

# Seagull ile Diameter Mesajları Üretme

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# Ajanda

## Diameter Protokolü

Mesaj Yapısı, Mesaj Tipleri, Geri Dönüş Kodları 3

## Seagull

Nedir, Kurulum, Konfigurasyon 10

## Seagull Nasıl Çalışıyor

Örnek senaryo çalıştırılması



[http://en.wikipedia.org/wiki/Diameter\\_\(protocol\)](http://en.wikipedia.org/wiki/Diameter_(protocol))

# DIAMETER

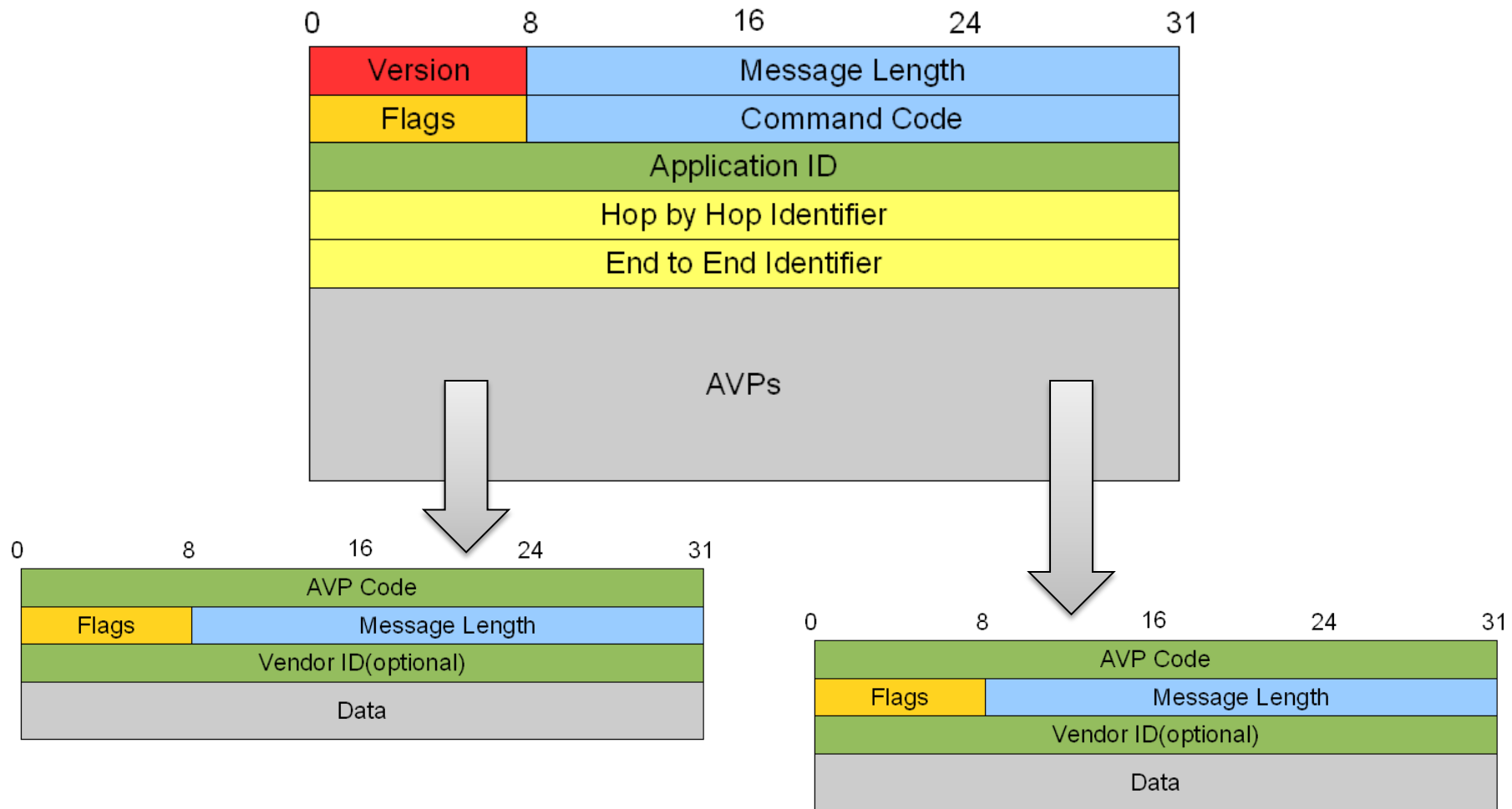


# Diameter Protokolü

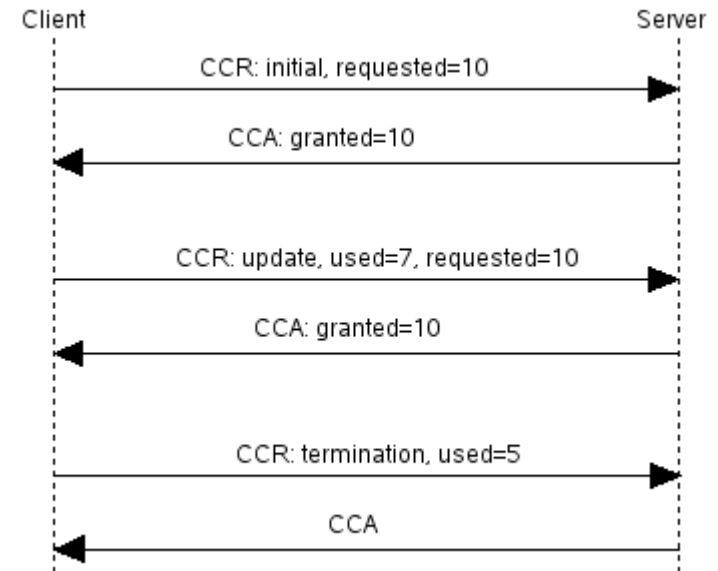
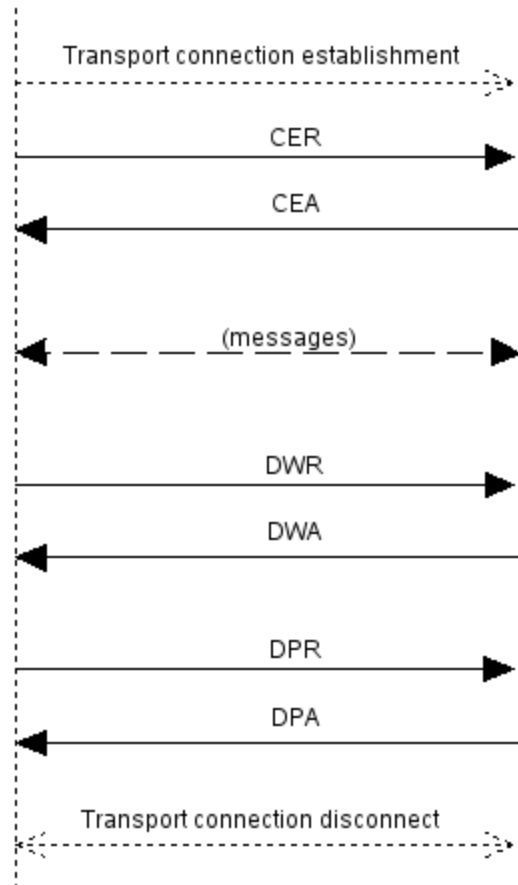
- > Diameter; RADIUS protokolünün halefi olan (çap-yarıçap), doğrulama, yetkilendirme ve ücretlendirme işlemlerinin gerçekleştirilmesini sağlayan bir protokoldür.  
(AAA – Authentication Authorization Accounting)
- > RFC-3588 (Diameter Base Protocol)
- > RFC-4006 (Diameter Credit-Control Application)



# Diameter Mesaj Yapısı



# Diameter Mesaj Akışları



# Diameter Geri Dönüş Kodları

- 1xxx (Informational)
- 2xxx (Success)
- 3xxx (Protocol Errors)
- 4xxx (Transient Failures)
- 5xxx (Permanent Failure)
- 9xxx (Internal Proprietary Errors)

DIAMETER\_MULTIROUND\_AUTH = 1001

**DIAMETER\_SUCCESS = 2001**

DIAMETER\_LIMITED\_SUCCESS = 2002

DIAMETER\_COMMAND\_UNSUPPORTED = 3001

DIAMETER\_UNABLE\_TO\_DELIVER = 3002

DIAMETER\_REALM\_NOT\_SERVED = 3003

**DIAMETER\_TOO\_BUSY = 3004**

DIAMETER\_LOOP\_DETECTED = 3005

DIAMETER\_REDIRECT\_INDICATION = 3006

DIAMETER\_APPLICATION\_UNSUPPORTED = 3007

DIAMETER\_INVALID\_AVP\_BITS = 3008

DIAMETER\_UNKNOWN\_PEER = 3009

DIAMETER\_AUTHENTICATION\_REJECTED = 4001

DIAMETER\_OUT\_OF\_SPACE = 4002

DIAMETER\_ELECTION\_LOST = 4003

DIAMETER\_AVP\_UNSUPPORTED = 5001

**DIAMETER\_UNKNOWN\_SESSION\_ID = 5002**

DIAMETER\_AUTHORIZATION\_REJECTED = 5003

**DIAMETER\_INVALID\_AVP\_VALUE = 5004**

**DIAMETER\_MISSING\_AVP = 5005**

DIAMETER\_RESOURCES\_EXCEEDED = 5006

DIAMETER\_CONTRADICTING\_AVPS = 5007

DIAMETER\_AVP\_NOT\_ALLOWED = 5008

DIAMETER\_AVP\_OCCURS\_TOO\_MANY\_TIMES = 5009

DIAMETER\_NO\_COMMON\_APPLICATION = 5010

DIAMETER\_UNSUPPORTED\_VERSION = 5011

**DIAMETER\_UNABLE\_TO\_COMPLY = 5012**

DIAMETER\_INVALID\_BIT\_IN\_HEADER = 5013

DIAMETER\_INVALID\_AVP\_LENGTH = 5014

DIAMETER\_INVALID\_MESSAGE\_LENGTH = 5015

DIAMETER\_INVALID\_AVP\_BIT\_COMBO = 5016

DIAMETER\_NO\_COMMON\_SECURITY = 5017

**DIAMETER\_END\_USER\_SERVICE\_DENIED = 4010**

DIAMETER\_CREDIT\_CONTROL\_NOT\_APPLICABLE = 4011

**DIAMETER\_CREDIT\_LIMIT\_REACHED = 4012**

DIAMETER\_USER\_UNKNOWN = 5030

DIAMETER\_RATING\_FAILED = 5031



# Snoop/Tcpdump

```
root@solaris # snoop -d nge0 -o test.pcap -port 3868
```

```
Using device nge0 (promiscuous mode)
```

```
523 ^C
```

```
root@redhat # tcpdump -w test.pcap 'tcp port 3868'
```

```
tcpdump: listening on eth0, link-type EN10MB (Ethernet),  
capture size 65535 bytes
```

```
^C42 packets captured
```

```
42 packets received by filter
```

```
0 packets dropped by kernel
```





# Wireshark

Wireshark 1.6.2 interface showing a packet capture of Diameter messages. The filter is set to 'diameter'. The packet list shows several Diameter messages, including a Credit-Control-Answer (272) and a Credit-Control-Request (272). The packet details pane shows the structure of the selected packet, including AVPs (Authentication-Vector-Payloads) and their values.

**Packet List:**

No.	Time	Source	Destination	Protocol	Length	Info
7	15:22:37.131875	192.168.69.163	192.168.192.110	DIAMETER	758	cmd=Credit-ControlAnswer(272) flags=-P-- appl=Diameter Credit Control
9	15:22:37.221227	192.168.192.110	192.168.69.163	DIAMETER	762	cmd=Credit-ControlRequest(272) flags=RP-- appl=Diameter Credit Control
10	15:22:37.223106	192.168.69.163	192.168.192.110	DIAMETER	230	cmd=Credit-ControlAnswer(272) flags=-P-- appl=Diameter Credit Control
11	15:22:37.353262	192.168.192.110	192.168.69.163	DIAMETER	822	cmd=Credit-ControlRequest(272) flags=RP-- appl=Diameter Credit Control

**Packet Details (Packet 10):**

- Diameter Protocol
  - Version: 0x01
  - Length: 708
  - Flags: 0xc0
  - Command Code: 272 Credit-Control
  - ApplicationId: 4
  - Hop-by-Hop Identifier: 0x07c004ba
  - End-to-End Identifier: 0x3f7c94c8
  - [\[Answer In: 34260\]](#)
  - AVP: Session-Id(263) l=48 f=-M- val=ggsn9811.huawei.com;3540720157;124;24971
  - AVP: Auth-Application-Id(258) l=12 f=-M- val=Diameter Credit Control (4)
  - AVP: Origin-Host(264) l=27 f=-M- val=ggsn9811.huawei.com
  - AVP: Origin-Realm(296) l=18 f=-M- val=huawei.com
  - AVP: Destination-Realm(283) l=20 f=-M- val=vodafone.com
  - AVP: Service-Context-Id(461) l=38 f=-M- val=version2.clci.ipc.vodafone.com
  - AVP: CC-Request-Type(416) l=12 f=-M- val=INITIAL\_REQUEST (1)
  - AVP: CC-Request-Number(415) l=12 f=-M- val=0
  - AVP: Destination-Host(293) l=16 f=-M- val=dccaapp1
  - AVP: Origin-State-Id(278) l=12 f=-M- val=3517699135
  - AVP: Event-Timestamp(55) l=12 f=-M- val=Mar 14, 2012 13:22:37.000000000 UTC
  - AVP: Subscription-Id(443) l=40 f=-M-
    - AVP Code: 443 Subscription-Id
    - AVP Flags: 0x40
    - AVP Length: 40
    - Subscription-Id: 000001c24000000c00000000000001bc4000001439303534...
    - AVP: Subscription-Id-Type(450) l=12 f=-M- val=END\_USER\_E164 (0)
    - AVP: Subscription-Id-Data(444) l=20 f=-M- val=905428551633
  - AVP: Requested-Service-Unit(437) l=8 f=-M-**
  - AVP: Multiple-Services-Indicator(455) l=12 f=-M- val=MULTIPLE\_SERVICES\_SUPPORTED (1)
  - AVP: 3GPP-Charging-Id(2) l=16 f=VM- vnd=TGPP val=156902562

**Packet Bytes:**

Offset	Bytes	Hex	ASCII
0000	00 21 28 00 67 b6 00 25	9e 05 c3 d7 08 00 45 00	.(.g..%.....E.
0010	02 ec 32 55 00 00 fe 06	00 54 c0 a8 c0 0e c0 a8	..2U....T..n..
0020	45 a3 27 10 0f 1c e5 0a	cd d2 b0 0b 2a 12 50 18	E.'.....*.P.
0030	ff ff 55 4a 00 00 01 00	02 c4 c0 00 01 10 00 00	..UJ.....

Frame (Frame), 762 bytes | Packets: 42639 Displayed: 33735 Marked: 0 Load time: 0:01.660 | Profile: Default



<http://gull.sourceforge.net>

# SEAGULL



## Seagull nedir?

- > Seagull, GPL ile lisanslanmış, birkaç farklı protokol için mesaj üretebilen bir yazılımdır.
- > Fonksiyonel, yük, stres, performans testlerinde kullanılabilir.
- > Sponsoru HP dir. Aynı zamanda ATOS ve COMET’de destek vermektedir.
- > Teknik destek veren bir kurum bulunmamaktadır, kullanıcı gruplarından email ile destek alınabilir.
- > Redhat, HPUX ve Windows paketleri vardır. Ayrıca Linux altında koddan derlenerek kurulum yapılabilir.



# Kurulum

```
[root@redhat tmp]# gunzip -c seagull-1.8.2-Linux_RHEL5U2.tar.gz | tar xvf -
packages/
packages/seagull-h248-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-core-1.8.2-linux-2.6-intel.rpm
packages/seagull-dcc-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-synchro-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-diameter-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-trans-tls-1.8.2-linux-2.6-intel.rpm
packages/seagull-msrp-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-library-java-synchro-1.8.2-linux-2.6-intel.rpm
packages/seagull-sip-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-trans-sctp-1.8.2-linux-2.6-intel.rpm
packages/seagull-mbi-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-binary-body-not-interp-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-radius-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-tcap-ip-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-orga-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-external-lib-sctp-1.8.2-linux-2.6-intel.rpm
packages/seagull-xcap-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-h323-registration-protocol-1.8.2-linux-2.6-intel.rpm
packages/seagull-crypto-1.8.2-linux-2.6-intel.rpm
packages/seagull-otcap-protocol-1.8.2-linux-2.6-intel.rpm
[root@redhat tmp]# cd packages/
[root@redhat packages]# rpm -ivh seagull-core-1.8.2-linux-2.6-intel.rpm
seagull-diameter-protocol-1.8.2-linux-2.6-intel.rpm
[root@redhat packages]# cd /opt/seagull/diameter/
[root@redhat diameter]# ls
config logs run scenario
```



# Önemli Dosyalar

- > /opt/seagull/diameter/conf/conf.client.xml
  - Genel konfigürasyon dosyasıdır. Hangi sunucuya, ne şekilde bağlanılacağı belirlenir. Ayrıca üretilcek trafik ile ilgili değerler de bulunur. (call-rate, number of calls, ...)
- > /opt/seagull/diameter/conf/base\_cc.xml
  - Senaryo içerisinde kullanılan AVP'lerin tanımlandığı dosyadır.
- > /opt/seagull/diameter/scenario/ccr-cca.client.xml
  - Senaryo dosyası. Ne zaman, hangi AVP'lerin hangi değerler ile gönderileceği bu dosyada belirlenir.
- > /opt/seagull/diameter/scenario/msisdns.csv
  - Örnek olarak, bir GPRS yük testi yapmak için belirlenen çok sayıda MSISDN bu dosyaya yazılır ve senaryo içerisinde bu dosya çağırılır.
- > /opt/seagull/diameter/run/start\_client\_cc.ksh
  - Senaryonun başlatma dosyası. İçerisinde hangi konfigürasyon dosyalarının kullanılacağı belirlenir:

```
seagull -conf ../config/conf.client.xml -dico ../config/base_cc.xml -  
scen ../scenario/ccr-cca.client.xml \  
-log ../logs/ccr-cca.client.log -llevel A
```



# Arayüz

```
[root@redhat run]# ./start_client_cc.ksh
```

```
|-----+-----+-----|
| Start/Current Time      | 2011-10-23 22:22:03 | 2011-10-23 22:22:03 |
|-----+-----+-----|
| Counter Name            | Periodic value       | Cumulative value     |
|-----+-----+-----|
| Elapsed Time            | 00:00:00:001         | 00:00:00:001         |
| Call rate (/s)          | 0.000                | 0.000                |
|-----+-----+-----|
| Incoming calls          | 0                    | 0                    |
| Outgoing calls          | 0                    | 0                    |
| Msg Recv/s              | 0.000                | 0.000                |
| Msg Sent/s              | 0.000                | 0.000                |
| Unexpected msg          | 0                    | 0                    |
| Current calls           | 0                    | 0.000                |
|-----+-----+-----|
| Successful calls        | 0                    | 0                    |
| Failed calls            | 0                    | 0                    |
| Refused calls           | 0                    | 0                    |
| Aborted calls           | 0                    | 0                    |
| Timeout calls           | 0                    | 0                    |
|-----+-----+-----|
| Last Info               | Outgoing traffic      |
| Last Error              | No error              |
|--- Next screen : Press key 1 ----- [h]: Display help -----|
```



# Arayüz

```
|-----+-----+-----|
| Start/Current Time      | 2011-10-23 22:22:03 | 2011-10-23 22:22:25 |
|-----+-----+-----|
| Counter Name            | Periodic value       | Cumulative value     |
|-----+-----+-----|
| Elapsed Time            | 00:00:00:822         | 00:00:21:871         |
| Call rate (/s)          | 0.000                | 0.091                |
|-----+-----+-----|
| Incoming calls          | 0                    | 0                    |
| Outgoing calls          | 0                    | 2                    |
| Msg Recv/s              | 0.000                | 0.320                |
| Msg Sent/s              | 0.000                | 0.320                |
| Unexpected msg          | 0                    | 0                    |
| Current calls           | 0                    | 0.000                |
|-----+-----+-----|
| Successful calls        | 0                    | 2                    |
| Failed calls            | 0                    | 0                    |
| Refused calls           | 0                    | 0                    |
| Aborted calls           | 0                    | 0                    |
| Timeout calls           | 0                    | 0                    |
|-----+-----+-----|
| Last Info               | Stopping traffic     |
| Last Error              | No error              |
|--- Next screen : Press key 1 ----- [h]: Display help -----|
```



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# TEŞEKKÜRLER

