

ISO/IEC TR 29181-1:2012-09 (E)

Information technology - Future Network - Problem statement and requirements - Part 1: Overall aspects

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Abbreviations	3
5	Overview	4
5.1	Needs to research and standardize FN	4
5.2	Value and vision of FN	4
6	Services and applications in FN	5
7	Problem statement	6
7.1	Basic problems	6
7.1.1	Routing failures and scalability	6
7.1.2	Insecurity	7
7.1.3	Mobility	7
7.1.4	Quality of service	7
7.1.5	Heterogeneous physical layers, applications and architecture	7
7.1.6	Network management	7
7.1.7	Congestive collapse	7
7.1.8	Opportunistic communications	7
7.1.9	Fast long-distance communications	7
7.1.10	Lack of efficient media distribution	7
7.1.11	Customizability	8
7.1.12	Economy and policy	8
7.2	Problems with fundamental design principles of current Internet	8
7.2.1	Packet switching	8
7.2.2	Models of the end-to-end principle	8
7.2.3	Layering	8
7.2.4	Naming and addressing	9
8	General requirements for FN	9
8.1	Scalability	9
8.2	Naming and addressing scheme	9
8.3	Security	9
8.3.1	Privacy	9
8.3.2	Mobility	10
8.3.3	Peer	10
8.3.4	Resource	10
8.3.5	Heterogeneity	10
8.3.6	Attack	10
8.4	Mobility	10
8.4.1	Context-awareness	11
8.4.2	Multi-homing and seamless flow switching	11

8.4.3	Heterogeneity	11
8.5	Customizable quality of service	11
8.6	Heterogeneity and network virtualization	12
8.6.1	Application/service heterogeneity	12
8.6.2	Device heterogeneity	12
8.6.3	Physical media heterogeneity	12
8.6.4	Network virtualization	12
8.7	Service awareness	12
8.7.1	Service discovery	13
8.7.2	Service composition	13
8.7.3	Self-organizing service	13
8.7.4	Context-awareness	14
8.7.5	Service QoE	14
8.8	Media transport	14
8.9	New layered architecture	14
8.10	Management	15
8.10.1	Robustness	15
8.10.2	Autonomy	15
8.11	Energy efficiency	15
8.12	Economic incentives	15
8.12.1	Quality of service/experience	15
8.12.2	Manageability	15
8.12.3	Customizability	15
8.12.4	AAA and security	15
8.12.5	Operational aspect	15
9	Milestone for standardization on FN	16
9.1	Overall work plan	16
9.2	Architectures of FN	16
9.2.1	FN architecture: services/network model and functional architecture	17
9.2.2	FN architecture: naming and addressing	18
9.2.3	FN architecture : switching and routing	18
9.2.4	FN architecture: mobility	18
9.2.5	FN architecture: security	18
9.2.6	FN architecture : media transport	19
9.2.7	FN architecture : service composition	19
9.2.8	FN architecture : federation	19
9.2.9	Protocols for FN	19
Annex A (informative) General concept of FN		20
Annex B (informative) Gap analysis		22
Bibliography		25