



Globo-NetworkAPI

Network as a Service
na Globo.com

GRUPO GLOBO

TV ABERTA



PAY TV



INTERNET



FILMES



REVISTAS



JORNAIS



RÁDIOS



NOVOS NEGÓCIOS



MÚSICA





Globo.com

Globo.com

- ▶ 2 Datacenters
 - ▶ Rio de Janeiro (Datacenter Principal)
 - ▶ São Paulo (POP)
- ▶ Mais de 1 Tbps de banda
- ▶ Mais de 2000 Servidores

Novo DataCenter no Rio

- ▶ Capacidade para mais de 10000 servidores



Objetivos rede DC

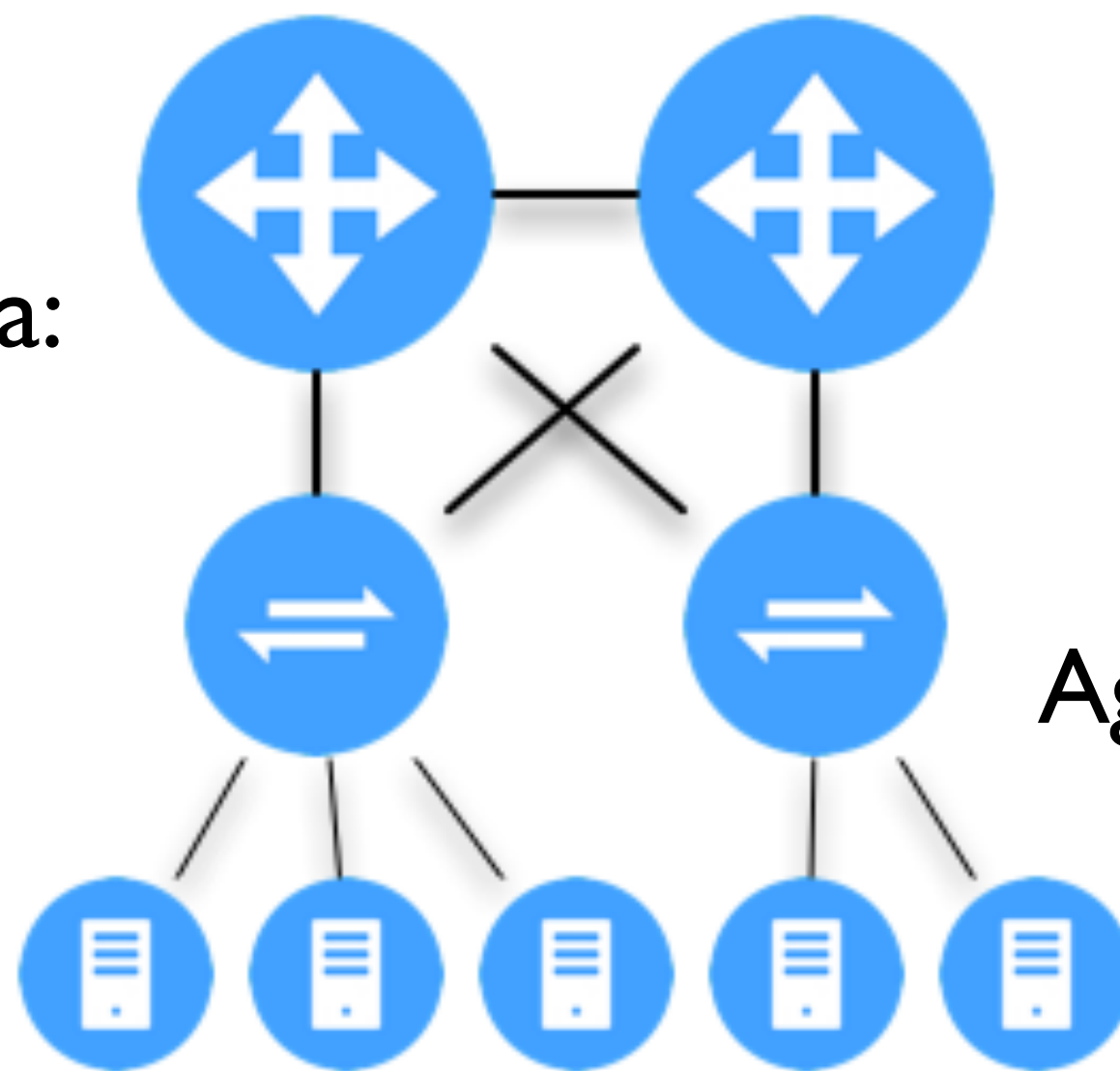
- ▶ Eficiência
- ▶ Flexibilidade
- ▶ Escalabilidade
- ▶ Robustez

Pontos de atenção

- ▶ Compatibilidade entre tecnologias utilizadas
- ▶ Maturidade das tecnologias
- ▶ Pontos de falha
- ▶ Performance Hardware x Software
- ▶ Troubleshooting
- ▶ Automação
- ▶ Segurança

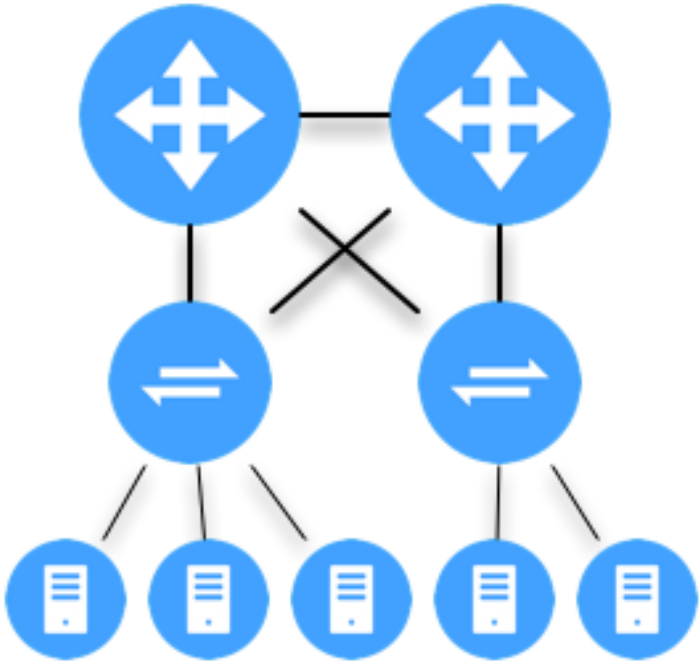


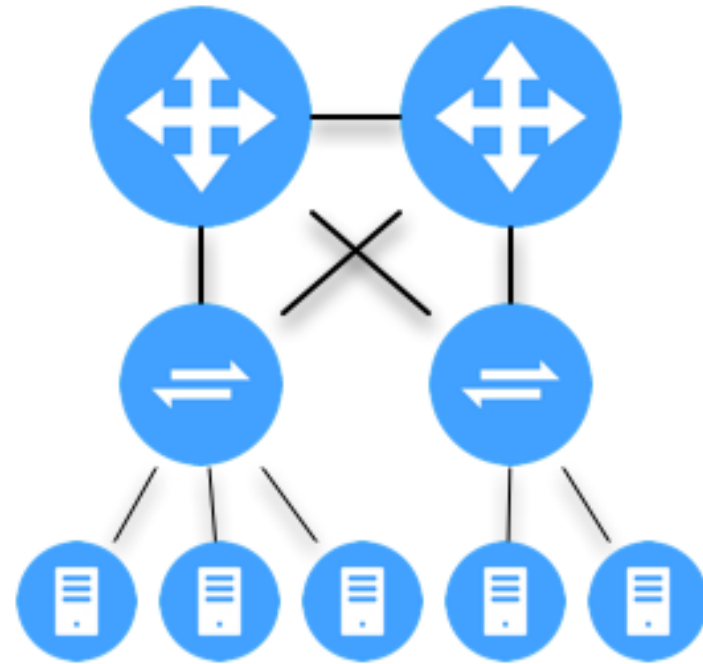
Ponto de falha:
STP
MC-LAG



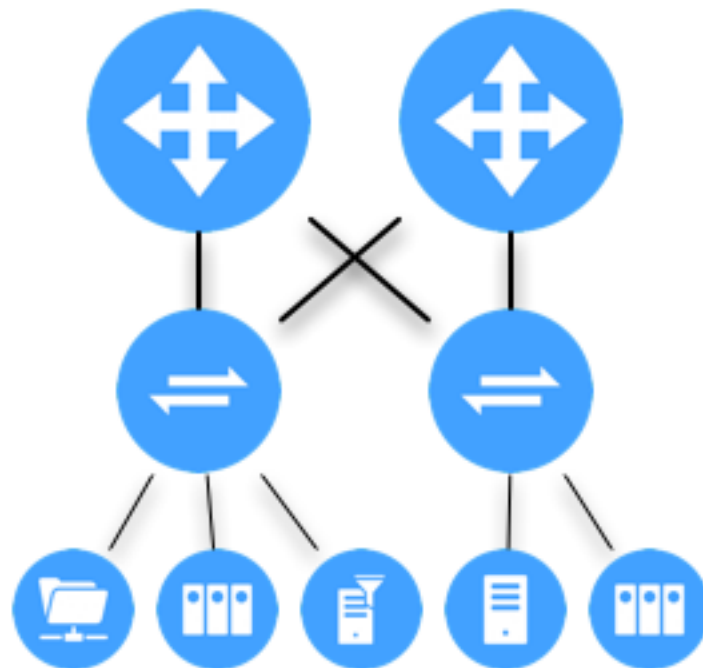
L3 Core

L2
Agregação/Acesso

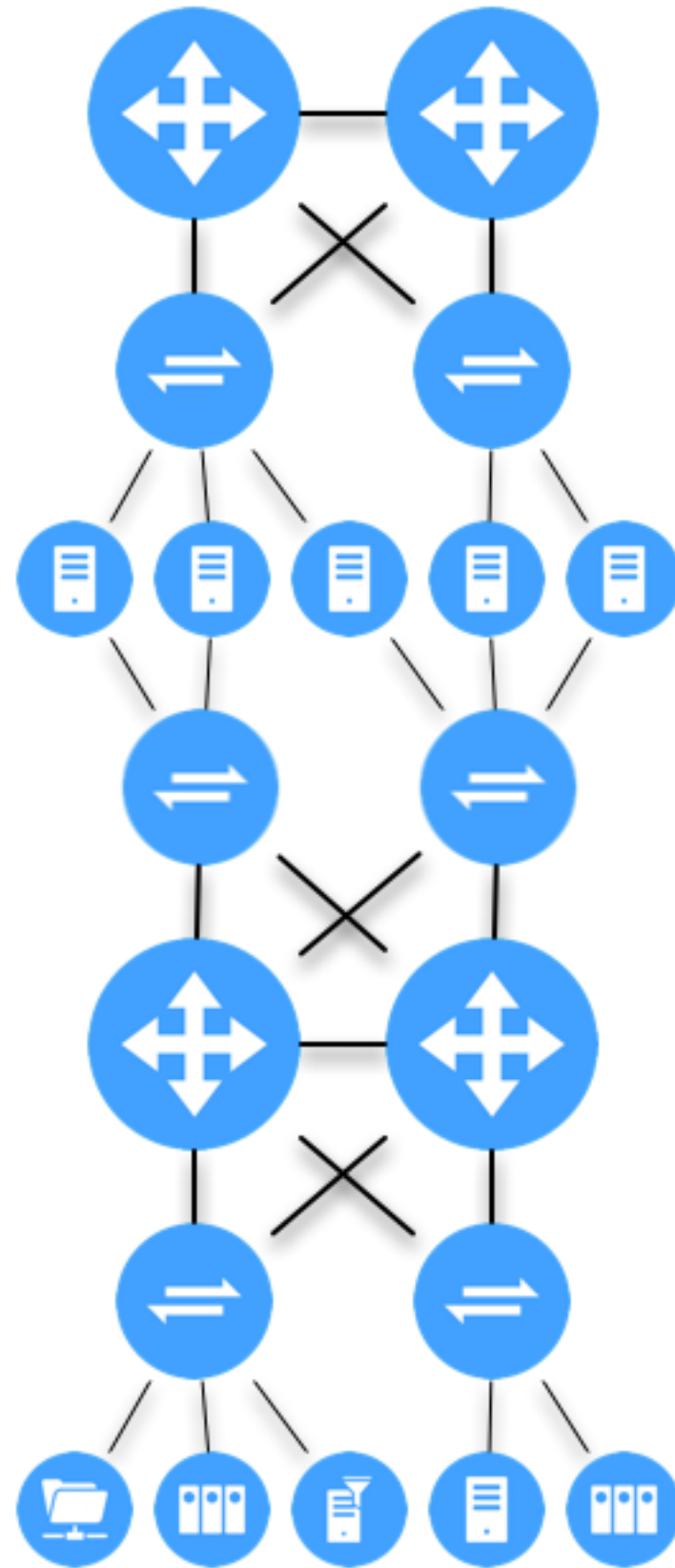




FE
4096 Vlans

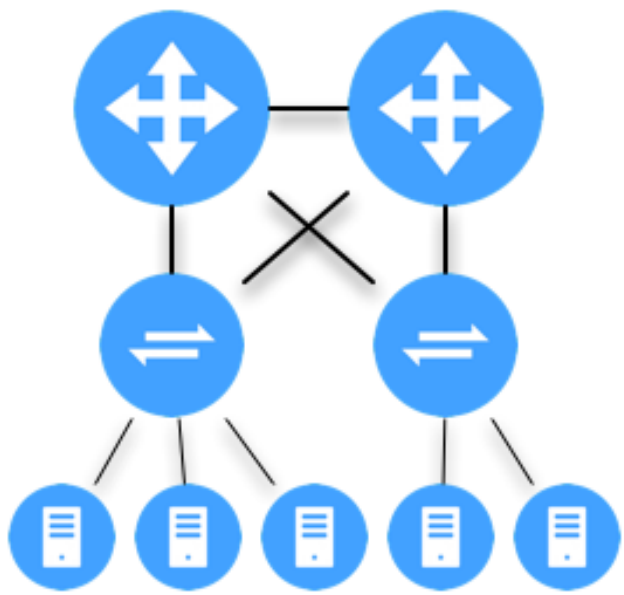


BE
4096 Vlans

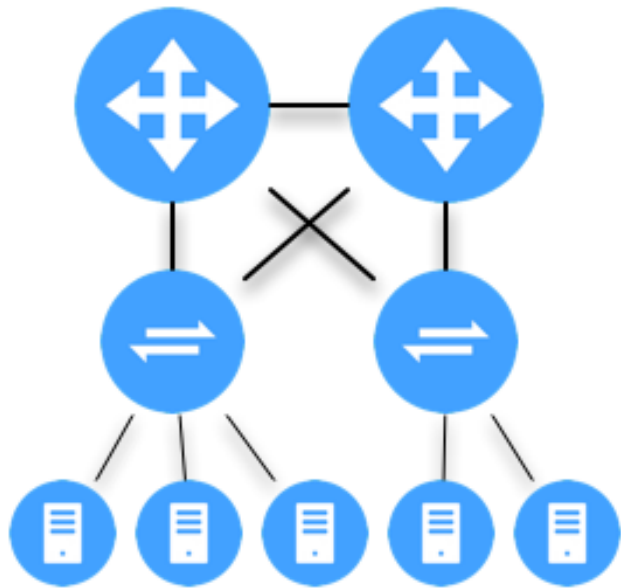


FE
4096 Vlans

BE
4096 Vlans



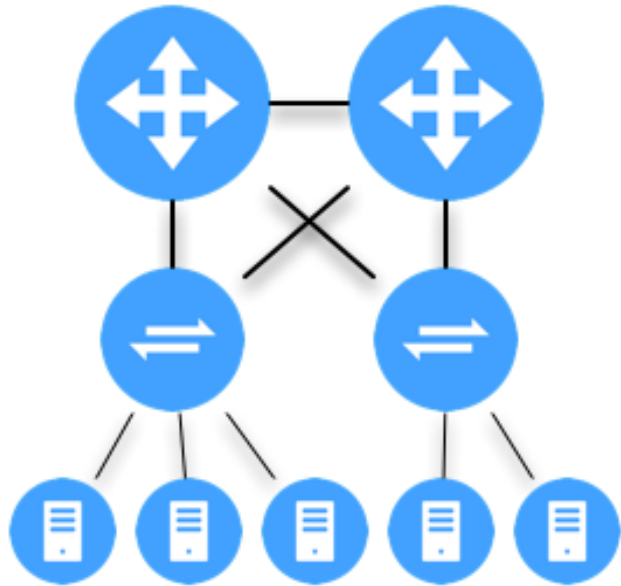
- ▶ L3 Core - Switches Top of Rack
 - ▶ 2 x (48x10G + 4x40G)
 - ▶ MC-LAG
- ▶ Switches Acesso
 - ▶ Virtual Switches
 - ▶ Xen Servers 2x10Gbps (bond)

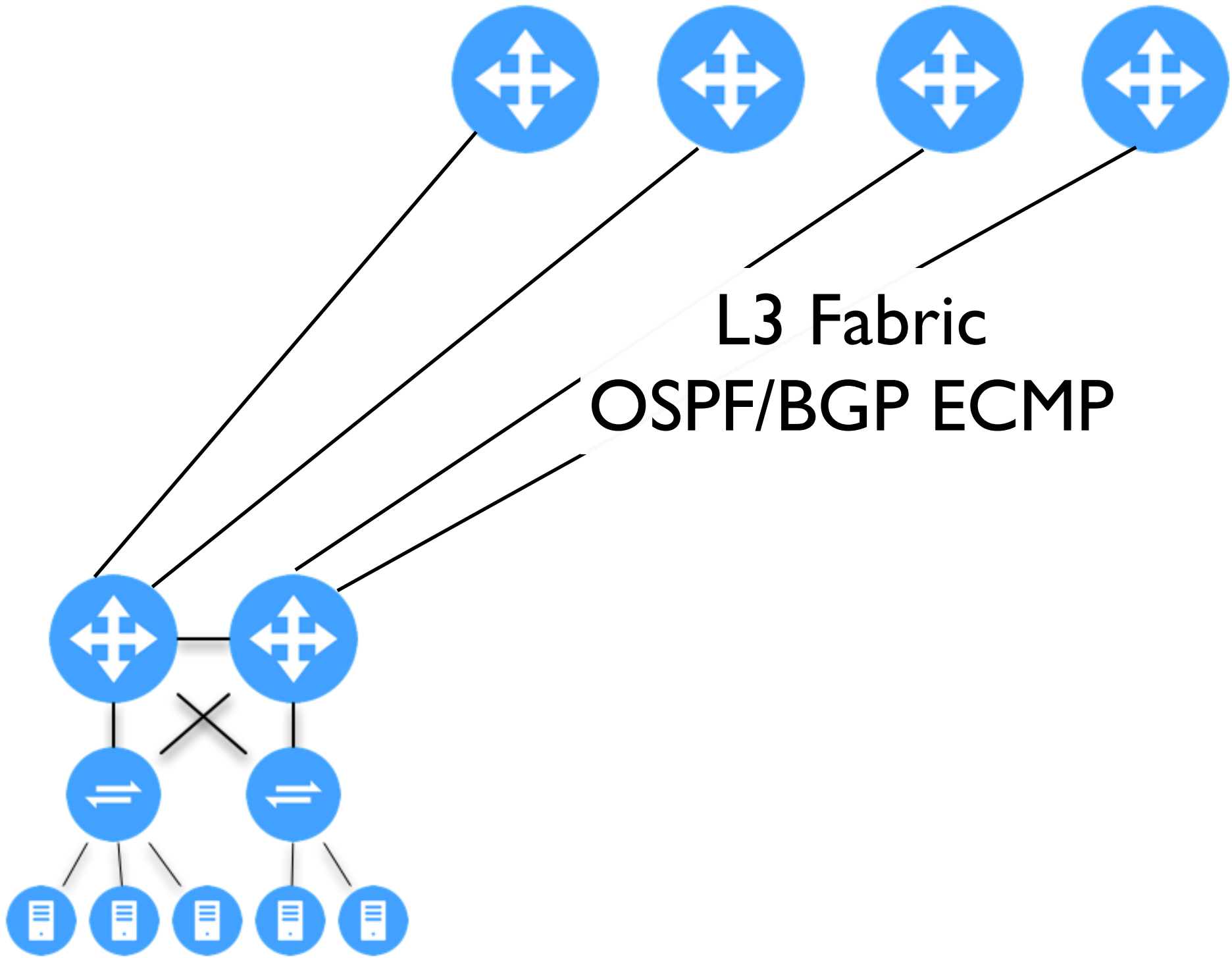


- ▶ Servidores / VM's
- ▶ Ambientes FE, BE etc = VRF's
 - ▶ 4096 Vans compartilhadas

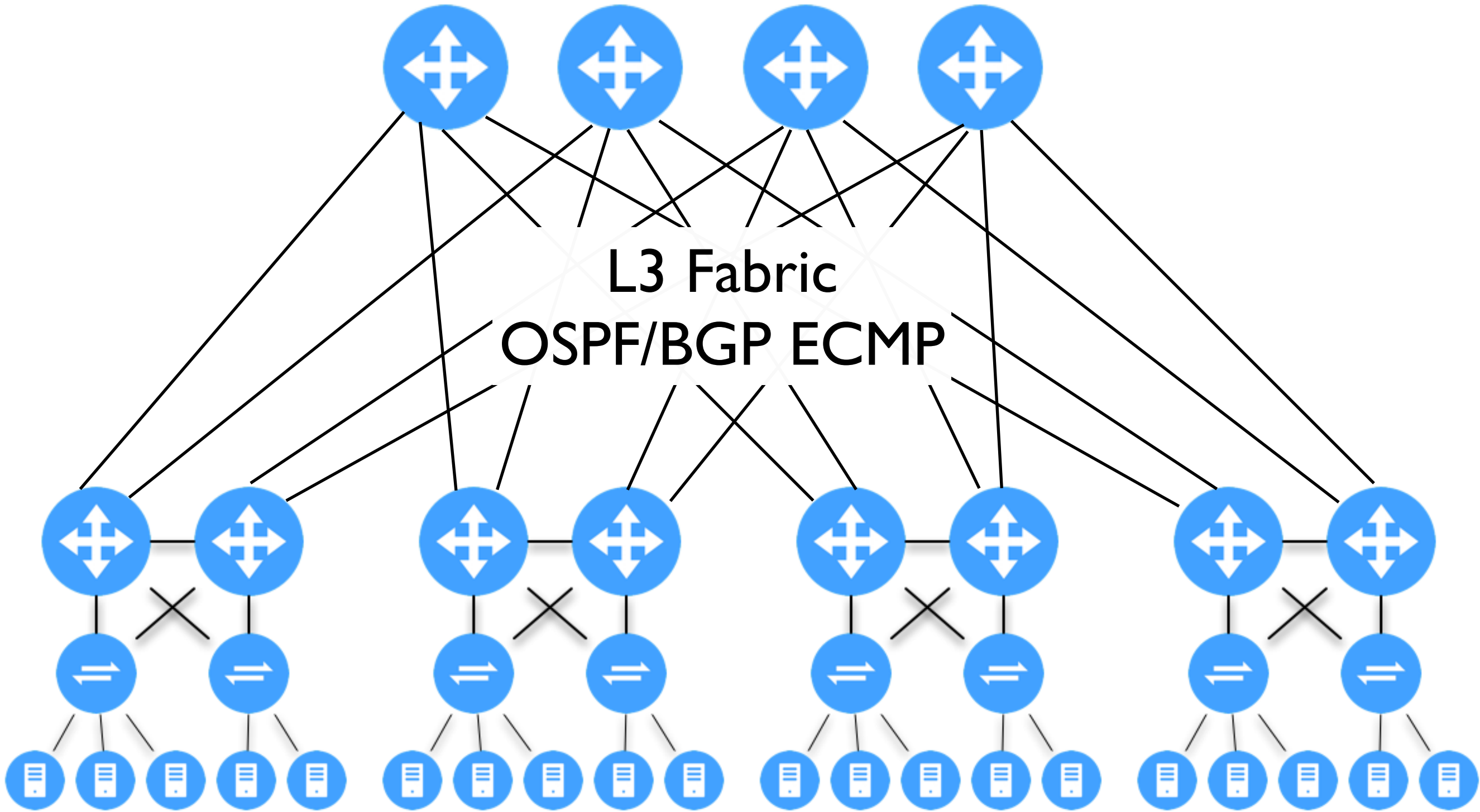
L3 Fabric

OSPF/BGP ECMP





L3 Fabric
OSPF/BGP ECMP



Fabric L3

- ▶ Modular
- ▶ Padronizada
- ▶ Alta capacidade e flexibilidade
- ▶ 160 Gbps entre racks (5:1)
- ▶ ~1 Tbps intra-rack line-rate
- ▶ 20 Gbps por servidor

Globo-NetworkAPI

Network As a Service

- ▶ Network as a service (NaaS) fornece recursos de rede de forma automatizada
- ▶ Cloud Computing

80%

- ▶ Das falhas são causadas por pessoas ou processos (1)
- ▶ Da energia é gasta para resolver 20% dos problemas

Motivação

Facilitar o gerenciamento de redes (dia a dia)

WebUI



DataBase



Orquestra



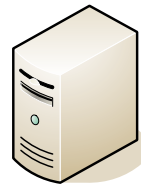
WebUI



DataBase



WebUI

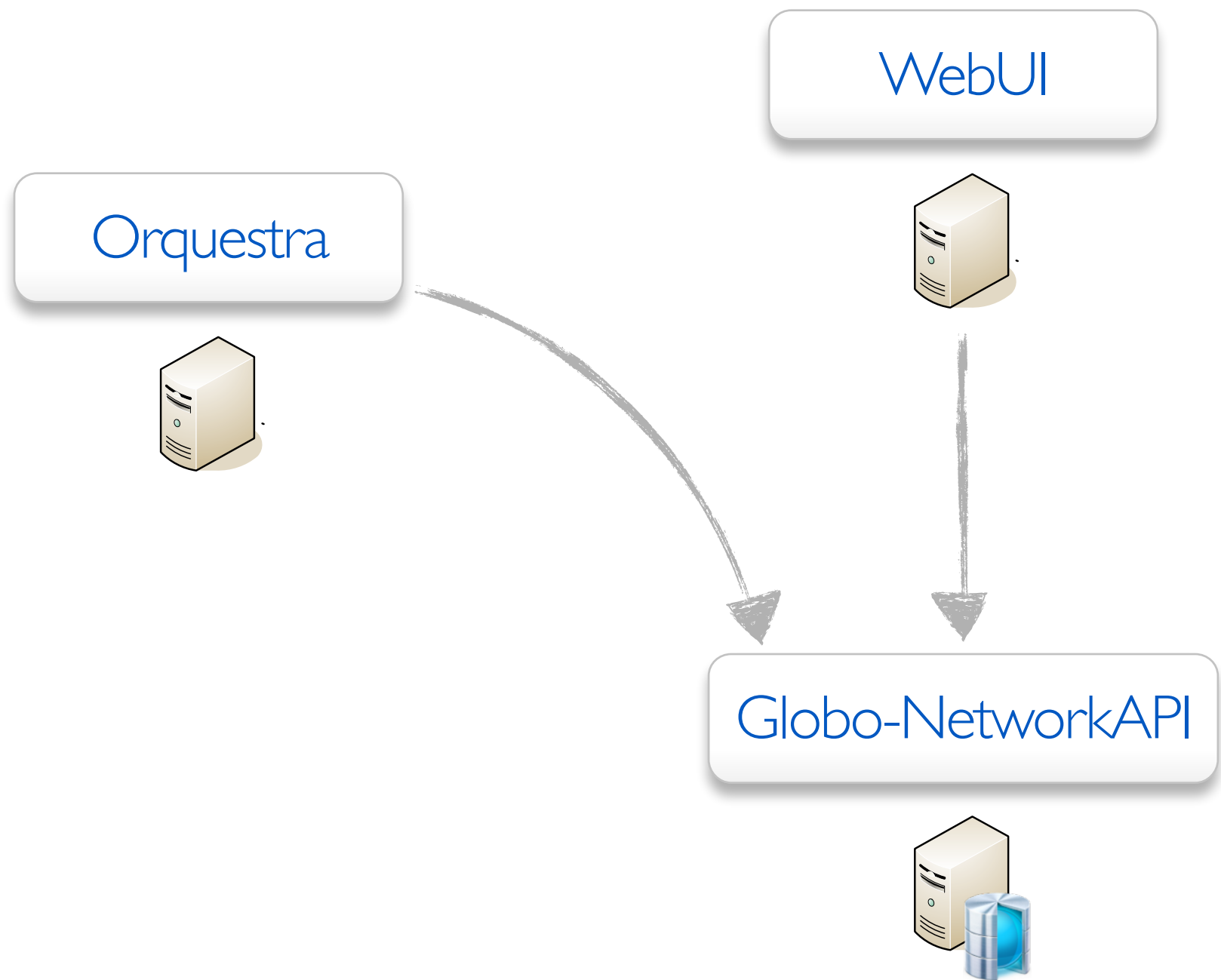


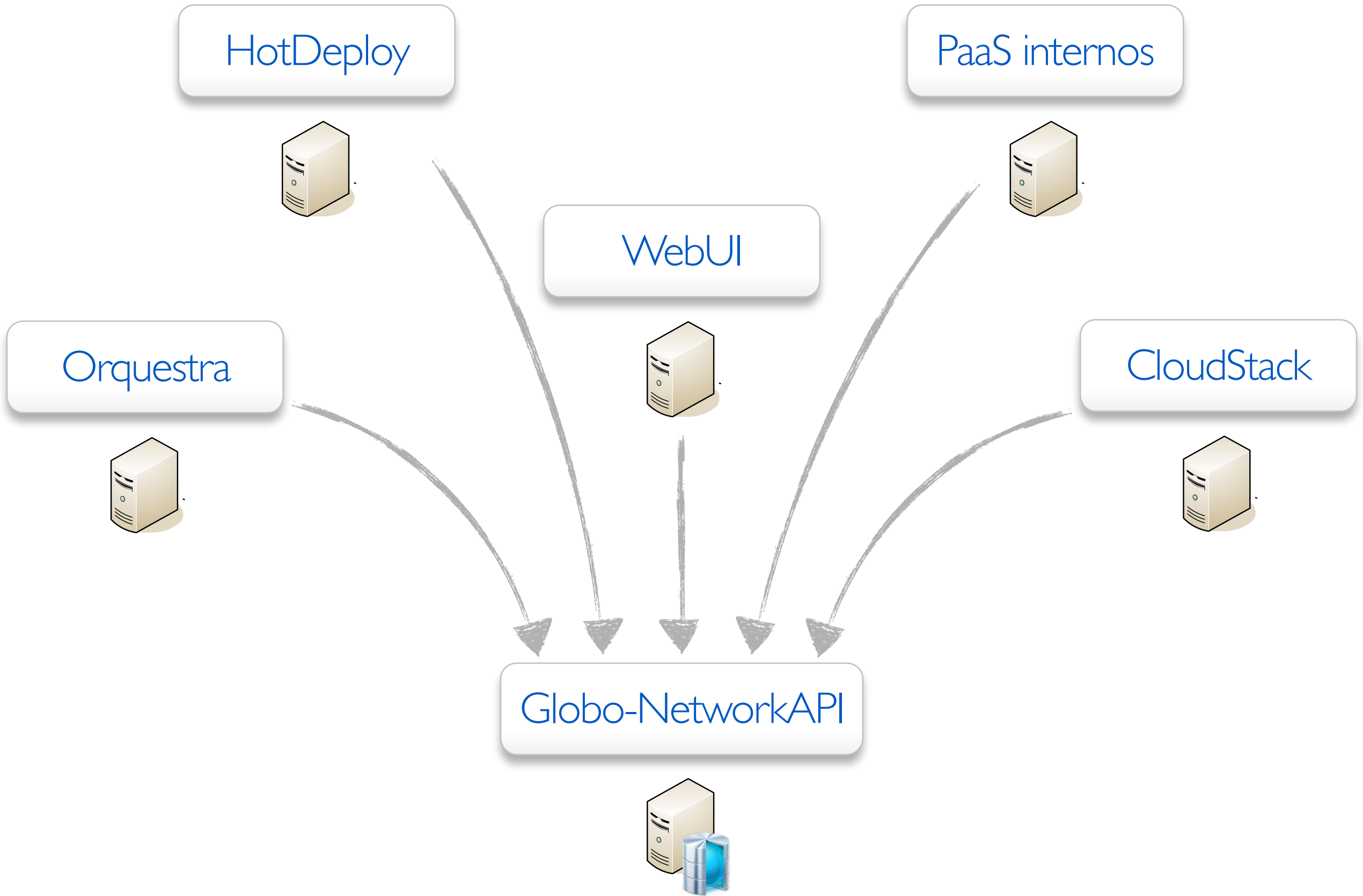
Orquestra



Globo-NetworkAPI







HotDeploy



PaaS internos



WebUI



Orquestra



CloudStack



- ▶ Ponto único de acesso ao banco de dados
- ▶ Permissionamento
- ▶ Log de eventos

Globo-NetworkAPI



Globo-NetworkAPI



- ▶ Ponto único de acesso ao banco de dados
- ▶ Permissionamento
- ▶ Log de eventos

Globo-NetworkAPI



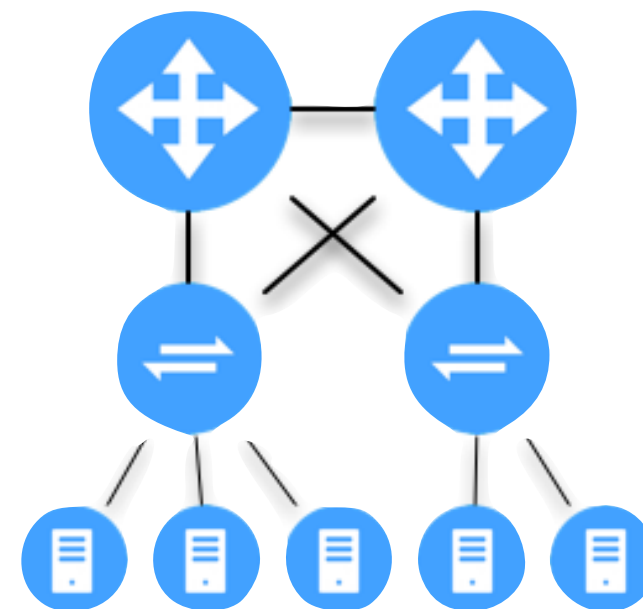
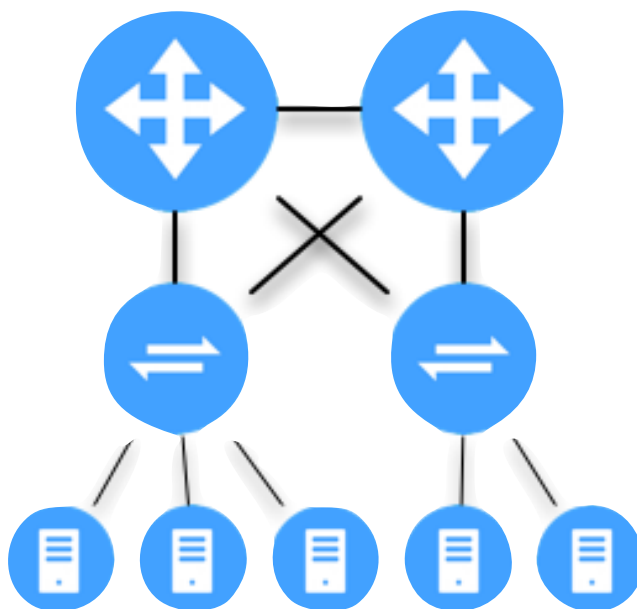
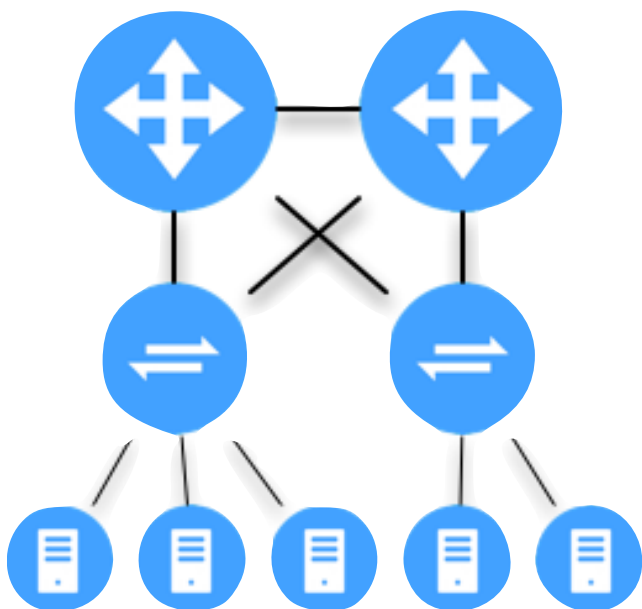
DataBase



Globo-NetworkAPI



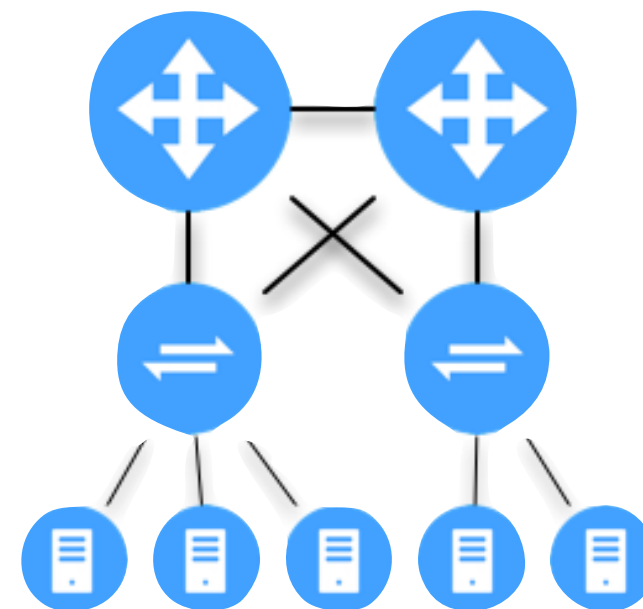
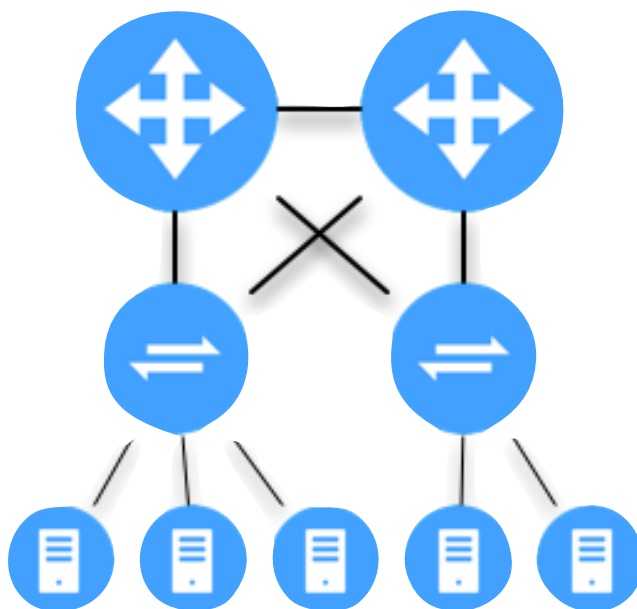
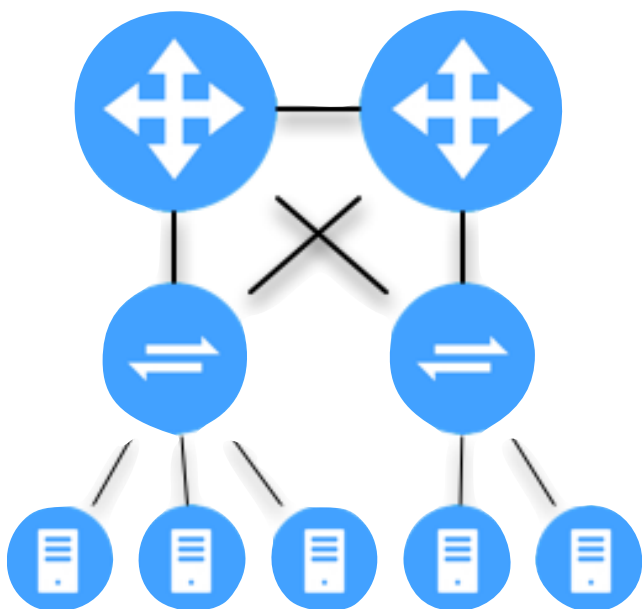
DataBase



Globo-NetworkAPI



DataBase



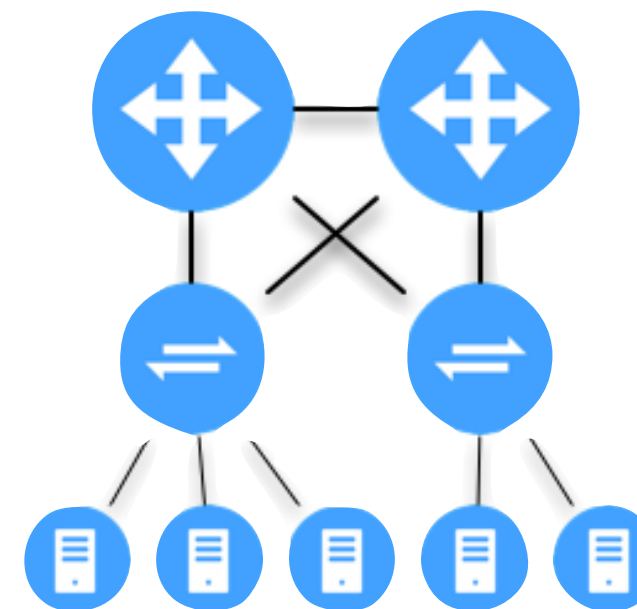
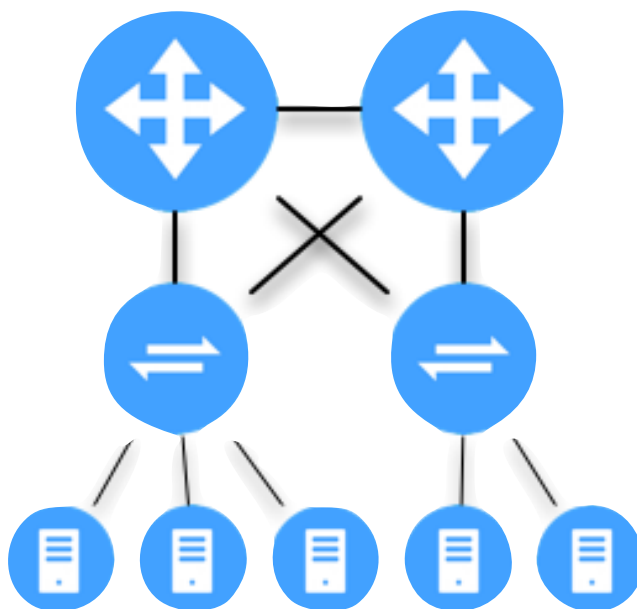
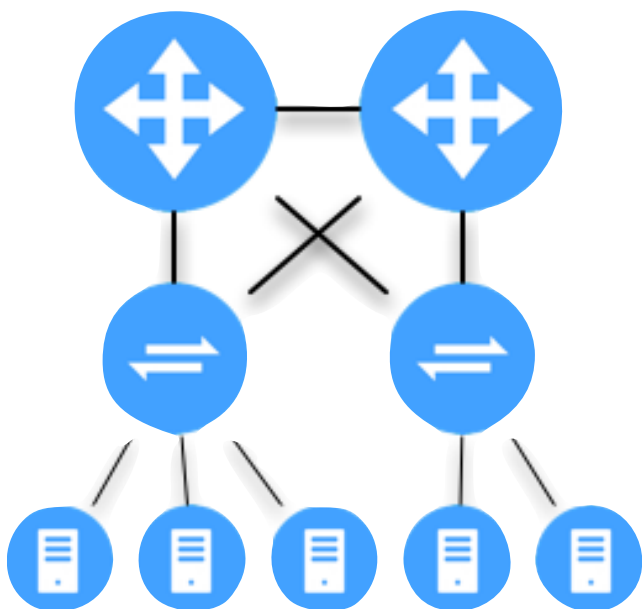
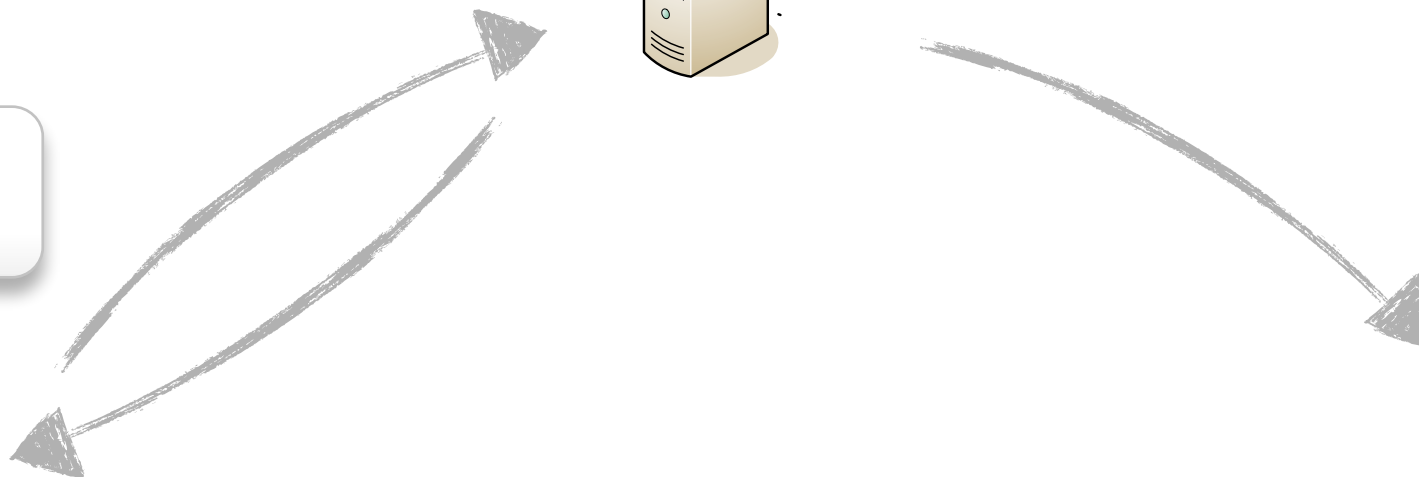
Globo-NetworkAPI



DataBase



Scripts



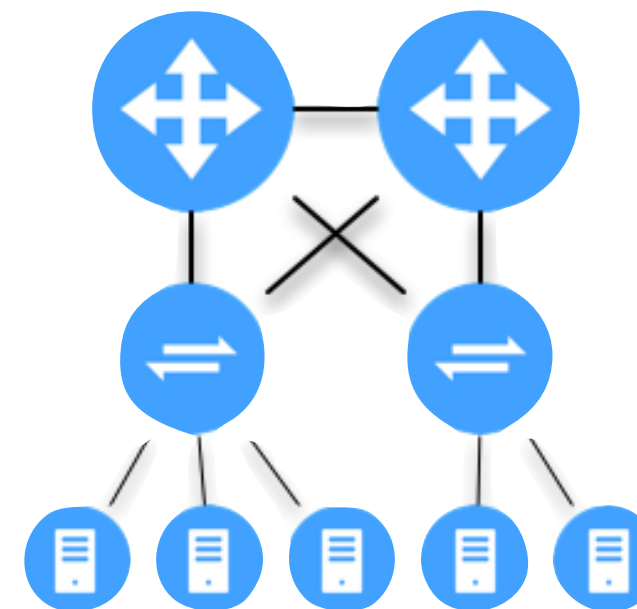
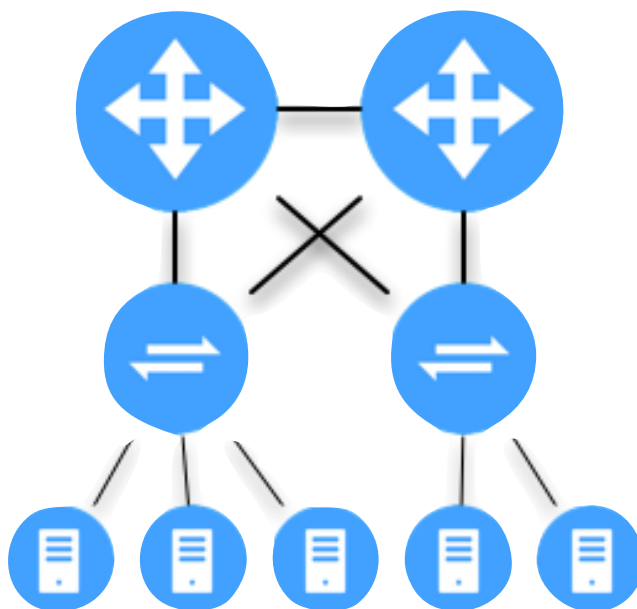
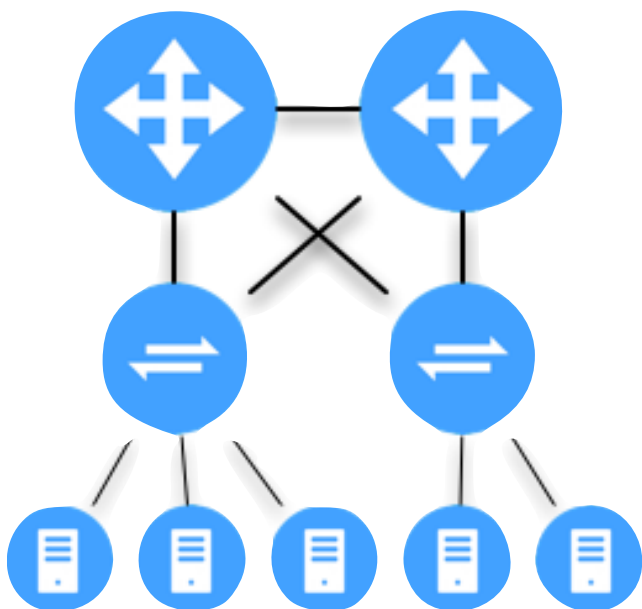
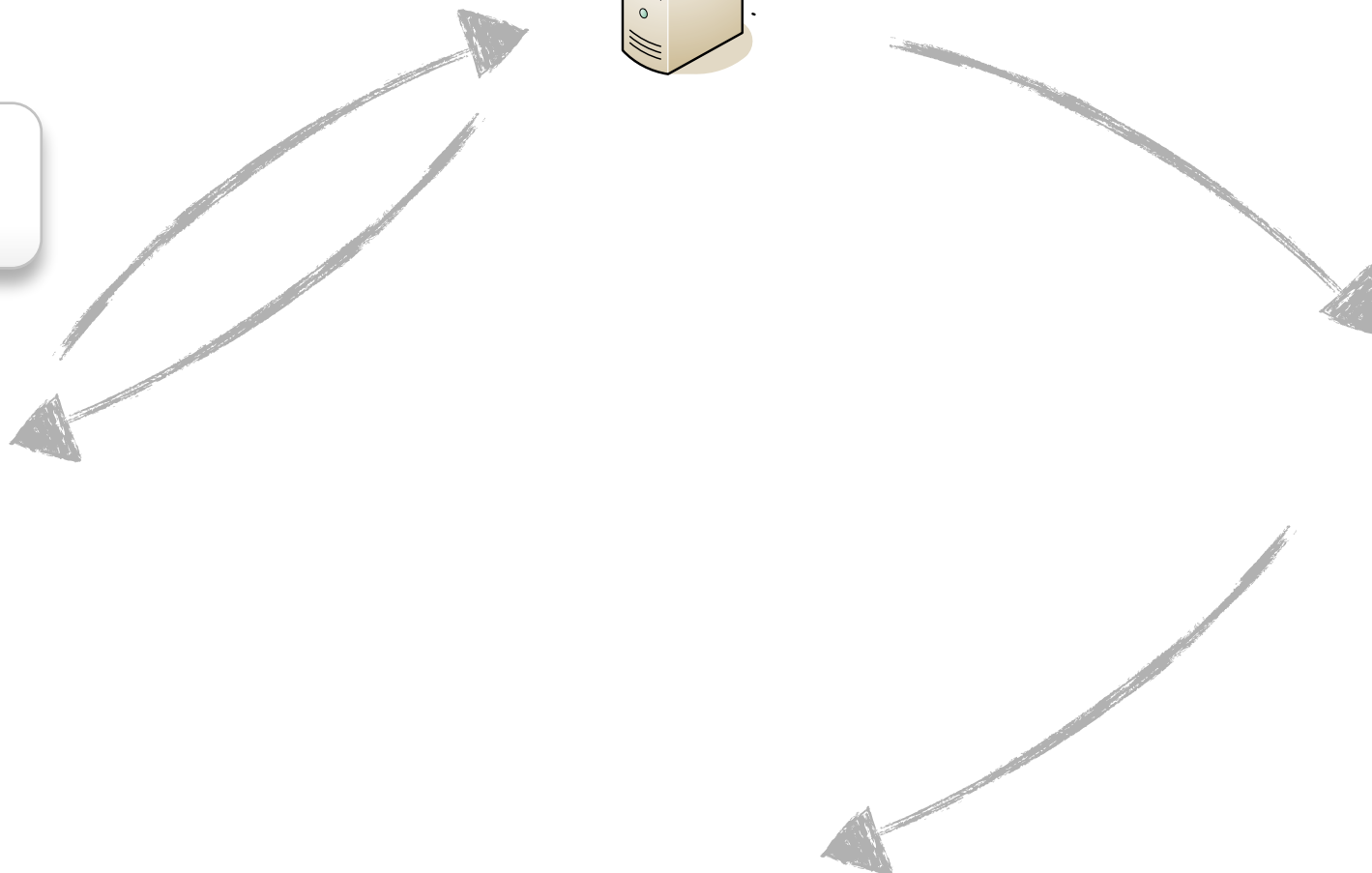
Globo-NetworkAPI



DataBase



Scripts



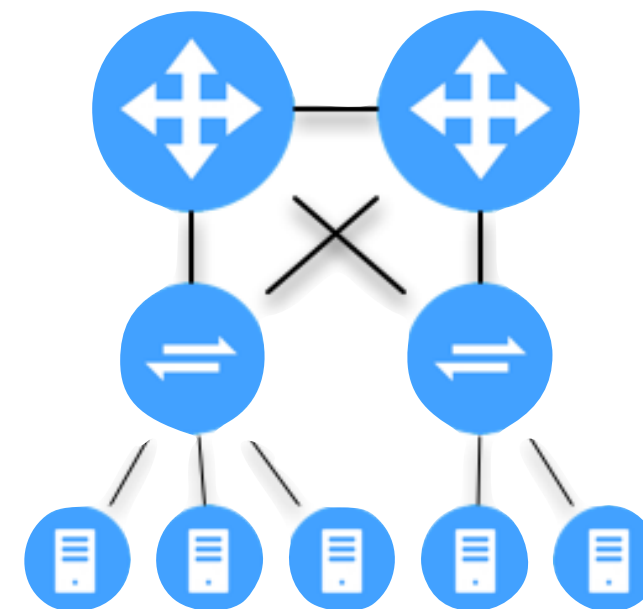
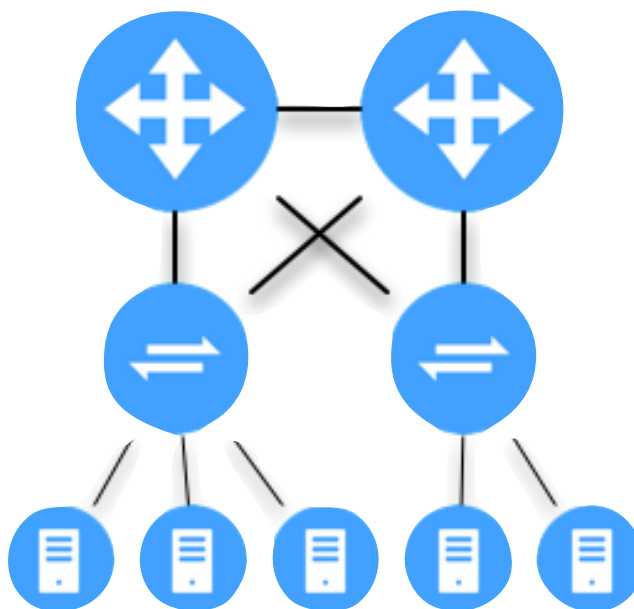
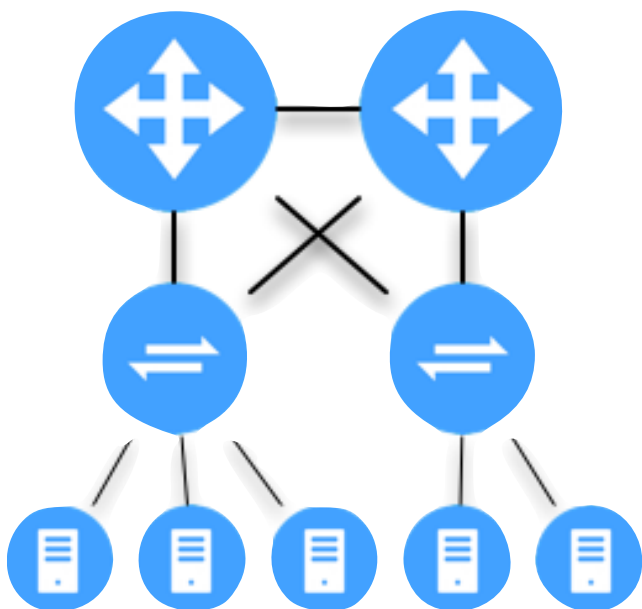
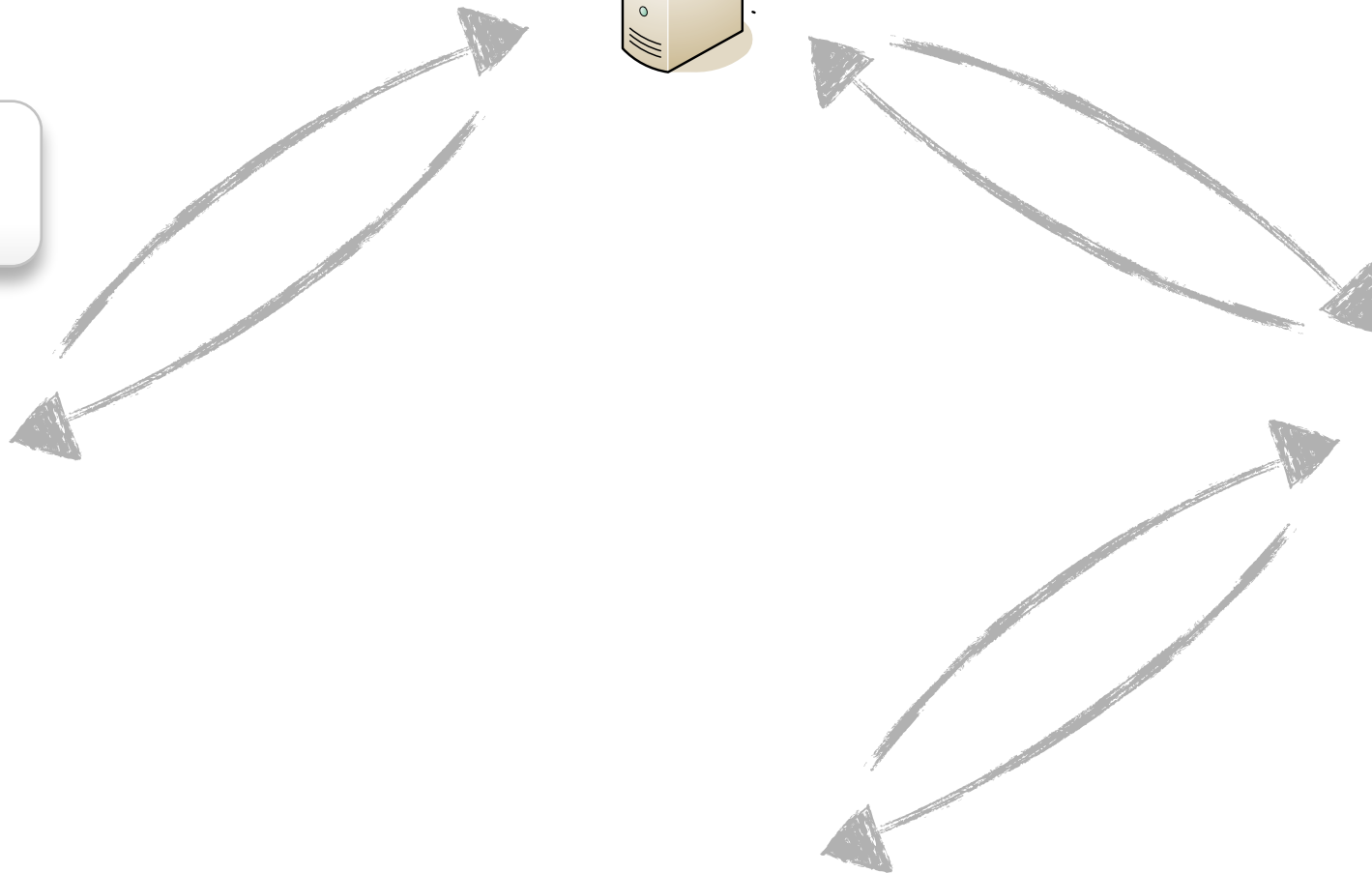
Globo-NetworkAPI



DataBase



Scripts



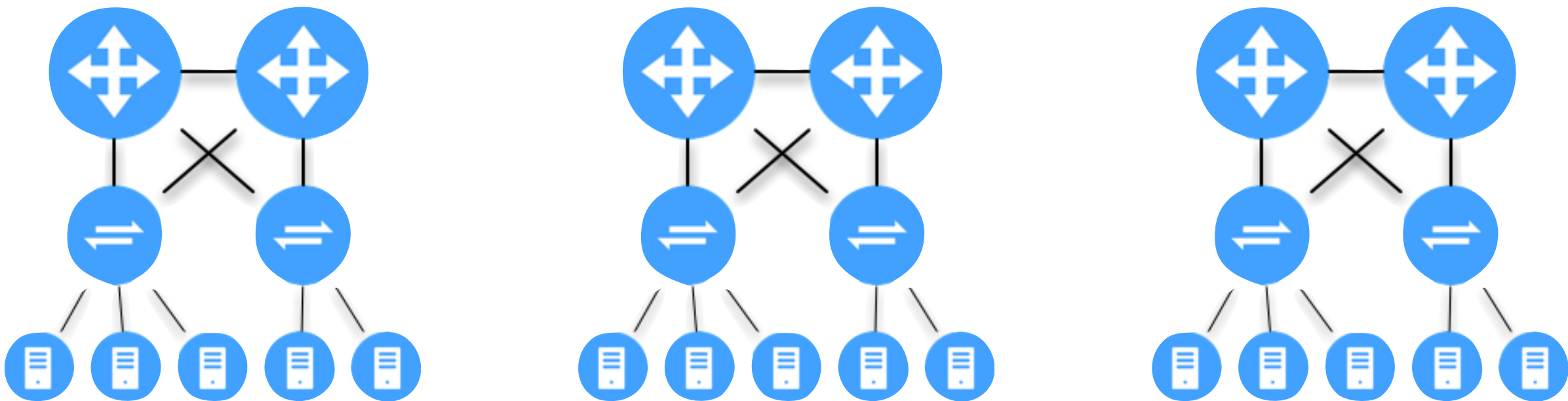
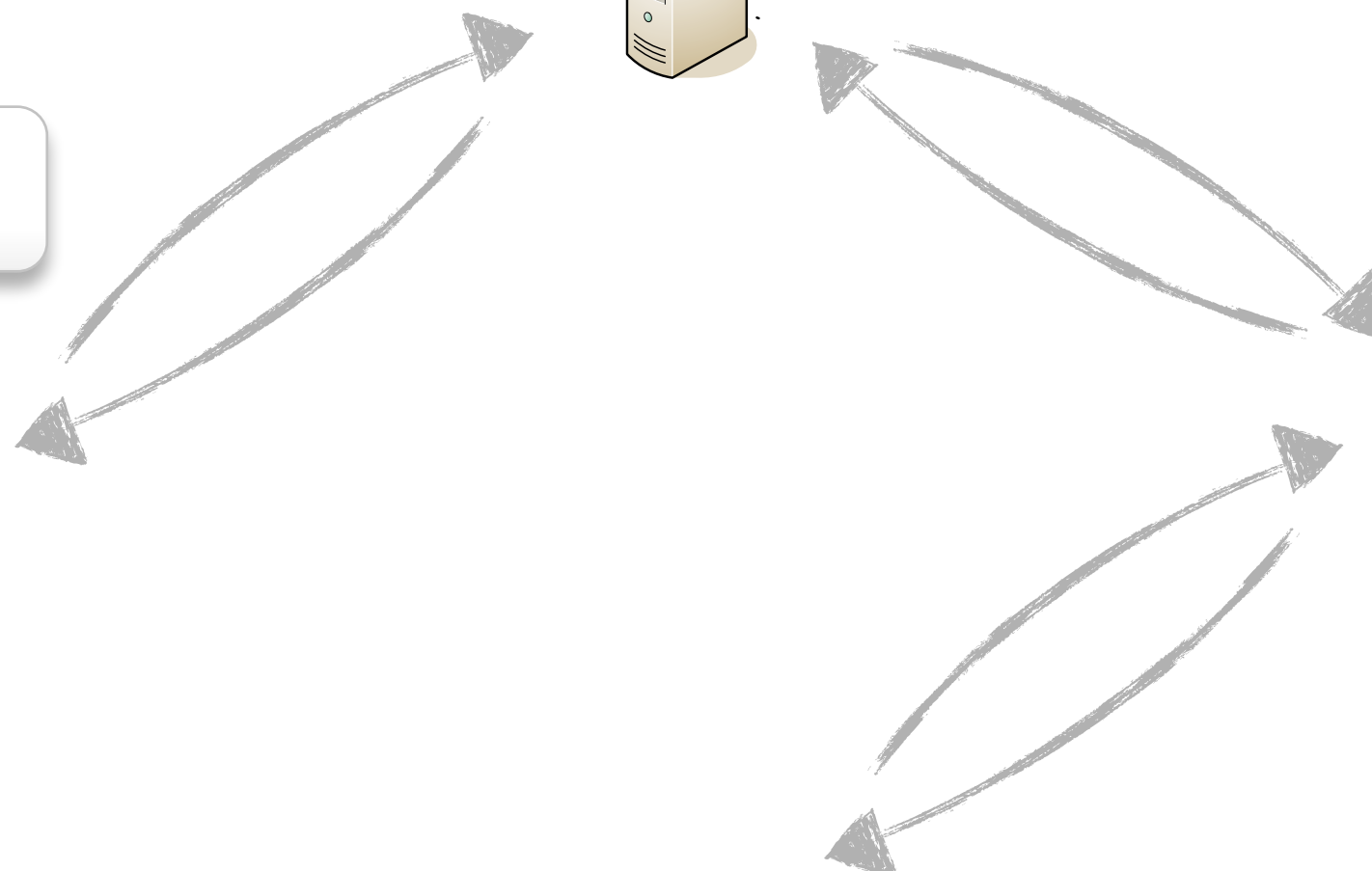
Globo-NetworkAPI



DataBase



Scripts





Características

- Python / Django
- REST Api
- Vendor agnostic

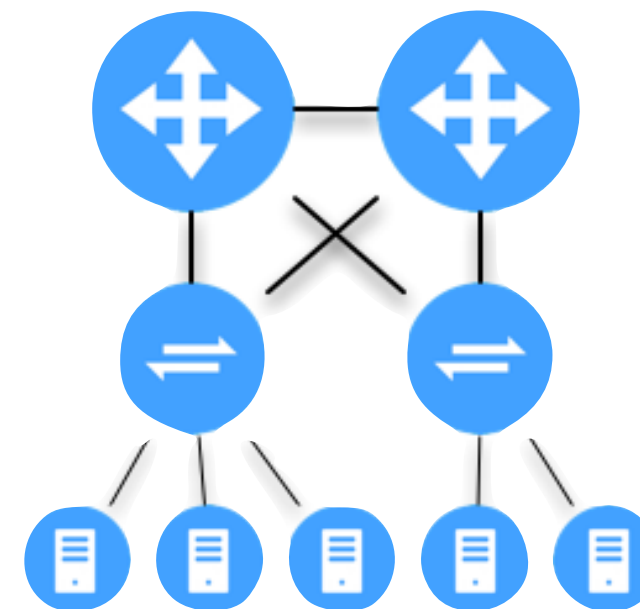
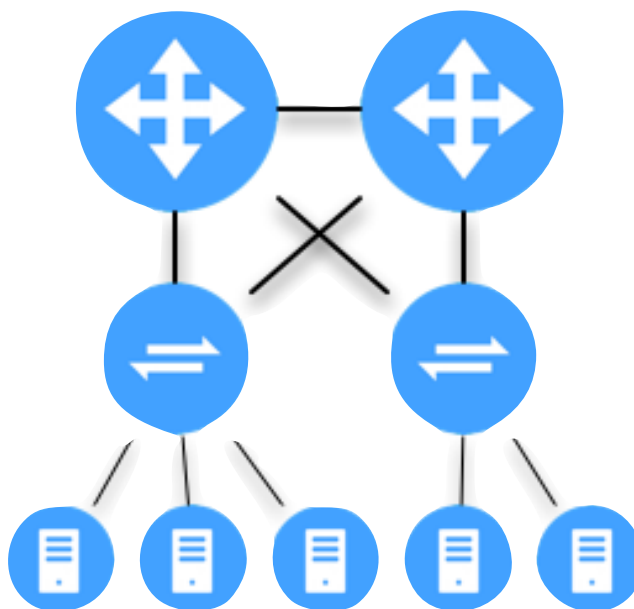
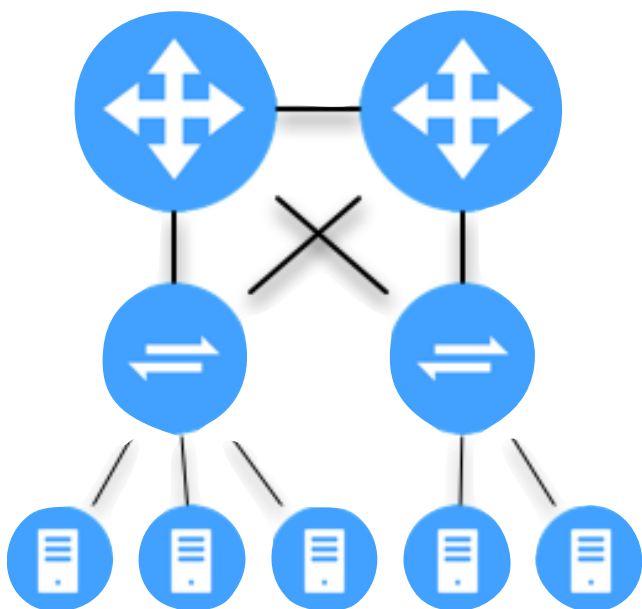
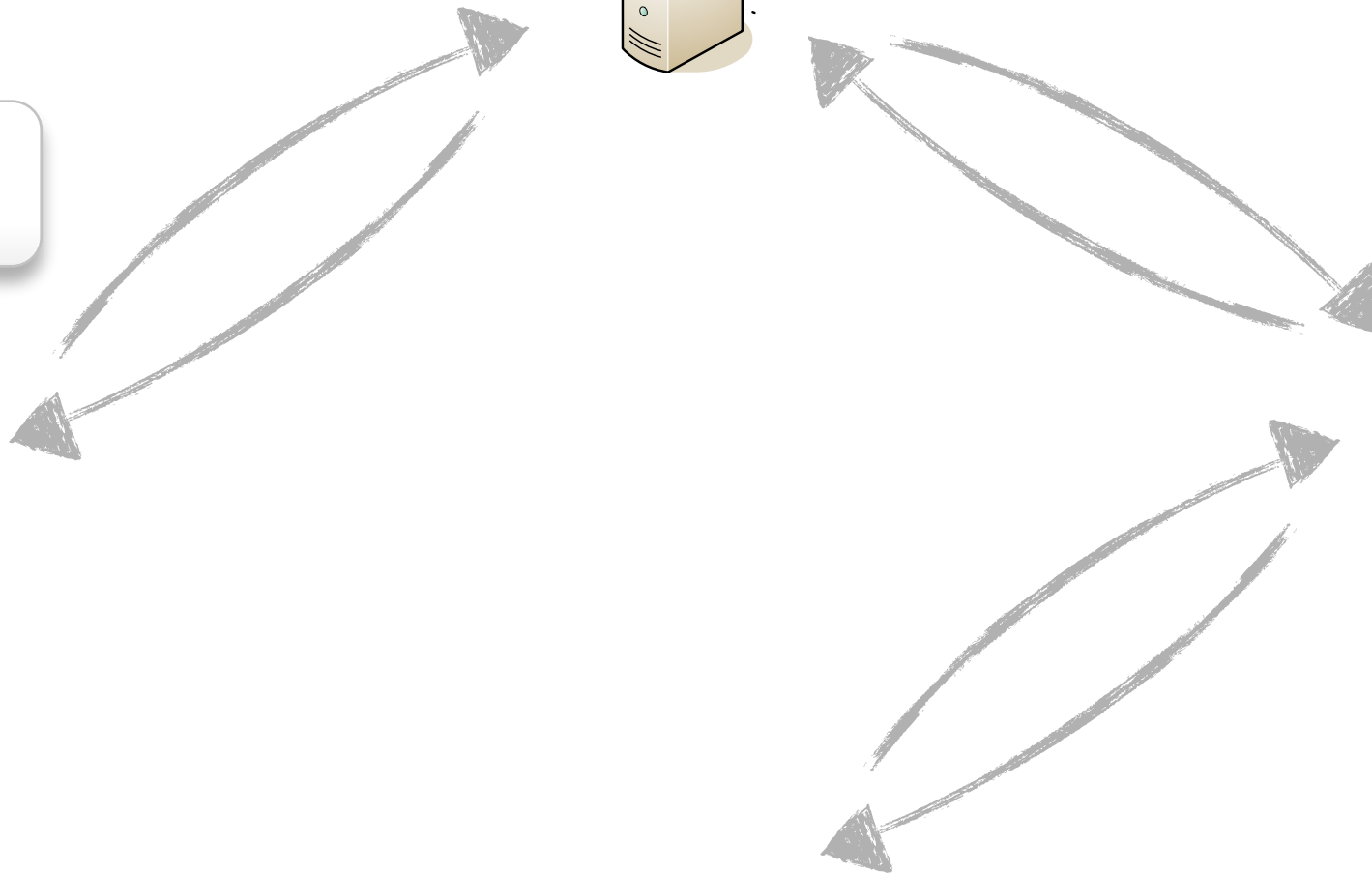
Globo-NetworkAPI



DataBase



Scripts





Características

- Perl
- backuper, gerenciador_vips, navlan, configurador
 - API do fabricante (SOAP, REST)
 - SSH
 - SNMP

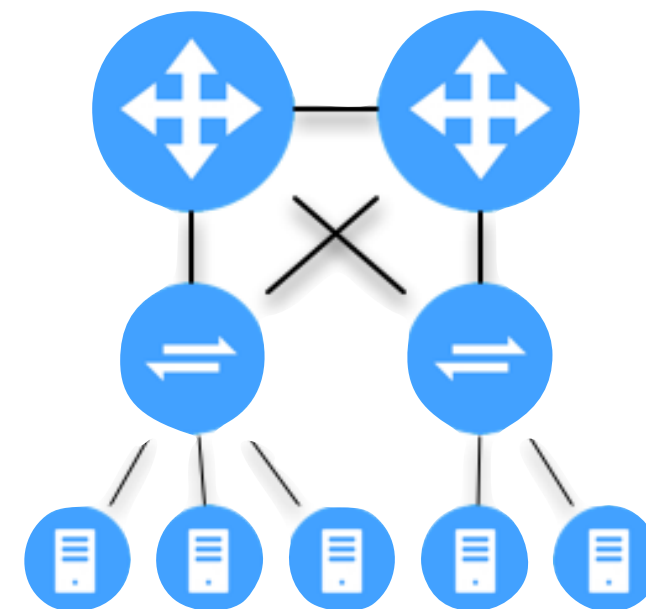
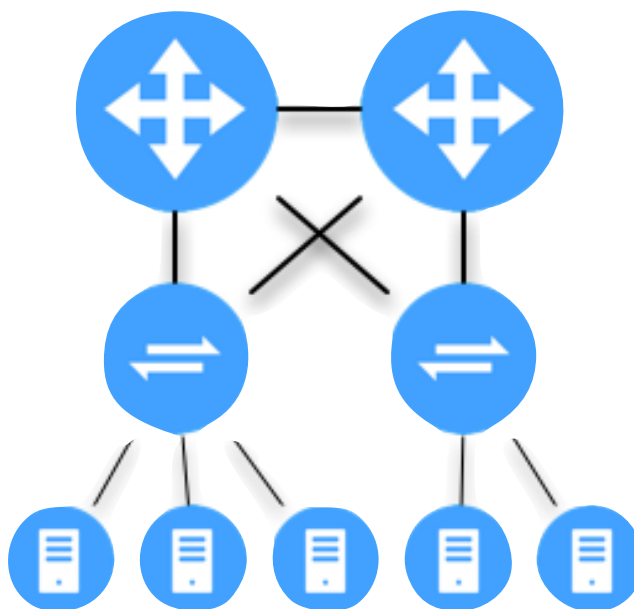
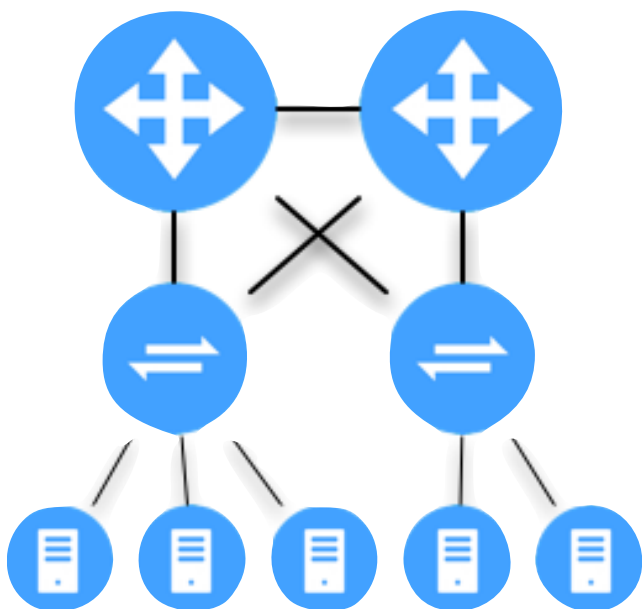
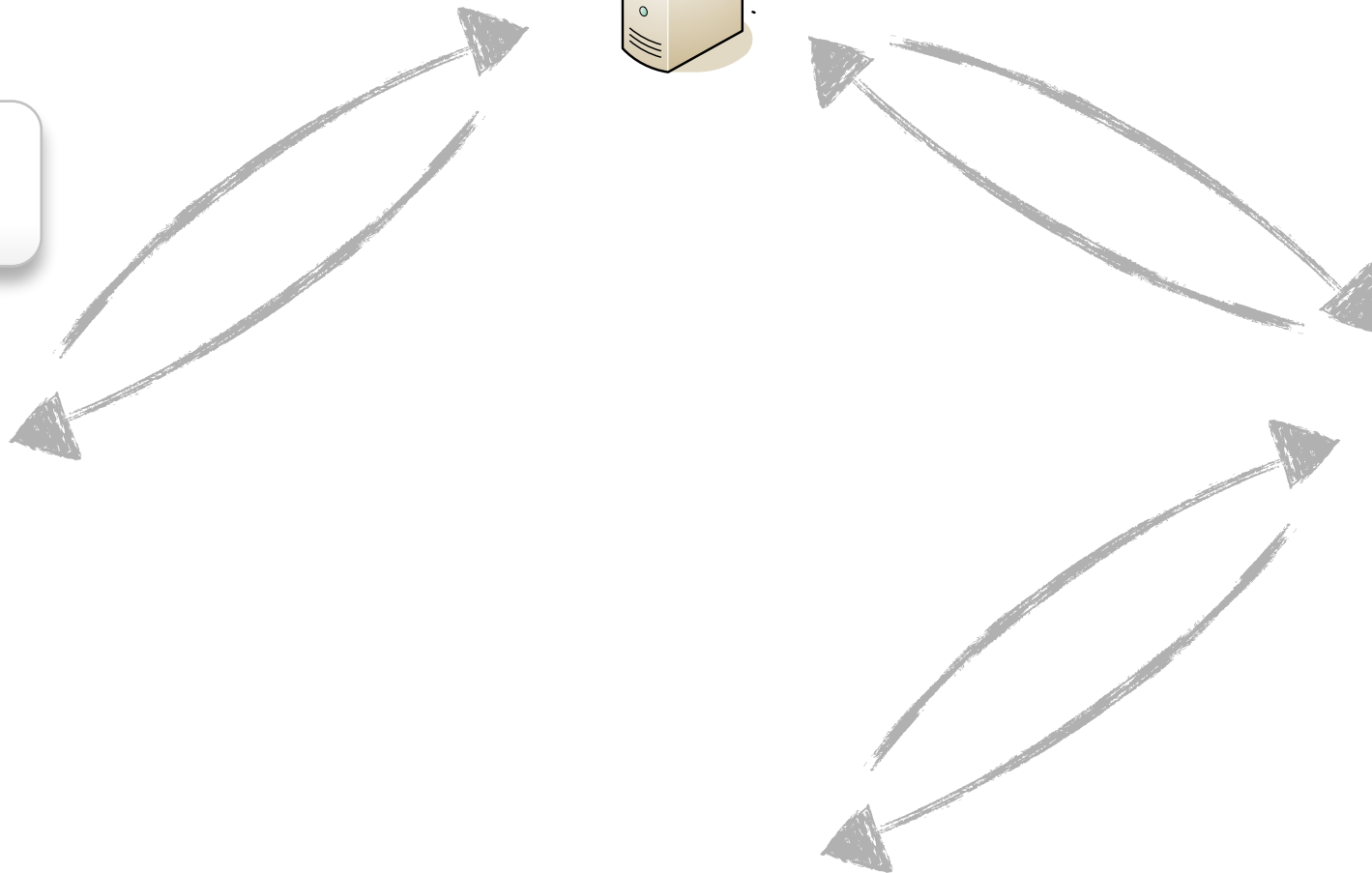
Globo-NetworkAPI



DataBase



Scripts





Características

- mysql
- Informações de rede
- Informações de usuários e permissões
- Logs de eventos

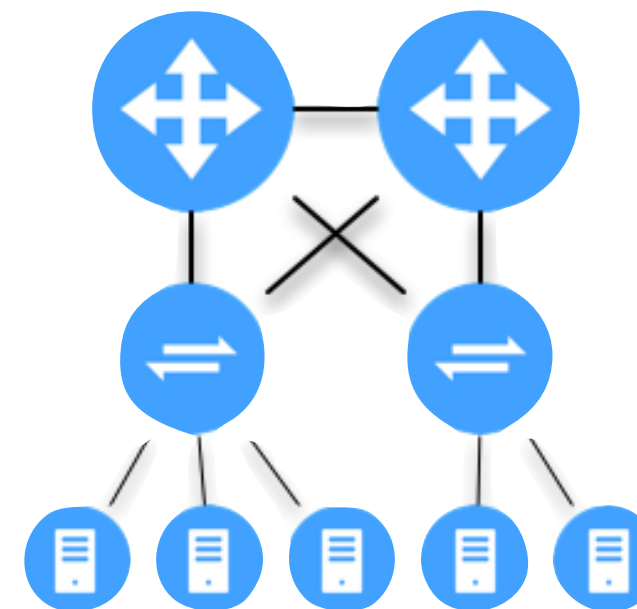
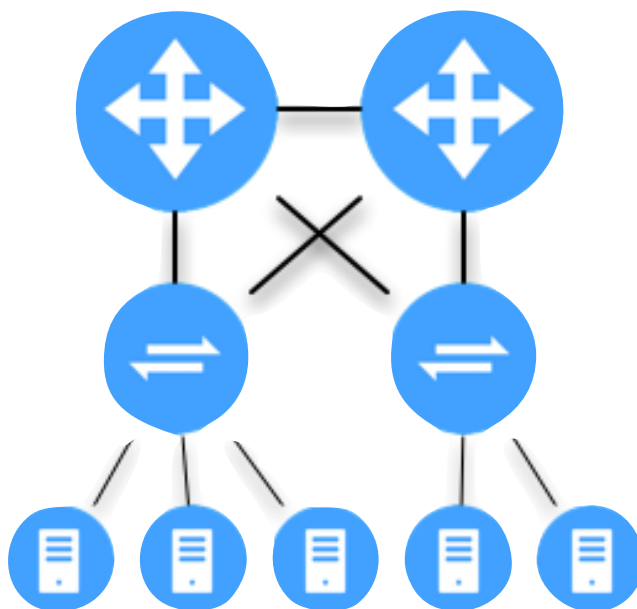
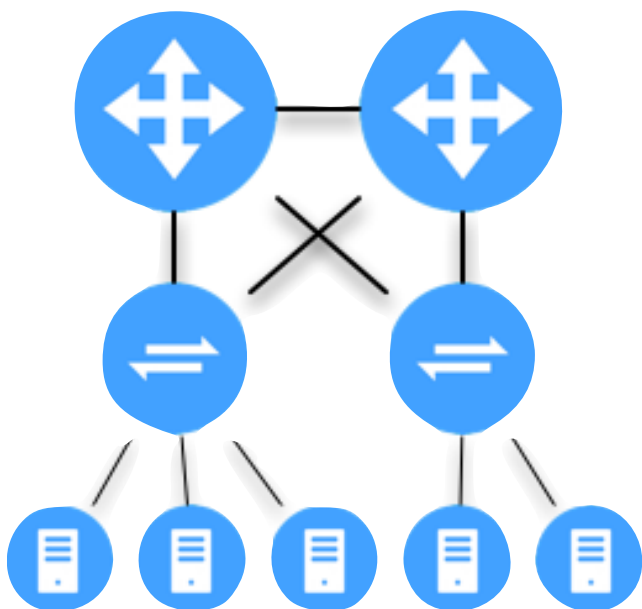
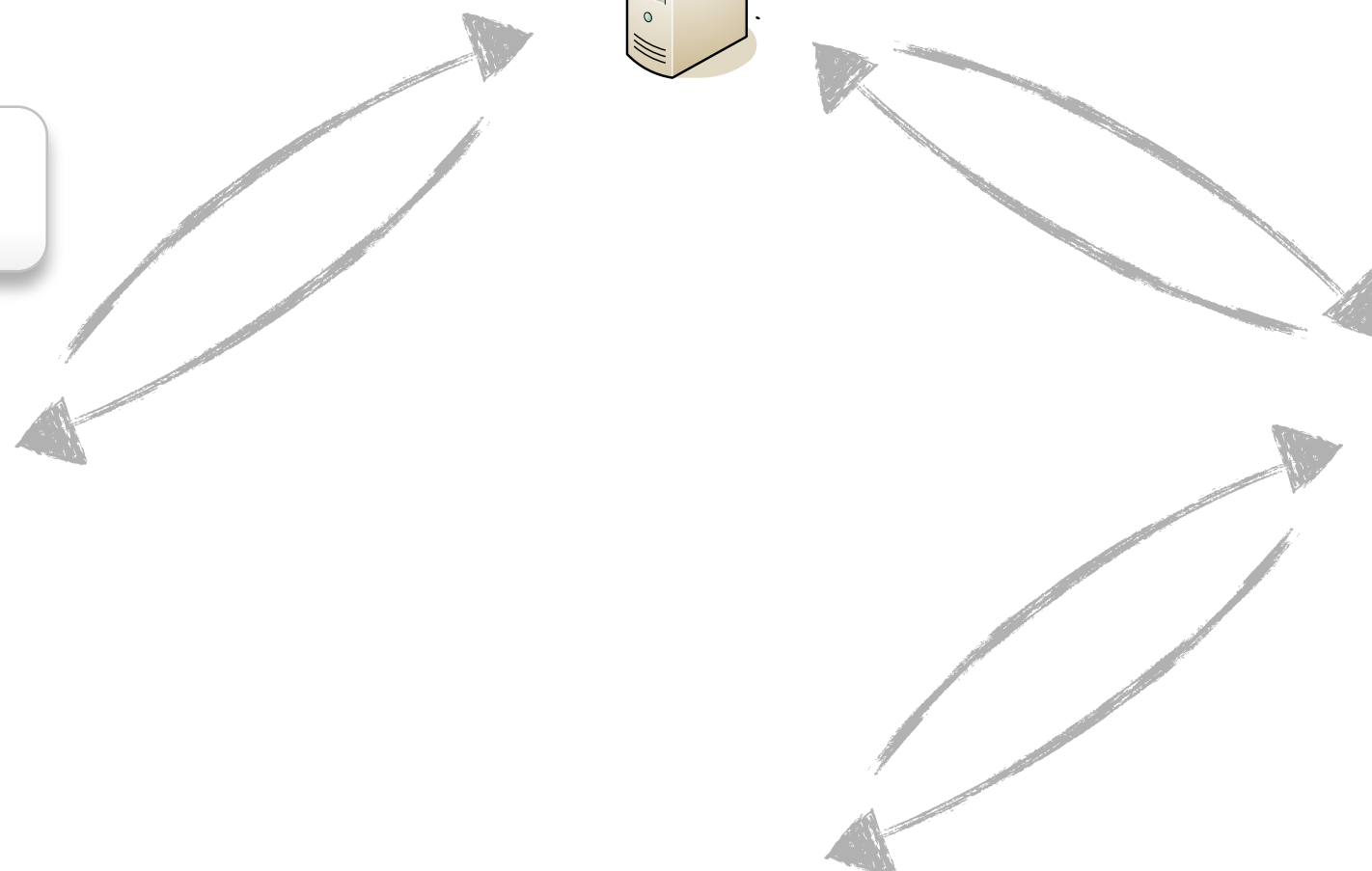
Globo-NetworkAPI



DataBase

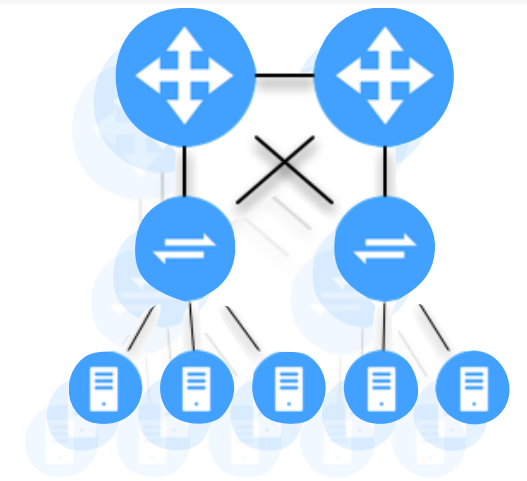


Scripts



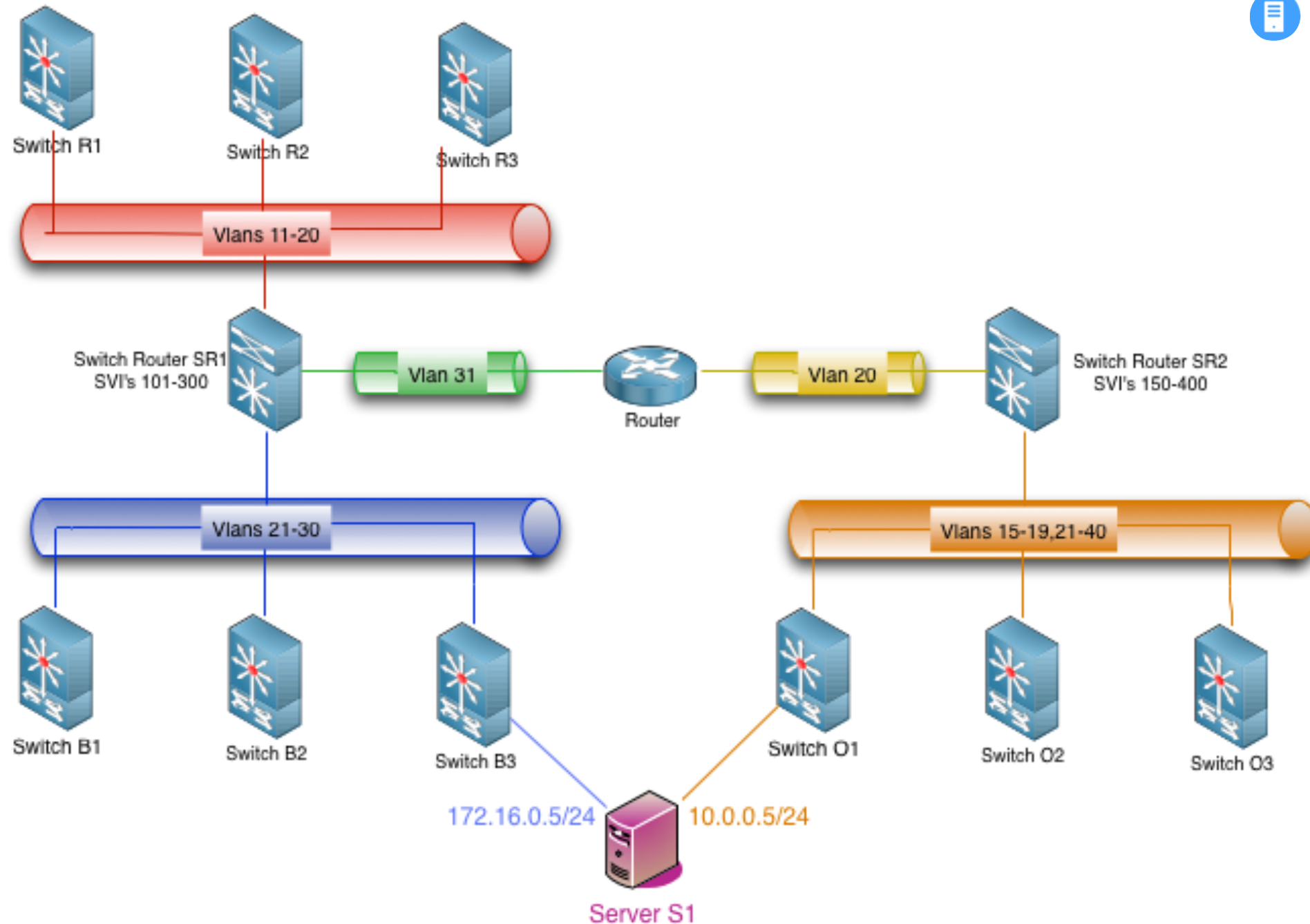
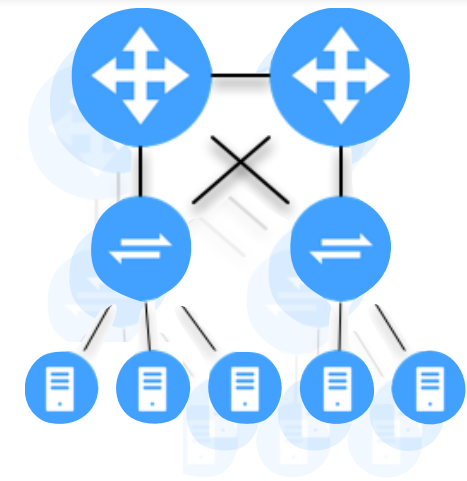
Ambiente

Características



- Conceito da Globo-NetworkAPI
- Equipamentos com uma finalidade em comum

Características



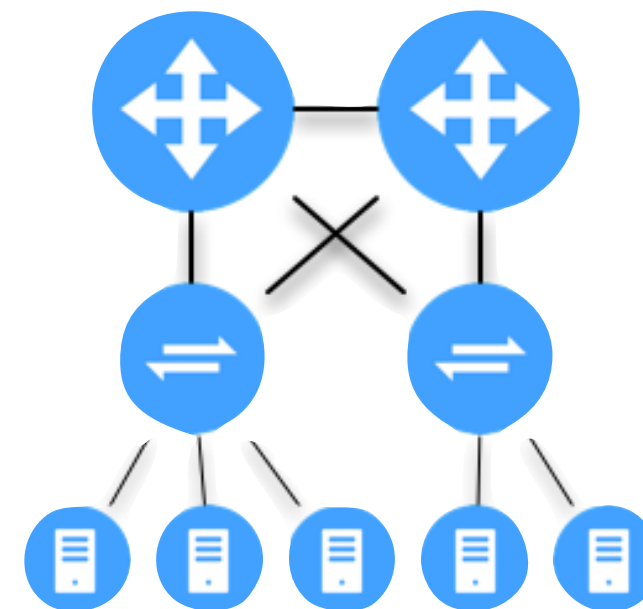
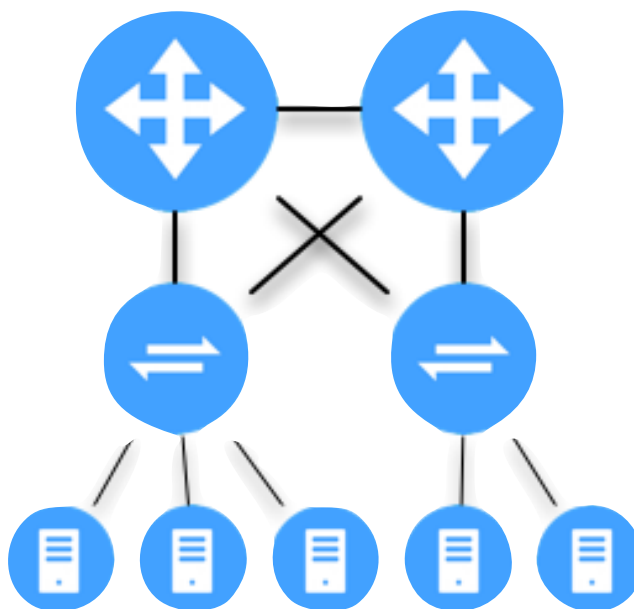
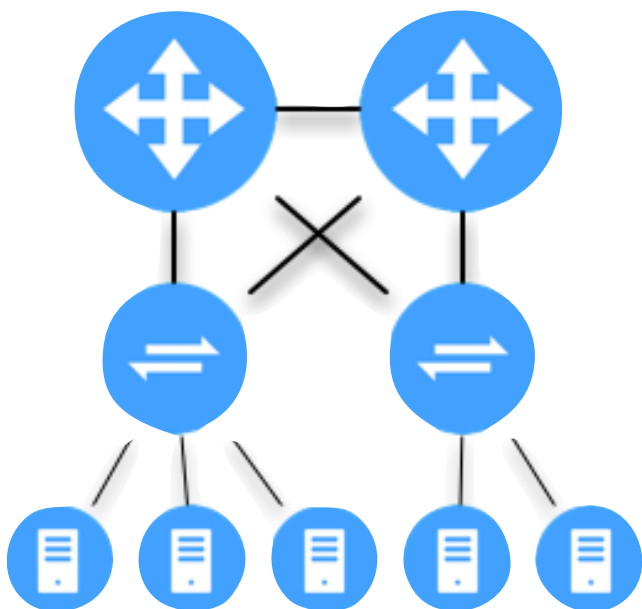
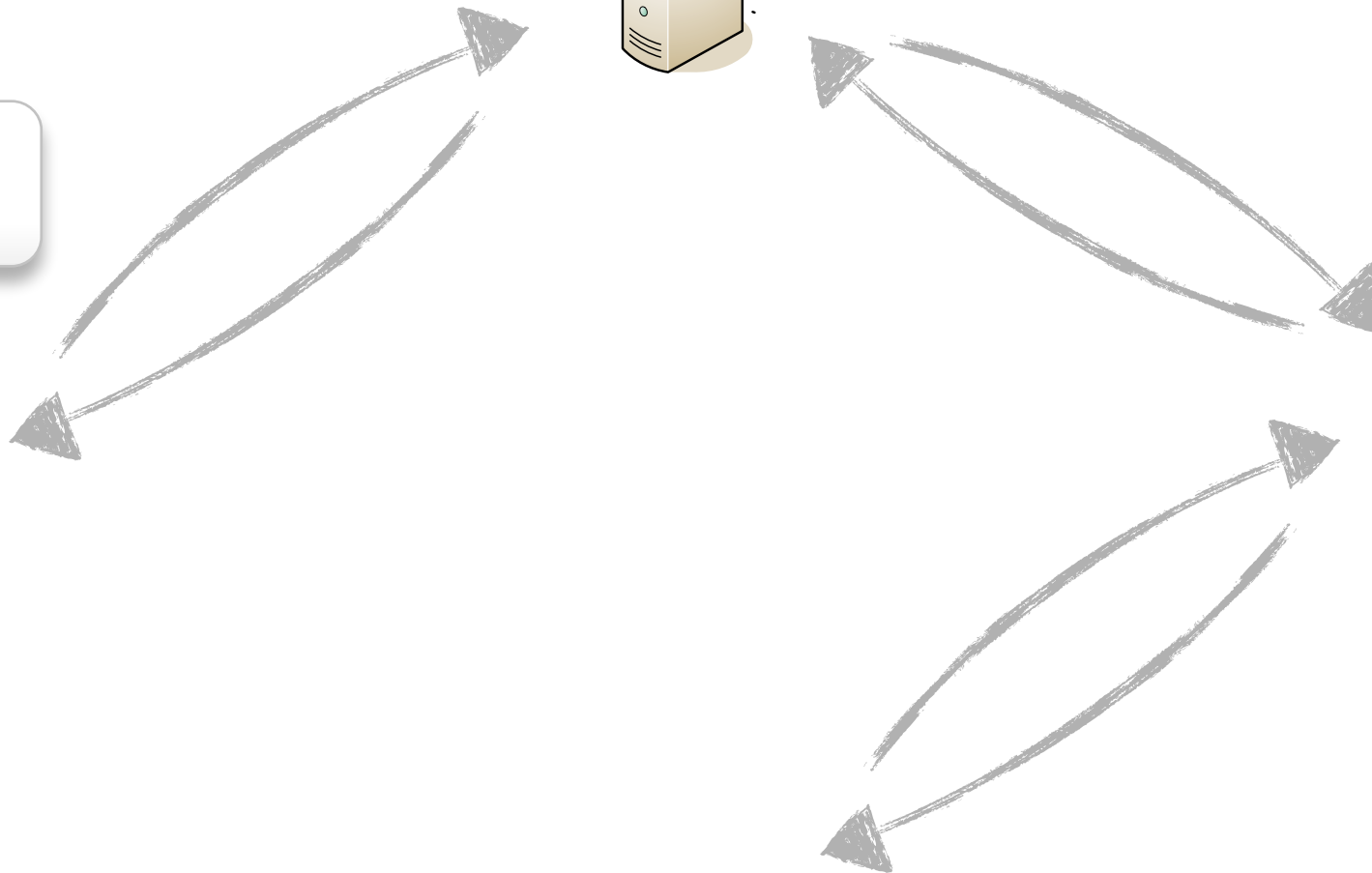
Globo-NetworkAPI



DataBase



Scripts



CloudStack

Integração com a NetworkAPI


CloudStack

- ▶ Permite utilizar redes físicas pré existentes
- ▶ Não existia automação para esta tarefa

CloudStack

CloudStack

Versão não modificada

 Add guest network

* Name:

* Description:

* Zone:

Physical Network:

* VLAN/VNI ID:

Secondary Isolated
VLAN ID:

Scope:

Network Offering:

IPv4 Gateway:

CloudStack

Versão não modificada

IPv4 Netmask:

IPv4 Start IP:

IPv4 End IP:

IPv6 Gateway:

IPv6 CIDR:

IPv6 Start IP:

IPv6 End IP:

Network Domain:


Cancel

OK

CloudStack

Versão não modificada

Com a NetworkAPI

 Add guest network

* Name:

* Description:

* Zone:

Physical Network:

* VLAN/VNI ID:

Secondary Isolated
VLAN ID:


Scope:

Network Offering:

IPv4 Gateway:

CloudStack

Versão não modificada

 Add guest network

* Name:

* Description:

* Zone:

Physical Network:

* VLAN/VNI ID:


Secondary Isolated VLAN ID:

Scope:

Network Offering:

IPv4 Gateway:

Com a NetworkAPI

 Add GloboNetwork Network

* Name:

* Description:

* Zone:

Environment:

Scope:

Network Offering:

CloudStack

Instances
Affinity Groups
Storage
Network
Templates
Events
Projects
Accounts
Domains
Regions
Infrastructure
Global Settings
Service Offerings

Details

↻ ×

Type	Shared
State	Implemented
VPC ID	N/A
Persistent	No
Restart required	No
VLAN/VNI ID	3
broadcasturl	vlan://3
Gateway	10.170.1.1
CIDR	10.170.1.0/24

WebUI

Nossa interface gráfica

WebUI

- ▶ Uma das principais ferramentas das equipes de operação e suporte

WebUI



Henrique Bonadio Linhares

Alterar Senha

Logout

Admin

Listar

Cadastrar

Roteiros

LDAP

Administração

Listagem de Vians

Pesquisar

Número	Nome	Ambiente	Tipo	Rede	<input type="radio"/> L2 + IPv4 + IPv6	<input checked="" type="radio"/> IPv4	<input type="radio"/> IPv6
		BE - HOMOLOGACAO - CITTA CORE/DENSIDAD	-				
<input type="checkbox"/> Buscar nomes exatos				<input checked="" type="radio"/> Exato <input type="radio"/> Sub/Super Redes <input type="checkbox"/> Apenas Acls não validadas			

Pesquisar

Redes ainda sem validação de Acl fornecida pela Equipe de Segurança.

Clique para visualizar mais redes.

Atualizar

Novo Registro

Excluir

Exibir 25 registros por página

<input type="checkbox"/>	Número	Nome	Ambiente	Tipo Rede	Rede	Roteamento Em	ACL - IPv4	ACL - IPv6
<input type="checkbox"/>	901	DEV-APP-BE	BE - HOMOLOGACAO - CITTA CORE/DENSIDADE	Rede invalida equipamentos	10.249.1.0/24	SW-CT-RJ-202	DEV-APP-ACL	
<input type="checkbox"/>	902	QA2-PARCEIROS-BE	BE - HOMOLOGACAO - CITTA CORE/DENSIDADE	Rede invalida equipamentos	10.249.2.0/24	SW-CT-RJ-202		
<input type="checkbox"/>	903	QA2-APP-BE	BE - HOMOLOGACAO - CITTA CORE/DENSIDADE	Rede invalida equipamentos	10.249.3.0/24	SW-CT-RJ-202	QA-APP-ACL	
<input type="checkbox"/>	904	DEV-BE	BE - HOMOLOGACAO - CITTA CORE/DENSIDADE	Rede invalida equipamentos	10.249.4.0/24	SW-CT-RJ-202		
<input type="checkbox"/>	905	QA1-BE	BE - HOMOLOGACAO - CITTA CORE/DENSIDADE	Rede invalida equipamentos	10.249.5.0/24	SW-CT-RJ-202		

WebUI

Cadastro de Interfaces

Nome da Interface*

Gi

Gi6/1

Descrição

SERVER01

Protegido*

Não Sim

Nome da Interface*

A0:B3:CC:DF:BB:2C

Descrição

BE - SWITCH 01

Protegido*

Não Sim



SWITCH01



SERVER01

WebUI

VLAN-FE - IPv4

Redes - IPv4

ACL

```
! SWITCH03 e SWITCH04
!  
! Retira as acls aplicadas
interface vlan 600
no ip access-group ACL-FEin in
no ip access-group ACL-FEout out
exit  
  
! Limpa acl
no ip access-list ACL-FEout  
  
! Cria acl
ip access-list ACL-FEout  
  
! Acessos ICMP  
  
! Acesso icmp NAT FE  
  
permit icmp 10.10.0.0 0.15.255.255 172.16.0.0 0.0.0.255 echo
permit icmp 10.10.0.0 0.15.255.255 172.16.0.0 0.0.0.255 echo-reply
permit icmp 10.10.0.0 0.15.255.255 172.16.0.0 0.0.0.255 packet-too-big
```

Comentários

✓ Aplicar ACL

Gravar

← Voltar

WebUI



Henrique Bonadio Linhares

Alterar Senha

Logout

Ad

Listar

Cadastrar

Roteiros

LDAP

Administração

▶ Detalhes do Requisição VIP

Id 1234
Ip 200.100.50.1
Descrição Ipv4 [www.teste.com](#)
Descrição Ipv6
Equipamento [BALANCEADOR-01 / BALANCEADOR-02](#)
Ambiente [FE - PRODUCAO - BALANCEAMENTO](#)

▶ Reals Server - Status

▶ [Reals Server](#)

▶ [Healthcheck](#)

▶ [Maxconn](#)

▶ [Filtro L7](#)

← Voltar

↻ Atualizar

🔌 Habilitar Real

! Desabilitar Real

Exibir registros por página

Pesquisar:


<input type="checkbox"/>	Nome do Real	IP do Real	Porta Vip	Porta Real	Prioridade	Status
<input type="checkbox"/>	SERVER01	10.10.10.1	80	8080	0	✓
<input type="checkbox"/>	SERVER02	10.10.10.2	80	8080	0	✓
<input type="checkbox"/>	SERVER03	10.10.10.3	443	8443	0	✓
<input type="checkbox"/>	SERVER04	10.10.10.4	443	8443	0	✓

Exibindo de 1 até 4. Total: 4


|<< < 1 > >>|


WebUI



 Henrique Bonadio Linhares

Alterar Se

 Listar

 Cadastrar

 Roteiros

 LDAP

 Administração

▶ Cadastra Roteiros nos Equipamentos

▼ Equipamento

SWITCH01

 Pesquisar

 Atualizar

 Novo Reg

Exibir registros por página

Pesquisar:

<input type="checkbox"/>	Roteiro	Descrição	Tipo de Roteiro	Descrição
<input type="checkbox"/>	ios	Backup dos equipamentos com IOS	backup	Roteiro de backup
<input type="checkbox"/>	aclosDC	Aplica acl em equipamento com IOS	acl	Roteiro de aplicacao de acl

Exibindo de 1 até 2. Total: 2

Obrigado

henrique.bonadio@corp.globo.com

marcus.vinicius@corp.globo.com

opensource.globo.com

github.com/globocom/GloboNetworkAPI

github.com/globocom/GloboNetworkAPI-WebUI

github.com/globocom/GloboNetworkAPI-client-python

github.com/globocom/GloboNetworkAPI-plugin-NAVlan