WHITE PAPER

Italtel

From Lift and Shift to Fast-Shift:
how to solve critical migration issues in a Hybrid Cloud context

Summary

Overview

As companies grow in maturity in their Cloud strategy, they are increasingly looking to combine and match the best available technologies that will enable a competitive advantage.

As a result, more and more companies are moving to a hybrid Cloud model, a mix of on-premise infrastructure and public Cloud services.

The most important feature of the Hybrid Cloud model is that it allows companies to move workloads between private data centres and public clouds whenever there is a change in requirements or costs. This means that companies have more options to choose from in application and data management and with greater flexibility.

In this hybrid cloud context, communication networks are the basis for a successful digital transformation.

For companies migrating to the Cloud, performance, reliability and security in connectivity between heterogeneous environments are crucial to ensure a risk-free migration of business-critical workloads.

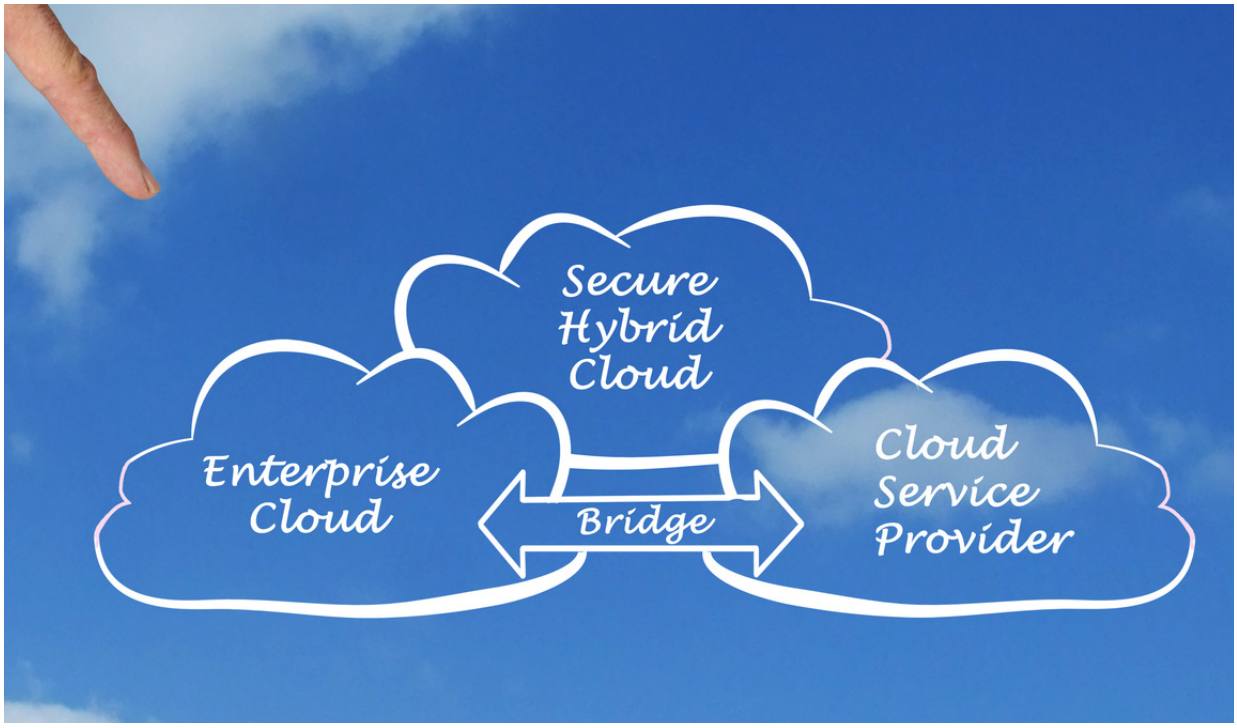
What is the Hybrid Cloud?

The hybrid cloud is an environment that utilises public cloud, private cloud and third-party solutions, combining the best of various platforms. With respect to workload management, this approach allows alternating between different service modes, drawing on public and private clouds according to processing needs. The hybrid cloud thus offers companies greater flexibility and development possibilities.

Based on needs, priorities and task hierarchies, this model allows an organization to plan its ideal combination of IT services, ensuring optimal performance and scalability for application management and data distribution.

The concept of a hybrid cloud depends on the company requirements, but a key aspect is certainly a seamless integration of applications and services. Such an agile infrastructure clearly offers competitive advantages and opens up potential savings.

For many companies, Hybrid Cloud is an ideal "bridging" solution to move, through a "selective" migration of applications and data, to a Cloud strategy.



A hybrid Cloud model thus provides a unified infrastructure and the possibility of storing some workloads and data locally while others move to services offered by Hyperscalers such as Microsoft Azure, AWS or Google Cloud Platform.

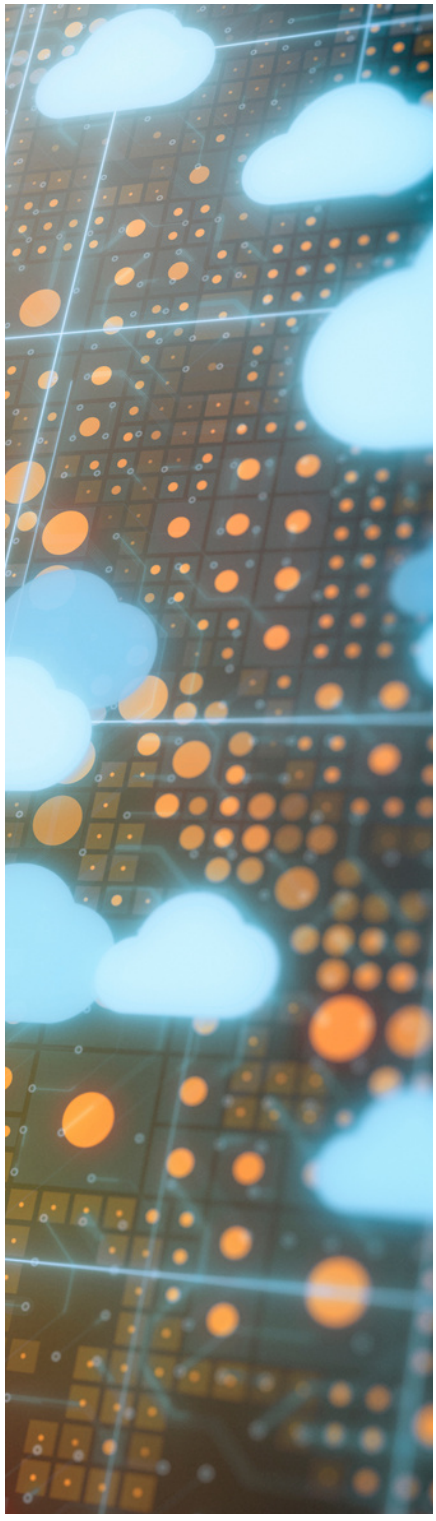
For instance, a company might use an on-premise private cloud to host sensitive customer credit card data, while also leveraging a public cloud provider to host less critical resources, such as test and development workloads.
Making it simple, we can say that it is appropriate to choose the hybrid Cloud in these cases:

- For a m**ore controlled and balanced management of resources and data**
- In case of a **first migration to the Cloud from an on premise structure** so as to make it less "traumatic".

As a result, Hybrid Cloud has become the dominant IT infrastructure model for most large companies.
It is in fact an **excellent compromise solution for companies that do not feel like entrusting their data entirely to a public cloud**.

Why migrate to the Cloud?

What are the reasons why we are now facing the evolution from On-Premise solutions to the Cloud?



The reasons why companies are becoming more interested in the "Cloud" derive from the benefits this technology can bring: **increased security, improved mobility, simplified access to data, flexibility, scalability** and the possibility of better **collaboration** within organisations.

There are also **economic advantages** related to not buying hardware and reducing maintenance costs.

The COVID-19 pandemic also showed how the Cloud is of paramount importance in the age of remote working and social distancing, a historical moment in which work, as we have always assumed it to be, is rapidly changing.

Another aspect to be evaluated for Cloud adoption is the **end of support (EOS) for obsolete versions of Windows Server and SQL Server hosted in Data Centres.** In such cases, companies may be exposed to **security attacks** or see their maintenance costs increase due to outdated hardware and software.

Moving to Azure Cloud, for example, among other benefits mentioned above, Windows and SQL servers in end-of-support receive an additional period of support and free security updates.

For these reasons, more and more corporate IT organisations have embarked on a **migration path to the Cloud**: most of these migrations take place in separate phases, in order to minimise risks and accelerate production times.

The most common approach is Lift and Shift (also known as "rehost"), which involves moving data and applications from local Data Centres to Cloud environments. The peculiarity of this migration is that it is no-code, which means no need to rewrite the code. In this way, organisations can take advantage of the agility of the Cloud, without the burdens and risks associated with reprogramming applications.

In conclusion, operating a **Lift and Shift** of your workloads to the Cloud means giving your strategic business applications a stable, secure and scalable infrastructure.

Migration to the Cloud: critical issues in the market

What is the **market proposition today**?
As already described, thanks to the methodology offered by the Hyperscaler market, called Lift and Shift, companies are already able to quickly and easily migrate their applications to the Cloud.
With the Lift and Shift approach, on-premise applications can move to the Cloud without being redesigned.
It is a method that allows companies or public administrations to start on a path towards IT modernisation, moving to an open and more extensible architecture in the Cloud, while also benefiting from reduced costs and improved performance and resilience.

However, the current market proposal may not meet some specific needs of customers who need to migrate their applications to a Cloud environment, approaching a **hybrid Cloud model.**

This is the case, for example, where the applications intended to be migrated have a dependency on or need to be subject to compliance requirements from specific IP addresses.

In these circumstances, it may be necessary to extend one or more local subnets of the private data centre to the public cloud, so that the same IP addressing plan can be maintained.

The extension of local subnets, from the data centre to the Public Cloud, thus enables applications to talk to each other on the same networks, even when they are allocated in different physical locations, eliminating the need to make changes in both application code and networking.

This solution enables several scenarios, including:

- **Phased migration**, thus allowing only certain applications to be migrated to the Cloud in a first step. In this way, it will be possible to maintain the interaction between applications in the Cloud and on Data Centres, without the need for a massive migration.

- As workloads can be run using the infrastructure as a service (IaaS) made available by Hyperscalers, the migration of the local **VMware infrastructure** to the Cloud is enabled. In this context, using Cloud Native services results in cost savings derived from not purchasing VMware licenses and acquiring specific technical skills needed to manage the on-prem infrastructure.

- Migration of applications configured with a **wired IP address**. A wired IP, in fact, is a static address configured within the application code and cannot be changed. In this scenario, which is mostly present in outdated applications but still considered business-critical, there is a need to be able to extend the network to enable its migration to the Cloud.

Fast-Shift: the solution that responds to market needs

Italtel, together with its reference partners, Cisco and Microsoft, has developed Fast-Shift, a software solution to limit networking impacts and constraints in application migration processes from local data centres to Microsoft Azure cloud environments.

The Fast-Shift solution enables the extension of one or more local subnets of the Data Centre to the Azure Cloud, enabling the following scenarios:

- **keep IP addresses and network parameter configuration unchanged** for applications migrated to Azure Cloud, even if they are obsolete, no longer supported or have a wired IP address within the application itself.
- **speed up migration time** without changing the application code and current network infrastructure.
- **selectively and gradually migrate applications**, while preserving their reachability, avoiding the need for a massive migration to the Cloud.
- since it is a completely overlay solution, thus agnostic to the existing network infrastructure, it will be possible to **interconnect the on-prem environment** and the Cloud without the need for network analysis and adaptation.

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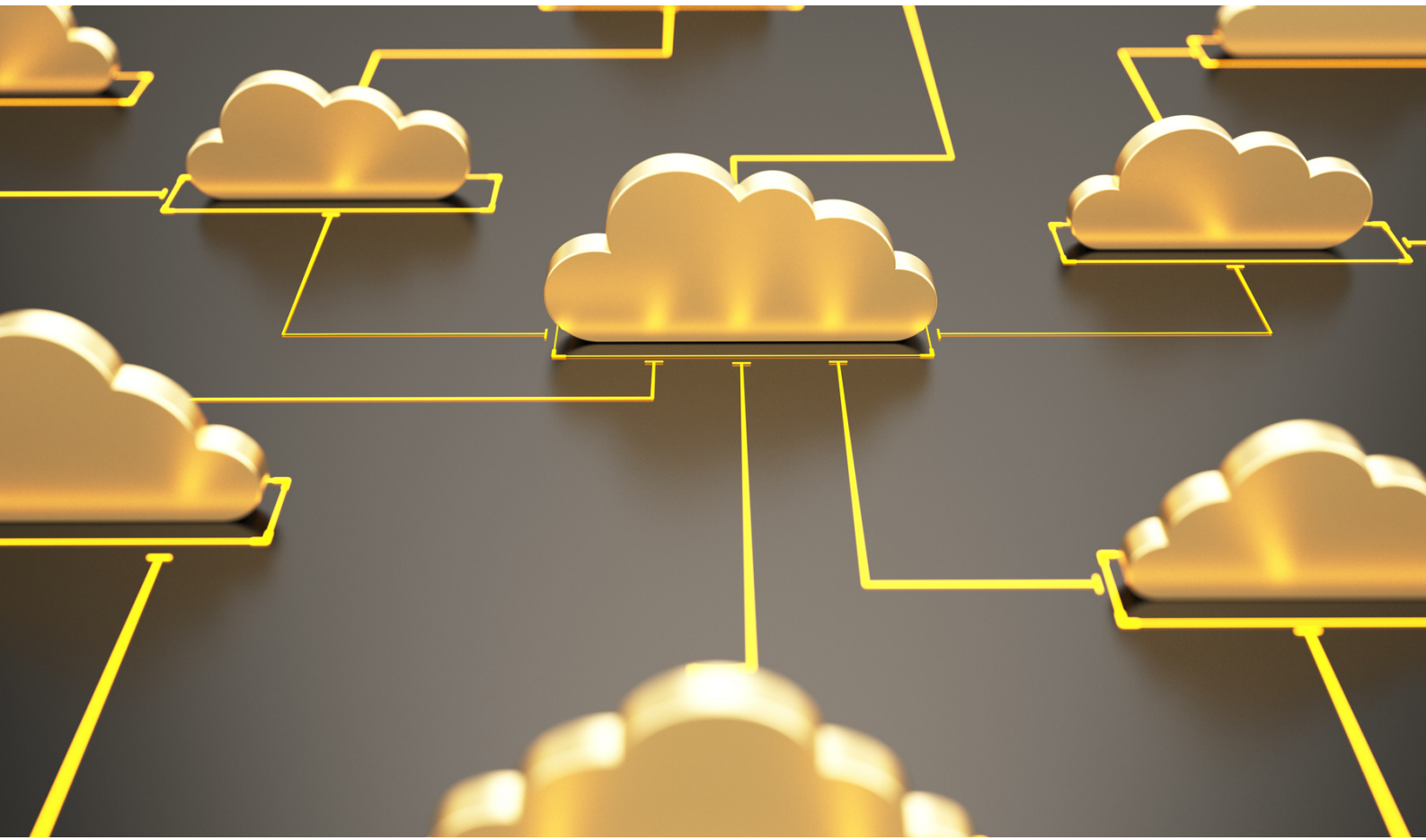
This solution is therefore an enabler both for approaching a **hybrid Cloud model** and for migrating workloads in Lift and Shift mode, **without any constraints** in having to redesign the network or applications.

Migrating workloads previously residing in on premise facilities to Cloud environments, as we have seen, is a particularly common process today.
In this Hybrid Cloud context, companies need to be able to migrate servers to the Cloud without making any changes or wanting to use the same server IP address, subnet mask, default gateway configurations and their own IP addressing scheme in the Cloud and not be constrained by the addressing scheme of the Cloud provider's infrastructure.

The Fast-Shift solution proposed by Italtel meets this requirement and allows, for companies moving to Azure, to gain benefits both from the aspect of IP mobility and related to the migration of obsolete Microsoft servers to the Azure Cloud.

Further advantages of the solution are:

- a pragmatic approach to migrating applications from the Data Centre to the Cloud;
- the migrated application will be able to take advantage of the Cloud paradigm, reducing internal infrastructure costs;
- connection to backup services for disaster recovery;
- additional support that can be activated, as well as the possibility of free security updates if adopted to migrate Windows and SQL servers to Azure in EOS.



Use Case: a few application examples

La The Fast-Shift solution allows a "soft" approach to the Cloud, with the possibility of benefiting from the advantages of the Azure Cloud, without having to go through a massive migration and, above all, without any constraints in having to redesign the network or applications.

This is why Fast-Shift enables different use cases, such as:

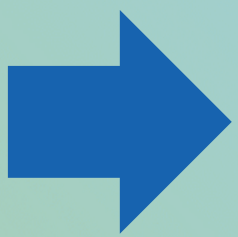
- **In small and medium-sized companies**, where IT staff is limited to just a few units, there is no time to analyse and implement all the necessary steps to migrate applications and data to the Cloud in total security. It is precisely for this reason that a technically simple solution such as Fast-Shift, which can accelerate the adoption of Azure Cloud and its benefits, can be useful.

- **For large enterprises**, moving to the hybrid Cloud allows organizations to save on operational costs compared to an entirely on-premise infrastructure. Moreover, in a large infrastructure, it is often not easy to be aware of which applications are vital, which are to be updated and finally which are to be deleted. For this reason, using Fast-Shift can enable migration to the Cloud without the real risk of disruption for business-critical applications and, through Data Center rationalization, also brings with it economic benefits. A rationalization that is also possible for Data Centers in remote locations by enabling the migration of applications to Azure Cloud while still maintaining reachability to the main locations. It all translates into reduced infrastructure complexity and management costs.

- **For the Public Administration**: to enable the transfer of applications to Azure Cloud infrastructure and allow the improvement of services in terms of availability, accessibility and interoperability, being able to easily operate upgrades or maintenance without having to bear the high costs associated with maintaining proprietary servers at the PA site.

Necessity of PALS

- Migration of applications to AGID-accredited CSPs
- EOS of local licences of WS2003/2008 or SQL Server 2008 and 2012
- It is necessary to extend one or more local subnets of the Data Centre to the Cloud, so that the same IP addressing plan can be maintained.
- A situation of prevalence of Windows systems was found, of which 20 percent were found to be in 2008 version and some even in 2003.
- Extending a network, from the local Data Centre to the Cloud, thus enabling applications to communicate on the same Virtual LAN
- Presence of a wired IP address within one or more applications (mostly obsolete applications) that are intended to be migrated to Azure Cloud



Advantages/Benefits

- Faster and easier migration: speed up migration time to the Azure cloud, without changing applications and network infrastructure
- Reduced risk and cost: enables selective migration of workloads while preserving reachability without any changes to the IP addressing plan
- Minimal rearchitecting and refactoring: migrate or create new servers in EOS on the cloud with the same IP address as the local DC
- Low initial cost compared to replatforming
- Little or no downtime
- Comprehensive solution, including the implementation and configuration of Cisco virtual components, both in a Data Centre environment and on Azure.

Fast-Shift solution high reliability

Italtel, thanks to its networking system integration capabilities and Cloud expertise, has developed an overlay solution, based on Cisco technology, that enables migration to Azure Cloud and responds to special customer requirements, reducing unnecessary complexity and project delays.

Italtel offers its customers a complete and highly reliable solution, including the implementation and configuration of Cisco virtual components, both in a Data Centre environment and on Azure.

To address the issue of high reliability related to the Fast-Shift solution, Italtel developed "Italtel Fast-Shift Redundancy Software". This is a software implemented in the Cloud that enables the management of automatic failover (automatic and uninterrupted switch to a reliable backup system) of Cisco virtual network components on the Azure Cloud, both in the presence of faults and in anticipation of scheduled maintenance activities.

In essence, redundancy software introduces automation in fault tolerance management. Without this development, every recovery task would have to be carried out manually, with the critical issues that this presents: the possibility of human error, longer timeframes and, consequently, cost impacts.

With its multi-technology expertise and professional services catalogue, Italtel provides end-to-end support to its customers for the Fast-Shift solution, having the capabilities to design and manage the entire solution.

Italtel is a multinational company that operates in the ICT sector with a strong focus on innovation. Italtel offers solutions for the digital transformation that include networks and UBB infrastructures, data centers, business collaboration, cybersecurity, hybrid cloud, the internet of things. The solutions are composed of proprietary and third-party software products, managed services, engineering and consultancy services, analytics & automation. The target market consists of service providers, public and private enterprises, with a specific focus on vertical markets such as Telco & Media, Manufacturing, Energy & Transportation, Finance & Insurance, Healthcare, Smart Cities. **www.italtel.com -** Marketing_communication@italtel.com