CHAPTER 6

Policies—Event Action Rules

This chapter explains how to add event action rules policies and how to configure event action rules. It contains the following sections:

Understanding Security Policies

You can create multiple security policies and apply them to individual virtual sensors. A security policy is made up of a signature definition policy, an event action rules policy, and an anomaly detection policy. IPS 6.0 contains a default signature definition policy called sig0, a default event action rules policy called rules0, and a default anomaly detection policy called ad0. You can assign the default policies to a virtual sensor or you can create new policies.

The use of multiple security policies lets you create security policies based on different requirements and then apply these customized policies per VLAN or physical interface.

Understanding Event Action Rules

This section describes event action rules, and contains the following topics:

Event Action Rules Functions

Event action rules are a group of settings you configure for the event action processing component of the sensor. These rules dictate the actions the sensor performs when an event occurs.

The event action processing component is responsible for the following functions:

- Calculating the risk rating
- Adding event action overrides
- Filtering event action
- Executing the resulting event action
- Summarizing and aggregating events
- Maintaining a list of denied attackers

Calculating the Risk Rating

A risk rating is a value between 0 and 100 that represents a numerical quantification of the risk associated with a particular event on the network. The calculation takes in to account the value of the network asset being attacked (for example, a particular server), so it is configured on a per-signature basis (attack severity rating and signature fidelity rating) and on a per-server basis (target value rating). The risk rating is calculated from several components, some of which are configured, some collected, and some derived.

Note The risk rating is associated with alerts not signatures.

Risk ratings let you prioritize alerts that need your attention. These risk rating factors take in to consideration the severity of the attack if it succeeds, the fidelity of the signature, and the overall value of the target host to you. The risk rating is reported in the evIdsAlert.

The following values are used to calculate the risk rating for a particular event:

- Signature fidelity rating (SFR)—A weight associated with how well this signature might perform in the absence of specific knowledge of the target. The signature fidelity rating is configured per signature and indicates how accurately the signature detects the event or condition it describes.

  Signature fidelity rating is calculated by the signature author on a per-signature basis. The signature author defines a baseline confidence ranking for the accuracy of the signature in the absence of qualifying intelligence on the target. It represents the confidence that the detected behavior would

produce the intended effect on the target platform if the packet under analysis were allowed to be delivered. For example, a signature that is written with very specific rules (specific regular expression) has a higher signature fidelity rating than a signature that is written with generic rules.

Note The signature fidelity rating does not indicate how bad the detected event may be.

- Attack severity rating (ASR)—A weight associated with the severity of a successful exploit of the vulnerability.

  The attack severity rating is derived from the alert severity parameter (informational, low, medium, or high) of the signature. The attack severity rating is configured per signature and indicates how dangerous the event detected is.

  Note The attack severity rating does not indicate how accurately the event is detected.

- Target value rating (TVR)—A weight associated with the perceived value of the target.

  Target value rating is a user-configurable value (zero, low, medium, high, or mission critical) that identifies the importance of a network asset (through its IP address). You can develop a security policy that is more stringent for valuable corporate resources and looser for less important resources. For example, you could assign a target value rating to the company web server that is higher than the target value rating you assign to a desktop node. In this example, attacks against the company web server have a higher risk rating than attacks against the desktop node. Target value rating is configured in the event action rules policy.

- Attack relevance rating (ARR)—A weight associated with the relevancy of the targeted OS.

  Attack relevance rating is a derived value (relevant, unknown, or not relevant), which is determined at alert time. The relevant OSes are configured per signature.

- Promiscuous delta (PD)—A weight associated with the promiscuous delta.

  Promiscuous delta is in the range of 0 to 30 and is configured per signature.

  Note If the trigger packet is not inline, the promiscuous delta is subtracted from the rating.

- Watch list rating (WLR)—A weight associated with the CSA MC watch list in the range of 0 to 100 (CSA MC only uses the range 0 to 35).

  If the attacker for the alert is found on the watch list, the watch list rating for that attacker is added to the rating.

Figure 6-1 illustrates the risk rating formula:

Figure 6-1 Risk Rating Formula

$$RR = \frac{ASR * TVR * SFR}{10000} + ARR - PD + WLR$$

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Understanding the Threat Rating

Threat rating is risk rating that has been lowered by event actions that have been taken. All event actions have a threat rating adjustment. The largest threat rating from all of the event actions taken is subtracted from the risk rating.

The event actions have the following threat ratings:

- Deny attacker inline—45
- Deny attacker victim pair inline—40
- Deny attacker service pair inline—40
- Deny connection inline—35
- Deny packet inline—35
- Modify packet inline—35
- Request block host—20
- Request block connection—20
- Reset TCP connection—20
- Request rate limit—20

Event Action Overrides

You can add an event action override to change the actions associated with an event based on the risk rating of that event. Event action overrides are a way to add event actions globally without having to configure each signature individually. Each event action has an associated risk rating range. If a signature event occurs and the risk rating for that event falls within the range for an event action, that action is added to the event. For example, if you want any event with a risk rating of 85 or more to generate an SNMP trap, you can set the risk rating range for Request SNMP Trap to 85-100. If you do not want to use action overrides, you can disable the entire event action override component.

Event Action Filters

Event action filters are processed as an ordered list and you can move filters up or down in the list.

Filters let the sensor perform certain actions in response to the event without requiring the sensor to perform all actions or remove the entire event. Filters work by removing actions from an event. A filter that removes all actions from an event effectively consumes the event.

Note When filtering sweep signatures, we recommend that you do not filter the destination addresses. If there are multiple destination addresses, only the last address is used for matching the filter.

Event Action Summarization and Aggregation

This section explains how event actions are summarized and aggregated. It contains the following topics:

- Event Action Summarization, page 6-5
- Event Action Aggregation, page 6-5

Event Action Summarization

Summarization decreases the volume of alerts sent out from the sensor by providing basic aggregation of events in to a single alert. Special parameters are specified for each signature and they influence the handling of the alerts. Each signature is created with defaults that reflect a preferred normal behavior. However, you can tune each signature to change this default behavior within the constraints for each engine type.

The nonalert-generating actions (deny, block, TCP reset) go through the filters for each signature event unsummarized. The alert-generating actions are not performed on these summarized alerts; instead the actions are applied to the one summary alert and then put through the filters.

If you select one of the other alert-generating actions and do not have it filtered out, the alert is created even if you do not select Produce Alert. To prevent alerts from being created, you must have all alert-generating actions filtered out.

Summarization and event actions are processed after the Meta engine has processed the component events. This lets the sensor watch for suspicious activity transpiring over a series of events.

Event Action Aggregation

Basic aggregation provides two operating modes. The simple mode involves configuring a threshold number of hits for a signature that must be met before the alert is sent. A more advanced mode is timed-interval counting. In this mode, the sensor tracks the number of hits per second and only sends alerts when that threshold is met. In this example, a hit is a term used to describe an event, which is basically an alert, but it is not sent out of the sensor as an alert until the threshold number of hits has been exceeded.

You can choose from the following summarization options:

- Fire All—Fire All mode fires an alert each time the signature is triggered. If the threshold is set for summarization, alerts are fired for each execution until summarization occurs. After summarization starts only one alert every summary interval fires for each address set. Alerts for other address sets are either all seen or separately summarized. The signature reverts to Fire All mode after a period of no alerts for that signature.
- Summary—Summary mode fires an alert the first time a signature is triggered, and then additional alerts for that signature are summarized for the duration of the summary interval. Only one alert every summary interval should fire for each address set. If the global summary threshold is reached, the signature goes in to Global Summarization mode.
- Global Summarization—Global Summarization mode fires an alert for every summary interval. Signatures can be preconfigured for global summarization.
- Fire Once—Fire Once mode fires an alert for each address set. You can upgrade this mode to Global Summarization mode.

Signature Event Action Processor

Signature Event Action Processor coordinates the data flow from the signature event in the alarm channel to processing through the Signature Event Action Override, the Signature Event Action Filter, and the Signature Event Action Handler. It consists of the following components:

- Alarm channel

  The unit that represents the area to communicate signature events from the SensorApp inspection path to signature event handling.

- Signature Event Action Override

  Adds actions based on the risk rating value. The Signature Event Action Override applies to all signatures that fall in the range of the configured risk rating threshold. Each Signature Event Action Override is independent and has a separate configuration value for each action type.

- Signature Event Action Filter

  Subtracts actions based on the signature ID, addresses, and risk rating of the signature event. The input to the Signature Event Action Filter is the signature event with actions possibly added by the Signature Event Action Override.

  Note The Signature Event Action Filter can only subtract actions, it cannot add new actions.

  The following parameters apply to the Signature Event Action Filter:

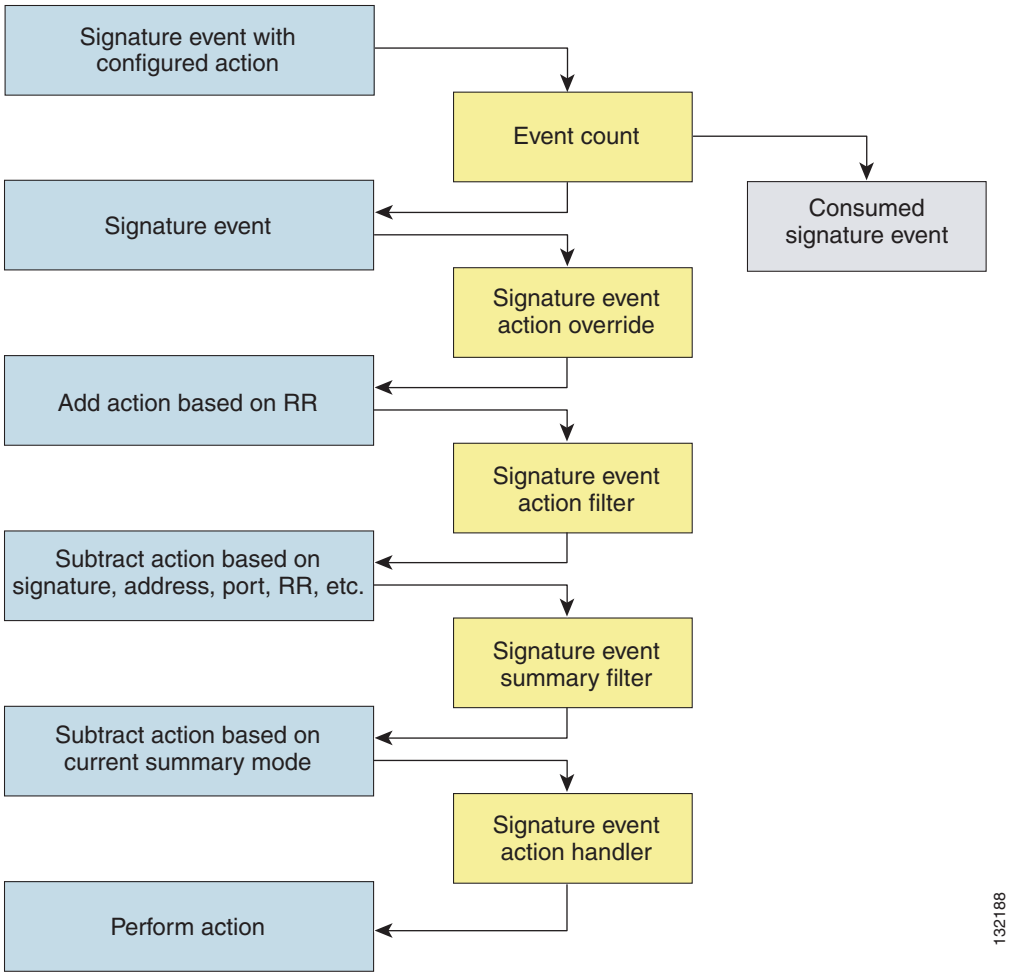
  - Signature ID
  - Subsignature ID
  - Attacker address
  - Attacker port
  - Victim address
  - Victim port
  - Risk rating threshold range
  - Actions to subtract
  - Sequence identifier (optional)
  - Stop-or-continue bit
  - Enable action filter line bit
  - Victim OS relevance or OS relevance

- Signature Event Action Handler

  Performs the requested actions. The output from the Signature Event Action Handler is the actions being performed and possibly an evIdsAlert written to the Event Store.

Figure 6-2 on page 6-7 illustrates the logical flow of the signature event through the Signature Event Action Handler and the operations performed on the action for this event. It starts with the signature event with configured action received in the alarm channel and flows top to bottom as the signature event passes through the functional components of the Signature Event Action Handler.

Figure 6-2 Signature Event Through the Signature Event Action Processor



For More Information

For more information on how the risk rating is calculated, see Calculating the Risk Rating, page 6-2.

Event Actions

The Cisco IPS has the following event actions.

Alert and Log Actions

- Product Alert—Writes the event to the Event Store as an alert.

Note The Product Alert action is not automatic when you enable alerts for a signature. To have an alert created in the Event Store, you must select Product Alert. If you add a second action, you must include Product Alert if you want an alert sent to the Event Store. Also, every time you configure the event actions, a new list is created and it replaces the old list. Make sure you include all the event actions you need for each signature.

Note There are other event actions that force a Product Alert. These actions use Product Alert as the vehicle for performing the action. Even if Product Alert is not selected or is filtered, the alert is still produced. The actions are the following: Produce Verbose Alert, Request SNMP Trap, Log Attacker Packets, Log Victim Packets, and Log Pair Packets.

Note A Produce Alert event action is added for an event when global correlation has increased the risk rating of an event, and has added either the Deny Packet Inline or Deny Attacker Inline event action.

- Produce Verbose Alert—Includes an encoded dump of the offending packet in the alert. This action causes an alert to be written to the Event Store, even if Product Alert is not selected.
- Log Attacker Packets—Starts IP logging on packets that contain the attacker address and sends an alert. This action causes an alert to be written to the Event Store, even if Product Alert is not selected.
- Log Victim Packets—Starts IP logging on packets that contain the victim address and sends an alert. This action causes an alert to be written to the Event Store, even if Product Alert is not selected.
- Log Pair Packets—Starts IP logging on packets that contain the attacker/victim address pair. This action causes an alert to be written to the Event Store, even if Product Alert is not selected.
- Request SNMP Trap—Sends a request to the Notification Application component of the sensor to perform SNMP notification. This action causes an alert to be written to the Event Store, even if Product Alert is not selected. You must have SNMP configured on the sensor to implement this action.

Deny Actions

- Deny Packet Inline (inline only)—Terminates the packet.

Note You cannot delete the event action override for Deny Packet Inline because it is protected. If you do not want to use that override, disable it.

- Deny Connection Inline (inline only)—Terminates the current packet and future packets on this TCP flow.
- Deny Attacker Victim Pair Inline (inline only)—Does not transmit this packet and future packets on the attacker/victim address pair for a specified period of time.
- Deny Attacker Service Pair Inline (inline only)—Does not transmit this packet and future packets on the attacker address victim port pair for a specified period of time.
- Deny Attacker Inline (inline only)—Terminates the current packet and future packets from this attacker address for a specified period of time.
- The sensor maintains a list of attackers being denied by the system. To remove an entry from the denied attacker list, you can view the list of attackers and clear the entire list, or you can wait for the timer to expire. The timer is a sliding timer for each entry. Therefore, if attacker A is being denied, but issues another attack, the timer for attacker A is reset and attacker A remains in the denied attacker list until the timer expires. If the denied attacker list is at capacity and cannot add a new entry, the packet is still denied.
- Modify Packet Inline (inline only)—Modifies packet data to remove ambiguity about what the end point might do with the packet.

Note You cannot use Modify Packet Inline as an action when adding event action filters or overrides.

Other Actions

- Request Block Connection—Sends a request to ARC to block this connection. You must have blocking devices configured to implement this action.

Note Connection blocks and network blocks are not supported on adaptive security appliances. Adaptive security appliances only support host blocks with additional connection information.

Note IPv6 does not support Request Block Connection.

- Request Block Host—Sends a request to ARC to block this attacker host. You must have blocking devices configured to implement this action.

Note IPv6 does not support Request Block Host.

- Request Rate Limit—Sends a rate limit request to ARC to perform rate limiting. You must have rate limiting devices configured to implement this action.

Note Request Rate Limit applies to a select set of signatures.

Note IPv6 does not support Request Rate Limit.

- Reset TCP Connection—Sends TCP resets to hijack and terminate the TCP flow. Reset TCP Connection only works on TCP signatures that analyze a single connection. It does not work for sweeps or floods.

Understanding Deny Packet Inline

For signatures that have Deny Packet Inline configured as an action or for an event action override that adds Deny Packet Inline as an action, the following actions may be taken:

- Dropped Packet
- Denied Flow
- TCP One Way Reset Sent TCP

The Deny Packet Inline action is represented as a dropped packet action in the alert. When a Deny Packet Inline occurs for a TCP connection, it is automatically upgraded to a Deny Connection Inline action and seen as a denied flow in the alert. If the IPS denies just one packet, the TCP continues to try to send that same packet again and again, so the IPS denies the entire connection to ensure it never succeeds with the resends.

When a Deny Connection Inline occurs, the IPS also automatically sends a TCP one-way reset, which shows up as a TCP one-way reset sent in the alert. When the IPS denies the connection, it leaves an open connection on both the client (generally the attacker) and the server (generally the victim). Too many open connections can result in resource problems on the victim. So the IPS sends a TCP reset to the victim to close the connection on the victim side (usually the server), which conserves the resources of the victim. It also prevents a failover that would otherwise allow the connection to fail over to a different network path and reach the victim. The IPS leaves the attacker side open and denies all traffic from it.

TCP Reset Differences Between IPS Appliances and AIP SSM

The IPS appliance sends TCP reset packets to both the attacker and victim when Reset TCP Connection is selected. The IPS appliance sends a TCP reset packet only to the victim under the following circumstances:

- When a Deny Packet Inline or Deny Connection Inline is selected
- When TCP-based signatures and Reset TCP Connection have NOT been selected

In the case of the AIP SSM, the TCP reset request is sent to the ASA, and then the ASA sends the TCP reset packets. The ASA sends TCP reset packets to both the attacker and victim when the Reset TCP Connection is selected. When Deny Packet Inline or Deny Connection Inline is selected, the ASA sends the TCP reset packet to either the attacker or victim depending on the configuration of the signature. Signatures configured to swap the attacker and victim when reporting the alert can cause the ASA to send the TCP reset packet to the attacker.

For More Information

- For the procedure for clearing the denied attacker list, see Monitoring the Denied Attackers List, page 12-2.
- For the procedure for configuring the general settings, see Configuring the General Settings, page 6-32.
- For more information on ARC and configuring blocking and rate limiting, see Chapter 9, “Configuring Attack Response Controller for Blocking and Rate Limiting.”
- For more information about SNMP, see Chapter 8, “Configuring SNMP.”

Event Action Rules Example

The following example demonstrates how the individual components of your event action rules work together.

Risk Rating Ranges

- Produce Alert—1-100
- Produce Verbose Alert—90-100
- Request SNMP Trap—50-100
- Log Pair Packets—90-100
- Log Victim Packets—90-100
- Log Attacker Packets—90-100
- Reset TCP Connection—90-100
- Request Block Connection—70-89
- Request Block Host—90-100

- Deny Attacker Inline—0-0
- Deny Connection Inline—90-100
- Deny Packet Inline—90-100

Event Action Filters

The filters are applied in the following order:

1. SigID=2004, Attacker Address=*, Victim Address=20.1.1.1, Actions to Remove=ALL, Risk Rating Range=1-100, StopOnMatch=True
2. SigID=2004, Attacker Address=30.1.1.1, Victim Address=*, Actions to Remove=ALL, Risk Rating Range=1-100, StopOnMatch=True
3. SigID=2004, Attacker Address=*, Victim Address=*, Actions to Remove=None, Risk Rating Range=95-100, StopOnMatch=True
4. SigID=2004, Attacker Address=*, Victim Address=*, Actions to Remove=denyAttackerInline, requestBlockHost, requestBlockConnection, Risk Rating Range=56-94, StopOnMatch=True
5. SigID=2004, Attacker Address=*, Victim Address=*, Actions to Remove=denyAttackerInline, requestBlockHost, produceAlert, resetTcpConnection, logAttackerPackets, Risk Rating Range=1-55, StopOnMatch=True

Results

When SIG 2004 is detected:

- If the attacker address is 30.1.1.1 or the victim address is 20.1.1.1, the event is consumed (ALL actions are subtracted).

If the attacker address is not 30.1.1.1 and the victim address is not 20.1.1.1:

- If the risk rating is 50, Produce Alert and Request SNMP Trap are added by the event action override component, but Produce Alert is subtracted by the event action filter. However, the event action policy forces the alert action because Request SNMP Trap is dependent on the evIdsAlert.
- If the risk rating is 89, Request SNMP Trap and Request Block Connection are added by the event action override component. However, Request Block Connection is subtracted by the event action filter.
- If the risk rating is 96, all actions except Deny Attacker Inline and Request Block Connection are added by the event action override component, and none are removed by the event action filter. The third filter line with the filter action NONE is optional, but is presented as a clearer way to define this type of filter.

Configuring Event Action Rules Policies

This section describes how to create event action rules policies, and contains the following topics:

Event Action Rules Pane

Note You must be administrator or operator to add, clone, or delete event action rules policies.

In the Event Action Rules pane, you can add, clone, or delete an event action rules policy. The default event action rules policy is rules0. When you add a policy, a control transaction is sent to the sensor to create the policy instance. If the response is successful, the new policy instance is added under Event Action Rules. If the control transaction fails, for example because of resource limitations, an error message appears.

If your platform does not support virtual policies, this means you can only have one instance for each component and you cannot create new ones or delete the existing one. In this case, the Add, Clone, and Delete buttons are disabled.

Caution IDS-4215, AIM IPS, and NM CIDS do not support sensor virtualization and therefore do not support multiple policies.

Event Action Rules Pane Field Definitions

The following fields are found in the Event Action Rules pane:

- Policy Name—Identifies the name of this event action rules policy.
- Assigned Virtual Sensor—Identifies the virtual sensor to which this event action rules policy is assigned.

Add and Clone Policy Dialog Boxes Field Definitions

The following field is found in the Add and Clone Policy dialog boxes:

- Policy Name—Lets you create a unique name for the new policy.

Adding, Cloning, and Deleting Event Action Rules Policies

To add, clone, or delete an event action rules policy, follow these steps:

Step 1 Log in to IDM using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Event Action Rules**, and then click **Add**.

Step 3 Enter a name for the event action rules policy in the Policy Name field.

Tip To discard your changes and close the Add Policy dialog box, click **Cancel**.

Step 4 Click **OK**.

The event action rules policy appears in the list in the Event Action Rules pane.

Step 5 To clone an existing event action rules policy, select it in the list, and then click **Clone**.

The Clone Policy dialog box appears with "_copy" appended to the existing event action rules policy name.

Step 6 Enter a unique name in the Policy Name field.

Step 7 Click **OK**.

The cloned event action rules policy appears in the list in the Event Action Rules pane.

Tip To discard your changes and close the Clone Policy dialog box, click **Cancel**.

Step 8 To remove an event action rules policy, select it, and then click **Delete**.

The Delete Policy dialog box appears asking if you are sure you want to delete this policy permanently.

Caution You cannot delete the default event action rules policy, rules0.

Step 9 Click **Yes**.

The event action rules policy no longer appears in the list in the Event Action Rules pane.

Tip To discard your changes, click **Reset**.

Step 10 Click **Apply** to apply your changes and save the revised configuration.

Event Action Rules Policy rules0

The rules0 pane (default) contains the event action rules policy configuration and the tools to configure event action rules. There are six tabs:

- Event Action Overrides—Lets you add an event action override that acts globally (rather than per signature) to change the actions associated with an event based on the risk rating of that event.
- Target Value Rating—Lets you assign a target value rating to your network assets. The target value rating is one of the factors used to calculate the risk rating value for each alert.
- Event Action Filters—Lets you remove specific actions from an event or discard an entire event and prevent further processing by the sensor.
- OS Identifications—Lets you associate IP addresses with an OS type, which in turn helps the sensor calculate the attack relevance rating.
- Event Variables—Lets you create event variables for use in event action filters. When you want to use the same value within multiple filters, you can use an event variable.
- General Settings—Lets you configure the general settings that apply to event action rules, such as whether you want to use the Summarizer and the Meta Event Generator.

Configuring Event Action Overrides

This section describes the Event Action Overrides tab and how to configure event action overrides. It contains the following topics:

Event Action Overrides Tab

Note You must be administrator or operator to configure event action overrides.

You can add an event action override to change the actions associated with an event based on specific details about that event.

Event Action Overrides Tab Field Definitions

The following fields are found on the Event Action Overrides tab:

- Use Event Action Overrides—If checked, lets you use any event action override that is enabled.
- Event Action—Specifies the event action that will be added to an event if the conditions of this event action override are satisfied.
- Enabled—Indicates whether or not the override is enabled.
- Risk Rating—Indicates the risk rating range between 0 and 100 that should be used to trigger this event action override.

  If an event occurs with a risk rating that falls within the minimum-maximum range you configure here, the event action is added to this event.

Add and Edit Event Action Override Dialog Boxes Field Definitions

The following fields are found in the Add and Edit Event Action Override dialog boxes:

- Event Action—Specifies the event action that will be added to an event if the conditions of this event action override are satisfied.
  - Deny Attacker Inline—(Inline only) Terminates the current packet and future packets from this attacker address for a specified period of time.

    The sensor maintains a list of attackers being denied by the system. To remove an entry from the denied attacker list, you can view the list of attackers and clear the entire list, or you can wait for the timer to expire. The timer is a sliding timer for each entry. Therefore, if attacker A is being denied, but issues another attack, the timer for attacker A is reset and attacker A remains in the denied attacker list until the timer expires. If the denied attacker list is at capacity and cannot add a new entry, the packet is still denied.

Note This is the most severe of the deny actions. It denies current and future packets from a single attacker address. To clear all denied attacker entries, choose **Monitoring > Denied Attackers > Clear List**, which permits the addresses back on the network.

- Deny Attacker Service Pair Inline—(Inline only) Does not transmit this packet and future packets on the attacker address victim port pair for a specified period of time.
- Deny Attacker Victim Pair Inline—(Inline only) Does not transmit this packet and future packets on the attacker/victim address pair for a specified period of time.

Note For deny actions, to set the specified period of time and maximum number of denied attackers, choose **Configuration > Policies > Event Action Rules > rules0 > General Settings**.

- Deny Connection Inline—(Inline only) Terminates the current packet and future packets on this TCP flow.
- Deny Packet Inline—(Inline only) Terminates the packet.

Note You cannot delete the event action override for Deny Packet Inline because it is protected. If you do not want to use that override, disable it.

- Log Attacker Packets—Starts IP logging on packets that contain the attacker address and sends an alert. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Log Pair Packets—Starts IP Logging on packets that contain the attacker/victim address pair. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Log Victim Packets—Starts IP Logging on packets that contain the victim address and sends an alert. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Modify Packet Inline— Modifies packet data to remove ambiguity about what the end point might do with the packet.

Note Modify Packet Inline is not an option for Add Event Action Filter or Add Event Action Override.

- Produce Alert—Writes the event to the Event Store as an alert.
- Produce Verbose Alert—Includes an encoded dump of the offending packet in the alert. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Request Block Connection—Sends a **r**equest to ARC to block this connection. You must have blocking devices configured to implement this action.
- Request Block Host—Sends a request to ARC to block this attacker host. You must have blocking devices configured to implement this action.

Note For block actions, to set the duration of the block, choose **Configuration > Policies > Event Action Rules > rules0 > General Settings**.

  - Request Rate Limit—Sends a rate limit request to ARC to perform rate limiting. You must have rate limiting devices configured to implement this action.

    Note Request Rate Limit applies to a select set of signatures.

  - Request SNMP Trap—Sends a request to the Notification Application component of the sensor to perform SNMP notification. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected. You must have SNMP configured on the sensor to implement this action.
  - Reset TCP Connection—Sends TCP resets to hijack and terminate the TCP flow. Reset TCP Connection only works on TCP signatures that analyze a single connection. It does not work for sweeps or floods.

- Enabled—Check the **Yes** check box to enable the override; check the **No** check box to disable the override.
- Risk Rating—Indicates the risk rating range between 0 and 100 that should be used to trigger this event action override.

  If an event occurs with an risk rating that falls within the minimum-maximum range you configure here, the event action is added to this event.

For More Information

For detailed information about event actions, see Event Actions, page 6-7.

Adding, Editing, Deleting, Enabling, and Disabling Event Action Overrides

To add, edit, delete, enable, and disable event action overrides, follow these steps:

Step 1 Log in to IDM using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Event Action Rules > rules0 > Event Action Overrides**, and then click **Add**.

Step 3 From the Event Action drop-down list, choose the event action this event action override will correspond to.

Step 4 In the Enabled field, click the **Yes** radio button to enable the override.

Step 5 Under Risk Rating, enter a risk rating range to this network asset in the Minimum and Maximum fields.

All values should be between 0 and 100 and the value in the Minimum field must be less than or equal to the value in the Maximum field.

Tip To discard your changes and close the Add Event Action Override dialog box, click **Cancel**.

Step 6 Click **OK**.

The new event action override now appears in the list on the Event Action Overrides tab.

Step 7 Check the **Use Event Action Overrides** check box.

Note You must check the **Use Event Action Overrides** check box on the Event Action Overrides tab or none of the event action overrides will be enabled regardless of the value you set.

Step 8 To edit an existing event action override, select it in the list, and then click **Edit**.

Step 9 In the Enabled field, click the **Yes** radio button to enable the override.

Step 10 Under Risk Rating, enter a risk rating range to this network asset in the Minimum and Maximum fields.

All values should be between 0 and 100 and the value in the Minimum field must be less than or equal to the value in the Maximum field.

Tip To discard your changes and close the Edit Event Action Override dialog box, click **Cancel**.

Step 11 Click **OK**.

The edited event action override now appears in the list on the Event Action Overrides tab.

Step 12 Check the **Use Event Action Overrides** check box.

Note You must check the **Use Event Action Overrides** check box on the Event Action Overrides tab or none of the event action overrides will be enabled regardless of the value you set.

Step 13 To delete an event action override, select it in the list, and then click **Delete**.

The event action override no longer appears in the list on the Event Action Overrides tab.

Note You cannot delete the event action override for Deny Packet Inline because it is protected. If you do not want to use that override, disable it.

Step 14 To enable or disable an event action override, select it in the list, and then click **Enable** or **Disable**.

Tip To discard your changes, click **Reset**.

Step 15 Click **Apply** to apply your changes and save the revised configuration.

Configuring Target Value Ratings

This section describes the Target Value Ratings tab and how to configure target value ratings. It contains the following topics:

Target Value Ratings Tab

Note You must be administrator or operator to configure target value ratings.

You can assign a target value rating to your network assets. The target value rating is one of the factors used to calculate the risk rating value for each alert. You can assign different target value ratings to different targets. Events with a higher risk rating trigger more severe signature event actions.

For More Information

For more information on risk rating, see Calculating the Risk Rating, page 6-2.

Target Value Rating Field Definitions

The following fields are found on the Target Value Rating tab:

- Target Value Rating (TVR)—Identifies the value assigned to this network asset. The value can be High, Low, Medium, Mission Critical, or No Value.
- Target IP Address—Identifies the IP address of the network asset you want to prioritize with a target value rating.

Add and Edit Target Value Rating Dialog Boxes Field Definitions

The following fields are found in the Add and Edit Target Value Rating dialog boxes:

- Target Value Rating (TVR)—Identifies the value assigned to this network asset. The value can be High, Low, Medium, Mission Critical, or No Value.
- Target IP Address(es)—Identifies the IP address of the network asset you want to prioritize with a target value rating.

Adding, Editing, and Deleting Target Value Ratings

To add, edit, and delete the target value rating for network assets, follow these steps:

Step 1 Log in to IDM using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Event Action Rules > rules0 > Target Value Rating**, and then click **Add**.

Step 3 To assign a target value rating to a new group of assets, follow these steps:

a. From the Target Value Rating drop-down list, choose a rating.

The values are High, Low, Medium, Mission Critical, or No Value.

b. In the Target IP Address(es) field, enter the IP address of the network asset.

To enter a range of IP addresses, enter the lowest address followed by a hyphen and then the highest address in the range. For example: 10.10.2.1-10.10.2.30.

Tip To discard your changes and close the Add Target Value Rating dialog box, click **Cancel**.

Step 4 Click **OK**.

The new target value rating for the new asset appears in the list on the Target Value Rating tab.

Step 5 To edit an existing target value rating, select it in the list, and then click **Edit**.

Step 6 Make your changes to the values in the Target IP Address(es) field.

Tip To discard your changes and close the Edit Target Value Rating dialog box, click **Cancel**.

Step 7 Click **OK**.

The edited network asset now appears in the list on the Target Value Rating tab.

Step 8 To delete a network asset, select in the list, and then click **Delete**.

The network asset no longer appears in the list on the Target Value Rating tab.

Tip To discard your changes, click **Reset**.

Step 9 Click **Apply** to apply your changes and save the revised configuration.

Configuring Event Action Filters

This section describes the Event Action Filters tab and how to configure event action filters. It contains the following topics:

Event Action Filter Tab

Note You must be administrator or operator to configure event action filters.

You can configure event action filters to remove specific actions from an event or to discard an entire event and prevent further processing by the sensor. You can use the variables that you defined on the Event Variables pane to group addresses for your filters.

Note You must preface the variable with a dollar sign ($) to indicate that you are using a variable rather than a string. Otherwise, you receive the `Bad source and destination` error.

Caution Event action filters based on source and destination IP addresses do not function for the Sweep engine, because they do not filter as regular signatures. To filter source and destination IP addresses in sweep alerts, use the source and destination IP address filter parameters in the Sweep engine signatures.

Event Action Filters Field Definitions

The following fields are found on the Event Action Filters tab:

- Use Event Action Filters—Enables the event action filter component.

  You must check this check box to use any filter that is enabled.

- Name—Lets you name the filter you are adding.

  You need to name your filters so that you can move them around in the list and move them to the inactive list if needed.

- Active—Indicates whether the filter has been put in to the filter list and will take effect on filtering events.

- Enabled—Indicates whether or not this filter is enabled.

- Sig ID—Identifies the unique numerical value assigned to this signature.

  This value lets the sensor identify a particular signature. You can also enter a range of signatures.

- SubSig ID—Identifies the unique numerical value assigned to this subsignature.

  The subSig ID identifies a more granular version of a broad signature. You can also enter a range of subSig IDs.

- Attacker (address/port)—Identifies the IP address and/or port of the host that sent the offending packet.

  You can also enter a range of addresses.

- Victim (address/port)—Identifies the IP address and/or port used by the attacker host.

  This is the port from where the offending packet originated. You can also enter a range of ports.

- Risk Rating—Indicates the risk rating range between 0 and 100 that should be used to trigger this event action filter.

  If an event occurs with a risk rating that falls within the minimum-maximum range you configure here, the event is processed against the rules of this event filter.

- Actions to Subtract—Indicates the actions that should be removed from the event, should the conditions of the event meet the criteria of the event action filter.

- OS Relevance—Indicates whether the alert is relevant to the OS that has been identified for the victim.

- Deny Pct—Indicates the percentage of packets to deny for deny attacker features.

- Stop on Match—Determines whether or not this event will be processed against remaining filters in the event action filters list.

  If set to No, the remaining filters are processed for a match until a Stop flag is encountered.

  If set to Yes, no further processing is done. The actions specified by this filter are removed and the remaining actions are performed.

- Comments—Displays the user comments associated with this filter.

Add and Edit Event Action Filter Dialog Boxes Field Definitions

The following fields are found in the Add and Edit Event Action Filter dialog boxes:

- Name—Lets you name the filter you are adding.

  You need to name your filters so that you can move them around in the list and move them to the inactive list if needed.
- Active—Lets you add the filter to the filter list so that it takes effect on filtering events.
- Enabled—Indicates whether or not this filter is enabled.
- Signature ID—Identifies the unique numerical value assigned to this signature.

  This value lets the sensor identify a particular signature. You can also enter a range of signatures.
- Subsignature ID—Identifies the unique numerical value assigned to this subsignature.

  The subsignature ID identifies a more granular version of a broad signature. You can also enter a range of subsignature IDs.
- Attacker Address—Identifies the IP address of the host that sent the offending packet.

  You can also enter a range of addresses.
- Attacker Port—Identifies the port used by the attacker host.

  This is the port from where the offending packet originated. You can also enter a range of ports.
- Victim Address—Identifies the IP address of the host being attacked (the recipient of the offending packet).

  You can also enter a range of addresses.
- Victim Port—Identifies the port through which the offending packet was received.

  You can also enter a range of ports.
- Risk Rating—Indicates the risk rating range between 0 and 100 that should be used to trigger this event action filter.

  If an event occurs with a risk rating that falls within the minimum-maximum range you configure here, the event is processed against the rules of this event filter.
- Actions to Subtract—Indicates the actions that should be removed from the event, should the conditions of the event meet the criteria of the event action filter.
  - Deny Attacker Inline—(Inline only) Terminates the current packet and future packets from this attacker address for a specified period of time.

    The sensor maintains a list of attackers being denied by the system. To remove an entry from the denied attacker list, you can view the list of attackers and clear the entire list, or you can wait for the timer to expire. The timer is a sliding timer for each entry. Therefore, if attacker A is being denied, but issues another attack, the timer for attacker A is reset and attacker A remains in the denied attacker list until the timer expires. If the denied attacker list is at capacity and cannot add a new entry, the packet is still denied.

    Note This is the most severe of the deny actions. It denies current and future packets from a single attacker address. To clear all denied attacker entries, choose **Monitoring > Denied Attackers > Clear List**, which permits the addresses back on the network.
  - Deny Attacker Service Pair Inline—(Inline only) Does not transmit this packet and future packets on the attacker address victim port pair for a specified period of time.

- Deny Attacker Victim Pair Inline—(Inline only) Does not transmit this packet and future packets on the attacker/victim address pair for a specified period of time.

Note For deny actions, to set the specified period of time and maximum number of denied attackers, choose **Configuration > Policies > Event Action Rules > rules0 > General Settings**.

- Deny Connection Inline—(Inline only) Terminates the current packet and future packets on this TCP flow.
- Deny Packet Inline—(Inline only) Terminates the packet.

Note You cannot delete the event action override for Deny Packet Inline because it is protected. If you do not want to use that override, disable it.

- Log Attacker Packets—Starts IP logging on packets that contain the attacker address and sends an alert. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Log Pair Packets—Starts IP Logging on packets that contain the attacker/victim address pair. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Log Victim Packets—Starts IP Logging on packets that contain the victim address and sends an alert. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Modify Packet Inline— Modifies packet data to remove ambiguity about what the end point might do with the packet.

Note Modify Packet Inline is not an option for Add Event Action Filter or Add Event Action Override.

- Produce Alert—Writes the event to the Event Store as an alert.
- Produce Verbose Alert—Includes an encoded dump of the offending packet in the alert. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected.
- Request Block Connection—Sends a **r**equest to ARC to block this connection. You must have blocking devices configured to implement this action.
- Request Block Host—Sends a request to ARC to block this attacker host. You must have blocking devices configured to implement this action.

Note For block actions, to set the duration of the block, choose **Configuration > Policies > Event Action Rules > rules0 > General Settings**.

- Request Rate Limit—Sends a rate limit request to ARC to perform rate limiting. You must have rate limiting devices configured to implement this action.

Note Request Rate Limit applies to a select set of signatures.

  - Request SNMP Trap—Sends a request to the Notification Application component of the sensor to perform SNMP notification. This action causes an alert to be written to the Event Store, even if Produce Alert is not selected. You must have SNMP configured on the sensor to implement this action.
  - Reset TCP Connection—Sends TCP resets to hijack and terminate the TCP flow. Reset TCP Connection only works on TCP signatures that analyze a single connection. It does not work for sweeps or floods.
- OS Relevance—Lets you filter out events where the attack is not relevant to the victim OS.
- Deny Percentage—Determines the percentage of packets to deny for deny attacker features.

  The valid range is 0 to 100. The default is 100 percent.
- Stop on Match—Determines whether or not this event will be processed against remaining filters in the event action filters list.

  If set to No, the remaining filters are processed for a match until a Stop flag is encountered.

  If set to Yes, no further processing is done. The actions specified by this filter are removed and the remaining actions are performed.
- Comments—Displays the user comments associated with this filter.

For More Information

- For the procedure for clearing the denied attacker list, see Monitoring the Denied Attackers List, page 12-2.
- For the procedure for configuring the general settings, see Configuring the General Settings, page 6-32.
- For more information on ARC and configuring blocking and rate limiting, see Chapter 9, “Configuring Attack Response Controller for Blocking and Rate Limiting.”
- For more information about SNMP, see Chapter 8, “Configuring SNMP.”

Adding, Editing, Deleting, Enabling, Disabling, and Moving Event Action Filters

To add, edit, delete, enable, disable, and move event action filters, follow these steps:

Step 1 Log in to IDM using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Event Action Rules > rules0 > Event Action Filters**, and then click **Add**.

Step 3 In the Name field, enter a name for the event action filter.

A default name is supplied, but you can change it to a more meaningful name.

Step 4 In the Active field, click the **Yes** radio button to add this filter to the list so that it takes effect on filtering events.

Step 5 In the Enabled field, click the **Yes** radio button to enable the filter.

Note You must also check the **Use Event Action Filters** check box on the Event Action Filters tab or none of the event action filters will be enabled regardless of whether you check the **Yes** check box in the Add Event Action Filter dialog box.

Step 6 In the Signature ID field, enter the signature IDs of all signatures to which this filter should be applied.

You can use a list (2001, 2004), or a range (2001–2004) or one of the SIG variables if you defined them on the Event Variables tab. Preface the variable with $.

Step 7 In the SubSignature ID field, enter the subsignature IDs of the subsignatures to which this filter should be applied.

Step 8 In the Attacker Address field, enter the IP address of the source host.

You can use one of the variables if you defined them on the Event Variables tab. Preface the variable with $. You can also enter a range of addresses (for example, 0.0.0.0-255.255.255.255).

Step 9 In the Attacker Port field, enter the port number used by the attacker to send the offending packet.

Step 10 In the Victim Address field, enter the IP address of the recipient host.

You can use one of the variables if you defined them on the Event Variables tab. Preface the variable with $. You can also enter a range of addresses (for example, 0.0.0.0-255.255.255.255).

Step 11 In the Victim Port field, enter the port number used by the victim host to receive the offending packet.

Step 12 In the Risk Rating field, enter a risk rating range for this filter.

If the risk rating for an event falls within the range you specify, the event is processed against the criteria of this filter.

Step 13 From the Actions to Subtract drop-down list, choose the actions you want this filter to remove from the event.

Tip To choose more than one event action in the list, hold down the **Ctrl** key.

Step 14 In the OS Relevance drop-down list, choose whether you want to know if the alert is relevant to the OS that has been identified for the victim.

Step 15 In the Deny Percentage field, enter the percentage of packets to deny for deny attacker features.

The default is 100 percent.

Step 16 In the Stop on Match field, click one of the following radio buttons:

a. **Yes**—If you want the Event Action Filters component to stop processing after the actions of this particular filter have been removed.

   Any remaining filters will not be processed; therefore, no additional actions can be removed from the event.

b. **No**—If you want to continue processing additional filters.

Step 17 In the Comments field, enter any comments that you want to store with this filter, such as the purpose of this filter or why you have configured this filter in a particular way.

Tip To discard your changes and close the Add Event Action Filter dialog box, click **Cancel**.

Step 18 Click **OK**.

The new event action filter now appears in the list on the Event Action Filters tab.

Step 19 Check the **Use Event Action Overrides** check box.

Note You must check the **Use Event Action Overrides** check box on the Event Action Overrides tab or none of the event action overrides will be enabled regardless of the value you set in the Add Event Action Filter dialog box.

Step 20 To edit an existing event action filter, select it in the list, and then click **Edit**.

Step 21 Change any values in the fields that you need to.

See Steps 4 through 18 for information on completing the fields.

Tip To discard your changes and close the Edit Event Action Filter dialog box, click **Cancel**.

Step 22 Click **OK**.

The edited event action filter now appears in the list on the Event Action Filters tab.

Step 23 Check the **Use Event Action Overrides** check box.

Note You must check the **Use Event Action Overrides** check box on the Event Action Overrides tab or none of the event action overrides will be enabled regardless of the value you set in the Edit Event Action Filter dialog box.

Step 24 To delete an event action filter, select it in the list, and then click **Delete**.

The event action filter no longer appears in the list on the Event Action Filters tab.

Step 25 To enable or disable an event action filter, select it in the list, and then click **Enable** or **Disable**.

Step 26 To move an event action filter up or down in the list, select it, and then click **Move Up** or **Move Down**.

Tip To discard your changes, click **Reset**.

Step 27 Click **Apply** to apply your changes and save the revised configuration.

Configuring OS Maps

This section describes the OS Identifications tab and how to configure OS maps. It contains the following topics:

OS Identifications Tab

Note You must be administrator or operator to add, edit, and delete configured OS maps.

Passive OS fingerprinting lets the sensor determine the OS that hosts are running. The sensor analyzes network traffic between hosts and stores the OS of these hosts with their IP addresses. The sensor inspects TCP SYN and SYNACK packets exchanged on the network to determine the OS type.

The sensor then uses the OS of the target host OS to determine the relevance of the attack to the victim by computing the attack relevance rating component of the risk rating. Based on the relevance of the attack, the sensor may alter the risk rating of the alert for the attack and/or the sensor may filter the alert for the attack. You can then use the risk rating to reduce the number of false positive alerts (a benefit in IDS mode) or definitively drop suspicious packets (a benefit in IPS mode). Passive OS fingerprinting also enhances the alert output by reporting the victim OS, the source of the OS identification, and the relevance to the victim OS in the alert.

Passive OS fingerprinting consists of three components:

- Passive OS learning

  Passive OS learning occurs as the sensor observes traffic on the network. Based on the characteristics of TCP SYN and SYNACK packets, the sensor makes a determination of the OS running on the host of the source IP address.

- User-configurable OS identification

  You can configure OS host mappings, which take precedence over learned OS mappings.

- Computation of attack relevance rating and risk rating

  The sensor uses OS information to determine the relevance of the attack signature to the targeted host. The attack relevance is the attack relevance rating component of the risk rating value for the attack alert. The sensor uses the OS type reported in the host posture information imported from the CSA MC to compute the attack relevance rating.

There are three sources of OS information. The sensor ranks the sources of OS information in the following order:

1. Configured OS mappings—OS mappings you enter.

   Configured OS mappings reside in the event action rules policy and can apply to one or many virtual sensors.

Caution You can specify multiple operating systems for the same IP address. The last one in the list is the operating system that is matched.

2. Imported OS mappings—OS mappings imported from an external data source.

   Imported OS mappings are global and apply to all virtual sensors.

   Note Currently CSA MC is the only external data source.

3. Learned OS mappings—OS mappings observed by the sensor through the fingerprinting of TCP packets with the SYN control bit set.

   Learned OS mappings are local to the virtual sensor that sees the traffic.

When the sensor needs to determine the OS for a target IP address, it consults the configured OS mappings. If the target IP address is not in the configured OS mappings, the sensor looks in the imported OS mappings. If the target IP address is not in the imported OS mappings, the sensor looks in the learned OS mappings. If it cannot find it there, the sensor treats the OS of the target IP address as unknown.

Note Passive OS fingerprinting is enabled by default and the IPS contains a default vulnerable OS list for each signature.

Use the OS Identifications tab to configure OS host mappings, which take precedence over learned OS mappings. On the OS Identifications tab you can add, edit, and delete configured OS maps. You can move them up and down in the list to change the order in which the sensor computes the attack relevance rating and risk rating for that particular IP address and OS type combination.

You can also move them up and down in the list to change the order in which the sensor resolves the OS associated with a particular IP address.

Configured OS mappings allow for ranges, so for network 192.168.1.0/24 an administrator might define the following (Table 6-1):

Table 6-1 Example Configured OS Mapping

IP Address Range Set	OS
192.168.1.1	IOS
192.168.1.2-192.168.1.10,192.168.1.25	UNIX
192.168.1.1-192.168.1.255	Windows

More specific mappings should be at the beginning of the list. Overlap in the IP address range sets is allowed, but the entry closest to the beginning of the list takes precedence.

Passive OS Fingerprinting Configuration Considerations

You do not have to configure passive OS fingerprinting for it to function. IPS provides a default vulnerable OS list for each signature and passive analysis is enabled by default.

You can configure the following aspects of passive OS fingerprinting:

- Define OS mappings

  We recommend configuring OS mappings to define the identity of the OS running on critical systems. It is best to configure OS mappings when the OS and IP address of the critical systems are unlikely to change.

- Limit the attack relevance rating calculation to a specific IP address range

  This limits the attack relevance rating calculations to IP addresses on the protected network.

- Import OS mappings

  Importing OS mappings provides a mechanism for accelerating the learning rate and fidelity of the OS identifications made through passive analysis. If you have an external product interface, such as the CSA MC, you can import OS identifications from it.

- Define event action rules filters using the OS relevancy value of the target

  This provides a way to filter alerts solely on OS relevancy.

- Disable passive analysis

  Stops the sensor from learning new OS mappings.

- Edit signature vulnerable OS lists

  The vulnerable OS list specifies what OS types are vulnerable to each signature. The default, general-os, applies to all signatures that do not specify a vulnerable OS list.

OS Identifications Tab Field Definitions

The following fields are found on the OS Identifications tab:

- Enable passive OS fingerprinting analysis—When checked, lets the sensor perform passive OS analysis.
- Restrict OS mapping and ARR to these IP addresses—Lets you configure the mapping of OS type to a specific IP address and have the sensor calculate the attack relevance rating for that IP address.
- Configured OS Map—Displays the attributes of the configured OS map.
  - Name—The Name you give the configured OS map.
  - Active—Wether this configured OS map is active or inactive.
  - IP Address—The IP address of this configured OS map.
  - OS Type—The OS type of this configured OS map.

Add and Edit Configured OS Map Dialog Boxes Field Definitions

The following fields are found on the Add and Edit Configured OS Map dialog boxes:

- Name—Lets you name this configured OS map.
- Active—Lets you choose to have the configured OS map active or inactive.
- IP Address—Lets you enter the IP address associated with this configured OS map.

  The IP address for configured OS mappings (and *only* configured OS mappings) can be a set of IP addresses and IP address ranges. The following are all valid IP address values for configured OS mappings:
  - 10.1.1.1,10.1.1.2,10.1.1.15
  - 10.1.2.1
  - 10.1.1.1-10.2.1.1,10.3.1.1
  - 10.1.1.1-10.1.1.5
- OS Type—Lets you choose one of the following OS Types to associate with the IP address:
  - AIX
  - BSD
  - General OS
  - HP UX
  - IOS
  - IRIX
  - Linux

- Mac OS
- Netware
- Other
- Solaris
- UNIX
- Unknown OS
- Win NT
- Windows
- Windows NT/2K/XP

Adding, Editing, Deleting, and Moving Configured OS Maps

To add, edit, delete, and move configured OS maps, follow these steps:

Step 1 Log in to for example using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Event Action Rules > rules0 > OS Identifications**, and then click **Add**.

Step 3 In the Name field, enter a name for the configured OS map.

A default name is supplied, but you can change it to a more meaningful name.

Step 4 In the Active field, click the **Yes** radio button to add this configured OS map to the list so that it takes effect.

Step 5 In the IP Address field, enter the IP address of the host that you are mapping to an OS.

Step 6 From the OS Type drop-down list, choose the OS that will be mapped to the IP address.

Tip To discard your changes and close the Add Configured OS Map dialog box, click **Cancel**.

Step 7 Click **OK**.

The new configured OS map now appears in the list on the OS Identifications tab.

Step 8 Check the **Enable passive OS fingerprinting analysis** check box.

Note You must check the **Enable passive OS fingerprinting analysis** check box on the OS Identifications tab or none of the configured OS maps will be enabled regardless of the value you set in the Add Configured OS Map dialog box.

Step 9 To edit a configured OS map, select it in the list, and then click **Edit**.

Step 10 Change any values in the fields that you need to.

Tip To discard your changes and close the Edit Configured OS Map dialog box, click **Cancel**.

Step 11 Click **OK**.

The edited configured OS map now appears in the list on the OS Identifications tab.

Step 12 Check the **Enable passive OS fingerprinting analysis** check box.

Note You must check the **Enable passive OS fingerprinting analysis** check box on the OS Identifications tab or none of the configured OS maps will be enabled regardless of the value you set in the Edit Configured OS Map dialog box.

Step 13 To delete a configured OS map, select it in the list, and then click **Delete**.

The configured OS map no longer appears in the list on the OS Identifications tab.

Step 14 To move a configured OS map up or down in the list, select it, and then click **Move Up** or **Move Down**.

Tip To discard your changes, click **Reset**.

Step 15 Click **Apply** to apply your changes and save the revised configuration.

Configuring Event Variables

This section describes the Event Variables tab and how to configure event variables. It contains the following topics:

Event Variables Tab

Note You must be administrator or operator to configure event variables.

You can create event variables and then use those variables in event action filters. When you want to use the same value within multiple filters, use a variable. When you change the value of the variable, any filter that uses that variable is updated with the new value.

Note You must preface the variable with a dollar ($) sign to indicate that you are using a variable rather than a string.

Some variables cannot be deleted because they are necessary to the signature system. If a variable is protected, you cannot select it to edit it. You receive an error message if you try to delete protected variables. You can edit only one variable at a time.

When configuring IP addresses, specify the full IP address or ranges or set of ranges. For example:

- 10.89.10.10-10.89.10.23

- 10.90.1.1
- 192.56.10.1-192.56.10.255
- 10.1.1.1-10.2.255.255, 10.89.10.10-10.89.10.23

Timesaver For example, if you have an IP address space that applies to your engineering group and there are no Windows systems in that group, and you are not worried about any Windows-based attacks to that group, you could set up a variable to be the IP address space of the engineering group. You could then use this variable to configure a filter that would ignore all Windows-based attacks for this group.

Event Variables Tab Field Definitions

The following fields are found on the Event Variables tab:

- Name—Lets you assign a name to this variable.
- Type—Identifies the variable as an address.
- Value—Lets you add the value(s) represented by this variable.

Add and Edit Event Variable Dialog Boxes Field Definitions

The following fields are found in the Add and Edit Event Variable dialog boxes:

- Name—Lets you assign a name to this variable.
- Type—Identifies the variable as an address.
- Value—Lets you add the value(s) represented by this variable.

Adding, Editing, and Deleting Event Variables

To add, edit, and delete event variables, follow these steps:

Step 1 Log in to for example using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Event Action Rules > rules0 > Event Variables**, and then click **Add**.

Step 3 In the Name field, enter a name for this variable.

Note A valid name can only contain numbers or letters. You can also use a hyphen (-) or an underscore (_).

Step 4 In the Value field, enter the values for this variable.

Specify the full IP address or ranges or set of ranges. For example:

- 10.89.10.10-10.89.10.23
- 10.90.1.1
- 192.56.10.1-192.56.10.255

Note You can use commas as delimiters. Make sure there are no trailing spaces after the comma. Otherwise, you receive a `Validation failed` error.

Tip To discard your changes and close the Add Variable dialog box, click **Cancel**.

Step 5 Click **OK**.

The new variable appears in the list on the Event Variables tab.

Step 6 To edit an existing variable, select it in the list, and then click **Edit**.

Step 7 In the Value field, enter your changes to the value.

Tip To discard your changes and close the Edit Variable dialog box, click **Cancel**.

Step 8 Click **OK**.

The edited event variable now appears in the list on the Event Variables tab.

Tip To discard your changes, click **Reset**.

Step 9 Click **Apply** to apply your changes and save the revised configuration.

Configuring the General Settings

This section describes the General Settings tab and how to configure the general settings. It contains the following topics:

General Settings Tab

Note You must be administrator or operator to configure the general settings for event action rules.

You can configure the general settings that apply to event action rules, such as whether you want to use the Summarizer and the Meta Event Generator. The Summarizer groups events in to a single alert, thus decreasing the number of alerts the sensor sends out. The Meta Event Generator processes the component events, which lets the sensor watch for suspicious activity transpiring over a series of events.

Caution Do not disable the Summarizer or Meta Event Generator except for troubleshooting purposes. If you disable the Summarizer, every signature is set to Fire All with no summarization. If you disable the Meta Event Generator, all Meta engine signatures are disabled.

You can configure how long you want to deny attackers, the maximum number of denied attackers, and how long you want blocks to last.

General Settings Tab Field Definitions

The following fields are found on the General Settings tab:

- Use Summarizer—Enables the Summarizer component.

  By default, the Summarizer is enabled. If you disable it, all signatures are set to Fire All with no summarization. If you configure individual signatures to summarize, this configuration will be ignored if the Summarizer is not enabled.
- Use Meta Event Generator—Enables the Meta Event Generator.

  By default, the Meta Event Generator is enabled. If you disable the Meta Event Generator, all Meta engine signatures are disabled.
- Use Threat Rating Adjustment—Enables threat rating adjustment, which adjusts the risk rating. If disabled, then the risk rating is equal to the threat rating.
- Deny Attacker Duration—Number of seconds to deny the attacker inline.

  The valid range is 0 to 518400. The default is 3600.
- Block Attack Duration—Number of minutes to block a host or connection.

  The valid range is 0 to 10000000. The default is 30.
- Maximum Denied Attackers—Limits the number of denied attackers possible in the system at any one time.

  The valid range is 0 to 100000000. The default is 10000.

Configuring the General Settings

Caution The Summarizer and Meta Event Generator operate at a global level, so enabling them affects all sensor processing of these features.

To configure the general settings for event action rules, follow these steps:

Step 1 Log in to disable using an account with administrator or operator privileges.

Step 2 Choose **Configuration > Policies > Action Rules > rules0 > General Settings**.

Step 3 To enable the summarizer feature, check the **Use Summarizer** check box.

Caution Disable the Summarizer for troubleshooting purposes only. Otherwise, make sure the Summarizer is enabled so that all signatures you configure for summarization will actually summarize.

Step 4 To enable the meta event generator, check the **Use Meta Event Generator** check box.

Caution Disable the Meta Event Generator for troubleshooting purposes only. Otherwise, make sure the Meta Event Generator is enabled so that all Meta engine signatures are functional.

Step 5 To enable threat rating adjustment, check the **Use Threat Rating Adjustment** check box.

Step 6 In the Deny Attacker Duration field, enter the number of seconds you want to deny the attacker inline.

Step 7 In the Block Action Duration field, enter the number of minutes you want to block a host or connection.

Step 8 In the Maximum Denied Attackers field, enter the maximum number of denied attackers you want at any one time.

Tip To discard your changes, click **Reset**.

Step 9 Click **Apply** to apply your changes and save the revised configuration.

Monitoring Events

This section describes the Events pane and how to monitor events. It contains the following topics:

Events Pane

The Events pane lets you filter and view event data. You can filter events based on type, time, or both. By default all alert and error events are displayed for the past one hour. To access these events, click **View**.

When you click **View**, IDM defines a time range for the events if you have not already configured one. If you do not specify an end time of the range, it is defined as the moment you click **View**.

To prevent system errors when retrieving large numbers of events from the sensor, IDM limits the number of events you can view at one time (the maximum number of rows per page is 500). Click **Back** and **Next** to view more events.

Events Pane Field Definitions

The following fields are found in the Events pane:

- Show Alert Events—Lets you configure the level of alert you want to view:
  - Informational
  - Low

  - Medium
  - High

    The default is all levels enabled.

- Threat Rating (0-100)—Lets you change the range (minimum and maximum levels) of the threat rating value.
- Show Error Events—Lets you configure the type of errors you want to view:
  - Warning
  - Error
  - Fatal

    The default is all levels enabled.
- Show Attack Response Controller events—Shows ARC (formerly known as Network Access Controller) events.

  The default is disabled.

  Note NAC is now known as ARC; however, in IPS 6.0, the name change has not been completed throughout IDM and the CLI.

- Show status events—Shows status events.

  The default is disabled.
- Select the number of the rows per page—Lets you determine how many rows you want to view per page.

  The valid range is 100 to 500. The default is 100.
- Show all events currently stored on the sensor—Retrieves all events stored on the sensor.
- Show past events—Lets you go back a specified number of hours or minutes to view past events.
- Show events from the following time range—Retrieves events from the specified time range.

For More Information

For more information about how to calculate threat rating, see Understanding the Threat Rating, page 6-4.

Event Viewer Window Field Definitions

The following fields are found on the Event Viewer window.

- #—Identifies the order number of the event in the results query.
- Type—Identifies the type of event as Error, NAC, Status, or Alert.
- Sensor UTC Time—Identifies when the event occurred.
- Event ID—The numerical identifier the sensor has assigned to the event.
- Events—Briefly describes the event.
- Sig ID—Identifies the signature that fired and caused the alert event.

Configuring Event Display

To configure how you want events to be displayed, follow these steps:

Step 1 Log in to IDM.

Step 2 Choose **Monitoring > Events**.

Step 3 Under Show Alert Events, check the check boxes of the levels of alerts you want to be displayed.

Step 4 In the Threat Rating field, enter the minimum and maximum range of threat rating.

Step 5 Under Show Error Events, check the check boxes of the types of errors you want to be displayed.

Step 6 To display ARC (formerly known as Network Access Controller) events, check the **Show Attack Response Controller events** check box.

Step 7 To display status events, check the **Show status events** check box.

Step 8 In the Select the number of the rows per page field, enter the number of rows per page you want displayed.

The default is 100. The values are 100, 200, 300, 400, or 500.

Step 9 To set a time for events to be displayed, click one of the following ratio buttons:

- **Show all events currently stored on the sensor**
- **Show past events**

  Enter the hours and minutes you want to go back to view past events.
- **Show events from the following time range**

  Enter a start and end time.

Tip To discard your changes, click **Reset**.

Step 10 Click **View** to display the events you configured.

Step 11 To sort up and down in a column, click the right-hand side to see the up and down arrow.

Step 12 Click **Next** or **Back** to page by one hundred.

Step 13 To view details of an event, select it, and click **Details**.

The details for that event appear in another dialog box. The dialog box has the Event ID as its title.

For More Information

For more information about how to calculate threat rating, see Understanding the Threat Rating, page 6-4.

Monitoring OS Identifications

This section describes the Learned OS and Imported OS panes and how to monitor OS identifications. It contains the following topics:

Learned OS Pane

Note You must be administrator to clear and delete learned OS mappings.

The Learned OS pane displays the learned OS mappings that the sensor has learned from observing traffic on the network. The sensor inspects TCP session negotiations to determine the OS running on each host.

To clear the list or delete one entry, select the row and click **Delete**.

Note If Passive OS Fingerprinting is still enabled and hosts are still communicating on the network, the learned OS mappings are immediately repopulated.

Field Definitions

The following fields are found in the Learned OS pane:

- Virtual Sensor—The virtual sensor that the OS value is associated with.
- Host IP Address—The IP address the OS value is mapped to.
- OS Type—The OS type associated with the IP address.

Deleting and Clearing Learned OS Values

To delete a learned OS value or to clear the entire list, follow these steps:

Step 1 Log in to IDM using an account with administrator privileges.

Step 2 Choose **Monitoring > OS Identifications > Learned OS**.

Step 3 To delete one entry in the list, select it, and click **Delete**.

The learned OS value no longer appears in the list on the Learned OS pane.

Step 4 To get the most recent list of learned OS values, click **Refresh**.

The learned OS list is refreshed.

Step 5 To clear all learned OS values, click **Clear List**.

The learned OS list is now empty.

For More Information

For more information on passive OS fingerprinting and the sensor, see Configuring OS Maps, page 6-25.

Imported OS Pane

Note You must be administrator to clear and delete imported OS mappings.

The Imported OS pane displays the OS mappings that the sensor has imported from CSA MC if you have CSA MC set up as an external interface product on the Configuration > External Product Interfaces pane. To clear the list or delete one entry, select the row and click **Delete**.

Field Definitions

The following fields are found in the Imported OS pane:

- Host IP Address—The IP address the OS value is mapped to.
- OS Type—The OS type associated with the IP address.

Monitoring the Imported OS Values

To delete an imported OS value or to clear the entire list, follow these steps:

Step 1 Log in to IDM using an account with administrator privileges.

Step 2 Choose **Monitoring > OS Identifications > Imported OS**.

Step 3 To delete one entry in the list, select it, and click **Delete**.

The imported OS value no longer appears in the list on the Imported OS pane.

Step 4 To clear all imported OS values, click **Clear List**.

The imported OS list is now empty.

For More Information

For more information on external product interfaces, see Chapter 10, "Configuring External Product Interfaces."