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About a device

The basis of every RMM tool is what it can do with a device. Find out what the product offers in this regard.

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Organizing devices

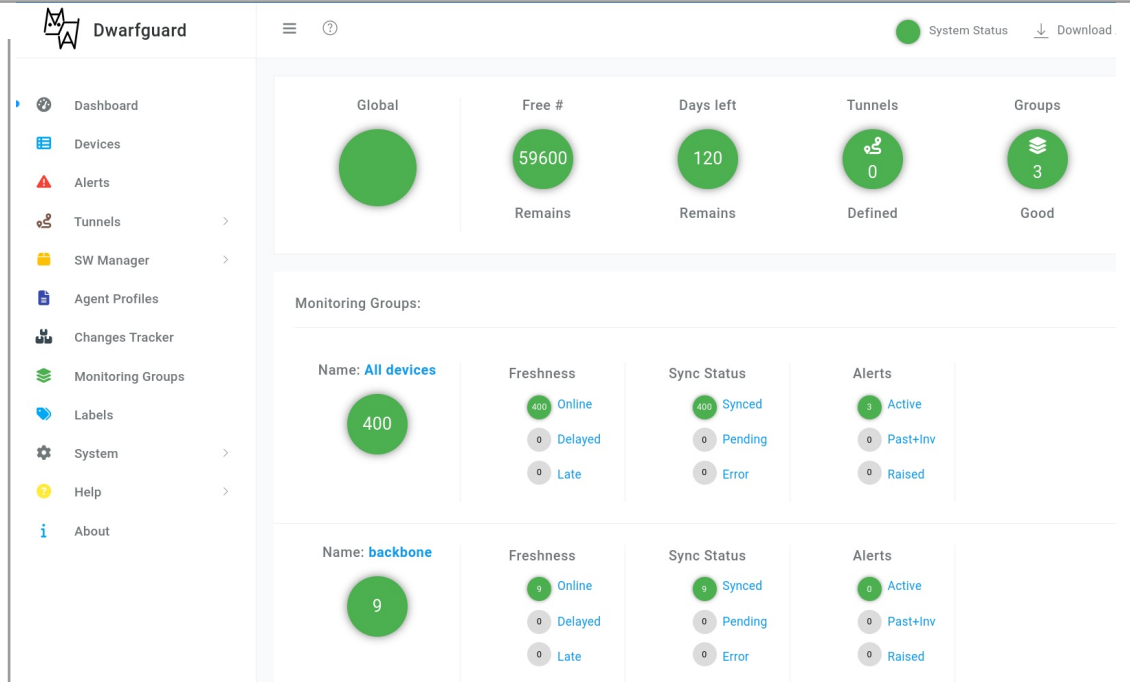
Managing one device is fun. Managing more is a work. When there are multiple heterogeneous device groups and setups it gets trickier. How to handle this?

Page 3

A lot of devices

And sometimes there are a LOT of devices. How many can be processed in on-premise version and on which hardware?

Page 4



The Dashboard, showing system status and monitoring groups

Dwarfguard is:

- Remote Monitoring and Management software
- High-performing on-premise and SaaS solution
- RMM System supporting following device types:
 - Advantech Industrial cellular routers (ICR OS)
 - Teltonika industrial cellular routers (RUTOS)
 - Linux servers and desktops
 - OpenWRT devices
- Addressing many common use-cases like:
 - Inspection of device data and changes
 - Problem detection and identification
 - Alert definition and notification
 - Effective organization of devices
 - Devices firmware management
 - Device Web interface remote access
 - Configuration cloning
- Tested to handle tens of thousands devices
- Being actively developed and supported
- Admin friendly - videos, bundled documentation

About a device

Device details

Each device provides its metrics.
Actual values are shown on Device Details

It contains among others:

- MEM, CPU load, # of running processes
- voltage, temperature, signal strength
- uptime, data age class, FW version
- network interface list
- access to FW flashing, labels, hostname

Device detail

Name: None

Devid: ZTUD [Download preset agent](#)

Status: Synced

Type: Advantech router

Data age: 5 minutes

Missed contacts: 0 missed contacts

Current OS/FW version: 6.3.5 (NO specific)

Agent Profile: DEFAULT [Set](#)

Monitoring Groups: Select Monitoring groups [Set](#)

[backbone](#) [truck fleet](#)

Statistics

Uptime: 2 days, 06:25:49

Memory Total: 497.49MB

Memory Available: 469.18MB

Running Processes: 53

Root Disk Space Available: 45.60MB

Load Average 1 minute: 0

Load Average 5 minute: 0.01

Load Average 15 minute: 0

Last Reboot: 08.11.2023 12:11:40

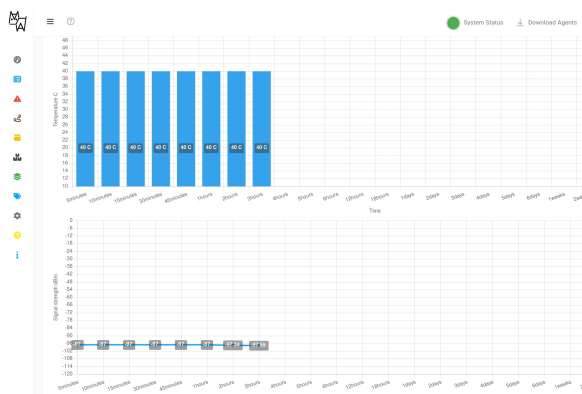
Reboot Counter: 1 times

Voltage: 12V

Temperature: 50°C

Signal strength: -83 dBm

Signal quality: -10 dB



History data

Below metrics, history data are provided:

- Availability, temperature
- In/Out traffic
- Signal strength, reboot counter

Webtunnel

Setting up webtunnel allows accessing device web interface via Dwarfguard

<https://serverurl/webtunnel/ux9bzpebge8d58wb/>

List of Web Tunnels

[Refresh](#) [Auto Refresh](#)

Showing 1 to 5 of 5 entries

ID	Device	Name	Status	Operation	Waiting Time	Actions
1	FUSY	None	Ready	NONE		Connect Shutdown
2	Not Assigned	None	Free	NONE		Setup
3	Not Assigned	None	Free	NONE		Setup
4	Not Assigned	None	Free	NONE		Setup
5	Not Assigned	None	Free	NONE		Setup

SmartFlex LTE Router

General	General Status
Mobile WAN	Mobile Connection
Network	
IPsec	
WebGuard	
System Log	
Configuration	
Ethernet	
VRP	
Mobile WAN	
PPPoE	
Backup Routes	
Static Routes	
Firewall	
NAT	
OpenVPN	
IPsec	
WebGuard	
GRE	
L2TP	
PPTP	
Services	
Expansion Port 1	
Expansion Port 2	
USB Port	
Scripts	
Automatic Update	
Customization	
User Modules	

Agent Profiles

To control how often does a device report back to the server.

Profiles can be mass-assigned and profile definition is customizable.

Agent Profile List

[Refresh](#)

Showing 1 to 3 of 3 entries

ID	Name	Ping	Regular	Debug	Fallback	Small Cycles	Fail Tolerance	Devices count	Actions
1	DEFAULT	10	260	10	60	5	5	0	Edit
2	FASTEST	4	60	4	60	1	0	5	Edit
3	SLOWEST	600	86400	3600	600	100	100	27	Edit



Organizing devices

Monitoring groups

- Device may be assigned to multiple Monitoring Groups
- Custom alerts per group supported
- All groups present on Dashboard, showing status, delays shortcuts
- "All devices" system group for alerts over all devices

Name: backbone	Freshness 9 Online 0 Delayed 0 Late	Sync Status 9 Synced 0 Pending 0 Error	Alerts 1 Active 0 Past+Inv 1 Raised
Name: truck fleet	Freshness 47 Online 0 Delayed 0 Late	Sync Status 47 Synced 0 Pending 0 Error	Alerts 0 Active 0 Past+Inv 0 Raised
Name: manuf1	Freshness 6 Online 0 Delayed 2 Late	Sync Status 8 Synced 0 Pending 0 Error	Alerts 0 Active 0 Past+Inv 0 Raised

Global Groups: 1

Free # Remains: 59597

Days left Remains: 120

Tunnels Defined: 0

Groups Bad: 1

Warnings:
Some groups have late devices, synchronization errors or triggered alerts. See red groups below.

Monitoring Groups:

Name: All devices	Freshness 403 Online 2 Delayed 0 Late	Sync Status 0 Synced 0 Pending 0 Error	Alerts 1 Active 0 Past+Inv 1 Raised
--------------------------	--	---	--

Alerts:

Triggered Alerts:
1. Late device for monitoring group: All devices for devices: List All (VVVF)

Root-cause identification

- Group alerts defined like:
 - Alert when at least X devices in group Y match condition...
- Easy and fast ID of problem from Dashboard
 - affected group changes color
 - direct link to devices triggering alert
- Past alerts to never miss raised alert

Other organizational techniques Naming, Labels, Filtering and Search

- name your devices + text search
- define labels and filter using them
- sort OR filter by metric value
- custom text notes fields available
- customize Devices table adding metrics

Registered Devices

Showing 1 to 9 of 9 entries

Devid	Name	Type	OS	Version	Labels	Cloned from	Sync Status	Freshness	Actions
YZSX	gateway	Advantech router	ICR OS	6.2.5	critical		Synced	0 missed contacts	Details
RZVJ	r4-flex	Advantech router	ICR OS	6.3.5			Synced	0 missed contacts	Details
PVDD	clonedest	Advantech router	ICR OS	6.3.5	critical		Synced	0 missed contacts	Details
PBXC	r3-flex	Advantech router	ICR OS	6.3.4	critical		Synced	0 missed contacts	Details
OVCS	r2-start	Advantech router	ICR OS	6.3.4	critical		Synced	0 missed contacts	Details
GCVF	None	Linux box					Synced	0 missed contacts	Details
DOPB	None	Linux box					Synced	0 missed contacts	Details
DABD	None	OpenWRT box					Synced	0 missed contacts	Details
CTPU	server	Linux box			critical		Synced	0 missed contacts	Details

Data Change Log

Showing 1 to 12 of 12 entries (filtered from 52 total entries)

Id	Metric	Device Id	Device Name	Value	Created
3	Temperature	YZSX	gateway	40	03.03.2023, 09:23:51
9	Temperature	RZVJ	r4-flex	39	03.03.2023, 09:24:10
14	Temperature	PVDD	clonedest	37	03.03.2023, 09:24:35
36	Temperature	PBXC	r3-flex	37	03.03.2023, 09:48:16
46	Temperature	PBXC	r3-flex	37	03.03.2023, 10:40:45
50	Temperature	PBXC	r3-flex	37	03.03.2023, 12:13:02
52	Temperature	PBXC	r3-flex	37	03.03.2023, 12:21:26
19	Temperature	OVCS	r2-start	36	03.03.2023, 09:25:44
32	Temperature	PBXC	r3-flex	36	03.03.2023, 09:35:09

Changes Tracker

- allows searching for peaks/depths
 - e.g. highest reported temperature
- allow comparison on additional metrics
 - e.g. device with highest reboot counter
- helps finding date of value change
 - e.g. show changes for Firmware version
- offers limiting time span of the inspection

A lot of devices

Firmware Management

- Automatic/manual FW download
- Approve versions you want to distribute
- Assign individually or use mass action
- Keeps device on desired version

Id	Os Type	Version	Available	Approved	Devices count
4	ICR OS	6.2.0	✓ Yes	NO	0
6	ICR OS	6.2.5	✓ Yes	NO	1
7	ICR OS	6.3.5	✓ Yes	YES	2
8	ICR OS	6.3.4	✓ Yes	YES	2

Mass Actions

- Assign Labels, groups or Agent Profiles
- Set desired FW version (Advantech)
- Clone configuration (Advantech)

1st step: select devices

Devid	Name	Type	OS	Version	Labels	Cloned from	Sync Status	Freshness	Actions
<input checked="" type="checkbox"/>	YZSX	gateway	Advantech router	ICR OS	6.2.5	critical	Synced	1 missed contact	Details
<input checked="" type="checkbox"/>	RZVV	r4 - flex	Advantech router	ICR OS	6.3.5	critical	Synced	0 missed contacts	Details
<input checked="" type="checkbox"/>	PVOD	clonedest	Advantech router	ICR OS	6.3.5	critical	Synced	0 missed contacts	Details
<input checked="" type="checkbox"/>	PBXC	r3 - flex	Advantech router	ICR OS	6.3.4	clone src	Synced	1 missed contact	Details
<input checked="" type="checkbox"/>	OVCB	r2 - start	Advantech router	ICR OS	6.3.4	clone src	Synced	1 missed contact	Details

2nd step: choose action

[Add to Monitoring group](#) [Assign Labels](#) [Assign Fw Version](#) [Assign Config Profile](#) [Assign Agent Profile](#) [Remove Config Profile](#)

3rd step: see notification for success/failed devices

Devid	Name	Type	OS	Version	Labels	Cloned from	Sync Status	Freshness	Actions
<input type="checkbox"/>	YZSX	gateway	Advantech router	ICR OS	6.2.5	critical	Processing	0 missed contacts	Details
<input type="checkbox"/>	RZVV	r4 - flex	Advantech router	ICR OS	6.3.5	critical	Processing	0 missed contacts	Details
<input type="checkbox"/>	PVOD	clonedest	Advantech router	ICR OS	6.3.5	critical	Processing	0 missed contacts	Details
<input type="checkbox"/>	PBXC	r3 - flex	Advantech router	ICR OS	6.3.4	clone src	Processing	0 missed contacts	Details
<input type="checkbox"/>	OVCB	r2 - start	Advantech router	ICR OS	6.3.4	clone src	Processing	0 missed contacts	Details
<input type="checkbox"/>	GCVF	None	Linux box				Synced	0 missed contacts	Details
<input type="checkbox"/>	DOPB	None	Linux box				Synced	0 missed contacts	Details
<input type="checkbox"/>	DABD	None	OpenWRT box				Synced	0 missed contacts	Details
<input type="checkbox"/>	CTPU	server	Linux box				Synced	0 missed contacts	Details

Success just now

Fw version successfully assigned to the devices: YZSX,RZVV,PVOD,PBXC,OVCB

Error just now

Fw version cannot be set for devices: GCVF,DOPB,DABD,CTPU

Mass deploy

- automatic+parallel agent installation
- just prepare addresses and pwds/keys
- can reach behind firewall (may execute from a NB)
- possible for
 - on-premise
 - SaaS

Availability

SaaS

- Partners
- Dwarf Technologies
- limited

Partner/DT Hosted

- on request

Cloud

- Customer owned
- Amazon EC2
- on-request

On-premise reqs

- Debian GNU/Linux 11/12
- 1 GiB disk space
- 512 MiB RAM (min)
- 1 CPU-core (min)
- See perftest protocols
- Tested for 40000 devices
- no Internet: possible

Distributors

Dwarfguard Resources

Dwarfguard Resources compendium

Below is a list of various frequently visited topics and links to other resources relevant to Dwarfguard and concerning effective handling of your devices.

If you are looking for the Dwarfguard introduction to guide you during first steps of setting up and using Dwarfguard, please follow to the [Dwarfguard Overview](#)

How to ... bundled documentation

- Setup slack/e-mail notification
- Connect device to Dwarfguard
- Define an alert
- Do basic devices operations - details, naming, searching
- Use Agent Profiles to specify frequency of device to server updates.
- Update device OS/Firmware
- Access a device via webtunnel
- Configure device and setup cloning

How to ... online video links

- Dwarfguard version 0.8 showcase video - a tour showing some of what Dwarfguard can do
- How to add device (of any supported type) to Dwarfguard
- How to effectively organize your devices
- How to use, manage and define alerts
- Changes Tracker usage
- Using Agent Profiles
- How to use Automatic Agent Deployment tool
- Flashing device firmware and FW management (ICR OS for Advantech cellular routers)
- What is Webtunnel good for and how to use it?
- How to exchange Dwarfguard license
- What is Configuration Cloning good for (and not) (Advantech cellular routers)
- How to setup notifications

In-App Help

- Covers all main topics
- Howtos on common use-cases
- Accessible without Internet
- With Internet - further pointers

Further Pointers

- Video Guides
- Documentation
- Administrator's Notes (for On-Prem, Cloud)
- Troubleshooting

Competitive advantages

- Made by experts with domain knowledge
- Quality, stability, performance
- Customizations possible
- Flexibility (SaaS, on-prem)
- Growing product

ID / Environment		Stability tests							
		Stab-2-2 / C1	Stab-4-2 / C2	Stab-8-2 C3	Stab-16-2 C4	Stab-16-2 H1	Stab-4-48 H0		
Test specs	Devices	1000	3000	10000	30000	30000	3000		
	Emulator threads	2	4	8	16	16	4		
	Set: Time / minutes	120	120	120	120	120	2880		
HW specs	Set loop time / sec	200	200	200	200	200	200		
	CPU cores	1	2	4	8	8	2		
	RAM / MiB	512	1024	2048	4096	32768	16384		
Resources	Pre-test	Available MiB OS	296.00	783.00	1800.00	3800.00	30000.00	14000.00	
		Used MiB OS	215	240	226	217	608	790	
		dwarf RSS (MiB)	44	44	44	44	49	49	
	Post-test	Available MiB OS	265	687	1400	2700	29000	14000	
		Used MiB OS	246	336	617	1300	1800	883	
		mamasd RSS (MiB)	57	75	186	415	395	88	
		avg load 15	0.07	0.16	0.51	1.18	0.78	0.27	
		avg load 15 / cpu core	0.07	0.08	0.13	0.15	0.10	0.14	
	Results	Test numbers	Processed loops	34	33	32	31	31	769
			Total time	7302	7308	7260	7353	7427	173013
		Real Loop time/sec (1)	215	221	227	237	240	225	
		Estimated data-pushes	36000	108000	360000	1080000	1080000	2592000	
		Performed Pushes	34000	99000	320000	930000	930000	2307000	
		Estim. Avg reqs/sec	5.00	15.00	50.00	150.00	150.00	15.00	
		Rough avg reqs/sec (2)	4.66	13.55	44.08	126.48	125.22	13.33	
		Data ERR/retries	0	0	0	0	31	0	
		Crashes	0	0	0	0	0	0	
		Reboots	0	0	0	0	0	0	
Calculations	Errors	Log entries	2	0	1	1	0	1	
		Log analysis	CFG profile sync	None	Mid-air profile collision	Mid-air profile collision	1 Invalid ID	Mid-air profile collision	
		RSS increase MiB	13	31	142	371	346	39	
		RSS increase %	29.55	70.45	322.73	843.18	706.12	79.59	
		MiB per device	0.013	0.010	0.014	0.012	0.012	0.013	
		RAM utilization %	48.05	32.81	11.04	5.30	1.86	4.82	
		Max safe # of devs	2081	9143	90619	566267	1616842	62218	
		RAM utilization note	reasonable	ok	perfect (low)	perfect (low)	perfect (low)	perfect (low)	
		CPU utilization note	reasonable	ok	perfect (low)	perfect (low)	perfect (low)	perfect (low)	
	Summary	Verdict	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	

Performance tests

- Every Minor + Major version
 - Stability + perf test
 - Test protocol available
- v0.8.0 - up to 40k devices
 - test results for 30k devices:
 - Xeon E-2250 8core 4G RAM
 - CPU 1core load: 15%
 - RAM used: 6 %
 - Core-i7 8core 32G RAM
 - CPU 1core load: 10%
 - RAM used: 2%

Coming Soon

- Custom agent profiles
- Alert exceptions
- Device SW package management (Advantech)
- PUSH install from UI
- Direct device WAN IP access
- Cellular data usage overview



v0.8.2

www.dwarfguard.com



DWARF TECHNOLOGIES

www.dwarftech.cz