SECURITY BULLETIN – Worldwide H.323 Botnet Calling H.323 Systems as “cisco”
Version 1.1

Security Bulletin Relating to Worldwide Botnet Dialing H.323-Capable Systems

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Polycom may at times issue either a ***Security Advisory*** or a ***Security Bulletin*** with regards to a particular vulnerability or set of vulnerabilities. If a ***Security Advisory*** is issued, this means that one more Polycom products are verified by Polycom to be affected by one or more vulnerabilities.

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This information applies only to those Polycom products that might answer, respond to, or forward an H.323 call.

This advisory is NOT about any vulnerability in any Polycom product. This advisory serves to educate those for whom unwanted inbound H.323 calls have become a problem. Polycom products are NOT demonstrating a vulnerability when they respond properly to H.323 calls.

Situation Summary

A “botnet”, or mass group of systems on the Internet under the control of one or several malicious entities, is being used to place H.323 calls to any device on the Internet that can meaningfully respond to

an H.323 call. This means endpoints, bridges, MCU's, gatekeepers, firewalls, proxies, etc. might all be called by the botnet.

The purpose of the botnet is unclear, although toll fraud is usually the purpose behind such broad sweeps against systems that speak a specific communications protocol. The systems used in the botnet are, as is typical with this method, innocent third-party hosts whose owners are most likely unaware are a part of the botnet.

The botnet can successfully be run against all H.323 systems it finds on the Internet, and is presumably noting which systems respond to calls for future attacks.

*This particular botnet advertises itself by the fact that it seems to consistently use "*h323-ID = 'cisco'". The name appears to be unrelated to anything in the real world, and is rather a way of adding seeming legitimacy to the H.323 botnet.

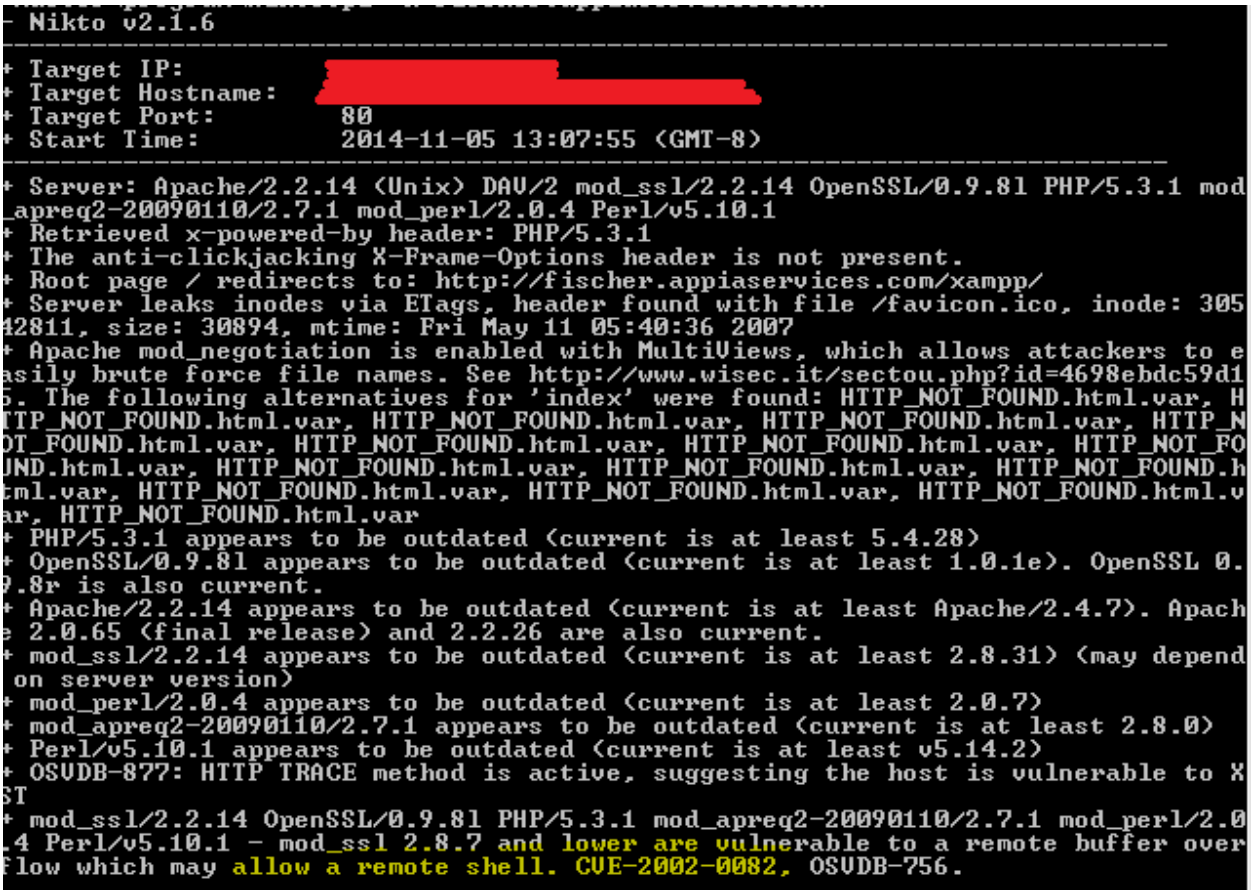
Situation Details

The botnet appears to be at least partially (probably mostly) comprised of web servers around the Internet, all of which appear to be operating below recommended security patch levels. Such systems are owned by innocent third parties who do not patch their systems to current levels. The attackers first use known security flaws to compromise such systems, and then insert code that dials H.323 systems and reports back to the individual(s) who created this illegal system ("bot master" and "bot herder" are the normal terms for the one(s) in control of the botnet.

Every system we have been able to analyze (but one) conforms with this model. One of the IP addresses used to call H.323 systems was analyzed and is shown below. The one system that did not conform with the under-patched web server model was an instance of FreePBX – most likely compromised in a similar manner for identical purposes.

From the perspective of the Internet, this is just a random web server whose owner failed to patch things when known vulnerabilities were announced (we had permission to scan). Such systems might be behind on patching Apache or OpenSSL or other similar modules. This one (as reported by Nikto, a free vulnerability scanner) has a vulnerability from 2002 among its many vulnerabilities.

Again, this is NOT a "bad guy" system. This is a third-party web server, poorly maintained, compromised by the attacker(s), and then loaded with the software that is performing the H.323 calls:



Impact and Risk

Since the attack is so widespread, since its purpose cannot be truly uncovered, and since each target network is different both in purpose and in layout, no one statement can be made about impact and risk. As noted above, botnets that dial communication protocols over and over to as many hosts as possible are quite likely looking for a means to conduct toll fraud – dialing calls through third-party systems, without the consent of the owners of those third-party systems.

General Mitigations

The challenge with these scenarios is that the target hosts (all H.323-listening devices) are doing exactly what they are set up to do: answering calls. Polycom products are not vulnerable to anything in this situation. Mitigations to relieve the burden presented by these non-stop calls therefore come in the form of adding some ability to discern desired calls from undesired calls.

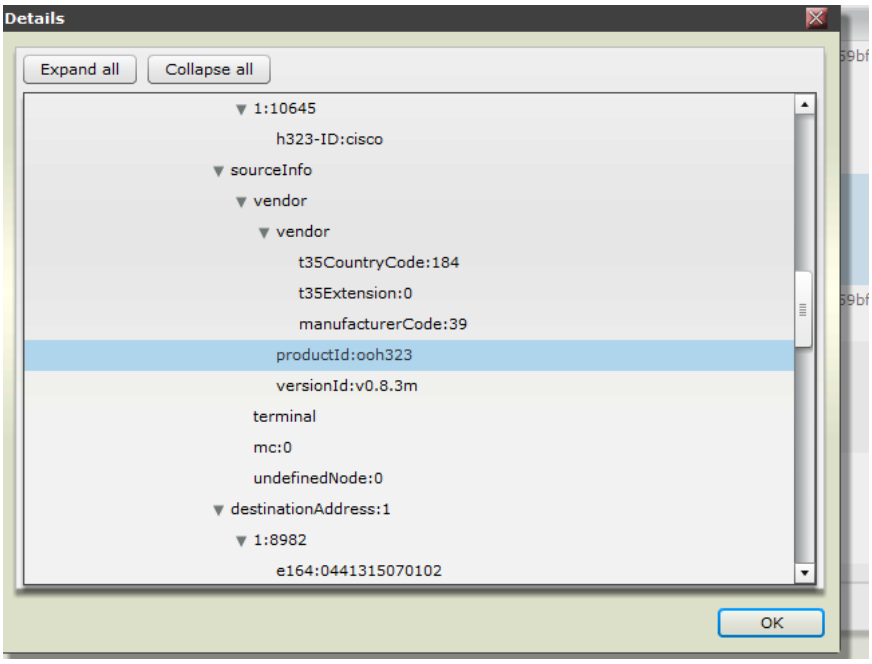
Whitelisting is the most common method for separating the good calls from the bad. In an environment where all of the "good guys" are known, it is best to simply create whitelists comprised of those addresses, and to deny all inbound calls NOT from those addresses.

Other times blacklists can be grown and maintained, blocking each of the botnet callers as it is logged and confirmed to be a "bad guy".

Fortunately, the botnet has also proven (so far) to consistently populate two key H.323 fields with the same information.

H.323 Alias Value: (h323-ID = “cisco”)
Vendor Product ID Field: (productId = “ooh323”)

The below RPAD screenshot taken from an RPAD management interface shows both fields:



Solution

Firewalls:

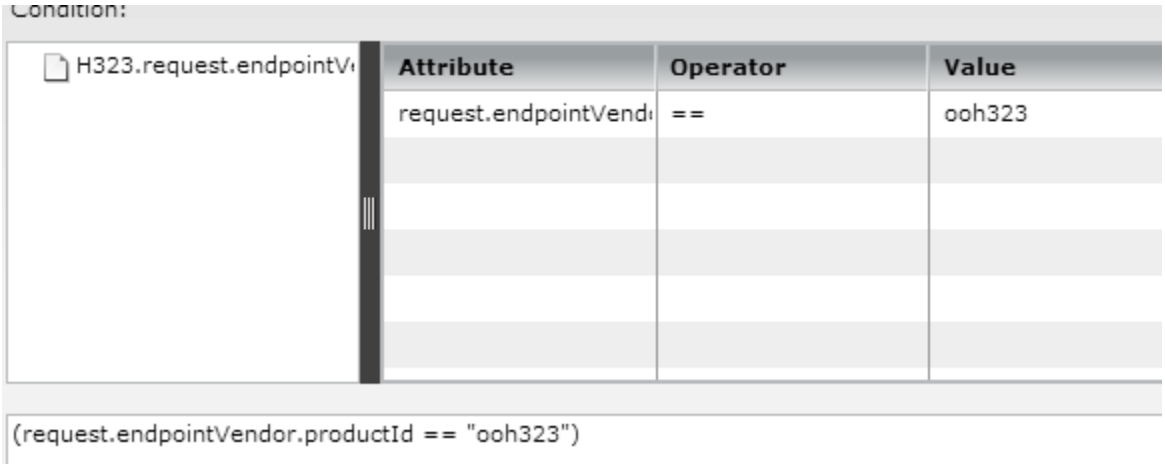
Polycom cannot give advice on specific firewall configurations or specific firewalls. Those who have a third-party firewall as their defense against incoming H.323 calls should consult with their firewall and/or security experts before implementing any of the high-level recommendation in this advisory.

H.323 is not traditionally a firewall-friendly protocol. H.323 uses both UDP and TCP over a range of ports both static and dynamic. Firewalls that support H.323 natively include special rules or modules to deal with the nuances of the H.323 protocol. Such firewalls might be able to use the field information above in the form of rules or ACL’s.

Alternatively, a firewall can come at the problem with more traditional IP-based whitelisting or blacklisting techniques.

RealPresence Access Director (RPAD):

RPAD administrators can make rules blocking for the two fields listed above. The rule for Product ID of “ooh323” is shown here.



Detailed information about enabling and activating rules in RPAD is available in Appendix A at the end of this document.

Video Border Proxy (VBP):

VBP version 11.2.20 has fixed the issue without need for any configuration changes. This version disables fastStart on the WAN side when the call originates from a non-registered client.

This change appears to reduce the nuisance factor of the H.323 botnet without the need for configuration changes.

Revision History

DRAFT 1.0 – Original publication: November 6, 2014. RPAD configurations given with lighter reference to VBP.

Version 1.0 – Removed DRAFT status, cleared for public consumption, provided detail on VBP upgrade.

Version 1.1 – Clarification on advisory/bulletin differences and inclusion of *h323-ID = "cisco"* string earlier in the document.

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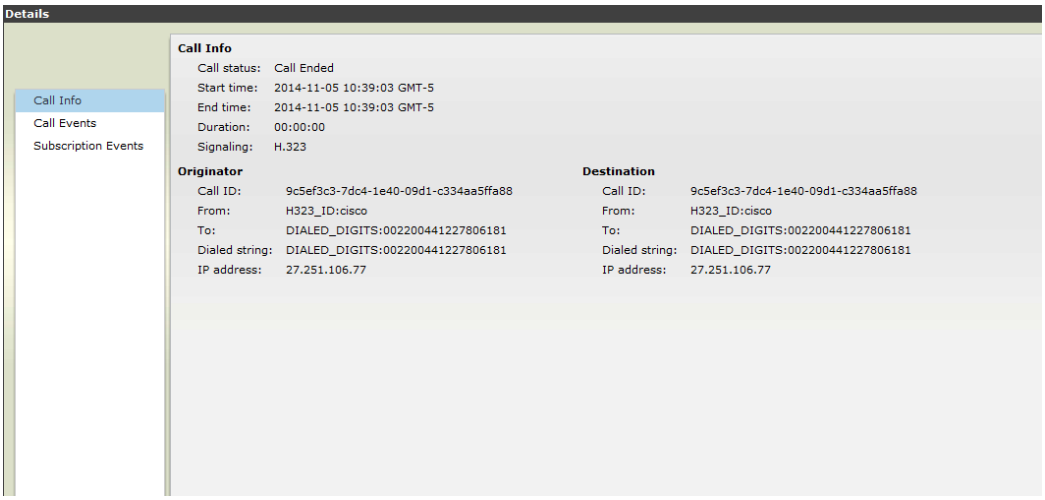
Appendix A: Detailed Instructions for Writing Rules in RPAD

Revealing the source H323-ID alias value of 'cisco': The RPAD Diagnostics->Call History->H323 Signaling type output shows them as:

Originator	Destination	Start Time	End Time	Signaling
H323_ID:cisco	DIALED_DIGITS:00220044122	2014-11-05 10:39:03 GMT-5	2014-11-05 10:39:03 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:00344122780	2014-11-05 10:31:02 GMT-5	2014-11-05 10:31:02 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:00644131507	2014-11-05 10:06:27 GMT-5	2014-11-05 10:06:27 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:00944122780	2014-11-05 09:35:03 GMT-5	2014-11-05 09:35:03 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:01144131507	2014-11-05 09:27:09 GMT-5	2014-11-05 09:27:09 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:01100441315	2014-11-05 09:05:29 GMT-5	2014-11-05 09:05:29 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:10441315070	2014-11-05 08:28:02 GMT-5	2014-11-05 08:28:02 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:10044131507	2014-11-05 08:20:24 GMT-5	2014-11-05 08:20:24 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:10004413150	2014-11-05 08:12:34 GMT-5	2014-11-05 08:12:34 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:10144122780	2014-11-05 08:04:32 GMT-5	2014-11-05 08:04:32 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:10114413150	2014-11-05 07:56:19 GMT-5	2014-11-05 07:56:19 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:11100441227	2014-11-05 07:48:20 GMT-5	2014-11-05 07:48:20 GMT-5	H.323
H323_ID:cisco	DIALED_DIGITS:12340044122	2014-11-05 07:24:37 GMT-5	2014-11-05 07:24:37 GMT-5	H.323



Creating an RPAD ACL to prevent the unit from processing those inbound calls:

Configuration->Access Control List Rules

To create the new Rule

In the Actions pane click Add

The Add Rule dialog opens

Give the Rule a Name, such as MaliciousTraffic

Use the drop-arrow to select H323

Optionally, provide a Description such as “this Rule is intended to match on h323ID=cisco and will be used with a Deny action to block unwanted call attempts.”

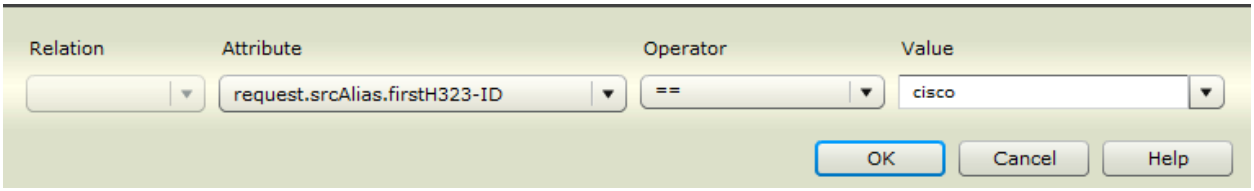
In the Add Rule dialog, click Add to add a Condition

The Add Condition dialog opens

In the Add Condition dialog, use the drop-arrow for Attribute and select **request.srcAlias.firstH323-ID**

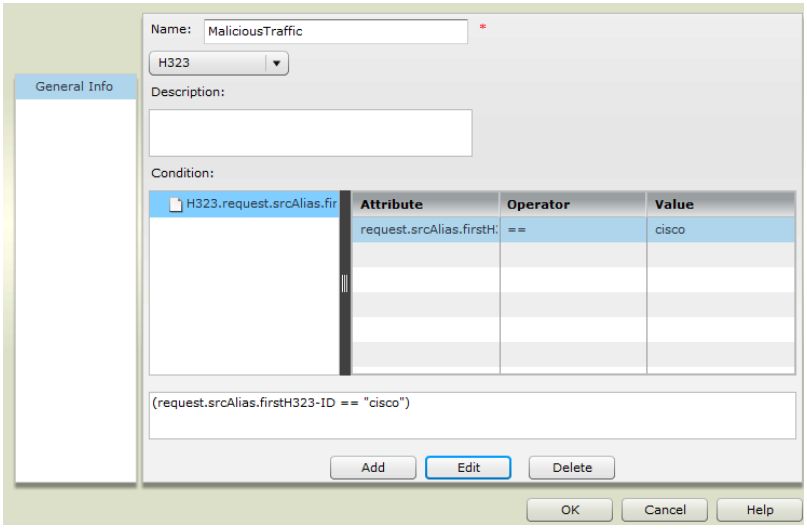
If the Operator is not **==** use the drop-arrow to select **==** (two equal symbols)

In the Value field enter “cisco” without the quotes.



Click Ok to save the condition

The new Rule should appear similar to this:



To apply the Rule, go to Configuration->Access Control List Settings

If there are no existing Settings, click Add in the Actions pane to open the Add ACL Setting dialog

For Service Name use the drop-arrow to select H323

For IP use the drop arrow to select the External Signaling IP of your RPAD

For Port use the drop-arrow to select H.225 call signaling port:1720

In the Rule Setting area click Add to open the Add Rule dialog

Use the drop-arrow under Access Control List Name to select the MaliciousTraffic Rule created in the previous step

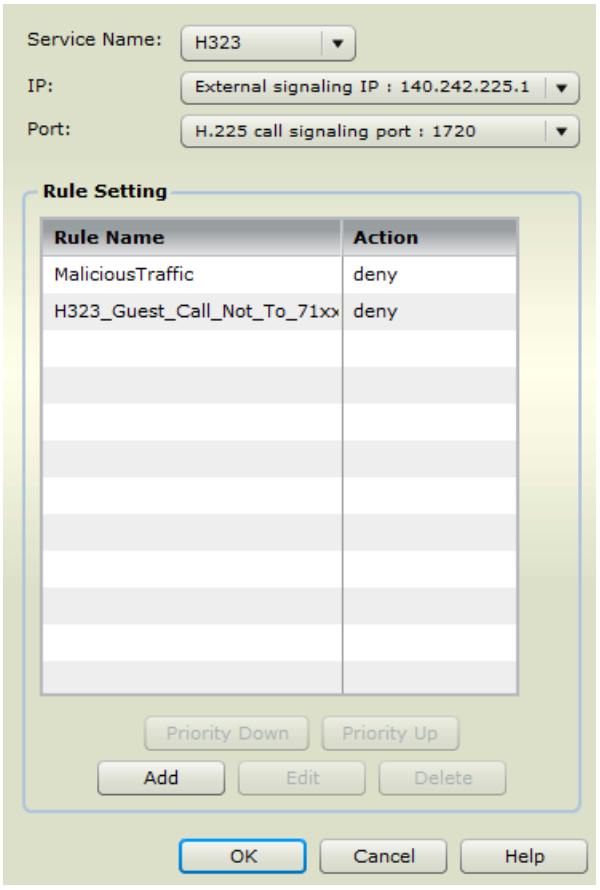
Use the drop-arrow below Action to select Deny

Click Ok to add the Rule to the Rule Settings area

In the Rule Setting area, highlight the MaliciousTraffic Rule and then use the Priority Up button to move this rule to the top of the list; you may have to Priority Up more than once.

Click OK to save the Setting

The completed rule should appear similar to this example:

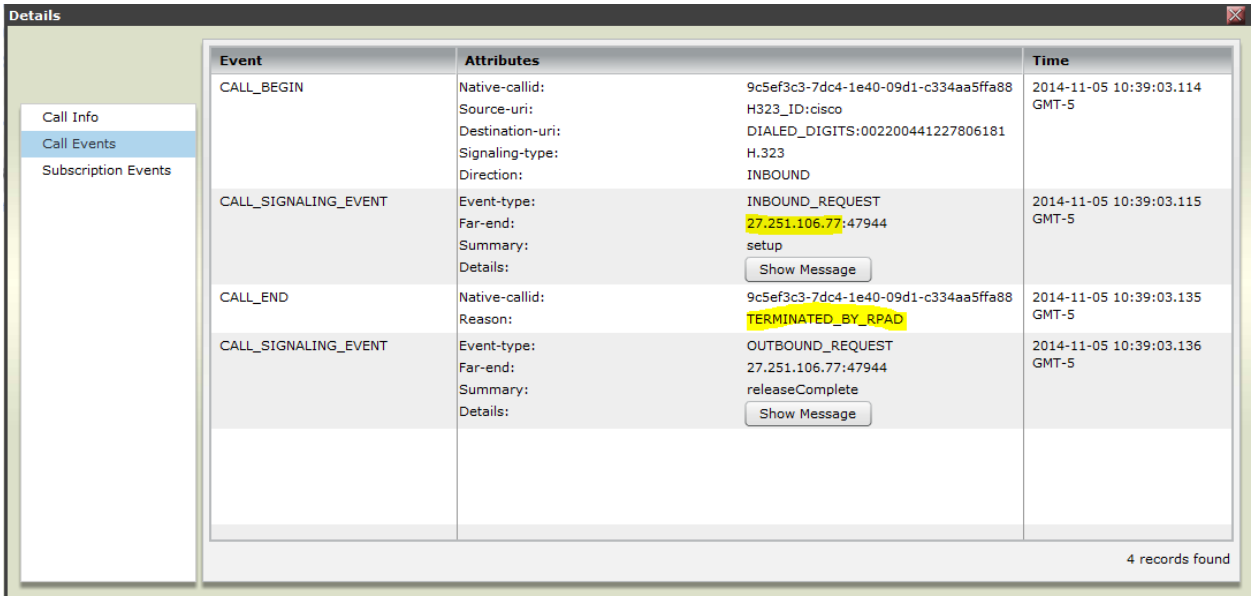


After applying the ACL to TCP1720, the next incident will to occur show a Call_End of TERMINATED_BY_RPAD.

RPAD Diagnostics->Call History->H323 Signaling type output

Click the call to select it, then click Show Call Details in the Actions pane

In the Call Details dialog, click Call Events to display the details

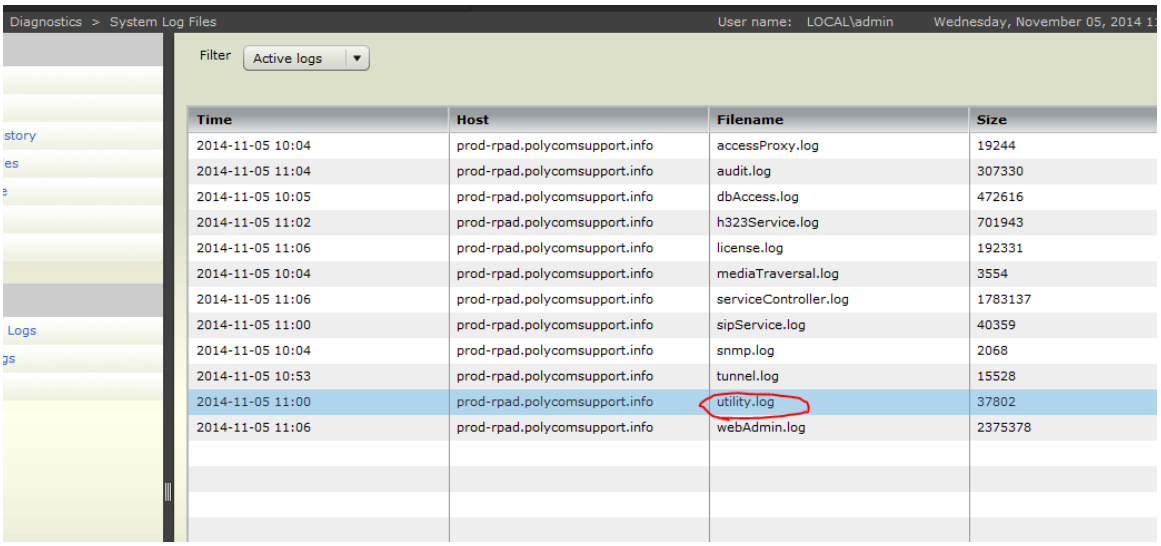


Note the sourceIP seen in the CALL_SIGNALING_EVENT for the Far-End

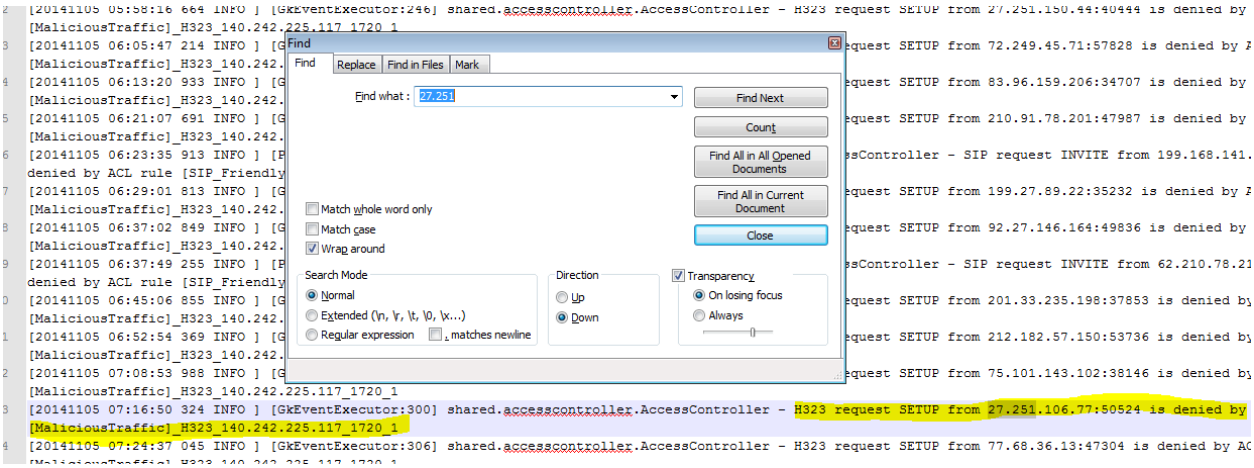
View the utility.log to verify the newly-created ACL is acting as desired.

Diagnostics->System Log files

Seclect the utility.log entry and click Download Logs to save the file to your computer



Use a text editor to search the utility.log for the sourceIP and you should see a line indicating the request was denied by the MaliciousTraffic ACL:



Optionally, you can add a Condition to deny the traffic based on the product.VendorID, which has been seen as “ooh323”. To add this Condition, go to Configuration->Access Control List Rules, click your MaliciousTraffic Rule to select it, and click Edit in the Actions pane to open the Edit Rule dialog.

Using the steps details above, Add a Condition by first clicking the existing H323.request.dstAlias.firstH323-ID entry, then click the Add button to open the Add Condition dialog

Use the drop-arrow below Relation to select **or**

Use the drop-arrow below Attribute to select **request.endpointVendor.productId**

Use the drop-arrow below Operator to select **==** (two equal symbols)

In the Value field enter **ooh323**

This is two lower-case “o” characters, a lower-case “h” and the digits “323”

Click OK to add the new Condition

Click OK again to save the changes to the Rule; there is no need to re-apply the Rule in Access Control List Settings