

Четыре возможных случаев при настройке агрегации каналов EtherChannel:

Switch-1	Switch-2	Соединение
ACTIVE	PASSIVE	YES
PASSIVE	ACTIVE	YES
ACTIVE	ACTIVE	YES
PASSIVE	PASSIVE	NO

```
Flags: D - down          P - bundled in port-channel
       I - stand-alone   S - suspended
       H - Hot-standby (LACP only)
       R - Layer3        S - Layer2
       U - in use        f - failed to allocate aggregator

       M - not in use, minimum links not met
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port
```

### ACTIVE-ACTIVE:

#### SW-1:

```
vIOS-L2-01>en
vIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
vIOS-L2-01(config)#interface range gi0/2-3
vIOS-L2-01(config-if-range)#
*Dec 11 06:09:46.687: %PLATFORM-5-SIGNATURE_VERIFIED: Image 'flash0:/vios_l2-adv
enterprisek9-m' passed code signing verification
vIOS-L2-01(config-if-range)#channel-protocol lacp
vIOS-L2-01(config-if-range)#channel-group 1 mode active
Creating a port-channel interface Port-channel 1
```

#### SW-3:

```
vIOS-L2-01>en
vIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
vIOS-L2-01(config)#int range gi0/0-1
vIOS-L2-01(config-if-range)#channel-protocol lacp
vIOS-L2-01(config-if-range)#channel-group 1 mode active
Creating a port-channel interface Port-channel 1

vIOS-L2-01(config-if-range)#exit
vIOS-L2-01(config)#exit
```

### Результат (каналы связаны):

```
Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)           LACP        Gi0/2(P)   Gi0/3(P)

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)           LACP        Gi0/0(P)   Gi0/1(P)
```

## ACTIVE-PASSIVE:

### SW-1:

```
VIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
VIOS-L2-01(config)#int range gi1/0-1
VIOS-L2-01(config-if-range)#channel-protocol lacp
VIOS-L2-01(config-if-range)#channel-group 2 mode active
Creating a port-channel interface Port-channel 2

VIOS-L2-01(config-if-range)#exi
VIOS-L2-01(config)#exit
```

### SW-4:

```
VIOS-L2-01>en
VIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
VIOS-L2-01(config)#int range gi0/0-1
VIOS-L2-01(config-if-range)#channel-protocol lacp
VIOS-L2-01(config-if-range)#channel-group 1 mode passive
Creating a port-channel interface Port-channel 1

VIOS-L2-01(config-if-range)#exit
VIOS-L2-01(config)#exit
VIOS-L2-01#
```

## Результат (каналы связаны):

```
Number of channel-groups in use: 2
Number of aggregators:          2

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1       Po1(SU)          LACP       Gi0/2(P)   Gi0/3(P)
2       Po2(SU)          LACP       Gi1/0(P)   Gi1/1(P)
```

```
Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1       Po1(SU)          LACP       Gi0/0(P)   Gi0/1(P)
```

## PASSIVE-ACTIVE:

### SW-1:

```
vIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
vIOS-L2-01(config)#int range gi1/2-3
vIOS-L2-01(config-if-range)#channel-protocol lacp
vIOS-L2-01(config-if-range)#channel-group 3 mode passive
Creating a port-channel interface Port-channel 3

vIOS-L2-01(config-if-range)#exit
vIOS-L2-01(config)#exit
vIOS-L2-01#
```

### SW-5:

```
vIOS-L2-01>en
vIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
vIOS-L2-01(config)#int range gi0/0-1
vIOS-L2-01(config-if-range)#channel-protocol lacp
vIOS-L2-01(config-if-range)#channel-group 1 mode active
Creating a port-channel interface Port-channel 1

vIOS-L2-01(config-if-range)#exit
vIOS-L2-01(config)#exit
vIOS-L2-01#
```

## Результат (каналы связаны):

```
Number of channel-groups in use: 3
Number of aggregators:          3

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)          LACP       Gi0/2(P)   Gi0/3(P)
2      Po2(SU)          LACP       Gi1/0(P)   Gi1/1(P)
3      Po3(SU)          LACP       Gi1/2(P)   Gi1/3(P)
```

```
Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)          LACP       Gi0/0(P)   Gi0/1(P)
```

## PASSIVE-PASSIVE:

### SW-2:

```
VIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
VIOS-L2-01(config)#int range gi0/2-3
VIOS-L2-01(config-if-range)#channel-protocol lacp
VIOS-L2-01(config-if-range)#channel-group 1 mode passive
Creating a port-channel interface Port-channel 1
```

### SW-3:

```
VIOS-L2-01>en
VIOS-L2-01#conf t
Enter configuration commands, one per line. End with CNTL/Z.
VIOS-L2-01(config)#int range gi0/2-3
VIOS-L2-01(config-if-range)#channel-protocol lacp
VIOS-L2-01(config-if-range)#channel-group 2 mode passive
Creating a port-channel interface Port-channel 2
```

## Результат (каналы не связаны):

```
Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
1      Po1(SD)          LACP        Gi0/2(s)   Gi0/3(s)
```

```
Number of channel-groups in use: 2
Number of aggregators:          2

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
1      Po1(SU)          LACP        Gi0/0(P)   Gi0/1(P)
2      Po2(SD)          LACP        Gi0/2(s)   Gi0/3(s)
```

### SW-1(до трафика):

vIOS-L2-01#show lacp counters								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 1								
Gi0/0	29	34	0	0	0	0	0	0
Gi0/1	29	32	0	0	0	0	0	0
Gi2/0	30	36	0	0	0	0	0	0
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 2								
Gi0/2	26	28	0	0	0	0	0	0
Gi0/3	36	37	0	0	0	0	0	0
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 3								
Gi1/0	30	30	0	0	0	0	0	0
Gi1/1	30	32	0	0	0	0	0	0
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 4								
Gi1/2	25	26	0	0	0	0	0	0
Gi1/3	29	37	0	0	0	0	0	0

### SW-1(после трафика):

vIOS-L2-01#show lacp counters								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 1								
Gi0/0	49	47	0	0	0	0	0	
Gi0/1	53	52	0	0	0	0	0	
Gi2/0	48	46	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 2								
Gi0/2	36	38	0	0	0	0	0	
Gi0/3	46	46	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 3								
Gi1/0	36	37	0	0	0	0	0	
Gi1/1	43	44	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 4								
Gi1/2	38	36	0	0	0	0	0	
Gi1/3	43	40	0	0	0	0	0	

## SW-2(до трафика):

vIOS-L2-01#show lacp counters								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 1								
Gi0/0	43	29	0	0	0	0	0	
Gi0/1	42	28	0	0	0	0	0	
Gi2/0	47	30	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 2								
Gi0/2	18	20	0	0	0	0	0	
Gi0/3	38	35	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 3								
Gi1/0	29	31	0	0	0	0	0	
Gi1/1	35	39	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 4								
Gi1/2	18	20	0	0	0	0	0	
Gi1/3	34	34	0	0	0	0	0	

## SW-2(после трафика):

vIOS-L2-01#show lacp counters								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 1								
Gi0/0	49	51	0	0	0	0	0	
Gi0/1	54	55	0	0	0	0	0	
Gi2/0	48	50	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 2								
Gi0/2	41	42	0	0	0	0	0	
Gi0/3	40	42	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 3								
Gi1/0	40	39	0	0	0	0	0	
Gi1/1	45	48	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker	Response	LACPDUs	
	Sent	Recv	Sent	Recv	Sent	Recv	Pkts	Err
-----								
Channel group: 4								
Gi1/2	46	46	0	0	0	0	0	
Gi1/3	44	44	0	0	0	0	0	

### SW-3(до трафика):

```
vIOS-L2-01#show lacp counters
```

Port	LACPDU		Marker		Marker Sent	Response Recv	LACPDU	
	Sent	Recv	Sent	Recv				
Channel group: 1								
Gi0/0	43	27	0	0	0	0	0	
Gi0/1	54	36	0	0	0	0	0	
Channel group: 2								
Gi0/2	30	18	0	0	0	0	0	
Gi0/3	47	39	0	0	0	0	0	

### SW-3(после трафика):

```
vIOS-L2-01#show lacp counters
```

Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 1								
Gi0/0	39	38	0	0	0	0	0	
Gi0/1	48	47	0	0	0	0	0	
-----								
Port	LACPDUs Sent	Recv	Marker Sent	Recv	Marker Sent	Response Recv	LACPDUs Pkts	Err
-----								
Channel group: 2								
Gi0/2	41	40	0	0	0	0	0	
Gi0/3	41	39	0	0	0	0	0	

### SW-4(до трафика):

```
vIOS-L2-01#show lacp counters
```

Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 1								
Gi0/0	49	31	0	0	0	0	0	0
Gi0/1	50	31	0	0	0	0	0	0
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 2								
Gi0/2	44	30	0	0	0	0	0	0
Gi0/3	54	36	0	0	0	0	0	0

### SW-4(после трафика):

```
vIOS-L2-01#show lacp counters
```

Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 1								
Gi0/0	42	42	0	0	0	0	0	
Gi0/1	49	48	0	0	0	0	0	
-----								
Port	LACPDUs		Marker		Marker Sent	Response Recv	LACPDUs Pkts Err	
	Sent	Recv	Sent	Recv				
-----								
Channel group: 2								
Gi0/2	43	43	0	0	0	0	0	
Gi0/3	52	48	0	0	0	0	0	

### SW-5(до трафика):

```

vIOS-L2-01#show lacp counters

```

Port	LACPDU		Marker		Marker Sent	Response Recv	LACPDU	
	Sent	Recv	Sent	Recv			Pkts	Err
-----								
Channel group: 1								
Gi0/0	48	26	0	0	0	0	0	
Gi0/1	59	30	0	0	0	0	0	
-----								
Port	LACPDU		Marker		Marker Sent	Response Recv	LACPDU	
	Sent	Recv	Sent	Recv			Pkts	Err
-----								
Channel group: 2								
Gi0/2	36	18	0	0	0	0	0	
Gi0/3	52	36	0	0	0	0	0	

### SW-5(после трафика):

```
vIOS-L2-01#show lacp counters
```

Port	LACPDU		Marker		Marker Sent	Response Recv	LACPDU	
	Sent	Recv	Sent	Recv			Pkts	Err
-----								
Channel group: 1								
Gi0/0	40	42	0	0	0	0	0	
Gi0/1	45	47	0	0	0	0	0	
-----								
Port	LACPDU		Marker		Marker Sent	Response Recv	LACPDU	
	Sent	Recv	Sent	Recv			Pkts	Err
-----								
Channel group: 2								
Gi0/2	48	48	0	0	0	0	0	
Gi0/3	46	46	0	0	0	0	0	

**Вывод:** Каналы внутри EtherChannel делят нагрузку между собой, то есть все агрегированные канал внутри EtherChannel в среднем получают и отправляют одинаковое количество пакетов.