Intelligent Application Bypass

The following topics describe how to configure access control polices to use Intelligent Application Bypass (IAB)

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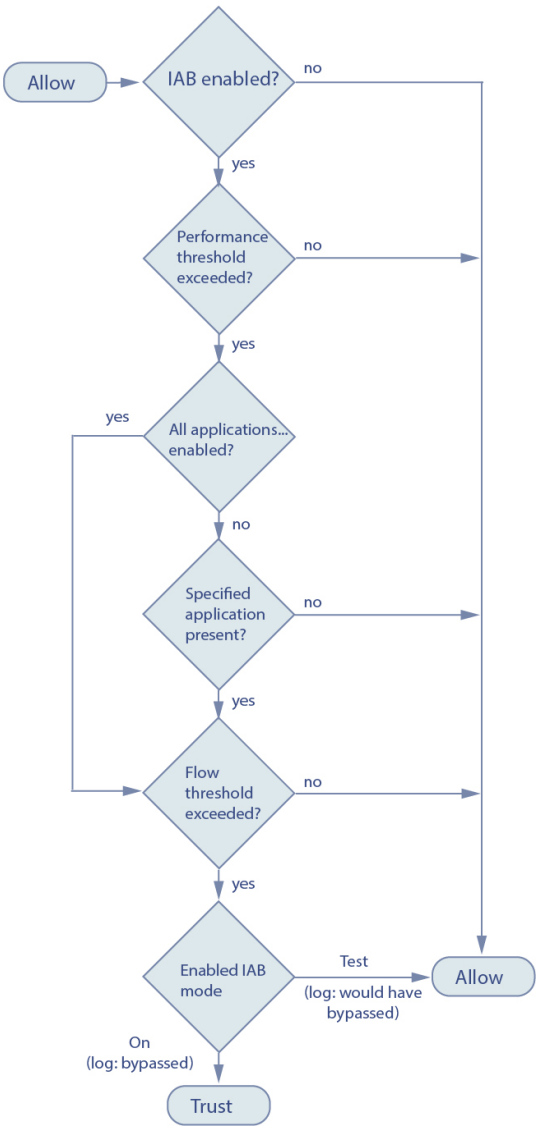
Introduction to IAB

IAB identifies applications that you trust to traverse your network without further inspection if performance and flow thresholds are exceeded. For example, if a nightly backup significantly impacts system performance, you can configure thresholds that, if exceeded, trust traffic generated by your backup application. Optionally, you can configure IAB so that, when an inspection performance threshold is exceeded, IAB trusts all traffic that exceeds any flow bypass threshold, regardless of the application type.

The system implements IAB on traffic allowed by access control rules or the access control policy's default action, before the traffic is subject to deep inspection. A test mode allows you to determine whether thresholds are exceeded and, if so, to identify the application flows that would have been bypassed if you had actually enabled IAB (called *bypass mode*).

The following graphic illustrates the IAB decision-making process:



IAB Options

State

Enables or disables IAB.

Performance Sample Interval

Specifies the time in seconds between IAB performance sampling scans, during which the system collects system performance metrics for comparison to IAB performance thresholds. A value of `0` disables IAB.

Bypassable Applications and Filters

This feature provides two mutually exclusive options:

Applications/Filters

Provides an editor where you can specify bypassable applications and sets of applications (filters). See Application Conditions (Application Control).

All applications including unidentified applications

When an inspection performance threshold is exceeded, trusts all traffic that exceeds any flow bypass threshold, regardless of the application type.

Performance and Flow Thresholds

You must configure at least one inspection performance threshold and one flow bypass threshold. When a performance threshold is exceeded, the system examines flow thresholds and, if one threshold is exceeded, trusts the specified traffic.If you enable more than one of either, only one of each must be exceeded.

Inspection performance thresholds provide intrusion inspection performance limits that, if exceeded, trigger the inspection of flow thresholds. IAB does not use inspection performance thresholds set to `0`. You can configure one or more of the following inspection performance thresholds:

Drop Percentage

Average packets dropped as a percentage of total packets, when packets are dropped because of performance overloads caused by expensive intrusion rules, file policies, decompression, and so on. This does not refer to packets dropped by normal configurations such as intrusion rules. Note that specifying an integer greater than 1 activates IAB when the specified percentage of packets is dropped. When you specify `1`, any percentage from 0 through 1 activates IAB. This allows a small number of packets to activate IAB.

Processor Utilization Percentage

Average percentage of processor resources used.

Package Latency

Average packet latency in microseconds.

Flow Rate

The rate at which the system processes flows, measured as the number of flows per second. Note that this option configures IAB to measure flow *rate*, not flow *count*.

Flow bypass thresholds provide flow limits that, if exceeded, trigger IAB to trust bypassable application traffic in bypass mode or allow application traffic subject to further inspection in test mode. IAB does not use flow bypass thresholds set to `0`. You can configure one or more of the following flow bypass thresholds:

Bytes per Flow

The maximum number of kilobytes a flow can include.

Packets per Flow

The maximum number of packets a flow can include.

Flow Duration

The maximum number of seconds a flow can remain open.

Flow Velocity

The maximum transfer rate in kilobytes per second.

Requirements and Prerequisites for Intelligent Application Bypass

Model Support

Any

Supported Domains

Any

User Roles

- Admin
- Access Admin
- Network Admin

Configuring Intelligent Application Bypass

Caution Not all deployments require IAB, and those that do might use it in a limited fashion. Do not enable IAB unless you have expert knowledge of your network traffic, especially application traffic, and system performance, including the causes of predictable performance issues. Before you run IAB in bypass mode, make sure that trusting the specified traffic does not expose you to risk.

Before you begin

For Classic devices, you must have the Control license.

Procedure

Step 1 In the access control policy editor, click **Advanced**, then click **Edit** ( ) next to **Intelligent Application Bypass Settings**.

If **View** ( ) appears instead, settings are inherited from an ancestor policy, or you do not have permission to modify the settings. If the configuration is unlocked, uncheck **Inherit from base policy** to enable editing.

Step 2 Configure IAB options:

- State—Turn IAB **Off** or **On**, or enable IAB in **Test** mode.
- Performance Sample Interval—Enter the time in seconds between IAB performance-sampling scans. If you enable IAB, even in test mode, enter a non-zero value. Entering `0` disables IAB.
- Bypassable Applications and Filters—Choose from:

- Click the number of bypassed applications and filters and specify the applications whose traffic you want to bypass; see Configuring Application Conditions and Filters.
- Click **All applications including unidentified applications** so that, when an inspection performance threshold is exceeded, IAB trusts all traffic that exceeds any flow bypass threshold, regardless of the application type.

- Inspection Performance Thresholds—Click **Configure** and enter at least one threshold value.
- Flow Bypass Thresholds—Click **Configure** and enter at least one threshold value.

You must specify at least one inspection performance threshold and one flow bypass threshold; both must be exceeded for IAB to trust traffic. If you enter more than one threshold of each type, only one of each type must be exceeded. For detailed information, see IAB Options, on page 2.

Step 3 Click **OK** to save IAB settings.

Step 4 Click **Save** to save the policy.

What to do next

- Because some packets must be allowed to pass before an application can be detected, you must configure your system to examine those packets.

  See Best Practices for Handling Packets That Pass Before Traffic Identification and Specify a Policy to Handle Packets That Pass Before Traffic Identification.

- Deploy configuration changes; see Deploy Configuration Changes.

IAB Logging and Analysis

IAB forces an end-of-connection event that logs bypassed flows and flows that would have been bypassed, regardless of whether you have enabled connection logging. Connection events indicate flows that are bypassed in bypass mode or that would have been bypassed in test mode. Custom dashboard widgets and reports based on connection events can display long-term statistics for bypassed and would-have-bypassed flows.

IAB Connection Events

Action

When **Reason** includes `Intelligent App Bypass`:

`Allow` -

indicates that the applied IAB configuration was in test mode and traffic for the application specified by **Application Protocol** remains available for inspection.

`Trust` -

indicates that the applied IAB configuration was in bypass mode and traffic for the application specified by **Application Protocol** has been trusted to traverse the network without further inspection.

Reason

`Intelligent App Bypass` indicates that IAB triggered the event in bypass or test mode.

Application Protocol

This field displays the application protocol that triggered the event.

Example

In the following truncated graphic, some fields are omitted. The graphic shows the **Action**, **Reason**, and **Application Protocol** fields for two connection events resulting from different IAB settings in two separate access control policies.

For the first event, the `Trust` action indicates that IAB was enabled in bypass mode and Bonjour protocol traffic was trusted to pass without further inspection.

For the second event, the `Allow` action indicates that IAB was enabled in test mode, so Ubuntu Update Manager traffic was subject to further inspection but would have been bypassed if IAB had been in bypass mode.

Action	Reason	Application Protocol
Trust	Intelligent App Bypass	Bonjour
Allow	Intelligent App Bypass	Ubuntu Update Manager

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Example

In the following truncated graphic, some fields are omitted. The flow in the second event was both bypassed (**Action**: `Trust`; **Reason**: `Intelligent App Bypass`) and inspected by an intrusion rule (**Reason**: `Intrusion Monitor`). The `Intrusion Monitor` reason indicates that an intrusion rule set to **Generate Events** detected but did not block an exploit during the connection. In the example, this happened before the application was detected. After the application was detected, IAB recognized the application as bypassable and trusted the flow.

Last Packet	Action	Reason	Application Protocol
2015-06-12 10:53:09	Trust	Intelligent App Bypass	Skype Probe
2015-06-12 10:53:08	Trust	Intelligent App Bypass, Intrusion Monitor	HTTP

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IAB Custom Dashboard Widgets

You can create a Custom Analysis dashboard widget to display long-term IAB statistics based on connection events. Specify the following when creating the widget:

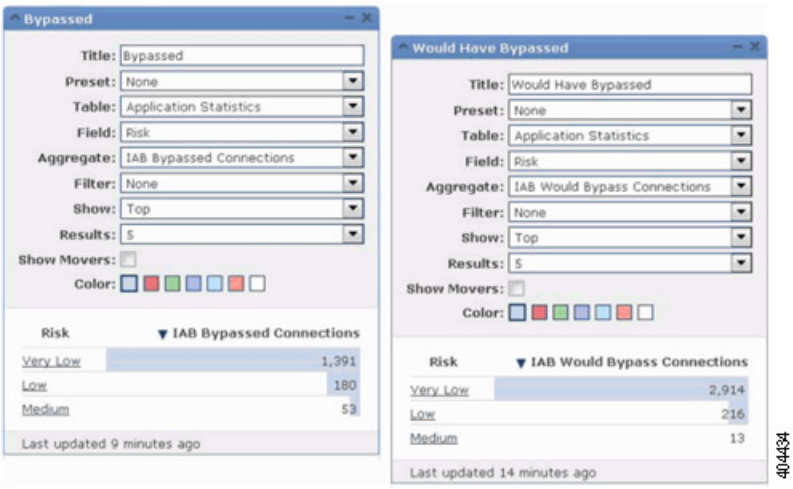
- **Preset**: `None`
- **Table**: `Application Statistics`
- **Field**: any
- **Aggregate**: either of:
  - `IAB Bypassed Connections`
  - `IAB Would Bypass Connections`

- **Filter**: any

Examples

In the following Custom Analysis dashboard widget examples:

- The *Bypassed* example shows statistics for application traffic bypassed because the applications were specified as bypassable and IAB was enabled in bypass mode in the deployed access control policy.
- The *Would Have Bypassed* example shows statistics for application traffic that would have been bypassed because the applications were specified as bypassable and IAB was enabled in test mode in the deployed access control policy. .



IAB Custom Reports

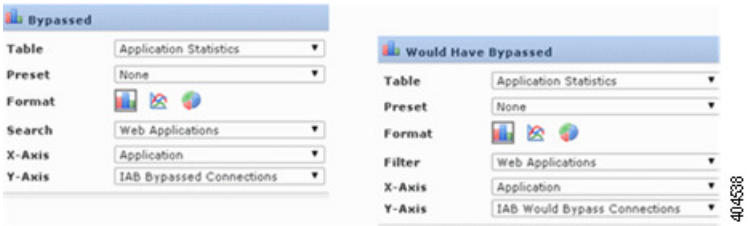
You can create a custom report to display long-term IAB statistics based on connection events. Specify the following when creating the report:

- **Table**: `Application Statistics`
- **Preset**: `None`
- **Filter**: any
- **X-Axis**: any
- **Y-Axis**: either of:
  - `IAB Bypassed Connections`
  - `IAB Would Bypass Connections`

Examples

The following graphic shows two abbreviated report examples:

- The *Bypassed* example shows statistics for application traffic bypassed because the applications were specified as bypassable and IAB was enabled in bypass mode in the deployed access control policy.
- The *Would Have Bypassed* example shows statistics for application traffic that would have been bypassed because the applications were specified as bypassable and IAB was enabled in test mode in the deployed access control policy.



Related Topics

Connection and Security Intelligence Event Fields
The Custom Analysis Widget
Adding Widgets to a Dashboard
Report Templates