

Cisco ISR Application Experience Routers

We are proud to announce the addition of the Cisco® Integrated Services Router Application Experience (ISR-AX) Series. Cisco ISR-AX directly integrates Cisco Wide Area Application Services (WAAS), Cisco Application Visibility and Control (AVC), Security (SEC), and Data (DATA) licenses into a platform that is simple to order, configure, and deploy for secure, optimized cloud connectivity and branch-office routing. By providing a system that is simple to order and deploy, the Cisco ISR-AX platforms add to the rich breadth of services available on the ISRs.

Similar to the ISR portfolio, the Application Experience (AX) portfolio consists of five product families: the Cisco 4400-AX, 3900-AX, 2900-AX, and 1900-AX Series Application Experience Routers and an AX Feature Set software licensing option for 800 Series. The portfolio provides increasing performance and module slot density; each AX platform comes equipped and ready to deploy, and all ISR-AX platforms include licenses for IP Base, Data, Security, WAAS, and AVC. The AX Feature Set software licensing option that is available for the Cisco ISR 800 Series routers combines: WAAS Express and Cisco Application Visibility and Control (AVC) for a simple to order, configure, and deploy solution for optimized branch office routing.

Cisco 4451-X-AX Series Integrated Services Routers

The Cisco 4451-X-AX provides optimal performance for applications delivered from a central data center to branch-office users. The solution allows you to consolidate costly server, storage, and backup infrastructure into data centers while maintaining LAN-like service levels for remote users. The Cisco 4451-X-AX includes licenses for IP Base, Data, Security, AVC, and a Right to Use (RTU) license for 2500 ISR-WAAS or Virtual WAAS (vWAAS) connections. Each 4451-X-AX includes 4-GB DRAM and 8 GB of flash memory by default and does not include solid state drives (SSDs) by default.

When ordering, you have two options to enable either ISR WAAS or vWAAS; one of the following is required with each configuration:

- 2500 ISR-WAAS connections: DRAM upgrade to 16 GB, flash memory upgrade to 32 GB, SSD carrier, and two 200-GB SSDs must be included in the configuration to enable 2500 ISR-WAAS connections.
- 2500 ISR-vWAAS connections: A Cisco Unified Computing System (Cisco UCS®) E-Series module must be included in the configuration to enable 2500 ISR-vWAAS connections.

Cisco 3900-AX, 2900-AX, and 1900-AX Series Integrated Services Routers

The Cisco 3900-AX includes licenses for IP Base, Data, Security, AVC, WAAS Express (WAASX), and a RTU for 2500 WAAS or vWAAS connections and a 1300 WAAS or vWAAS RTU license for the Cisco 2911-AX Series platforms and later. You can use this RTU on any combination or multiples of modules for WAAS and/or vWAAS connections on the Cisco 2900-AX or 3900-AX Series Routers, respectively. The Cisco 1900-AX Series includes licenses for IP Base, Data, Security, AVC, and WAASX.

Required options when ordering:

- DRAM for WAAS Express: In order to enable WAASX on the Cisco 1941-AX, 2901-AX, 2911-AX, and 2921-AX platforms, a minimum of 2.5 GB of DRAM is required; for the Cisco 2951-AX and later platforms, 4 GB of DRAM is required. The Cisco 1941-AX and 2901-AX have 2.5-GB DRAM by default; other platforms have 1-GB DRAM by default (the Cisco 1921-AX has fixed 512-MB DRAM).
- The Cisco Services-Ready Engine (SRE) for WAAS or Cisco UCS E-Series for vWAAS: Enabling WAAS requires a Cisco SRE 710 or SRE 910, and enabling vWAAS requires a Cisco UCS E-Series module. One of these options are required for when ordering the Cisco 2921-AX and later; they are configured as separate line items in each configuration when ordering. Although the SRE or Cisco UCS E-Series module is not included by default with Cisco ISR-AX Routers when ordering, one of these choices is required when ordering Cisco 2921-AX platforms and later - **not including by default gives you flexibility in choosing modules when ordering and enabling either WAAS or vWAAS**. The RTU can be spread across multiple SRE and/or Cisco UCS E-Series modules in a single router. Table 1 gives ordering information for the platforms.

AX Licensing for the Cisco® 800 Series

The AX licensing for the Cisco® 800 Series combines Cisco Wide Area Application Services (WAAS) Express and Cisco Application Visibility and Control (AVC) in a way that is simple to order, configure, and deploy for optimized branch office routing.

The AX licensing for the Cisco 800 Series consists of a combination of Right-to-Use software licenses and necessary DRAM memory as shown below that will get applied to the Cisco 800 Series Integrated Services Router:

- Advanced IP License
- Wide Area Application Services (WAAS) Express Right-To-Use License
- Application Visibility and Control (AVC) Right-To-Use
- DRAM maximum memory upgrade - up to 1GB as available for each 800 Series Router

The AX Feature Set for the 800 series is a selectable option that can be added when configuring a Cisco 890 Series Integrated Services Router. Spare licenses may also be purchased and added to existing 890 series routers for these features.

Table 1. Ordering Information

Platform ID	Description	Services Ready Engine/UCS-E	WAAS Optimized TCP Connections ¹	Target WAN Capacity ²
C1921-AX/K9	CISCO 1921 Modular Router, 2 GE, 2 EHWIC slots, 256F/512D, IP Base, DATA, SEC, AX license with; AVC and WAAS-Express	-	50 (WAAS-Express) ³	0.512 Mbps
C1941-AX/K9	Cisco ISR 1941 Router w/ 2 GE, 2 EHWIC slots, 256MB CF, 2.5GB DRAM, IP Base, DATA, SEC, AX license with; AVC and WAAS-Express	-	150 (WAAS-Express) ⁵	4 Mbps
C2901-AX/K9	Cisco ISR 2901 w/ 2 GE, 4 EHWIC, 2 DSP, 256MB CF, 2.5GB DRAM, IP Base, DATA, SEC, AX license with; AVC, WAAS-Express	-	150 (WAAS-Express) ⁵	6 Mbps

Platform ID	Description	Services Ready Engine/UCS-E	WAAS Optimized TCP Connections ¹	Target WAN Capacity ²
C2911-AX/K9	Cisco ISR 2911 w/ 3 GE, 4 EHWIC, 2 DSP, 1 SM, 256MB CF, 1GB DRAM, IP Base, SEC, AX license with; DATA, AVC and WAAS/vWAAS with 1300 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS 	<ul style="list-style-type: none"> • 250 (WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • >1001 and up to 1300 add UCS-E (vWAAS) • >1300 add UCS-E and vWAAS-2500 or 6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)
C2921-AX/K9	Cisco ISR 2921 w/ 3 GE, 4 EHWIC, 3 DSP, 1 SM, 256MB CF, 1GB DRAM, IP Base, SEC, AX license with; DATA, AVC, and WAAS/vWAAS with 1300 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS <i>(Minimum of one module required)</i> 	<ul style="list-style-type: none"> • 250 (WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • >1001 and up to 1300 add UCS-E (vWAAS) • >1300 add UCS-E and vWAAS-2500 or 6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)
C2951-AX/K9	Cisco ISR 2951 w/ 3 GE, 4 EHWIC, 3 DSP, 2 SM, 256MB CF, 1GB DRAM, IP Base, SEC, AX license with; DATA, AVC, and WAAS/vWAAS with 1300 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS <i>(Minimum of one module required)</i> 	<ul style="list-style-type: none"> • 400(WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • For >1000 and up to 1300 add 2nd SRE for WAAS or UCS-E for vWAAS up to 1300 connections • For >1300 add UCS-E and vWAAS-2500 or 6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)
C3925-AX/K9	Cisco ISR 3925 w/ SPE100 (3GE, 4EHWIC, 4DSP, 2SM, 256MBCF, 1GBDRAM, IP Base, SEC, AX licenses with; DATA, AVC, WAAS/vWAAS with 2500 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS <i>(Minimum of one module required)</i> 	<ul style="list-style-type: none"> • 400 (WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • For >1000 and up to 2000 add 2nd SRE for WAAS or UCS-E for vWAAS up to 2500 connections • For >2500 add UCS-E and vWAAS-6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)
C3925E-AX/K9	Cisco ISR 3925 w/ SPE200, 4GE, 3EHWIC, 3DSP, 2SM, 256MBCF, 1GB DRAM, IP Base, SEC, AX license with; DATA, AVC, and WAAS/vWAAS with 2500 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS <i>(Minimum of one module required)</i> 	<ul style="list-style-type: none"> • 400 (WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • For >1000 and up to 2000 add 2nd SRE for WAAS or UCS-E for vWAAS up to 2500 connections • For >2500 add UCS-E and vWAAS-6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)

Platform ID	Description	Services Ready Engine/UCS-E	WAAS Optimized TCP Connections ¹	Target WAN Capacity ²
C3945-AX/K9	Cisco ISR 3945 w/ SPE150, 3GE, 4EHWIC, 4DSP, 4SM, 256MBCF, 1GBDRAM, IP Base, SEC, AX licenses with; DATA, AVC, and WAAS/vWAAS with 2500 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS <i>(Minimum of one module required)</i> 	<ul style="list-style-type: none"> • 400 (WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • For >1000 and up to 2000 add 2nd SRE for WAAS or UCS-E for vWAAS up to 2500 connections • For >2500 add UCS-E and vWAAS-6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)
C3945E-AX/K9	Cisco ISR 3945E w/ SPE250, 4GE, 3EHWIC, 3DSP, 4SM, 256MBCF, 1GBDRAM, IP Base, SEC, AX licenses with; DATA, AVC, WAAS/vWAAS with 2500 connection RTU	<ul style="list-style-type: none"> • SRE-710 option for WAAS • SRE-910 option for WAAS • UCS-E140/160 single wide option for vWAAS <i>(Minimum of one module required)</i> 	<ul style="list-style-type: none"> • 400 (WAAS-Express)⁵ • 500 (SRE-710) • 1000 (SRE-910) • For >1000 and up to 2000 add 2nd SRE for WAAS or UCS-E for vWAAS up to 2500 connections • For >2500 add UCS-E and vWAAS-6000 	<ul style="list-style-type: none"> • 6 Mbps (WAAS Express) • 20 Mbps (SRE-710) • 50 Mbps (SRE-910) • 100 Mbps (vWAAS-1300) • 200 Mbps (vWAAS-2500 or 6000)
ISR4451-X-AX/K9	Cisco ISR 4451 w/ 4GE,3NIM,2SM,8G FLASH, 4G DRAM, IP Base, SEC, AX license with: DATA, AVC, ISR-WAAS with 2500 connection RTU	<ul style="list-style-type: none"> • 16GB DRAM, 32GB Flash and 2x200GB SSD drives for ISR-WAAS • UCS-E140/160 single wide or doublewide option for vWAAS <i>(One of above options is required)</i> 	<ul style="list-style-type: none"> • 2500 with ISR-WAAS or 2500 with UCS-E for vWAAS • For >2500 add UCS-E and vWAAS-6000 	<ul style="list-style-type: none"> • 150 Mbps (ISR-WAAS) • 200 Mbps (vWAAS-2500 or 6000)
Ordering Information for AX Feature Set on Cisco ISR 800 Series listed further below				

Notes:

1. TCP connection requirements vary by application; some applications consume multiple TCP connection resources for WAAS optimization.
2. Target WAN bandwidth is not limited in software or by any other system limit, but is rather provided as guidance for deployment sizing purposes.
3. Cisco 1921 routers have fixed non-expandable memory. DRE is disabled on these platforms.
4. Typical WAN interfaces for maximum benefit with Cisco WAAS Express include T1/E1, 3G, and multi-T1, and smaller interfaces such as 256 or 384 Kbps interfaces.
5. 2.5GB DRAM required for WAAS-Express on Cisco 1941/2901/2911/2921-AX and for 2951-AX and 3900-AX series routers 4GB DRAM is needed. 2.5GB DRAM included by default for Cisco 1941-AX and 2901-AX. (ISR 1921-AX has fixed 512MB DRAM).
6. To run ISR WAAS natively on the 4451-X, memory upgrade to 16GB, flash memory upgrade to 32 GB and 2*200G SSD storage is needed.

AX License Product IDs for ISR 1900/2900/3900/4400 Series

You can also purchase AX licenses and add them to any appropriately equipped Cisco 1921, 1941, 2900, 3900, or 4400 Series ISR by purchasing the AX license as a separate line item. Table 2 gives the product IDs for ordering AX spare licenses.

Table 2. Ordering Spare AX Licenses

Ordering SKU	Description
SL-19-AX-K9=	DATA/WAAS-X/AVC for Cisco 1921 or 1941 License (spare)
SL-29-AX-K9=	DATA/WAAS/WAAS-X/vWAAS/AVC for 2900 series, 1300 RTU connections License (spare)
SL-39-AX-K9=	DATA/WAAS/WAAS-X/vWAAS/AVC for 3900 series, 2500 RTU connections License (spare)
SL-44-AX-K9=	DATA/WAAS/vWAAS/AVC for 4400 series, 2500 RTU connections License (spare)

Note: Spare AX license does not include Security license.

AX License for Cisco 800 Series Routers

The AX License may be a separate line item for select Cisco 800 Series Routers. The table below gives the product IDs for ordering AX Feature Set for 800 series.

Table 3. Ordering AX Licenses for Cisco 800 Series Routers

Ordering SKU	Description
FL-C800-AX	WAAS-Express/AVC/Advanced IP with upgrade up to 1GB DRAM for Cisco 800 Series Routers
FL-C800-AX =	WAAS- Express/AVC/Advanced IP with upgrade up to 1GB DRAM for Cisco 800 Series Routers (spare)
L-FL-800-AX =	WAAS- Express/AVC/Advanced IP with upgrade up to 1GB DRAM for Cisco 800 Series Routers (spare, e-delivery)

Supported Cisco 800 Series Routers

The AX License may be added to any of the following Cisco 800 Series Routers.

Table 4. Supported Cisco 800 Series Routers

Supported Platform	Description
C892FSP-K9	Cisco 892 FSP Router
C896VA-K9	Cisco 896 VA router
C897VA-K9	Cisco 897 VA router
C897VAW-A-K9	Cisco 897 AW A router
C897VA-M-K9	Cisco 897 Annex M over POTs and 1GE/SFP Sec Router
C898EA-K9	Cisco 898 G.SHDSL ATM/EFM Multi-mode & 1GE/SFP Sec Router
C897VAW-E-K9	Cisco 897 VDSL2/ADSL2+ over POTs, 1GE/SFP, 802.11n ETSI Comp
C897VAM-W-E-K9	Cisco 897 Annex M over POTs & 1GE/SFP, 802.11n ETSI

AX Performance on Cisco 800 Series

The AX Feature Set on the Cisco 890 Series Integrated Services Router with 1 GB DRAM can support a target WAN capacity of 11Mbps and up to 125 concurrent TCP connections.

The DRAM memory upgrade is applied at the factory when the AX license is ordered with the 800 series router. When the AX license is ordered as a spare license the DRAM memory upgrade and WAASX license are able to be activated via software with a Product Activation Key (PAK) which ships with the spare license. The PAK may be applied remotely - so there is no need for a truck roll or personnel to visit the remote site to open up the chassis to apply the DRAM upgrade or install WAASX.

Additional Information

To obtain current information about prices for products in the Cisco Integrated Services Routers Generation 2 (ISR G2) portfolio, please refer to the Cisco price list.

- Cisco Commerce Warehouse Tool: http://www.cisco.com/web/partners/events/commerce_workspace.html
- Cisco global price list: <https://tools.cisco.com/qtc/pricing/MainServlet>
- Cisco WAAS Software data sheets:
http://www.cisco.com/en/US/products/ps6870/products_data_sheets_list.html
- Cisco WAAS Modules for Cisco ISRs data sheets: <http://www.cisco.com/en/US/products/ps9750/index.html>
- Cisco WAAS Express data sheet:
http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps11211/datasheet_c78-611644.html
- Cisco Technical Services: <http://www.cisco.com/go/ts>



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