





There are only three major GDS providers in the market space: [Amadeus](http://en.wikipedia.org/wiki/Amadeus_CRS), [Travel port](http://en.wikipedia.org/wiki/Travelport) (the merged [World span](http://en.wikipedia.org/wiki/Worldspan) and [Galileo](http://en.wikipedia.org/wiki/Galileo_CRS) systems), [Sabre](http://en.wikipedia.org/wiki/Sabre_%28computer_system%29) and Shares. There is one major Regional GDS, Abacus, serving the Asian marketplace and a number of regional players serving single countries, including Travel sky (China), Japan and South Korea.

In additional to these "standardized" GDS, some airlines have proprietary versions which they use to run their [flight](http://www.surfcanyon.com/search?f=sl&q=flight&partner=wtiffrwa) operations. A few examples of this kind of system are Deltamatic (built off the World span platform) and EDS SHARES. SITA Reservations remains the largest neutral multi-host airline reservations system, with over 100 airlines currently managing inventory.

List of fares for travel on [Delta Airlines](http://en.wikipedia.org/wiki/Delta_Airlines) from San Francisco, CA to Boston, MA. Applicable booking classes, as well as specific restrictions such as minimum stay and advance purchase can be seen.

**Data flow diagrams**

User

Cancellation

Display in tabular form

Read passenger

Customer Database

Passenger database

Accept the details

Cancel in the file

Airline reservation system

Display

Accepts the details

Reserves in the file

Passenger database

Reservation

A **computer reservations system** (or central reservation system)[[1]](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_note-0) (CRS) is a [computerized](http://en.wikipedia.org/wiki/Computer) system used to store and retrieve information and conduct transactions related to [air travel](http://en.wikipedia.org/wiki/Air_travel). Originally designed and operated by [airlines](http://en.wikipedia.org/wiki/Airline), CRSes were later extended for the use of [travel agencies](http://en.wikipedia.org/wiki/Travel_agency). Major CRS operations that book and sell tickets for multiple airlines are known as **global distribution systems (GDS)**. Airlines have divested most of their direct holdings to dedicated GDS companies, who make their systems accessible to consumers through [Internet](http://en.wikipedia.org/wiki/Internet) gateways. Modern GDSes typically allow users to book [hotel](http://en.wikipedia.org/wiki/Hotel) rooms and [rental cars](http://en.wikipedia.org/wiki/Car_rental) as well as airline tickets. They also provide access to railway reservations in some markets although these are not always integrated with the main system.

In the early days of [American](http://en.wikipedia.org/wiki/United_States) [commercial aviation](http://en.wikipedia.org/wiki/Commercial_aviation), passengers were relatively few, and each airline's routes and fares were tightly regulated by the [Civil Aeronautics Board](http://en.wikipedia.org/wiki/U.S._government_role_in_civil_aviation). These were published in a volume entitled *The Official Airline Guide*, from which travel agents or consumers could construct an itinerary, then call or [telex](http://en.wikipedia.org/wiki/Teleprinter) airline staff, who would mark the reservation on a card and file it. As demand for air travel increased and schedules grew more complex, this process became impractical.

In 1946, [American Airlines](http://en.wikipedia.org/wiki/American_Airlines) installed the first automated booking system, the experimental [electromechanical](http://en.wikipedia.org/wiki/Electromechanical) [Reservisor](http://en.wikipedia.org/wiki/Reservisor). A newer machine with temporary storage based on a [magnetic drum](http://en.wikipedia.org/wiki/Magnetic_drum), the Magnetronic Reservisor, soon followed. This system proved successful, and was soon being used by several airlines, as well as [Sheraton Hotels](http://en.wikipedia.org/wiki/Sheraton_Hotels_and_Resorts) and [Goodyear](http://en.wikipedia.org/wiki/Goodyear_Tire_and_Rubber_Company) for [inventory](http://en.wikipedia.org/wiki/Inventory) control. It was seriously hampered by the need for local human operators to do the actual lookups; ticketing agents would have to call a booking office, whose operators would direct a small team operating the Reservisor and then read the results over the telephone. There was no way for agents to directly query the system.[[*citation needed*](http://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed)]

In 1953, [Trans-Canada Airlines](http://en.wikipedia.org/wiki/Trans-Canada_Airlines) (TCA) started investigating a computer-based system with remote [terminals](http://en.wikipedia.org/wiki/Computer_terminal), testing one design on the [University of Toronto](http://en.wikipedia.org/wiki/University_of_Toronto)'s [Manchester Mark 1](http://en.wikipedia.org/wiki/Manchester_Mark_1) machine that summer. Though successful, the researchers found that input and output was a major problem. [Ferranti Canada](http://en.wikipedia.org/wiki/Ferranti_Canada) became involved in the project and suggested a new system using [punched cards](http://en.wikipedia.org/wiki/Punched_card) and a [transistorized](http://en.wikipedia.org/wiki/Transistor) computer in place of the unreliable [tube](http://en.wikipedia.org/wiki/Vacuum_tube)-based Mark I. The resulting system, [ReserVec](http://en.wikipedia.org/wiki/ReserVec), started operation in 1962, and took over all booking operations in January 1963. Terminals were placed in all of TCA's ticketing offices, allowing all queries and bookings to complete in about one second with no remote operators needed.

In 1953, American Airlines [CEO](http://en.wikipedia.org/wiki/Chief_executive_officer) [C. R. Smith](http://en.wikipedia.org/wiki/C._R._Smith) chanced to sit next to R. Blair Smith, a senior [IBM](http://en.wikipedia.org/wiki/IBM) sales representative, on a [flight](http://www.surfcanyon.com/search?f=sl&q=flight&partner=wtiffrwa) from Los Angeles to New York. C.R. invited Blair to visit their Reservisor system and look for ways that IBM could improve the system. Blair alerted [Thomas Watson Jr.](http://en.wikipedia.org/wiki/Thomas_Watson%2C_Jr.) that American was interested in a major collaboration, and a series of low-level studies started. Their idea of an automated [Airline Reservation System](http://en.wikipedia.org/wiki/Airline_Reservation_System) (ARS) resulted in a 1959 venture known as the [Semi-Automatic Business Research Environment](http://en.wikipedia.org/wiki/Sabre_%28computer_system%29) (SABRE), launched the following year.[[2]](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_note-1) By the time the network was completed in December 1964, it was the largest civil [data processing](http://en.wikipedia.org/wiki/Data_processing) system in the world.

Other airlines soon established their own systems. [Delta Air Lines](http://en.wikipedia.org/wiki/Delta_Air_Lines) launched the [Delta Automated Travel Account System](http://en.wikipedia.org/w/index.php?title=Delta_Automated_Travel_Account_System&action=edit&redlink=1) (DATAS) in 1968. [United Airlines](http://en.wikipedia.org/wiki/United_Airlines) and [Trans World Airlines](http://en.wikipedia.org/wiki/Trans_World_Airlines) followed in 1971 with the [Apollo Reservation System](http://en.wikipedia.org/wiki/Apollo_Reservation_System) and [Programmed Airline Reservation System](http://en.wikipedia.org/wiki/Programmed_Airline_Reservation_System) (PARS), respectively. Soon, travel agents began pushing for a system that could automate their side of the process by accessing the various ARSes directly to make reservations. Fearful this would place too much power in the hands of agents, American Airlines executive [Robert Crandall](http://en.wikipedia.org/wiki/Robert_Crandall) proposed creating an industry-wide Computer Reservation System to be a central clearing house for U.S. travel; other airlines demurred, citing fear of [antitrust prosecution](http://en.wikipedia.org/wiki/United_States_antitrust_law).

### [[edit](http://en.wikipedia.org/w/index.php?title=Computer_reservations_system&action=edit&section=4)] Travel agent access

In 1976, United began offering its Apollo system to travel agents; while it would not allow the agents to book tickets on United's competitors, the marketing value of the convenient terminal proved indispensable. SABRE, PARS, and DATAS were soon released to travel agents as well. Following [airline deregulation](http://en.wikipedia.org/wiki/Airline_Deregulation_Act) in 1978, an efficient CRS proved particularly important; by some counts, [Texas Air](http://en.wikipedia.org/wiki/Texas_Air) executive [Frank Lorenzo](http://en.wikipedia.org/wiki/Frank_Lorenzo) purchased money-losing [Eastern Air Lines](http://en.wikipedia.org/wiki/Eastern_Air_Lines) specifically to gain control of its SystemOne CRS.

Also in 1976 [Videcom international](http://en.wikipedia.org/wiki/Videcom_international) with [British Airways](http://en.wikipedia.org/wiki/British_Airways), [British Caledonian](http://en.wikipedia.org/wiki/British_Caledonian) and CCL launched Travicom, the world's first multi-access reservations system (wholly based on Videcom technology), forming a network providing distribution for initially 2 and subsequently 49 subscribing international airlines (including [British Airways](http://en.wikipedia.org/wiki/British_Airways), [British Caledonian](http://en.wikipedia.org/wiki/British_Caledonian), [TWA](http://en.wikipedia.org/wiki/TWA) , [Pan American World Airways](http://en.wikipedia.org/wiki/Pan_American_World_Airways), [Qantas](http://en.wikipedia.org/wiki/Qantas), [Singapore Airlines](http://en.wikipedia.org/wiki/Singapore_Airlines), [Air France](http://en.wikipedia.org/wiki/Air_France), [Lufthansa](http://en.wikipedia.org/wiki/Lufthansa), [SAS](http://en.wikipedia.org/wiki/Scandinavian_Airlines_System), [Air Canada](http://en.wikipedia.org/wiki/Air_Canada), [KLM](http://en.wikipedia.org/wiki/KLM), [Alitalia](http://en.wikipedia.org/wiki/Alitalia), [Cathay Pacific](http://en.wikipedia.org/wiki/Cathay_Pacific) and [JAL](http://en.wikipedia.org/wiki/JAL)) to thousands of travel agents in the UK. It allowed agents and airlines to communicate via a common distribution language and network, handling 97% of UK airline business trade bookings by 1987. The system went on to be replicated by Videcom in other areas of the World including the Middle East (DMARS), New Zealand, Kuwait (KMARS), Ireland, Caribbean, United Sates and Hong Kong. Travicom was a trading name for Travel Automation Services Ltd. When BA (who by then owned 100% of Travel Automation Services Ltd) chose to participate in the development of the Galileo system Travicom changed its' trading name to Galileo UK and a migration process was put in place to move agencies from Travicom to Galileo.

[European](http://en.wikipedia.org/wiki/Europe) airlines also began to invest in the field in the 1980s initially by deploying their own reservations systems in their homeland, propelled by growth in demand for travel as well as technological advances which allowed GDSes to offer ever-increasing services and searching power. In 1987, a consortium led by [Air France](http://en.wikipedia.org/wiki/Air_France) and [West Germany](http://en.wikipedia.org/wiki/West_Germany)'s [Lufthansa](http://en.wikipedia.org/wiki/Lufthansa) developed [Amadeus](http://en.wikipedia.org/wiki/Amadeus_%28computer_system%29), modeled on SystemOne. Amadeus Global Travel Distribution was launched in 1992. In 1990, Delta, [Northwest Airlines](http://en.wikipedia.org/wiki/Northwest_Airlines), and Trans World Airlines formed [Worldspan](http://en.wikipedia.org/wiki/Worldspan), and in 1993, another consortium (including [British Airways](http://en.wikipedia.org/wiki/British_Airways), [KLM](http://en.wikipedia.org/wiki/KLM), and [United Airlines](http://en.wikipedia.org/wiki/United_Airlines), among others) formed the competing company [Galileo International](http://en.wikipedia.org/wiki/Galileo_CRS) based on Apollo. Numerous smaller companies such as [KIU](http://en.wikipedia.org/wiki/KIU_System_%28CRS%26GDS%29) have also formed, aimed at niche markets not catered for by the four largest networks, including the [Low Cost Carrier](http://en.wikipedia.org/wiki/Low_Cost_Carrier) segment, and small and medium size domestic and regional airlines.

* Sabre Holdings was purchased by private investors Silver Lake Partners and Texas Pacific Group on March 30, 2007, for about US$5 billion. Full year 2008 Sabre Holdings revenues were about US$3 billion.
* In December 2006, [Travelport](http://en.wikipedia.org/wiki/Travelport), which owns Galileo, agreed to buy and merge with the [Worldspan](http://en.wikipedia.org/wiki/Worldspan) GDS. The combined company would then control a 46.3% market share using 2002 airline booking data.
* Worldspan's market share is 16.9% globally and 31% in the U.S. according to 2006 [MIDT](http://en.wikipedia.org/w/index.php?title=MIDT&action=edit&redlink=1) airline transaction data.
* In March 2007, KLM Royal Dutch Airlines switched from its own reservations system (CORDA) to Amadeus as a result of the merger with Air France.
* In February 2010, JetBlue converted its reservation system over to the SabreSonic Customer Sales and Service platform.

## [[edit](http://en.wikipedia.org/w/index.php?title=Computer_reservations_system&action=edit&section=6)] Trends

For many years the GDSs had a dominant position in the travel industry. To bypass the GDS and avoid high GDS-fees, airlines have started to distribute flights directly from their websites.[[3]](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_note-2) Another possibility to bypass the GDS are direct connections to the Travel Agencies. [American Airlines](http://en.wikipedia.org/wiki/American_Airlines)' direct connects are a prominent example of this development.[[4]](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_note-3)

## [[edit](http://en.wikipedia.org/w/index.php?title=Computer_reservations_system&action=edit&section=7)] See also

* [Airline Reservation System](http://en.wikipedia.org/wiki/Airline_Reservation_System)
* [Passenger Name Record](http://en.wikipedia.org/wiki/Passenger_Name_Record)
* [Travel technology](http://en.wikipedia.org/wiki/Travel_technology)

## [[edit](http://en.wikipedia.org/w/index.php?title=Computer_reservations_system&action=edit&section=8)] References

1. [**^**](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_ref-0) <http://www.iaweb.net/global-distribution-systems/central-reservation-system.html>
2. [**^**](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_ref-1) R. Blair Smith, OH 34. Oral history interview by Robina Mapstone, May 1980. Charles Babbage Institute, University of Minnesota, Minneapolis. <http://www.cbi.umn.edu/oh/display.phtml?id=9>
3. [**^**](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_ref-2) Strauss, Michael (2010): Value Creation in Travel Distribution, [http://www.amazon.com/Creation-Travel-Distribution-Michael-Strauss/dp/0557612462/ref=sr\_1\_1?ie=UTF8&s=books&qid=1291050497&sr=8-1](http://www.amazon.com/Creation-Travel-Distribution-Michael-Strauss/dp/0557612462/ref%3Dsr_1_1?ie=UTF8&s=books&qid=1291050497&sr=8-1)
4. [**^**](http://en.wikipedia.org/wiki/Computer_reservations_system#cite_ref-3) <http://directconnect.aa.com/Default.aspx>

## [[edit](http://en.wikipedia.org/w/index.php?title=Computer_reservations_system&action=edit&section=9)] Further reading

* Winston, Clifford, ["The Evolution of the Airline Industry"](http://books.google.com/books?id=jCfkJUL8oV0C&printsec=frontcover), [Brookings Institution Press](http://en.wikipedia.org/wiki/Brookings_Institution_Press), 1995. [ISBN 081575843X](http://en.wikipedia.org/wiki/Special%3ABookSources/081575843X). Cf. p. 61-62, Computer Reservation Systems.
* Wardell, David J, ["Airline Reservation Systems"](http://independent.academia.edu/DavidWardell/Papers/478957/Airline_Reservation_Systems), 1991. Research paper.

## [[edit](http://en.wikipedia.org/w/index.php?title=Computer_reservations_system&action=edit&section=10)] External links

* [Consumer Web Watch: Computer Reservations System (CRSs) and Travel Technology](http://www.consumerwebwatch.org/dynamic/travel-report-internet-travel-industry.cfm#technology)
* [Hospitality.net: Galileo International Tells USDOT: Modified Computer Reservation System (CRS) Rules Necessary to Protect Consumers and Competition](http://www.hospitalitynet.org/news/4015176.print), 18 March 2003
* Das, Samipatra. "[Global Distribution Systems in Present Times](http://www.hospitalitynet.org/news/4013406.html)," Hospitality.net, 30 September 2003
* Hasbrouck, Edward. *The Practical Nomad*: "[What's in a Passenger Name Record (PNR)?](http://www.hasbrouck.org/articles/PNR.html)"
* [European Union](http://en.wikipedia.org/wiki/European_Union): [Code of conduct for use of computerized reservation systems (CRS's)](http://europa.eu/legislation_summaries/consumers/protection_of_consumers/l24080_en.htm)
* [United States Department of Transportation](http://en.wikipedia.org/wiki/United_States_Department_of_Transportation): [Computer Reservations System (CRS)](http://www.dot.gov/affairs/Computer%20Reservations%20System.htm)