NBAR Coarse-Grain Classification

NBAR provides two levels of application recognition—coarse-grain and fine-grain. In the Cisco IOS XE Release 3.14S, by default NBAR operates in the fine-grain mode, offering NBAR's full application recognition capabilities. By minimizing deep packet inspection, coarse-grain mode offers a performance advantage and reduces memory resource demands.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Information About NBAR Coarse-Grain Classification

Overview of NBAR Coarse-Grain Classification

NBAR provides two levels of application recognition-coarse-grain and fine-grain. By default NBAR operates in the fine-grain mode, offering NBAR's full application recognition capabilities. The default NBAR fine-grain mode is equivalent to NBAR functionality and performance prior to introduction of separate fine-grain and coarse-grain modes. This provides full backward compatibility for existing configurations.

By minimizing deep packet inspection, coarse-grain mode offers a performance advantage and reduces memory resource demands. This mode is be used in scenarios where the full power of fine-grain classification is not required. We recommend that you use fine-grained mode when per-packet reporting is required. When specific

per-packet reporting is not required, use the coarse-grained mode, as it offers performance and memory advantages.

Simplified Classification

Coarse-grain mode employs a simplified mode of classification, minimizing deep packet inspection. NBAR caches classification decisions made for earlier packets, then classifies later packets from the same server similarly.

Limitations of Coarse-Grain Mode

Coarse-grain mode has the following limitations in metric reporting detail:

Granularity—Caching may result in some reduction in the granularity. For example, NBAR might classify some traffic as **ms-office-365** instead of as the more specific **ms-office-web-apps**.

Evasive applications—Classification of evasive applications such as BitTorrent, eMule, and Skype, may be less effective than in fine-grain mode which is the default NBAR. Consequently, blocking or throttling may not work as well for these applications.

Comparison of Fine-grain and Coarse-grain Modes

Coarse-grain mode has the following limitations in metric reporting detail:

	Fine-Grain Mode	**Coarse-Grain Mode**
Classification	Full-power of deep packet inspection	Simplified classification Some classification according to similar earlier packets.
Performance	Slower	Faster
Memory Resources	Higher memory demands	Lower memory demands
Sub-classification	Full supported	Partial support
Field Extraction	Full supported	Partial support
Ideal usage	Per-packet policy Example: class-map that looks for specific url	When there is no requirement for specific per-packet operations.

How to Configure NBAR Coarse-Grain Classification

Configuring the NBAR Classification Modes

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip nbar classification granularity coarse-grain**
4. **exit**
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**ip nbar classification granularity coarse-grain** **Example:** `Device(config)# ip nbar classification granularity coarse-grain`	Configures the coarse-grain NBAR classification mode.
Step 4	**exit** **Example:** `Device(config)# exit`	Exits the global configuration mode and enters privileged EXEC mode.
Step 5	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.

Configuring a Performance Monitor Context with Application Statistics

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **performance monitor context** *context-name* **coarse-grain***profile-name*

4. **traffic-monitor application-client-server-stats**
5. **exit**
6. **interface** *type slot/port/number*
7. **performance monitor context** *context-name*
8. **end**
9. **show ip nbar classification granularity**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**performance monitor context** *context-name* **coarse-grain***profile-name* **Example:** `Device (config)# performance monitor context xyz profile application-statistics`	Enters performance monitor configuration mode, and creates a context with application-statistics profile. **Note** Configuring an Easy Performance Monitor (ezPM) policy using the Application Statistics profile implicitly invokes the coarse-grain Network Based Application Recognition (NBAR) classification mode. However, if you need to configure fine-grain NBAR classification mode, use the **ip nbar classification granularity fine-grain** command after configuring the performance monitor context with application statistics profile.
Step 4	**traffic-monitor application-client-server-stats** **Example:** `Device(config-perf-mon)# traffic-monitor application-client-server-stats`	Configures the traffic monitor to monitor the specified metrics.
Step 5	**exit** **Example:** `Device(config-perf-mon)# exit`	Exits performance monitor configuration mode and enters global configuration mode.
Step 6	**interface** *type slot/port/number* **Example:** `Device(config)# interfcace 0/2/2`	Enters interface configuration mode.
Step 7	**performance monitor context** *context-name* **Example:**	Configures the specified performance monitor context on the interface.

	Command or Action	Purpose
	`Device (config-if)# performance monitor context xyz`	
Step 8	**end** **Example:** `Device(config-if)# end`	Returns to privileged EXEC mode.
Step 9	**show ip nbar classification granularity** **Example:** `Device# show ip nbar classification granularity`	Displays the currently configured NBAR classification mode.

Configuration Examples for NBAR Coarse-Grain Classification

Example: Configuring the NBAR Classification Mode

The following example shows how to configure the coarse-grain classification mode of NBAR:

```
Device> enable
Device# configure terminal
Device (config)# ip nbar classification granularity coarse-grain
Device (config)# end
```

Example: Configuring a Performance Monitor Context with Application Statistics Profile

The following example shows how to configure an Easy Performance Monitor (ezPM) policy using the Application Statistics profile and invoke coarse-grain NBAR classification mode:

```
Device> enable
Device# configure terminal
Device(config)# performance monitor context xyz profile application-statistics
Device(config-perf-mon)# traffic-monitor application-client-server-stats
Device(config-perf-mon)# exit
Device(config)# interface gigabitEthernet 0/2/2
Device(config-if)# performance monitor context xyz
Device(config-if)# end
```

Example: Configuring a Performance Monitor Context with Application Statistics Profile and Force-configure Fine-Grain NBAR Classification Mode

The following example shows how to configure an ezPM policy using the Application Statistics profile and to force-configure fine-grain NBAR classification mode:

```
Device> enable
Device# configure terminal
Device(config)# performance monitor context xyz profile application-statistics
Device(config-perf-mon)# traffic-monitor application-client-server-stats
```

```
Device(config-perf-mon)# exit
Device(config)# interface gigabitEthernet 0/2/2
Device(config-if)# performance monitor context xyz
Device(config-if)# end
Device (config)# ip nbar classification granularity fine-grain
```

Example: Verifying the NBAR Classification Mode

The following example shows how to verify the currently configured NBAR Classification Mode:

```
Device # show ip nbar classification granularity

NBAR classification granularity mode: coarse-grain
```

Additional References for NBAR Coarse-Grain Classification

Related Documents

Related Topic	Document Title
Cisco IOS commands	*Cisco IOS Master Command List, All Releases*
AVC Configuration	AVC Configuration module

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for NBAR Coarse-Grain Classification

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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Table 1: Feature Information for NBAR Coarse-Grain Classification

Feature Name	Releases	Feature Information
NBAR Coarse-Grain Classification	Cisco IOS XE Release 3.14S	Network Based Application Recognition (NBAR) provides two levels of application recognition—coarse-grain and fine-grain. By default NBAR operates in the fine-grain mode, offering NBAR's full application recognition capabilities. By minimizing deep packet inspection, coarse-grain mode offers a performance advantage and reduces memory resource demands. The following command was introduced or modified: **ip nbar classification granularity** and **show ip nbar classification granularity**.