Managing Ramcache Entries with Pycontrol

Jason Rahm, 2012-10-01

A DevCentral user posted a question in the forums asking for verification of an attribute on the RamCacheKey structure. The maximum_responses attribute should be a long integer. With his C# code, the maximum_responses returned from his iControl call is always double the setting. I fired up pycontrol to see if this was a bug, and in my pycontrol code, I received the expected responses. While he's taking a look at his code and the .Net library he's using, I took an interest in the ramcache methods as I have not messed with the Ramcache module much. In this article, I'll build out a pycontrol script that will enable users to query/evict ramcache entries.

The Interface

The iControl interface for querying/evicting Ramcache entries is RAMCacheInformation. The methods I'll handle in the script are:

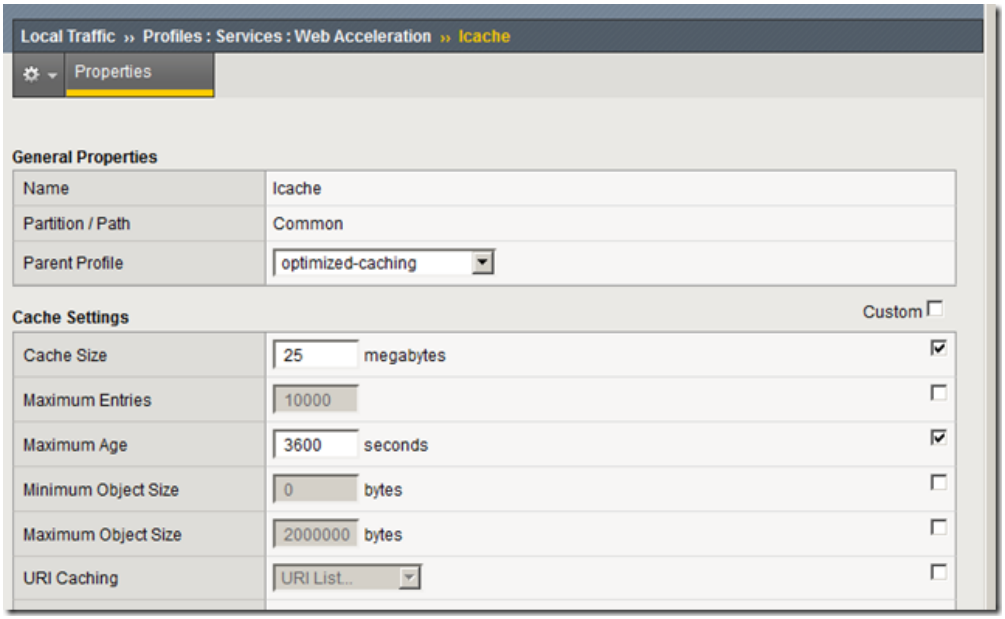
- get_ramcache_entry
- get_ramcache_entry_exact_match
- evict_ramcache_entry_v2
- evict_all_ramcache_entries

There are two more methods defined:

- get_version – All interfaces have this method, not important to Ramcache function
- get_ramcache_entry – Deprecated in favor of _v2 above.

Preparing the BIG-IP

Beginning in v11, the ramcache configuration was removed from the http profile and moved into its own under Local Traffic->Profiles->Services->Web Acceleration. I created a profile called lcache with a parent profile of optimized-caching, increasing the cache size to 25 MB and decreasing the max age to 3600 seconds for testing. I left all the other settings default.



Apply this profile to an http virtual and a pool member with some content and I'm ready to move to the iControl work.

Building the Script

Because there are multiple actions in this interface I want to address, I'll use command line options to control the script flow:

- Host – (-H) **Required**
- Username (-u) **Required**
- Get Entries (-g) **Profile Required**
- Get Exact Entry (-x) **Profile, Host and URI required** (as a white-space separated list in quotes. Ex. “lcache 10.10.20.60 /images/img1.png”
- Evict Entry (-E) **Profile, Host and partial URI required**
- Evict Exact Entry (-X) **Profile, Host and URI required**
- Evict All Entries (-A) **No arguments necessary, empties the ramcache**

With that plan in place, I can configure the parser options, shown in the following code snippet:

```
1:  from optparse import OptionParser
2:
3:  parser = OptionParser()
4:  parser.add_option("-H", "--host", action="store", type="string", dest="host")
5:  parser.add_option("-u", "--user", action="store", type="string", dest="uname")
6:  parser.add_option("-g", "--get", action="store", type="string", dest="get", help="Supply profile name")
7:  parser.add_option("-x", "--get_exact", action="store", type="string", dest="get_exact", help="Supply profile name, host, and
8:  parser.add_option("-E", "--evict", action="store", type="string", dest="evict_entry")
9:  parser.add_option("-X", "--evict_exact", action="store", type="string", dest="evict_exact")
10:  parser.add_option("-A", "--evict_all", action="store_false", default=False, dest="evict_all")
11:  (options, args) = parser.parse_args()
12:
13:  if (options.host is None) or (options.uname is None):
14:   print "\n\tHost (-H) and username (-u) must be supplied, exiting..."
15:   sys.exit()
```

Now that the options are in place, we need to act based on the options provided

```
if options.get is not None:
 rce = getRAMCacheEntries(rc, options.get)
 print rce

elif options.get_exact is not None:
 rce = getRAMCacheExactEntry(rc, options.get_exact)
 print rce

elif options.evict_entry is not None:
 rce = evictRAMCacheEntry(rc, options.evict_entry)
 print rce

elif options.evict_exact is not None:
 rce = evictRAMCacheExactEntry(rc, options.evict_exact)
 print rce

elif options.evict_all is not None:
 rce = evictRAMCacheAllEntries(rc)
 print rce

else:
```

```
22:   print "No options selected!"
```

```
23:   sys.exit()
```

In this code, I'm checking for the options and if none are set, I'm exiting. For each option, I'm calling a function to operate on that particular action. I'm passing the iControl object (see code below) and the argument list ("profile host uri") as necessary to each function.

```
1:  b = pc.BIGIP(
```

```
2:   hostname = options.host,
```

```
3:   username = options.uname,
```

```
4:   password = upass,
```

```
5:   fromurl = True,
```

```
6:   wsdls = ['LocalLB.RAMCacheInformation']
```

```
7:  )
```

```
8:
```

```
9:  rc = b.LocalLB.RAMCacheInformation
```

For all the functions except the one to handle evicting all ramcache entries, I need to create an object for the RamCacheKey structure. This is done in pycontrol with the typefactory. Once the structure is created, I just need to add the appropriate attributes as defined in the API: profile_name, host_name, uri, and maximum_responses. The first three are strings, the last is a long integer. So the code is very similar in each function:

```
1:  rc_key=obj.typefactory.create('LocalLB.RAMCacheInformation.RAMCacheKey')
```

```
2:
```

```
3:  key_attr = rc_info.split(' ')
```

```
4:  rc_key.profile_name = key_attr[0]
```

```
5:  rc_key.host_name = ''
```

```
6:  rc_key.uri = ''
```

```
7:  rc_key.maximum_responses = 100L
```

I split the arguments to get each attribute isolated, then assign as appropriate. For a general get, I only need the profile name so I set the host and uri to an empty string. I chose 100 as a max response just to pick something. Now that the structure is defined, I can make an iControl call, in this case, to get all ramcache entries, then I return those values from the function to the variable making the function call above.

```
1:  rc_entry = obj.get_ramcache_entry(keys=[rc_key])
```

```
2:  return rc_entry
```

So if I put all this together, I can issue this command at the command line, with the data below returned:

```
C:\Users\jrahm\PycharmProjects\pyControl_Scripts>python ramcache_manager.py -H 10.10.20.5 -u admin -g
Please enter the password for user admin
Password:
[[(LocalLB.RAMCacheInformation.RAMCacheEntry){
   profile_name = "lcache"
   host_name = "10.10.20.60"
   uri = "/images/gnome-64.png"
   vary_type = "RAM_CACHE_VARY_NONE"
   vary_count = 1
   hits = 0
   received = 1326237864
   last_sent = 1326237864
   expiration = 1326241060
   size = 4677
 }, (LocalLB.RAMCacheInformation.RAMCacheEntry){
   profile_name = "lcache"
   host_name = "10.10.20.60"
   uri = "/images/ad_remoteauth_ssh_1.png"
   vary_type = "RAM_CACHE_VARY_NONE"
   vary_count = 1
   hits = 0
   received = 1326237873
   last_sent = 1326237873
   expiration = 1326241069
   size = 16304
 }, (LocalLB.RAMCacheInformation.RAMCacheEntry){
   profile_name = "lcache"
   host_name = "10.10.20.60"
   uri = "/images/ad_descr.png"
   vary_type = "RAM_CACHE_VARY_NONE"
   vary_count = 1
   hits = 0
   received = 1326237818
   last_sent = 1326237818
   expiration = 1326241014
```

```
   size = 17942
 }]]
```

Now, if I want to evict one of those, I can change my options a little and try again, then do another query:

```
C:\Users\jrahm\PycharmProjects\pyControl_Scripts>python ramcache_manager.py -H 10.10.20.5 -u admin -E
Please enter the password for user admin
Password:
None

C:\Users\jrahm\PycharmProjects\pyControl_Scripts>python ramcache_manager.py -H 10.10.20.5 -u admin -g
Please enter the password for user admin
Password:
[[(LocalLB.RAMCacheInformation.RAMCacheEntry){
   profile_name = "lcache"
   host_name = "10.10.20.60"
   uri = "/images/gnome-64.png"
   vary_type = "RAM_CACHE_VARY_NONE"
   vary_count = 1
   hits = 0
   received = 1326237864
   last_sent = 1326237864
   expiration = 1326241060
   size = 4677
 }, (LocalLB.RAMCacheInformation.RAMCacheEntry){
   profile_name = "lcache"
   host_name = "10.10.20.60"
   uri = "/images/ad_remoteauth_ssh_1.png"
   vary_type = "RAM_CACHE_VARY_NONE"
   vary_count = 1
   hits = 0
   received = 1326237873
   last_sent = 1326237873
   expiration = 1326241069
   size = 16304
 }]]
```

You can see that the entry is now gone. And finally, If I evict all:

```
C:\Users\jrahm\PycharmProjects\pyControl_Scripts>python ramcache_manager.py -H 10.10.20.5 -u admin -A
Please enter the password for user admin
Password:
None

C:\Users\jrahm\PycharmProjects\pyControl_Scripts>python ramcache_manager.py -H 10.10.20.5 -u admin -g
Please enter the password for user admin
Password:
[[]]
```

Conclusion

There is access to great power via the iControl interface of your BIG-IP. With just a few lines of code, you can manage the ramcache from the CLI. For the full script, please check out the RAMCache Manager wiki page in the iControl codeshare. Happy Coding!

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