

Index

Symbols

2.5 grid generation 22

A

Abstract Workflow Language (AWL) 1068
 accelerometers 1083
 Access control 254
 Access Control in Fednets 980
 Accessibility 22, 25, 27, 42
 accessible Grids 20, 25, 27
 adaptability 382, 383, 384, 385, 386, 387, 392
 Adaptive 396, 410, 423
 Adaptive Control 394
 Adaptive Query Processing 382, 383, 393, 394
 Ad-hoc Grids 25, 27, 28
 Ad-Hoc Network 1090
 ad-hoc wireless networks 948
 Advance Reservation 480, 488, 494
 Adversary 755, 760, 773
 agent-based approach 931
 Agent scheduler 576
 agility 245, 246, 249, 265
 AIDSEC 911, 913, 922, 923, 924, 925, 926, 927, 928, 929, 930
 Algorithm 564
 allocations 526, 527, 528
 Amazon 800, 804, 808, 809
 Ambient Intelligence (AmI) 22
 Ambient Networks (AN) 210, 224
 ambient vibration 1083
 AN 199, 210, 211, 212, 217, 224, 225
 analog to digital converters (ADC) 1083

anonymity 1, 19
 AOP paradigm 638, 649
 Application Oriented Modules (AO-M) 897
 AQP 382, 383, 384, 385, 391
 asset-backed securities (ABSs) 691
 Assignment 735, 745
 association service 180, 196
 asymmetric communication 3, 9
 asynchronous collaboration 839
 asynchronous collaborative environment 841, 844
 audio and video streaming 65
 audio-visual contents 1032
 augmented transition networks (ATNs) 742
 authentication 262
 automated control planes 338
 automation 253, 259, 273
 autonomic computing 254, 260, 274, 276, 277
 Autonomic Computing 952, 954, 955
 Autonomic Grids 25, 33
 Average or Characteristic Path Length 121

B

bandwidth reservation 241, 242
 BarterCast algorithm 760, 762
 barter-trade pattern 434
 Batch Grids 31
 Berkeley-Mote Family 1076
 BGP protocol 546
 binding protocols 2
 bindings 984, 999
 BitTorrent 425, 433, 434, 436, 437, 438, 439, 440, 442, 443, 445, 446, 447, 449

- blind search 399, 410
 BOINC 5, 7, 17
 Broker 573, 574, 575, 576, 577, 578, 579, 582, 587
 business applications 635, 636, 637, 638, 642, 643, 644, 652, 653
 Business Grid 635, 636, 637, 638, 643, 644, 645, 652, 653, 655
 business processes 245, 246, 250, 254, 263
 Business Process Execution Language (BPEL) 636
 business process level 916
 Business Process Management (BPM) 636
 Business Process Modelling Language (BPML) 919
 business-to-business (B2B) 923
 business-to-business (B2B) model 923
- C**
- CA 210, 212, 213, 214, 217, 224
 CaaS 35
 cable networks 1033, 1034
 Cache 87
 CAGS (Computer Algebra to Grid Service) 1062
 Campus Grids 26
 CAN 3, 10, 11, 12, 13, 363
 Candidate Detection 4
 cell phones 314, 317, 318, 328, 331
 central indexing server 3
 Certificate Authority (CA) 817
 certificate-based approaches 829
 certificate-based PKI 817, 818, 821, 825, 828, 830, 832
 certificate-based setting 825
 Certificate-Free 823, 830, 836
 Certificate Revocation List (CRL) 818
 CeSA 124, 125, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144
 CHILD relationships 695
 choke algorithm 439
 Chord 3, 9, 10, 11, 12, 13, 14, 19
 Churn 618, 622, 625, 633
 Client Agent (CA) 924
 client-server 3, 5
 client-server architecture 947
 Client-Server (CS) 938
 client-server model 658
 client-server paradigms 937
 cloud computing 20, 34, 35, 36, 38, 474, 475
 cloud providers 252
 Clouds 252
 Cluster 539, 541
 Cluster Grid 21, 26, 40
 Clustering Coefficient 121
 clusters 21, 27, 246, 247, 259, 275, 276
 Cluster status module 576
 cluster systems 659
 co-allocation 476, 477, 478, 479, 480, 481, 482, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494
 Co-Allocation 476, 478, 494
 co-authoring 123, 124
 Code Division Multiple Access (CDMA) 1078
 cognition 180, 186, 187
 cognition service 180, 186, 187, 196
 coherent theory 947
 collaboration 123, 124, 127, 128, 130, 132, 134, 135, 136, 143, 144, 145, 330, 331
 collaborations 245, 264
 collaborative behavior 838, 848, 849
 collaborative computing 775
 Collaborative e-Science Architecture 124, 145
 collaborative system 840, 841
 collaborative systems 839, 840, 842, 848, 849
 Collaborative systems 838, 848
 Collaborative Virtual Enterprises (CVEs) 912
 collateralized debt obligations (CDOs) 689, 691
 collecting sensor data 1076
 collusion 425, 426, 448
 Communication as a Service 35
 communication system 1053
 community network 1033, 1036, 1037, 1038, 1048
 Community Network 1052
 Complete recall (response) time 91
 complex meaning 111
 component-based P2P applications 941

component-level rebooting 260
component model 983, 984, 992, 993
Component Service Model with Semantics (CoSMoS) 162
components model 1082
composable consistency model 607
Composition Agreement (CA) 210, 212, 213
compound routing indices (CRIs) 81
computational Grid 983
Computational Reflection 1001
Computer Algebra Systems (CASs) 1054
computer science 1053
computer systems 798, 799, 802
concept tree 113, 118
Conceptual searching 91
congestion 543, 550, 560
Congestion 564
congestion points 543
connection problems 547
connectivity 313, 317, 318, 319, 322, 326, 327, 543, 544, 546, 555, 556, 557, 558, 561
Constrained Shortest Path First (CSPF) 359
Consumer Electronics Association (CEA) 1034
consumers 1, 2, 7
Content Addressable Network (CAN) 11, 363
Content filtering 238
Context-Aware Grids 25, 31
context-awareness 148, 152, 153, 156, 157, 159, 172
context-based reputation object 806
contract-based system 733, 734, 737, 742
contract management architecture 733
Control Plane (CP) 359
control planes 338, 341
control theory 386, 388
conventional network coding 1046
Cooperation Incentives 425, 449
CP 341, 342, 344, 345, 346, 347, 348, 349, 350, 354, 355, 359
credibility service 196
Cross-Layer Design 955
Cross layer solutions 947
CryptoGrid Gatekeeper 819
CSPF 342, 343, 349, 354, 356, 359
CS solutions 947
customer relationship management (CRM) 917

D

data 314, 315, 317, 318, 319, 320, 321, 325, 330, 336
Data Acquisition 4
data analysis 64
Data distribution strategy 239
data-driven model 1040
data freshness 591
data grid 23, 25, 382, 384, 386, 387, 388, 390, 391
Data Replication 589, 614
Data staging 254
DataSynapse 689
data transport 338, 339
deadline-aware network coding (DNC) 1046
decentralised P2P systems 3, 5, 6, 7, 8, 9, 12
Decentralized Component Object Model (DCOM) 976
decentralized deployment 946
dedicated overlay header 547
deep web gateway 116
deep web resource directory 116
deep web resources 115, 116
deferred-remuneration schemes 434
Degree Distribution 121
Delegation 825, 836
Departmental Grids 26
desktop grids 23
desktop systems 1057
DHT 9, 10, 12, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87
DHT network 1044, 1045
DHTs 64, 65, 66, 69, 71, 72, 73, 74, 75, 77, 78, 80, 81, 83, 84, 87, 363, 364
digital AV content 1033
digital business ecosystem 1021, 1025
Digital Business Ecosystem (DBE) 1027
Digital Business Ecosystem (DBE) project 1027
digital ecosystem 1003, 1005, 1008, 1016, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1027, 1028
digital identities 798, 801, 802, 803, 816
DINs 360, 362, 366, 376

- Direct Interactive Grids 25, 31
 discovery 396, 397, 398, 399, 400, 401, 405, 408, 410, 420, 421, 422, 423, 424
 discovery of services 3
 discovery protocols 2
 discovery service 180, 196
 dissemination service 181, 196
 distance table 105, 106, 107, 108
 Distributed 396, 398, 422, 423, 424
 Distributed Component Framework 995
 distributed computing 26, 36, 38, 40, 659
 distributed discovery mechanisms 396, 397, 398, 421
 Distributed European Infrastructure for Super-computing Applications (DEISA) 247
 distributed hash table (DHT) 712, 1041
 distributed hash tables 360, 363
 distributed hash tables (DHTs) 64, 288
 distributed heuristic function 81
 distributed indexing networks 361, 362, 366, 367, 376, 378, 380
 Distributed indexing networks (DIN) 360, 366
 Distributed Lexicographic Placement Table (DLPT) 285, 292
 distributed search network 89, 93, 116, 118
 Distributed Search Network 93
 distributed search network (DSN) 89, 118
 distributed system 20, 21, 34, 42
 distributed system architecture 660
 Distributed Transactions 479, 487
 distributed user communities 123
 Domain Name 712, 718, 719, 720, 726, 727, 728, 731
 dot product 113
 DQPSK (Differential Quadrature Phase Shift Keying) 1039
 DSN 89, 90, 91, 92, 93, 94, 95, 96, 99, 118
 Dynamic Adaptation 1001
 dynamic business processes 911
 dynamic composition 911, 912, 913, 918, 920, 925, 930
 dynamic composition approach 918
 dynamic environment 1028
 dynamic equilibrium 617, 623, 633
 dynamicity 246, 250, 251, 265
 dynamic key infrastructure for grid (DKIG) 818, 827
 Dynamic Service Composition 912, 923, 930, 935
E
 EaaS\ XaaS\ aaS 34, 42
 eBay 800, 804, 808, 809
 e-business 264
 e-commerce 912
 economic community 1004
 eco-system 943, 951, 952
 ecosystem 1003, 1004, 1005, 1008, 1016, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1027, 1028
 EDA 265, 280, 283
 Efficient 424
 Electrically Erasable and Programmable Read-Only Memory (EEPROM) 1080
 electronic commerce 920, 933
 email 125
 embedded devices 166
 Embedded System 1090
 eMule 432, 440, 442, 443, 446, 449
 Enabling Grid for E-sciencE (EGEE) 247
 encryption 251, 252, 257, 262, 267
 end-hosts 360, 365, 372
 end user 396, 397, 398, 401, 402, 421, 423, 424
 end-user devices 946, 947
 end-user domain 943
 End-users communities 1032
 energy-aware computing 541
 Energy-Efficient Computing 541
 enterprise 247, 248, 249, 250, 251, 253, 254, 255, 267, 275, 276, 278
 Enterprise Grid 26, 37
 enterprise resource planning (ERP) 917
 Enterprise Service Bus (ESB) 636
 entity-based modeling framework 669
 environmental data 1083
 Equipment grid 23
 equivalent concept 1015
 Erasure Codes 619, 633

E-Science 124, 131, 137, 139, 146
Evaluation module 576
Event Driven Architecture 265
everything as a service 20, 34, 36, 39
execution 383, 384, 385, 386, 394
Expected Availability Time (EAT) 1025
expected search size (ESS) 592
extensible markup language (XML) 914
External Dependency Graph (EDG)
 1017, 1018
extraterrestrial intelligence 4
eXtreme Transaction Processing (XTP) 253

F

Facebook 800, 802, 804, 809
FADA network 1027
failures 543, 545, 546
Fairness 748, 749, 751, 752, 754, 759,
 760, 761, 762, 763, 764, 765, 766,
 769, 772, 773
Fault management 238
fault-tolerance 285, 287, 290, 292, 296,
 301, 306, 309, 451, 589, 599, 600
Fednet 956, 957, 958, 959, 960, 961, 962,
 963, 964, 965, 966, 967, 968, 969,
 970, 971, 972, 973, 974, 975, 976,
 977, 979, 980
Fednet manager (FM) 963
feedback 180, 186, 383, 394
feedback service 185, 186, 196
fiber channel arbitrated loop (FC-AL) 1037
file sharing 1, 6, 65, 83
Financial Risk Management 690, 710
Fine Grain Scalable (FGS) 1047
finger tables 10
first generation grids 22
flash-memory 1081
flooding 338, 339, 340, 342, 343, 344,
 347, 349, 350, 352, 353, 354, 356,
 357, 358
Flooding 410
flooding strategy 82
fluctuation 495, 503, 508, 513
forecasting 499, 500, 501, 506, 508, 509,
 514, 515, 517
form factor 331

fragmentation of platforms 332
Freerider 773
free-riding 425, 426, 427, 429, 430, 433,
 434, 436, 437, 446, 448
Free-Riding 429, 449
Frequency Division Multi Access (FDMA)
 1078
Friend of a Friend (FOAF) 803
Full Aggregation Systems 773
full mesh topology 543, 545, 555, 556,
 558, 559, 561
Full Search Query and Discovery Protocol
 (FSQDP) 714
Future Internet 197, 198, 199, 205, 206,
 208, 209, 210, 211, 217, 218, 219,
 224

G

Galois lattice 112
game-theoretic approach 947
Gatekeeper (GK) 822
Gateway Agent (GA) 924
Gateway Node (GW) 963
Generative semantic composition mechanism
 111
global Capacity 949
global economy 1005
Global Grid Forum (GGF) 916
global quality 842
Global Service Repository 1024
Globus Toolkit (GT) 817, 819
GMPLS control plane 895, 897
Gnutella 3, 6, 7, 8, 9, 12, 13, 14, 15, 17,
 18, 19
gossip-ring 1044
graph-based language 919
green computing 541
Grid 64, 65, 66, 67, 68, 71, 75, 76, 78,
 80, 83, 84, 85, 86, 87, 123, 124,
 125, 126, 127, 128, 129, 130, 131,
 132, 133, 134, 135, 137, 138, 139,
 140, 141, 143, 144, 146, 450, 451,
 452, 453, 662, 663, 664, 665, 666,
 667, 669, 670, 672, 673, 674, 676,
 677, 678, 679, 680, 681, 682, 684,
 685

- Grid5000 247, 276
grid applications 817, 818, 819, 822, 826, 827, 829, 830, 833, 834
Grid applications 636, 637, 645, 653, 1057
Grid Architecture for Computational Economy (GRACE) 689
Grid architectures 1057
Grid-based financial services 688
Grid-based solution 1054, 1055
Grid-based systems 1054
grid community 652, 653, 817, 818, 833
grid computing 20, 22, 34, 35, 37, 38, 313, 314, 635, 659, 660, 664, 677, 685, 686, 687, 689, 699, 706, 709, 710, 775, 781, 792, 890, 891, 892, 893, 906, 907, 981, 982, 994
grid deployment 826
grid economy 686, 688, 689, 707, 708, 710
grid ecosystem 918
grid environment 21, 26, 27, 31, 41, 700, 818, 819, 822, 823, 826, 827, 829, 831, 833
GRID (Global Resource Information Database) 940
grid infrastructure 314, 317, 319, 320, 324, 326, 328, 329, 332, 335, 981, 1001
Grid middleware 891
Grid monitoring systems 700
grid nodes 25, 27, 29, 33
Grid resource 700, 701, 703, 707, 708, 709, 891, 892, 894, 905
Grid Resource Allocation Agreement Protocol (GRAAP) 699
Grid Resource Broker (GRB) 689
grid resources 21, 22, 23, 26, 28, 32, 43, 688, 689, 699, 706, 707
Grids 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 39, 42, 43, 495, 498, 503, 516, 517
Grid scheduling 567, 568, 570, 571, 573, 584, 585, 586
Grid Security Infrastructure 817, 819, 830, 837
Grid Security Infrastructure (GSI) 817, 819
Grid Service 127, 128, 134, 137, 138, 139, 140, 141, 144, 146
Grid Service Agent (GSA) 924
Grid Service Provider (GSP) 25
Grid Service Registry (GSR) 924
grid services 322, 324, 327, 331, 911, 912, 913, 914, 916, 918, 919, 920, 922, 924, 925, 926, 928, 929, 930, 935
GridSolve 1057, 1075
grid systems 495, 496, 498, 500, 512, 748, 749, 755, 759, 768, 769
Grid technologies 981, 982
Grid Workflow Execution Languange (GWEL) 919
Grooming Routing and Wavelength Assignment (GRWA) 359
group of pictures (GOP) 1047
group-to-group collaboration 26
groupware 125, 145
GRWA 341, 344, 353, 359
GT client 819
guiding tool 670
guigoh e-learning collaborative platform 1028
- ## H
- habitat monitoring 1076, 1077, 1083, 1084, 1085, 1089
hash 9, 10, 11
healthcare systems 982
heterogeneity 1, 19, 123, 246, 313, 317, 319, 328, 481, 483, 526, 534, 535, 536, 567, 577, 585, 663, 664, 665, 666
heterogeneous data 917
heterogeneous networks 890, 895
hierarchical identity-based cryptography (HIBC) 821
hierarchical power law network 100
high-degree random walks (HDRW) 594
Home Network 1052
hop count 350, 351, 352, 353, 354, 356, 357
HPC solution 1054, 1055, 1056
HTML Web pages 1056
human genome 1054
human-to-human 950
human-to-machine 950
hybrid grids 323
hybrid setting 827

I

ICT services 937, 942, 943, 951
Identification of shortest paths 106
identity-based approach 818, 822, 830
Identity-Based Cryptography
 817, 820, 823, 835, 837
identity-based cryptography (IBC)
 817, 818, 819
identity-based encryption (IBE) 820
identity-based encryption (IBE) scheme 820
identity-based infrastructure for grid applications (IKIG) 822
identity-based key distribution technique 827
identity-based key infrastructure for grid (IKIG) 818
identity-based PKI 821, 831
identity-based primitives 832
identity-based security infrastructure 827, 833
identity-based signature (IBS) 820
identity-based signature (IBS) scheme 820
identity-based techniques
 818, 827, 828, 830, 831
identity federation 262
Identity Management
 801, 802, 803, 812, 815
idle CPU cycles 325
impedance mismatch 208
Implementation 547, 564
IMS architecture 895, 939, 940
incentive 425, 426, 427, 428, 429, 430,
 431, 432, 433, 434, 435, 436, 437,
 439, 440, 441, 443, 444, 445, 446,
 448, 449
incremental change model 414, 415, 416
information space 361, 362, 373
Information Technology (IT) 913
Information Technology (IT) investment 913
infrastructure 21, 23, 27, 28, 30, 33, 34,
 36, 37, 40, 41, 42
Infrastructure as a Service (IaaS)
 635, 652, 687
instant messengers 125
integration 15, 16, 17
interaction-based service composition 1026
interaction model 899, 902, 906
interaction paradigms 982, 990, 999

interactive Grids 20
Interactivity 22, 25, 31, 42
interception meta-interface 985
Interconnection 540, 541
interface description languages (IDLs) 639
Interfaces 983
Internal Dependency Graph (IDG) 1016
Internet Assigned Numbers Authority (IANA)
 1061
Internet-based solution 1054, 1055
Internet layered architecture (ISO-OSI) 947
interoperability 316, 326, 332, 451, 462
Inter-Process Communication 494
intersymbol interference (ISI) 1039, 1048
IP approach 938
IP-based communications 830
IP layer 842
IP Multimedia Subsystem (IMS) 894, 938
IP Network 938
IT functions 939
IT security disciplines 796

J

Java Agent Development Environment (JADE)
 928
Java Interface for Network Infrastructure (JINI)
 928
job 520, 521, 525, 526, 541
Job Submission Description Language (JSDL)
 896, 906

K

KANT computer algebra systems 1066
Key Agreement 825, 837
Key-Based Routing (KBR) 987
Key Based Routing (KBR) algorithm 10
Key-Based Routing (KBR) overlay 987
killer application 3
Knowledge Grids 25, 33

L

lambda switch capable 338
language-based simulation tool 675
Large Hadron Collider (LHC) 672
large scale distributed systems 566, 567, 572

- large scale distributed systems (LSDS) 566, 567
- large-scale group communication 361, 362, 370, 372, 373, 374, 379
- large-scale resource 659
- large-scale system 839
- latency 29
- lattice networks 101
- Layered Coding (LC) 1047
- leaf nodes 8, 9
- leecher 437, 439
- legacy software 1054, 1064, 1065, 1066
- Lightpath 359
- link failure 543, 544, 550, 557, 558
- Livelock 492, 494
- load balancing 285, 287, 288, 289, 290, 291, 296, 299, 300, 301, 308
- local peer 430, 432, 438, 439, 440, 441, 443, 445
- location transparency 662
- low bandwidth 29
- low voltage (LV) 1037
- low voltage (LV) network 1037
- LSDS 566, 567, 568, 578, 581, 585, 586
- M**
- machine-to-machine interaction 1006
- Manageability 23, 25, 32, 37, 42
- manageable Grids 20
- management lifecycle 813
- MANET 314, 321, 324, 330, 331, 335
- MANET environment 988
- Mapping 254, 289, 307, 312
- Markov Model 622, 633
- master 255
- matchmaking service 180, 181, 182, 183, 186, 187, 188, 190, 191, 192, 196
- mathematical models 1053
- Mathematical Services Description Language (MSDL) 1057
- MathML 1056, 1060
- MAXFLOW algorithm 760
- meaning based searching 91, 119
- medium access control (MAC) 948, 1035
- medium access control (MAC) technologies 1035
- mesh-based approaches 1040, 1043
- mesh-based P2P VoD systems 1033, 1041, 1043, 1045
- mesh networking 937
- message level security 262
- message passing interface (MPI) 31, 483
- Metadata catalog 254
- meta-representation 984, 1001
- Meta-Scheduler 587
- microphones 1083
- micro-rebooting 260
- middleware 148, 149, 150, 151, 152, 153, 154, 155, 156, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 315, 316, 317, 319, 326, 327, 330, 334, 335, 360, 365, 366, 380, 981, 982, 983, 985, 986, 987, 989, 991, 996, 997, 998, 999, 1001
- middleware level 982
- Migration 503, 504, 505, 508, 509, 510, 511, 512, 513, 514, 517
- Minimum Buffer Cover (MBC) 1044
- Mobile Access Grid 26
- Mobile Ad hoc Network (MANET) 314
- mobile computing 148, 166, 170
- mobile devices 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 326, 327, 328, 329, 330, 331, 332, 334, 336
- mobile grid 313, 314, 315, 316, 317, 318, 319, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 335, 336
- mobility 314, 317, 320, 326
- molecular networks 1028, 1029, 1031
- MONARC concurrency 661
- MONARC project 673
- monetary-based patterns 434
- monitoring 496, 497, 498, 499, 500, 502, 503, 504, 505, 506, 507, 508, 509, 510, 512, 514, 517
- monitoring service 185, 186, 196
- Monte Carlo Simulation 688, 691, 693, 694, 698, 700, 710
- motivation 105, 107, 112
- MPI 31, 483, 490

- multi-agent models 796
Multi-agent system approach 911
Multi-agent System (MAS) 911, 912, 920, 922, 924, 929, 930, 935
multi-attribute range queries 285, 288
multi-cluster systems 486, 488
multi-domain context 942
multi-domain issue 893
multi-hop option 1083
multi-layer overlay networks 17
multi-master approach 255
multimedia computing 775
Multiple Description Coding (MDC) 1047
Multi-Site Applications 494
- N**
- Napster 3, 4, 5, 6, 7, 8, 17, 18, 19
Nash equilibrium 444
National Grids 26
National Grid Service (NGS) 689, 699, 700, 707
natural meaning 118
near-neighbors 1044
negotiation model 486
NetSolve 1057
network architecture 2, 3, 7, 15, 17, 19
network coding (NC) 1045
network composition 198, 209, 210, 212, 213, 215
Network Description Language (NDL) 896
Network errors 580
networking infrastructure 890, 892, 905
networking protocols 683
Network Intelligence 937, 938, 940, 951, 953, 954, 955
network maintenance 5, 6
network management application 1086
Network Operators 937, 941
network protocol composition 985
network proximity 12
Network Resource Description Language 896, 906
network resources 891, 892, 894, 895, 896, 898, 899, 902, 904, 905, 907
network servers 947
Network Service Subscription model 906
- Next Generation Grids (NGG) 22
Next Generation Network (NGN) 197, 891
Next Generation Network (NGN) architecture 891
NGG 20, 22, 23, 31, 36, 39
NGNs 197
no control of it because it is hidden from him.
Multihop Communication 1090
nodes 286, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 305, 306, 307, 312, 587
Node's Degree 121
non-hierarchical-based IBE 828
non-parametric models 691
non-visual interface 675
Non-voluntary grids 26
N-Tuple Virtual Hierarchical Tree 731
number of hops 12
- O**
- object-oriented design 661
Object Request Brokers (ORB) 976
one-hop replication 594
Ontology Interchange Language (OIL) 917
Ontology Registry (OR) 924
ontology service 184, 196
open distributed environments 1, 19
Open Grid Forum (OGF) 699
Open Grid Service Architecture 127, 146
Open Grid Service Infrastructure (OGSI) 916
OpenMath 1056, 1057, 1058, 1059, 1060, 1061, 1064, 1067, 1068, 1074, 1075
OpenNap 4, 5, 19
Open Overlays 14, 15, 17
Open PLC European Research Alliance (OP-ERA) 1034, 1037
Operations and Business Support Systems (OSS/BSS) 944
optical core networks 338, 340
optical network resources 891
Optical Signal-To-Noise Ratio (OSNR) 359
optimization 383, 384, 385, 386, 387, 393, 394
optimum performance 394
Organic Grids 25, 33
Orthogonal Frequency Division Multiplexing (OFDM) 1039

OSGi 148, 154, 165, 169, 170, 173
 OSNR 341, 359
 overlay access component 544, 547, 548, 549, 551, 553
 overlay-based approach 963
 overlay network 543, 544, 545, 546, 547, 549, 552, 555, 556, 557, 558, 559, 560, 564, 589, 590, 604, 608
 Overlay Routing 559, 562, 564
 overlay routing networks 545, 560, 561
 overlay topology 543, 544, 545, 547, 550, 551, 553, 554, 555, 557, 558, 559, 560, 561
 owner replication 593, 594, 596, 604, 605

P

p2p 166
 P2P 1, 2, 3, 4, 5, 6, 133, 134, 135, 137, 138, 139, 140, 141, 142, 143, 144, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 285, 286, 287, 288, 292, 296, 301, 302, 308, 309, 310, 311, 315, 316, 322, 326, 327, 328, 332, 336, 383, 386, 393, 425, 426, 427, 428, 429, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 470, 472, 473, 474, 475
 P2P applications 657, 658, 659
 P2P electronic communities 786
 P2P file sharing 315
 P2P Layer 208, 209
 P2P methodology 912
 P2P network 949, 951
 P2P network management 226, 227, 241, 243
 P2P networks 755, 756, 757, 769
 P2P (peer-to-peer) 1032, 1033, 1039
 P2P platform 938, 943
 P2P Service Platform (PSP) 942
 p2pSOA 164, 165, 166
 P2P storage systems 616, 617, 618, 619, 622, 623, 625, 627, 632
 p2p systems 589, 590, 591, 592, 595, 596, 601, 604, 605, 606, 608, 609, 610, 611, 614

P2P systems 658, 659, 662, 667, 684, 688, 706
 P2P technology 711, 713, 715, 716, 724, 729, 937, 938, 1032, 1033, 1040, 1041, 1048
 P2PTV 1052
 P2P wireless networks confederation 975
 packet loss ratio 553, 554
 pairing-based cryptographic schemes 820
 Parallel Application 494
 parallel architecture 111
 Parallel Computing 31, 540, 541
 Pastry 3, 10, 12, 13, 14, 15, 18
 Path Length Distribution 121
 PBMAN 208, 210, 211, 212, 213, 214, 215, 216, 217, 219
 peer discovery response 6
 peer discovery search 6
 peer reliability 16
 peers 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 16, 19, 290, 296, 297, 298, 299, 300, 301, 307
 peer selection strategy 439
 Peers in mesh-based P2P systems 1042
 peer-to-peer 1, 19, 28, 37, 41, 175, 193, 194, 196, 285, 287, 295, 296, 308, 311, 383, 386
 Peer-to-Peer architectures 1003
 Peer-to-Peer Collaborative Environment 130, 134, 146
 peer-to-peer design 3, 5
 peer-to-peer file sharing applications 839
 Peer-to-peer grids 844
 Peer-to-Peer Network 565
 peer-to-peer overlay networks 173, 543, 560
 Peer-to-Peer (P2P) 450, 451, 614, 686, 688, 912, 938
 peer-to-peer (P2P) networks 796, 810
 Peer-to-peer (P2P) storage 616, 634
 peer-to-peer (p2p) system 589
 Peer-to-Peer Systems 311, 312, 612, 613, 614, 792, 794
 Personal Digital Assistants (PDAs) 29
 personal Grids 20
 Personal Mobile Grid 25, 27, 34
 personal network 956, 957, 975, 976, 980
 personal network (PN) 956, 957

- Personal Networks 956, 957, 958, 978, 979, 980
Person-Centric Grids 20
pervasive computing 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 160, 161, 162, 163, 166, 167, 168, 169, 170, 171, 172, 331
Pervasive Connectivity 173
Pervasive Grid 981, 982, 983, 985, 986, 993, 995, 998, 999, 1001
Petascale computers 309
P-Grid 326, 327
physical architecture 951
physical resources 661, 663, 678, 683
PING 6, 8
PKI-based grid systems 817
PKI-based GSI 818, 819, 823, 829, 833
plan-change based adaptation 383
Platform as a Service (PaaS) 687
PLC network 1033, 1036, 1037, 1039
pluggable interaction paradigms 990, 999
point-to-point interactions 982
Policy-based Management (PBM) 199, 205
Policy Layer 208, 209, 211
pollution 426
PONG 6, 8
Portable Batch System 579
power-aware computing 541
power consumption 29
power-efficient computing 541
power law 100, 101, 102, 103
power line communication (PLC) 1048
Power Line Communications 1049, 1051, 1052
power line network 1035
Precision 91
prediction mechanisms 252
Preference 396, 405, 409, 414, 415, 424
Prefix Trees 312
prisoner's dilemma 439, 444
privacy 157, 160, 161, 165, 167
Private Key Generator (PKG) 818, 821
Probability Distribution 634
process-based approach 636, 641
process parameterization 651
professionalization 123
programming approach 661
Proof 751, 773
Prototype 565
prototypical identity 813
providers 1, 2
proxies 360, 362, 363, 365, 370
proximity 12, 14, 15
proxy-based approach 963
proxy-based architectures 326
proxy certificate 819, 820, 822, 825, 829, 836
publication of service specifications 3
Public Key Infrastructure 834, 836, 837
public key infrastructure (PKI) 817
PUSH 4, 6
- ## Q
- QoS characteristics 635, 642, 646
QoS parameters 905, 906
Quality of Service (QoS) 25, 87, 359, 496, 65, 699, 894, 909
QUERY 6, 8, 14
QUERYHIT 6
Query Optimization 394
query processing (QP) 382, 383, 384, 385, 386, 387, 388, 392, 393, 394
- ## R
- radio communication 1076
radio transmitter 1084
random change model 414, 415, 416
randomness 443
random network 94, 101
random walk 410, 592, 594, 595
rank-based function 787
Rating module 575, 576
real-time information 957, 961
real-world testbed 683
Recall 91
Receptacles 984
Reed-Solomon (RS) 1047
Registration Authorities (RAs) 817
registry 1
Remote Procedure Call (RPC) 986
remote resource sharing 246

Replica Placement 614
 Replication 254, 255, 256, 277, 278, 283
 replication transparency 662
 Replica Updates 614
 Representational State Transfer (REST) 915
 reputation-based approach 796, 797, 800
 reputation-based incentives 446
 Reputation Object 808, 816
 Reputation Reference Trust Model (RRTM)
 804, 814, 816
 Resource 450, 451, 454, 455, 458, 459,
 460, 462, 464, 465, 466, 470, 471,
 474, 475, 571, 575, 576, 586, 588
 resource allocations 495, 514
 resource autonomy 481
 resource co-allocation 476, 477, 478, 479,
 480, 481, 484, 485, 486, 487, 488,
 489, 490, 493
 Resource Co-Allocation 476, 478, 494
 Resource Collusion 449
 Resource Description Framework (RDF)
 895, 917
 resource discovery 3, 4, 5, 6, 7, 14, 64,
 66, 67, 69, 79, 87, 458, 460, 464,
 465, 474, 475
 resource discovery response 6
 resource discovery search 6
 Resource Distribution 4, 6
 Resource Fragmentation 494
 resource lookup algorithm 82
 resource management 175, 176, 178, 180,
 184, 186, 187, 188, 192, 193, 194
 Resource Management framework 905, 906
 resource managers 949
 Resource Negotiation 955
 Resource ReSer-Vation Protocol (RSVP) 894
 resource sharing
 659, 660, 661, 664, 915, 916
 Resource Sharing 450, 475
 RFM sender/receiver 1082
 RiskGrid 689
 Robustness 500, 512, 517
 rollback technique 583
 Routable Network 121
 routing indices (RIs) 68, 81
 rumor mongering 607
 Rutherford Appleton Labs (RAL) 700

S

SaaS 35
 scalability 4, 5, 6, 7, 8, 9, 15, 17, 246,
 255, 451, 462, 481
 scheduling 496, 497, 498, 499, 500, 501,
 502, 503, 504, 506, 507, 508, 509,
 510, 511, 512, 513, 514, 515, 516,
 517
 scientific applications 1053
 scientific collaborations 123, 124, 125, 127,
 128, 130, 131, 136, 144, 145
 Scope Query 731
 search for extraterrestrial intelligence 4
 search horizon 6, 7, 9, 17
 Search response time 91
 second generation grids 22
 security 15, 16, 17, 148, 157, 160, 161,
 166, 172, 247, 249, 250, 252, 255,
 257, 258, 260, 262, 263, 264, 266,
 268, 271, 273, 274, 276, 279, 280,
 451, 455, 463
 security management 238
 security risks 29
 security service 185, 196
 seeder 437, 439
 selection service 183, 196
 Selective 424
 self-adjustment 496, 497, 498, 499, 500,
 504, 508, 512, 513, 514, 515, 516
 Self-Adjustment System 518
 Self-healing 259
 Self-Stabilization 302, 310, 311, 312
 Semantic Catalogue 731
 semantic discovery 156, 158, 162, 165, 166
 Semantic Graph-based Service Composition
 (SeGSeC) 162
 Semantic Routed Network 96, 103, 115, 119
 semantic routing table 96, 97, 98, 102, 105,
 107, 112, 113, 115, 119
 Semantic searching 91
 Semantic Web 151, 161, 167, 172, 173,
 917, 930, 931, 932, 934
 semantic web paradigm 118
 semi-centralised architectures 5, 7
 semi-centralised systems 3, 5, 6, 7, 13
 sense of meaning 110

- sensor board 1081, 1083, 1085
sensor network 912, 983, 989, 993, 994, 995, 996, 998, 999, 1000, 1078, 1088, 1089, 1090
Sensors 1088, 1090
sensors nodes 1076, 1090
sensor system 1085
server-centric approaches 938, 951
server grids 23
Service 147, 148, 149, 150, 151, 152, 156, 157, 158, 159, 161, 162, 164, 165, 166, 167, 170, 171, 172, 173, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 461, 466, 471, 472, 473, 474, 475
Service Component Architecture (SCA) 264
Service Composition 151, 158, 162, 173
Service Data Objects (SDO) 264
service definition languages 1
Service Delivery Platform (SDP) 939
service discovery 148, 149, 153, 157, 158, 160, 161, 162, 163, 164, 167, 168, 171, 172, 285, 286, 287, 291, 292, 293, 296, 308, 309
service fails 586
Service Grids 23, 25, 34
Service Layer 208, 209, 210
Service Level Agreements (SLAs) 264, 480, 489, 686, 687, 699, 706
service orientation 245, 246, 452, 453, 456
service-oriented architecture (SOA) 125, 126, 133, 444, 700, 816, 975, 1006
Service-Oriented Computing 396, 397, 398, 399, 405, 407, 416, 421, 911, 914, 918, 920, 933, 934
service-oriented computing paradigm 911
Service Oriented Computing (SOC) 1, 15, 19, 635, 911, 914, 1007, 1030
Service Oriented Computing (SOC) paradigm 911, 914
service-oriented grids 495, 496, 497, 498
service-oriented infrastructure 635
service-oriented middleware 153, 166
service-oriented scenarios 1027
service-oriented symbolic computations, 1053
service-oriented user 166
service providers (SPs) 938
Service Proxy 963, 966, 971, 980
services 175, 176, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 192, 193, 194, 195, 196
Session Initiation Protocol (SIP) 892, 895, 909, 910
SETI@Home 3, 4, 5, 7, 17
Sharing Personal Resources and Services 980
Simple Object Access Protocol (SOAP) 915
simpler syntax hypothesis 111
simulations 64, 83
Single-DHT techniques 70
Single Sign-On 824, 837
SIP protocol 893, 895, 898, 901, 905, 906
SIP proxy 894, 895, 897, 910
SIP User Agents 899
SLAs 252, 257, 264, 273, 274, 480
slave 255
Small to Medium-sized Enterprises (SMEs) 1003
Small-World Networks 359
small world networks (SWN) 101
smart phones 29
SOA 34, 35, 147, 148, 149, 150, 151, 156, 157, 158, 159, 160, 162, 163, 164, 165, 166, 167, 172, 174, 176, 184, 187, 188, 190, 194, 196, 245, 257, 264, 265, 266, 271, 272, 273, 276, 278, 280, 284, 444
SOA architectural style 638
SOA-based middleware 166
SOA communities 636
SOA environment 645
SOAP 2, 15, 16, 17
SOA paradigm 636, 639, 643
SOAP messaging 982
SOA principles 645
SOA Reference Model 798, 799
SOA solution 1055, 1056, 1062, 1067
SOC 1, 2, 7, 9, 12, 13, 15, 16, 17, 19, 450, 451, 452, 456, 457, 462, 467, 475
social networks 942
software applications 912, 914
Software as a Service 35

- Software as a Service (SaaS) 635, 652, 687
 software utilities 321, 325, 336
 special purpose vehicle (SPV) 694
 square-root replication (SR) 593
 SRN 96, 97, 98, 99, 100, 101, 102, 104,
 105, 109, 110, 112, 115, 116
 stabilization cycle 82
 stable interfaces 638
 stable network 1028
 standardization 254, 255, 261, 264, 266,
 268, 272, 273
 static composition 918
 Static Random Access Memory (SRAM) 1080
 static storage footprint 989
 Stochastic Differential Equation 634
 storage area networks (SANs) 1037
 streaming system 1033, 1040, 1050
 Streaming Video 1052
 Structella 13, 14, 15, 17
 Structural Health Monitoring (SHM) 1090
 structured decentralised networks
 9, 13, 15, 17
 sub-linear search 1041, 1043
 sub-transactions
 1008, 1015, 1016, 1017, 1019
 super-computers 4, 5
 super-node architectures 7, 17
 super nodes 8
 super-node systems 8
 Sybil Attack 449
 symbolic approach 1053, 1054
 symbolic components 1058, 1062
 symbolic computations 1053, 1054, 1055, 10
 58, 1059, 1061, 1067, 1071, 1072, 10
 73, 1074
 Symbolic Computation Software Composability Protocol
 1059, 1060, 1061, 1074, 1075
 Symbolic Computation Software Composability Protocol (SCSCP) 1060
 symbolic computing 1054, 1055, 1056,
 1057, 1058, 1059, 1060, 1064, 1072,
 1073, 1074
 symbolic methods 1053
 Symbolic solution 1054
 SymGrid framework 1058
 SymGrid-Services 1057, 1061, 1062, 1063,
 1064, 1065, 1066, 1067, 1068, 1070
 System Identification 389, 395
- T**
- Tapestry 12
 task 519, 521, 523, 524, 525, 526, 527,
 528, 529, 530, 531, 532, 533, 534,
 535, 536, 541
 taxonomy 658, 669, 670, 671, 672, 673,
 674, 676, 677, 679, 680, 682, 684,
 685
 TCP connection 3, 4
 TCP connections 842
 TCP socket 842
 TCP-sockets-based implementation 1060
 TED 339, 342, 349, 354, 356, 359
 Telco Enablers 955
 telecommunications 912
 Telecommunication services 937, 938, 951
 third generation grids 22
 Three-layer Architecture 208
 Time Division Multiple Access (TDMA) 1078
 time-to-live (TTL) 592
 time-to-live (TTL) parameter 592
 Timing errors 580
 Tit-for-Tat (TFT) strategy 1046
 topology 28, 941, 944, 945, 946
 Topology Management 553, 556, 565
 topology reconfiguration 550, 557
 Traffic Engineering Database (TED) 359
 Traffic management 239
 transactional environment 1013
 transaction contexts 1009
 transaction monitory service 196
 transaction processing 253
 transportation 912
 tree-based P2P system 1041
 tree-based P2P VoD system 1041
 tree construction algorithm 81, 82
 tree structure 1008
 Trust 748, 749, 750, 751, 755, 756, 758,
 759, 762, 769, 770, 771, 772, 773
 trust-based pricing 782
 Trust-based systems 800
 trust-based trading 782

Trust Classification 795
Trust Evaluation 795
Trust Functions 776, 779, 781, 795
trust management 796, 798, 800, 812, 813, 814, 816
Trust Management 792, 795, 796, 797, 799, 811, 812, 816
Trust Reputation Center (TRC) 806, 816
trust service 185, 196
tuple-routing based adaptation 383, 385
Two-Level Scheduling 1090

U

UDDI 2, 17
ultra-peer 8
Uncertainties 503, 518
uncertainty 501, 502, 503, 505, 507, 514, 515
uniform replication (UR) 592
Universal Description, Discovery and Integration (UDDI) 915
unstructured decentralised overlay network 6
unstructured decentralised systems 17
unstructured overlay network 5
Unstructured Peer-to-Peer Systems 614
User 571, 574, 588
user applications 672, 673
user-centric 892
User-Centric Grids 25, 32, 43
User-centricity 22, 25
User-Controlled Light-paths (UCLP) 891
User Preference and Context Repository (UPCR) 925
Utility Grids 25, 34

V

Value at Risk (VaR) 688, 690, 691, 706, 710
VaR service 689
vector-based behavioural description 1011
vehicular ad-hoc networks (VANETS) 982
vendor solution approach 913
vertexes 695
Video-on-Demand 1033, 1052
video streaming 65
Virtual and Dynamic Hierarchical Architecture 713, 731

virtual communities 942
Virtual Group 731
Virtual Hierarchical Tree Gird Organizations (VIRGO) 711, 712, 731
virtualization 260, 261, 262, 264, 270, 273, 278, 360, 362, 365, 366, 367, 380
virtualize hardware resources 640
virtual organisation (VO) 21, 263, 566, 912, 935
virtual overlay topologies 890
Virtual Private Transaction Network (VPTN) 1019
Virtual Super Peers (VSPs) 1024
vital information 1025
VO 21, 23, 25, 26, 27, 36, 42, 263, 266, 268, 284
VoD services 1032, 1033, 1041, 1049
VoD (Video-on-Demand) 1033
Volatility 710
Voluntary grids 26
volunteer computing 315

W

Web2.0 Service Providers 937
Web 2.0 services 769
Web-based mathematical services 1056, 1073
Web Service 146
web service-based infrastructure 891
Web Service Description Language (WSDL) 639
Web Service Modeling Ontology, WSMO 161
Web Service Resource Framework 146, 257, 284
Web Service Resource Framework (WSRF) 636, 640, 916
Web services 636, 639, 640, 643, 645, 648, 649, 654, 655, 656
Web Services Choreography Interface (WSCF) 919
Web Services Description Language (WSDL) 915
Web Services Flow Language (WSFL) 919
Web Service (WS) 1006
well-known network file systems 658
Wireless Access Grid 26, 29

Wireless community networks 975, 1039
wireless devices 28, 29, 30, 40
wireless network interface 331
Wireless sensor networks (WSNs) 937, 1076,
 1078, 1083, 1085, 1090
Wireless sensor nodes 1077
wormhole theorem 1015, 1016
WSDL 1, 16, 17
WSDL 2.0 1066
WSN networks 1078
WS-Resource 640, 641

WSRF 257, 266, 281, 284
WSRF-compliant grid systems 929

X

XaaS 34, 35, 36, 39, 42
XML-based expressions 992
XML-based messages 936
XML description 1009, 1011
XML encoding 1056
XTP 253, 281, 284