Catalogs and APIs converge to support end-to-end service providers

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New generation Digital Service Providers need to be able to plug in partners and immediately create products to compete in this new hyper-connected world. Services that include cloud, NFV, IoT and traditional access components are all becoming part of the expectation.

When did this happen?

Governments are investing in networks, enterprise IT is moving to the cloud, network functions are being virtualised and all manner of devices for measurement and control are becoming network-connected. Markets are changing faster than many service providers think. Communication service revenues are declining, while demand for bundled services is increasing: from small bundles like an Internet service with an NFV-based security appliance, to large bundles like a smart city!

The seemingly impossible task

Telcos already have a reputation for long and costly IT projects in support of their communications business. As a new-age Digital Services Provider, you must bundle if you are to transition from being a declining old-world telco. Service bundling pushes complexity to new levels: more interfaces, more partners, more flexible products, more automation. A fundamentally different approach is required if service providers are to succeed.

The way of the Internet will prevail

Most web APIs now use REST. REST is an architecture which uses the web's existing protocols and technologies.

We all know the brands that have led the way with the use of these APIs, including Google, Amazon, Facebook and Twitter. REST operations are meaningful verbs from HTTP (www protocol): GET, POST, PUT and DELETE. Data within the messages is in JSON format, which is compact and easy to work with. For those of us with networking backgrounds, the move to REST bears many similarities to the replacement of NetBUI and IPX by TCP/IP. Clearly, REST-based integration will progressively penetrate deeper into enterprise IT.

Move forward, don't waste your time re-inventing the wheel

Frameworx provides a reference architecture to apply to the service provider problem. Technology has dramatically improved, but seasoned architects will tell you that there have only been incremental changes to the actual problem. A layered approach should be applied to the management of products, services and resources as defined in eTOM and SID, along with the use of catalog, party and metadata patterns from Frameworx. We do this to prevent projects becoming multi-million dollar re-inventions and to provide long-term interoperability between platforms.

Catalog meets metadata

At DGIT Systems we have remained true to Frameworx, but made our catalog universally applicable. In run-time, catalogs are used to associate entities – for example, products which are to be offered to parties. In this case, a product is defined in metadata, including rules and relationships with process and service or resource entities. It goes further; Telflow is a truly metadata-driven system and will consult a catalog for almost everything it does: which process? Which task? Which service? What products?

The rise of the catalog

Not long ago, catalogs were limited in function by the performance limits of real-world systems. A configurable system would store all the configuration in SQL data. Data-driven screens or system messages would then place computing load on the back end as fields were rendered, and rules and behaviour were applied. If you made everything configurable, the system would simply be too slow. Consequently, high-volume old-generation systems all have significant "hard wiring" and their catalogs can only manage limited entities.

Around six years ago, new technology for managing metadata started to emerge as a part of the "big data" revolution. Supporting data in a highly scalable way without the need to adhere to a traditional database structure, this technology allows catalogs in high performance systems to manage many versions of many different "things". This fundamental shift in agility and performance is a game changer for the Digital Service Provider.

To take advantage of this new technology, DGIT Systems made the bold move to redevelop Telflow Fulfilment from the ground up, guided by the TM Forum on architecture, applying all the best new IT technologies, and even testing it in Catalyst projects along the way. Many of our fellow TM Forum members will have noticed us win awards for our Catalyst projects, as well as the 2015 Excellence Award for our Telflow product.

Big things are built from smaller parts

And these smaller parts need to be "pluggable". The TM Forum API program has solutions here. Forum APIs are "dynamic", which means sharable metadata governs the message payload so you can reuse the same standard interface. With NFV, cloud and traditional telecommunications, one should adopt a platform-based approach. A platform would use TM Forum standard APIs to expose services. The product layer can then combine these services to form products to offer customers. Yes, if your platform components are small, you may call them micro-services.

An interesting observation here is that standard mechanisms for communication between catalogs are useful, but the real value comes from standardising the metadata model. DGIT Systems has had great success using the metadata patterns of the SID and has made a number of contributions to help guide others, including the recent TR 245 Dynamic API Technical Recommendation.

Your catalog is my catalog

If Service Providers and their suppliers adopt standardised, catalog-driven APIs, they can plug in many different types of services without coding new integrations, saving money and achieving more. For this partner integration case there are some additional non-functional aspects

to look after as well as onboarding, but essentially operational integration is the same as the internal platform case.

With many using the same APIs, new innovators can enter an ecosystem as suppliers and have a ready market to plug into. If you have a smart system sequencing traffic lights or processing waste, or predictive analytics on video images to provide alerts, then service providers can plug you in.

Come play in my sandpit

DGIT is getting right behind standardised catalog-driven dynamic APIs. TM Forum members, service providers and vendors alike will be invited to test APIs in the "universal sandpit", a service which DGIT Systems is providing in support of 2016 Catalyst projects and other future initiatives. The universal sandpit will be operated as a perpetual service to help us all work together and achieve these common goals.

The universal sandpit provides a platform with a set of test scenarios that can support demonstrations. The sandpit also includes a catalog, set up to drive dynamic API payloads. This catalog is extensible and is anticipated to grow over time.

Members can use the sandpit to support demonstrations and Catalyst projects. By extension, members can also use the sandpit for onboarding between trading partners and marketplaces, or as a living interface contract.

We hope to put an end to needless divergence from TM Forum API specifications by helping these specifications become the easiest path to follow.