WIALAN Technologies, Inc.
Network Monitoring System
Overview

Table of Content

I. Introduction

Wialan Network Monitoring System Appliance is a complex monitoring system composed of many individual modules oriented to give you an easy a comprehensive monitoring solution for Wialan Equipment.

II. Connectivity

Standard monitoring solutions rely on the ability of the monitoring software to connect to the monitored appliance. That fact can impose not needed complications, especially when the monitoring server is on a different geographical location, such as NOCs and other central monitoring facilities. In these scenarios, the monitored devices tend to be in firewall protected and private networks, where, to allow external access, complex firewall and routing policies have to be put in place in order to let the monitoring device inside the network to be able to reach its intended targets.

Wialan solution turns this problem around, literally. In order to simplify the network configuration needed for monitoring, all Wialan's equipment leaves the factory with the capacity to establish a VPN connection with our monitoring appliance. Being the monitored device the one that initiate the connection, most of the time, no network reconfiguration is necessary, and the standard, certificate protected VPN tunnel is more than enough to take care of the needed security when dealing with sensitive monitoring data.

III. Monitoring Core Module

Wialan's Network Management System basic monitoring functionality is based on an open source industry standard solution. This platform provides all the monitoring features that a network engineer dreams about.

Current Status

Tactical Overview Section

It all begins in the Tactical Overview Section, where, with a quick glance, the network engineer can easily determine the general status of the network. Without focusing on specific host or services, the Tactical Overview presents a summary of the unhandled and handled alerts (that can be queried using links in that same section). The health of the

monitoring server is also present on this section, so you can be sure that the main component of your monitoring solution is running properly.

Host Section

The host section presents you with a list of all the devices you are monitoring at any given time. This section covers only the current availability check, showing you the moment of the last performed check, how long the current status has been and the packet loss attained during the availability check (the basic host availability check uses an ICMP ping), which also allows you to ascertain the level of reliability of the network channel you are using to monitor the device. From that section you can jump to individual hosts status by clicking on their names, or, in the case of Wialan's devices, you can even jump to their management interface which is, of course, secure on its own, guaranteeing that although somebody can monitor the general status of a host, only the authorized personnel can make changes to the configuration.
This section also allows you to jump to various Host Group views.

Current Network Status
Last Updated: Fri Nov 8 20:58:58 UTC 2013
Updated every 90 seconds
Nagios® Core™ 3.4.1 - www.nagios.org
Logged in as nagiosadmin

View Service Status Detail For All Host Groups
View Status Overview For All Host Groups
View Status Summary For All Host Groups
View Status Grid For All Host Groups

Host Status Totals

Up	Down	Unreachable	Pending
38	7	0	0

All Problems	All Types
7	45

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
73	0	0	20	0

All Problems	All Types
20	93

Host Status Details For All Host Groups

Limit Results: 100

Host		Status	Last Check	Duration	Status Information
0000007		DOWN	2013-11-08 20:53:45	1d 4h 48m 15s	PING CRITICAL - Packet loss = 100%
0000010		UP	2013-11-08 20:54:25	2d 4h 49m 17s	PING OK - Packet loss = 0%, RTA = 83.23 ms
0000012		UP	2013-11-08 20:55:35	0d 2h 58m 35s	PING OK - Packet loss = 0%, RTA = 87.11 ms
0000014		UP	2013-11-08 20:56:35	0d 2h 57m 42s	PING OK - Packet loss = 0%, RTA = 86.67 ms
0000017		UP	2013-11-08 20:55:15	0d 6h 20m 36s	PING OK - Packet loss = 0%, RTA = 102.89 ms
0000019		UP	2013-11-08 20:54:35	0d 2h 59m 42s	PING OK - Packet loss = 0%, RTA = 113.62 ms
0000020		UP	2013-11-08 20:56:25	0d 4h 44m 31s	PING OK - Packet loss = 0%, RTA = 87.25 ms
0000022		UP	2013-11-08 20:57:55	0d 0h 47m 21s	PING OK - Packet loss = 0%, RTA = 62.85 ms
0000025		UP	2013-11-08 20:57:05	0d 0h 48m 11s	PING OK - Packet loss = 0%, RTA = 61.80 ms
0000026		UP	2013-11-08 20:57:45	0d 0h 47m 31s	PING OK - Packet loss = 0%, RTA = 64.59 ms
0000027		UP	2013-11-08 20:56:25	0d 5h 58m 46s	PING OK - Packet loss = 0%, RTA = 80.82 ms
BEACHEXTENDER		UP	2013-11-08 20:55:25	0d 0h 44m 43s	PING OK - Packet loss = 0%, RTA = 39.16 ms
BIRDMARINA1		UP	2013-11-08 20:56:25	7d 9h 4m 54s	PING OK - Packet loss = 0%, RTA = 130.54 ms
CEIBADELMAR03		UP	2013-11-08 20:54:05	0d 12h 33m 26s	PING OK - Packet loss = 0%, RTA = 83.15 ms
CEIBADELMAR05		UP	2013-11-08 20:56:25	0d 3h 34m 1s	PING OK - Packet loss = 0%, RTA = 126.19 ms
CLEARWATERDEMO002		DOWN	2013-11-08 20:58:15	8d 5h 22m 7s	PING CRITICAL - Packet loss = 100%
CNCNARP001x		UP	2013-11-08 20:57:25	0d 0h 48m 1s	PING OK - Packet loss = 0%, RTA = 62.96 ms
CNCNARP002		UP	2013-11-08 20:57:45	0d 0h 47m 31s	PING OK - Packet loss = 0%, RTA = 61.93 ms
CNCNARP007		UP	2013-11-08 20:57:55	0d 0h 47m 51s	PING OK - Packet loss = 0%, RTA = 64.35 ms
COCOPLUMMRNA		UP	2013-11-08 20:56:35	12d 3h 11m 0s	PING OK - Packet loss = 0%, RTA = 60.96 ms
DEERINGBAY01		UP	2013-11-08 20:54:25	3d 22h 22m 38s	PING OK - Packet loss = 0%, RTA = 66.00 ms
DEMO10002		UP	2013-11-08 20:55:05	2d 7h 49m 34s	PING OK - Packet loss = 0%, RTA = 57.63 ms

Service Section

The service section gives you a more detailed list of all the hosts with its associated monitored services and associated details, such as up time for the services, how many times it has been checked before generating an alert and the time of the last check. From this section you can jump to any specific host or to the detailed report for the a specific service of an specific host which will let you in turn get into more detailed reports such as service and alert histories, availability and trends. And as the hosts are listed, in the case of Wialan's devices, you can also jump to their management interfaces from this section.

Current Network Status
Last Updated: Fri Nov 8 21:05:44 UTC 2013
Updated every 90 seconds
Nagios® Core™ 3.4.1 - www.nagios.org
Logged in as nagiosadmin

View History For all hosts
View Notifications For All Hosts
View Host Status Detail For All Hosts

Host Status Totals

Up	Down	Unreachable	Pending
37	8	0	0

All Problems	All Types
8	45

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
71	0	0	22	0

All Problems	All Types
22	93

Service Status Details For All Hosts

Limit Results: 100

Host	Service	Status	Last Check	Duration	Attempt	Status Information
0000007	SSH	CRITICAL	2013-11-08 21:03:43	1d 5h 2m 1s	4/4	CRITICAL - Socket timeout after 10 seconds
	Wigate Admin Interface	CRITICAL	2013-11-08 21:01:23	1d 4h 59m 21s	4/4	CRITICAL - Socket timeout after 10 seconds
0000010	SSH	OK	2013-11-08 21:03:00	0d 12h 38m 24s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:01:28	2d 5h 11m 1s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.398 second response time
0000012	SSH	OK	2013-11-08 21:03:10	0d 3h 2m 34s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:01:05	0d 3h 49m 39s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.395 second response time
0000014	SSH	OK	2013-11-08 21:04:36	0d 3h 1m 8s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:01:11	1d 22h 24m 33s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.392 second response time
0000017	SSH	OK	2013-11-08 21:03:07	1d 2h 42m 37s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:04:47	0d 12h 35m 57s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.425 second response time
0000019	SSH	OK	2013-11-08 21:00:43	0d 5h 0m 1s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:04:07	0d 4h 46m 37s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.395 second response time
0000020	SSH	OK	2013-11-08 21:02:16	0d 2h 0m 8s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:05:01	1d 21h 30m 43s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.402 second response time
0000022	SSH	OK	2013-11-08 21:01:49	1d 1h 33m 55s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin Interface	OK	2013-11-08 21:04:04	0d 0h 51m 40s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.296 second response time
0000025	SSH	OK	2013-11-08 21:04:57	0d 0h 50m 47s	1/4	SSH OK - OpenSSH_5.9 (protocol 2.0)
	Wigate Admin	OK	2013-11-08 21:05:03	0d 0h 50m 41s	1/4	HTTP OK: HTTP/1.1 200 Ok - 313 bytes in 0.298 second

Host Group Section

In order to make hosts list more manageable, the Host Group Section, as the name implies, gives you a view of the hosts, group by any criteria you see fit, such as devices per client, devices in a geographical location, or devices of a specific type. The hosts can be repeated in this view so you can have the same host in different functional groups in order to classifying them according to your specific needs. For the information presented here, this is the section where you will spend more of your time. This section has two available subsections, the first one, the summary, will give you an overlook of the health of any specific host group, without detailing the individual hosts belonging to it. From that subsection you can jump to any individual host group.

The second subsection, the grid, gives you all host groups and their members in a comprehensive view, where you can see their individual status and alerts up to the services level, and from there, again, you can jump to any individual device, host group or management interfaces.

Current Network Status
Last Updated: Fri Nov 8 21:08:18 UTC 2013
Updated every 90 seconds
Nagios® Core™ 3.4.1 - www.nagios.org
Logged in as *nagiosadmin*

View Service Status Detail For All Host Groups
View Host Status Detail For All Host Groups
View Status Summary For All Host Groups
View Status Grid For All Host Groups

Host Status Totals

Up	Down	Unreachable	Pending
37	8	0	0

All Problems	All Types
8	45

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
71	0	0	22	0

All Problems	All Types
22	93

Service Overview For All Host Groups

All Servers (all)

Host	Status	Services	Actions
0000007	DOWN	2 CRITICAL	
CLEARWATERDEMO002	DOWN	2 CRITICAL	
LIGTHS-WX02	DOWN	2 CRITICAL	
T1TECHSBAHAMAS007	DOWN	2 CRITICAL	
WIALANCWGDUAL540001	DOWN	2 CRITICAL	
WIALANWG54DUAL0013	DOWN	2 CRITICAL	

Cancun International Airport (cancunairport)

Host	Status	Services	Actions
0000022	UP	2 OK	
0000025	UP	2 OK	
0000026	UP	2 OK	
CNCNARP001x	UP	2 OK	
CNCNARP002	UP	2 OK	
CNCNARP007	UP	2 OK	
MXARP0003	UP	2 OK	

Cancun International Airport 2 (cancunairport2)

Host	Status	Services	Actions
0000012	UP	2 OK	
0000014	UP	2 OK	
0000019	UP	2 OK	
0000020	UP	2 OK	
MXARP0005	UP	2 OK	

Caribbean Beach (caribbeanbeach)

Host	Status	Services	Actions
BEACHEXTENDER	DOWN	2 CRITICAL	

Club Campestre Ciudad de Mexico (cccm)

Host	Status	Services	Actions
DEMO10002	UP	1 OK / 1 CRITICAL	

Cocoplum Marina (cocoplummarina)

Host	Status	Services	Actions
COCOPLUMMRNA	UP	1 OK / 1 CRITICAL	
DEMOKEYWEST001	UP	2 OK	

Debian GNU/Linux Servers (debian-servers)

Deering Bay Marina (deeringbaymarina)

Delegacion Miguel Hidalgo (Mexico) (dmh)

Problem Section

This section is dedicated solely to any condition that represents a problem or issue with the devices and/or network. All alerts are in one of two states, a warning or an alert. The section is divided into three subsections dealing with the origin of the problem (host, service or network), and whether they have been handled or not.

Current Network Status
Last Updated: Fri Nov 8 21:09:31 UTC 2013
Updated every 90 seconds
Nagios® Core™ 3.4.1 - www.nagios.org
Logged in as *nagiosadmin*

View History For all hosts
View Notifications For All Hosts
View Host Status Detail For All Hosts

Display Filters:
Host Status Types: All
Host Properties: Any
Service Status Types: All Problems
Service Properties: Any

Limit Results: 100

Host Status Totals

Up	Down	Unreachable	Pending
36	9	0	0

All Problems	All Types
9	45

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
69	0	0	24	0

All Problems	All Types
24	93

Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
0000007	SSH	CRITICAL	2013-11-08 21:08:43	1d 5h 5m 48s	4/4	CRITICAL - Socket timeout after 10 seconds
	Wigate Admin Interface	CRITICAL	2013-11-08 21:06:23	1d 5h 3m 8s	4/4	CRITICAL - Socket timeout after 10 seconds
BEACHEXTENDER	SSH	CRITICAL	2013-11-08 21:04:42	0d 0h 4m 49s	1/4	CRITICAL - Socket timeout after 10 seconds
	Wigate Admin Interface	CRITICAL	2013-11-08 21:07:44	0d 0h 6m 47s	2/4	CRITICAL - Socket timeout after 10 seconds
BIRDMARINA1	SSH	CRITICAL	2013-11-08 21:08:24	32d 4h 50m 49s	4/4	Connection refused
CLEARWATERDEMO002	SSH	CRITICAL	2013-11-08 21:06:04	8d 5h 40m 21s	4/4	CRITICAL - Socket timeout after 10 seconds
	Wigate Admin Interface	CRITICAL	2013-11-08 21:04:53	8d 5h 41m 40s	4/4	CRITICAL - Socket timeout after 10 seconds
COCOPLUMMRNA	SSH	CRITICAL	2013-11-08 21:08:35	28d 3h 56m 1s	4/4	Connection refused
DEERINGBAY01	SSH	CRITICAL	2013-11-08 21:07:55	32d 4h 48m 0s	4/4	Connection refused
DEMO10002	SSH	CRITICAL	2013-11-08 21:08:07	2d 8h 3m 9s	4/4	Connection refused
LIGTHS-WX02	SSH	CRITICAL	2013-11-08 21:07:04	32d 4h 47m 45s	4/4	CRITICAL - Socket timeout after 10 seconds
	Wigate Admin Interface	CRITICAL	2013-11-08 21:05:07	1d 6h 41m 13s	4/4	CRITICAL - Socket timeout after 10 seconds
NEWPORT0002	SSH	CRITICAL	2013-11-08 21:09:11	32d 3h 37m 29s	4/4	Connection refused
OLMARINA002	SSH	CRITICAL	2013-11-08 21:07:29	32d 4h 47m 21s	4/4	Connection refused
PINECRESTVILLAGE004	Wigate Admin Interface	CRITICAL	2013-11-08 21:09:06	0d 0h 0m 25s	1/4	CRITICAL - Socket timeout after 10 seconds
PINECRESTVILLAGE005	Wigate Admin Interface	CRITICAL	2013-11-08 21:08:47	0d 0h 0m 44s	1/4	CRITICAL - Socket timeout after 10 seconds
T1TECHSBAHAMAS007	SSH	CRITICAL	2013-11-08 21:07:02	11d 7h 11m 31s	4/4	CRITICAL - Socket timeout after 10 seconds
	Wigate Admin Interface	CRITICAL	2013-11-08 21:05:38	11d 7h 11m 15s	4/4	CRITICAL - Socket timeout after 10 seconds
WIALANCWGDUAL540001	SSH	CRITICAL	2013-11-08 21:07:04	8d 5h 3m 17s	4/4	CRITICAL - Socket timeout after 10 seconds

Reports

The reports offered by the monitoring system are available from practically every section, where all reports pertinent to the section are presented. Nevertheless, there is a more consolidated Report section so it is easier to get them in case your current task is of a more historical nature. There are reports available for every device, service and aspect of the system, and they are divided as follows:

Availability Reports

These reports show you the level, in percentage of availability of the object you wish to evaluate, and, in the case of a host group, of all the hosts in such group. The report is available by choosing the object and the period of time that you may want to evaluate.

Hostgroup Availability Report
Last Updated: Fri Nov 8 21:14:29 UTC 2013
Nagios® Core™ 3.4.1 - www.nagios.org
Logged in as nagiosadmin

All Hostgroups

2013-11-01 21:14:29 to 2013-11-08 21:14:29
Duration: 7d 0h 0m 0s

First assumed host state: Unspecified
First assumed service state: Unspecified
Report period: Last 7 Days
Backtracked archives: 4

Update

[Availability report completed in 0 min 1 sec]

Hostgroup 'all' Host State Breakdowns:

Host	% Time Up	% Time Down	% Time Unreachable	% Time Undetermined
0000007	0.000% (0.000%)	17.299% (100.000%)	0.000% (0.000%)	82.701%
CLEARWATERDEMO002	0.000% (0.000%)	100.000% (100.000%)	0.000% (0.000%)	0.000%
LIGTHS-WX02	18.563% (18.563%)	81.437% (81.437%)	0.000% (0.000%)	0.000%
T1TECHSBAHAMAS007	0.000% (0.000%)	100.000% (100.000%)	0.000% (0.000%)	0.000%
WIALANCWGDUAL540001	0.000% (0.000%)	100.000% (100.000%)	0.000% (0.000%)	0.000%
WIALANWG54DUAL0013	6.916% (16.781%)	34.299% (83.219%)	0.000% (0.000%)	58.785%
Average	4.247% (5.891%)	72.172% (94.109%)	0.000% (0.000%)	23.581%

Hostgroup 'cancunairport' Host State Breakdowns:

Host	% Time Up	% Time Down	% Time Unreachable	% Time Undetermined
0000022	99.880% (99.880%)	0.120% (0.120%)	0.000% (0.000%)	0.000%
0000025	97.647% (97.647%)	2.353% (2.353%)	0.000% (0.000%)	0.000%
0000026	99.954% (99.954%)	0.046% (0.046%)	0.000% (0.000%)	0.000%
CNCNARP001x	99.936% (99.936%)	0.064% (0.064%)	0.000% (0.000%)	0.000%
CNCNARP002	94.643% (94.643%)	5.357% (5.357%)	0.000% (0.000%)	0.000%
CNCNARP007	99.251% (99.251%)	0.749% (0.749%)	0.000% (0.000%)	0.000%
MXARP0003	99.961% (99.961%)	0.039% (0.039%)	0.000% (0.000%)	0.000%
Average	98.753% (98.753%)	1.247% (1.247%)	0.000% (0.000%)	0.000%

Hostgroup 'cancunairport2' Host State Breakdowns:

Host	% Time Up	% Time Down	% Time Unreachable	% Time Undetermined
0000012	99.818% (99.818%)	0.182% (0.182%)	0.000% (0.000%)	0.000%
0000014	99.844% (99.844%)	0.156% (0.156%)	0.000% (0.000%)	0.000%
0000019	88.115% (88.115%)	11.885% (11.885%)	0.000% (0.000%)	0.000%
0000020	99.853% (99.853%)	0.147% (0.147%)	0.000% (0.000%)	0.000%

Trend

The Trend report is available only to host or individual service into each host, and shows in a graph, how has been the host or service available during the period of time evaluated, allowing the user to determine details such as the time the host or service is failing, which could in turn indicate an environmental circumstance occurring at only certain times.

Host State Trends
Last Updated: Fri Nov 8 21:16:41 UTC 2013
Nagios® Core™ 3.4.1 - www.nagios.org
Logged in as nagiosadmin

View Availability Report For This Host
View Status Detail For This Host
View Alert History For This Host
View Notifications For This Host

Host '0000019'

2013-11-01 21:16:41 to 2013-11-08 21:16:41
Duration: 7d 0h 0m 0s

First assumed host state: Unspecified
Backtracked archives: 4
Report period: Last 7 Days
Zoom factor: 4

Update

State History For Host '0000019'
Fri Nov 1 21:16:41 2013 to Fri Nov 8 21:16:41 2013

Up   : (88.115%) 6d 4h 2m 0s
Down   : (11.885%) 0d 19h 58m 0s
Unreachable : (0.000%) 0d 0h 0m 0s
Indeterminate: (0.000%) 0d 0h 0m 0s
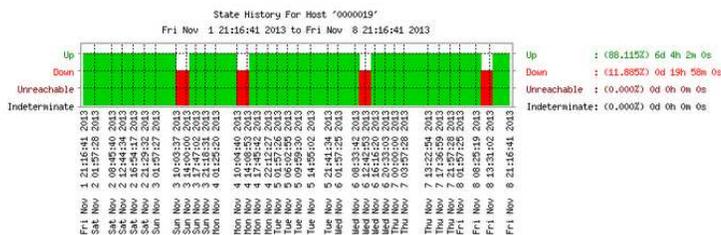
Alerts

The alert section contains an historical record of all the alerts produced by a monitored service or device. There are many types of alerts depending on the object producing it. In the case of hosts, the alerts may be a change to a down state (the host does not answer), an up state (the host started to answer) and unreachable (the network the host belongs to is not reachable). In the case of service, the alerts may reflect an ok state (the service is answering), critical (the service is not answering) and warning (the service may be responding, but in an unexpected way).

This section is divided in a detailed history subsection, a summary subsection and a histogram subsection, available only to individual hosts or services, which lets you see in a graphical way the amount of alerts generated per time unit.

Notifications

The section shows the notifications generated by the alerts. Notifications are defined as any possible way the system has of letting know a user of any alert produced by the system. These notifications can be programmed to be issued to different contacts according to many different policies. For example, when a device is alternating between up and down state repeatedly, the system catalog it to be in a "flapping state" so a flapping

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state notification is sent and the up and down notifications are disabled, to avoid overwhelming the user with continuous notifications of something that may be an already determined issue.

System

The system area is a section dedicated to show the user information about the monitoring system itself. It has many sections that allow you to see from the amount of server processes to the polling schedule for every specific host.

Especial attention has to be placed to the Comments section, where you can write persistent comments to individual hosts or services, allowing system administrators to share information or write observations about a host or service that may be useful in the future

IV. Customization

Although out-of-the-box the monitoring system is ready to be used, customization is allowed in order to adapt the monitoring to your specific needs. In the case of Wialan's devices, they are equipped with a series of reporting mechanisms, such as SNMP or syslog, which can give you more in

dept or diagnostic information for any host or service. For example, using the standard SNMP network MIB, the device may report uptime and many other useful parameters and statistics.

Customization also opens the door for integration with other software, such as billing applications, CRM systems and many more.