# ARIS/SmartBus® communication middleware

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## Connects ARIS® products to external systems

The ARIS/SmartBus communication middleware is the technology layer surrounding the ARIS/SmartBase® database that enables information exchange between the ARIS/SmartBase database and external systems and between the ARIS/SmartBase database and external devices, such as tablets, smart phones, mobile pagers, dispatch devices, and clock-in and clock-out devices.

The ARIS/SmartBus communication middleware supports multiple connections, enabling information to flow between the ARIS/SmartBase database and multiple external systems simultaneously. When you rely on the ARIS/SmartBus communication middleware to handle your information flow, you can disseminate critical business knowledge throughout your organization while you reduce the cost of interface development, deployment, and maintenance.

## Increases organizational efficiency and effectiveness

In many organizations, the same information often appears in many different computer systems, and each system often represents the same information differently, which prevents automatic information exchange. As a consequence, you can waste valuable time entering and re-entering information manually and creating inefficient workarounds to compensate for systems that cannot talk to one another. Considering manual data-entry error, unproductive time, and lost opportunity, the cost is substantial.

The ARIS/SmartBus communication middleware increases organizational efficiency and effectiveness by enabling information to flow between the ARIS/SmartBase database and external systems rapidly, reliably, and accurately. The ARIS/SmartBus communication middleware:

- Integrates information stored in the ARIS/SmartBase database with external systems, such as financial systems and databases as well as sources of real-time information

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- Monitors and controls the information flow between the ARIS/SmartBase database and external systems
- Provides a redundant communication infrastructure that minimizes the effect of server and network failures
- Provides the ability to view what is actually happening in your organization.

Using the ARIS/SmartBus communication middleware greatly reduces the time, effort, and cost involved to integrate enterprise systems.

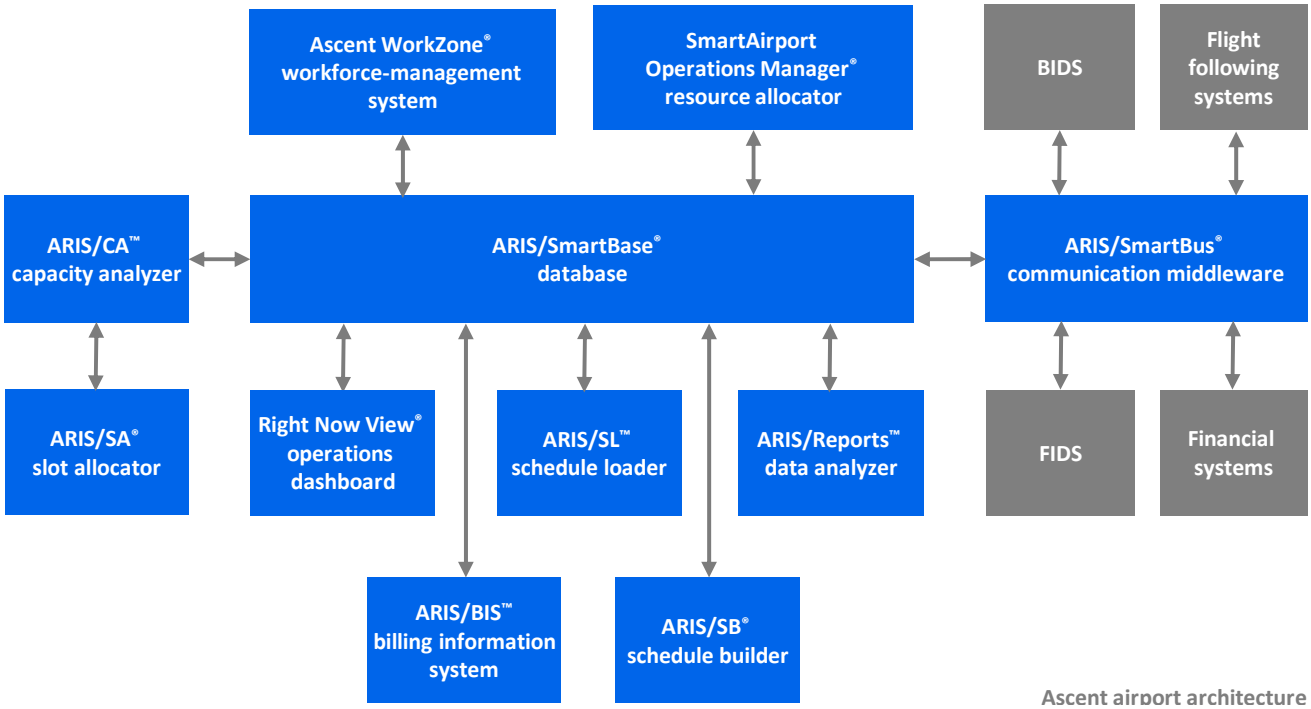
## Relies on standards and adapts to your needs

We configure the ARIS/SmartBus communication middleware to meet your requirements, assembling the most appropriate set of modules from the ARIS/SmartBus communication middleware toolkit. The two most typical configurations involve:

- Table-to-table interfaces that transfer information between the ARIS/SmartBase database and an external Oracle® database
- Messaging and web-enabled interfaces.

We interface each system that will exchange information with other systems with an ARIS/SmartBus communication middleware adapter, which assures the proper transfer of information from that system to all other systems interfaced with ARIS/SmartBus communication middleware adapters. Information can then flow to one, some, or all of the systems. Some information may be routed to the ARIS/SmartBase database for archival storage, while other information can be routed to bypass the ARIS/SmartBase database entirely.

The ARIS/SmartBus communication middleware eliminates the need to build individual interfaces between each system and all other systems that require its information. Instead, you need only build an interface between each system and the ARIS/SmartBus communication middleware, significantly reducing the number of interfaces to build and maintain.




Ascent airport architecture

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### Who we are

Since our founding more than 30 years ago by members of the Massachusetts Institute of Technology Artificial Intelligence Laboratory, Ascent Technology has helped organizations deploy costly resources as efficiently, effectively, and economically as possible. Our highly trained and capable team of technologists, problem solvers, and solution designers has broad domain expertise and substantial experience in artificial intelligence, computer science and engineering, system design, mathematical optimization, operations research, and resource optimization, planning, scheduling, and management.

## Representative features

**Lowers integration costs.** Connectivity standards and built-in adapters reduce the need to develop costly customized interfaces between individual systems.

**Coordinates business knowledge.** The ARIS/SmartBus communication middleware enables information to flow between the ARIS/SmartBase database and external systems rapidly, reliably, and accurately so that everyone always views consistent information.

**Tolerates outages.** If an external system is unable to receive message updates, for example, because of a network outage, the ARIS/SmartBus communication middleware automatically queues the updates for transmission later. No data is lost due to temporary infrastructure failures.

**Improves organization efficiency.** The ARIS/SmartBus communication middleware reduces costs associated with human error and wasted time, while it enables organizations to exploit new opportunities.

**Supports industry-standard information-exchange mechanism.** Information appears in easily-to-read ASCII format, which simplifies data-traffic monitoring. The product supports web services transmissions, such as Simple Object Access Protocol (SOAP).

**Scales to meet the needs of organizations of all sizes.** The ARIS/SmartBus communication middleware can be used to interface the ARIS/SmartBase database to a single external system as well as to multiple systems, data feeds, and databases.

**Supports a range of fault-tolerant configurations, from simple single servers to sophisticated parallel clusters.** With the most sophisticated hardware configuration, information continues to flow between systems despite the failure of one or more components.

**Provides continuous information flow over a variety of operational conditions.** The ARIS/SmartBus communication middleware is tuned to ensure information distribution is timely regardless of the level of message traffic between systems.

**Provides management reports.** You can use log files and monitoring tools, available with the ARIS/SmartBus communication middleware and in other commercial products that operate with the ARIS/SmartBus communication middleware, to monitor the system and provide reports about the data exchanged between specific systems.

## Reports

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All ARIS products store information in the ARIS/SmartBase database, which runs on the Oracle® database. We can create reports for you, and you can create your own reports from a synchronized reporting database using Oracle-compatible report-generator tools, without interfering with the integrity or performance of the ARIS/SmartBase database.

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## Ways we can help you

**Advisory and consulting services.** We provide unbiased advice about resource allocation, optimization, planning, scheduling, management, and deployment methodologies; develop cost-benefit analyses; analyze business processes; manage projects; gather and document technical requirements; develop functional specifications; and specify hardware, software, and devices.

**More information**

To learn more about how Ascent Technology solutions can help you optimize your resources to greatest advantage and to schedule a demonstration of our products, send email to sales@ascent.com or call our Sales and Marketing department at +1.617.395.4800.

**Project management services.** Our project management team works closely with you, following our time-proven delivery methodology, and uses face-to-face meetings, teleconferences, web conferences, and email exchanges to keep you informed every step of the way. We believe careful project management is the key to successful on-time and on-budget deliveries of SmartAirline Operations Center and SmartAirport Operations Center products, services, and solutions.

**Knowledge engineering services.** Knowledge engineering is the process of identifying your business knowledge—the business rules, policies, procedures, preferences, and requirements that guide the way your organization operates—and then codifying your business knowledge in the knowledge base at the heart of SmartAirline Operations Center and SmartAirport Operations Center solutions. The business knowledge in the knowledge base determines how the solutions behave. Our knowledge engineers work with you to gather and enter the business knowledge that enables the solution to behave exactly the way you want it to.

**Implementation, integration, and installation services.** Our implementation team provides system integration and testing services; develops product extensions, enhancements, and connectivity software for importing data to and exporting data from external systems; and creates reports. The team also configures, installs, and tests hardware, software, and equipment for you when you choose to integrate the SmartAirline Operations Center or SmartAirport Operations Center solutions in your IT environment, and quickly sets up an environment in our hosting center for you when you choose to gain access to the solutions over the web.

**Training services.** We provide a wide range of user, administrator, trainer, and refresher training classes in person at your location, at our Cambridge, MA, headquarters, and remotely over the web. We also provide operational training services in person and remotely when you begin to use the SmartAirline Operations Center or SmartAirport Operations Center solutions in production.

## Maintenance and support services

We offer Standard Support Services Monday through Friday during our normal office hours in Cambridge, MA, and Premium Support Services around the clock. Both provide comprehensive remote user support services via telephone, email, and Internet, as well as software maintenance, such as product updates, patches, and releases. We provide a web-enabled support portal that enables you to ask questions and receive responses, request service, report problems, and track issues.

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## Technology Platform

You can gain access to the SmartAirline Operations Center or SmartAirport Operations Center solutions in two ways: you can integrate the solution into your own IT environment, or you can gain access over the Internet to the solution running on Amazon Web Services (AWS) platform.

| **Ascent Technology Products** | **Your own IT environment**<br>Server: Microsoft® Windows® Server™ 2012 or 2016 operating system or Red Hat® Enterprise Linux 7; if virtualized, our solutions are certified to run on VMware® server virtualization products<br>Database: Oracle 12C SE2<br>Desktop: Windows 7, 8 or 10 with 4GB of RAM<br>Browser: Microsoft Internet Explorer 11, Microsoft Edge, latest Google Chrome or Mozilla Firefox<br>Minimum internet access for remote support: 512 kbps | | | **Amazon Web Services (AWS) platform**<br>Browser: Microsoft Internet Explorer 11, Microsoft Edge, latest Google Chrome or Mozilla Firefox; Internet connection (1 Mbps or better) |
|---|---|---|---|---|
| | Server | Client desktop | Web browser | |
| ARIS/AV® aerial-view display | ✓ | | ✓ | ✓ |
| ARIS/AR® aircraft-routing system | ✓ | ✓ | | |
| ARIS/SmartBase® database (including Resource Editors) | ✓ | | | |
| ARIS/BB® baggage-belt allocator | ✓ | ✓ | | ✓ |
| ARIS/BIS™ billing information system | ✓ | | ✓ | ✓ |
| ARIS/CI® check-in counter allocator | | ✓ | | ✓* |
| ARIS/CX® crew-connection analyzer | | | ✓ | ✓ |
| ARIS/GateView® real-time display | ✓ | ✓ | | ✓ |
| ARIS/GM® gate manager | | ✓* | | ✓* |
| Right Now View® operations dashboard | ✓ | | ✓ | ✓ |
| ARIS/PX® passenger-connection analyzer | ✓ | | ✓ | ✓ |
| ARIS/Reports™ data analyzer | ✓ | | ✓ | ✓ |
| ARIS/SB® schedule builder | ✓ | ✓ | ✓ | ✓ |
| ARIS/SL™ schedule loader | ✓ | | ✓ | |
| ARIS/SmartBus® communication middleware | ✓ | | | |
| ARIS/SP® stand planner | | ✓* | | ✓* |
| SmartAirline/SmartAirport Capacity Analyzer strategic planner | ✓ | | ✓* | ✓* |

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|---|---|---|---|
| Ascent WorkZone® workforce management system | ✓ | ✓* | 1200x768 minimum resolution for ARIS/WorkNet® bid and trade manager |

*Minimum display resolution (pixels): 1600 x 1200

ARIS, ARIS/AR, ARIS/AV, ARIS/BB, ARIS/CI, ARIS/CX, ARIS/FW, ARIS/GateView, ARIS/GM, ARIS/IQ, ARIS/LegGen, ARIS/PX, ARIS/SA, ARIS/SB, ARIS/SE, ARIS/SmartBase, ARIS/SmartBus, ARIS/SP ARIS/Tow Panel, ARIS/WorkModel, ARIS/WorkNet, ARIS/WorkOptimize, ARIS/WorkPlan, ARIS/WorkRelay, ARIS/WorkTime, Ascent Technology, Inc. (stylized), Ascent WorkZone, Ascent WorkZone (stylized), GateKeeper, Right Now View, SmartAirline, SmartAirline Capacity Analyzer (stylized), SmartAirline Operations Manager (stylized), SmartAirline WorkZone, SmartAirline WorkZone (stylized), SmartAirport, Smartairport.com, SmartAirport Capacity Analyzer, SmartAirport Capacity Analyzer(stylized), SmartAirport Information Manager, SmartAirport Informatio Manager(stylized), SmartAirport Operations, SmartAirport Operations Center, SmartAirportOperations Manager, SmartAirport Operations Manager (stylized), SmartAirport WorkZone, and SmartAirport WorkZone (stylized) are registered trademarks of Ascent Technology,Inc., in the United States.

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