Using DNS SRV Feature on Yealink VP530

1. Feature Introduction

The Yealink Phone DNS-SRV Feature is to ensure continuity of phone service for events where the call server needs to be taken offline for maintenance, the F fails, or the connection from the phone to the server fails.

Two types of redundancy are possible:

- Fail-over: In this mode, the full phone system functionality is preserved by having a second equivalent capability call server take over from the one that has gone down/off-line. This mode of operation should be done using DNS mechanisms or "IP Address Moving" from the primary to the back-up server.

- Fallback: In this mode, a second less featured call server (router or gateway device) with SIP capability takes over call control to provide basic calling capability, but without some of the richer features offered by the primary call server (for example, shared lines, presence, and Message Waiting Indicator). Yealink phones support configuration of multiple servers per SIP registration for this purpose.

In some cases, a combination of the two may be deployed.

With DNS-SRV feature, Yealink phones are able to perform the following redundancy scenarios:

- DNS SRV Lookup

  Take the DN onsip.com for example, before registration, phone will do NAPTR lookup for onsip.com, and get the result below:

	order	pref	flags	service	regexp	replacement
IN NAPTR	50	50	"s"	"SIPS+D2T"	""	_sips._tcp.example.com
IN NAPTR	90	50	"s"	"SIP+D2T"	""	_sip._tcp.example.com
IN NAPTR	100	50	"s"	"SIP+D2U"	""	_sip._udp.example.com

  Then phone will do SRV lookup according to the NAPTR lookup result, and get the SRV lookup result below:

	Priority	Weight	Port	Target
IN SRV	0	1	5060	server1.example.com
IN SRV	0	2	5060	server1.example.com

  Finally, do the A record lookup according to the SRV lookup result and get two IP addresses which are associated with the DN onsip.com, also the IP addressed will ordered by the priority which returned from DNS server, for example first server is 69.57.179.234 and second sever is 69.57.179.235.

```
⊟ Domain Name System (response)
   [Request In: 881]
   [Time: 0.617004000 seconds]
   Transaction ID: 0x0005
 ⊞ Flags: 0x8180 (Standard query response, No error)
   Questions: 1
   Answer RRs: 1
   Authority RRs: 2
   Additional RRs: 2
 ⊟ Queries
   ⊞ onsip.com: type A, class IN
 ⊟ Answers
   ⊞ onsip.com: type A, class IN, addr 69.57.179.234
 ⊞ Authoritative nameservers
 ⊞ Additional records
```

● REGISTER Failover/Failback

   If phone fail to register to the first server 69.57.179.234, it will try to register to second server 69.57.179.235 automatically.

● INVITE Failover/Failback

   If the INVITE message does not correct response from the first server 69.57.179.234, it will try the second server 69.57.179.235 automatically.

● BYE Failover

   If the BYE message does not correct response from the first server 69.57.179.234, it will try the second server 69.57.179.235 automatically.

2. Phone Configuration

Browse to Account→Basic page, give a DNS name to SIP server and select "DNS-SVR" for transport option.

Sample introduction of how Yealink Phones use TCP as transport type after DNS-SRV

1. Configure Yealink Phone

2. DNS-SRV Process

◆ Refer to session 2.1 when click "Configm" after setting, Yealink SIP Phone performs a NAPTR lookup, and gets the NAPTR records.

	order	pref	flags	service	regexp	replacement
IN NAPTR	2	0	"s"	"SIP+D2T"	""	_sip._tcp.airties.com
IN NAPTR	2	0	"s"	"SIP+D2U"	""	_sip._udp. airties.com

```
17 193.944356        10.12.0.1          10.12.2.1          DNS    Standard query response NAPTR 2 0 s NAPTR 2 0 s
18 194.011848        10.12.0.1          10.12.2.1          DNS    Standard query SRV _sip._tcp.airties.com
19 194.013156        10.12.0.1          10.12.2.1          DNS    Standard query response SRV 1 0 5060 uc2.airties.com SRV 2 0 5060 uc1.airties.com
20 194.017134        10.12.2.1          10.12.0.1          DNS    Standard query A uc2.airties.com
21 194.017758        10.12.0.1          10.12.2.1          DNS    Standard query response A 91.220.65.27
22 194.026062        10.12.2.1          10.12.0.1          DNS    Standard query A uc1.airties.com
23 194.026618        10.12.0.1          10.12.2.1          DNS    Standard query response A 91.220.65.26
24 194.040169        10.12.2.1          10.12.0.1          DNS    Standard query SRV _sip._udp.airties.com
25 194.041494        10.12.0.1          10.12.2.1          DNS    Standard query response SRV 2 0 5060 uc1.airties.com SRV 1 0 5060 uc2.airties.com
26 194.192043        10.12.2.1          91.220.65.27       SIP    Request: REGISTER sip:airties.com
27 194.197000        91.220.65.27       10.12.2.1          SIP    Status: 401 Unauthorized    (0 bindings)
28 195.696335        10.12.2.1          91.220.65.27       SIP    Request: REGISTER sip:airties.com
29 195.701767        91.220.65.27       10.12.2.1          SIP    Status: 423 Registration Too Brief    (0 bindings)
30 195.845413        10.12.2.1          224.0.1.75         SIP    Request: SUBSCRIBE sip:MAC0015651a108b@224.0.1.75
31 195.901397        10.12.2.1          91.220.65.27       SIP    Request: REGISTER sip:airties.com
32 195.909072        91.220.65.27       10.12.2.1          SIP    Status: 200 OK    (1 bindings)
```

```
Answer RRs: 2
Authority RRs: 0
Additional RRs: 0
Queries
Answers
airties.com: type NAPTR, class IN, order 2, preference 0, flags s
    Name: airties.com
    Type: NAPTR (Naming authority pointer)
    Class: IN (0x0001)
    Time to live: 1 hour
    Data length: 38
    Order: 2
    Preference: 0
    Flags length: 1
    Flags: "s"
    Service length: 7
    Service: "SIP+D2T"
    Regex length: 0
    Regex: ""
    Replacement length: 23
    Replacement: _sip._tcp.airties.com
airties.com: type NAPTR, class IN, order 2, preference 0, flags s
    Name: airties.com
    Type: NAPTR (Naming authority pointer)
    Class: IN (0x0001)
    Time to live: 1 hour
    Data length: 38
    Order: 2
    Preference: 0
    Flags length: 1
    Flags: "s"
    Service length: 7
    Service: "SIP+D2U"
    Regex length: 0
    Regex: ""
    Replacement length: 23
    Replacement: _sip._udp.airties.com
```

◆ Then Yealink Phone performs a SRV lookup, and gets the SRV records, and gets the SRV records as follows:

NAPTR record : _sip._tcp.airties.com

	Priority	Weight	Port	Target
IN SRV	1	0	5060	uc2. airties.com
IN SRV	2	0	5060	Uc1. airties.com

```
16 193.942190      10.12.2.1       10.12.0.1       DNS   Standard query NAPTR airties.com
17 193.944356      10.12.0.1       10.12.2.1       DNS   Standard query response NAPTR 2 0 s NAPTR 2 0 s
18 194.011848      10.12.2.1       10.12.0.1       DNS   Standard query SRV _sip._tcp.airties.com
19 194.013156      10.12.0.1       10.12.2.1       DNS   Standard query response SRV 1 0 5060 uc2.airties.com SRV 2 0 5060 uc1.airties.com
20 194.017134      10.12.2.1       10.12.0.1       DNS   Standard query A uc2.airties.com
21 194.017758      10.12.0.1       10.12.2.1       DNS   Standard query response A 91.220.65.27
22 194.026062      10.12.2.1       10.12.0.1       DNS   Standard query A uc1.airties.com
23 194.026618      10.12.0.1       10.12.2.1       DNS   Standard query response A 91.220.65.26
24 194.040169      10.12.2.1       10.12.0.1       DNS   Standard query SRV _sip._udp.airties.com
25 194.041494      10.12.0.1       10.12.2.1       DNS   Standard query response SRV 2 0 5060 uc1.airties.com SRV 1 0 5060 uc2.airties.com
26 194.192043      10.12.2.1       91.220.65.27    SIP   Request: REGISTER sip:airties.com
27 194.197000      91.220.65.27    10.12.2.1       SIP   Status: 401 Unauthorized   (0 bindings)
28 195.696335      10.12.2.1       91.220.65.27    SIP   Request: REGISTER sip:airties.com
29 195.701767      91.220.65.27    10.12.2.1       SIP   Status: 423 Registration Too Brief   (0 bindings)
30 195.845413      10.12.2.1       224.0.1.75      SIP   Request: SUBSCRIBE sip:MAC0015651a108b@224.0.1.75
31 195.901397      10.12.2.1       91.220.65.27    SIP   Request: REGISTER sip:airties.com
32 195.909072      91.220.65.27    10.12.2.1       SIP   Status: 200 OK   (1 bindings)
33 196.706830      10.12.2.1       91.220.65.27    SIP   Request: SUBSCRIBE sip:6903@airties.com
34 196.711394      91.220.65.27    10.12.2.1       SIP   Status: 401 Unauthorized
35 196.920012      10.12.2.1       91.220.65.27    SIP   Request: SUBSCRIBE sip:6002@airties.com
```

```
Frame 19 (151 bytes on wire, 151 bytes captured)
Ethernet II, Src: JuniperN_17:68:8a (00:21:59:17:68:8a), Dst: XiamenYe_1a:10:8b (00:15:65:1a:10:8b)
Internet Protocol, Src: 10.12.0.1 (10.12.0.1), Dst: 10.12.2.1 (10.12.2.1)
User Datagram Protocol, Src Port: domain (53), Dst Port: blackjack (1025)
Domain Name System (response)
    [Request In: 24]
    [Time: -0.027013000 seconds]
    Transaction ID: 0x0002
+ Flags: 0x8500 (Standard query response, No error)
    Questions: 1
    Answer RRs: 2
    Authority RRs: 0
    Additional RRs: 0
+ Queries
- Answers
  ⊟ _sip._tcp.airties.com: type SRV, class IN, priority 1, weight 0, port 5060, target uc2.airties.com
      Name: _sip._tcp.airties.com
      Type: SRV (Service location)
      Class: IN (0x0001)
      Time to live: 1 hour
      Data length: 23
      Priority: 1
      Weight: 0
      Port: 5060
      Target: uc2.airties.com
  ⊟ _sip._tcp.airties.com: type SRV, class IN, priority 2, weight 0, port 5060, target uc1.airties.com
      Name: _sip._tcp.airties.com
      Type: SRV (Service location)
      Class: IN (0x0001)
      Time to live: 1 hour
      Data length: 23
      Priority: 2
      Weight: 0
      Port: 5060
      Target: uc1.airties.com
```

◆ After SRV lookup Yealink Phone performs A record lookup, and gets the IP Address of the sip server domain.

	Name	TTL	Addr
IN A	uc2. airties.com		91.220.65.27
IN A	Uc1. irties.com		91.220.65.26

```
16 193.942190      10.12.2.1        10.12.0.1       DNS    Standard query NAPTR airties.com
17 193.944356      10.12.0.1        10.12.2.1       DNS    Standard query response NAPTR 2 0 s NAPTR 2 0 s
18 194.011848      10.12.2.1        10.12.0.1       DNS    Standard query SRV _sip._tcp.airties.com
19 194.013156      10.12.0.1        10.12.2.1       DNS    Standard query response SRV 1 0 5060 uc2.airties.com SRV 2 0 5060 uc1.airties.com
20 194.017134      10.12.2.1        10.12.0.1       DNS    Standard query A uc2.airties.com
21 194.017758      10.12.0.1        10.12.2.1       DNS    Standard query response A 91.220.65.27
22 194.026062      10.12.2.1        10.12.0.1       DNS    Standard query A uc1.airties.com
23 194.026618      10.12.0.1        10.12.2.1       DNS    Standard query response A 91.220.65.26
24 194.040169      10.12.2.1        10.12.0.1       DNS    Standard query SRV _sip._udp.airties.com
25 194.041494      10.12.0.1        10.12.2.1       DNS    Standard query response SRV 2 0 5060 uc1.airties.com SRV 1 0 5060 uc2.airties.com
26 194.192043      10.12.2.1        91.220.65.27    SIP    Request: REGISTER sip:airties.com
27 194.197000      91.220.65.27     10.12.2.1       SIP    Status: 401 Unauthorized    (0 bindings)
28 195.696335      10.12.2.1        91.220.65.27    SIP    Request: REGISTER sip:airties.com
29 195.701767      91.220.65.27     10.12.2.1       SIP    Status: 423 Registration Too Brief    (0 bindings)
30 195.845413      10.12.2.1        224.0.1.75      SIP    Request: SUBSCRIBE sip:MAC0015651a108b@224.0.1.75
31 195.901397      10.12.2.1        91.220.65.27    SIP    Request: REGISTER sip:airties.com
32 195.909072      91.220.65.27     10.12.2.1       SIP    Status: 200 OK    (1 bindings)
33 196.706830      10.12.2.1        91.220.65.27    SIP    Request: SUBSCRIBE sip:6903@airties.com
34 196.711394      91.220.65.27     10.12.2.1       SIP    Status: 401 Unauthorized
35 196.020012      10.12.2.1        91.220.65.27    SIP    Request: SUBSCRIBE sip:6002@airties.com

Frame 21 (91 bytes on wire, 91 bytes captured)
Ethernet II, Src: JuniperN_17:68:8a (00:21:59:17:68:8a), Dst: XiamenYe_1a:10:8b (00:15:65:1a:10:8b)
Internet Protocol, Src: 10.12.0.1 (10.12.0.1), Dst: 10.12.2.1 (10.12.2.1)
User Datagram Protocol, Src Port: domain (53), Dst Port: blackjack (1025)
Domain Name System (response)
 [Request In: 24]
 [Time: -0.022411000 seconds]
 Transaction ID: 0x0002
+ Flags: 0x8100 (Standard query response, No error)
 Questions: 1
 Answer RRs: 1
 Authority RRs: 0
 Additional RRs: 0
+ Queries
- Answers
  - uc2.airties.com: type A, class IN, addr 91.220.65.27
      Name: uc2.airties.com
      Type: A (Host address)
      Class: IN (0x0001)
      Time to live: 48 minutes, 56 seconds
      Data length: 4
      Addr: 91.220.65.27
```

Then from the NAPTR record "_sip._udp. airties.com" , Yealink Phone gets the same SRV

records, so the DNS-SRV records should be listed as below:

SIP Server DN	NAPTR	SRV			IP Address
		Host name	priority	port	
airties.com	_sip._Tcp. airties.com	uc2. irties.com	1	5060	91.220.65.27
		Uc1. irties.com	2	5060	91.220.65.26
	_sip._udp. airties.com	uc2. irties.com	1	5060	91.220.65.27
		Uc1. irties.com	2	5060	91.220.65.26

So refer to RFC 3263, Yealink Phone then sends the Register Request to the first IP Address of

the sip server 91.220.65.27 with the transport type of TCP. When the first server is

down ,Yealink Phone will try the second sip server。

```
16 193.942190      10.12.2.1      10.12.0.1      DNS   Standard query NAPTR airties.com
17 193.944356      10.12.0.1      10.12.2.1      DNS   Standard query response NAPTR 2 0 s NAPTR 2 0 s
18 194.011848      10.12.2.1      10.12.0.1      DNS   Standard query SRV _sip._tcp.airties.com
19 194.013156      10.12.0.1      10.12.2.1      DNS   Standard query response SRV 1 0 5060 uc2.airties.com SRV 2 0 5060 uc1.airties.com
20 194.017134      10.12.2.1      10.12.0.1      DNS   Standard query A uc2.airties.com
21 194.017758      10.12.0.1      10.12.2.1      DNS   Standard query response A 91.220.65.27
22 194.026062      10.12.2.1      10.12.0.1      DNS   Standard query A uc1.airties.com
23 194.026618      10.12.0.1      10.12.2.1      DNS   Standard query response A 91.220.65.26
24 194.040169      10.12.2.1      10.12.0.1      DNS   Standard query SRV _sip._udp.airties.com
25 194.041494      10.12.0.1      10.12.2.1      DNS   Standard query response SRV 2 0 5060 uc1.airties.com SRV 1 0 5060 uc2.airties.com
26 194.192043      10.12.2.1      91.220.65.27   SIP   Request: REGISTER sip:airties.com
27 194.197000      91.220.65.27   10.12.2.1      SIP   Status: 401 Unauthorized    (0 bindings)
28 195.696335      10.12.2.1      91.220.65.27   SIP   Request: REGISTER sip:airties.com
29 195.701767      91.220.65.27   10.12.2.1      SIP   Status: 423 Registration Too Brief    (0 bindings)
30 195.845413      10.12.2.1      224.0.1.75     SIP   Request: SUBSCRIBE sip:MAC0015651a108b@224.0.1.75
31 195.901397      10.12.2.1      91.220.65.27   SIP   Request: REGISTER sip:airties.com
32 195.909072      91.220.65.27   10.12.2.1      SIP   Status: 200 OK    (1 bindings)
33 196.706830      10.12.2.1      91.220.65.27   SIP   Request: SUBSCRIBE sip:6903@airties.com
34 196.711394      91.220.65.27   10.12.2.1      SIP   Status: 401 Unauthorized
35 196.930013      10.12.2.1      91.220.65.27   SIP   Request: SUBSCRIBE sip:6903@airties.com
```

```
Frame 26 (549 bytes on wire, 549 bytes captured)
Ethernet II, Src: XiamenYe_1a:10:8b (00:15:65:1a:10:8b), Dst: JuniperN_17:68:8a (00:21:59:17:68:8a)
Internet Protocol, Src: 10.12.2.1 (10.12.2.1), Dst: 91.220.65.27 (91.220.65.27)
Transmission Control Protocol, Src Port: nav-port (3859), Dst Port: sip (5060), Seq: 1, Ack: 1, Len: 483
Session Initiation Protocol
⊞ Request-Line: REGISTER sip:airties.com SIP/2.0
⊟ Message Header
  ⊞ Via: SIP/2.0/TCP 10.12.2.1:5062;branch=z9hG4bK109393139
  ⊞ From: "6903" <sip:6903@airties.com>;tag=1445564399
  ⊞ To: "6903" <sip:6903@airties.com>
    Call-ID: 1730047149@10.12.2.1
  ⊞ CSeq: 1 REGISTER
  ⊞ Contact: <sip:6903@10.12.2.1:5062;transport=TCP>
    Allow: INVITE, INFO, PRACK, ACK, BYE, CANCEL, OPTIONS, NOTIFY, REGISTER, SUBSCRIBE, REFER, PUBLISH, UPDATE, MESSAGE
    Max-Forwards: 70
    User-Agent: Yealink IP116 2.60.4.2
    Expires: 180
    Content-Length: 0
```

For more information about DNS-SRV , please refer to RFC3263.