

How to install sngrep on your VoipNow server

sngrep is a tool for displaying SIP calls message flows from the terminal of your server. It can be used to display real-time SIP traffic and to process PCAP files (packet captures). Think of it as a specialized `tcpdump` tool designed for VoIP. It's open-source and it's available [here](#).

This knowledge base article assumes advanced knowledge of the Linux command line and familiarity with the SIP protocol.

Step-by-step guide

Here are the steps to take if you want to install sngrep on your VoipNow server.

Please note that all commands listed in a code block need to be executed as root.

1. If VoipNow is not installed, perform the installation using the command line installer as instructed [here](#).
2. Install the required software packages so that you can download and compile sngrep by running:

```
# yum -y install git libpcap openssl-devel gnutls pcre-devel libpcap-devel ncurses-devel autoconf  
automake gcc make
```

3. Download the sngrep files.

```
# cd ~  
# git clone https://github.com/irontec/sngrep.git  
Cloning into 'sngrep'...  
remote: Counting objects: 4878, done.  
remote: Total 4878 (delta 0), reused 0 (delta 0), pack-reused 4878  
Receiving objects: 100% (4878/4878), 4.06 MiB | 1.98 MiB/s, done.  
Resolving deltas: 100% (3864/3864), done.  
Checking connectivity... done.
```

4. A new folder named sngrep containing the source code will be created. Go to that folder.

```
# cd sngrep
```

5. Run the bootstrap.sh script.

```
# ./bootstrap.sh  
Generating the configure script ...
```

6. Run the configure script.

```
./configure  
checking for a BSD-compatible install... /usr/bin/install -c  
checking whether build environment is sane... yes  
checking for a thread-safe mkdir -p... /usr/bin/mkdir -p  
checking for gawk... gawk  
checking whether make sets $(MAKE)... yes  
checking whether make supports nested variables... yes  
checking whether make supports nested variables... (cached) yes  
checking for style of include used by make... GNU  
checking for gcc... gcc  
checking whether the C compiler works... yes  
checking for C compiler default output file name... a.out  
checking for suffix of executables...  
checking whether we are cross compiling... no  
checking for suffix of object files... o  
checking whether we are using the GNU C compiler... yes  
checking whether gcc accepts -g... yes  
checking for gcc option to accept ISO C89... none needed  
checking dependency style of gcc... gcc3  
checking how to run the C preprocessor... gcc -E  
checking for grep that handles long lines and -e... /usr/bin/grep  
checking for egrep... /usr/bin/grep -E  
checking for ANSI C header files... yes
```

```

checking for sys/types.h... yes
checking for sys/stat.h... yes
checking for stdlib.h... yes
checking for string.h... yes
checking for memory.h... yes
checking for strings.h... yes
checking for inttypes.h... yes
checking for stdint.h... yes
checking for unistd.h... yes
checking minix/config.h usability... no
checking minix/config.h presence... no
checking for minix/config.h... no
checking whether it is safe to define __EXTENSIONS__... yes
checking for gcc... (cached) gcc
checking whether we are using the GNU C compiler... (cached) yes
checking whether gcc accepts -g... (cached) yes
checking for gcc option to accept ISO C89... (cached) none needed
checking dependency style of gcc... (cached) gcc3
checking for g++... no
checking for c++... no
checking for gpp... no
checking for aCC... no
checking for CC... no
checking for cxx... no
checking for cc++... no
checking for cl.exe... no
checking for FCC... no
checking for KCC... no
checking for RCC... no
checking for xlc_r... no
checking for xlc... no
checking whether we are using the GNU C++ compiler... no
checking whether g++ accepts -g... no
checking dependency style of g++... none
checking whether ln -s works... yes
checking for egrep... (cached) /usr/bin/grep -E
checking for pthread_create in -lpthread... yes
checking for pcap_open_offline in -lpcap... yes
checking pcap.h usability... yes
checking pcap.h presence... yes
checking for pcap.h... yes
checking ncurses.h usability... yes
checking ncurses.h presence... yes
checking for ncurses.h... yes
checking for initscr in -lncurses... yes
checking for new_panel in -lpanel... yes
checking for new_form in -lform... yes
checking for new_item in -lmenu... yes

```

```

configure:
configure: sngrep configure finished
configure: =====
configure: GnuTLS Support           : no
configure: OpenSSL Support         : no
configure: Unicode Support         : no
configure: Perl Expressions Support : no
configure: IPv6 Support            : no
configure: EEP Support             : no
configure: =====
configure:
checking that generated files are newer than configure... done
configure: creating ./config.status
config.status: creating Makefile
config.status: creating src/Makefile
config.status: creating config/Makefile
config.status: creating doc/Makefile

```

```
config.status: creating tests/Makefile
config.status: creating src/config.h
config.status: executing depfiles commands
```

7. Compile sngrep with the make command.

```
# make
Making all in src
make[1]: Entering directory `/root/sngrep/src'
make all-am
make[2]: Entering directory `/root/sngrep/src'
CC      capture.o
CC      address.o
CC      packet.o
CC      sip.o
CC      sip_call.o
CC      sip_msg.o
CC      sip_attr.o
CC      main.o
CC      option.o
CC      group.o
CC      filter.o
CC      keybinding.o
CC      media.o
CC      setting.o
CC      rtp.o
CC      util.o
CC      vector.o
CC      ui_panel.o
CC      scrollbar.o
CC      ui_manager.o
CC      ui_call_list.o
CC      ui_call_flow.o
CC      ui_call_raw.o
CC      ui_stats.o
CC      ui_filter.o
CC      ui_save.o
CC      ui_msg_diff.o
CC      ui_column_select.o
CC      ui_settings.o
CCLD    sngrep
make[2]: Leaving directory `/root/sngrep/src'
make[1]: Leaving directory `/root/sngrep/src'
Making all in config
make[1]: Entering directory `/root/sngrep/config'
make[1]: Nothing to be done for `all'.
make[1]: Leaving directory `/root/sngrep/config'
Making all in doc
make[1]: Entering directory `/root/sngrep/doc'
make[1]: Nothing to be done for `all'.
make[1]: Leaving directory `/root/sngrep/doc'
Making all in tests
make[1]: Entering directory `/root/sngrep/tests'
make[1]: Nothing to be done for `all'.
make[1]: Leaving directory `/root/sngrep/tests'
make[1]: Entering directory `/root/sngrep'
make[1]: Nothing to be done for `all-am'.
make[1]: Leaving directory `/root/sngrep'
```

8. Install sngrep with the make install command.

```
# make install
Making install in src
make[1]: Entering directory `/root/sngrep/src'
make[2]: Entering directory `/root/sngrep/src'
  /usr/bin/mkdir -p '/usr/local/bin'
  /usr/bin/install -c sngrep '/usr/local/bin'
make[2]: Nothing to be done for `install-data-am'.
make[2]: Leaving directory `/root/sngrep/src'
make[1]: Leaving directory `/root/sngrep/src'
Making install in config
make[1]: Entering directory `/root/sngrep/config'
make[2]: Entering directory `/root/sngrep/config'
  /usr/bin/mkdir -p '/usr/local/etc'
  /usr/bin/install -c -m 644 sngrepc '/usr/local/etc'
make[2]: Nothing to be done for `install-data-am'.
make[2]: Leaving directory `/root/sngrep/config'
make[1]: Leaving directory `/root/sngrep/config'
Making install in doc
make[1]: Entering directory `/root/sngrep/doc'
make[2]: Entering directory `/root/sngrep/doc'
make[2]: Nothing to be done for `install-exec-am'.
  /usr/bin/mkdir -p '/usr/local/share/man/man8'
  /usr/bin/install -c -m 644 sngrep.8 '/usr/local/share/man/man8'
make[2]: Leaving directory `/root/sngrep/doc'
make[1]: Leaving directory `/root/sngrep/doc'
Making install in tests
make[1]: Entering directory `/root/sngrep/tests'
make[2]: Entering directory `/root/sngrep/tests'
make[2]: Nothing to be done for `install-exec-am'.
make[2]: Nothing to be done for `install-data-am'.
make[2]: Leaving directory `/root/sngrep/tests'
make[1]: Leaving directory `/root/sngrep/tests'
make[1]: Entering directory `/root/sngrep'
make[2]: Entering directory `/root/sngrep'
make[2]: Nothing to be done for `install-exec-am'.
make[2]: Nothing to be done for `install-data-am'.
make[2]: Leaving directory `/root/sngrep'
make[1]: Leaving directory `/root/sngrep'
```

9. sngrep is now installed into /usr/local/bin/sngrep which should be already in your path. You may launch it with the sngrep command:

```
# sngrep
```

After starting sngrep, you'll be presented with a text-mode, interactive interface which can be navigated with the arrow keys and quit with the Esc key.

How to make the most of SNGREP

Initialize a softphone which registers to your VoipNow server, and the REGISTER and the SUBSCRIBE methods sent by the phone will appear in the console right away. You can clear the list of captured messages by pressing the F5 key, as indicated in the legend at the bottom of the screen.

sngrep - SIP messages flow viewer								
Current Mode: Online		Dialogs: 2						
Display Filter:								
	Seq	Method	SIP From	SIP To	Mags	Source	Destination	Call State
[]	1	REGISTER	0003*002@10.150.8.21:5060	0003*002@10.150.8.21:5060	4	192.168.3.189:56712	10.150.8.21:5060	
[]	2	SUBSCRIBE	0003*002@10.150.8.21:5060	0003*002@10.150.8.21:5060	4	192.168.3.189:56712	10.150.8.21:5060	

You can move the cursor between the displayed packets using the arrow keys. For details about a specific SIP method, press ENTER. You'll get a graphical flow of the packets exchanged between your phone and the VoipNow server. You may navigate through the flow using the same arrow keys - the selected message details will be displayed on the right of the window.

Call flow for NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. (Color by Request/Response)		
192.168.3.189:56712	10.150.8.21:5060	REGISTER sip:10.150.8.21:5060 SIP/2.0 Via: SIP/2.0/UDP 192.168.3.189:56712;branch=z9hG4bK-d8754z-b42c2d6ac977f91c-1---d8754z-;rport Max-Forwards: 70 Contact: <sip:0003*002@192.168.3.189:56712;rinstance=1c1bf515683da4b4> To: "4PSATEST"<sip:0003*002@10.150.8.21:5060> From: "4PSATEST"<sip:0003*002@10.150.8.21:5060>;tag=0a390a23 Call-ID: NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. CSeq: 1 REGISTER Expires: 120 Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE Supported: replaces User-Agent: 3CXPhone 6.0.26523.0 Content-Length: 0 X-Dc: PHNpcDowMDAzKjAwMkAxOTIuMTY4LjMuMTg5OjU2NzEyO3JpbmN0YW5jZT0xYzF1ZjUxNTY4M2RhNGI0Pg== X-Dv: U0lQZlZuMC9VRFAgMTkyLjE2OC4zLjE4OTc1Njc4MjE1cmFuY2g9ej1cRzRiSylkODc1NH0tYjYyYzJkNmFjOTc3ZjxxYy0xLS0tZDg3NTR6LTtvcG9ydA==
12:34:16.463983	REGISTER	
+0.001068	401 Unauthorized	
12:34:16.465051	REGISTER	
+0.102470	200 OK	
12:34:16.567521	REGISTER	
+0.005218	200 OK	
12:34:16.572739	REGISTER	
+108.141789	401 Unauthorized	
12:36:04.714528	REGISTER	
+0.001707	200 OK	
12:36:04.716235	REGISTER	
+0.103391	200 OK	
12:36:04.819626	REGISTER	
+0.006869	200 OK	
12:36:04.826486	REGISTER	

Pressing ENTER again will show the packet in raw mode.

```

2016/05/13 12:34:16.463983 192.168.3.189:56712 -> 10.150.8.21:5060
REGISTER sip:10.150.8.21:5060 SIP/2.0
Via: SIP/2.0/UDP 192.168.3.189:56712;branch=z9hG4bK-d8754z-b42c2d6ac977f91c-1---d8754z-;rport
Max-Forwards: 70
Contact: <sip:0003*002@192.168.3.189:56712;rinstance=1c1bf515683da4b4>
To: "4PSATEST"<sip:0003*002@10.150.8.21:5060>
From: "4PSATEST"<sip:0003*002@10.150.8.21:5060>;tag=0a390a23
Call-ID: NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE.
CSeq: 1 REGISTER
Expires: 120
Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE
Supported: replaces
User-Agent: 3CXPhone 6.0.26523.0
Content-Length: 0
X-Dc: PHNpcDowMDAzKjAwMkAxOTIuMTY4LjMuMTg5OjU2NzEyO3JpbmN0YW5jZT0xYzF1ZjUxNTY4M2RhNGI0Pg==
X-Dv: U0lQZlZuMC9VRFAgMTkyLjE2OC4zLjE4OTc1Njc4MjE1cmFuY2g9ej1cRzRiSylkODc1NH0tYjYyYzJkNmFjOTc3ZjxxYy0xLS0tZDg3NTR6LTtvcG9ydA==

```

Here are the 4 stages of a SIP registration:

1. The initial REGISTER sent by the phone (informing the server of his presence).

Call flow for NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. (Color by Request/Response)		
192.168.3.189:56712	10.150.8.21:5060	REGISTER sip:10.150.8.21:5060 SIP/2.0 Via: SIP/2.0/UDP 192.168.3.189:56712;branch=z9hG4bK-d8754z-7233e2a4b5472d-1---d8754z-;rport Max-Forwards: 70 Contact: <sip:0003*002@192.168.3.189:56712;rinstance=1c1bf515683da4b4> To: "4PSATEST"<sip:0003*002@10.150.8.21:5060> From: "4PSATEST"<sip:0003*002@10.150.8.21:5060>;tag=0a390a23 Call-ID: NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. CSeq: 2 REGISTER Expires: 120 Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE Supported: replaces User-Agent: 3CXPhone 6.0.26523.0 Content-Length: 0 X-Dc: PHNpcDowMDAzKjAwMkAxOTIuMTY4LjMuMTg5OjU2NzEyO3JpbmN0YW5jZT0xYzF1ZjUxNTY4M2RhNGI0Pg== X-Dv: U0lQZlZuMC9VRFAgMTkyLjE2OC4zLjE4OTc1Njc4MjE1cmFuY2g9ej1cRzRiSylkODc1NH0tYjYyYzJkNmFjOTc3ZjxxYy0xLS0tZDg3NTR6LTtvcG9ydA==
12:34:16.463983	REGISTER	
+0.001068	401 Unauthorized	
12:34:16.465051	REGISTER	
+0.102470	200 OK	
12:34:16.567521	REGISTER	
+108.141789	401 Unauthorized	
12:36:04.714528	REGISTER	
+0.001707	200 OK	
12:36:04.819626	REGISTER	
+0.006869	200 OK	
12:36:04.826486	REGISTER	
+108.141789	401 Unauthorized	
12:37:52.994899	REGISTER	
+0.002763	401 Unauthorized	
12:37:52.997662	REGISTER	
+0.104674	200 OK	
12:37:53.102336	REGISTER	
+0.007118	200 OK	
12:37:53.109050	REGISTER	
+108.141789	401 Unauthorized	

2. The 401 Unauthorized sent by the server to the phone (containing the challenge to which the phone has to reply).

Call flow for NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. (Color by Request/Response)		
192.168.3.189:56712	10.150.8.21:5060	SIP/2.0 OK Via: SIP/2.0/UDP 192.168.3.189:56712;branch=z9hG4bK-d8754z-7233e2a4b5472d-1---d8754z-;rport=56712 From: "4PSATEST"<sip:0003*002@10.150.8.21:5060>;tag=0a390a23 To: "4PSATEST"<sip:0003*002@10.150.8.21:5060> Call-ID: NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. CSeq: 2 REGISTER Server: VoIPNow PBX Content-Length: 0
12:34:16.463983	REGISTER	
+0.001068	401 Unauthorized	
12:34:16.465051	REGISTER	
+0.102470	200 OK	
12:34:16.567521	REGISTER	
+108.141789	401 Unauthorized	
12:36:04.714528	REGISTER	
+0.001707	200 OK	
12:36:04.819626	REGISTER	
+0.006869	200 OK	
12:36:04.826486	REGISTER	
+108.141789	401 Unauthorized	
12:37:52.994899	REGISTER	
+0.002763	401 Unauthorized	
12:37:52.997662	REGISTER	
+0.104674	200 OK	
12:37:53.102336	REGISTER	
+0.007118	200 OK	
12:37:53.109050	REGISTER	
+108.141789	401 Unauthorized	

3. The second REGISTER message sent by the phone (with the valid credentials, user ID and password).

Call flow for NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. (Color by Request/Response)		
192.168.3.189:56712	10.150.8.21:5060	REGISTER sip:10.150.8.21:5060 SIP/2.0 Via: SIP/2.0/UDP 192.168.3.189:56712;branch=z9hG4bK-d8754z-b42c2d6ac977f91c-1---d8754z-;rport Max-Forwards: 70 Contact: <sip:0003*002@192.168.3.189:56712;rinstance=1c1bf515683da4b4> To: "4PSATEST"<sip:0003*002@10.150.8.21:5060> From: "4PSATEST"<sip:0003*002@10.150.8.21:5060>;tag=0a390a23 Call-ID: NTHlMTA0YjY2ZWQzOThhNTg2MWEyNTVhMjEzY2ZWE. CSeq: 3 REGISTER Expires: 120 Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE Supported: replaces User-Agent: 3CXPhone 6.0.26523.0 Content-Length: 0 X-Dc: PHNpcDowMDAzKjAwMkAxOTIuMTY4LjMuMTg5OjU2NzEyO3JpbmN0YW5jZT0xYzF1ZjUxNTY4M2RhNGI0Pg== X-Dv: U0lQZlZuMC9VRFAgMTkyLjE2OC4zLjE4OTc1Njc4MjE1cmFuY2g9ej1cRzRiSylkODc1NH0tYjYyYzJkNmFjOTc3ZjxxYy0xLS0tZDg3NTR6LTtvcG9ydA==
12:34:16.463983	REGISTER	
+0.001068	401 Unauthorized	
12:34:16.465051	REGISTER	
+0.102470	200 OK	
12:34:16.567521	REGISTER	
+108.141789	401 Unauthorized	
12:36:04.714528	REGISTER	
+0.001707	200 OK	
12:36:04.819626	REGISTER	
+0.006869	200 OK	
12:36:04.826486	REGISTER	
+108.141789	401 Unauthorized	
12:37:52.994899	REGISTER	
+0.002763	401 Unauthorized	
12:37:52.997662	REGISTER	
+0.104674	200 OK	
12:37:53.102336	REGISTER	
+0.007118	200 OK	
12:37:53.109050	REGISTER	
+108.141789	401 Unauthorized	

4. The 200 OK confirming the phone has registered correctly with the server.

Time	Source IP	Destination IP	Source Port	Destination Port	Protocol	Request/Response
192.168.3.189	192.168.3.189	10.150.8.21	56712	5060	HTTP	GET / HTTP/1.1 401 Unauthorized
12:34:16.463993	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:34:16.465051	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:34:16.467021	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:34:16.472739	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:36:04.714528	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:36:04.714626	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:37:52.994999	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:37:53.102336	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized
12:37:53.109050	192.168.3.189	10.150.8.21	56712	5060	HTTP	401 Unauthorized

Place a call to *52 (the echo test) and you'll see the call appear in the list.

Pressing ENTER will open a call flow diagram illustrating the communication between the phone and the SIP/PBX components of VoipNow.

sngrep - SIP messages flow viewer						
Current Mode: Online		Dialogs: 1				
Display Filter:						
Seq	Method	SIP From	SIP To	Msgs	Source	Destination
[] 1	INVITE	0003*002@10.150.8.21:5060	*52@10.150.8.21:5060	16	192.168.3.189:56712	10.150.8.21:5060
						IN CALL

Call flow for H264M-J2MNMZEXYTHSMJISMTKONWQJZDZLN2ZMTY. (Color by Request/Response)

192.168.3.189:56712	10.150.8.21:5060	10.150.8.21:5050	INVITE sip:*52810.150.8.21:5060 SIP/2.0 Via: SIP/2.0/UDP 192.168.3.189:56712;branch=*9b5d40k-d8754z-d1228e0ea432445-1---d8754z;-rport Max-Forwards: 70 Content-Length: 000000028192.168.3.189:56712;instance=1c1bf8f51683da4b4 To: <sp:*52810.150.8.21:5060> From: "4PSATEST"<sp:0003*002810.150.8.21:5060>;tag=822293d Call-ID: H2JMhJm2NM0ZmEXYTHSMJISMTKONWQJZDZLN2ZMTY. Cseq: 1 INVITE Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE Content-Type: application/sdp Supported: replaces User-Agent: 3CXPhone 6.0.26523.0 Content-Length: 404 X-0: BmNpcQwMDASkAwMkAwOTUHTYt4LjMuMTp5QjU2NZXQzUjphbnN0YWN5J2Z0eXZlZjUxNTY4M2RhbnRlIGl0Pw== X-D: U01QLzLmUc9VRfAgHtKyLjE2OCzLzLE4OTc1cnxmKjcmfUcM2Y9eJl0RzRlSjY1K0Dc1NH0tZDEYmJhJMG0wYtQzMjQNS0K5LStDg3NtR6LItcy09yda== X-Ba: MtkYlE2OCzLzLE4Q== X-Damp: NDAwMDV=
12:44:24.810447	INVITE (SDP)		
+0.00941	100 Trying -- your call is		
12:44:24.819488	<-----		
+0.00244		INVITE (SDP)	
12:44:24.819732	100 Trying		
+0.00761	<-----		
12:44:24.827323	200 OK (SDP)		
+0.01965			
12:44:24.846988	200 OK (SDP)		
+0.00243			
12:44:24.849422	ACK		
+0.102886			
12:44:24.952308	ACK		
+0.003178			
12:44:24.955486	INFO		
+0.996801			
12:44:25.952287	415 Unsupported Media Type		
+0.004489			
12:44:25.958776	415 Unsupported Media Type		
+0.104632			
12:44:26.063408	415 Unsupported Media Type		
+0.003272			
12:44:26.063787	415 Unsupported Media Type		
+11.884265			
12:44:37.948052	INFO		
+0.001348			
12:44:37.950395	415 Unsupported Media Type		
+0.102881			
12:44:38.053276	415 Unsupported Media Type		
+0.000446			
12:44:38.053722			

More great SNGREP features

For example, you can compare two SIP packets by checking them with the Space key. Once the second packet is checked, the differences between the two packets will be automatically shown in a separate window.

```

[2016/05/13 12:50:30.774989 192.168.3.189:56712 -> 10.150.8.21:5060]
REGISTER sip:10.150.8.21:5060 SIP/2.0
Host: sip/2.0 [CSeq: 192.168.3.189:56712;branch=9HG4bK-dB754z-2q393ll3l6d4t5f1----dB754z;-rport
Max-Forwards: 70
Contact: <sip:0003+0028192.168.3.189:56712;rinstance=lc1bf51683da4b4>
To: *WASISTE?<sip:0003+0028192.168.3.189:56712>
From: *WASISTE?<sip:0003+0028192.168.3.189:56712>;tag=Oa39oaz3
Call-ID: NtlMlTAQYjYjZWQzOTZhbnQzMWEyTmVwXkZMEzYSZME.
Cseq: 19 REGISTER
Expires: 120
Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE
Supported: replaces
User-Agent: 3CXPhone 6.0.2652.0
Content-Disposition: <sip:0003+0028192.168.3.189:56712>;realname="10.150.8.21";nonce="vXNHoFclzbPzIbzU/Bsg7/CcAo//WEM3K3",uri="sip:10.150.8.21:5060",response="76f3f9cf9443302502ba0e865ffefaf",algorithm=WMD5
Content-Length: 0
A-Dcr: FRNCPGQW4H3Aded0v0tJ4L3JmHnG5o3Y2UaHq5o3pbH0Nq5Y2tRzfAs3Y2tRzfAs4M2RhH0IG0p==
A-Cdr: FRNCPGQW4H3Aded0v0tJ4L3JmHnG5o3Y2UaHq5o3pbH0Nq5Y2tRzfAs3Y2tRzfAs4M2RhH0IG0p==
A-TrgSdyId:=
A-TrgSdyId:=

[2016/05/13 12:50:30.877033 192.168.3.189:56712 -> 10.150.8.21:5060]
REGISTER sip:10.150.8.21:5060 SIP/2.0
Host: sip/2.0 [CSeq: 192.168.3.189:56712;branch=9HG4bK-dB754z-49368316972b5f1f----dB754z;-rport
Max-Forwards: 70
Contact: <sip:0003+0028192.168.3.189:56712;rinstance=lc1bf51683da4b4>
To: *WASISTE?<sip:0003+0028192.168.3.189:56712>
From: *WASISTE?<sip:0003+0028192.168.3.189:56712>;tag=Oa39oaz3
Call-ID: NtlMlTAQYjYjZWQzOTZhbnQzMWEyTmVwXkZMEzYSZME.
Cseq: 20 REGISTER
Expires: 120
Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE
Supported: replaces
User-Agent: 3CXPhone 6.0.2652.0
Content-Disposition: <sip:0003+0028192.168.3.189:56712>;realname="10.150.8.21";nonce="vXNHoFclzbPzIbzU/Bsg7/CcAo//WEM3K3",uri="sip:10.150.8.21:5060",response="76f3f9cf9443302502ba0e865ffefaf",algorithm=WMD5
Content-Length: 0
A-Dcr: FRNCPGQW4H3Aded0v0tJ4L3JmHnG5o3Y2UaHq5o3pbH0Nq5Y2tRzfAs3Y2tRzfAs4M2RhH0IG0p==
A-Cdr: FRNCPGQW4H3Aded0v0tJ4L3JmHnG5o3Y2UaHq5o3pbH0Nq5Y2tRzfAs3Y2tRzfAs4M2RhH0IG0p==
A-TrgSdyId:=
A-TrgSdyId:=

```

If you press F2 and F3 in a call flow, you will be able to see SDP and RTP information.

Call Flow for 9H1jVWp0rg4Hkac0kz2RjW0Jf0Wfz0nc400j3NTU. (Color by Request/Response)			
192.168.3.189:56712	10.150.8.21:5060	10.150.8.21:5050	INVITE sip:4644@10.8.21:5060 SIP/2.0 Via: SIP/2.0/UDP 192.168.3.189:56712;branch=19b04bR-d8754+-5a098a520b7fb030-1----q8794z--rport Max-Forward: 70 (Content-Length:0000>0028102.168.3.189:56712;instance=1c1bf515683de4b<> To: <sip:52810.150.8.21:5060> From: *4PSATEST*<sip:0003>002810.150.8.21:5060>;tag=6484371b Call-ID: 9H1jVWp0rg4Hkac0kz2RjW0Jf0Wfz0nc400j3NTU (Seq: 1 INVITE Allow: INVITE, ACK, CANCEL, OPTIONS, BYE, REGISTER, SUBSCRIBE, NOTIFY, REFER, INFO, MESSAGE (Content-Type: application/sdp (Supported: replaces (User-Agent: JGCPPhone 4.0.24523.0 (Content-Length: 404 X-Do: PHSpC0uM0aKJAm0KAcTl0MTV41;MuHtTg0J0U2HsTy03Jp0a0TW1;2T0wTaf13U0HTY4M2RHH0I0Pq== X-Do: U0qpfu1u0CvYRfAg0HsTy0J2OC4s1Jk40r0lly0aMj0a0aX2qheJ10kSs15Yak001H0u0w0r0h0TlVY0aYjAm0C0a150rZDgNTR6LlY009dA== X-Seq: MTr4Y1K2OC4s1Jk40C== X-Seq: HDA0MTI= v=0 o=S0aVCE 166582220 101622390 IN IP4 192.168.3.189 s=S0aVCE Audio Call c=IN IP4 192.168.3.189 t=0 0 m=audio 40012 RTP/AVP 0 8 3 98 a=rtpmap0 PCM/8000 a=rtpmap18 PCM/8000 a=rtpmap13 G726/8000 a=rtpmap198 telephone-event/8000 a=rtpmap 0-15 a=ptime:20 a=sendrecv m=video 40010 RTP/AVP 34 c=IN IP4 192.168.3.189 a=rtpmap:34 H263/80000 a=fmtp:34 QCIF=1;CIF=1;SQCIF=1;CIF4=1 a=sendrecv
12:49:37.124992	200 (192.168.3.189)		
+0.006211	audio 40012 (g711u)		
12:49:37.131203	video 40011 (h263)		
+0.006211	100 trying -- your call is		
+0.000134	100 trying		
12:49:37.131337	audio 40012 (g711u)		
+0.005904	video 40010 (h263)		
12:49:37.137241	100 trying		
+0.0013736	200 (10.150.8.21)		
12:49:37.150977	audio 16015 (g711u)		
+0.001199	video 0 (h263)		
12:49:37.152176	RTP (g711u) 298		
12:49:37.150028	40012	16018	
+0.102785	ACK		
12:49:37.254934			
+0.001468	ACK		
12:49:37.256540	RTP (g711u) 249		
12:49:38.182841	40012	16018	
+0.002884	INFO		
12:49:38.249424	415 Unsupported Media Type		
+0.001525	415 Unsupported Media Type		
12:49:38.255246	415 Unsupported Media Type		
+0.002159	415 Unsupported Media Type		
12:49:38.357425	415 Unsupported Media Type		
+0.001371	415 Unsupported Media Type		
12:49:38.358706	415 Unsupported Media Type		
+0.001517	415 Unsupported Media Type		
12:49:43.171913	415 Unsupported Media Type		
+0.002151	415 Unsupported Media Type		
12:49:43.174045	415 Unsupported Media Type		
+0.000159	415 Unsupported Media Type		
12:49:43.174624	415 Unsupported Media Type		
+0.000702	415 Unsupported Media Type		
12:49:43.178326	415 Unsupported Media Type		

There are more options and features in sngrep, so feel free to explore further. While a bit more cumbersome to use than Wireshark, sngrep can help you quickly debug SIP problems on your server.

Related articles

- [How to install sngrep on your VoipNow server](#)
- [Primary and secondary server setup for 4PSA DNS Manager](#)
- [How to interact with RabbitMQ](#)
- [How to Allow 4PSA Access to the Server](#)
- [How to do a data migration between two DNSManager servers](#)