

# 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**

The screenshot shows the Cisco ISE Administration console interface. The breadcrumb navigation is: Home > Context Visibility > Operations > Policy > Administration > Work Centers. The main navigation bar includes Policy Sets, Policy Elements, Dictionaries, Conditions, and Results. The 'Dictionaries' section is active, showing a tree view on the left with 'Operator-Name' selected. The main content area displays the configuration for the 'Operator-Name' attribute under the 'IETF' dictionary. The configuration includes:
 

- Attribute Name: Operator-Name
- Description: undefined\_attribute\_126
- Data Type: STRING (with 'Enable MAC option' checkbox unchecked)
- Direction: IN
- ID: 126 (0-255)
- Allow Tagging: unchecked
- Allow multiple instances of this attribute in a profile: checked

 'Save' and 'Reset' buttons are visible at the bottom of the configuration panel.

### 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.

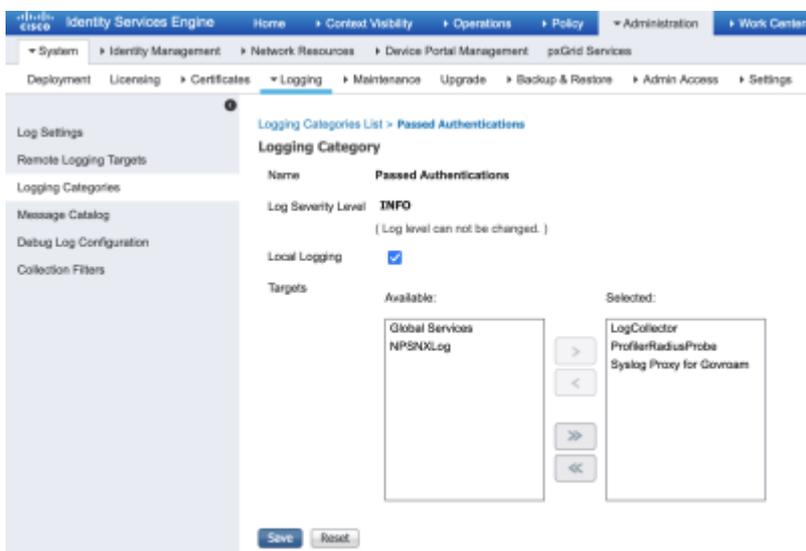
The *Facility Code* can be anything but make sure that it matches what the filters expect on the syslog server.

*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=${ISE.UserName}#VISICOUNTRY=GB#VISINST=${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)

```
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 Operator-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.

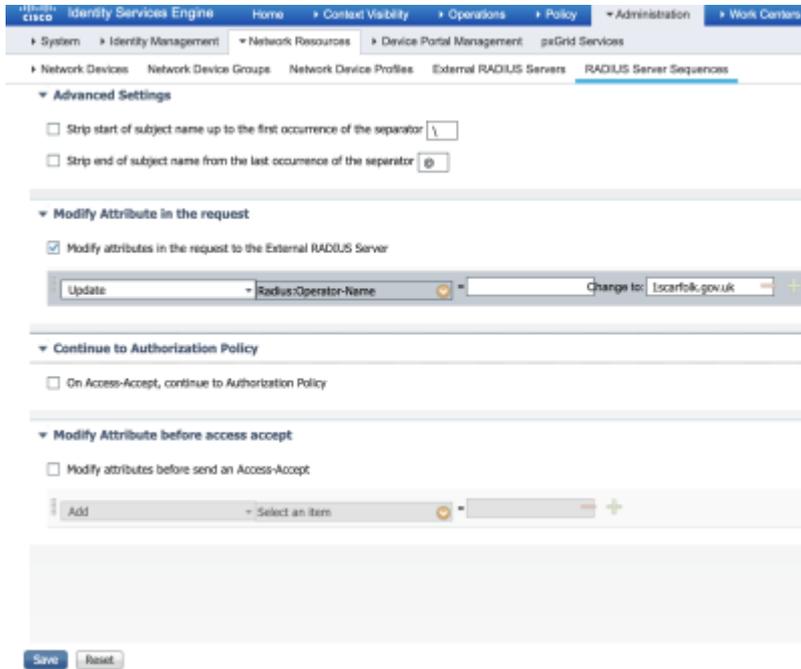
## Conditional Setting of Operator-Name

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.

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