ISTUD

Teldat-Dm 784-I

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Chapter 1 Introduction

1.1 Introduction

One of the benefits of the ISTUD feature (IPSEC Tunnel Server Discovery Protocol) is that it makes the discovery and management of CIM devices in the PIO service architecture easier. These devices terminate IPSEC tunnels used for communications between the contents management device and the different contents presentation devices.

The ISTUD feature, initially, permits you to notify the management or supervision station for the PIO service architecture of CIM presence and availability for the service. Additionally, it notifies the supervisor the CPU load the CIM has and the number of tunnels it has open. This information is used by the supervisor to manage the load between the different CIMs that have been detected.

1.1.1 Operating mode

When this feature is enabled, the router sends a DISCOVER frame to the configured supervisor and passes to a DISCOVERY state. The router waits for the supervisor to respond with a DISCOVER ACK. frame. This wait time is configured through TIMING DISCOVERY-TIMEOUT.

If a response is not received, the feature passes to a DISCOVERY-TIMEOUT state. Once this time, configured through TIMING DISCOVERY-RATE, has timed out after sending the DISCOVERY frame without receiving a response, the router sends another DISCOVER frame and the whole process starts again.

If the response is received, the feature passes to an ACTIVE state and sends the first data frame from the device (CPU load, etc.) and continues to send frames at the rate configured through TIMING REFRESH-RATE. The supervision device can, at any point, request data from the device by sending a QUERY DATA frame.

So the router can verify that the supervisor is receiving the traffic being sent, it must send the supervisor at least one QUERY DATA frame in the interval configured through TIMING SUPERVISOR-TIMEOUT. If this requirement is not met then the feature passes to a DISCOVERY state.

Chapter 2 Configuration

2.1 Accessing the configuration

To access the ISTUD feature configuration, enter the **FEATURE ISTUD** command in the main configuration menu.

Syntax:

```
Config>feature istud

-- ISTUD configuration --
ISTUD config>
```

2.2 Configuration commands

The following table summarizes the ISTUD feature configuration commands. These commands are explained in more detail further down.

Command	Function
? (HELP)	Displays the configuration commands or subcommands options.
ENABLE	Enables the feature and initiates the discovery process for the configured supervisor.
NO	Permits you to delete the indicated element which then takes the default value.
PROTOCOL-PORT	Configures the UDP port so information with the supervisor is exchanged
SUPERVISOR-IP	Configures the supervisor's IP address. The discovery and data frames are sent to this IP address.
TIMING	Configures the values of various timers being used. The timers are basically two types: sending rate and maximum wait time.
EXIT	Exits the ISTUD feature configuration menu.

2.2.1 ? (HELP)

Displays the list of available commands for the feature.

Syntax:

```
ISTUD config>?
```

Example:

```
ISTUD config>?
  enable           Global enable
  no               Negate a command or set its defaults
  protocol-port    UDP port for exchange protocol information
  supervisor-ip    Supervisor IP address
  timing           Configure several timers
  exit
```

2.2.2 [NO] ENABLE

Enables the feature. In order to enable the feature, the supervisor IP address must have been previously configured. This command is not available if the supervisor IP address has not been configured. By default the feature is disabled. If you delete the supervisor IP address then the feature is automatically disabled.

Syntax:

```
ISTUD config>enable
```

2.2.3 NO

Configures the indicated parameter to its default value.

Syntax:

```
ISTUD config>no ?
  enable           Global enable
  supervisor-ip    Supervisor IP address
  protocol-port    UDP port for exchange protocol information
  timing           Configure several timers
```

2.2.4 [NO] PROTOCOL-PORT

Configures the UDP port used by the feature to register and exchange information with the supervisor device. Default is port 20000.

Syntax:

```
ISTUD config>protocol-port <port>
```

2.2.5 [NO] SUPERVISOR-IP

Configures the IP address for the supervisor device. Default is no IP address configured. This parameter must be configured before enabling the feature. If you delete this IP address, the feature is automatically disabled.

Syntax:

```
ISTUD config>supervisor-ip <ipv4 format address>
```

2.2.6 TIMING

Configures the various timers linked to the ISTUD feature. This permits you to configure the rate the discovery frames are sent from the supervisor, the maximum time permitted to receive an answer from this latter, the rate at which information is automatically sent to the supervisor and the maximum time permitted without a response from the said supervisor.

Syntax:

```
ISTUD config>timing ?
  discovery-rate        Discovery frames sending rate
  discovery-timeout     Discovery frames acknowledge timeout
  refresh-rate          Automatic tunnel information sending rate
  supervisor-timeout    Supervisor alive notification timeout
```

2.2.6.1 [NO] TIMING DISCOVERY-RATE

Configures the rate in seconds the DISCOVERY frames are sent to the supervisor. Default is every 3 seconds. Admits values between 1 and 300 seconds.

Syntax:

```
ISTUD config>timing discovery-rate <rate value>
```

This value must be greater than that configured through the TIMING DISCOVERY-TIMEOUT command.

2.2.6.2 [NO]TIMING DISCOVERY-TIMEOUT

Configures the maximum time in seconds that the router waits for the response to a DISCOVERY frame. Default is 2 seconds. Admits values between 1 and 60 seconds.

Syntax:

```
ISTUD config>timing discovery-timeout <timeout value>
```

This value must be less than that configured through the TIMING DISCOVERY- RATE command.

2.2.6.3 [NO]TIMING REFRESH-RATE

Configures the rate at which the router automatically sends information to the supervisor. Default is a data frame every 60 seconds. Admits values between 1 and 7200 seconds.

Syntax:

```
ISTUD config>timing refresh-rate <rate value>
```

2.2.6.4 [NO]TIMING SUPERVISOR-TIMEOUT

Configures the maximum time in seconds that a router can wait without receiving a petition from the supervisor. Once this has timed out, the router passes to a “discovery” state and begins to send DISCOVERY frames while waiting for a response from the supervisor. Default is configured to 300 seconds. Admits values between 1 and 7200 seconds.

Syntax:

```
ISTUD config>timing supervisor-timeout <timeout value>
```

2.2.7 EXIT

Permits you to exit the ISTUD feature configuration console and to access the device's general configuration *prompt*.

Syntax:

```
ISTUD config>exit
```

Chapter 3 Monitoring

3.1 Accessing the monitoring

To access the ISTUD feature monitoring, enter the **FEATURE ISTUD** command in the main monitoring menu.

Syntax:

```
+feature istud
-- ISTUD console --
ISTUD+
```

3.2 Monitoring commands

Below you can see the various monitoring commands that are available:

Command	Function
? (HELP)	Displays the monitoring commands or the subcommands options
CLEAR	Deletes the ISTUD feature statistics:
LIST	Displays the feature state and the statistics for this.
EXIT	Exits the feature monitoring menu.

3.2.1 ? (HELP)

Displays the monitoring commands or the subcommands options.

Syntax:

```
ISTUD+?
  clear    Clear statistics
  list     List statistics
  exit
```

3.2.2 CLEAR

Permits you to clear the statistics that support the ISTUD feature. These statistics refer to the counters for the different frames that are sent and received by the feature.

Syntax:

```
ISTUD+clear
```

3.2.3 LIST

Displays the status of the feature and the various statistics for the ISTUD feature which allow you to identify and delimit operating problems.

Syntax:

```
ISTUD+list
```

Example:

```
ISTUD+list
State : ACTIVE
Tx Discover frm:              0   Rx Discover ACK frm:                0
Discovery Timeouts:           0   Rx Discover ACK wrong frm:          0
                                  RX Unsupported frames:              0
                                  RX Unknown frames:                  0

Tx Refresh frm:               7
Tx Data frm:                  4   Rx Query data frm:                  4
Supervisor Timeouts:          0
```

```
ISTUD+
```

The status of the feature can be:

DISCOVERY	The router has sent a DISCOVER frame to the supervisor and is waiting for a response.
DISCOVERY-TIMEOUT	The router has not received a response from the supervisor within the configured time.
ACTIVE	The router is in contact with the supervisor, receiving petitions and periodically sending information.
DISABLED	The feature is not enabled.

The statistics show the number and type of sent frames and the number and type of received frames, both correct as well as with errors. The statistics also display the number of *timeouts* that have occurred.

3.2.4 EXIT

Permits you to exit the ISTUD feature monitoring console and to access the device's general monitoring *prompt*.

Syntax:

```
ISTUD+exit
+
```

Chapter 4 Example

4.1 Example

Configuring a CIM in the PIO service architecture can be carried out as follows. Traffic from the two IPSec tunnels is received by the ethenet0/0 interface and information in clear is sent through the ethernet0/1 interface. The CIMs' supervisor has address 172.24.78.94 and uses port 45700 for the ISTUD feature.

```
   log-command-errors
   no configuration
   set hostname CIM-1
   feature access-lists
; -- Access Lists user configuration --
      access-list 100
         entry 1 default
         entry 1 permit
         entry 1 source address 202.1.0.0 255.255.0.0
         entry 1 destination address 201.1.0.0 255.255.0.0
;
      exit
;
   exit
;
;
   network ethernet0/0
; -- Ethernet Interface User Configuration --
      ip address 2.1.1.1 255.255.255.0
;
   exit
;
;
   network ethernet0/1
; -- Ethernet Interface User Configuration --
      ip address 202.1.1.1 255.255.0.0
      ip address 202.1.2.1 255.255.0.0 secondary
      ip address 202.1.3.1 255.255.0.0 secondary
      ip address 172.24.78.149 255.255.0.0 secondary
;
   exit
;
;
;
   event
; -- ELS Config -
      enable trace event IKE.040
      enable trace event IKE.041
      enable trace event IKE.048
      enable trace subsystem ISTUD ALL
      enable filter
      ev-buffer 3000 200
   exit
;
;
   protocol ip
; -- Internet protocol user configuration --
      route 10.1.1.0 255.255.255.0 2.1.1.2
      route 10.1.2.0 255.255.255.0 2.1.1.3
      route 10.1.3.0 255.255.255.0 2.1.1.4
      route 0.0.0.0 0.0.0.0 2.1.1.100
;
      classless
;
      ipsec
; -- IPSec user configuration --
```

```
        enable
        assign-access-list 100
;
        template 1 default
        template 1 isakmp des md5
        template 1 source-address 2.1.1.1
;
        template 2 default
        template 2 dynamic esp tdes md5
        template 2 source-address 2.1.1.1
;
        map-template 100 2
        key preshared ip 0.0.0.0 ciphered 0x37349246263B0066
     exit
;
   exit
;
;
;
   feature istud
; -- ISTUD configuration --
      supervisor-ip 172.24.78.94
      protocol-port 45700
      enable
;
   exit
;
   dump-command-errors
   end
```