v1.21_AirTune

- AirTune
-
-
-
-
-
  - /
  - API AirTune EMS
  -
  -
    - TPC/DCA
    - Load Balance
  - AirTune
  - AirTune
-
  - AirTune
  - AirTune
  - AirTune
- ELTEX

AirTune

Enterprise&High-Density Wi-Fi AirTune, , Radio Resource Management (RRM).

Radio Resource Management . **AirTune** , , .

:

- Dynamic Channel Assignment (DCA) - ;
- Transmit Power Control (TPC) - "" , ;
- Load Balancing - . , , 1 , .

:

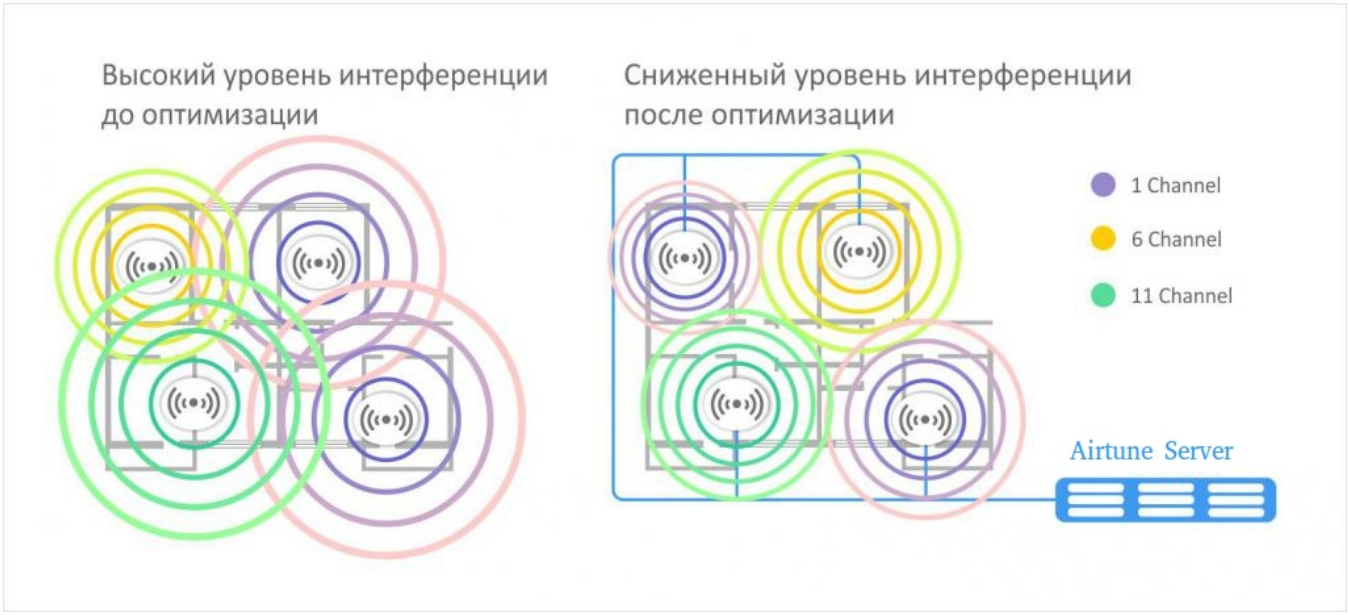
- ;
- ("");
- ;
- «» ;
- ;
- "" ;
- "" «»;
- .

TPC/DCA (Action Frame) . , " " , .

802.11k, , .

> 802.11k .

(DCA+TPC):



, AirTune.

"licence.xml" :

- */usr/lib/eltex-ems/conf/licence/*
- */etc/eltex-airtune/*

EMS AirTune :

```
service eltex-ems restart
service eltex-airtune restart
```

/ .

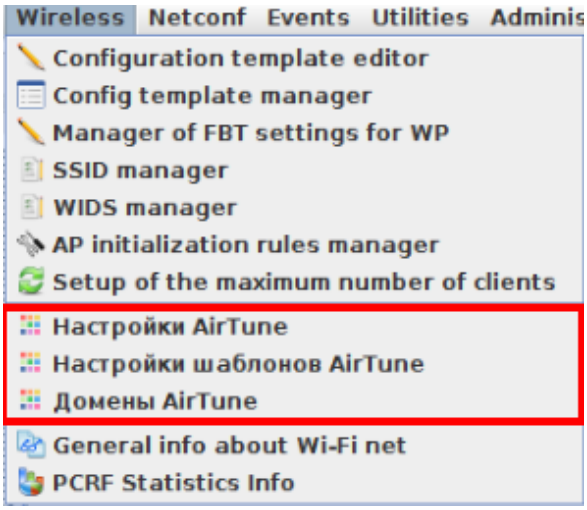
GUI EMS -> , */usr/lib/eltex-ems/conf/licence/licence.xml*

Number	Group	Devices	Restriction	Use devices
1	AIRTUNE	AIRTUNE	200	13

/usr/lib/eltex-ems/conf/licence/licence-dist.xml

```
        <group>
            <title>AIRTUNE</title>
            <count>200</count>
            <typeList>
                <type>AIRTUNE</type>
            </typeList>
        </group>
```

Airtune , GUI EMS "*Wireless*" , *:*



AirTune EMS .

- **Ubuntu Server 16.04 LTS/ Ubuntu Server 18.04 LTS**

, (*VM*):

	CPU core, Xeon	RAM, Gb	HDD, Gb
10 200	4, 64-bit x86 CPUs	4	40
200 500	6, 64-bit x86 CPUs	6	80
500 1000	6, 64-bit x86 CPUs	8	120
1 . 2 .	8, 64-bit x86 CPUs	12	200
2 . 4 .	8, 64-bit x86 CPUs	16	350

1.19.0, AirTune 1.3.0 SoftWLC 1.17

:

- SoftWLC + AirTune;
- , ;
- , ;
- URL AirTune , .

(WebSocket) "subscribe-request", , :

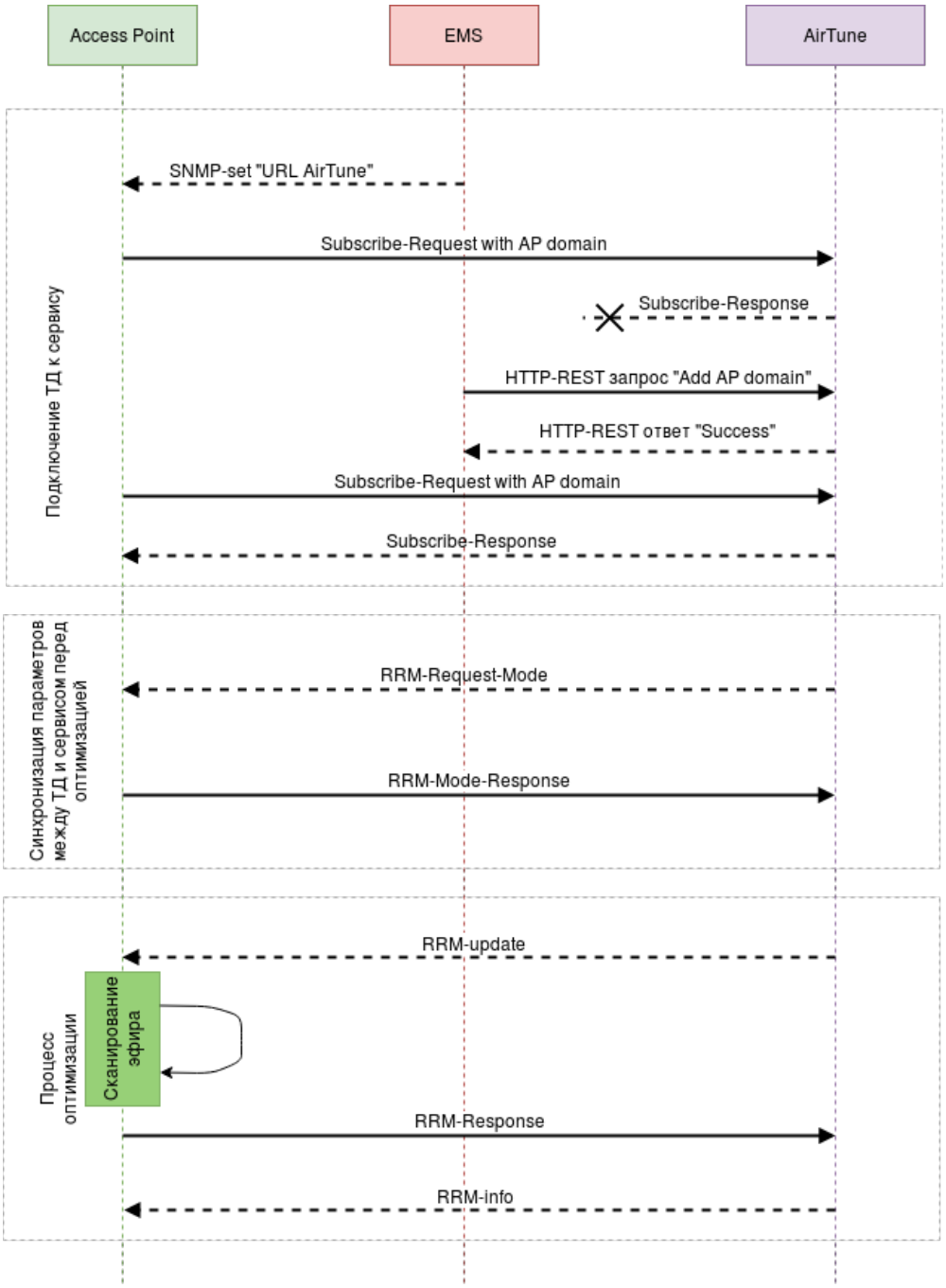
- (, ,);
- ( );
- (,);
- SSID;
- .

, AirTune . , , AirTune .

AirTune , "subscribe-response" c (DCA, TPC, Load Balance) .

(DCA, TPC) :

DCA/TPC:



1) AirTune, SNMP-set URL AirTune;

2) , Subscribe-Request/ Subscribe-Response, . , , . , .

3) "rrm-request-mode", , .. , ;

4) "rrm-response-mode", ;

5) "rrm-update". eltex-rrm-scan "" ( ) , action , , ;

6) "rrm-response";

7) , , , "rrm-info";

8) , .

:

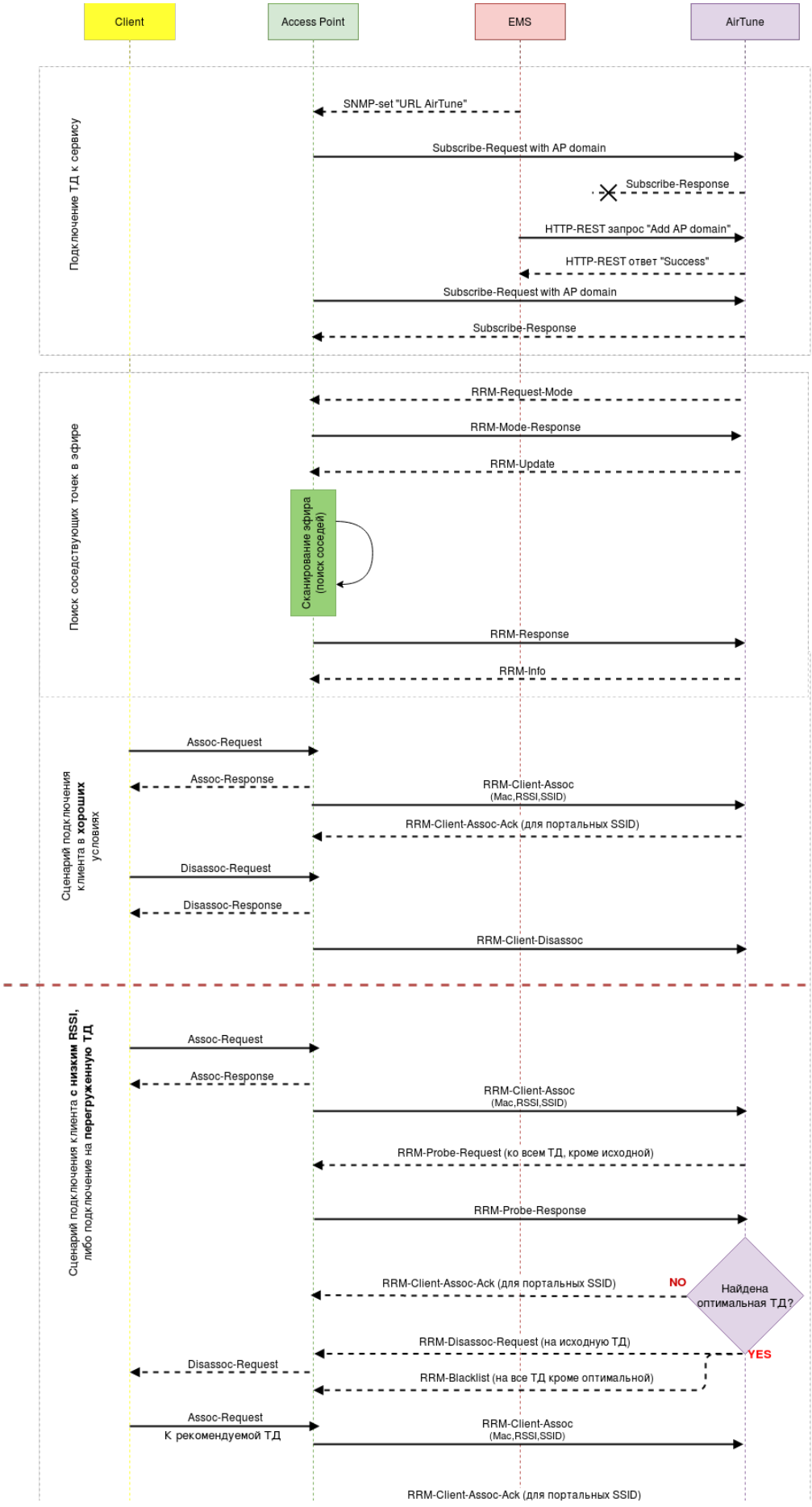
- ;
- ;
- ;
- (Optimization interval);
- .

:

- ;
- ;
- .

:

:


Client
Access Point
EMS
AirTune
Подключение ТД к сервису
SNMP-set "URL AirTune"
Subscribe-Request with AP domain
Subscribe-Response
HTTP-REST запрос "Add AP domain"
HTTP-REST ответ "Success"
Subscribe-Request with AP domain
Subscribe-Response
Поиск соседствующих точек в эфире
RRM-Request-Mode
RRM-Mode-Response
RRM-Update
Сканирование эфира (поиск соседей)
RRM-Response
RRM-Info
Сценарий подключения клиента в хороших условиях
Assoc-Request
Assoc-Response
RRM-Client-Assoc (Mac,RSSI,SSID)
RRM-Client-Assoc-Ack (для портальных SSID)
Disassoc-Request
Disassoc-Response
RRM-Client-Disassoc
Сценарий подключения клиента с низким RSSI, либо подключение на перегруженную ТД
Assoc-Request
Assoc-Response
RRM-Client-Assoc (Mac,RSSI,SSID)
RRM-Probe-Request (ко всем ТД, кроме исходной)
RRM-Probe-Response
Найдена оптимальная ТД?
NO
RRM-Client-Assoc-Ack (для портальных SSID)
YES
RRM-Disassoc-Request (на исходную ТД)
Disassoc-Request
RRM-Blacklist (на все ТД кроме оптимальной)
Assoc-Request
К рекомендуемой ТД
RRM-Client-Assoc (Mac,RSSI,SSID)
RRM-Client-Assoc-Ack (для портальных SSID)

1) , TPC/DCA , "Use all AP for Balance", ;

, "Use all AP for Balance" AirTune, , , ;

2) . "rrm-client-assoc", - , SSID . , , "RRM-Client-Assoc-Ack" , ( );

3) ( ) , ;

4) "" , SSID "rrm-probe-request", " " ;

5) "rrm-probe-response", RSSI;

6) , . , "rrm-disassoc-request", , , "rrm-blacklist", 1 ().

(2.4 5).

2.4 , 5 , (2.4).

:

mac- Probe Request', , .. - (Probe request).

/

	`service eltex-airtune status`	`eltex-airtune is running` `eltex-airtune is not running`

	`service eltex-airtune start`	`Starting eltex-airtune ...`
		`eltex-airtune started`
		`eltex-airtune is already running`

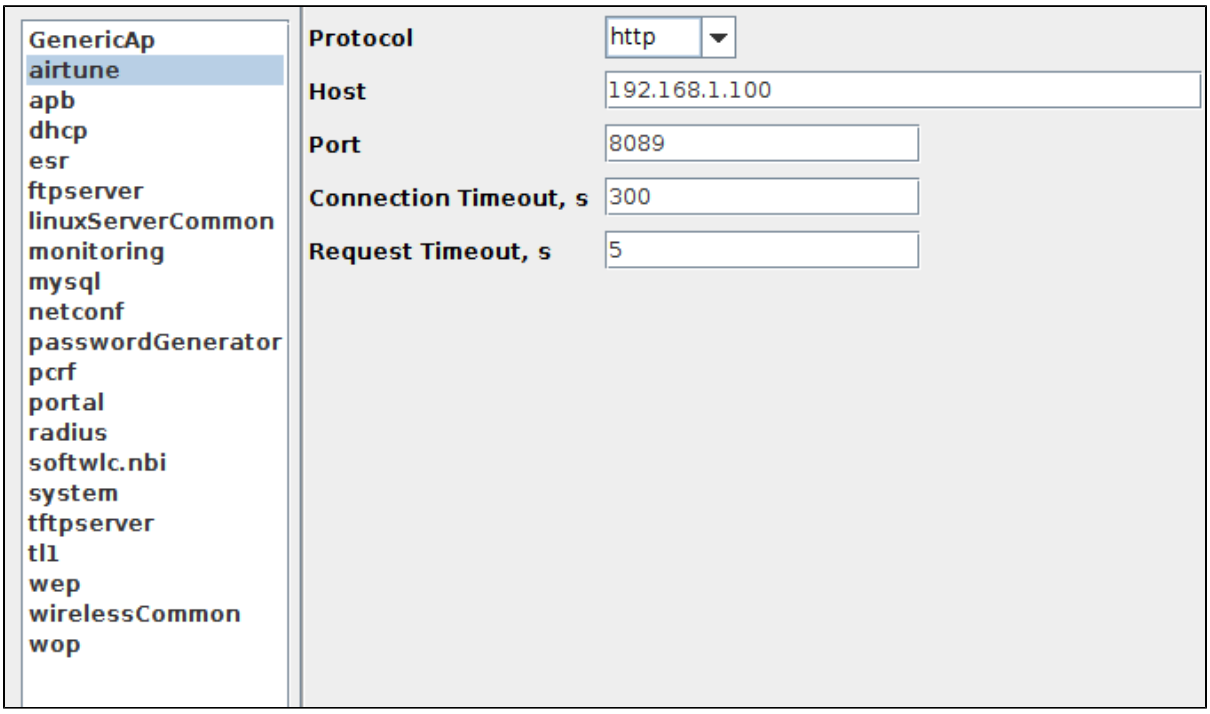
	`service eltex-airtune stop`	`Stopping eltex-airtune ...`
		`eltex-airtune stopped`
		
		`, ..`
		`eltex-airtune is not running`
		`rm: cannot remove '/var/run/eltex-airtune.pid': No such file or directory`

	`service eltex-airtune restart`	`Stopping eltex-airtune ...`
		`eltex-airtune stopped`
		`Starting eltex-airtune ...`
		`eltex-airtunee started`

API AirTune EMS

AirTune EMS . GUI EMS "" " " " ".
"airtune", , , AirTune.

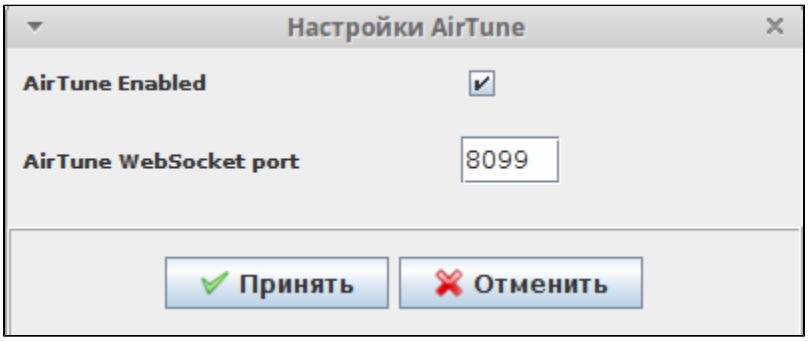
Host IP , AirTune.
IP EMS AirTune, AirTune



Protocol		Http/Https	Http
Host	API AirTune	ASCII	localhost
Port	API AirTune	0 - 65535	8089
Connection Timeout, s	AirTune	0 - 65535	10

Request Timeout, s	AirTune	0 - 65535	5

/ , , .



- AirTune Enabled - AirTune. ;
- AirTune WebSocket - .

.

, , , . .
, , - Load Balance. ( ) ( ), .

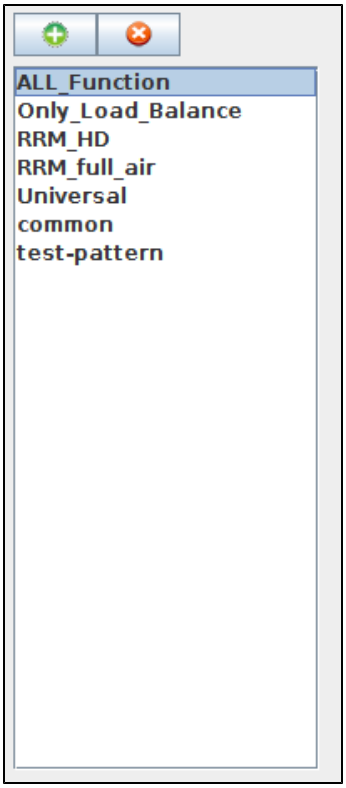
TPC,DCA,Load Balancing .

, - - , (), , , .

.

, *"Wireless"" AirTune".*

:


ALL_Function
Only_Load_Balance
RRM_HD
RRM_full_air
Universal
common
test-pattern

.

-

-

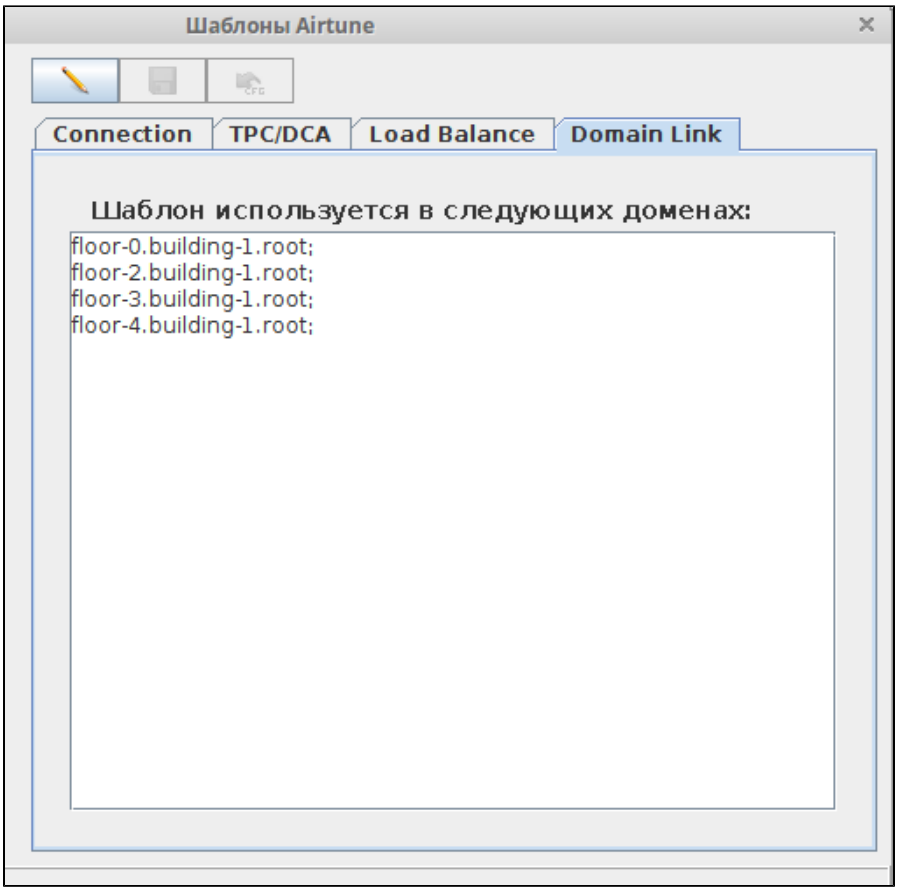
:

- ;

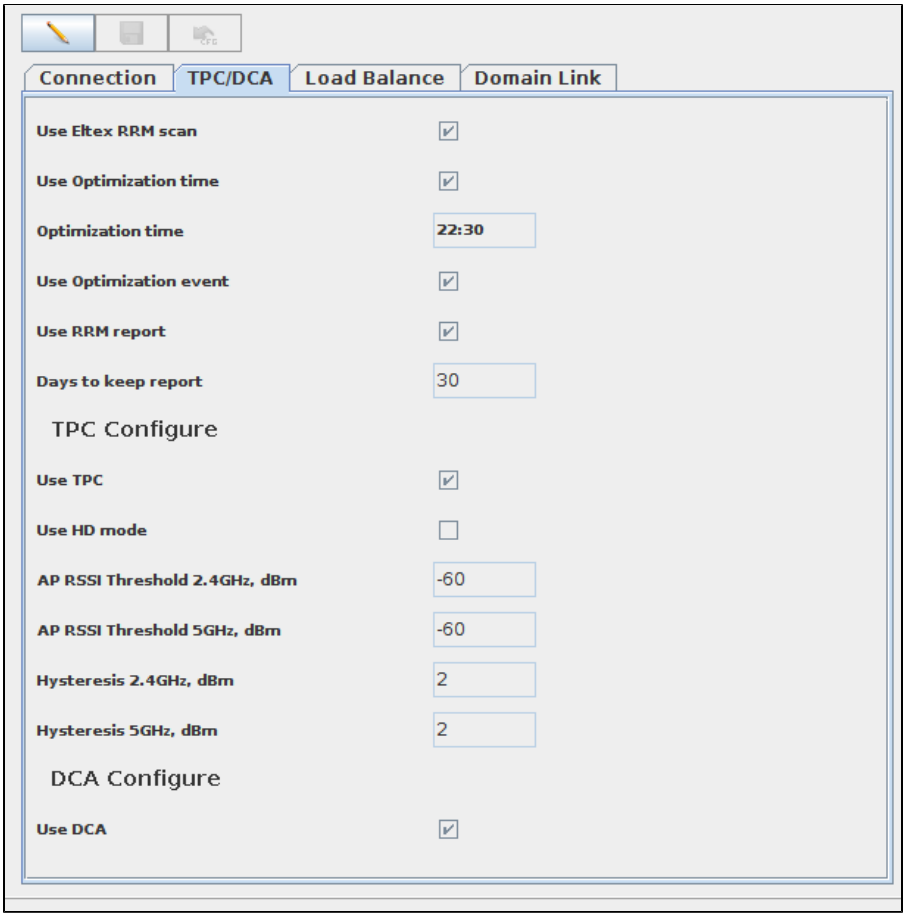
- ;

- .

"*Domain Link*":

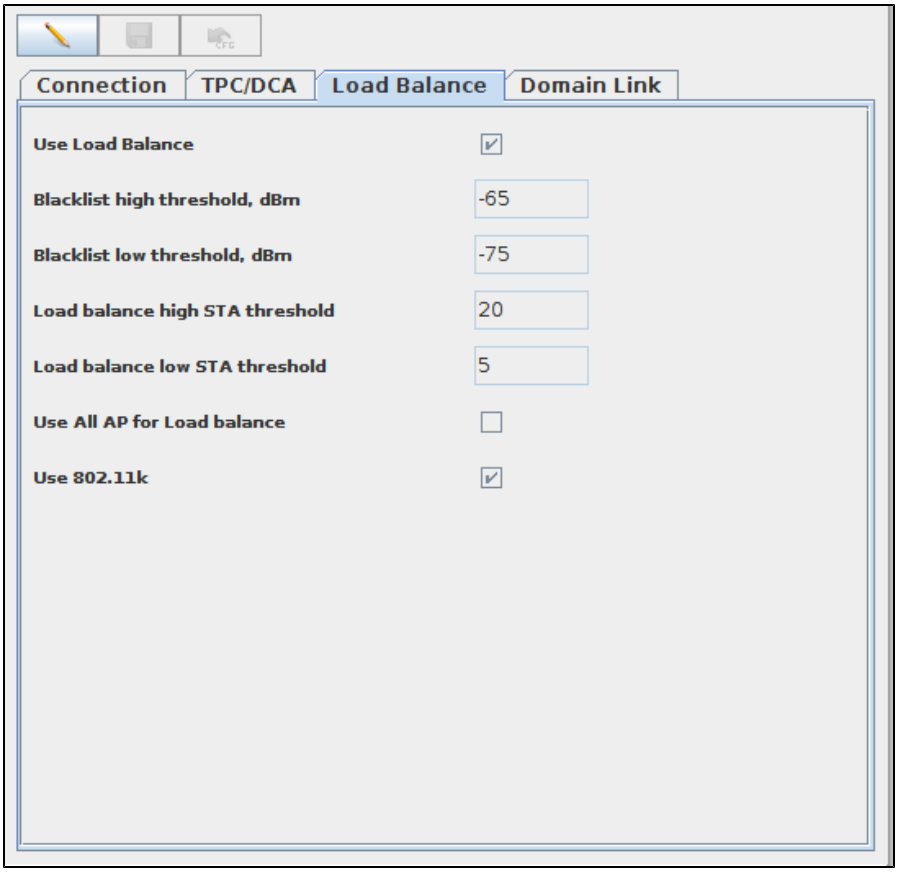

Шаблоны Airtune
Connection
TPC/DCA
Load Balance
Domain Link
Шаблон используется в следующих доменах:
floor-0.building-1.root;
floor-2.building-1.root;
floor-3.building-1.root;
floor-4.building-1.root;

TPC/DCA



Use Eltex RRM scan	/ . Action- , . . . , . (1 - 50-60).	Up/Down	Up
Use Optimization time	/ .	Up/Down	Down
Optimization time	, .	00:00 - 23:59	00:00
Use Optimization event	/ : • ; • ; • 5 ; • .	Up/Down	Up
Use RRM report	/ RRM.	Up/Down	Up
Days to keep report	, , .	1-365	93
Use TPC	/ .	Up/Down	Up
Use HD mode	/ HD. .	Up/Down	Down
AP RSSI Treshold 2.4GHz	, 2.4 , . RSSI , RSSI Treshold (RSSI_ > RSSI_Treshold), (RSSI_ < RSSI_Treshold).	-1 - -100	-70
AP RSSI Treshold 5GHz	, 5 , . RSSI , RSSI Treshold (RSSI_ > RSSI_Treshold), (RSSI_ < RSSI_Treshold).	-1 - -100	-70
Hysteresis 2.4Ghz	2.4 . "" , RSSI Treshold+-2dbm, .	1-10	2
Hysterezis 5GHz	5 . "" , RSSI Treshold+-2dbm, .	1-10	2
Use DCA	/ .	Up/Down	Up

Load Balance



Use Load Balance	/ , , .	Up/Down	Up
Blacklist high threshold	, . RSSI , "" .	-1 - -100	-65
Blacklist low threshold	, . RSSI , , " " . "" , .	-1 - -100	-75
Load balance high STA treshold	, .	1-100	20
Load balance low STA threshold	, (,). - .	1-100	5
Use All AP for Load balance	/ , . . - , (,). , , (,).	Up/Down	Down
Use 802.11k	/ 802.11k.	Up/Down	Down

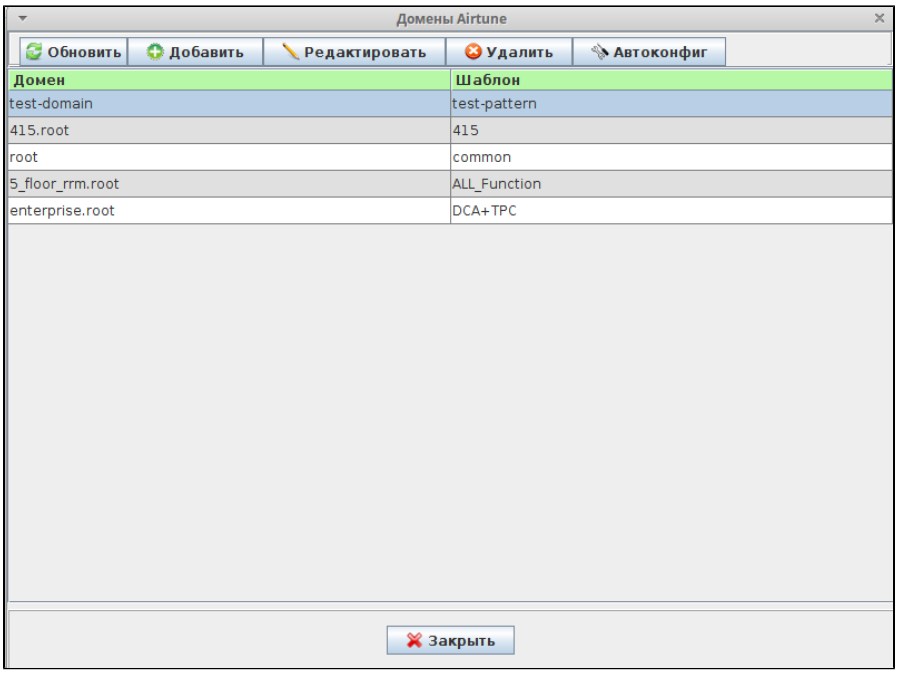
AirTune

"Wireless" " AirTune".

AirTune , ( ) AirTune.

. , , :
„ „ „ „ „.

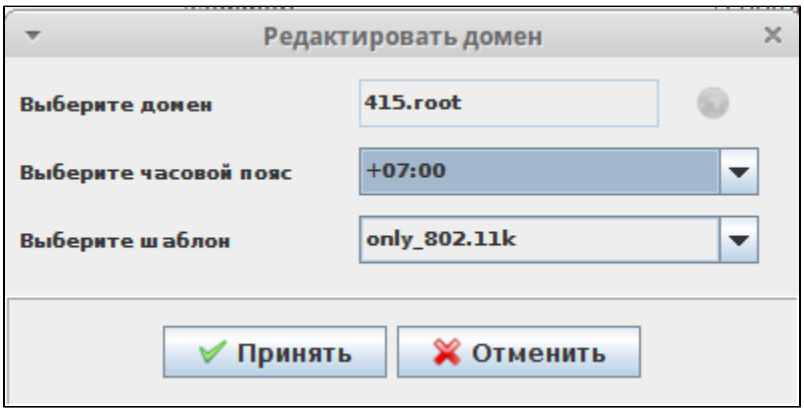
AirTune , ( ).



- - -;
- ;
- ;
- , (URL,).

:

, , , (UTC), ( )



AirTune

, Limit channels .

- 2.4 : 1, 6, 11.
- 5: 36, 40, 44, 48, 52, 56, 60, 64.

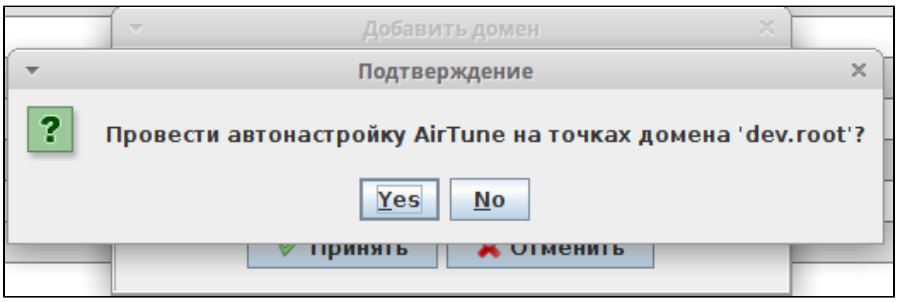
, URL AirTune , , URL .

GUI EMS / CLI.

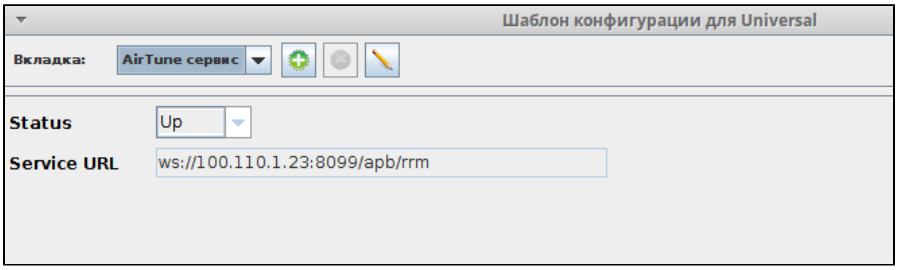
EMS:

URL EMS:

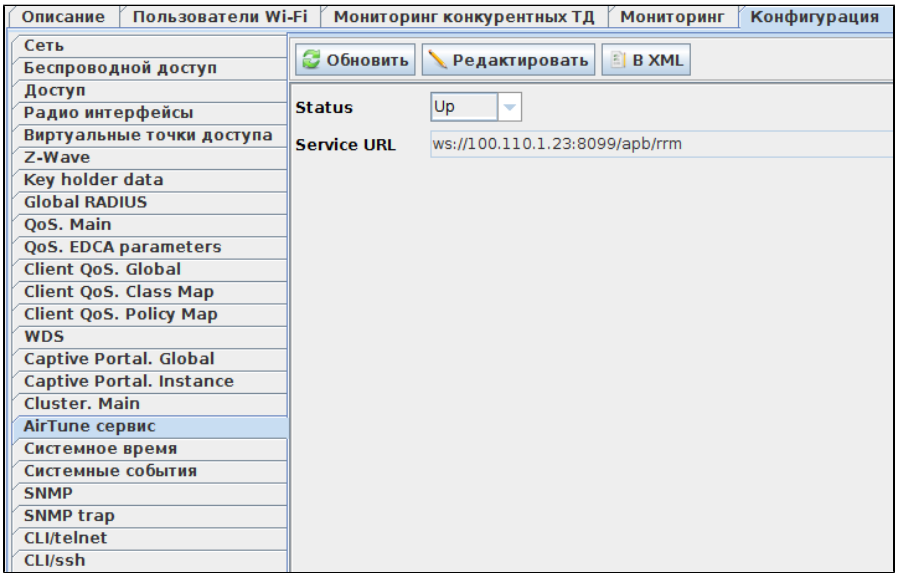
- AirTune , "" URL , AirTune, "" :



- *Wireless* , , , :



- , *AirTune* , *Service URL* = ws://<IP AirTune>:8099/apb/rrm, <IP AirTune> - AirTune, .



CLI:

```
set rrm rrm-service up
set rrm rrm-service-url  ws://<IP  AirTune>:8099/apb/rrm
```

"Wireless" .

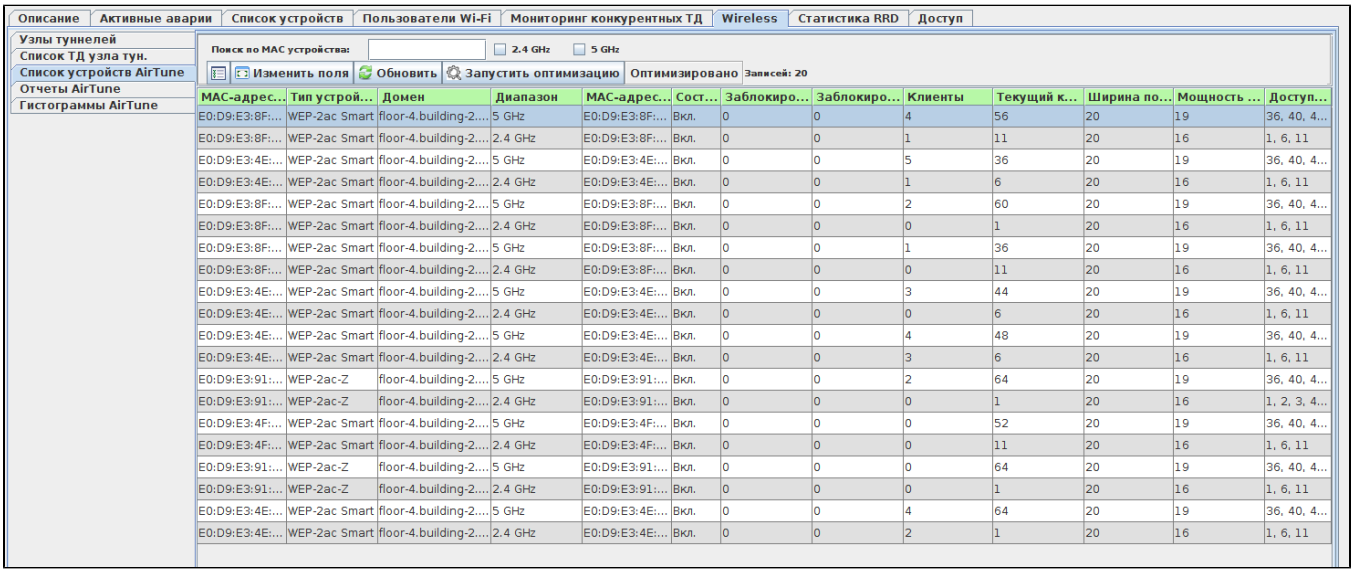
3 RRM, :

AirTune

, , AirTune .

:

- , , ;
- 2.4 5, mac- ;
- , .



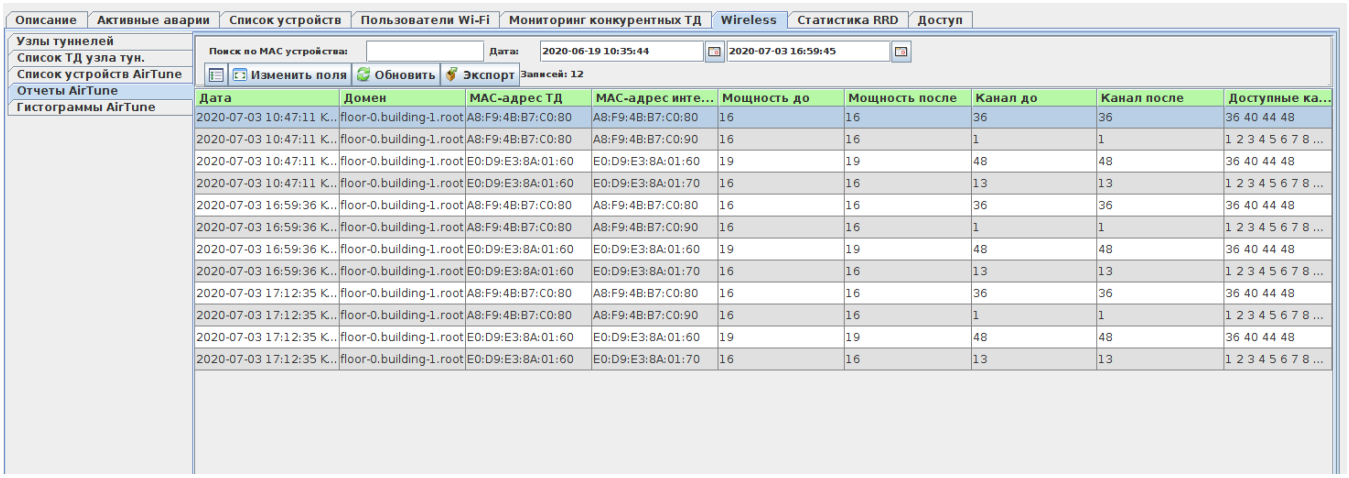
MAC-	Mac- .
	.
	( ).
	, .
MAC-	Mac- (2.4 5).
	.
TPC	AirTune, WDS/Mesh/WGB.
DCA	AirTune, WDS/Mesh/WGB.
	.
	.
	.
	.
	(Limit channels).

AirTune

" AirTune" TPC/DCA, , .

:

- MAC- ;
- ;
- ;
- CSV-.



	. AirTune UTC , GUI .
	( ).
MAC-	Mac- .
MAC-	Mac- (2.4 5).
M	, dbm.
	, dbm.
	.
	.
	(Limit channels).

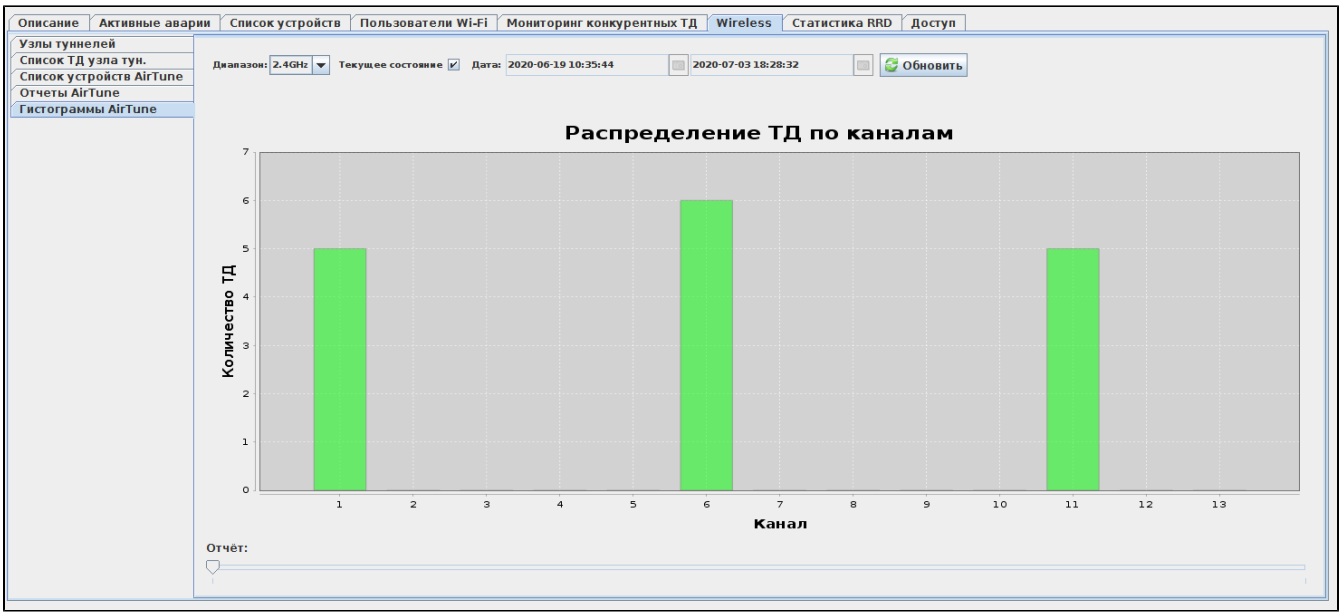
AirTune

" AirTune" DCA.

:

- , 2.4 5;
- , . " ", ( );

:



ELTEX

AirTune		EMS (SoftWLC)	
1.3.0	1.19.0 (WEP -2/-12ac)	3.22 (1.18.0)	
1.3.1	1.20.0 (WEP -2/-12ac)	3.22 (1.18.0)	
1.3.2	1.20.0 (WEP -2/-12ac) / 1.5.0 WEP-3ax	3.24 (1.20.0)	WEP-3ax