iWAG Scalability and Performance

The infrastructure of a service provider must be capable of supporting the services that an enterprise customer or Internet service provider (ISP) wants to offer its subscribers. The service provider must also be able to scale up to an expanding subscriber base. You can configure IWAG on the Cisco ASR1000 Series Routers for high scalability and performance.

iWAG Scaling

The ASR 1000 Series Routers can be deployed as an IP session aggregator. The maximum number of IP sessions that can be supported depends on the hardware combination.

Table below lists the iWAG scaling numbers and maximum number of IP sessions supported on the ASR 1000 hardware:

- Hardware combination and the maximum number of IP sessions that are supported when used for SP WiFi applications.

The session limits apply to all variety of IP session initiators: DHCP, unclassified Mac address, unclassified IP, and radius proxy.

- Hardware combinations for SP WiFi applications and the corresponding Simple IP use case scale numbers for authenticated and walk-by users.

Note Other hardware variants are not supported for SP WiFi applications. For more information, see Restrictions for iWAG Scalability, page 3

The scale numbers provided in the table below assumes the following reference configuration:

- Walk-by users: A maximum of three traffic classes on the default session.

• Authenticated users: There are no traffic classes for authenticated users.

Any deviation from the conditions mentioned above may result in different scale numbers. The scale limits and the hardware combinations listed in the next table requires 16GB of DRAM on ASR1000 Route Processor 2 (RP2).

Table 1: iWAG Scale: Maximum Number of IP Sessions Supported on ASR 1000 Hardware

Chassis	RP	ESP	Walk-by Users	Authenticated Users	Total number of Session (combined Authenticated and Walk-by Users)
1001	Integrated + 16 GB	ESP-2.5G or ESP-5G	16000	8000	24000
1001-X	Integrated + 16 GB	ESP licensing from -2.5G, 5G, 10G, or 20G	16000	8000	24000
1002-X	Integrated + 16 GB	ESP licensing from 5G, 10G, 20, or 36G	128000	32000	160000
1001-HX	Integrated + 16 GB	44G to 60G	128000	32000	160000
1002-HX	Integrated + 16 GB or 32 GB	44G to 60G	256000	128000	384000
1004, 1006, 1006-X, 1009-X, 1013	RP2 + 16 GB	ESP-40G	192000	64000	256000
1006-X, 1009-X, 1013	RP3 + 16 GB or 32GB or 64GB	ESP-40G	192000	64000	256000
1006, 1006-X,1009-X, 1013	RP2 + 16 GB	ESP-100G	256000	128000	384000
1006-X,1009-X, 1013	RP3 + 16 GB, or 32GB or 64 GB	ESP-100G	256000	128000	384000
1009-X, 1013	RP2 + 16 GB, or RP3+ 16GB or 32GB or 64 GB	ESP-200G	256000	128000	384000

Restrictions for iWAG Scalability

The following are the restrictions pertaining to iWAG scalability:

The Intelligent Wireless Access Gateway (iWAG) feature is not supported on the following hardware.

- RP1 with ESP10 or ESP20
- ASR1002
- ASR1002F

Layer 4 Redirect Scaling

The ASR 1000 supports the ability to redirect IP traffic within an ISG traffic class. Layer 4 redirect scaling is performed by the Quantum Flow Processor (QFP). The scaling limits are dependent on the ESP.

Table 2: Maximum Number of Per-Session Limit Per ESP

Chassis	RP	ESP	L4 Redirect Translations	Default Per-Session Limit
1001	Integrated	ESP-2.5G	256000	128
1002-X	Integrated	ESP-5G ESP licensing from 5G, 10G, 20, or 36G	256000	128
1004, 1006, 1013	RP2	ESP-40G	1 Million	128
1006, 1013	RP2	ESP-100G	1 Million	128

Configuring Call Admission Control

The Call Admission Control (CAC) feature is configured to protect the ASR 1000 processing resources that must be configured. CAC can restrict creation of new sessions when system resources exceed configured thresholds.

For examples about configuring the CAC for IPoE feature, see the "Call Admission Control" section in the Intelligent Wireless Access Gateway Configuration Guide located at:

http://www.cisco.com/en/US/docs/routers/asr1000/configuration/guide/chassis/IWAG_Config_Guide_BookMap_chapter_01001.html

Walk-by User Support for PWLAN in iWAG

In public wireless LAN (PWLAN) setups, a high number of ISG sessions might be unauthenticated sessions from wireless devices that do not use the PWLAN service. These sessions are referred to in this document as walk-by sessions, and users that use these sessions are referred to as walk-by users.

Walk-by sessions, if not dealt with in an optimized way, may consume a large portion of the hardware resources. This resource utilization may lead to an increase in the number of ISG routers required for a given PWLAN deployment. The concept of light-weight sessions is introduced to provide an optimization for walk-by sessions.

The features for walk-by users are configured on a default session acting as a template. Walk-by users are then assigned light-weight sessions that inherit features from a default session. The features are configured only once on the default session, thereby optimizing the resource usage.

A lite session is a light-weight unauthenticated ISG session that inherits default session services. Lite sessions are created on ISG to support walk-by users and optimize resource usage. A timer may be specified to limit the duration for which the lite session can utilize the public wireless LAN (PWLAN) services while remaining unauthenticated.

On the ASR 1000 Series router, the Layer 4 Redirect (L4R) feature supports a maximum of 16 translation entries per walk-by session. For more information on the limit for the total number of translations on the system, see Layer 4 Redirect Scaling, on page 3.

For platform-independent restrictions pertaining to the walk-by sessions and information on how to configure the Walk-By User Support for PWLAN in ISG feature, refer to the following URL: http://www.cisco.com/en/US/docs/ios-xml/ios/isg/configuration/xe-3s/isg-wlkby-supp.html

Additional References

Related Documents

Related Topic	Document Title
Control Plane Policing	*Quality of Service Solutions Configuration Guide*
Using ARP for Keepalive Messages and Using ICMP for Keepalive Messages	Intelligent Services Gateway Configuration Guide Cisco IOS XE Release 3S
Cisco IOS commands	*Cisco IOS Master Commands List, All Releases*

Standards

Standard	Title
None	—

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at this URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
None	—

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 iWAG Scalability and Performance

Feature Information for IWAG Scalability and Performance table lists the features in this module and provides links to specific configuration information.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn . An account on Cisco.com is not required.

Note Feature Information for IWAG Scalability and Performance 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.

Table 3: Feature Information for IWAG Scalability and Performance

Feature Name	Releases	Feature Information
iWAG Scalability and Performance	Cisco IOS XE 3.11S	In Cisco IOS XE Release 3.11S, this feature was introduced on the Cisco ASR 1000 Series Router.