

# Order management: understanding the elements of end-to-end service fulfillment

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## Abstract

In the modern era of telecommunication services, automation of B/OSS processes to activate subscriber services is essential. The more integration and automation on a network, the lower the OPEX costs. But automating any process can be difficult. There are numerous steps along the process of end-to-end order management that can become complex, especially when more subscribers are being added onto a network.

It's essential to consider all aspects of order management, not only so that business processes are efficient, but also to maintain high quality subscriber experiences. This white paper, Order management: understanding the elements of end-to-end service fulfillment, was made to help operators dig into the various elements that need to be considered when automating the activation of a new subscriber or activating new services with an existing customer.

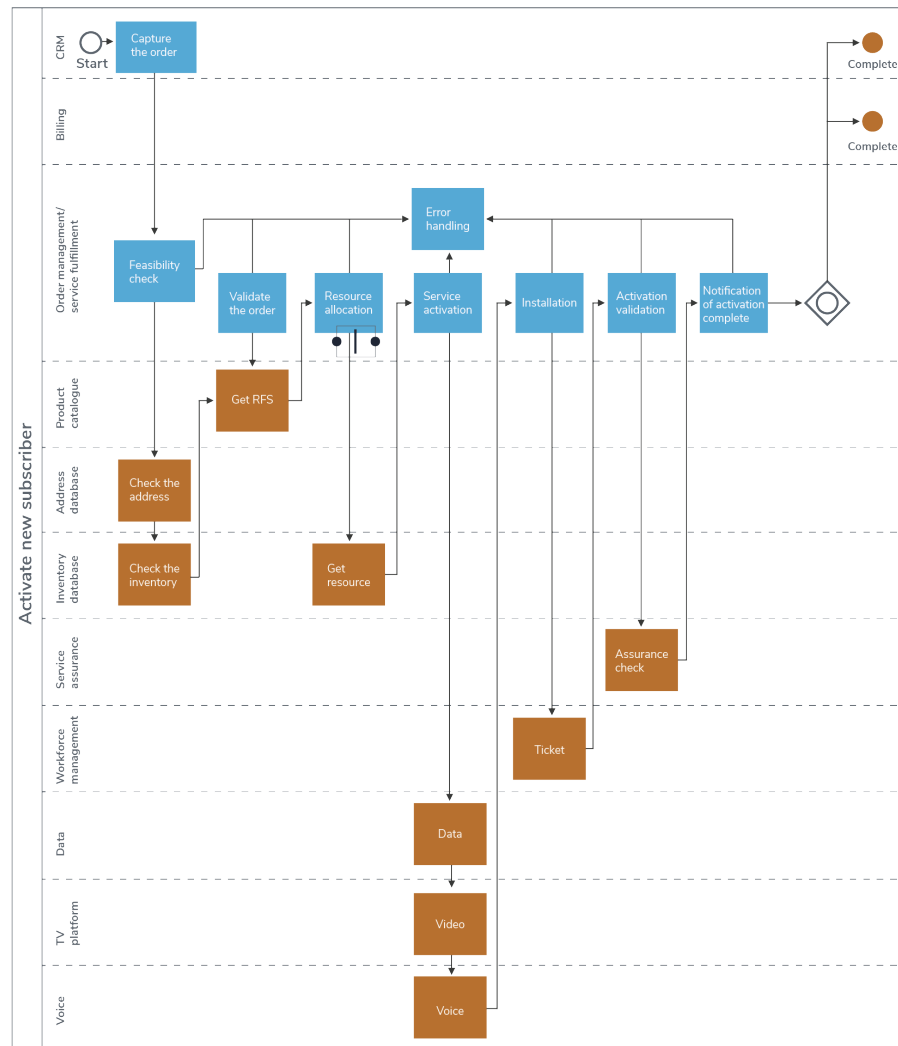


Figure 1: End-to-end order management involves multiple complex tasks



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## What service can you offer?

How do you answer the subscriber's fundamental question: "what's in it for me?"

Aside from advertising campaigns with the promise of exceptional services, you need to drill down into specific subscriber characteristics to determine which service offerings are the most attractive to your customers. There are a couple ways that you can determine those characteristics:

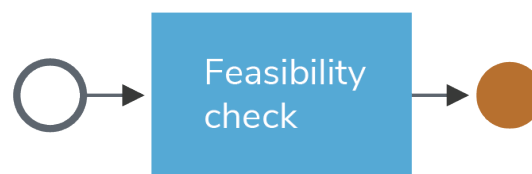
- A conversation between the customer service representative (CSR) and the subscriber
- An online tool that allows the subscriber to do a check for themselves

To save OPEX, you want to avoid large volumes of phone calls to a service desk, so the more automation put into the initial steps of subscriber self-care, the better the result will be for your bottom line.

But what do you need to know? Some simple questions for the subscriber may include:

- What service(s) do they want?
- Where are they located?
- How much is their budget?

Once these questions are answered, what happens next? Any information gathered is sent to business processes to determine the feasibility of making an offer to the subscriber. Think of this as a gated process; in order to move to the next step, it must pass this feasibility check.



### Feasibility check:

What does the feasibility check do? This can include:

- Looking up the subscriber's address and confirming if the service is available in that area
- Checking the service options based on the subscriber's budget

These checks can be made fully automated or simplified further by "gating" the required steps. For example, check to see if the service is available in the subscriber's area first. If it is, then supply the available service options to the subscriber.



This sounds relatively straightforward but it may involve the integration of a number of components, including:

- Address Database
- Product Catalog
- Customer Resource Management (CRM) Platform
- Order Management Server

Already, you can see how automation can get complicated. However, to capture new orders, you need to provide options to your subscribers.

## Capturing and validating the order

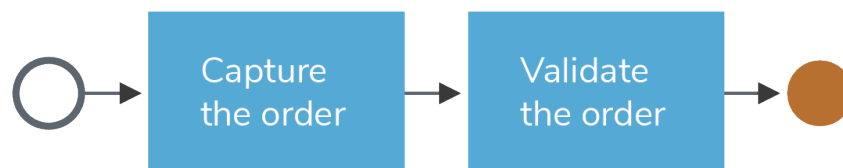
### Order capture

To capture an order, you need to capture the subscriber's details and their product choices. Subscriber information is extremely valuable when growing a business, as targeting subscribers for new orders is best accomplished when the offer made is based on their previous product and service choices.

Similar to offering services, order capture sounds relatively straightforward, but it may involve the integration of a number of components, including:

- Customer Resource Management (CRM) Platform
- Product Catalog
- Order Management Server

Once you have captured the correct information from the subscriber, you need your systems to validate the order.



### Order validation

The next step is to validate the order, which involves:

- **Confirm order legitimacy:** Once the order is received, you need to confirm its legitimacy. For example, can the product or service be delivered to that address? This may mean different things for different products or services but it should be



determined early in the service delivery process to ensure the best process efficiencies. In other words, there is no point in proceeding to any further step if the services cannot be delivered in the first place.

- **Resource-Facing Service (RFS) validation:** An RFS is the definition of the service as required by the service activation system. In other words, an RFS provides the information that is needed in order to understand how to provision a service and a device. The RFS may also consist of a bundle of services. This step will break down the RFS into its component parts.

Validating the order may involve integration to the following components:

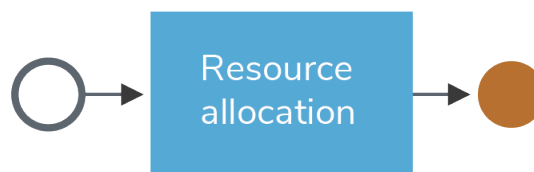
- Addressability Database
- Product Catalog
- Order Management Server

Now that you have captured and validated your subscriber's order, you need to allocate resources and activate services.

## Resource allocation and service activation

### Resource allocation

Some service types require equipment or some other allocated resource, e.g. a phone number. The activation of services may require the allocation of resources from (typically) an inventory database.



For such service types, this order management step should check to see if resources are available to fulfill the order. Typical resources include customer premise equipment, port availability, telephone numbers, and so on. If resources are not available, then the order should be pushed to an error-handling subprocess.

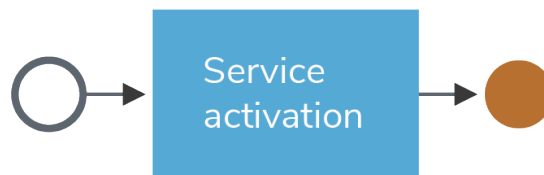
Validating a subscriber's order may involve integration of the following components:

- Inventory Database
- Order Management Server



## Service activation

For successful service activation, you need to connect to the various network servers and devices in order to activate the desired service. The complexity here is that there are many different types of servers using many different communications protocols, such as SOAP, REST, CORBA, TL1, and so on. Usually new servers will use newer communications protocols but there are still many older protocols in use today.



With service activation, the trick is to abstract the communications protocol from the business process logic. This abstraction provides the ability to plug and play adapters to third party systems with minimal or even no changes to business processes. For example, if a service provider changes from one vendor's TV CAS (Conditional Access System) to another vendor's equipment, the core business logic can stay intact but the adapter to the third party system will change.

The business logic can usually be broken down into the following:

1. Service activation (Create)
2. Service deactivation (Delete)
3. Service upgrade/downgrade (Update)
4. Service suspend/resume (Update)
5. Service get (Read)
6. Other:
  - a. Service: refresh, synchronise
  - b. Device: reset, initialise, swap, probe

Typical network servers include:

- Data: DHCP, DNS, AAA
- Voice: Softswitch, Tariff, Phone Credit, Call Features
- TV: CAS, IPTV platform, VOD
- Other: E-mail, Web Host

With resource allocation and service activation complete, you now move onto the next processes in the order management cycle, Installation and Activation Validation.



## Installation and activation validation

### Installation

An installation engineer may be required to do a device installation for any new subscriber. Installation will generally be a manual process but can go one of two ways:

- If the installation is simple, then there may not be a need for an installation engineer to go onsite. The subscriber is simply sent the equipment and asked to plug it in. If the service is pre-provisioned, then the subscriber will be activated automatically once the equipment is plugged in.
- Otherwise, the installation engineer will pick up the installation ticket via the workforce management system and update the system once the installation is complete, allowing service fulfillment to progress to the next step.

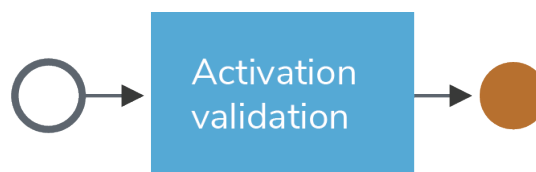


Installation may involve integration of the following components:

- Workforce Management
- Captive Portal
- Order Management/Activation Server

### Activation validation

It always pays to ensure that services are working as expected. That's why activation validation is such a critical step; it can be the difference between building a strong relationship with a new or existing customer, or avoiding a quality of experience issue that may eventually lead to subscriber churn.







Service assurance steps will differ depending on the service type, for example:

- For data services:
  1. Check to see if Internet connection is available
  2. Check assurance parameters: signal-to-noise ratio, power levels, and so on
- For voice services:
  1. Check for a dial tone
  2. Make a call
  3. Review the Mean Opinion Score
- For video services:
  1. Verify picture availability
  2. Verify picture quality
  3. Ensure channel availability

Activation validation may involve integration of the following components:

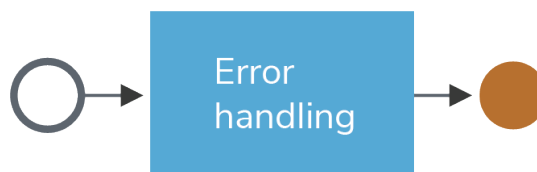
- Service Assurance
- Captive Portal
- Order Management/Activation Server

At this point, your subscriber's services are functional.

## Error handling

Your subscriber's services are up and running, but in order to protect business processes and minimize potential disruption to the subscriber's experience, there must be a mechanism to handle errors. There is a lot of potential for errors throughout the order management cycle, for example:

- The simple but hugely disruptive failure to connect to a third party system
- A resource is already in use
- Systems timing out when connecting to a third party system due to lack of response





## Error handling

Whatever the reason, the error handling sub-process needs to be able to deal with the error effectively. Some of the ways to achieve this are:

- Retrying the request, sometimes after an interval wait
- Remedial actions if the validation step fails, e.g. the SNR levels are outside of expected thresholds
- Manual intervention, for example:
  1. Swapping the device
  2. Changing the details of the requests, e.g. a phone number
  3. Fixing a network connection and retry
- Failing the request if an issue cannot be resolved, e.g. a subscriber address does not exist

Error handling may involve integration of many components throughout the order management cycle, including:

- Inventory Database
- Address database
- Product database
- Customer resource management (CRM) platform
- Service assurance platform
- Captive portals
- Order management/Activation server

The final section of the Order Management white paper describes how automation is a key component in the end-to-end order management process.

## Automation

A number of processes have been covered in the Order Management white paper, including:

- Offering the right service to the subscriber
- Capturing and validating the order
- Allocating resources and activating services
- Installing equipment and verifying services
- Ensuring proper error-handling to protect business processes



As you have learned in the previous five sections, the order management process involves multiple complex tasks. The diagram below shows that there is a lot to be considered. If the entire process is completed using an automated solution, it will make the end-to-end order management a lot simpler.

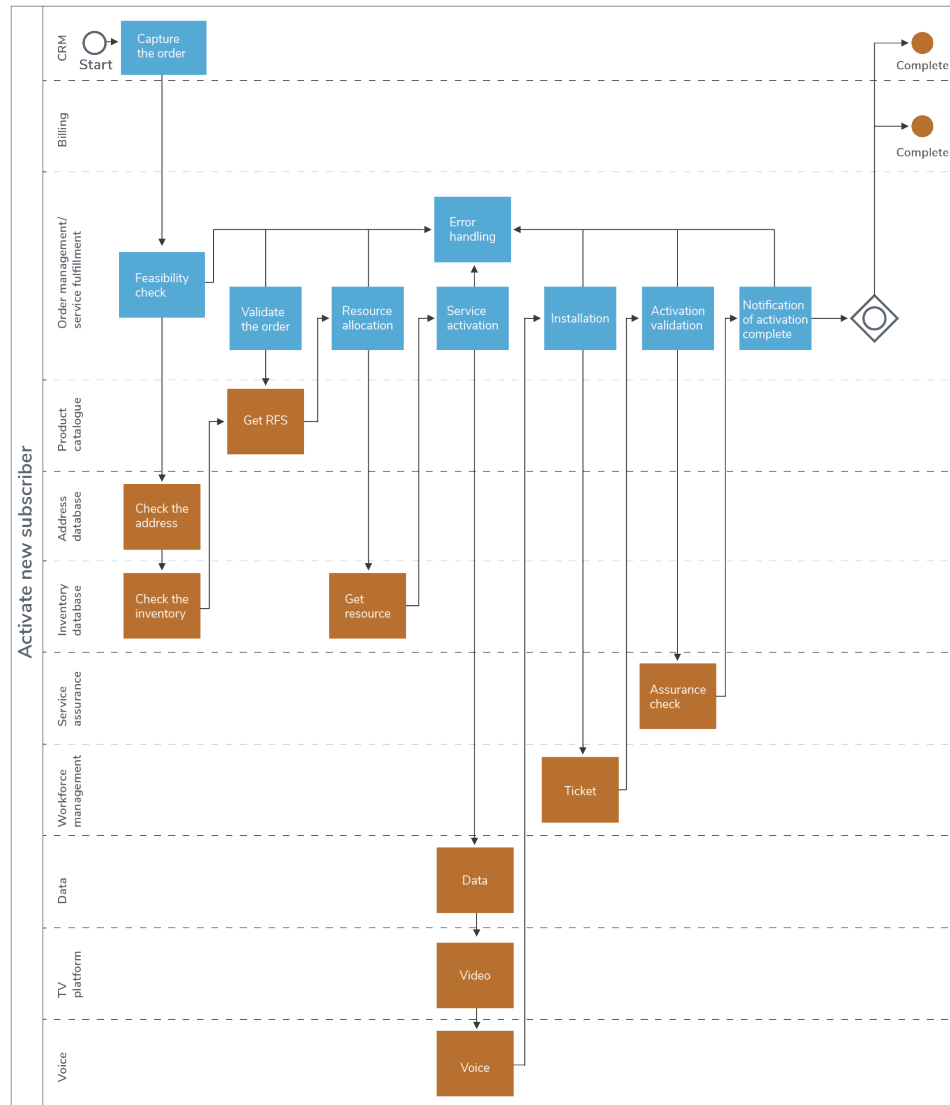


Figure 2: Operators can reduce the complexity of order management

The obvious goal of any business is to make a profit. For service providers in the telecommunications industry, there are two main ways that this can be done:

- Increasing Revenues
- Decreasing Costs

Automation is a major contributor to both of these options.



## **Automation**

Today, all major industries use automation to make production processes quicker, more efficient, and less error prone. Take the manufacturing of any electronic component and you'll find that robots are used extensively.

The same can be said for order management processes. Having the ability to reduce manual steps while streamlining and hardening business processes will greatly increase an organization's ability to efficiently deliver products and services to their subscribers. Hardening business processes also decreases the potential for errors caused by accidental mistakes. With proper automation, if errors do occur, they will be contained within a range of known issues that make resolution much easier.

A fully automated solution can help you along the entire process of order management, streamlining subscriber service activation to increase revenue, while decreasing costs with less manual effort. In addition, quick issue resolution helps to improve the subscriber experience and leads to better customer loyalty.

## **Conclusion**

This white paper focused, for the most part, on the service activation and fulfillment processes required for a new or existing subscriber, but there are other processes to consider. Deactivation, upgrading and downgrading, and other steps may be required throughout the lifecycle of a customer. There are also ancillary processes such as the configuration of the various servers, which may also be automated.

For complete end-to-end order management, a holistic solution is required. Contact us for more information.

## About Incognito

Incognito Software Systems Inc. provides software and services solutions to help global service providers manage and monetize broadband services. Over 200 customers worldwide, including Cox, Claro, Globe, Foxtel, and SingTel, leverage Incognito solutions to fast-track the introduction of innovative broadband services over fiber, LTE, and cable technologies, while delivering a great customer experience. The company is a division of the Lumine Group, a portfolio of Constellation Software Inc., the largest independent software company in Canada.

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