

Welcome to the World of Standards



NFV(17)000244
For information

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

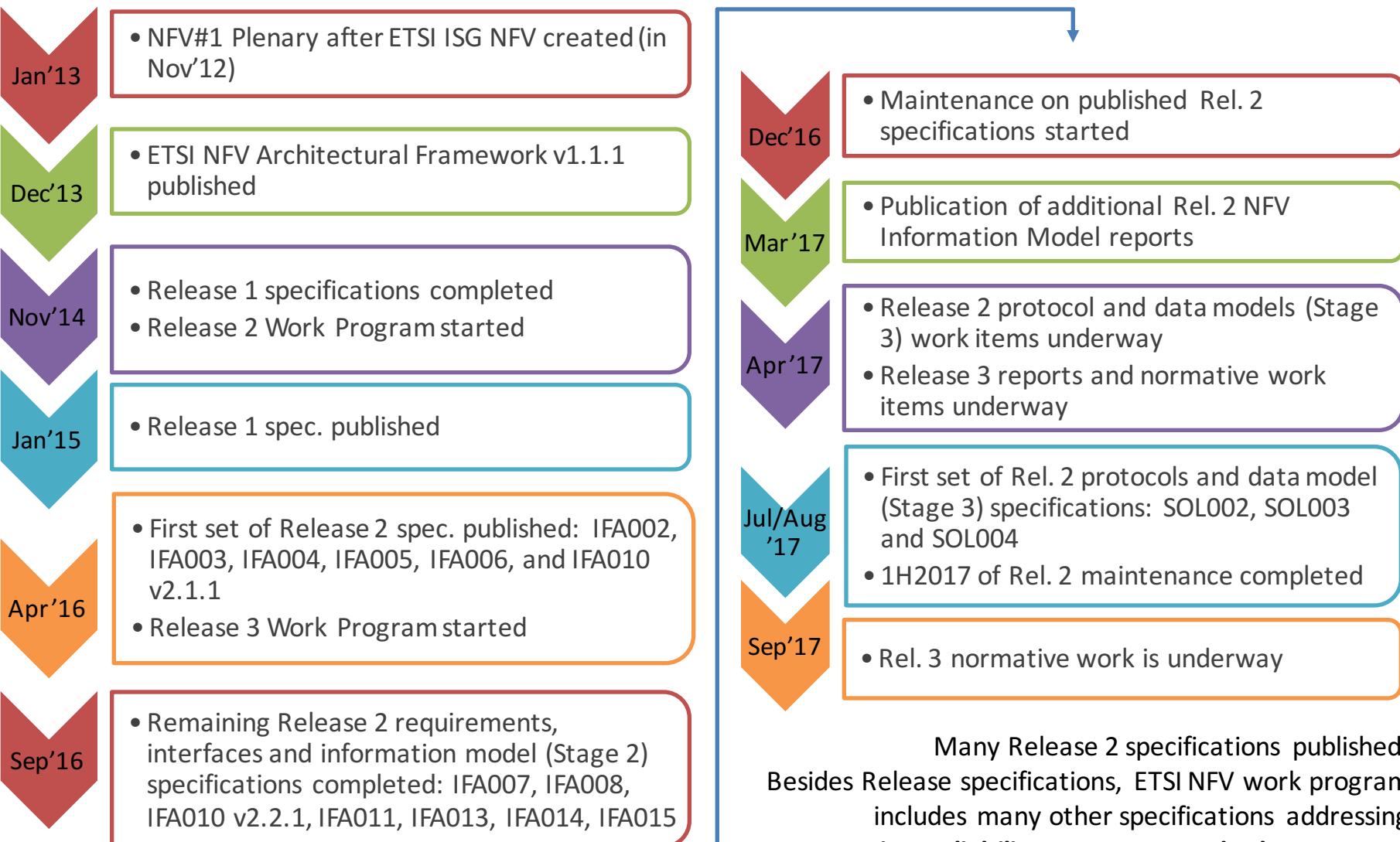
ETSI ISG NFV

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- 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



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

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.

PART 2: NFV RELEASE 2

The diagram illustrates the ETSI NFV Architectural Framework, showing the flow from design to runtime and the underlying management layers.

From design to runtime:

- Design:** NSD (Network Service Description) and VNF Package (containing VNFD - VNF Descriptor).
- Runtime:** End-to-End Service, Network Service, VNFs (VNF-1 to VNF-5), NS End Point, End Point, Virtualisation Layer, NFVI (Network Functions Infrastructure), and Infrastructure Network.

Management Layers:

- Network Service management:**
 - NS lifecycle mgmt.
 - NS performance, fault mgmt.
- VNF management:**
 - VNF lifecycle mgmt.
 - VNF performance, fault, configuration mgmt.
- VNF Package mgmt.**
- Virtualised resource management, including fault, performance, capacity, etc. mgmt.**

Underlying Infrastructure and Management:

- OS/BSS:** OSS/BSS, EM 1, EM 2, EM 3.
- NFV Management and Orchestration:** Os-Ma, NFV Orchestrator, Or-Vnfm.
- VNF Manager(s):** VNF 1, VNF 2, VNF 3.
- Service, VNF and Infrastructure Description:** Ve-Vnfm, Vn-Nf, Vi-Vnfm.
- NEVI (Network Elements Virtualisation Interface):** Virtual Computing, Virtual Storage, Virtual Network.
- Virtualisation Layer:** NI-Ha, Virtualised Infrastructure Manager(s).
- Hardware resources:** Computing Hardware, Storage Hardware, Network Hardware.
- Other components:** Nf-Vi, Or-Vi.

Legend:

- Physical Link (solid line)
- Logical Link (dashed line)
- Virtualisation (arrow)
- Compute/Storage (cube)
- Infrastructure Network (cylinder)

Execution reference points: •

Other reference points: +

Main NFV reference points: ⊕

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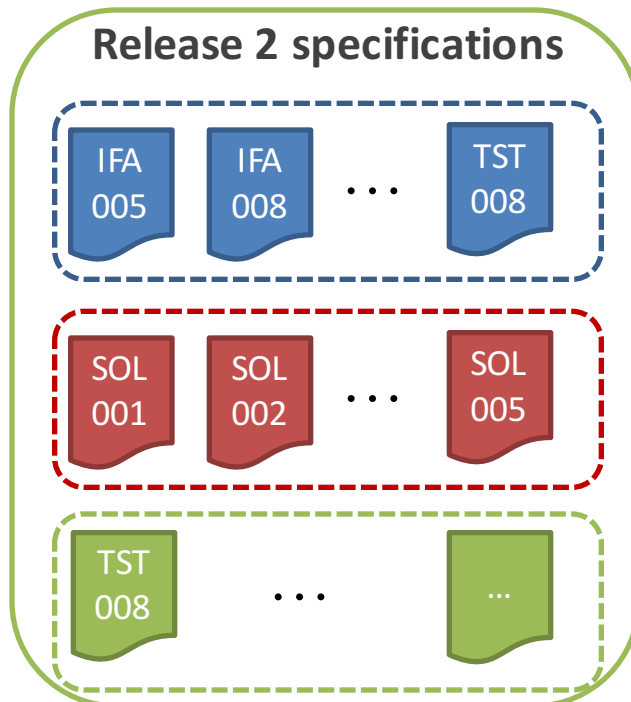
2) The ETSI NFV Architectural Framework

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.



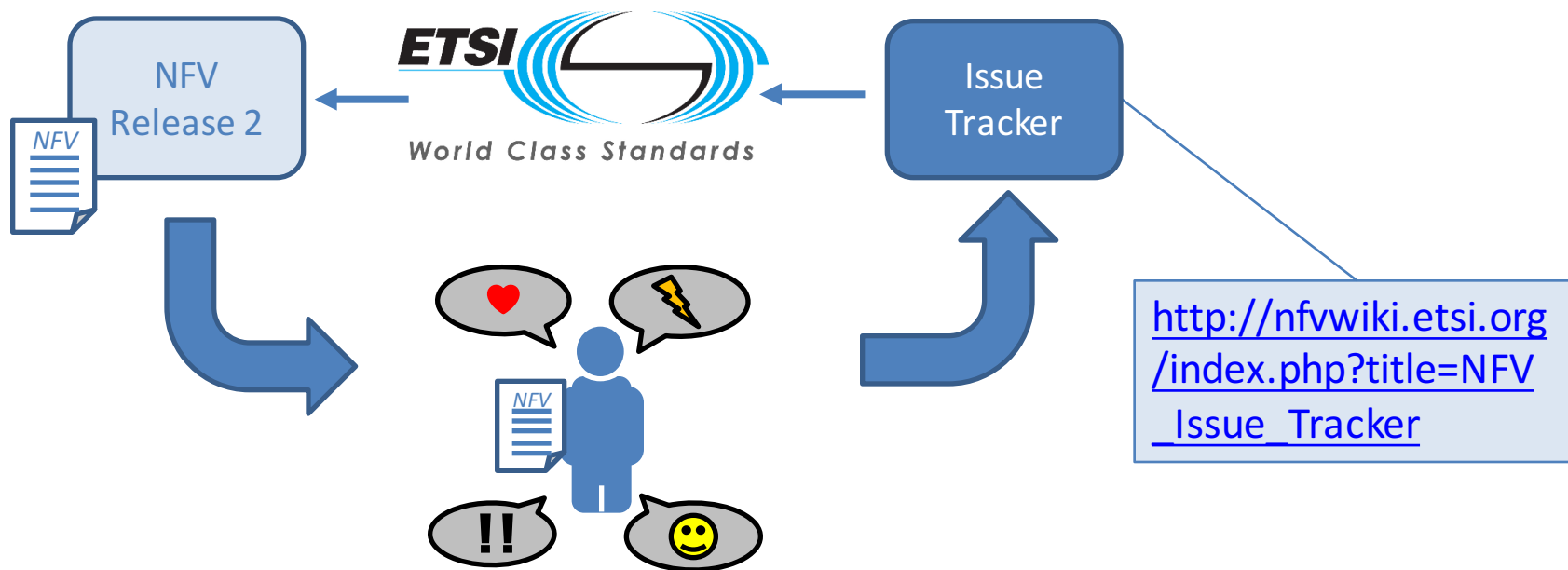
NFV-SOL specifications: stage 3 level protocols, API and data models and “artifacts”.

NFV-TST specifications: metrics, testing, benchmarking.

Release 2: information and feedback!



- 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/>



PART 3: NFV RELEASE 3

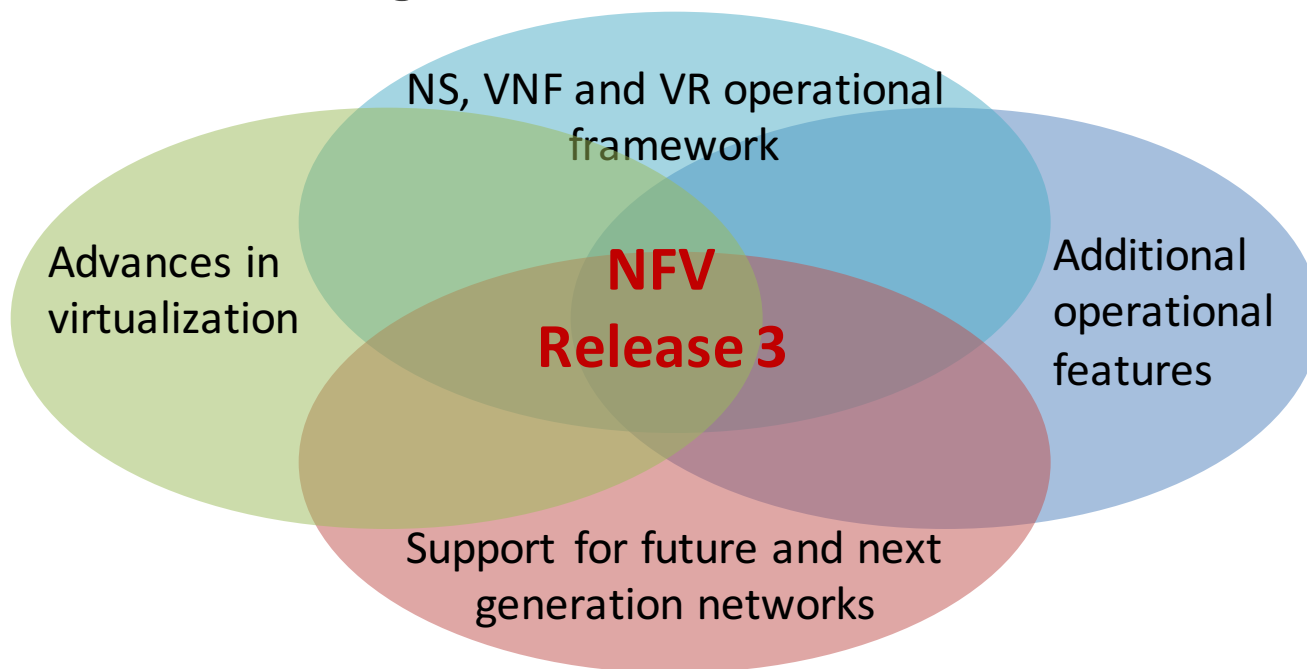


Main focus:

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



The intersection among



Release 3: with some work items...



NOTE: not an exhaustive list of all work items!

R2: Operational and automation framework

Additional operational features

NFV software update and upgrade (NFV-REL006)

Policy management framework (NFV-IFA023)

Charging, billing and accounting (NFV-EVE008)

NFV-MANO management (NFV-IFA021)

Security management (NFV-IFA026)

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

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

Supporting future network advances

Network Slicing to NFV concepts (NFV-EVE012)

NFV Licensing (NFV-EVE010)

VNF Snapshotting (NFV-TST005)

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)

Advances in virtualization

Hypervisor (NFV-EVE001)

Cloud-native VNF (NFV-EVE011)

NFVI aspects: Hardware environment (NFV-EVE007)

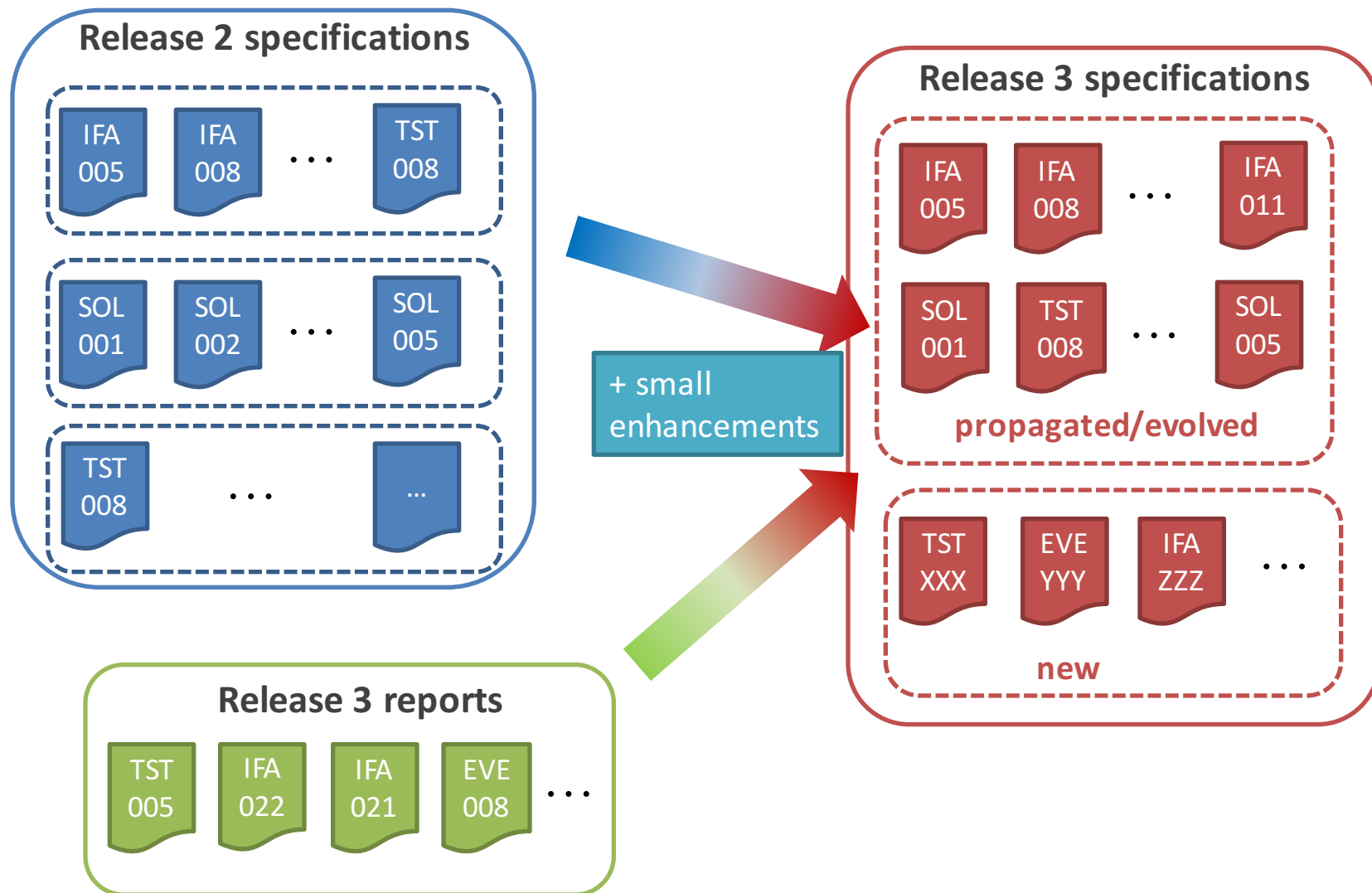
PaaS support for cloud-native (NFV-IFA029)

Acceleration (NFV-IFA018, NFV-IFA019)

More information about Release 3 features:

[https://docbox.etsi.org/ISG/NFV/Open/Other/NFV\(16\)000229r7_NFV_Release_3_Definition_v060.pdf](https://docbox.etsi.org/ISG/NFV/Open/Other/NFV(16)000229r7_NFV_Release_3_Definition_v060.pdf)

Release 3: how it is being developed





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:

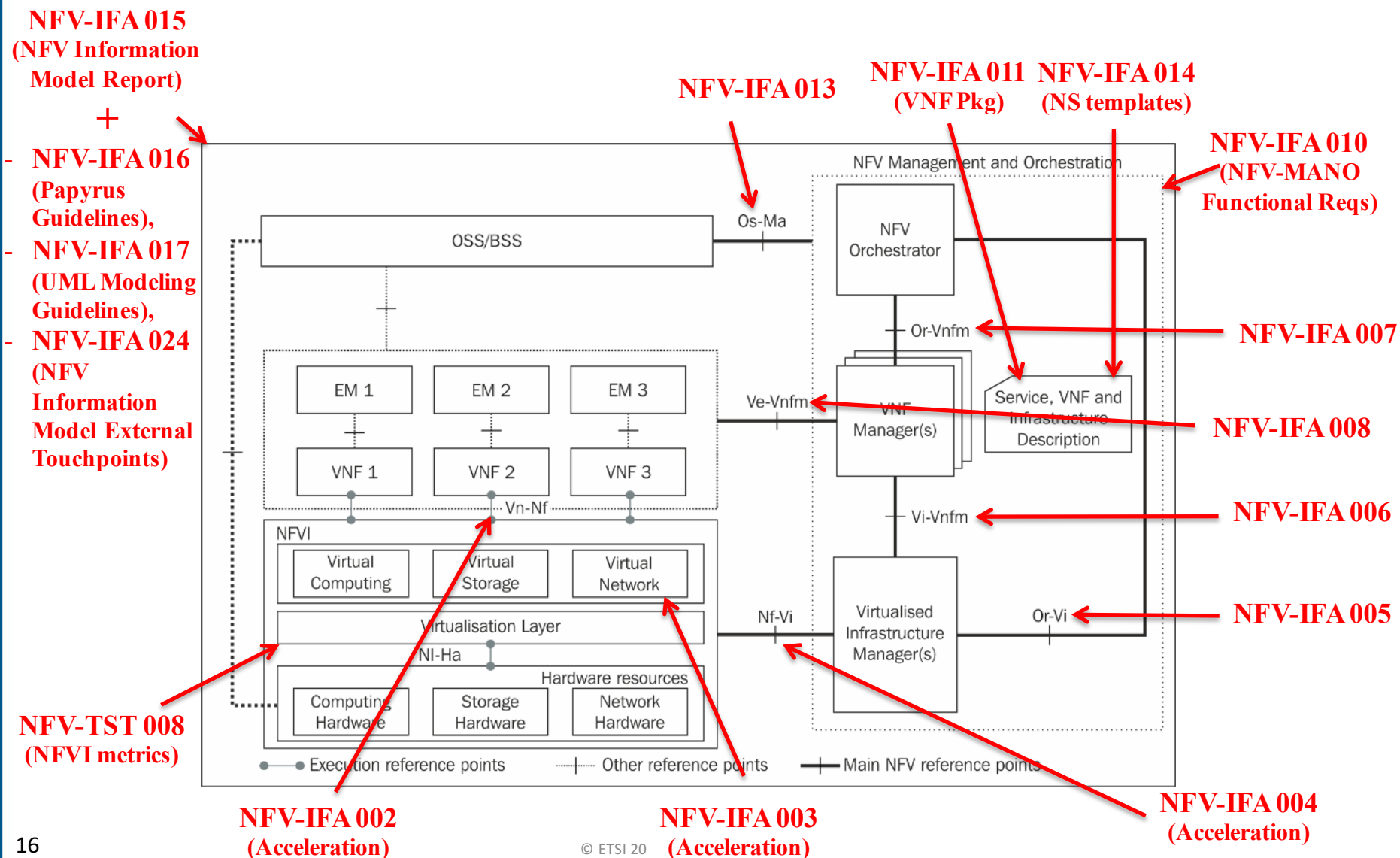
Drafts <http://docbox.etsi.org/ISG/NFV/Open/Drafts/>

Issue tracker http://nfvwiki.etsi.org/index.php?title=NFV_Issue_Tracker

A black chalkboard with white chalk text that reads "ANY QUESTIONS?". The text is written in a casual, hand-drawn style. The chalkboard is positioned in the bottom left corner of the slide, partially overlapping the blue background and the globe.

Backup Slides

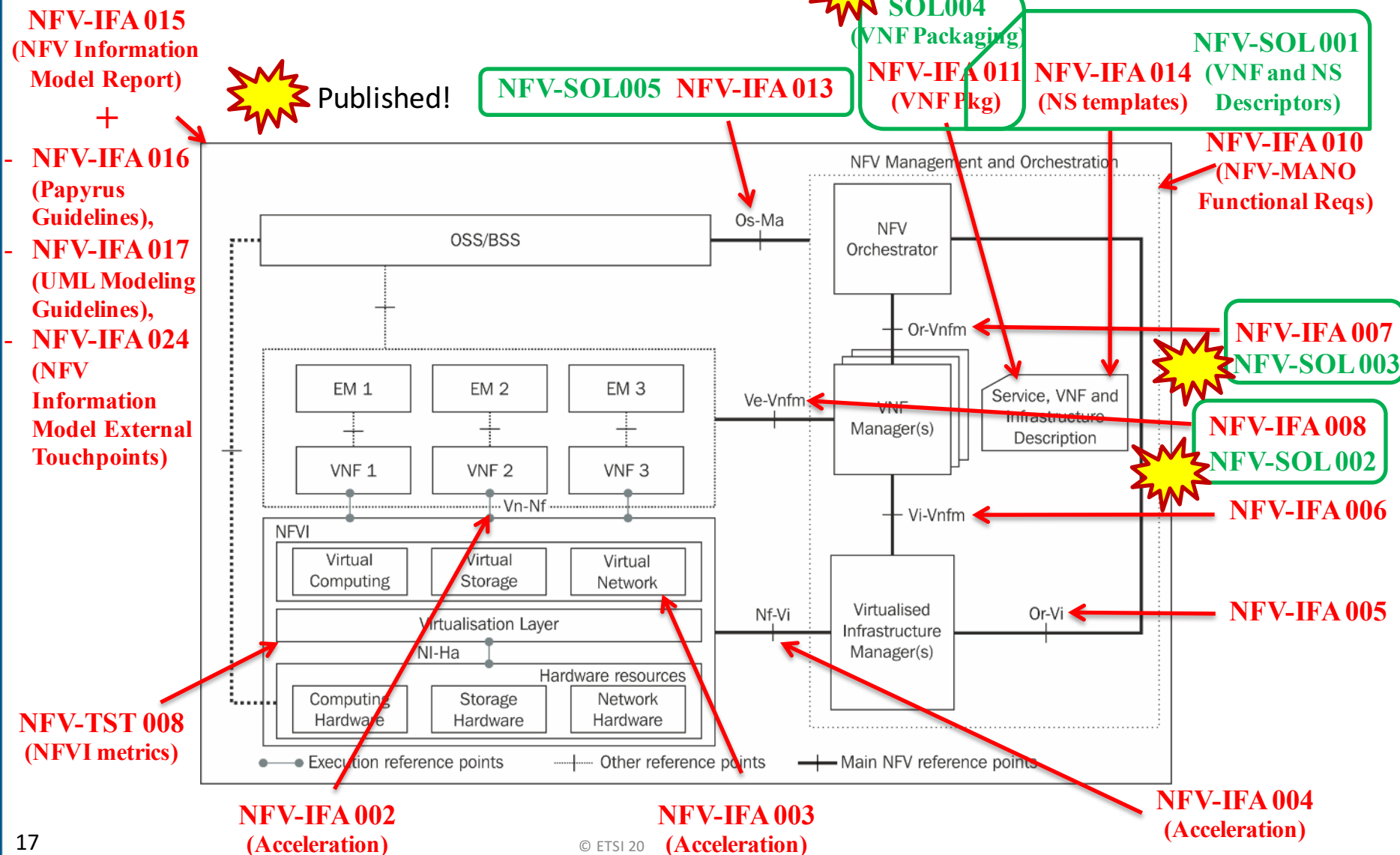
Release 2: Stage 2 published documents



Release 2: Stage 3 published and ongoing work



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



Release 2: Stage 2 published documents (for reference)



[Link to documents \(search tool\)](#)

ID	Title
ETSI GS NFV-IFA 002 v2.3.1	Acceleration Technologies: VNF Interfaces Specification
ETSI GS NFV-IFA 003 v2.3.1	Acceleration Technologies; vSwitch Benchmarking and Acceleration Specification
ETSI GS NFV-IFA 004 v2.3.1	Acceleration Technologies; Management aspects Specification
ETSI GS NFV-IFA 005 v2.3.1	MANO; Or-Vi reference point - Interface and Information Model Specification
ETSI GS NFV-IFA 006 v2.3.1	MANO; Vi-Vnfm reference point - Interface and Information Model Specification
ETSI GS NFV-IFA 007 v2.3.1	MANO; Or-Vnfm reference point - Interface and Information Model Specification
ETSI GS NFV-IFA 008 v2.3.1	MANO; Ve-Vnfm reference point - Interface and Information Model Specification
ETSI GS NFV-IFA 010 v2.3.1	MANO; Functional requirements specification
ETSI GS NFV-IFA 011 v2.3.1	MANO; VNF Packaging Specification
ETSI GS NFV-IFA 013 v2.3.1	MANO; Os-Ma-Nfvo reference point - Interface and Information Model Specification
ETSI GS NFV-IFA 014 v2.3.1	MANO; Network Service Templates Specification
ETSI GR NFV-IFA 015 v2.3.1	MANO; Report on NFV Information Model
ETSI GR NFV-IFA 016 v2.1.1	IM; Papyrus Guidelines
ETSI GR NFV-IFA 017 v2.1.1	IM; UML Modeling Guidelines
ETSI GR NFV-IFA 024 v2.1.1	IM; Report on External Touchpoints related to NFV Information Model
ETSI GS NFV-TST 008 v2.1.1	Testing; NFVI Compute and Network Metrics Specification

Release 2: Stage 3 published documents (for reference)



[Link to documents \(search tool\)](#)

ID	Title
ETSI GS NFV-SOL 002 v2.3.1	Protocols and Data Models; RESTful protocols specification for the Ve-Vnfm Reference Point
ETSI GS NFV-SOL 003 v2.3.1	Protocols and Data Models; RESTful protocols specification for the Or-Vnfm Reference Point
ETSI GS NFV-SOL 004 v2.3.1	Protocols and Data Models; VNF Package specification

Release 3: Feature topics



Published!



Area/topic	Work Item(s)
End-to-end multi-site services management	NFV-IFA 022
Additional aspects on MANO, such as: MANO management, end-to-end processes, multi-admin domain, etc.	NFV-IFA 021, NFV-EVE 009, NFV-IFA 028
Cloud-native and PaaS enhancements	NFV-EVE 011, NFV-IFA 029
Acceleration technologies	NFV-IFA 018,  NFV-IFA 019 
Charging, billing & accounting	NFV-EVE 008
License management	NFV-EVE 010
Network Slicing support in NFV	NFV-EVE 012
Security analysis and management	NFV-SEC 013, NFV-SEC 014, NFV-SEC 015, NFV-IFA 026
Reliability and availability considerations	NFV-REL 007, NFV-REL 008, NFV-REL 009
VNF snapshotting, DevOps and CI/CD	NFV-TST005  NFV-TST 006
Testing	NFV-TST 004  NFV-TST 007, NFV-TST 009
Policy management	NFV-IFA 023 

Release 3: published documents (for reference)



ID	Title
ETSI GS NFV-EVE 001 v3.1.1	Virtualisation Technologies; Hypervisor Domain Requirements specification
ETSI GS NFV-EVE 007 v3.1.2	Evolution and Ecosystem; NFV Hardware Interoperability Requirements
ETSI GS NFV-IFA 018 v3.1.1	Acceleration Technologies; Network Acceleration Interface Specification
ETSI GS NFV-IFA 019 v3.1.1	Acceleration Technologies; Acceleration Resource Management Interface Specification
ETSI GR NFV-IFA 023 v3.1.1	Management and Orchestration; Report on Policy Management in MANO
ETSI GS NFV-SEC 012 v3.1.1	Security; System architecture specification for execution of sensitive NFV components
ETSI GS NFV-SEC 013 v3.1.1	Security; Security Management and Monitoring Specification
ETSI GR NFV-TST 005 v3.1.1	Continuous Development and Integration; Report on use cases and recommendations for VNF Snapshot



More information about Release 3 features:

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