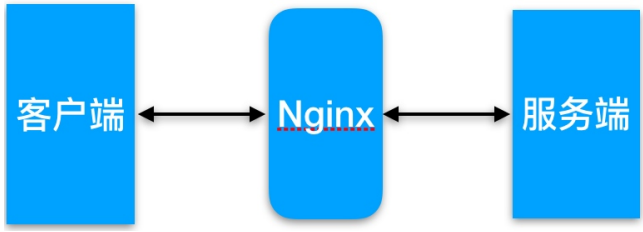
05.Nginx缓存服务

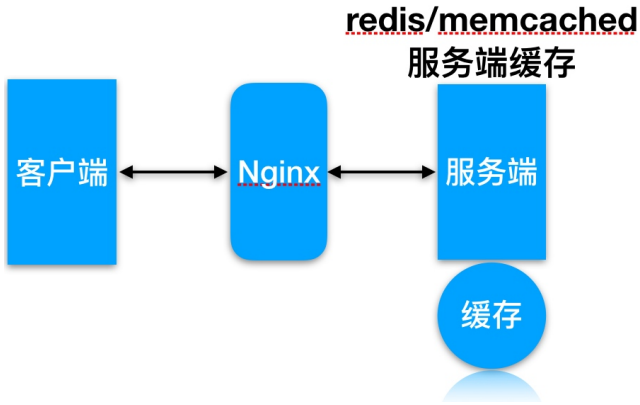
> 徐亮伟, 江湖人称标杆徐。多年互联网运维工作经验， 曾负责过大规模集群架构自动化运维管理工作。擅长Web集群架构与自动化运维， 曾负责国内某大型电商运维工作。
> 个人博客"徐亮伟架构师之路"累计受益数万人。
> 笔者Q:552408925、572891887
> 架构师群:471443208

通常情况下缓存是用来减少后端压力, **将压力尽可能的往前推**, 减少后端压力,提高网站并发延时

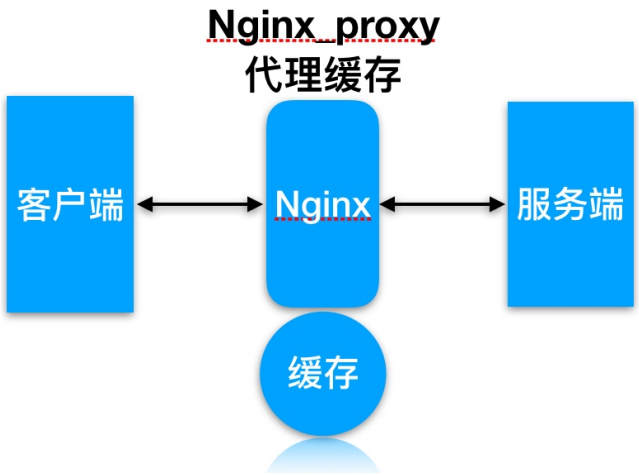


1.缓存常见类型

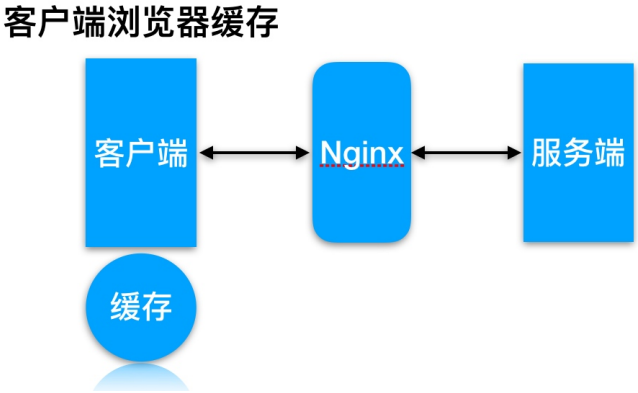
服务端缓存



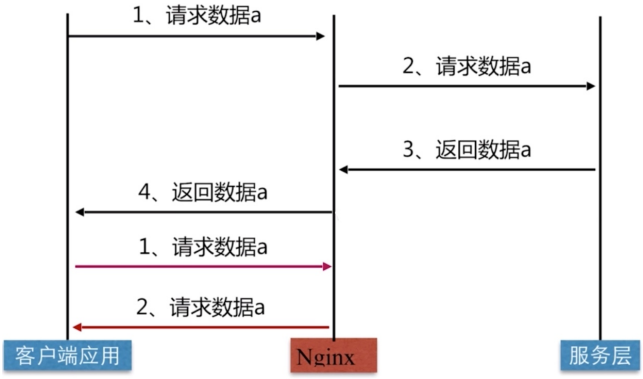
代理缓存, 获取服务端内容进行缓存



客户端浏览器缓存



`Nginx` 代理缓存原理



2.缓存配置语法

`proxy_cache` 配置语法

```
Syntax: proxy_cache zone | off;
Default: proxy_cache off;
Context: http, server, location

//缓存路径
```

```
Syntax: proxy_cache_path path [levels=levels]
[use_temp_path=on|off] keys_zone=name:size [inactive=time]
[max_size=size] [manager_files=number] [manager_sleep=time][manager_threshold=time]
[loader_files=number] [loader_sleep=time] [loader_threshold=time] [purger=on|off]
[purger_files=number] [purger_sleep=time] [purger_threshold=time];
Default: —
Context: http
```

缓存过期周期

```
Syntax: proxy_cache_valid [code ...] time;
Default: —
Context: http, server, location

//示例
proxy_cache_valid 200 302 10m;
proxy_cache_valid 404   1m;
```

缓存的维度

```
Syntax: proxy_cache_key string;
Default:    proxy_cache_key $scheme$proxy_host$request_uri;
Context: http, server, location

//示例
proxy_cache_key "$host$request_uri $cookie_user";
proxy_cache_key $scheme$proxy_host$uri$is_args$args;
```

3.缓存配置实践

1.缓存准备

系统	服务	地址
CentOS7.4	Nginx Proxy	192.168.69.112
CentOS7.4	Nginx Web	192.168.69.113

2.web节点准备

```
//建立相关目录
[root@nginx ~]# mkdir -p /soft/code{1..3}
```

```
//建立相关html文件
[root@nginx ~]# for i in {1..3};do echo Code1-Url$i > /soft/code1/url$i.html;done
[root@nginx ~]# for i in {1..3};do echo Code2-Url$i > /soft/code2/url$i.html;done
[root@nginx ~]# for i in {1..3};do echo Code3-Url$i > /soft/code3/url$i.html;done

//配置Nginx
[root@nginx ~]# cat /etc/nginx/conf.d/web_node.conf
server {
        listen 8081;
        root /soft/code1;
        index index.html;
}
server {
        listen 8082;
        root /soft/code2;
        index index.html;
}
server {
        listen 8083;
        root /soft/code3;
        index index.html;
}

//检查监听端口
[root@nginx ~]# netstat -lntp|grep 80
tcp        0      0 0.0.0.0:8081            0.0.0.0:*               LISTEN      509
22/nginx: master
tcp        0      0 0.0.0.0:8082            0.0.0.0:*               LISTEN      509
22/nginx: master
tcp        0      0 0.0.0.0:8083            0.0.0.0:*               LISTEN      509
22/nginx: master
```

2.代理配置缓存

```
[root@proxy ~]# mkdir /soft/cache
[root@proxy ~]# cat /etc/nginx/conf.d/proxy_cache.conf
upstream cache {
    server 192.168.69.113:8081;
    server 192.168.69.113:8082;
    server 192.168.69.113:8083;
}

#proxy_cache存放缓存临时文件
#levels     按照两层目录分级
#keys_zone  开辟空间名，10m:开辟空间大小，1m可存放8000key
#max_size   控制最大大小，超过后Nginx会启用淘汰规则
```

```
#inactive   60分钟没有被访问缓存会被清理
#use_temp_path  临时文件，会影响性能，建议关闭
proxy_cache_path /soft/cache levels=1:2 keys_zone=code_cache:10m max_size=10g inact
ive=60m use_temp_path=off;

server {
        listen 80;
        server_name 192.168.69.12;

#proxy_cache        开启缓存
#proxy_cache_valid  状态码200|304的过期为12h，其余状态码10分钟过期
#proxy_cache_key    缓存key
#add_header         增加头信息，观察客户端respoce是否命中
#proxy_next_upstream 出现502-504或错误，会跳过此台服务器访问下台
        location / {
                proxy_pass http://cache;
                proxy_cache code_cache;
                proxy_cache_valid 200 304 12h;
                proxy_cache_valid any 10m;
                add_header Nginx-Cache "$upstream_cache_status";
                proxy_next_upstream error timeout invalid_header http_500 http_502
http_503  http_504;
                include proxy_params;
        }
}
```

3.客户端测试

```
//
[root@nginx ~]# curl -s -I http://192.168.56.11/url3.html|grep "Nginx-Cache"
Nginx-Cache: MISS

//命中
[root@nginx ~]# curl -s -I http://192.168.56.11/url3.html|grep "Nginx-Cache"
Nginx-Cache: HIT
```

4.缓存清理实践

如何清理`proxy_cache`代理缓存

1.`rm`删除已缓存数据

```
[root@proxy ~]# rm -rf /soft/cache/*
[root@proxy ~]# curl -s -I http://192.168.56.11/url3.html|grep "Nginx-Cache"
```

```
Nginx-Cache: MISS
```

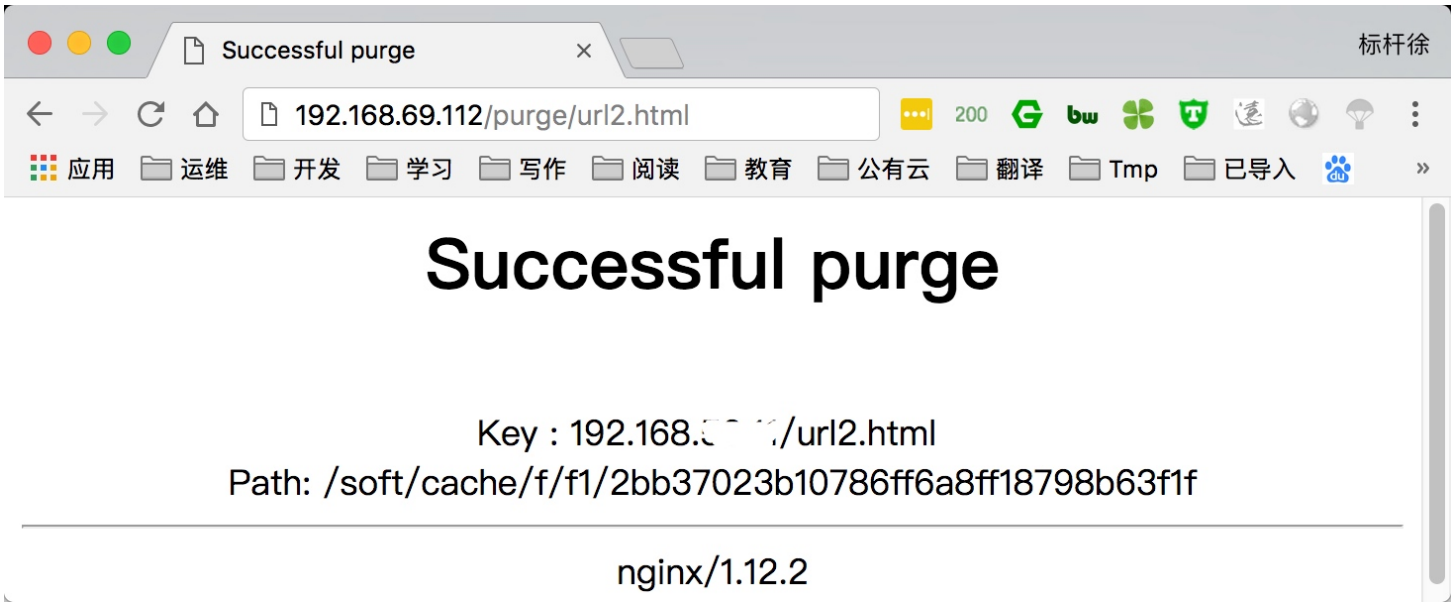
1.通过 `ngx_cache_purge` 扩展模块清理, 需要编译安装 `Nginx`

```
//建立对应目录
[root@proxy ~]# mkdir /soft/src
[root@proxy ~]# cd /soft/src

//下载Nginx包
[root@proxy ~]# wget http://nginx.org/download/nginx-1.12.2.tar.gz
[root@proxy ~]# tar xf nginx-1.12.2.tar.gz

//下载ngx_cache_purge
[root@proxy ~]# wget http://labs.frickle.com/files/ngx_cache_purge-2.3.tar.gz
[root@proxy ~]# tar xf ngx_cache_purge-2.3.tar.gz

//编译Nginx

[root@nginx src]# cd nginx-1.12.2/ && ./configure \
--prefix=/server/nginx --add-module=../ngx_cache_purge-2.3 \
--with-http_stub_status_module --with-http_ssl_module
[root@nginx src]# make && make install

//需要将上文的缓存proxy_cache.conf文件拷贝至源码包中, 并增加如下内容
        location ~ /purge(/.*) {
                allow   127.0.0.1;
                allow   192.168.69.0/24;
                deny    all;
                proxy_cache_purge    code_cache $host$1$is_args$args;
        }

//检测配置重新加载
[root@nginx conf.d]# /server/nginx/sbin/nginx -t
[root@nginx conf.d]# /server/nginx/sbin/nginx -s reload
```

使用浏览器访问建立缓存

Code2-Url2

通过 `purge` 请求对应的缓存数据



再次刷新就会 `404` 因为缓存内容已清理

5.部分页面不缓存

指定部分页面不进行 `proxy_Cache` 缓存

```
 cat proxy_cache.conf
upstream cache{
        server 192.168.69.113:8081;
        server 192.168.69.113:8082;
        server 192.168.69.113:8083;
}

proxy_cache_path /soft/cache levels=1:2 keys_zone=code_cache:10m max_size=10g inact
ive=60m use_temp_path=off;
```

```
server {
        listen 80;
        server_name 192.168.69.112;
        if ($request_uri ~ ^/(url3|login|register|password)) {
                set $cookie_nocache 1;
        }

        location / {
                proxy_pass http://cache;
                proxy_cache code_cache;
                proxy_cache_valid 200 304 12h;
                proxy_cache_valid any 10m;
                proxy_cache_key $host$uri$is_args$args;
                'proxy_no_cache $cookie_nocache $arg_nocache $arg_comment;
                proxy_no_cache $http_pargma $http_authorization;'
                add_header Nginx-Cache "$upstream_cache_status";
                proxy_next_upstream error timeout invalid_header http_500 http_502
http_503  http_504;
                include proxy_params;
        }
}

//清理缓存
[root@nginx ~]# rm -rf /soft/cache/*

//请求测试
[root@nginx ~]# curl -s -I http://192.168.69.112/url3.html|grep "Nginx-Cache"
Nginx-Cache: MISS
[root@nginx ~]# curl -s -I http://192.168.69.112/url3.html|grep "Nginx-Cache"
Nginx-Cache: MISS
[root@nginx ~]# curl -s -I http://192.168.69.112/url3.html|grep "Nginx-Cache"
Nginx-Cache: MISS
```

6.缓存日志记录统计

通过日志记录 `proxy_cache` 命中情况与对应 `url`

```
//修改/etc/nginx/nginx.conf中log_format格式
log_format  main  '$http_user_agent' '$request_uri' '$remote_addr - $remote_user [$
time_local] "$request" '
                    '$status $body_bytes_sent "$http_referer" '
                    '"$http_user_agent" "$http_x_forwarded_for"' '"$upstream_cach
e_status"';

//修改proxy_cache.conf，在server标签新增access日志
```

```
    access_log /var/log/nginx/proxy_cache.log main;


//使用curl访问，最后检查日志命令情况
curl/7.29.0/url3.html192.168.56.183 - - [19/Apr/2018:11:48:43 -0400] "HEAD /url3.ht
ml HTTP/1.1" 200 0 "-" "curl/7.29.0" "-""MISS"
curl/7.29.0/url2.html192.168.56.183 - - [19/Apr/2018:11:48:45 -0400] "HEAD /url2.ht
ml HTTP/1.1" 200 0 "-" "curl/7.29.0" "-""HIT"
curl/7.29.0/url2.html192.168.56.183 - - [19/Apr/2018:11:48:46 -0400] "HEAD /url2.ht
ml HTTP/1.1" 200 0 "-" "curl/7.29.0" "-""HIT"
```

Nginx查看命中率