Nginx -- static file serving confusion with root & alias

Asked 12 years, 10 months ago   Modified 2 years, 8 months ago   Viewed 457k times

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I need to serve my app through my app server at `8080` , and my static files from a directory without touching the app server.

```
# app server on port 8080
# nginx listens on port 8123
server {
        listen          8123;
        access_log      off;

        location /static/ {
                # root /var/www/app/static/;
                alias /var/www/app/static/;
                autoindex off;
        }


        location / {
                proxy_pass              http://127.0.0.1:8080;
                proxy_set_header        Host            $host;
                proxy_set_header        X-Real-IP       $remote_addr;
                proxy_set_header        X-Forwarded-For
$proxy_add_x_forwarded_for;
        }
    }
```

Now, with this config, everything is working fine. Note that the `root` directive is commented out.

If I activate `root` and deactivate the `alias` , it stops working. However, when I remove the trailing `/static/` from `root` , it starts working again.

Can someone explain what's going on?

nginx

Share   Improve this question   Follow   edited Aug 2, 2022 at 20:19   asked May 17, 2012 at 8:03

                                                                                              treecoder
                                                                                              45.3k ● 23 ● 70 ● 96

8 Answers

Sorted by: Highest score (default) ⇕

▲   There is a very important difference between the `root` and the `alias` directives. This difference
    exists in the way the path specified in the `root` or the `alias` is processed.

1482   `root`

- the `location` part is appended to `root` part
- final path = `root` + `location`

`alias`

- the `location` part is replaced by the `alias` part
- final path = `alias`

To illustrate:

Let's say we have the config

```
location /static/ {
    root /var/www/app/static/;
    autoindex off;
}
```

In this case the final path that Nginx will derive will be

```
/var/www/app/static/static
```

This is going to return `404` since there is no `static/` within `static/`

This is because the location part is appended to the path specified in the `root`. Hence, with `root`, the correct way is

```
location /static/ {
    root /var/www/app/;
    autoindex off;
}
```

On the other hand, with `alias`, the location part gets **dropped**. So for the config

```
location /static/ {
    alias /var/www/app/static/;
    autoindex off;              ↑
}                               |
                        pay attention to this trailing slash
```

the final path will correctly be formed as

```
/var/www/app/static
```

In a way this makes sense. The `alias` just lets you define a new path to represent an existing "real" path. The location part is that new path, and so it gets replaced with the real path. Think of it as a symlink.

Root, on the other hand is not a new path, it contains some information that has to be collated with some other info to make the final path. And so, the location part is used, not dropped.

The case for trailing slash in `alias`

There is no definitive guideline about whether a trailing slash is mandatory per [Nginx documentation](#), but a common observation by people here and elsewhere seems to indicate that it is.

A few more places have discussed this, not conclusively though.

https://serverfault.com/questions/376162/how-can-i-create-a-location-in-nginx-that-works-with-and-without-a-trailing-slas

https://serverfault.com/questions/375602/why-is-my-nginx-alias-not-working

Share Improve this answer Follow   edited Jul 29, 2022 at 23:55   answered May 18, 2012 at 5:18

                                                                              treecoder
                                                                              45.3k ● 23 ● 70 ● 96

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161   The trailing slash on the alias path is essential! – mafrosis Dec 16, 2015 at 7:30

10   This is all great (it helped me fix my config issues), but I wonder what logging settings people could use to help diagnose these kinds of problems? Like, anything that would print to logs stuff like "received request for [...], matched by "location [...]" config block, searching directory [...]" – Pistos Jun 5, 2018 at 17:18

8   @Pistos: put `log_format scripts '$document_root | $uri | > $request';` into `http` section and `access_log /var/log/nginx/scripts.log scripts;` into `server` section of nginx config.. – helvete Jun 6, 2018 at 13:24

1   Thanks! Indeed the trailing slash is essential on the alias, otherwise i got `nginx: [emerg] invalid number of arguments in "alias" directive`, and the server went down during its restart. – FotisK Jul 18, 2018 at 21:36

      @mafrosis Why is it essential? – Bruce Sun Feb 25, 2020 at 2:17
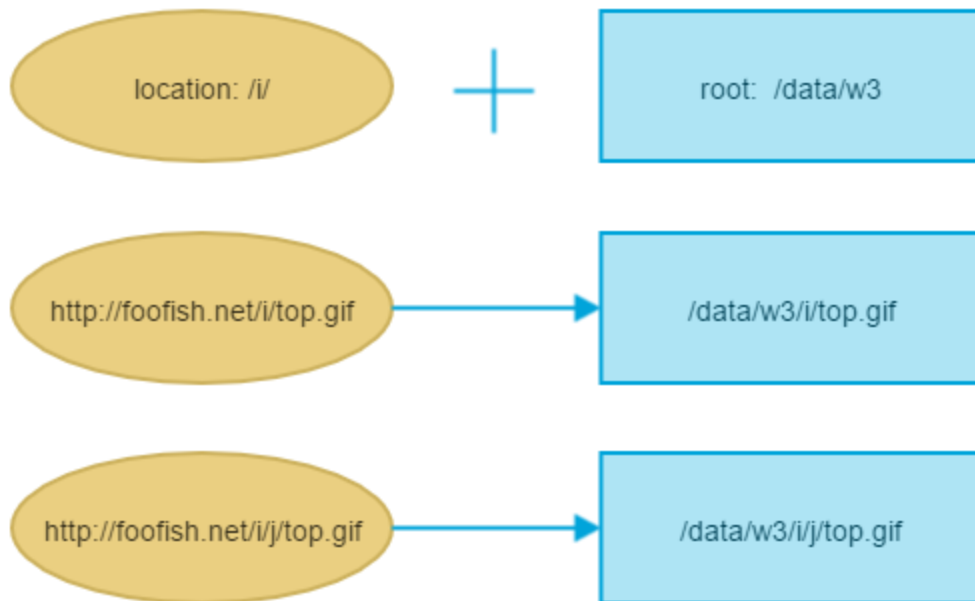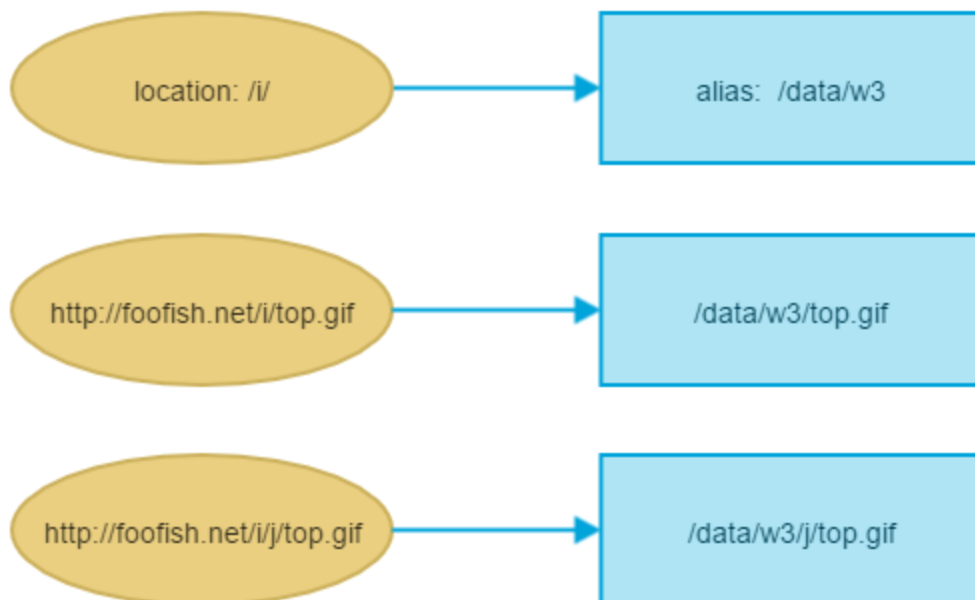

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163   as say as @treecoder

▼   In case of the `root` directive, full path is appended to the root including the location part, whereas in case of the `alias` directive, only the portion of the path NOT including the location part is appended to the alias.

A picture is worth a thousand words

for `root` :

for `alias` :

edited Jun 14, 2017 at 17:41   answered Oct 9, 2016 at 3:03

Mahmoud Al-Qudsi   liuzhijun
29.6k ● 13 ● 92 ● 128   **4,479** ● 3 ● 25 ● 28

35   Should the first arrow in the second image be a "+"? – aioobe Oct 21, 2017 at 9:32

6   A picture is worth 0 words if it isn't made accessible for users with visual impairments – miken32 Jul 5, 2023 at 19:08

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In your case, you can use `root` directive, because `$uri` part of the `location` directive is the same with last `root` directive part.

> Nginx documentation advices it as well:
>
> When location matches the last part of the directive's value:
>
> ```
> location /images/ {
>     alias /data/w3/images/;
> }
> ```
>
> it is better to use the root directive instead:
>
> ```
> location /images/ {
>     root /data/w3;
> }
> ```

and `root` directive will append `$uri` to the path.

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edited Oct 21, 2017 at 9:51   answered Jul 1, 2015 at 6:03
       aioobe   antonbormotov
422k ● 114 ● 829 ● 840   **1,987** ● 2 ● 21 ● 33

5   Why is it better? Docs don't say either. – HostedMetrics.com Dec 26, 2017 at 17:35

2   The benefit that I see is to avoid duplication of the $uri, /images in given example, when using alias – antonbormotov Dec 26, 2017 at 17:42

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Just a quick addendum to @good_computer's very helpful answer, I wanted to replace to root of the URL with a folder, but only if it matched a subfolder containing static files (which I wanted to retain as part of the path).

For example if file requested is in `/app/js` or `/app/css`, look in `/app/location/public/[that folder]`.

I got this to work using a regex.

```
location ~ ^/app/((images/|stylesheets/|javascripts/).*)$ {
    alias /home/user/sites/app/public/$1;
```

```
        access_log off;
        expires max;
    }
```

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answered Oct 5, 2014 at 16:38

meloncholy
2,192 ● 19 ● 16

4   Thanks for this answer. I know this is 3 years later, but could anyone explain if there is a performance
     and/or security tradeoff between using alias versus root? – Mina May 28, 2017 at 15:33

4   @Mina It's better to use root if you can. (There's a comment in the docs
     wiki.nginx.org/HttpCoreModule#alias) – Matthew Wilcoxson Aug 16, 2018 at 17:35

     This is exactly what I came here for 👍👏 – alienfromouterspace Jul 7, 2019 at 6:17

1   Both are safe, but be careful when using alias with location that doesn't end with / It is a vulnerability
     github.com/yandex/gixy/blob/master/docs/en/plugins/… – Eduardo Sep 23, 2021 at 18:49 ✎

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`alias` is used to replace the location part path (LPP) in the request path, while the `root` is used
to be prepended to the request path.

They are two ways to map the request path to the final file path.

`alias` could only be used in location block, and it will override the outside `root` .

`alias` and `root` cannot be used in location block together.

Share Improve this answer Follow   edited May 25, 2019 at 9:47   answered May 25, 2019 at 9:33

Yao Zhao
4,623 ● 4 ● 24 ● 33

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```
server {
    server_name xyz.com;
    root /home/ubuntu/project_folder/;

    client_max_body_size 10M;
    access_log  /var/log/nginx/project.access.log;
    error_log  /var/log/nginx/project.error.log;

    location /static {
        index index.html;
    }

    location /media {
        alias /home/ubuntu/project/media/;
    }
}
```

Server block to live the static page on nginx.

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Tapish
61 ● 3

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1   Be careful when using alias with location that doesn't end with / It is a vulnerability
    github.com/yandex/gixy/blob/master/docs/en/plugins/... Files from the project directory can be revealed
    using /media.. on request – Eduardo Sep 23, 2021 at 18:46

Though my answer is not needed, But I think It is necessary to add this, `root` and `alias` works
differently when is come to regex.

4

```
location ~ /static/my.png$ {
    alias /var/www/static/;
    access_log off;
    expires max;
}
```

In this case the regex match is not going to add with alias, nginx will search only
`/var/www/static/` not `/var/www/static/my.png`. You have to use regex capture.

```
location ~ /static/my.png$ {
    root /var/www;
    access_log off;
    expires max;
}
```

In this case the matched url going to add with root, nginx will search `/var/www/static/my.png`.

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edited Oct 29, 2021 at 8:56

Jean-Philippe Caruana
2,706 ● 4 ● 25 ● 47

Akash Patra
61 ● 2

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In other words on keeping this brief: in case of `root` , location argument specified is part of **filesystem's path and URI** . On the other hand — for `alias` directive argument of location statement is part of **URI only**

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So, `alias` is a different name that maps certain URI to certain path in the filesystem, whereas `root` appends location argument to the root path given as argument to `root` directive.

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edited May 11, 2019 at 17:22

answered May 11, 2019 at 16:29

user4153980

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