Reporting	Centralized logging and reporting of <ul style="list-style-type: none"> ○ Device events ○ Client events ○ Radio resource events ○ Security events ○ Administrator events
	Logs can be archived to external syslog server
	User Traffic Logs can be stored for two years as per TRAI compliance standards
Network configuration	Operating modes Gateway to inter connect private LAN and public /WAN internet <ul style="list-style-type: none"> ○ Bridge mode ○ Out of Band

Gateway features	<p>DHCP</p> <ul style="list-style-type: none"> o Multiple DHCP servers for multiple VLAN segments o Configure DNS servers o DHCP MAC reservation
	<p>Routing</p> <ul style="list-style-type: none"> o Network address translation (NAT) o Static routing
	<p>Ethernet port</p> <ul style="list-style-type: none"> o Manage WAN/LAN ports o IP address management (Static / Dynamic) o VLAN tagging o DDNS support (Any DNS / No IP)
Network device monitoring (Non Quantum)	<p>Supports monitoring of non-Quantum devices via</p> <ul style="list-style-type: none"> o Heartbeat o API o ICMP Ping
Flexible deployment option	<p>RUDDER Public Cloud RUDDER on premise (VM) RUDDER Appliances (QN-RR-200, QN-RR-300, QN-RR-400)</p>
RUDDER Appliance Network Management	Support up to 4000 devices (appliance dependent)
	Support up to 2500 guest users (User counts can be extended via clustering)
	User count can be extended via clustering
	<p>Device management options</p> <ul style="list-style-type: none"> o SSH/SSL o Command Line Interface o On device web GUI o Reliability / Resilience o High availability cluster o Back up to RUDDR cloud account
	<p>Disaster Recovery</p> <ul style="list-style-type: none"> o Back up on RUDDER cloud controller
	<p>Protocol supported</p> <ul style="list-style-type: none"> o SSHv2 / SNMP v2/v3 o RADIUS o TACACS+ o NTP

Parameter	Service Management Platform(SMP) Extension
Captive portal management	<p>Internal and External captive portal to authenticate unauthorized users.</p> <p>Authenticate enterprise users, guest users and BYOD users</p> <p>Collect users profile and authentication methods with authentication server</p> <p>Rapidly design integrated captive portal using templates</p> <p>Customization / Specific branding of captive portals</p> <p>Customizable user on boarding workflow</p>
User Authentication, Authorization and Accounting	<p>Integrated AAA/RADIUS server</p> <p>Proxy / forward traffic to external AAA/RADIUS servers</p> <p>Integrated with various user directory options</p> <ul style="list-style-type: none"> o QIM (Quantum Identity Management) o Microsoft active directory o LDAP o Gsuite o Oauth
Internet access QoS	<p>Enter QoS on user group, user level</p> <p>Enforce fair usage</p> <p>Customized access plans for limiting Bandwidth, Throughput, Quota (data), Time</p> <p>Content filtering</p>
Security	<p>Provision for access to</p> <ul style="list-style-type: none"> o Internet only o Internet and private applications o Whitelist devices o Black list devices
BYOD	<p>Permit self enrollment of devices through customizable BYOD workflow</p> <p>Enforce BYOD policy</p>
Analytics	<p>Top users</p> <p>Top applications</p>
Application Integration	<p>PM WANI</p>

Parameter	RUDDER- Access Point Management
Load Balancing	Load balance users between radios / Devices
Roaming	Support 802.11 roaming/fast roaming standards
WAN QoS	Provision QoS based on <ul style="list-style-type: none"> o User Type o Traffic type (voice/video/data)
QoS Parameter	Data rate, data quota traffic prioritization Assign QoS for user, user group subnet or IP address
WLAN Security	Support various Industry Standard authentication methods. Refer to AP datasheet for supported methods. <ul style="list-style-type: none"> o Quantum® SECURE o MFP(management frame protection) o WIPS/WIDS for various attack signatures) Assign Guest VLAN to Guest traffic. Integrate with Wi-Fi service management platform for advanced captive portal/guest management Integrate with various user directories. QIM, RADIUS(Integrated), RADIUS (External), Microsoft AD,G suite and Oauth
Access control list	Implement dynamic ACL Policies Block traffic by application Block malware, phishing and spam domain
Secure user authentication	Quantum® SECURE, Quantum® SECURE+ Quantum® Guest Pass Quantum® COLLAB
Switch management	Manage through Quantum® RUDDER management console Direct access to configuration via remote CLI, console or SSH Port settings and PoE control DHCP snooping, Supports IPv4/IPv6, Layer 2/Layer 3 with RIPv2 & OSPF features Create and manage stacks
Gateway management	Manage multiple site gateway devices from a single console Secure access from anywhere using Quantum® RUDDER Multi-tier administration Ease of access profiles deployments on multiple gateways Notification / alert on ISP connections states

Mobile application - Quantum® ACE	Manage multiple Access Points Monitor status of sites, APs, client devices, WLAN Create and configure new SSID Manage Quantum® guest authentication Supports zero-touch provisioning for AP, Switch Supported platform iOS and Android
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RUDDER Deployment Matrix

Parameter	Cloud RUDDER®	QN-RV-1000	QN-RR-200	QN-RR-300	QN-RR-400
Appliance type	Managed cloud	Virtual instance	Hardware	Hardware	Hardware
Managed device	Ultra-scalable	Check hardware matrix	Up to 500	Up to 2000	Up to 4000
Switch	Yes	Yes	Yes	Yes	Yes
Gateway	Yes	Yes	Yes	Yes	Yes
Network ports	NA	As per virtual instance	6 x Eth, 2 x SFP, 2 x SFP+	6 x Eth, 2 x SFP, 2 x SFP+	8 x Eth, 1 x SFP, 4 x SFP+
WLAN	Ultra-scalable	Check hardware matrix	Up to 2,048	Up to 2,048	Up to 4000
QIM	Yes	Yes	Yes	Yes	Yes
High availability	Yes	Yes	Yes	Yes	Yes
Gateway Extension	NA	Yes	Yes	Yes	Yes
DHCP services	NA	Yes	Yes	Yes	Yes



HARDWARE REQUIREMENTS for vRUDDER

Number of Devices	Number of vCPUs	RAM Size (GB) H	Hard Disk (GB)
100 AP	4 vCPU	8 GB vRAM	64 GB vHDD
500 AP	8 vCPU	16 GB vRAM	128 GB vHDD
1000 AP	8 vCPU	16 GB vRAM	256 GB vHDD
10,000 AP	16 vCPU	32 GB vRAM	512 GB vHDD
20,000 AP	32 vCPU	64 GB vRAM	1 TB vHDD
40,000 AP	64 vCPU	128 GB vRAM	2 TB vHDD

Supported virtualization platforms

- VMware
- Microsoft Hyper-V
- Oracle VM
- KVM

ORDERING INFORMATION

Parameter	Quantum Rudder Ordering Information
RUDDER Device License	Access Point management license Switch management license Gateway management license
RUDDER Extensions	Quantum Identity Manager Quantum Service Management Platform QPASS-Password less authentication