Reverse SSH Verification

Logs

- /var/log/pulse/xmpp-agent-relay.log
- /var/log/mmc/master-mast.log
- C:\Program Files\Medulla\var\log\xmpp-agent-machine.log

Debugging operations

On the client
Reverse SSH connections from clients are established via the following scripts

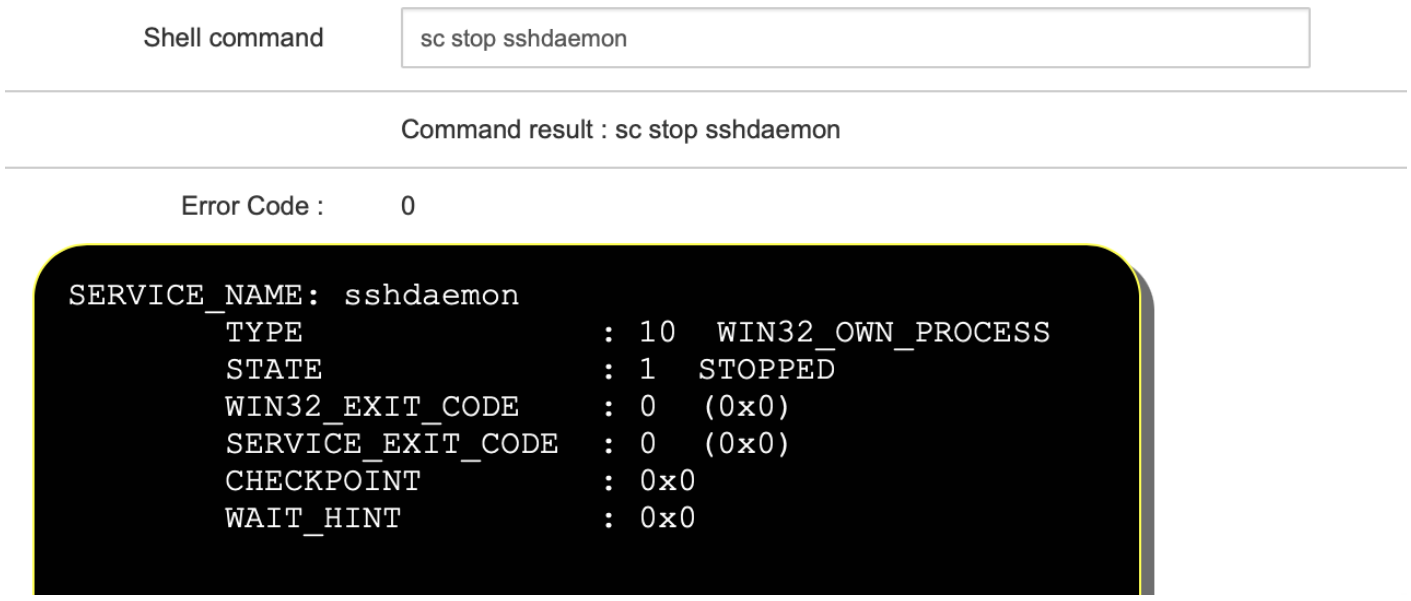
- Linux: /var/lib/pulse2/reversessh.sh
- Windows: c:\Program Files\Medulla\bin\reversessh.ps1

On Linux, you can run these scripts manually to test the tunnel setup. Refer to these scripts to find the port number being used. e.g.:

```
/usr/bin/ssh -t -t -R 51891:localhost:22 -o StrictHostKeyChecking=no -i "/var/li
b/pulse2/.ssh/id_rsa" -l reversessh 192.168.2.15 -p 22
```

On Windows, you must use the MMC console to enable debugging during deployment. To do this, stop the OpenSSH service from an XMPP console to force the reverse SSH connection:

```
sc stop sshdaemon
```



Start a deployment. In the audit view, the result of the reverse SSH connection will be displayed:

2026-01-30 07:17:38	-1	script reverse : ssh-keygen -R "[62.210.101.254]:2002" $stdout = Join-Path "C:\Progra~1\Medulla\bin" "reverse_ssh_stdout.log" $stderr = Join-Path "C:\Progra~1\Medulla\bin" "reverse_ssh_stderr.log" $process = Start-Process -FilePath "c:\progra~1\OpenSSH\ssh.exe" -ArgumentList "-N -T -R 50629:127.0.0.1:22 -o StrictHostKeyChecking=no -o UserKnownHostsFile=NUL -i `"c:\users\pulseuser\.ssh\id_rsa`" -l reversessh 62.210.101.254 -p 2002 -v" -RedirectStandardOutput $stdout -RedirectStandardError $stderr -PassThru $sshPID = $process.Id Write-Output "SSH process PID: $sshPID" $sshPID | Out-File -FilePath "C:\Progra~1\Medulla\bin\$sshPID.pid" -Encoding ASCII
2026-01-30 07:17:38	-1	reversessh error : OpenSSH_for_Windows_9.8p1 Win32-OpenSSH-GitHub, LibreSSL 3.9.2 debug1: Connecting to 62.210.101.254 [62.210.101.254] port 2002. debug1: Connection established. debug1: identity file c:\\users\\pulseuser\\.ssh\\id_rsa type 0 debug1: identity file c:\\users\\pulseuser\\.ssh\\id_rsa-cert type -1 debug1: Local version string SSH-2.0-OpenSSH_for_Windows_9.8 Win32-OpenSSH-GitHub debug1: Remote protocol version 2.0, remote software version OpenSSH_9.2p1 Debian-2+deb12u7 debug1: compat_banner: match: OpenSSH_9.2p1 Debian-2+deb12u7 pat OpenSSH* compat 0x04000000 debug1: Authenticating to 62.210.101.254:2002 as 'reversessh' debug1: load_hostkeys: fopen __PROGRAMDATA__\\ssh/ssh_known_hosts: No such file or directory debug1: load_hostkeys: fopen __PROGRAMDATA__\\ssh/ssh_known_hosts2: No such file or directory debug1: SSH2_MSG_KEXINIT sent debug1: SSH2_MSG_KEXINIT received debug1: kex: algorithm: curve25519-sha256 debug1: kex: host key algorithm: ssh-ed25519 debug1: kex: server->client cipher: chacha20-poly1305@openssh.com MAC: compression: none debug1: kex: client->server cipher: chacha20-poly1305@openssh.com MAC: compression: none debug1: expecting SSH2_MSG_KEX_ECDH_REPLY debug1: SSH2_MSG_KEX_ECDH_REPLY received debug1: Server host key: ssh-ed25519 SHA256:QAoaDIN3Uz0v5cRIoEMCP3QdIZcjMJ3zgZz9gdodTo0 debug1: load_hostkeys: fopen __PROGRAMDATA__\\ssh/ssh_known_hosts: No such file or directory debug1: load_hostkeys: fopen __PROGRAMDATA__\\ssh/ssh_known_hosts2: No such file or directory debug1: checking without port identifier debug1: load_hostkeys: fopen __PROGRAMDATA__\\ssh/ssh_known_hosts: No such file or directory debug1: load_hostkeys: fopen __PROGRAMDATA__\\ssh/ssh_known_hosts2: No such file or directory Warning: Permanently added '[62.210.101.254]:2002' (ED25519) to the list of known hosts. debug1: ssh_packet_send2_wrapped: resetting send seqnr 3 debug1: rekey out after 134217728 blocks debug1: SSH2_MSG_NEWKEYS sent debug1: expecting SSH2_MSG_NEWKEYS debug1: ssh_packet_read_poll2: resetting read seqnr 3 debug1: SSH2_MSG_NEWKEYS received debug1: rekey in after 134217728 blocks debug1: SSH2_MSG_EXT_INFO received debug1: kex_ext_info_client_parse: server-sig-algs= debug1: kex_ext_info_check_ver: publickey-hostbound@openssh.com=<0> debug1: SSH2_MSG_SERVICE_ACCEPT received debug1: Authentications that can continue: publickey debug1: Next authentication method: publickey debug1: get_agent_identities: ssh_get_authentication_socket: No such file or directory debug1: Will attempt key: c:\\users\\pulseuser\\.ssh\\id_rsa RSA SHA256:o66vEM+fL5oO8h3FsyD2h9GAP20G5XIMC1w66F6lKTs explicit debug1: Offering public key: c:\\users\\pulseuser\\.ssh\\id_rsa RSA SHA256:o66vEM+fL5oO8h3FsyD2h9GAP20G5XIMC1w66F6lKTs explicit debug1: Server accepts key: c:\\users\\pulseuser\\.ssh\\id_rsa RSA SHA256:o66vEM+fL5oO8h3FsyD2h9GAP20G5XIMC1w66F6lKTs explicit Authenticated to 62.210.101.254 ([62.210.101.254]:2002) using "publickey". debug1: Remote connections from LOCALHOST:50629 forwarded to local address 127.0.0.1:22 debug1: Requesting no-more-sessions@openssh.com debug1: Entering interactive session. debug1: pledge: network debug1: pledge: network debug1: client_input_global_request: rtype hostkeys-00@openssh.com want_reply 0 debug1: Remote: /var/lib/pulse2/clients/reversessh/.ssh/authorized_keys:1: key options: agent-forwarding port-forwarding pty user-rc x11-forwarding debug1: Remote: /var/lib/pulse2/clients/reversessh/.ssh/authorized_keys:1: key options: agent-forwarding port-forwarding pty user-rc x11-forwarding debug1: Remote: Forwarding listen address "localhost" overridden by server GatewayPorts debug1: remote forward success for: listen 50629, connect 127.0.0.1:22 debug1: client_input_channel_open: ctype forwarded-tcpip rchan 2 win 2097152 max 32768 debug1: client_request_forwarded_tcpip: listen lo

If the tunnel does not establish, it is either a port issue or a key issue

On the relay

The following script allows you to test the establishment of the reverse connection on the ARSs on the defined port (see above):

```
#!/bin/bash
echo "port $1"
echo "reverse exists"
netstat -an | egrep "tcp.*:$1.*LISTEN"
echo "reverse in use"
netstat -an | egrep "tcp.*:$1.*ESTABLISHED"
echo "reverse PID"
lsof -t -i :$1 -s tcp:LISTEN
```

You can view the reverse SSH processes with:

```
ps aux | grep ssh
```

root 2267 0.0 0.1 95184 6860 ? Ss 15:26 0:00 sshd: reversessh [priv]
reverse+ 2280 0.0 0.0 95184 3868 ? S 15:26 0:00 sshd: reversessh@pts/7

on Windows:

```
tasklist | findstr ssh
```

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