Logging for Cisco ISE

NOTE: This is untested.

This only applies to Federation Operators and not to individual sites

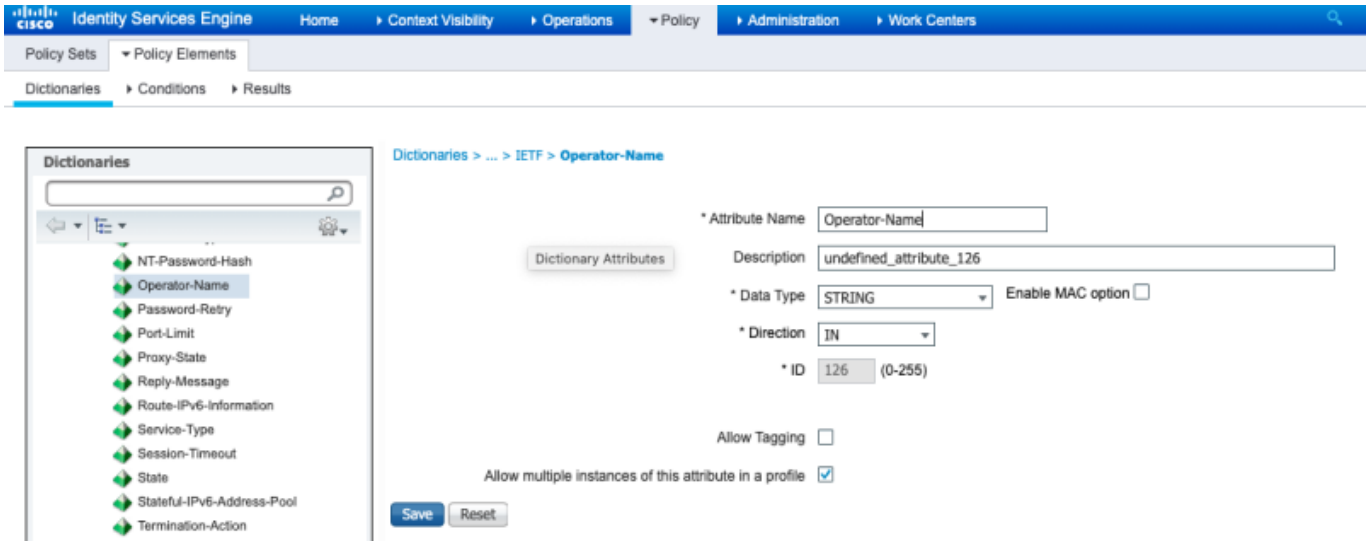
Unfortunately ISE can't generate custom logs in the format required (FTICKS) but, fortunately, it can generate syslog logs with the right information, which can be sent to a syslog server and munged into a suitable format.

This approach assumes that the member sites are configured to include their Operator-Name in RADIUS Requests.

Configuring Cisco ISE

Enabling the Operator-Name attribute

- Go to **Policy** → **Policy Elements** → **Dictionaries**.
- Open up the **System** dropdown.
- Open up the **Radius** dropdown.
- Click on **IETF**.
- Click on **unknown-126** and enter
  - **Attribute Name** as 'Operator-Name'
  - **Data Type** as STRING
  - **Direction** as IN
- Click **Save**



Logging

This has been done with ISE 2.6 but the principle should apply to other versions.

In **Administration** → **System** → **Logging**.

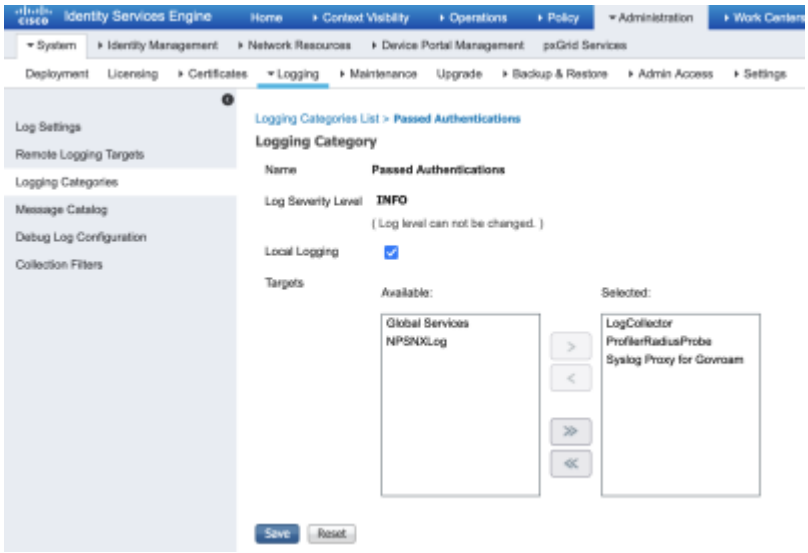
In **Remote Logging Targets** create a new Logging Target with the host name of your syslog server.

The *Facility Code* can be anything but make sure that it matches what the filters expect on the syslog server.

Maximum Length must be set higher than the default because the ISE log line exceeds 1024 bytes and gets split across multiple logs. 2048 seems to be high enough.

Enable *Comply to RFC3164*

In *Logging Categories* select *Passed Authentications* and add the new server to the Selected Targets.



Configuring Syslog-NG

Syslog proxies

Here are two options for possible syslog servers and config but you set up any syslog server as long as it has the following behaviour:

- Uses the FTICKS format
- Proxies to utilities.govroam.uk on port 514/UDP with Facility local6
- Includes in the FTICKS '#FEDID=0X000#' where 0X000 is replaced by the Federation ID supplied by Jisc.
- Filters down the proxied log to just those for
    - Successful authentications
    - Only authentications between member sites (i.e. NOT those to or from the Jisc NRPS, or within an organisation)

The two options:

syslog-ng on Linux

```
source s_remote_udp {
  udp();
  unix-stream("/dev/log" max-connections(100));};
};

filter f_local0 {
  facility(local0);
};

rewrite r_realm {
  subst("@","",value("ISE.UserName"));
};

rewrite r_facility_6 {
  set-facility("local6");
};

destination d_jisc {
  syslog("212.219.243.132"
        transport("udp")
        port("514")
        template("F-
TICKS/govroam/1.0#REALM=${ISE.UserName}#VISCOUNTRY=GB#VISINST=${ISE.Operator
-Name}#CSI=${ISE.Calling-Station-ID}#RESULT=OK#FEDID=XXXXX#")
  );
};


log {
        source(s_remote_udp);
        filter(f_local0);
        parser {
            kv-parser (prefix("ISE."));
        };
        filter{ "${ISE.NetworkDeviceName}" != "NRPS NAME"};
        filter{ "${ISE.SelectedAccessService}" != "NRPS NAME"};
        rewrite(r_realm);
        rewrite(r_facility_6);
        destination(d_jisc);
};
```

Replace the **XXXXX** with the Federation ID supplied.

Replace **NRPS NAME** with the NRPS name as defined in the *Network Devices* and the *External RADIUS Servers* respectively.

NXLog on Windows

- Install NXLog CE on Windows
- Use this configuration (with paths changed appropriately)

Note: This doesn't actually send the logs in FTICKS format but it does send them in a format which Jisc can convert to FTICKS. However, it's absolutely critical that the FedID is set correctly

```
Panic Soft
#NoFreeOnExit TRUE

define ROOT     C:\Program Files (x86)\nxlog
define CERTDIR  %ROOT%\cert
define CONFDIR  %ROOT%\conf
define LOGDIR   %ROOT%\data
define LOGFILE  %LOGDIR%\nxlog.log
LogFile %LOGFILE%

Moduledir %ROOT%\modules
CacheDir  %ROOT%\data
Pidfile   %ROOT%\data\nxlog.pid
SpoolDir  %ROOT%\data

<Extension _syslog>
    Module      xm_syslog
</Extension>

<Extension _exec>
    Module      xm_exec
</Extension>

<Input tcp_ise>
    Module im_tcp
    Host  10.10.10.10 # Set this to the address of the Windows syslog server
    Port  514
    <Exec>
      if $SyslogFacility != "local0" drop();
      if $raw_event !~ /CISE_Passed_Authentications/ drop();
      $FedID="XXXXX"; # Set this to the Federation ID provided by Jisc
      $SyslogFacility = "local6";
    </Exec>
</Input>

## For future use
<Output syslog_tls>
    Module      om_ssl
    Host        212.219.243.132
    Port        6514
#    CAFile      c:/Program Files (x86)/nxlog/data/cacert.pem
```

```
#    CertFile    c:/Program Files (x86)/nxlog/data/clientreq.pem
#    CertKeyFile c:/Program Files (x86)/nxlog/data/clientkey.pem
    AllowUntrusted 1
    OutputType  Syslog_TLS
    Exec        to_syslog_ietf();
</Output>

<Output syslog_tcp>
    Module      om_tcp
    Host        212.219.243.132
    Port        601
    OutputType  Syslog_TLS
    Exec        to_syslog_ietf();
</Output>


<Route 1>
    Path        tcp_ise => syslog_tcp
</Route>
```

- Change XXXXX to the supplied Federation ID.
- Change the 'Host' in 'Input tcp_ise' to the address of the syslog server.
- (Ignore the syslog_tls part, that's for future use)
- Restart the Service

Untested Advanced Configuration

There's a limitation to the logging process which might be addressable.

Problem: Not all member organisations can or do set the Operater-Name attribute in their Requests. Ideally the RFO should be able to insert an O-N with a value set on behalf of your site but only some RADIUS servers are capable of doing this (FreeRADIUS, RadSecProxy, RADIATOR). The next best option is to insert a generic value for the Federation. i.e:

When an RFO, scarfolk.gov.uk, gets a request from a site, say arkham.nhs.uk:

1. If the Operator-Name is set to, say, 1arkham.nhs.uk then leave it as is.
2. If the Operator-Name is missing the insert an Operator-Name with the value '1arkham.nhs.uk' no matter which of the several holby,nhs.uk servers the request comes from.
3. If there's no way to set the Operator-Name as in (2) then just insert an Operator-Name of, say, '1scarfolk.gov.uk'.

This way the home site will, at best, see an Operator-Name with the source site's value or, at worst, with it set to the Federation's value.

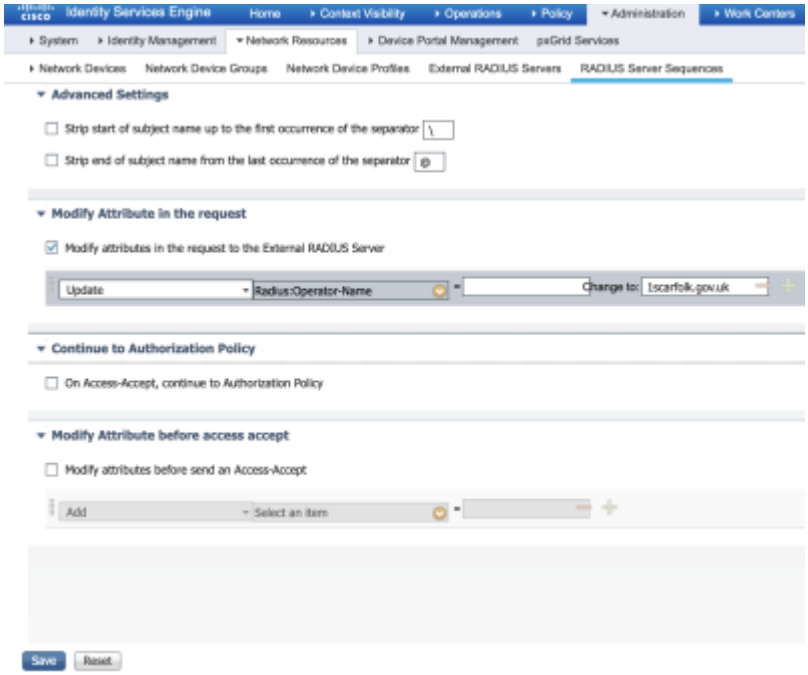
However, this conditional setting of Operator-Name isn't something found in servers like ClearPass, ISE or NPS. NPS is completely incapable of setting the Operator-Name. ClearPass can't do any sort of conditional setting. ISE might be able to.

Conditional Setting of Operator-Name

For each RADIUS Server Sequence dealing with proxying to a member organisation for authentication, go into the Advanced Attribute Settings and enable *Modify attributes in Request to External RADIUS Server*.

Set it to *Update Radius:Operator-Name = “” 1scarfolk.gov.uk*

which should replace the Operator-Name's value with 1scarfolk.gov.uk if it's empty.



Unfortunately, due to bugs in our ISE, we can't test this.