Feature: SNMP

- **Status**: Completed
- **Version**: 2.x, 3.x

Contents

Details

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Enabling SNMP in Squid

Squid-3

It's now built in by default. Simply add the configuration options to squid.conf.

Squid-2

To use SNMP, it must first be enabled with the *configure* script, and squid rebuilt. To enable is first run the script:

```
./configure --enable-snmp  [ ... other configure options ]
```

Next, recompile after cleaning the source tree :

```
make clean
make all
make install
```

Once the compile is completed and the new binary is installed the *squid.conf* file needs to be configured to allow access; the default is to deny all requests.

You may also want to move the Squid mib.txt into your SNMP MIB directory so that you can view the output as text rather than raw OID numbers.

Configuring Squid

To configure SNMP first specify a list of communities that you would like to allow access by using a standard SquidConf:acl of the form:

```
acl aclname snmp_community string
```

For example:

```
acl snmppublic snmp_community public
acl snmpjoebloggs snmp_community joebloggs
```

This creates two SquidConf:acl's, with two different communities, public and joebloggs. You can name the SquidConf:acl's and the community strings anything that you like.

To specify the port that the agent will listen on modify the SquidConf:snmp_port parameter, the official SNMP port is **3401**.

```
snmp_port 3401
```

To allow access to Squid's SNMP agent, define an SquidConf:snmp_access ACL with the community strings that you previously defined. For example:

```
snmp_access allow snmppublic localhost
snmp_access deny all
```

The above will allow anyone on the localhost who uses the community *public* to access the agent. It will deny all others access.

> ⚠ If you do not define any SquidConf:snmp_access ACL's, then SNMP access is denied by default.

Finally squid allows to you to configure the address that the agent will bind to for incoming and outgoing traffic. These are defaulted to all addresses on the system, changing these will cause the agent to bind to a specific address on the host.

Defaults:

```
snmp_incoming_address 0.0.0.0
snmp_outgoing_address 0.0.0.0
```

Squid OIDs

Squid OIDs do change between releases. Below is a table of the current OIDs available. The column **Squid** contains the versions of Squid where the OID is present.

> NP: Last updated for Squid-3.1.0.15

> All Squid OID begin with **1.3.6.1.4.1.3495**

OID	Name	Type	Squid	Description
*.1.1.1.0	cacheSysVMsize	Integer32	2.0+	Storage Mem size in KB
*.1.1.2.0	cacheSysStorage	Integer32	2.0+	Storage Swap size in KB
*.1.1.3.0	cacheUptime	Timeticks	2.0+	The Uptime of the cache in timeticks
*.1.2.1.0	cacheAdmin	STRING	2.0+	Cache Administrator E-Mail address
*.1.2.2.0	cacheSoftware	STRING	2.0+	Cache Software Name. Constant **squid**
*.1.2.3.0	cacheVersionId	STRING	2.0+	Cache Software Version

*.1.2.4.0	cacheLoggingFacility	STRING	2.0+	Logging Facility. An informational string indicating logging info like debug level, local/syslog/remote logging etc
Memory Usage Overview				
*.1.2.5.1.0	cacheMemMaxSize	Integer32	2.0+	The value of the SquidConf:cache_mem parameter in MB
*.1.2.5.2.0	cacheSwapMaxSize	Integer32	2.2+	The total of the SquidConf:cache_dir space allocated in MB
*.1.2.5.3.0	cacheSwapHighWM	Integer32	2.2+	Cache Swap High Water Mark
*.1.2.5.4.0	cacheSwapLowWM	Integer32	2.2+	Cache Swap Low Water Mark
*.1.2.6.0	cacheUniqName	Integer32	2.6+	Cache unique host name
Cache Performance Measures				
*.1.3.1.1.0	cacheSysPageFaults	Counter32	2.0+	Page faults with physical i/o
*.1.3.1.2.0	cacheSysNumReads	Counter32	2.0+	HTTP I/O number of reads
*.1.3.1.3.0	cacheMemUsage	Integer32	2.2+	Total memory accounted for KB
*.1.3.1.4.0	cacheCpuTime	Integer32	2.2+	Amount of cpu seconds consumed
*.1.3.1.5.0	cacheCpuUsage	Integer32	2.2+	The percentage use of the CPU
*.1.3.1.6.0	cacheMaxResSize	Integer32	2.0+	Maximum Resident Size in KB
*.1.3.1.7.0	cacheNumObjCount	Gauge32	2.0+	Number of objects stored by the cache
*.1.3.1.8.0	cacheCurrentLRUExpiration	Timeticks	2.0+	Storage LRU Expiration Age
*.1.3.1.9.0	cacheCurrentUnlinkRequests	Gauge32	2.0+	Requests given to unlinkd
*.1.3.1.10.0	cacheCurrentUnusedFDescrCnt	Gauge32	2.0+	Available number of file descriptors
*.1.3.1.11.0	cacheCurrentResFileDescrCnt	Gauge32	2.0+	Reserved number of file descriptors
*.1.3.1.12.0	cacheCurrentFileDescrCnt	Gauge32	2.6+	Number of file descriptors in use
*.1.3.1.13.0	cacheCurrentFileDescrMax	Gauge32	2.6+	Highest file descriptors in use
Per-Protocol Statistics				
*.1.3.2.1.1.0	cacheProtoClientHttpRequests	Counter32	2.0+	Number of HTTP requests received
*.1.3.2.1.2.0	cacheHttpHits	Counter32	2.0+	Number of HTTP Hits sent to clients from cache
*.1.3.2.1.3.0	cacheHttpErrors	Counter32	2.0+	Number of HTTP Errors sent to clients
*.1.3.2.1.4.0	cacheHttpInKb	Counter32	2.0+	Number of HTTP KB's received from clients
*.1.3.2.1.5.0	cacheHttpOutKb	Counter32	2.0+	Number of HTTP KB's sent to clients
*.1.3.2.1.6.0	cacheIcpPktsSent	Counter32	2.0+	Number of ICP messages sent
*.1.3.2.1.7.0	cacheIcpPktsRecv	Counter32	2.0+	Number of ICP messages received

*.1.3.2.1.8.0	cacheIcpKbSent	Counter32	2.0+	Number of ICP KB's transmitted
*.1.3.2.1.9.0	cacheIcpKbRecv	Counter32	2.0+	Number of ICP KB's received
*.1.3.2.1.10.0	cacheServerRequests	Integer32	2.0+	All requests from the client for the cache server
*.1.3.2.1.11.0	cacheServerErrors	Integer32	2.0+	All errors for the cache server from client requests
*.1.3.2.1.12.0	cacheServerInKb	Counter32	2.0+	KB's of traffic received from servers
*.1.3.2.1.13.0	cacheServerOutKb	Counter32	2.0+	KB's of traffic sent to servers
*.1.3.2.1.14.0	cacheCurrentSwapSize	Gauge32	2.0+	Storage Swap size
*.1.3.2.1.15.0	cacheClients	Gauge32	2.2+	Number of clients accessing cache
Service Timing Statistics				
*.1.3.2.2.1.1.1	cacheMedianTime.1	Integer32	2.0+	The value used to index the table 1/5/60
*.1.3.2.2.1.1.5	cacheMedianTime.5	Integer32	2.0+	
*.1.3.2.2.1.1.60	cacheMedianTime.60	Integer32	2.0+	
*.1.3.2.2.1.2.1	cacheHttpAllSvcTime.1	Integer32	2.0+	HTTP all service time
*.1.3.2.2.1.2.5	cacheHttpAllSvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.2.60	cacheHttpAllSvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.3.1	cacheHttpMissSvcTime.1	Integer32	2.0+	HTTP miss service time
*.1.3.2.2.1.3.5	cacheHttpMissSvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.3.60	cacheHttpMissSvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.4.1	cacheHttpNmSvcTime.1	Integer32	2.0+	HTTP hit not-modified service time
*.1.3.2.2.1.4.5	cacheHttpNmSvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.4.60	cacheHttpNmSvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.5.1	cacheHttpHitSvcTime.1	Integer32	2.0+	HTTP hit service time
*.1.3.2.2.1.5.5	cacheHttpHitSvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.5.60	cacheHttpHitSvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.6.1	cacheIcpQuerySvcTime.1	Integer32	2.0+	ICP query service time
*.1.3.2.2.1.6.5	cacheIcpQuerySvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.6.60	cacheIcpQuerySvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.7.1	cacheIcpReplySvcTime.1	Integer32	2.0+	ICP reply service time
*.1.3.2.2.1.7.5	cacheIcpReplySvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.7.60	cacheIcpReplySvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.8.1	cacheDnsSvcTime.1	Integer32	2.0+	DNS service time
*.1.3.2.2.1.8.5	cacheDnsSvcTime.5	Integer32	2.0+	
*.1.3.2.2.1.8.60	cacheDnsSvcTime.60	Integer32	2.0+	
*.1.3.2.2.1.9.1	cacheRequestHitRatio.1	Integer32	2.2+	Request Hit Ratios
*.1.3.2.2.1.9.5	cacheRequestHitRatio.5	Integer32	2.2+	
*.1.3.2.2.1.9.60	cacheRequestHitRatio.60	Integer32	2.2+	
*.1.3.2.2.1.10.1	cacheRequestByteRatio.1	Integer32	2.2+	Byte Hit Ratios
*.1.3.2.2.1.10.5	cacheRequestByteRatio.5	Integer32	2.2+	
*.1.3.2.2.1.10.60	cacheRequestByteRatio.60	Integer32	2.2+	

*.1.3.2.2.1.11.1	cacheHttpNhSvcTime.1	Integer32	2.6+	HTTP refresh hit service time
*.1.3.2.2.1.11.5	cacheHttpNhSvcTime.5	Integer32	2.6+	
*.1.3.2.2.1.11.60	cacheHttpNhSvcTime.60	Integer32	2.6+	
IP Address Cache Statistics				
*.1.4.1.1.0	cacheIpEntries	Gauge32	2.0+	IP Cache Entries
*.1.4.1.2.0	cacheIpRequests	Counter32	2.0+	Number of IP Cache requests
*.1.4.1.3.0	cacheIpHits	Counter32	2.0+	Number of IP Cache hits
*.1.4.1.4.0	cacheIpPendingHits	Gauge32	2.0+	Number of IP Cache pending hits
*.1.4.1.5.0	cacheIpNegativeHits	Counter32	2.0+	Number of IP Cache pending hits
*.1.4.1.6.0	cacheIpMisses	Counter32	2.0+	Number of IP Cache misses
*.1.4.1.7.0	cacheBlockingGetHostByName	Counter32	2.0+	Number of blocking gethostbyname requests
*.1.4.1.8.0	cacheAttemptReleaseLckEntries	Counter32	2.0+	Number of attempts to release locked IP Cache entries
*.1.4.1.9.0	cacheQueueLength	Guage32	2.0-2.1	Obsolete.
Domain Name (FQDN) Cache Statistics				
*.1.4.2.1.0	cacheFqdnEntries	Gauge32	2.0+	FQDN Cache entries
*.1.4.2.2.0	cacheFqdnRequests	Counter32	2.0+	Number of FQDN Cache requests
*.1.4.2.3.0	cacheFqdnHits	Counter32	2.0+	Number of FQDN Cache hits
*.1.4.2.4.0	cacheFqdnPendingHits	Gauge32	2.0+	Number of FQDN Cache pending hits
*.1.4.2.5.0	cacheFqdnNegativeHits	Counter32	2.0+	Number of FQDN Cache negative hits
*.1.4.2.6.0	cacheFqdnMisses	Counter32	2.0+	Number of FQDN Cache misses
*.1.4.2.7.0	cacheBlockingGetHostByAddr	Counter32	2.0+	Number of blocking gethostbyaddr requests
*.1.4.2.8.0	cacheQueueLength	Guage32	2.0-2.1	Obsolete.
DNS Lookup Statistics				
*.1.4.3.1.0	cacheDnsRequests	Counter32	2.0+	Number of external dnsserver requests
*.1.4.3.2.0	cacheDnsReplies	Counter32	2.0+	Number of external dnsserver replies
*.1.4.3.3.0	cacheDnsNumberServers	Counter32	2.0+	Number of external dnsserver processes
Peer Servers Table (Squid-2.x) Indexed by IPv4 Address				
*.1.5.1.1.1	cachePeerName	STRING	2.0-3.0	The FQDN name or internal alias for the peer cache
*.1.5.1.1.2	cachePeerAddr	IP Address	2.0-3.0	The IP Address of the peer cache
*.1.5.1.1.3	cachePeerPortHttp	Integer32	2.0-3.0	The port the peer listens for HTTP requests
*.1.5.1.1.4	cachePeerPortIcp	Integer32	2.0-3.0	The port the peer listens for ICP requests should be 0 if not configured to send ICP requests

*.1.5.1.1.5	cachePeerType	Integer32	2.0-3.0	Peer Type
*.1.5.1.1.6	cachePeerState	Integer32	2.0-3.0	The operational state of this peer
*.1.5.1.1.7	cachePeerPingsSent	Counter32	2.0-3.0	Number of pings sent to peer
*.1.5.1.1.8	cachePeerPingsAcked	Counter32	2.0-3.0	Number of pings received from peer
*.1.5.1.1.9	cachePeerFetches	Counter32	2.0-3.0	Number of times this peer was selected
*.1.5.1.1.10	cachePeerRtt	Integer32	2.0-3.0	Last known round-trip time to the peer (in ms)
*.1.5.1.1.11	cachePeerIgnored	Counter32	2.0-3.0	How many times this peer was ignored
*.1.5.1.1.12	cachePeerKeepAlSent	Counter32	2.0-3.0	Number of keepalives sent
*.1.5.1.1.13	cachePeerKeepAlRecv	Counter32	2.0-3.0	Number of keepalives received
*.1.5.1.1.14	cachePeerIndex	Integer32	2.6-2.8	Reference Index for each peer
*.1.5.1.1.15	cachePeerHost	Integer32	2.6-2.8	The FQDN name for the peer cache
Peer Servers Table (Squid-2.6) Indexed by squid.conf order				
*.1.5.1.2.1	cachePeerName	Integer32	2.6-2.8	The FQDN name or internal alias for the peer cache
*.1.5.1.2.2	cachePeerAddr	IP Address	2.6-2.8	The IP Address of the peer cache
*.1.5.1.2.3	cachePeerPortHttp	Integer32	2.6-2.8	The port the peer listens for HTTP requests
*.1.5.1.2.4	cachePeerPortIcp	Integer32	2.6-2.8	The port the peer listens for ICP requests should be 0 if not configured to send ICP requests
*.1.5.1.2.5	cachePeerType	Integer32	2.6-2.8	Peer Type
*.1.5.1.2.6	cachePeerState	Integer32	2.6-2.8	The operational state of this peer
*.1.5.1.2.7	cachePeerPingsSent	Counter32	2.6-2.8	Number of pings sent to peer
*.1.5.1.2.8	cachePeerPingsAcked	Counter32	2.6-2.8	Number of pings received from peer
*.1.5.1.2.9	cachePeerFetches	Counter32	2.6-2.8	Number of times this peer was selected
*.1.5.1.2.10	cachePeerRtt	Integer32	2.6-2.8	Last known round-trip time to the peer (in ms)
*.1.5.1.2.11	cachePeerIgnored	Counter32	2.6-2.8	How many times this peer was ignored
*.1.5.1.2.12	cachePeerKeepAlSent	Counter32	2.6-2.8	Number of keepalives sent
*.1.5.1.2.13	cachePeerKeepAlRecv	Counter32	2.6-2.8	Number of keepalives received
*.1.5.1.2.14	cachePeerIndex	Integer32	2.6-2.8	Reference Index for each peer
*.1.5.1.2.15	cachePeerHost	STRING	2.6-2.8	The FQDN name for the peer cache
Peer Servers Table (Squid-3.1)				

*.1.5.1.3.1	cachePeerIndex	Integer32	3.1+	A unique value, greater than zero for each SquidConf:cache_peer instance in the managed system.
*.1.5.1.3.2	cachePeerName	STRING	3.1+	The FQDN name or internal alias for the peer cache
*.1.5.1.3.3	cachePeerAddressType	InetAddressType	3.1+	The type of Internet address by which the peer cache is reachable.
*.1.5.1.3.4	cachePeerAddress	InetAddress	3.1+	The Internet address for the peer cache. The type of this address is determined by the value of the cachePeerAddressType object.
*.1.5.1.3.5	cachePeerPortHttp	Integer32	3.1+	The port the peer listens for HTTP requests
*.1.5.1.3.6	cachePeerPortIcp	Integer32	3.1+	The port the peer listens for ICP requests should be 0 if not configured to send ICP requests
*.1.5.1.3.7	cachePeerType	Integer32	3.1+	Peer Type
*.1.5.1.3.8	cachePeerState	Integer32	3.1+	The operational state of this peer
*.1.5.1.3.9	cachePeerPingsSent	Counter32	3.1+	Number of pings sent to peer
*.1.5.1.3.10	cachePeerPingsAcked	Counter32	3.1+	Number of pings received from peer
*.1.5.1.3.11	cachePeerFetches	Counter32	3.1+	Number of times this peer was selected
*.1.5.1.3.12	cachePeerRtt	Integer32	3.1+	Last known round-trip time to the peer (in ms)
*.1.5.1.3.13	cachePeerIgnored	Counter32	3.1+	How many times this peer was ignored
*.1.5.1.3.14	cachePeerKeepAlSent	Counter32	3.1+	Number of keepalives sent
*.1.5.1.3.15	cachePeerKeepAlRecv	Counter32	3.1+	Number of keepalives received
Client Table (Squid-2)				
*.1.5.2.1.1	cacheClientAddr	IP Address	2.x-3.0	The client's IP address
*.1.5.2.1.2	cacheClientHttpRequests	Counter32	2.x-3.0	Number of HTTP requests received from client
*.1.5.2.1.3	cacheClientHttpKb	Counter32	2.x-3.0	Amount of total HTTP traffic to this client
*.1.5.2.1.4	cacheClientHttpHits	Counter32	2.x-3.0	Number of hits in response to this client's HTTP requests
*.1.5.2.1.5	cacheClientHTTPHitKb	Counter32	2.x-3.0	Amount of HTTP hit traffic in KB
*.1.5.2.1.6	cacheClientIcpRequests	Counter32	2.x-3.0	Number of ICP requests received from client
*.1.5.2.1.7	cacheClientIcpKb	Counter32	2.x-3.0	Amount of total ICP traffic to this client (child)

*.1.5.2.1.8	cacheClientIcpHits	Counter32	2.x-3.0	Number of hits in response to this client's ICP requests
*.1.5.2.1.9	cacheClientIcpHitKb	Counter32	2.x-3.0	Amount of ICP hit traffic in KB
Client Table (Squid-3)				
*.1.5.2.2.1	cacheClientAddrType	Integer32	3.1+	IP version :: 1 = IPv4, 2 = IPv6
*.1.5.2.2.2	cacheClientAddr	IP Address	3.1+	The client's IP address
*.1.5.2.2.3	cacheClientHttpRequests	Counter32	3.1+	Number of HTTP requests received from client
*.1.5.2.2.4	cacheClientHttpKb	Counter32	3.1+	Amount of total HTTP traffic to this client
*.1.5.2.2.5	cacheClientHttpHits	Counter32	3.1+	Number of hits in response to this client's HTTP requests
*.1.5.2.2.6	cacheClientHTTPHitKb	Counter32	3.1+	Amount of HTTP hit traffic in KB
*.1.5.2.2.7	cacheClientIcpRequests	Counter32	3.1+	Number of ICP requests received from client
*.1.5.2.2.8	cacheClientIcpKb	Counter32	3.1+	Amount of total ICP traffic to this client (child)
*.1.5.2.2.9	cacheClientIcpHits	Counter32	3.1+	Number of hits in response to this client's ICP requests
*.1.5.2.2.10	cacheClientIcpHitKb	Counter32	3.1+	Amount of ICP hit traffic in KB

FAQ

How can I query the Squid SNMP Agent

You can test if your Squid supports SNMP with the *snmpwalk* program (*snmpwalk* is a part of the NET-SNMP project). Note that you have to specify the SNMP port, which in Squid defaults to 3401.

```
snmpwalk -m /usr/share/squid/mib.txt -v2c -Cc -c communitystring
hostname:3401 .1.3.6.1.4.1.3495.1.1
```

If it gives output like:

```
enterprises.nlanr.squid.cacheSystem.cacheSysVMsize = 7970816
enterprises.nlanr.squid.cacheSystem.cacheSysStorage = 2796142
enterprises.nlanr.squid.cacheSystem.cacheUptime = Timeticks: (766299)
2:07:42.99
```

or

```
SQUID-MIB::cacheUptime.0 = Timeticks: (237007) 0:39:30.07
SQUID-MIB::cacheSoftware.0 = STRING: squid
SQUID-MIB::cacheVersionId.0 = STRING: "3.1"
```

or

```
SNMPv2-SMI::enterprises.3495.1.1.1.0 = INTEGER: 460
SNMPv2-SMI::enterprises.3495.1.1.2.0 = INTEGER: 1566452
SNMPv2-SMI::enterprises.3495.1.1.3.0 = Timeticks: (584627) 1:37:26.27
```

then it is working ok, and you should be able to make nice statistics out of it.

What can I use SNMP and Squid for?

There are a lot of things you can do with SNMP and Squid. It can be useful in some extent for a longer term overview of how your proxy is doing. It can also be used as a problem solver. For example: how is it going with your filedescriptor usage? or how much does your LRU vary along a day. Things you can't monitor very well normally, aside from clicking at the cachemgr frequently. Why not let MRTG do it for you?

How can I use SNMP with Squid?

There are a number of tools that you can use to monitor Squid via SNMP. Many people use MRTG. Another good combination is NET-SNMP plus RRDTool. You might be able to find more information in the ircache rrdtool scripts

Where can I get more information/discussion about Squid and SNMP?

There is an archive of messages from the cache-snmp@ircache.net mailing list mailing list.

Subscriptions should be sent to: cache-snmp-request@ircache.net .

Monitoring Squid with MRTG

Some people use MRTG to query Squid through its SNMP interface.

To get instruction on using MRTG with Squid please visit these pages:

- Cache Monitoring - How to set up your own monitoring by DFN-Cache
- Using MRTG to monitor Squid by ACME Consulting
- Squid Configuration Manual - Monitoring Squid by Visolve
- Using MRTG for Squid monitoring Desire II caching workshop session by Matija Grabnar
- How do I monitor my Squid 2 cache using MRT by The National Janet Web Cache Service

Further examples of Squid MRTG configurations can be found here:

- MRTG HOWTO Collection / Squid from MRTG
- using mrtg to monitor Squid from MRTG
- Chris' MRTG Resources
- MRTG & Squid by Glenn Chisholm
- Braindump by Joakim Recht

Monitoring Squid with Cacti

Cacti is a software tool based on the same concepts as MRTG, but with a more user-friendly interface and infrastructure. Its home is at http://www.cacti.net/. It allows to use pre-defined templates to facilitate deployment. Templates for squid can be found on the cacti forums

Monitoring with OpenNMS

The OpenNMS site has a complete tutorial.

Future Work

The SNMP agent built into squid is very limited, as it is SNMP v2c cross-compatible with v1 in places.

1. The bundled library needs replacing.
    - net-snmp v5.4 is now widely available. net-snmp
    - this should resolve 64-bit integer issues just with the update
    - this may also resolve bulk OID requests without other special changes
2. Many statistics and details inside Squid need to be added to the tree.

    - synchronising with the cachemgr available data
    - possibly leading to a shared cachemgr/SNMP internal PDU fetch from SMP workers
3. Live configuration changess may be done by SNMP agents.
    - toggle directives and scalar values being the primary ones
    - possibly also toggle options on certain directives
    - requires the library support of SET operations
4. auto-generating the MIB file needs to be done at some point.
    - managing the MIB contents is non-trivial already and will only get harder as more OID are added
    - a process of building the MIB file either in daily maintenance or bundling process would be very helpful long-term

Back to the SquidFaq

CategoryFeature

Features/Snmp (last edited 2013-03-03 00:50:37 by Amos Jeffries)