

System Migration

Merging of sites & reallocation of card addresses

The challenge

DDS has brilliantly migrated the whole Amadeus 5 system to face the challenge to raise the cardholder's capacity to 300.000, at one of the company biggest sites, a global leader in business and technology services in India.

DDS solution took into consideration the large system capacity, as well as the complexity of the site.

Large system capacity

At the start, four years ago, the cardholders' capacity averaged 163K. Since then the number of readers and cardholders has steadily increased. Initially, DDS had developed the 'xxxF' ROM, a hardware component which allowed increasing the card capacity of DDS controllers to 220K cards. We knew that this limit would be reached quickly and we brainstormed about another solution to comply with the request to manage at least 300K cards. As we know, the card capacity of a controller is physically limited by the ROM and the RAM components. The ROM defines the maximum quantity of cards that the controller can manage and the RAM defines the largest card index (called NumBadge) supported by the controller memory, which is 225K with the 'xxxF' ROM.

As Amadeus 5 works with the global indexing method, so even if the ROM limit is not reached already, controllers with the new 'xxxF' ROM cannot support cards having a NumBadge value >225K.



Complex site

The implementation was complex because the installation is already running for 4 years. 50 sites all over the country are alive recording ~1 million of event transactions every day with peak hours. The number of cardholders & readers is different from site to site. There are 50 Amadeus workstations all over the country. The database is mirrored and contains dozens of millions of events, 220,000 existing cardholders with about 60k travelling from site to site and about 1000 Controller networks managed by communication servers and redundant servers. In addition, there are daily cardholders' imports and 3rd party software using API.

Case Study: System Migration

The solution

As the site configuration is using the Multisite module (with 50 sites located in 11 different cities, with some cardholders travelling from site to site), the appropriate solution was to use the DynamicSiteBadge feature developed in the Amadeus5 version 3.2, in order to support the increase of the number of cards in the system by duplicating the NumBadges in the Amadeus5 DB.

Indeed, this feature has been designed for Multisite installations having more than 200K cardholders. This greatly expands the quantity of cardholders that we can now accept in Multisite installations.

The principle of this feature consists of separating the cardholders who need access just to their own site (i.e. local cardholders) from those who need access to several sites (i.e. global cardholders). To expand the quantity of cardholders, Amadeus gives to the local cardholders, a duplicated NumBadge of a cardholder from another site. It is not an issue because those persons will never travel to another site, so in the controller memory, there will always be only one card code allocated to a specific NumBadge value.

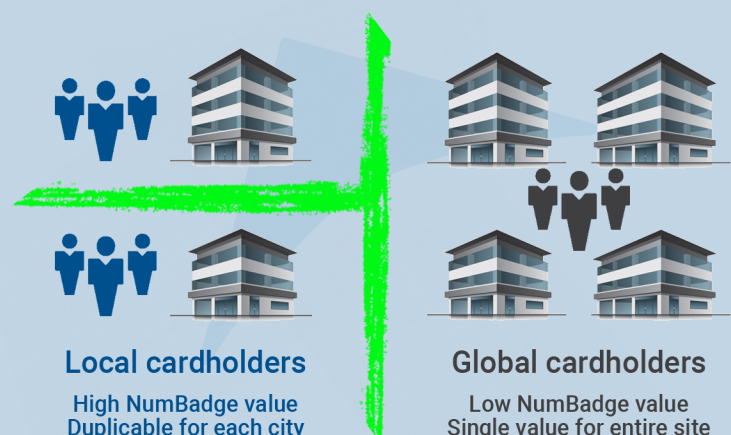
To distinguish the two categories of people, Amadeus automatically allocates to people travelling from site to site a unique NumBadges with a low value. NumBadges with high values are reserved for local people and may be duplicated on each site.

The methodology

The migration process consisted of:

- Backing up the Amadeus database
- Turning off the communication with all the controllers
- Updating the Amadeus 5 license on the Main server, the Communication servers and the redundant servers
- Installing the latest Amadeus 5 version on all the servers and workstations
- Merging 50 sites into 11 sites (one per city) by using SQL queries
- Identifying cardholders who need access to several sites
- Changing Numbadge of cardholders, moving from Low to High value or from High to Low value
- Moving into the 'DynamicSiteBadge' mode
- Initializing about 1100 controllers
- Turning on the communication with all the controllers

Reallocation of cards address between local and global cardholders



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The migration was planned to be done overnight, during the weekend, to create the least disturbance possible.

To do so, DDS team had prepared a detailed process plan several months before the migration. We had repeated this process plan on a test platform several times in order to be ready the D-day. As the system was constantly evolving, it was necessary to prepare meticulously each stage and the smallest details were of importance. We had to think of all eventualities to ensure smooth migration of the system.

In addition, we had a time limitation. So, to minimize the migration time, we had previously installed the secComService on 15 different PCs, in order to remotely initialize the controllers in parallel from these machines. We had prepared a precise plan to initialize the relevant controllers from each of the 15 PC by taking into account the number of cards in controller memory on each controller. The controller initializing process was supposed to take about 2 hours only.

The migration

The migration started on Saturday night at 11:30PM (local time).

Mr. Sumeeth Kumar, General Manager - Engineering Services of DDS India and Mr. Nachiappan T., Assistant Manager - Engineering Services, DDS India, were at the customer offices, while Mr. Shlomo Partouche-Sebban, DDS Technical Support Manager and Mr. Yuval Ofner, DDS Software Project Manager were at the head office in remote.

After having backup the Amadeus database, the migration followed the planned process. The operation lasted 12 hours.

Once the migration has been done successfully, DDS waited another two days for the system to get stabilized.

“The migration, which includes the merging of sites and the reallocation of card addresses, was based on a genius development by DDS team. Nevertheless, in practice, I felt like a like a surgical surgeon. We had to be thorough, precise and check every day that everything went well. It was a complex daring feat, the first one of its type at DDS.” says Mr. Shlomo Partouche Sebban, DDS Technical Support & Training Manager.

Case Study: System Migration

Example of reallocation of badges

A Multisite installation of 24 different sites in 4 different cities has a total of 240k local cardholders (10k per site). After grouping the 24 sites per city (6 sites per city), the DynamicSiteBadge feature allows Amadeus to give to these people a NumBadge value comprised between 1 and 60,000 with possible duplication between cities. One person of each city may have the NumBadge value '50,000' for example.

The max limit for the unique NumBadge low values is automatically calculated by Amadeus and readjusted, if necessary. In practice, every new cardholder who has in his Access groups one or more readers belonging to a city different from his own city, get a NumBadge value below this limit. In the same way, new cardholder having Access groups of his own city only, get a NumBadge value above this limit.



In the controller memory, there will be only one card code allocated to the NumBadge '50,000' because these persons will never travel to another city. Now, if 10k people should access to several cities for example, Amadeus will give to these 10k people a unique NumBadge value comprised between 1 and 16,000. The 234k local cardholders will have a NumBadge value comprised between 16,001 and 76,000 with possible duplication between cities.

When changing the Access group of existing cardholders, the NumBadge value is also modified dynamically from High to Low or from Low to High if necessary.