ATIS NFV Forum Charter
ATIS is launching the NFV Forum to engage the industry in important contributions to Network Functions Virtualization (NFV) and Software Defined Networking (SDN). These technologies are part of a sweeping evolution that is moving the ICT industry from integrated, hardware-centric solutions to modular, hardware-agnostic frameworks by abstracting the hardware resources into a consistent operating environment for the software. ATIS has analyzed this technology disruption in an effort to identify emerging business opportunities enabled by these programmatic frameworks and has determined that one of the most consequential impacts of this implementation is the ability to integrate software across service providers, in a uniform and automated way, and to scale application instances to meet changing demand.

NFV Business Drivers
There are two primary financial drivers for service providers to adopt NFV and SDN: reduction of infrastructure cost and creation of new revenue opportunities. Virtualization lowers network cost in the service provider core through higher resource utilization, but it has limited impact on total network cost. When virtualization is coupled with the systematic exposure of software functions through APIs, the resulting framework of service enablers allows increased customization of service offerings and provides new revenue opportunities for operators who productize these internal functions for external integration by enterprises and other service providers. This process enables service providers to both expand their offerings and customer bases resulting in improved utilization and scale of assets, for example IMS, CDN, data center services, and MPLS-based networks. This multi-faceted monetization strategy includes a combination of network efficiency and new offerings across an expanded base resulting in improved return on investment for virtualized infrastructure by further amortizing many base costs.

This move to a structured software framework also has material benefits to business processes for service providers and their customers. The open NFV framework provides a basis to simplify operational environments through the automation of the network and its functions. Subsequently, service-consuming companies integrate these abstracted, IT-centric capabilities while avoiding staffing and skills challenges that correspond with the underlying complexity of service provider infrastructures.

ATIS NFV Principles and Foundation
While the drivers for service virtualization may differ between companies, ATIS members share a set of common principles that provide insight into important aspects of SDN/NFV and are a foundation for the ATIS program:

- Focus on the interoperability and interworking between providers
- Engage web scale and enterprise companies with easy-to-use capabilities
- Develop services that enable and enhance the user experience
• Preserve and maximize the value of the network
• Use open source where practical to deliver standards-based services

In addition to these principles, ATIS members recognize that service virtualization should not occur in a silo. NFV is not a single solution but rather an orchestration of capabilities that operate within an extensible framework. Many groups are contributing to the development and realization of these functions. The ETSI ISG NFV Reference Architectural Framework, OpenStack’s general purpose virtualization framework, the Linux Foundation’s Open Platform for NFV (core NFV functions), TM Forum Zoom’s program on management and operations, OpenDaylight’s open source SDN solution, and Open Networking Foundation’s OpenFlow all provide one or more important building blocks into the emerging service marketplace.

ATIS is also incorporating the output of its own Cloud Services Forum (CSF). The management and exposure of virtualized functions share many requirements with cloud. This allows NFV to reuse existing cloud standards for descriptive metadata, lifecycle governance, and federation. Examples of these standards include:

• Service Enabler Characterization Technical Report, ATIS-0200001
• Cloud Services Lifecycle Checklist, ATIS-0200009
• CDN Interconnection Use Cases and Requirements in a Multi-Party Federation Environment, ATIS-0200010

Recognizing these industry efforts are contributing to the development and realization of NFV, ATIS builds on these existing activities with its focus on inter-provider technical requirements and solutions.

**ATIS NFV Program**

In ATIS’ evaluation of the industry landscape, it discovered that the initial phase of NFV standardization centered on single enterprise virtualization and that inter-provider NFV was left for a later effort. To further evaluate this opportunity, in February 2014 ATIS launched the ATIS SDN/NFV Focus Group on inter-provider service chaining and in March 2014 began extensive executive discussions on how to maximize the inter-provider business value of NFV. This analysis concluded that, while virtualization within a single enterprise reduces cost, inter-provider NFV enables the “productization” of the same internal software functions and results in opportunity for revenue growth.

In pursuance of this opportunity, ATIS will use agile software methodologies to phase six to nine month cycles for delivery of member business priorities:

1. Define priority use cases such as virtual network operator that emphasize the benefits of NFV in a multi-provider environment and require improved service integration and portability between network operators, web scale companies, and enterprises.
2. Establish a common catalog of service descriptions that can be instantiated between service providers. The purpose is not to duplicate existing service definitions but rather to provide standardized descriptive metadata to support interconnection, interoperability, and
interworking. The ATIS effort differentiates itself by emphasizing a catalog of compatible services. At a minimum, this catalog of APIs will contain:

- Runtime environment (e.g., compute, storage, orchestration) required to operate generic software processes
- Network functions (SDN northbound APIs) for control of network routing and quality by other service provider and enterprise third parties
- Supporting operational capabilities such as those defined by the TM Forum and ATIS Ordering and Billing Forum including management, monitoring, ordering, and billing functions needed for business process integration and maintaining service level agreements (SLAs) across service providers

3. Specify the service advertising and discovery mechanisms that allow companies to find and incorporate these services into their software environments. Existing mechanisms may be integrated or extended as appropriate.

4. Incorporate service creation tools such as service chaining for construction of new aggregate business applications and models. This work items transitions and continues the current activities of the ATIS SDN/NFV Focus Group.

Phase I of the ATIS work program includes virtual network operator capabilities as well as other high priority use cases. Using the methodology defined above, the forum will develop technical requirements, the catalog of needed capabilities and the service chaining necessary for a third party service provider or enterprise to integrate the functions into a business application. This process will result in creation of specifications that are complementary with existing industry work products and that extend the current environment for inter-provider NFV. The forum will also engage relevant open source activities for the implementation of these capabilities in software.

The ATIS NFV Forum looks forward to collaborating with the industry on this transformational opportunity.