



How ITM Calculates Repeated Restarts and Flapping

ITM uses similar calculations to diagnose both repeated restarts and flapping. ITM considers a system to be restarting repeatedly when it performs too many cold or warm starts over a short period of time. [Table G-1](#) lists the elements, traps, and user-defineable parameters that ITM uses to calculate repeated restarts.

Table G-1 *Elements, Traps, and Parameters Used to Calculate Repeated Restarts*

Elements	SNMP Traps	Threshold Category	Parameter	Parameter Definition
Hosts	Cold Start	Reachability Settings	Restart trap threshold	Minimum number of SNMP traps required in a user-defined period of time to trigger an event.
Hubs	Warm Start			
Routers			Restart trap window	User-defined period within which minimum number of traps must be received to trigger an event.
Switches				

ITM considers a network adapter to be flapping when it fluctuates between the Up and Down states too often over a short period of time. [Table G-2](#) lists the elements, traps, and user-defineable parameters ITM uses to diagnose flapping.

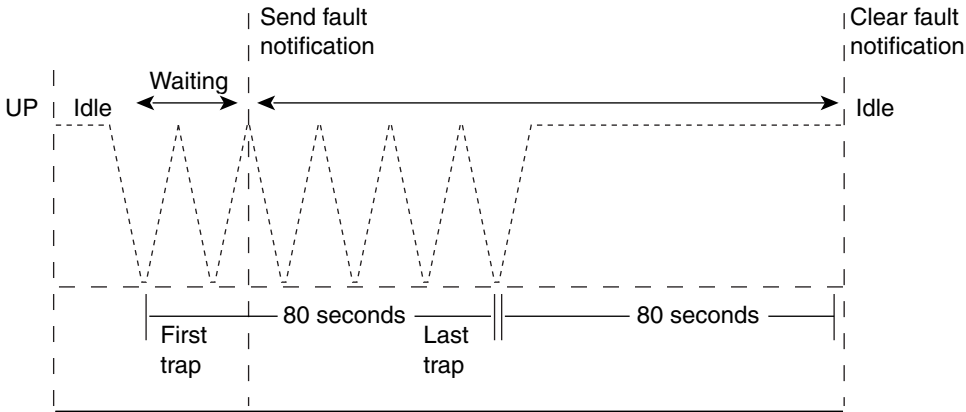
Table G-2 Elements, Traps, and Parameters Used to Calculate Flapping

Elements	SNMP Traps	Threshold Category	Parameter	Parameter Definition
Network adapters	Link Up	Interface/port flapping settings	Link trap threshold	Minimum number of SNMP traps required in a user-defined period of time to trigger an event.
	Link Down	Interface - ATM interface/port flapping settings Interface - serial interface/port flapping settings Interface - other interface/port flapping settings Interface - voice interface flapping settings		
			Link trap window	User-defined period within which minimum number of traps must be received to trigger an event.

After ITM generates a Repeated Restarts event or a Flapping event, ITM computes the *stable time* (the amount of time that must elapse without further traps before ITM declares the element stable again). The stable time is at least as long as the time the element was at fault, and at least as long as the trap window; however, it can be no longer than one hour.

Figure G-1 illustrates how a system is diagnosed as performing repeated restarts, or how a network adapter is diagnosed as flapping.

Figure G-1 Diagnosing Repeated System Restarts or Flapping Network Adapters



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In [Figure G-1](#), the trap window (Restart trap window or Link trap window parameter) has a value of 30 seconds, and the trap threshold (Restart trap threshold or Link trap threshold parameter) has a value of 2. ITM performs the following actions:

1. As soon as ITM receives a Link Down Trap from a physical port or interface (or a Warm Start/Cold Start Trap from a system), ITM begins counting.
2. When ITM receives 2 or more traps within 30 seconds, it considers the network adapter or system to be at fault and ITM generates a Repeated Restarts event or a Flapping event. The minimum traps parameter (set by the Link trap threshold or Restart trap threshold parameter) determines the number of traps ITM must receive (2) within the trap window (30 seconds, set by the Link trap window or restart trap window parameter) before it considers an element at fault.
3. ITM continues to receive traps for 80 seconds after the initial trap, resulting in a stable time of 80 seconds.

The stable time is the amount of time that ITM waits before it clears the Repeated Restarts event or Flapping event.

