ETSİ ISG NFV: WORK PROGRAM RELEASE 2 AND RELEASE 3 OVERVIEW

Joan Triay (ETSI NFV Technical Manager, DOCOMO Euro-Labs)
PART 1: ETSI ISG NFV Overview
  • ETSI NFV key milestones
  • NFV Release highlights

PART 2: NFV Release 2

PART 3: NFV Release 3
PART 1: ETSI ISG NFV OVERVIEW
ETSI NFV key milestones

Jan’13
• NFV#1 Plenary after ETSI ISG NFV created (in Nov’12)

Dec’13
• ETSI NFV Architectural Framework v1.1.1 published

Nov’14
• Release 1 specifications completed
• Release 2 Work Program started

Jan’15
• Release 1 spec. published

Apr’16
• First set of Release 2 spec. published: IFA002, IFA003, IFA004, IFA005, IFA006, and IFA010 v2.1.1
• Release 3 Work Program started

Sep’16
• Remaining Release 2 requirements, interfaces and information model (Stage 2) specifications completed: IFA007, IFA008, IFA010 v2.2.1, IFA011, IFA013, IFA014, IFA015

Dec’16
• Maintenance on published Rel. 2 specifications started

Mar’17
• Publication of additional Rel. 2 NFV Information Model reports

Apr’17
• Release 2 protocol and data models (Stage 3) work items underway
• Release 3 reports and normative work items underway

Jul/Aug ’17
• First set of Rel. 2 protocols and data model (Stage 3) specifications: SOL002, SOL003 and SOL004
• 1H2017 of Rel. 2 maintenance completed

Sep’17
• Rel. 3 normative work is underway

Many Release 2 specifications published. Besides Release specifications, ETSI NFV work program includes many other specifications addressing Security, Reliability, Use Cases and other Features
NFV Release highlights

**Release 1**
- Focused on the feasibility of NFV.
- Delivered the baseline studies and specifications.
- Set the NFV Architecture:
  - Infrastructure (NFVI),
  - Virtualized network functions (VNF),
  - Integration of the VNFs into Network Services (NS), and
  - NFV Management and Orchestration (NFV-MANO) aspects at different layers.

**Release 2**
- Focuses on interoperability of NFV solutions.
- Details requirements and specification of interfaces and descriptors.
- Realizes the interoperability of solutions based on the NFV Architecture, detailing
  - VNF Package and VNF and NS Descriptors,
  - Acceleration,
  - Internal and external NFV-MANO interfaces.

**Release 3**
- Focuses on feature enriching the NFV Architectural Framework, readying NFV for deployment and operation.
- Features such as:
  - Charging and billing,
  - Licensing,
  - Policy framework,
  - Multi-site,
  - Cloud-native support,
  - Etc.
- Details new requirements and specification of interfaces and descriptors.

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PART 2: NFV RELEASE 2
Release 2: main technical areas

1) Example of NS, VNF and deployment on virtualized infrastructure

- VNF management:
  - VNF lifecycle mgmt.
  - VNF performance, fault, configuration mgmt.
- VNF Package mgmt.

Virtualised resource management, including fault, performance, capacity, etc. mgmt.

Network Service management:
- NS lifecycle mgmt.
- NS performance, fault mgmt.
- VNF Package and NSD mgmt.

From design to runtime

NSD
VNF Package
VNFD
Release 2: a note about ETSI NFV IFA, SOL and TST specifications

Release 2 are comprised of specifications delivered by different ETSI NFV working groups:

- SOLutions (SOL) working group.
- Interfaces and Architecture (IFA) working group.
- Testing (TST) working group.

**NFV-IFA specifications**: stage 2 level requirements, architecture, interfaces and information model.

**NFV-SOL specifications**: stage 3 level protocols, API and data models and “artifacts”.

**NFV-TST specifications**: metrics, testing, benchmarking.
More information about Release 2 features:

- [https://docbox.etsi.org/ISG/NFV/Open/Other/NFV(16)000274r6_NFV_Release_2_Description_v12.pdf](https://docbox.etsi.org/ISG/NFV/Open/Other/NFV(16)000274r6_NFV_Release_2_Description_v12.pdf)

Ongoing work (drafts) publicly available here:

- [https://docbox.etsi.org/ISG/NFV/Open/Drafts/](https://docbox.etsi.org/ISG/NFV/Open/Drafts/)


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PART 3: NFV RELEASE 3
Main focus:

- **Enriching** the NFV Architectural Framework, readying NFV for expansive deployment and enhanced operation.

The intersection among:

- Advances in virtualization
- NFV Release 3
- Support for future and next generation networks
- Additional operational features
Release 3: with some work items...

**Network Service LCM and Descriptor** (NFV-IFA013, NFV-IFA014)

**VNF LCM, Packaging and Descriptor** (NFV-IFA007, NFV-IFA008, NFV-IFA011)

**Virtualised Resource management** (NFV-IFA005, NFV-IFA006)

**R2: Operational and automation framework**

**Additional operational features**

**Network Slicing to NFV concepts** (NFV-EVE012)

**Policy management framework** (NFV-IFA023)

**NFV software update and upgrade** (NFV-REL006)

**Security management** (NFV-IFA026)

**Multi administrative domain NFV-MANO services** (NFV-IFA028)

**NFV-MANO management** (NFV-IFA021)

**Supporting future network advances**

**Hypervisor** (NFV-EVE001)

**NFVI aspects: Hardware environment** (NFV-EVE007)

**Cloud-native VNF** (NFV-EVE011)

**PaaS support for cloud-native** (NFV-IFA029)

**Acceleration** (NFV-IFA018, NFV-IFA019)

**NFV Licensing** (NFV-EVE010)

**VNF Snapshotting** (NFV-TST005)

**Charging, billing and accounting** (NFV-EVE008)

**Management and connectivity for multi-site services** (NFV-IFA022)

**More information about Release 3 features:**
https://docbox.etsi.org/ISG/NFV/Open/Other/NFV(16)000229r7_NFV_Release_3_Definition_v060.pdf

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Release 3: how it is being developed

Release 2 specifications
- IFA 005
- IFA 008
- TST 008
- SOL 001
- SOL 002
- SOL 005
- TST 008

+ small enhancements

Release 3 specifications
- IFA 005
- IFA 008
- IFA 011
- SOL 001
- TST 008
- SOL 005
- SOL XXX
- EVE YYY
- IFA ZZZ

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More information:

NFV Technology Page (information)
http://www.etsi.org/nfv

NFV Portal (working area)
http://portal.etsi.org/nfv

NFV Proofs of Concept (information)
http://www.etsi.org/nfv-poc

NFV Plugtest (information & registration)
http://www.etsi.org/nfvplugtest

Open Area:

Drafts http://docbox.etsi.org/ISG/NFV/Open/Drafts/

Backup Slides
Release 2: Stage 2 published documents

- NFV-IFA 015 (NFV Information Model Report)
- NFV-IFA 016 (Papyrus Guidelines)
- NFV-IFA 017 (UML Modeling Guidelines)
- NFV-IFA 024 (NFV Information Model External Touchpoints)

NFV-IFA 011 NFV-IFA 014
(VNF Pkg) (NS templates)

NFV-IFA 010 (NFV-MANO Functional Reqs)

NFV-IFA 007

NFV-IFA 008

NFV-IFA 006

NFV-IFA 005

NFV-IFA 004
(Acceleration)

NFV-IFA 003
(Acceleration)

NFV-IFA 002 (Acceleration)

NFV-TST 008 (NFVI metrics)

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Release 2: Stage 3 published and ongoing work

(*) Release 2 Stage 3 work items in “green”

- NFV-IFA 015 (NFV Information Model Report)
- NFV-IFA 016 (Papyrus Guidelines)
- NFV-IFA 017 (UML Modeling Guidelines)
- NFV-IFA 024 (NFV Information Model External Touchpoints)

- NFV-TST 008 (NFVI metrics)

- NFV-IFA 002 (Acceleration)
- NFV-IFA 003 (Acceleration)

- NFV-SA 004 (VNF Packaging)
- NFV-IFA 011 (VNF Pkg)
- NFV-IFA 014 (NS templates)
- NFV-IFA 010 (NFV-MANO Functional Reqs)
- NFV-IFA 007
- NFV-SOL 003
- NFV-IFA 008
- NFV-SOL 002
- NFV-IFA 006
- NFV-IFA 005

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<tr>
<td>ETSI GS NFV-IFA 002 v2.3.1</td>
<td>Acceleration Technologies: VNF Interfaces Specification</td>
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<td>ETSI GS NFV-IFA 003 v2.3.1</td>
<td>Acceleration Technologies; vSwitch Benchmarking and Acceleration Specification</td>
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<td>ETSI GS NFV-IFA 004 v2.3.1</td>
<td>Acceleration Technologies; Management aspects Specification</td>
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<td>ETSI GS NFV-IFA 005 v2.3.1</td>
<td>MANO; Or-Vi reference point - Interface and Information Model Specification</td>
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<td>ETSI GS NFV-IFA 006 v2.3.1</td>
<td>MANO; Vi-Vnfm reference point - Interface and Information Model Specification</td>
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<td>MANO; Functional requirements specification</td>
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<td>MANO; VNF Packaging Specification</td>
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<td>MANO; Os-Ma-Nfvo reference point - Interface and Information Model Specification</td>
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<td>ETSI GS NFV-IFA 014 v2.3.1</td>
<td>MANO; Network Service Templates Specification</td>
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<td>ETSI GR NFV-IFA 015 v2.3.1</td>
<td>MANO; Report on NFV Information Model</td>
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<td>ETSI GR NFV-IFA 016 v2.1.1</td>
<td>IM; Papyrus Guidelines</td>
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<td>IM; Report on External Touchpoints related to NFV Information Model</td>
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<td>ETSI GS NFV-TST 008 v2.1.1</td>
<td>Testing; NFVI Compute and Network Metrics Specification</td>
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## Release 2: Stage 3 published documents (for reference)

### Link to documents (search tool)

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<td>ETSI GS NFV-SOL 002 v2.3.1</td>
<td>Protocols and Data Models; RESTful protocols specification for the Ve-Vnfm Reference Point</td>
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<tr>
<td>ETSI GS NFV-SOL 003 v2.3.1</td>
<td>Protocols and Data Models; RESTful protocols specification for the Or-Vnfm Reference Point</td>
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<tr>
<td>ETSI GS NFV-SOL 004 v2.3.1</td>
<td>Protocols and Data Models; VNF Package specification</td>
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## Release 3: Feature topics

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<td>End-to-end multi-site services management</td>
<td>NFV-IFA 022</td>
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<tr>
<td>Additional aspects on MANO, such as: MANO management, end-to-end processes, multi-admin domain, etc.</td>
<td>NFV-IFA 021, NFV-EVE 009, NFV-IFA 028</td>
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<td>Cloud-native and PaaS enhancements</td>
<td>NFV-EVE 011, NFV-IFA 029</td>
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<td>Acceleration technologies</td>
<td>NFV-IFA 018, NFV-IFA 019</td>
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<td>Charging, billing &amp; accounting</td>
<td>NFV-EVE 008</td>
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<td>License management</td>
<td>NFV-EVE 010</td>
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<td>Network Slicing support in NFV</td>
<td>NFV-EVE 012</td>
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<td>Security analysis and management</td>
<td>NFV-SEC 013, NFV-SEC 014, NFV-SEC 015, NFV-IFA 026</td>
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<td>Reliability and availability considerations</td>
<td>NFV-REL 007, NFV-REL 008, NFV-REL 009</td>
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<td>VNF snapshotting, DevOps and CI/CD</td>
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<td>Testing</td>
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<td>Policy management</td>
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<td>ETSI GS NFV-EVE 001 v3.1.1</td>
<td>Virtualisation Technologies; Hypervisor Domain Requirements specification</td>
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<td>ETSI GS NFV-EVE 007 v3.1.2</td>
<td>Evolution and Ecosystem; NFV Hardware Interoperability Requirements</td>
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<td>ETSI GS NFV-IFA 018 v3.1.1</td>
<td>Acceleration Technologies; Network Acceleration Interface Specification</td>
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<td>ETSI GS NFV-IFA 019 v3.1.1</td>
<td>Acceleration Technologies; Acceleration Resource Management Interface Specification</td>
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<td>ETSI GR NFV-IFA 023 v3.1.1</td>
<td>Management and Orchestration; Report on Policy Management in MANO</td>
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<td>ETSI GS NFV-SEC 012 v3.1.1</td>
<td>Security; System architecture specification for execution of sensitive NFV components</td>
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<td>ETSI GS NFV-SEC 013 v3.1.1</td>
<td>Security; Security Management and Monitoring Specification</td>
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<tr>
<td>ETSI GR NFV-TST 005 v3.1.1</td>
<td>Continuous Development and Integration; Report on use cases and recommendations for VNF Snapshot</td>
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**Link to documents (search tool)**