
Alternatives for Signaling Link Evolution

CONTENTS

[Telcordia SR-NWT-002897-Documentation Information](#)

1. Introduction	1-1
1.1 Purpose and Scope	1-1
1.2 Background	1-3
1.3 Document Organization	1-4
2. Drivers for High-Speed Signaling Links	2-1
2.1 Current CCS Supported Services	2-1
2.1.1 Current CCS Network Capacity Requirements	2-3
2.2 Planned Future CCS Supported Services	2-4
2.2.1 Impact on CCS Network Delay	2-6
2.2.2 Impact on CCS Network Capacity	2-8
2.2.3 Discussion and Summary	2-12
2.3 Evolving Network Technologies and Platforms	2-13
2.3.1 Technology and Platform Descriptions	2-14
2.3.2 Broadband Services	2-15
2.3.3 Broadband Signaling	2-15
3. Alternatives for High-Speed Signaling Links	3-1
3.1 Considerations for High-Speed Signaling Links	3-1
3.1.1 Service Issues	3-1
3.1.2 Deployment Platforms	3-2
3.1.3 Business Considerations	3-4
3.2 Implementation Alternatives	3-5
3.3 Analyses of Implementation Alternatives	3-6
3.3.1 Alternative 1: High-Speed Signaling Links using Narrowband Platform	3-7
3.3.1.1 Option 1: Signaling Network Elements with Modified MTP Level 2	3-7
3.3.1.2 Option 2: Signaling Network Elements with SAAL Level 2	3-8
3.3.2 Alternative 2: High-Speed Signaling Links using the Broadband Platform	3-10
3.4 Comparison of the Different Deployment Alternatives	3-11
4. Impact on the Signaling System	4-1
4.1 CCS Network	4-1
4.1.1 Topology	4-1
4.1.2 Transport Architecture	4-1
4.1.3 Transition to High-Speed Signaling Links	4-2
4.2 Signaling Network Element Impacts	4-5

4.2.1	Node Architecture	4-5
4.2.2	Node Operations	4-7
4.2.2.1	Node Operations Parameters	4-7
4.2.2.2	Other Node-Operations Impacts	4-9
4.3	Operations Systems and Interfaces	4-10
4.3.1	Overview of Current and Near-Term OS and OS-Node Interface Architecture	4-10
4.3.2	OS and OS-Node Interface Impacts from High-speed Links	4-11
5.	Deployment and Development Plans	5-1
6.	Standards Status	6-1
7.	Supplier Input	7-1
Appendix A:	Broadband Signaling Platform	A-1
A.1	Asynchronous Transfer Mode (ATM)	A-1
A.2	ATM Adaptation Layer (AAL)	A-2
A.2.1	Physical Layer	A-2
A.2.2	ATM Layer	A-2
A.2.3	SAAL Layer	A-3
A.2.4	SSCOP Layer	A-3
A.2.5	SCCF Layer	A-4
A.2.6	Layer Management	A-4
A.2.7	Summary	A-5
References	R-1
Glossary	G-1

LIST OF FIGURES

Figure 2-1. A Potential BCC Network Service Evolution View 2-20

Figure 2-2. Typical CCS Network Configuration 2-21

Figure 2-3. Network Delay Model 2-22

Figure 2-4. Broadband/ATM Protocol Architecture Model 2-23

Figure 2-5. Signaling for ATM Adjuncts to Narrowband (SSP)
Switches 2-24

Figure 2-6. Network Signaling Using Q.93B in Associated Mode 2-25

Figure 2-7. Network Signaling Using SS7 (BISUP) over Existing CCS
Network Interworking 2-26

Figure 2-8. Network Signaling Existing CCS Network for Signaling and Trunk
Interworking 2-27

Figure 2-9. Network Signaling Using SS7 (BISUP) over ATM in Associated
Mode 2-28

Figure 2-10. Signaling Alternatives in Integrated (Broadband and Narrowband)
Networks 2-29

Figure 2-11. Signaling with ATM Node with STP Functionality 2-30

Figure 3-1. High-Speed Signaling Architecture with Modified MTP Level
2 3-13

Figure 3-2. High-Speed Signaling Architecture with SAAL Layer 3-14

Figure 3-3. High-Speed Signaling Architecture with ATM and SAAL
Layers 3-15

Figure 3-4. Integration of STP Functions in ATM Nodes 3-16

Figure 4-1. Idealized STP Architecture with M Links and N Routing (Level 3)
Processors 4-13

Figure A-1. STM and ATM Pattern A-6

Figure A-2. Structure of SAAL A-7

LIST OF TABLES

Table 2-1. Service Traffic Characteristics (Base Services)	2-2
Table 2-2. Projected Traffic Characteristics (Base and Future Services)	2-5
Table 2-3. Typical Values For Means of Network Delay Components	2-7
Table 2-4. Mean Network Response Time, T_{TOTAL} in ms (Link Utilization=0.40)	2-8
Table 2-5. Illustrative Network Segment Profile	2-9
Table 2-6. Subnet Link Capacity Requirements	2-11
Table 2-7. SCP A-Link, SSP A-Link and STP Link-Port Capacity Requirements	2-12
Table 3-1. Comparison of Deployment Alternatives	3-12