

Федеральное государственное бюджетное образовательное учреждение высшего образования

«Новосибирский государственный технический университет»



Лабораторная работа №3

Настройка агрегирования каналов

Студент

Истратенко Валерий

Новосибирск, 2024

Все команды для настройки включены в отчет в текстовом виде вместе с скриншотами, чтобы наглядно отобразить ход работы.

nb! - отметка в тексте, "обратите особое внимание"!

1. Для заданной на схеме schema-lab3 сети, состоящей из управляемых коммутаторов и персональных компьютеров настроить на коммутаторах протокол LACP агрегирования каналов технологии EtherChannel

```
Layer2Switch-2#show running-config interface Gi0/1
Building configuration...
Current configuration : 162 bytes
interface GigabitEthernet0/1
 switchport trunk encapsulation dot1q
 switchport mode trunk
media-type rj45
 negotiation auto
 channel-group 1 mode passive
Layer2Switch-2#show running-config interface Gi0/0
Building configuration...
Current configuration : 162 bytes
interface GigabitEthernet0/0
 switchport trunk encapsulation dot1q
 switchport mode trunk
 media-type rj45
negotiation auto
channel-group 1 mode passive
Layer2Switch-2#show running-config interface Gi2/0
Building configuration...
Current configuration : 162 bytes
interface GigabitEthernet2/0
 switchport trunk encapsulation dot1q
 switchport mode trunk
 media-type rj45
 negotiation auto
 channel-group 1 mode passive
end
Layer2Switch-2#
```

```
Flags: S - Device is requesting Slow LACPDUs
         F - Device is requesting Fast LACPDUs
                                                P - Device is in Passive mode
        A - Device is in Active mode
Channel group 1 neighbors
Partner's information:
                    LACP port
                                                          Admin
                                                                  Oper
           Flags
                    Priority Dev ID
                                                                          Number
                                                                                   State
                                                          key
                                                                  Key
                                                  Age
Gi0/0
                    32768
                                                          0 \times 0
                                                                  0x1
                                                                          0x1
                                                                                   0x3C
          SP
                                                 0s
                               Ocda.eee8.0000
                                                  68
                                                          0 \times 0
Gi 0 / 1
                    32768
                                                                  0 \times 1
                                                                          0x2
                                                                                   0x3C
Gi2/0
                                                                          0x201
                    32768
                                                          0 \times 0
                                                                  0 \times 1
                                                                                   0x3C
Channel group 2 neighbors
Partner's information:
                    LACP port
                                                          Admin
                                                                  Oper
                                                                          Port
                                                                                   Port
                                                          key
0x0
                                                                  Key
0x2
          Flags
Port
                                                                          Number
                                                                                   State
                              0c22.b3c1.0000 26s
0c22.b3c1.0000 23s
           SP
                    32768
                                                                          0x1
                                                                                   0x3C
Gi0/3
                    32768
                                                          0x0
                                                                  0x2
                                                                          0x2
                                                                                   0x3C
Channel group 4 neighbors
Partner's information:
                    LACP port
                                                          Admin
                                                                  Oper
                                                                                   Port
                                                                  Key
0x4
           Flags
                                                          key
                                                                          Number
                                                                                   State
                    32768
                                                          0x0
                                                                          0x1
                                                                                   0x3C
                               Ocea.9d33.0000
                                                                  0 \times 4
                                                                          0x2
                                                                                   0x3C
Channel group 7 neighbors
Partner's information:
                    LACP port
                                                          Admin
                                                                  Oper
                                                                  Кеу
0х7
           Flags
                    Priority Dev ID
                                                          key
                                                                          Number
                                                                                   State
Gi1/2
                    32768
                                                          0 \times 0
                                                                                   0x3C
           SP
                                                                          0x1
                                                  24s
          SP
                                                          0x0
                                                                                   0x3C
Gi1/3
                    32768
                                                  0s
                                                                  0x7
                                                                          0x2
```

```
ayer2Switch-2#show lacp neighbor
      S - Device is requesting Slow LACPDUs
          - Device is requesting Fast LACPDUs
        A - Device is in Active mode
                                               P - Device is in Passive mode
Channel group 1 neighbors
artner's information:
                   LACP port
                                                        Admin
                                                                Oper
                                                                        Port
                                                                                Port
          Flags
                              Dev ID
Port
                                                        key
                                                                        Number
                                                                                State
                   32768
          SA
                                                 9s
                                                        0 \times 0
                                                                0x1
                                                                        0x1
                                                                                0x3D
3i0/1
          SA
                   32768
                                                        0x0
                                                                        0x2
                                                                                 0x3D
                              0c33.5ce5.0000
                                                                        0x201
                                                                                 0x3D
Channel group 3 neighbors
Partner's information:
                   LACP port
                                                        Admin
                                                                Oper
                                                                        Port
                                                                                 Port
          Flags
Port
                   Priority Dev ID
                                                                Key
                                                                        Number
                                                                                State
Gi1/0
                   32768
                                                                0x3
                                                                        0x3
                                                                                0x3C
          SP
                                                 1s
                                                        0 \times 0
                              Ocea.9d33.0000
                                                12s
                   32768
                                                        0 \times 0
                                                                0x3
                                                                        0 \times 4
                                                                                0x3C
Channel group 5 neighbors
Partner's information:
                   LACP port
                                                        Admin
                                                                Oper
                                                                        Port
                                                                                Port
                                                        key
                                                                Key
          Flags
                   Priority Dev ID
                                                                        Number
                                                                                State
                                                                0x5
Gi0/2
                   32768
                              0c22.b3c1.0000
          SP
                   32768
                              0c22.b3c1.0000
                                                                                 0x3C
Channel group 6 neighbors
Partner's information:
                   LACP port
                                                        Admin
                                                                Oper
                                                                                Port
          Flags
                                                                       Number
                                                                                State
                                                        key
                                                                Key
Gi1/2
                   32768
                              0c6c.00c7.0000
          SP
                                                        0 \times 0
                                                                0x6
                                                                        0x3
                                                                                0x3C
                   32768
                                                                        0 \times 4
ii1/3
          SP
                              0c6c,00c7,0000
                                                        0 \times 0
                                                                0 \times 6
                                                                                0x3C
```

Команды, которые использовались для настойки протокола LACP агрегирования каналов технологии EtherChannel:

- interface range Gig0/0, Gig0/1, Gig2/0 interface range позволяет настраивать несколько интерфейсов одновременно.
- switchport trunk encapsulation dot1q Настраивает интерфейсы на использование протокола 802.1Q для тегирования VLAN в режиме транка. dot1q Протокол тегирования VLAN (используется почти во всех современных сетях).
- switchport mode trunk Переключает интерфейсы в режим trunk.
- **channel-group 1 mode active** создаём группу с номером 1, включаем протокол **LACP** и устанавливаем интерфейсы в активный режим, что означает, что они будут инициировать установление соединения с противоположной стороной.
- Если на конце mode passive -
- no shutdown Включает выбранные интерфейсы, если они были выключены
- **interface port-channel 1** Переходим в конфигурацию логического интерфейса Port-channel 1, который объединяет физические интерфейсы из группы 1.
- **switchport mode trunk** Устанавливает логический интерфейс в режим trunk для передачи трафика нескольких VLAN.
- **switchport trunk allowed vlan all** Разрешает всем VLAN передаваться через этот транковый интерфейс.
- show lacp neighbor проверка работы протокола LACP.

Режим trunk на сетевых коммутаторах используется для передачи трафика нескольких VLAN через один физический или логический интерфейс. Это ключевая технология для работы с виртуальными локальными сетями (VLAN) в корпоративных сетях.

2. Изменяя режим работы групп портов в режиме агрегирования произвольных соседних коммутаторов проверить работоспособность режима агрегации

Мною были выбраны для проверки работоспособности режима агрегации соседние первый и второй коммутаторы.

2.1. Проверим режим работы, когда первый коммутатор находятся в режиме "active", а второй в режиме "passive":

Будем проверять работоспособность с помощью команды: "show etherchannel summary".

Она используется для отображения информации о текущих настройках и состоянии всех конфигураций **EtherChannel** на устройстве.

```
Layer2Switch-1#show etherchannel summary
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
Number of channel-groups in use: 4
Number of aggregators:
Group Port-channel Protocol
                                          Ports

        Po1(SU)
        LACP
        Gi0/0(P)
        Gi0/1(P)

        Po2(SU)
        LACP
        Gi0/2(P)
        Gi0/3(P)

        Po4(SU)
        LACP
        Gi1/0(P)
        Gi1/1(P)

        Po7(SU)
        LACP
        Gi1/2(P)
        Gi1/3(P)

                                                                            Gi2/0(P)
 Layer2Switch-1#
Layer2Switch-2 - PuTTY
                                                                                                  ×
          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
Number of channel-groups in use: 4
Number of aggregators:
Group Port-channel Protocol Ports
        Po1(SU) LACP Gi0/0(P) Gi0/1(P)
Po3(SU) LACP Gi1/0(P) Gi1/1(P)
Po5(SU) LACP Gi0/2(P) Gi0/3(P)
                                                                           Gi2/0(P)
         Po6 (SU)
                            LACP
                                         Gi1/2(P)
                                                           Gi1/3(P)
Layer2Switch-2#
```

Можем видеть, что рядом с портами, принадлежащими каналу 1, который настроен между первым и вторым коммутатором, находится буква P, то есть "bundled in port-channel", что в переводе значит: упакованный в порт-канал.

2.2. В режиме, когда первый и второй коммутаторы находятся в режиме " passive":

С помощью команды "show etherchannel summary" можем видеть, что порты в канале 1 находятся в режиме "suspended", то есть приостановлены.

```
- 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
Number of channel-groups in use: 4
Number of aggregators:
Group Port-channel Protocol

        Po1(SD)
        LACP
        Gi0/0(s)
        Gi0/1(s)

        Po2(SU)
        LACP
        Gi0/2(P)
        Gi0/3(P)

        Po4(SU)
        LACP
        Gi1/0(P)
        Gi1/1(P)

        Po7(SU)
        LACP
        Gi1/2(P)
        Gi1/3(P)

                                                                                   Gi2/0(s)
Laver2Switch-1#
*Dec 12 13:55:19.448: %EC-5-L3DONTBNDL2: Gi0/1 suspended: LACP currently not ena
bled on the remote port.
Layer2Switch-1#
Layer2Switch-2 - PuTTY
                                                                                                           ×
 Dec 12 13:55:17.225: %EC-5-L3DONTBNDL2: Gi0/1 suspended: LACP currently not ena
bled on the remote port.
Layer2Switch-2#show etherchannel summary
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
Number of channel-groups in use: 4
Number of aggregators:
Group Port-channel Protocol Ports

        Po1(SD)
        LACP
        Gi0/0(s)
        Gi0/1(s)

        Po3(SU)
        LACP
        Gi1/0(P)
        Gi1/1(P)

        Po5(SU)
        LACP
        Gi0/2(P)
        Gi0/3(P)

        Po6(SU)
        LACP
        Gi1/2(P)
        Gi1/3(P)

                                                                                   Gi2/0(s)
Layer2Switch-2#
```

Сообщение:

%EC-5-L3DONTBNDL2: Gi0/1 suspended: LACP currently not enabled on the remote port

- Указывает на то, что противоположная сторона (другой коммутатор) не инициирует LACP-сообщения (LACPDU), из-за чего порт переходит в состояние suspended.

2.3.В режиме, когда первый и второй коммутаторы находятся в режиме " active":

На скриншоте видно "running-config" одного порта из канала на обоих устройствах, а также можем видеть букву P, обозначающую корректную работу между коммутаторами.

```
Layer2Switch-1 - PuTTY
                                                                                    \times
Group Port-channel Protocol
                                   Ports
                  LACP Gi0/0(P)
                                                Gi0/1(P)
                                                             Gi2/0(P)
       Po1(SU)
                                             Gi0/3(P)
Gi1/1(P)
                       LACP
       Po2 (SU)
                                  Gi0/2(P)
                                 Gi1/0(P)
Gi1/2(P)
       Po4 (SU)
                        LACP
                        LACP
                                                Gi1/3(P)
       Po7 (SU)
Layer2Switch-1#show running-config Gig2/0
% Invalid input detected at '^' marker.
Layer2Switch-1#show running-config interface Gig2/0
Building configuration...
Current configuration : 161 bytes
interface GigabitEthernet2/0
 switchport trunk encapsulation dot1q
 switchport mode trunk
media-type rj45
negotiation auto
channel-group 1 mode active
Layer2Switch-1#show running-config interface Gig2/0
Layer2Switch-2 - PuTTY
Number of channel-groups in use: 4
Number of aggregators:
Group Port-channel Protocol Ports
                      LACP Gi0/0(P) Gi0/1(P)
LACP Gi1/0(P) Gi1/1(P)
LACP Gi0/2(P) Gi0/3(P)
LACP Gi1/2(P) Gi1/3(P)
      Pol(SU)
                                                            Gi2/0(P)
      Po3 (SU)
      Po5 (SU)
       Po6 (SU)
Layer2Switch-2#show running-config interface Gig2/0
Building configuration...
Current configuration : 161 bytes
interface GigabitEthernet2/0
switchport trunk encapsulation dot1q
switchport mode trunk
media-type rj45
negotiation auto
channel-group 1 mode active
end
Layer2Switch-2#
```

Таким образом, изменяя режим работы групп портов в режиме агрегирования произвольных соседних коммутаторов мы проверили работоспособность режима агрегации в разных условиях.

3. Получить статистику пакетов для портов коммутаторов (nb!: show interfaces stats), результаты сохранить в файл, создать некоторый трафик между различными персональными компьютерами при помощи утилиты ping, сохранить новую статистику (рекомендуется использовать таблицы excel или его opensource аналоги для наглядности)

3.1. Данные с коммутаторов с помощью команды "show interfaces stats" до трафика между различными персональными компьютерами.

GigabitEthernett/06 Pkts In Chars In Pkts Out Chars Out Processor 124 12418 506 39764 Route cache 0	Layer2Switch-1	#show interfaces stats			
Switching path Pkts In Chars In Pkts Out Canyof A Processor 124 14218 506 39764 Route cache 0 0 0 39764 Total 124 14218 506 39764 GigabitEthernet0/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 0 0 0 0 0 Total 103 12537 86 12091 GigabitEthernet0/2 Chars In Pkts Out Chars Out Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 Total 2015 133537,00 101 12768 Switching path Pkts In Chars In Pkts Out Chars Out Switching path Pkts In Chars In Pkts Out Chars Out Switching path </th <th></th> <th></th> <th></th> <th></th> <th></th>					
Processor		Pkts In	Chars In	Pkts Out	Chars Out
Route cache					
Total 124 14218 506 39764 GigabitEthernet0/1 Pkts In Chars In Pkts Out Chars Out Processor 103 12537 86 12091 Route cache 0 0 0 0 Total 103 12537 86 12091 GigabitEthernet0/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 GigabitEthernet0/3 O 0 0 0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163			t		
Gigabit Ethernet0/1 Pkts In Chars In Pkts Out Chars Out Processor 103 12537 86 12091 Route cache 0 0 0 0 Total 103 12537 86 12091 Gigabit Ethernet0/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 Total 2015 133537,00 101 12763 Gigabit Ethernet0/3 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Gigabit Ethernet1/0 0 0 0 0 Switching path Pkts In Chars In Pkts Out Chars Out Foute cache 0 0 0 0 Gigabit Ethernet1/0 0 0 0 0 Switching path </td <td></td> <td></td> <td>t</td> <td></td> <td></td>			t		
Switching path Pkts In Chars In Pkts Out Chars Out Processor 103 12537 86 12091 Route cache 0 0 0 0 Total 103 12537 86 12091 GigabitEthernett0/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 Total 2015 133537,00 101 12763 GigabitEthernett0/3 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 GigabitEthernet1/0 3 15486 90 12208 GigabitEthernet1/0 6 Chars In Pkts Out Chars Out Foute cache 0 0 0 0 Total 166 12163 1038		121	11210	200	37701
Processor 103 12537 86 12091 Route cache 0		Pkts In	Chars In	Pkts Out	Chars Out
Route cache 0 0 0 0 0 0 0 0 0					
Total 103 12537 86 12091 GigabitEthernett//2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 Total 2015 133537,00 101 12763 GigabitEthernett//3 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 GigabitEthernet1/0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out			†		
GigabitEthernet0/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 Total 2015 133537,00 101 12763 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 Route cache 0 0 0 0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total Pkts In Chars In Pkts Out Chars Out Route cache 0 0 0 0 Total 141 15652 90		103	†		
Switching path Pkts In Chars In Pkts Out Chars Out Processor 2015 133537,00 101 12763 Route cache 0 0,00 0 0 Total 2015 133537,00 101 12763 GigabitEthernet0/3 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 GigabitEthernet1/0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 <t< td=""><td></td><td></td><td></td><td></td><td>22072</td></t<>					22072
Processor 2015 133537.00 101 12763 Route cache 0 0,00 0 0 0 0 1 12763 Route cache 0 0,00 0 0 0 0 0 0 1 12763 GigabitEthernet0/3 Switching path Pkts In		Pkts In	Chars In	Pkts Out	Chars Out
Route cache			t		
Total 2015 133537,00 101 12763 GigabitEthernet0/3 Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 GigabitEthernet1/0 139 15486 90 12208 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 Route cache 0 0 0 0 GigabitEthernet1/2 Switching path Pkts In Chars In Pkts Out Chars Out <					_
GigabitEthernet0/3 Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 GigabitEthernet1/0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 GigabitEthernet1/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 145 15665 1032 74655		2015	· · · · · · · · · · · · · · · · · · ·		12763
Switching path Pkts In Chars In Pkts Out Chars Out Processor 139 15486 90 12208 Route cache 0 0 0 0 Total 139 15486 90 12208 GigabitEthernet1/0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 Route cache 0 0 0 0 GigabitEthernet1/2 Switching path Pkts In Pkts Out Chars Out Processor 145 15665 1032 74655 Route cache 0 0 0 0 Switching path <					12.00
Processor		Pkts In	Chars In	Pkts Out	Chars Out
Route cache 0 0 0 0 Total 139 15486 90 12208 GigabitEthernet1/0 Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 Route cache 0 0 0 0 Total 141 15652 90 12188 GigabitEthernet1/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 145 15665 1032 74655 Route cache 0 0 0 0 Total 145 15665 1032 74655 GigabitEthernet1/3			t		
Total 139 15486 90 12208 GigabitEthernet1/0 Chars In Pkts Out Chars Out Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 Route cache 0 0 0 0 Total 141 15652 90 12188 GigabitEthernet1/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 145 15665 1032 74655 Route cache 0 0 0 0 Total 145 15665 1032 74655 GigabitEthernet1/3 Switching path			t		
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Switching path Pkts In Chars In Pkts Out Chars Out Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1		10,	10.00	, ,	12200
Processor 166 17163 1038 75705 Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 Route cache 0 0 0 0 Total 141 15652 90 12188 GigabitEthernet1/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 145 15665 1032 74655 Route cache 0 0 0 0 Total 145 15665 1032 74655 GigabitEthernet1/3 Switching path Pkts In Chars In Pkts Out Chars Out Processor 137 14852 89 12080 Route cache 0 0 0 0 GigabitEthernet2/0		Pkts In	Chars In	Pkts Out	Chars Out
Route cache 0 0 0 0 Total 166 17163 1038 75705 GigabitEthernet1/1 Switching path Pkts In Chars In Pkts Out Chars Out Processor 141 15652 90 12188 Route cache 0 0 0 0 Total 141 15652 90 12188 GigabitEthernet1/2 Switching path Pkts In Chars In Pkts Out Chars Out Processor 145 15665 1032 74655 Route cache 0 0 0 0 0 Total 145 15665 1032 74655	~ .				
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Switching path Pkts In Chars In Pkts Out Chars Out Processor 108 13177 87 12229 Route cache 0 0 0 0 Total 108 13177 87 12229 Port-channel7 Switching path Chars In Pkts Out Chars Out					
Processor 108 13177 87 12229 Route cache 0 0 0 0 Total 108 13177 87 12229 Port-channel7 Switching path Chars In Pkts Out Chars Out		Pkts In	Chars In	Pkts Out	Chars Out
Route cache 0 0 0 0 Total 108 13177 87 12229 Port-channel7 Switching path Chars In Pkts Out Chars Out			t		
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Port-channel7Chars InPkts OutChars Out				_	_
Switching path Pkts In Chars In Pkts Out Chars Out		100			
		Pkts In	Chars In	Pkts Out	Chars Out
11000501 74 12026 0 0	Processor	74	12628	0	0

Route cache	0	0	0	0
Total	74	12628	0	0
Port-channel4	, .	12020		
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	72	11438	0	0
Route cache	0	0	0	0
Total	72	11438	0	0
Port-channel1	72	11130	<u> </u>	- U
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	45	7080	0	0
Route cache	0	0	0	0
Total	45	7080	0	0
Port-channel2	73	7000	0	
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	1008	69540	0	0
Route cache	0	09340	0	0
Total	1008	69540	0	0
1 Olai	1008	09340	0	0
Layer2Switch-2	#show interfaces stats			
GigabitEthernet0/0				
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
Processor	3120	207452	181	21342
Route cache	0	0	0	0
Total	3120	207452	181	21342
GigabitEthernet0/1				
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
Processor	239	24671	162	20114
Route cache	0	0	0	0
Total	239	24671	162	20114
GigabitEthernet0/2				
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
Processor	4162	272799	176	21282
Route cache	0	0	0	0
Total	4162	272799	176	21282
GigabitEthernet0/3				
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
Processor	301	29204	176	21438
Route cache	0	0	0	0
Total	301	29204	176	21438
GigabitEthernet1/0	301		1,3	
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
Processor	273	26999	2113	149950
Route cache	0	0	0	0
Total	273	26999	2113	149950
GigabitEthernet1/1				
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
Processor	274	26994	187	22183
Route cache	0	0	0	0
Total	274	26994	187	22183
GigabitEthernet1/2	27.1		107	==190
Switching path	Pkts in	Chars In	Pkts Out	Chars Out
SWITCHING DAID	1 1 815 111			

Route cache		0	0	0	0
Total		296	28353	2113	150128
GigabitEthernet1/3					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	T KUS III	274	26990	188	22311
Route cache		0	0	0	0
Total		274	26990	188	22311
GigabitEthernet2/0		271	20770	100	22311
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	T RES III	241	24937	166	20626
Route cache		0	0	0	0
Total		241	24937	166	20626
Port-channel6		211	21737	100	20020
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	1 KtS III	139	22754	0	0
Route cache		0	0	0	0
Total		139	22754	0	0
Port-channel5		137	22134	0	0
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
	FKtS III	2097			
Processor		2087	143524	0	0
Route cache		2007	142524	0	0
Total		2087	143524	0	0
Port-channel3	DI		C1 T	DI . O .	CI O
Switching path	Pkts in	1.40	Chars In	Pkts Out	Chars Out
Processor		143	24144	0	0
Route cache		0	0	0	0
Total		143	24144	0	0
Port-channel1					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		1585	112806	0	0
Route cache		0	0	0	0
Total		1585	112806	0	0
T 00 1 1 0					
Layer2Switch-3	#show interfaces	stats			
GigabitEthernet0/0					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		297	28239	2122	150520
Route cache		0	0	0	0
Total		297	28239	2122	150520
GigabitEthernet0/1					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		295	28670	180	21821
Route cache		0	0	0	0
Total		295	28670	180	21821
GigabitEthernet0/2					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		288	27781	2119	150424
Route cache		0	0	0	0
Total		288	27781	2119	150424
GigabitEthernet0/3					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		287	28044	184	22119
11000001	1	201	20077	104	22117

Route cache		0	0	0	0
Total		287	28044	184	22119
GigabitEthernet1/0		207	20011	101	2211)
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	T Kt5 III	0	0	575	44338
Route cache		0	0	0	0
Total		0	0	575	44338
GigabitEthernet1/1		0	0	313	44330
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	1 KtS III	0	0	575	44338
Route cache		0	0	0	0
Total		0	0	575	44338
Port-channel5		0	0	313	44336
	Pkts in		Chars In	Pkts Out	Chars Out
Switching path Processor	rkts III	152	25350	PRIS OUI	
					0
Route cache		152	25250	0	0
Total		152	25350	0	0
Port-channel2	Dista		Ch - ··· T	Dlate O 4	Charrie C. (
Switching path	Pkts in	155	Chars In	Pkts Out	Chars Out
Processor		155	24626	0	0
Route cache		0	0	0	0
Total		155	24626	0	0
T 40 1 1 4					
Layer2Switch-4	#show interface	s stats			
GigabitEthernet0/0					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		4187	274575	194	22934
Route cache		0	0	0	0
Total		4187	274575	194	22934
GigabitEthernet0/1					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		313	30036	171	21118
Route cache		0	0	0	0
Total		313	30036	171	21118
GigabitEthernet0/2					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		4182	273981	169	20944
Route cache		0	0	0	0
Total		4182	273981	169	20944
GigabitEthernet0/3					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		311	29790	169	20862
Route cache		0	0	0	0
Total		311	29790	169	20862
GigabitEthernet1/0					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		0	0	580	44638
Route cache		0	0	0	0
Total		0	0	580	44638
GigabitEthernet1/1					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
<i>U</i> 1	1				

Route cache		0	0	0	0
Total		0	0	581	45070
Port-channel4		-			
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	1 1100 111	2087	143094	0	0
Route cache		0	0	0	0
Total		2087	143094	0	0
Port-channel3		2007	143074	0	
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	1 Kts III	2120	147150	0	0
Route cache	cache	2120	0	0	0
Total	cache	2120	147150	0	0
Total		2120	14/130	0	0
Layer2Switch-5	#show interfa	ices stats			
GigabitEthernet0/0	#SHOW IIICITA	ices stats			
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor	1 KtS III	4219	276255	173	21424
Route cache		0	0	0	0
Total		4219	276255	173	21424
GigabitEthernet0/1	Dl-t- in		C1 I	D1-4 - O-4	Clara Cart
Switching path	Pkts in	212	Chars In	Pkts Out	Chars Out
Processor		312	29928	170	20928
Route cache		0	0	0	0
Total		312	29928	170	20928
GigabitEthernet0/2					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		4181	274139	195	22880
Route cache		0	0	0	0
Total		4181	274139	195	22880
GigabitEthernet0/3					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		312	29918	170	20918
Route cache		0	0	0	0
Total		312	29918	170	20918
GigabitEthernet1/0					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		0	0	584	44884
Route cache		0	0	0	0
Total		0	0	584	44884
GigabitEthernet1/1					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		0	0	584	44884
Route cache		0	0	0	0
Total		0	0	584	44884
Port-channel7					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		2116	145892	0	0
Route cache		0	0	0	0
Total		2116	145892	0	0
Port-channel6					
Switching path	Pkts in		Chars In	Pkts Out	Chars Out
Processor		2107	144672	0	0

Route cache	0	0	0	0
Total	2107	144672	0	0

3.2.Данные с коммутаторов с помощью команды "show interfaces stats" после трафика между различными персональными компьютерами.

	#show interfaces			
Layer2Switch-1	stats			
GigabitEthernet0/0				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	484	45766	3573	252616
Route cache	0	0	0	0
Total	484	45766	3573	252616
GigabitEthernet0/1				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	460	44199	293	34511
Route cache	0	0	0	0
Total	460	44199	293	34511
GigabitEthernet0/2				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	8031	526057	358	40203
Route cache	0	0	0	0
Total	8031	526057	358	40203
GigabitEthernet0/3				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	665	61730	434	44766
Route cache	0	0	0	0
Total	665	61730	434	44766
GigabitEthernet1/0				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	570	52721	4031	283479
Route cache	0	0	0	0
Total	570	52721	4031	283479
GigabitEthernet1/1				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	666	59804	428	45140
Route cache	0	0	0	0
Total	666	59804	428	45140
GigabitEthernet1/2				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	581	53997	4023	282981
Route cache	0	0	0	0
Total	581	53997	4023	282981
GigabitEthernet1/3				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	643	58532	450	46606
Route cache	0	0	0	0
Total	643	58532	450	46606
GigabitEthernet2/0				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	463	44289	294	34649

Route cache	0	0	0	0
Total	463	44289	294	34649
Port-channel7	103	1120)	271	31013
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor Processor	268	43720	0	0
Route cache	0	0	0	0
Total	268	43720	0	0
Port-channel4	200	43720		0
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	265	42704	0	0
Route cache	0	0	0	0
Total	265	42704	0	0
	203	42704	0	0
Port-channel1				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	336	54016	0	0
Route cache	0	0	0	0
Total	336	54016	0	0
Port-channel2				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	3927	268492	0	0
Route cache	0	0	0	0
Total	3927	268492	0	0
	#show interfaces			
Layer2Switch-2	stats			
GigabitEthernet0/0				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	7024	460494	313	35748
Route cache	0	0	0	0
Total	7024	460494	313	35748
GigabitEthernet0/1				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	463	44459	293	34443
Route cache	0	0	0	0
Total	463	44459	293	34443
GigabitEthernet0/2	100	11.109		01110
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	7837	510755	307	35611
Route cache	0	0	0	0
Total	7837	510755	307	35611
GigabitEthernet0/3	1031	310733	301	33011
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	744	63308	314	36306
Route cache	0	03308	0	0
Total	744	63308	314	36306
	/44	03308	314	30300
GigabitEthernet1/0	Dista In	Chars In	Dista Out	Chara Out
Switching path Processor	Pkts In		Pkts Out	Chars Out
Processor	497	46787	3969	278819
Route cache	0	0	0	0
Total	497	46787	3969	278819
GigabitEthernet1/1				

Switching path	Pkts In		Chars In	Pkts Out	Chars Ou
Processor	5	500	46936	433	43
Route cache		0	0	0	
Total	5	500	46936	433	43
GigabitEthernet1/2					
Switching path	Pkts In		Chars In	Pkts Out	Chars O
Processor	5	519	48013	3968	278
Route cache		0	0	0	
Total	5	519	48013	3968	278
GigabitEthernet1/3					
Switching path	Pkts In		Chars In	Pkts Out	Chars O
Processor	4	198	46382	435	44
Route cache		0	0	0	
Total	4	198	46382	435	44.
GigabitEthernet2/0					
Switching path	Pkts In		Chars In	Pkts Out	Chars O
Processor	+	165	44725	297	34
Route cache		0	0	0	
Total	4	165	44725	297	34
Port-channel6					
Switching path	Pkts In		Chars In	Pkts Out	Chars O
Processor	•	258	41924	0	Chars of
Route cache	cache	250	0	0	
Total		258	41924	0	
Port-channel5	2	230	41724	0	
Switching path	Pkts In		Chars In	Pkts Out	Chars O
Processor	+	934	269624	0	Chars Ot
Route cache	cache	734	0	0	
Total	+	934	269624	0	
	39	134	209024	0	
Port-channel3	Pkts In		Chars In	Dista Out	Chara Or
Switching path	+	265		Pkts Out 0	Chars O
Processor	2	265	43984		
Route cache		0	42004	0	
Total	2	265	43984	0	
Port-channel1	DI. I		CI I	Di e O e	CI O
Switching path	Pkts In	C1.1	Chars In	Pkts Out	Chars O
Processor	36	511	256664	0	
Route cache		0	0	0	
Total	36	511	256664	0	
	#show interfaces				
Layer2Switch-3					
•	stats				
GigabitEthernet0/0	Disto In		Chomo I	Dista Out	Chama Ca
Switching path	Pkts In	(10	Chars In	Pkts Out	Chars O
Processor	6	519	57223	4082	287
Route cache		0	0	0	
Total	6	519	57223	4082	287
GigabitEthernet0/1					~:
Switching path	Pkts In		Chars In	Pkts Out	Chars O
Processor	7	768	66362	386	42
Route cache		0	0	0	
Total	1 7	768	66362	386	42

GigabitEthernet0/2				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	512	47569	3976	279421
Route cache	0	0	0	0
Total	512	47569	3976	279421
GigabitEthernet0/3				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	525	48910	424	43542
Route cache	0	0	0	0
Total	525	48910	424	43542
GigabitEthernet1/0				
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	88	7774	1218	91293
Route cache	0	0	0	0
Total	88	7774	1218	91293
GigabitEthernet1/1		,,,,	1210)1 2)3
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	124	10656	1225	91843
Route cache	0	0	0	0
Total	124	10656	1225	91843
Port-channel5	124	10030	1223	71043
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	274	45190	0	0
Route cache	0	43190	0	0
Total	274	45190	0	0
	274	43190	U	U
Port-channel2	Dl I	Clara II	Dist. Osst	Clara and Orași
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	276	44044	0	0
Route cache	0	0	0	0
Total	276	44044	0	0
Layer2Switch-4	#show interfaces stats			
	#snow interfaces stats			
GigabitEthernet0/0	Di . I	Cl. I	DI . O .	CI O (
Switching path	Pkts In	Chars In	Pkts Out	Chars Out
Processor	7885	514931	344	38543
Route cache	0	0	0	0
Total	5005	51.4001	244	20542
	7885	514931	344	38543
GigabitEthernet0/1				
GigabitEthernet0/1 Switching path	Pkts In	Chars In	Pkts Out	Chars Out
GigabitEthernet0/1 Switching path Processor	Pkts In 749	Chars In 66646	Pkts Out 382	Chars Out 41580
GigabitEthernet0/1 Switching path Processor Route cache	Pkts In 749	Chars In 66646	Pkts Out 382 0	Chars Out 41580 0
GigabitEthernet0/1 Switching path Processor Route cache Total	Pkts In 749	Chars In 66646	Pkts Out 382	Chars Out 41580
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2	Pkts In 749 0 749	Chars In 66646 0 66646	Pkts Out 382 0 382	Chars Out 41580 0 41580
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path	Pkts In 749 0 749 Pkts In	Chars In 66646 0 66646 Chars In	Pkts Out	Chars Out 41580 0 41580 Chars Out
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor	Pkts In 749 0 749	Chars In 66646 0 66646	Pkts Out 382 0 382	Chars Out 41580 0 41580
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor Route cache	Pkts In 749 0 749 Pkts In 7759	Chars In 66646 0 66646 Chars In 505637	Pkts Out	Chars Out 41580 0 41580 Chars Out 34963 0
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor	Pkts In 749 0 749 Pkts In 7759	Chars In 66646 0 66646 Chars In 505637	Pkts Out 382 0 382 Pkts Out 296	Chars Out 41580 0 41580 Chars Out 34963
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor Route cache	Pkts In 749 0 749 Pkts In 7759	Chars In 66646 0 66646 Chars In 505637	Pkts Out	Chars Out 41580 0 41580 Chars Out 34963 0
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor Route cache Total	Pkts In 749 0 749 Pkts In 7759	Chars In 66646 0 66646 Chars In 505637	Pkts Out	Chars Out 41580 0 41580 Chars Out 34963 0
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor Route cache Total GigabitEthernet0/3	Pkts In 749 0 749 Pkts In 7759 0 7759	Chars In 66646 0 66646 Chars In 505637 0 505637	Pkts Out 382 0 382 Pkts Out 296 0 296	Chars Out 41580 0 41580 Chars Out 34963 0 34963
GigabitEthernet0/1 Switching path Processor Route cache Total GigabitEthernet0/2 Switching path Processor Route cache Total GigabitEthernet0/3 Switching path	Pkts In 749 0 749 Pkts In 7759 0 7759 Pkts In	Chars In 66646 0 66646 Chars In 505637 0 505637 Chars In	Pkts Out	Chars Out 41580 0 41580 Chars Out 34963 0 34963 Chars Out

GigabitEthernet1/0					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		94	7546	1167	87085
Route cache		0	0	0	0
Total		94	7546	1167	87085
GigabitEthernet1/1					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		54	4374	1161	86559
Route cache		0	0	0	0
Total		54	4374	1161	86559
Port-channel4					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		3883	265512	0	0
Route cache		0	0	0	0
Total		3883	265512	0	0
Port-channel3			200012	<u> </u>	<u> </u>
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor Processor	1 KtS III	4036	277654	0	0
Route cache cache		0	0	0	0
Total		4036	277654	0	0
Total		4030	211034	0	0
T 00 11 1 5					
Layer2Switch-5	#show interfac	es stats			
GigabitEthernet0/0					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		7863	514261	338	38507
Route cache		0	0	0	0
Total		7863	514261	338	38507
GigabitEthernet0/1					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		794	69686	369	40608
Route cache	cache		0	0	0
Total		794	69686	369	40608
GigabitEthernet0/2					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		7707	502213	320	36417
Route cache		0	0	0	0
Total		7707	502213	320	36417
GigabitEthernet0/3					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		760	64168	295	34404
Route cache		0	0	0	0
Total		760	64168	295	34404
GigabitEthernet1/0					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor	1	56	4638	1170	87053
Route cache	†	0	0	0	0
Total		56	4638	1170	87053
GigabitEthernet1/1			1030	1170	07033
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor	I Ktts III	71	6210	1194	89167
Route cache	+	0	0210	0	0
	+				†
Total		71	6210	1194	89167

Port-channel7					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		3887	266472	0	0
Route cache		0	0	0	0
Total		3887	266472	0	0
Port-channel6					
Switching path	Pkts In		Chars In	Pkts Out	Chars Out
Processor		3996	273090	0	0
Route cache		0	0	0	0
Total		3996	273090	0	0

3.3. Разница между ДО и ПОСЛЕ

Разница total между ДО и ПОСЛЕ

	Разница total между ДО и ПОСЛЕ				
Layer2Switch-1	Pkts In	Chars In	Pkts Out	Chars Out	
GigabitEthernet0/0					
Total	360	31548	3067	212852	
GigabitEthernet0/1					
Total	357	31662	207	22420	
GigabitEthernet0/2					
Total	6016	392520	257	27440	
GigabitEthernet0/3					
Total	526	46244	344	32558	
GigabitEthernet1/0					
Total	404	35558	2993	207774	
GigabitEthernet1/1					
Total	525	44152	338	32952	
GigabitEthernet1/2					
Total	436	38332	2991	208326	
GigabitEthernet1/3					
Total	506	43680	361	34526	
GigabitEthernet2/0					
Total	355	31112	207	22420	
Port-channel7					
Total	194	31092	0	0	
Port-channel4					
Total	193	31266	0	0	
Port-channel1					
Total	291	46936	0	0	
Port-channel2					
Total	2919	198952	0	0	
Layer2Switch-2					
GigabitEthernet0/0					
Total	3904	253042	132	14406	
GigabitEthernet0/1					
Total	224	19788	131	14329	
GigabitEthernet0/2					
Total	3675	237956	131	14329	
GigabitEthernet0/3					
Total	443	34104	138	14868	

GigabitEthernet1/0			1	
Total	224	19788	1856	128869
GigabitEthernet1/1				
Total	226	19942	246	21591
GigabitEthernet1/2		-,,		
Total	223	19660	1855	128447
GigabitEthernet1/3				
Total	224	19392	247	22013
GigabitEthernet2/0				
Total	224	19788	131	14329
Port-channel6				
Total	119	19170	0	0
Port-channel5				
Total	1847	126100	0	0
Port-channel3				
Total	122	19840	0	0
Port-channel1		-	-	
Total	2026	143858	0	0
Layer2Switch-3				
GigabitEthernet0/0				
Total	322	28984	1960	136867
GigabitEthernet0/1	322	20704	1700	130007
Total	473	37692	206	21061
GigabitEthernet0/2	473	31072	200	21001
Total	224	19788	1857	128997
GigabitEthernet0/3	224	17700	1057	120///
Total	238	20866	240	21423
GigabitEthernet1/0	230	20000	2-10	21423
Total	88	7774	643	46955
		,,,,	0.5	10,00
GigabitEthernet1/1	124	10656	650	47505
Total Port-channel5	124	10030	030	47303
Total	122	10940	0	0
Port-channel2	122	19840	0	0
Total	121	19418	0	0
1 Otal	141	13410	U	U
Layer2Switch-4				
•	+			
GigabitEthernet0/0	2600	240256	150	15600
Total	3698	240356	150	15609
GigabitEthernet0/1 Total	436	36610	211	20462
	430	30010	211	20462
GigabitEthernet0/2	2577	221656	107	14010
Total CigabitEthornot0/3	3577	231656	127	14019
GigabitEthernet0/3 Total	449	34378	128	14096
	449	343/8	128	14090
GigabitEthernet1/0	94	7516	507	40447
Total	94	7546	587	42447
GigabitEthernet1/1	E 1	1271	500	41 400
Total Port sharmel4	54	4374	580	41489
Port-channel4				

Total	1796	122418	0	0
Port-channel3				
Total	1916	130504	0	0
Layer2Switch-5				
GigabitEthernet0/0				
Total	3644	238006	165	17083
GigabitEthernet0/1				
Total	482	39758	199	19680
GigabitEthernet0/2				
Total	3526	228074	125	13537
GigabitEthernet0/3				
Total	448	34250	125	13486
GigabitEthernet1/0				
Total	56	4638	586	42169
GigabitEthernet1/1				
Total	71	6210	610	44283
Port-channel7				
Total	1771	120580	0	0
Port-channel6				
Total	1889	128418	0	0

4. Сохранить файлы конфигураций устройств в виде набора файлов с именами, соответствующими именам устройств

Т.к. у нас 5 коммутаторов, соответственно у нас 5 файлов конфигурации устройств, которые я прилагаю вместе с отчётом. Названия идентичны названиям коммутаторов в системе и подписаны вначале как "laba_3".