Chapter 15
Static Routes

as

Name

as - associates the specified autonomous system number with the static route

Syntax

as *autonomous_system ;*

Parameters

autonomous_system **-** the autonomous system number from which routes are to be learned

Description

as associates the specified autonomous system number with the static route.

Defaults

Context

static statement

Examples

```
static {
    host 211.14.165.243
    gateway 12.17.99.45
    as 201;
};
```

See Also

static on page 357

gateway on page 346

blackhole

Name

`blackhole` - causes this route to be installed as a blackhole route

Syntax

`blackhole ;`

Parameters

Description

`blackhole` is a mechanism enabling the router to refuse to route various prefixes. The prefixes are represented as routes that are not reachable, called unreachable routes. A blackhole route is the same as a reject route except that unreachable messages are not generated. Specifying `blackhole` causes this route to be installed as a blackhole route. `blackhole` should only be used with systems based on *BSD 4.3 Tahoe* or earlier that have installed a reject or blackhole pseudointerface. For interface routes, `blackhole` specifies that the address of the interface that matches these criteria is to be used as the local address when installing reject routes in the kernel.

Defaults

disabled

Context

`static` statement

Examples

```
static {
    192.0.2.0/24
    interface en1
    blackhole;
};
```

See Also

`static` on page 357

default

See `static` on page 357

gateway

Name

gateway - defines static routes through a gateway

Syntax

gateway *gateway_list*

Parameters

gateway_list - Specifies one or more gateways (routers) that can be used to reach the specified host or subnet.

Description

static gateway statements define static routes through a gateway. The **static gateway** statement defines a route to a destination host, to a subnet, or to the default prefix (0.0.0.0/0). Static gateway routes are installed in the kernel forwarding information base when one or more of the listed gateways are available. The gateway can be directly attached to an interface, or indirectly reachable via directly connected routers. Some versions of the UNIX operating system support equal-cost multipath next hops, supporting load sharing among the next hops. The number of multipath destinations supported by the UNIX kernel is a compile-time constant. If more than one specified gateway is available, and the kernel supports multipath destinations, multiple routes to a destination will be installed.

Defaults

Context

static statement

Examples

Example 1

```
static {
    host 211.14.165.243          # host reachable via
    gateway 12.17.99.45;         # specified gateway
} ;
```

Example 2

```
static  {
    default
    gateway 196.44.21.12;     # default route through gateway;
};
```

Example 3

```
static {
    242.2.218.5 mask 255.255.254.0    # define 23-bit subnet address
    gateway 12.17.99.45;              # reachable via gateway
};
```

See Also

static on page 357

default on page 345

host

See **static** on page 357

interface

Name

interface - specifies an interface or list of interfaces to associate with a static route

Syntax

interface *interface*

where *interface* is

```
( name | address | local address | remote address )
```

interface *interface_list*

where *interface_list* is

```
all | ( interface ...)     # a list of interfaces
```

Parameters

all - all available interfaces

name **-** the name of an interface or a host DNS name to use as the unique address of the interface

address **-** the unique address of the interface

local *address* **-** the local address of the interface

remote *address* **-** the remote address of the interface

Description

For **static gateway**, **interface** is followed by an *interface_list*, which specifies the list of acceptable interfaces to be used to reach the gateways specified in *gateway_list*. The gateways are examined in the order they were specified to see if they are reachable by an interface included in *interface_list*. The first up to **RT_N_MULTIPATH** (compile-time constant) gateways reachable via an interface allowed by *interface_list* become the nexthops for the static route. *interface_list* can contain wildcards (i.e., a physical interface name without trailing digits).

For the static interface case, only a single interface can be specified as the *interface* associated with the static route. The route will be eligible to become active only if the associated interface is up. The nexthop address will be the local interface address.

Defaults

There is no default for the **static interface** case. In the **static gateway** case, the interface for a given gateway defaults to the interface via which the specified gateway address is reachable.

Context

static statement

Examples

Example 1

```
static {
    192.0.2.0/24
    interface en1
    blackhole;
};
```

Example 2

```
static {
    default
    gateway 196.44.21.12
    interface ex1;
}
```

See Also

gateway on page 346

multicast

Name

`multicast` - loads this route in the multicast RIB

Syntax

`multicast ;`

Parameters

Description

This route will be loaded in the multicast RIB. Static routes are installed into the multicast RIB only by specification.

Defaults

unicast RIB

Context

`static` statement

Examples

```
static {
    host 2.6.5.35
    gateway 8.9.7.93
    multicast;
} ;
```

See Also

`unicast` on page 359

`static` on page 357

`gateway` on page 346

noinstall

Name

noinstall - specifies that this static route is not to be installed in the kernel forwarding table

Syntax

noinstall ;

Parameters

Description

Normally, the route with the lowest preference is installed in the kernel forwarding table and is the route exported to other protocols. When **noinstall** is specified on a static route, it will not be installed in the kernel forwarding table when it is active, but it will still be eligible to be exported to other protocols.

Defaults

Active static routes are installed in the kernel forwarding table.

Context

static statement

Examples

```
static {
    route 2.6.5.35
    gateway 8.9.7.93
    noinstall;
} ;
```

See Also

static on page 357

gateway on page 346

preference

Name

preference - used to select the best route, when multiple routes exist for the same destination

Syntax

preference *preference*

Parameters

preference - Preferences are in the range 0 to 255, inclusive, with 0 being the lowest (best) preference a route can have.

Description

Multiple routes can exist for the same destination. When multiple routes exist for the same destination, the route's preference is used to select the best route. **preference** overrides the default preference for this static route.

Defaults

preference 60;

Context

static statement

Examples

Example 1

```
static {
    host 211.14.165.243
    gateway 12.17.99.45
    preference 30;
};
```

Example 2

```
static {
    199.14.128.0
    mask 255.255.224.0
    interface en1
    preference 15;
} ;
```

See Also

`static` on page 357

"Interface Statement" on page 23 of *Configuring GateD*

reject

Name

reject - enables the router to refuse to route to various prefixes

Syntax

reject ;

Parameters

Description

This is a mechanism enabling the router to refuse to route to various prefixes. The pre-fixes are represented as routes that are not reachable, called unreachable routes. Instead of forwarding a packet as a normal route, **reject** routes cause packets to be dropped and unreachable messages to be sent to the packet originators. Specifying **reject** causes this static route to be installed as a reject route. Not all kernel forwarding engines support reject routes.

For interface routes, **reject** specifies that the address of the interface that matches **interface** will be used as the local address when installing reject routes in the kernel.

Defaults

disabled

Context

static statement

Examples

```
static {
    host 192.0.2.0
    gateway 172.31.255.255
    reject;
} ;
```

See Also

static on page 357

interface on page 349

gateway on page 346

"Interface Statement" on page 23 of *Configuring GateD*

blackhole on page 344

retain

Name

retain - prevents specific static routes from being removed

Syntax

retain ;

Parameters

Description

Normally, GateD removes all routes except interface routes and kernel routes with the RTF_STATIC bit set from the kernel forwarding table during a graceful shutdown. The retain option is used to prevent specific static routes from being removed. Retain ensures that some routing is available when GateD is not running.

Defaults

Static routes are not retained at graceful shutdown.

Context

static statement

Examples

```
static {
    route 2.6.5.35
    gateway 8.9.7.93
    retain;
} ;
```

See Also

static on page 357

gateway on page 346

interface on page 349

static

Name

static - defines static routes through a gateway

Syntax

```
static {
    static_dest gateway gateway_list
        [ interface interface_list ]
        [ as autonomous_system ]
        [ preference preference ]
        [ static_route_flags ] ;
    static_dest interface interface
        [ preference preference ]
        [ static_route_flags ] ;
};
```

Parameters

static_dest is:

> **host [inet6]** *host* |
> **[inet6] default** |
> *network* **[(mask** *mask* **) | (masklen** *number* **)]**

and

gateway_list is one or more gateways (routers) that can be used to reach the specified host or subnet.

and

static_route_flags are:

> **(retain | reject | blackhole | noinstall | unicast | multicast)**

and

host is a host DNS name or address

interface is:

> **(** *name* | *address* | **local** *address* | **remote** *address* **)**

interface_list is:

> **all | (** *interface* **...)**   # a list of interfaces

Description

static gateway route statements define static routes through a gateway. A single **static** statement can specify any number of routes. The **static** statements occur after protocol statements and before control statements in the gated.conf file. Any number of **static**

statements may be specified, each containing any number of static route definitions. These routes can be overridden by routes with better preference values.

Defaults

Static routes do not exist by default.

Context

global

Examples

```
static {
    host 211.14.165.243      # host reachable via
    gateway 12.17.99.45;     # specified gateway
} ;


static { 199.14.128.0 mask 255.255.224.0 interface en1 ; } ;
```

See Also

interface on page 349

gateway on page 346

unicast

Name

unicast - specifies that the route will be loaded into the unicast RIB

Syntax

unicast ;

Parameters

Description

This route will be loaded in the unicast RIB. This is useful when a route is being installed into both the unicast and multicast RIBs.

Defaults

By default, all static routes are loaded into the unicast RIB.

Context

static statement

Examples

```
static {
    host 2.6.5.35
    gateway 8.9.7.93
    unicast;
} ;
```

See Also

multicast on page 351

interface on page 349

gateway on page 346