PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT5437058

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
OPNET TECHNOLOGIES LLC	04/01/2013

RECEIVING PARTY DATA

Name:	RIVERBED TECHNOLOGY, INC.
Street Address:	199 FREMONT STREET
City:	SAN FRANCISCO
State/Country:	CALIFORNIA
Postal Code:	94105

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	14062489

CORRESPONDENCE DATA

Fax Number:	(530)759-1665

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

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Correspondent Name:	A. RICHARD PARK
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ATTORNEY DOCKET NUMBER:	RIV-OP-050824C2
NAME OF SUBMITTER:	A. RICHARD PARK
SIGNATURE:	/A. Richard Park/
DATE SIGNED:	03/22/2019

Total Attachments: 13
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PATENT ASSIGNMENT

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SUBMISSION TYPE:	NEW ASSIGNMENT
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CONVEYING PARTY DATA

Name	Execution Date
OPNET Technologies LLC	04/01/2013

RECEIVING PARTY DATA

Name:	Riverbed Technology, Inc.
Street Address:	199 Fremont Street
City:	San Francisco
State/Country:	CALIFORNIA
Postal Code:	94105

PROPERTY NUMBERS Total: 52

Property Type	Number
Application Number:	12652499
Application Number:	12900348
Application Number:	12900357
Application Number:	12907225
Application Number:	12963481
Application Number:	13021709
Application Number:	13117105
Application Number:	13165589
Application Number:	13210351
Application Number:	13301688
Application Number:	13333955
Application Number:	13365484
Application Number:	13365496
Application Number:	13400973
Application Number:	13412604

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Application Number:	13412615
Application Number:	13412623
Application Number:	13424005
Application Number:	13430541
Application Number:	13444583
Application Number:	13448389
Application Number:	13454034
Application Number:	13454050
Application Number:	13487863
Application Number:	13487895
Application Number:	13556174
Patent Number:	7509229
Patent Number:	7519700
Patent Number:	7551560
Patent Number:	7570669
Patent Number:	7593351
Patent Number:	7639609
Patent Number:	7672238
Patent Number:	7688743
Patent Number:	7693699
Patent Number:	7729240
Patent Number:	7729256
Patent Number:	7730099
Patent Number:	7813281
Patent Number:	7839790
Patent Number:	7843815
Patent Number:	7843840
Patent Number:	7844423
Patent Number:	7848259
Patent Number:	7885200
Patent Number:	7885206
Patent Number:	7889641
Patent Number:	7894369
Patent Number:	8005006
Patent Number:	8005019

	8005945
Patent Number:	8010643

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NAME OF SUBMITTER:	A. Richard Park, Reg. No. 41,241
Signature:	/A. Richard Park/
Date:	05/21/2013

Total Attachments: 10
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PATENT ASSIGNMENT AGREEMENT

This ASSIGNMENT dated April 1, 2013, which shall be the Effective Date of this Assignment, from OPNET Technologies LLC, a Delaware company ("Assignor"), to and with Riverbed Technology, Inc. a Delaware corporation ("Assignee").

WITNESSETH:

WHEREAS, Assignor and Assignee have entered into an Agreement And Plan of Merger dated as of October 28, 2012 ("the Agreement"), providing for the transfer of assets of Assignor to Assignee, in the manner and to the extent set forth in the Agreement; and

WHEREAS, this Patent Assignment Agreement is being executed and delivered to effect the transfer to Assignee of all patents and patent applications, including all divisions, continuations, reissues, and extensions thereof and all patents that are granted on any patent application, including without limitation, the patents and applications set forth on Schedules A and B hereto, all of which are listed in the Agreement.

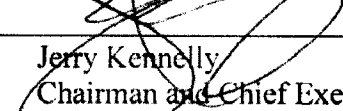NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged:

1.   <u>Assignment</u>. Assignor hereby sells, conveys, assigns, transfers and delivers to Assignee, its successors and assigns, to have and to hold the same for use and enjoyment of Assignee and its successors and assigns, the entire right, title and interest in and to, or arising under, the certain United States and foreign patents and patent applications (the "Patents"), including without limitation those patents and patent applications registered in the United States and in certain foreign jurisdictions set forth in Schedules A and B hereto, along with the right to recover for damages and profits for past and future infringements thereof, the Patents to be held and enjoyed by Assignee for its own use and behalf and for the use and behalf of its successors and assigns, as fully and entirely as the same would have been held and enjoyed by Assignor had this Assignment not been made.

2.   <u>Further Assurances</u>. Assignor, for itself and its successors and assigns hereby agrees with Assignee, its successors and assigns, that Assignor will do, execute and deliver or will cause to be done, executed and delivered all such further acts, transfers, assignments, conveyances, powers of attorney and assurances, and will take all such further action, in order to better assure, convey and confirm unto Assignee, its successors and assigns, all and singular the Patents hereby sold, conveyed, assigned and delivered as Assignee, its successors and assigns, shall reasonably request.

3.   <u>Effect of Agreement</u>. The execution and delivery of this Assignment shall not be (or be deemed) a waiver or discharge of any representation, warranty, covenant, or agreement of Assignor or Assignee in or under the Agreement, and such execution and delivery shall not be deemed a modification of any provision of the Agreement in any respect.

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4.   Headings. Section headings contained in this Assignment are solely for the convenience of reference and shall not affect the meaning or interpretation of this Assignment or of any term or provision hereof.

5.   Successors and Assigns. This Assignment shall inure to the benefit of, and be binding upon, Assignor and Assignee and their respective successors and assigns.

IN WITNESS WHEREOF, the undersigned has caused this Assignment to be duly executed and delivered as of the date first written above.

OPNET TECHNOLOGIES LLC

By: Riverbed Technology, Inc.,
    its sole Member and Manager

By:_____
    Jerry Kennelly
    Chairman and Chief Executive Officer

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Continuation of Item 4

A. Patent Application Nos.	B. Patent Nos.
10/912,704	6,240,416
10/914,602	6,278,963
10/937,986	6,600,752
11/001,985	6,643,613
11/092,226	6,674,717
11/180,878	6,820,042
11/180,888	6,823,382
11/358,538	6,928,472
11/490,586	6,947,381
11/501,389	6,968,540
11/503,555	6,990,071
11/505,171	7,072,297
11/505,176	7,076,695
11/505,228	7,139,692
11/506,650	7,219,034
11/506,651	7,219,047
11/678,595	7,248,564
11/776,708	7,254,389
11/776,721	7,277,843
11/838,417	7,333,431
11/941,186	7,337,206
12/176,325	7,443,870
12/435,932	7,444,263
12/623,592	7,469,203

12/652,499	7,509,229
12/900,348	7,519,700
12/900,357	7,551,560
12/907,225	7,570,669
12/963,481	7,593,351
13/021,709	7,639,609
13/117,105	7,672,238
13/165,589	7,688,743
13/210,351	7,693,699
13/301,688	7,729,240
13/333,955	7,729,256
13/365,484	7,730,099
13/365,496	7,813,281
13/400,973	7,839,790
13/412,604	7,843,815
13/412,615	7,843,840
13/412,623	7,844,423
13/424,005	7,848,259
13/430,541	7,885,200
13/444,583	7,885,206
13/448,389	7,889,641
13/454,034	7,894,369
13/454,050	8,005,006
13/487,863	8,005,019
13/487,895	8,005,945
13/556,174	8,010,643

13/556,178	8,089,904
13/568,988	8,095,645
13/570,572	8,095,649
13/590,088	8,130,661
13/595,372	8,130,759
13/645,688	8,135,990
13/654,859	8,140,665
13/657,541	8,144,627
13/669,117	8,159,971
13/674,874	8,165,038
13/677,283	8,166,004
13/693,165	8,195,443
13/715,381	8,195,736
13/745,055	8,228,804
13/746,273	8,230,491
PCT/US12/23722	8,249,094
PCT/US12/23725	8,255,906
PCT/US12/33102	8,296,424
PCT/US12/50097	8,305,931
	8,312,139
	8,359,450
	8,400,941

SCHEDULE A

US Patents

Title	App. #	Patent #
Method For Reducing Packet Loss And Increasing Internet Flow By Feedback Control	09/539,434	6,674,717
Simulation With Convergence-Detection Skip-Ahead	10/112,179	7,219,047
Method Of Reducing Packet Loss By Resonance Identification In Communication Networks	09/846,451	7,551,560
Method For Reducing Packet Loss By Phase Transition Identification In Communication Networks	09/846,449	6,947,381
Method For Accelerating TCP Flows In Communication Networks With Dynamic Control	09/846,452	7,333,431
Method For Dynamical Identification Of Network Congestion Characteristics	09/846,450	7,072,297
Method For Reducing Fetch Time In A Congested Communication Network	09/846,174	6,990,071
Method For Determining Network Congestion And Link Capacities	09/854,321	7,248,564
Software Instrumentation Method And Apparatus	09/879,838	6,968,540
Monitoring And Control Engine For Multi-Tiered Service-Level Management Of Distributed Web-Application Servers	09/682,324	6,823,382
Flow Propagation Analysis Using Iterative Signaling	10/325,148	7,139,692
System And Method For Monitoring Performance Metrics	10/186,401	6,643,613
Method For Detecting Congestion In Internet Traffic	10/195,904	7,337,206
Method For Real-Time Auto-Detection Of Outliers	10/195,905	7,277,843
System And Methods For Adaptive Threshold Determination For Performance Metrics	10/198,689	7,076,695
Bayesian Approach To Correlating Congestion To Performance Metrics In Internet Traffic	10/205,135	7,509,229
Method For Correlating Congestion To Performance Metrics In Internet Traffic	10/205,101	6,928,472
Method For Prioritizing Grouped Data Reduction	10/923,576	7,443,870
System And Methods For Display Of Time-Series Data Distribution	10/243,534	7,219,034
Systems And Methods For Intelligent Probe Testing	10/903,586	8,130,661
System And Methods For Inferring Services On A Network	10/845,517	7,848,259
System And Methods For Inferring Services On A Network	12/023,026	8,400,941
System And Methods For Simulating Traffic Generation	10/903,585	8,010,643
Synchronizing Packet Traces	10/914,603	7,570,669
Wireless Network Hybrid Simulation	10/923,214	7,469,203
Wireless Link Simulation With Generic Caching	10/821,558	7,254,389
Fuzzy Routing	11/125,562	8,005,019
Correlating Packets	11/180,879	7,729,256
Application Delay Analysis	11/397,359	7,885,200
Predictive Modeling And Graphical Editing Of Application Logic	11/358,536	8,195,443
Method And System For Topological Navigation Of Hierarchical Data Groups	11/061,978	7,519,700
Method And System For Topological Navigation Of Hierarchical Data Groups	12/397,356	7,885,206
Method And System For Collecting And Consolidating Network Traffic Information	11/173,758	7,593,351
Method And System For Identifying Duplicate Packets In Flow-Based Network Monitoring System	11/173,752	7,729,240
Routing Validation	11/494,441	8,130,759
Tracing Routing Differences	11/494,692	7,688,743
Wireless Mac And Link-Layer Simulation Modeling	11/501,388	8,249,094
Automatic Access To Network Devices Using Various Authentication	11/503,554	8,230,491

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Schemes		
Storage And Retrieval Of Richly Typed Hierarchical Network Models	11/506,665	7,730,099
Network Physical Connection Inference For IP Tunnels	11/506,648	7,894,369
Network Physical Connection Inference For IP Tunnels	12/192,103	8,165,038
Managing Captured Network Traffic Data	11/507,114	8,140,665
Network Capacity Planning	12/861,832	8,296,424
Incremental Update Of Virtual Devices In A Modeled Network	11/503,553	7,693,699
Traffic Flow Inference Based On Link Loads And Gravity Measures	11/755,089	8,095,645
Traffic Flow Inference Based On Link Loads And Gravity Measures	13/346,453	8,312,139
Aggregating Policy Criteria Parameters Into Ranges For Efficient Network Analysis	11/735,474	8,005,945
Estimation Of Time-Varying Latency Based On Network Trace Information	11/752,283	7,843,815
Network Congestion Analysis	11/776,736	7,839,790
Path Flow Formulation For Fast Reroute Bypass Tunnels In MPLS	11/779,429	7,889,641
Controlled Incremental Multi-Protocol Label Switching (MPLS) Traffic Engineering	11/778,053	7,639,609
Link Inference In Large Networks Based On Incomplete Data	11/829,925	8,089,904
Performance Metric Collection And Automated Analysis	11/832,319	7,444,263
Mapping Virtual Internet Protocol Addresses	11/832,923	8,195,736
Mapping Off-Network Traffic To An Administered Network	11/835,130	7,672,238
Multi-Variate Network Survivability Analysis	11/834,058	8,135,990
System And Method For Inferring Connectivity Among Network Segments In The Absence Of Configuration Information	11/844,765	8,159,971
Component-Based Modeling Of Wireless Mac Protocols For Efficient Simulations	11/875,900	7,844,423
Interactive Mpls Traffic Engineering	12/098,436	7,813,281
Network Delay Analysis Including Parallel Delay Effects	12/060,271	8,095,649
Tuning Routing Metrics To Reduce Maximum Link Utilization and/or Provide Failure Resiliency	12/143,799	8,228,804
Verifying Data Consistency Among Multiple Structured Files	12/176,317	8,166,004
Traffic Independent Survivability Analysis	12/195,393	7,843,840
Modeling Overhead For A Plurality Of Virtualization Technologies In A Computer System	12/196,044	8,255,906
Discovery Of Multiple-Parent Dependencies In Network Performance Analysis	12/478,775	8,005,006
Inferring Connectivity In The Presence Of Conflicting Network Data	12/498,786	8,144,627
Incremental And Targeted Auto-Discovery Of Network Devices	12/544,317	8,305,931
Memory Utilization Analysis	12/705,570	8,359,450
System Architecture For Distribution Of Discrete-Event Simulations	09/108,503	6,278,963
Distributed Metadata System And Method	09/151,748	6,240,416
Method For Reducing Excess Queue Time In Communication Nodes	09/345,249	6,600,752
Mixed Mode Network Simulator	09/624,092	6,820,042
Systems And Methods For Intelligent Probe Testing	13/412,615	Pending
System And Methods For Inferring Services On A Network	12/907,225	Pending
System For Automatic Import, Analysis, And Reporting Of Network Configuration And Status Information	10/912,704	Pending
Division Of Data Structures For Efficient Simulation	10/914,602	Pending
Packet Tracing	11/180,878	Pending
Network Difference Reporting	11/180,888	Pending
Method And System For Grouping Diagnostic Information	10/937,986	Pending
Method For Discovery And Troubleshooting Of Network Application Usage And Performance Issues	11/001,985	Pending
Tracking, Analyzing, And Visualizing Application Delay	11/358,538	Pending

Predictive Modeling And Graphical Editing Of Application Logic	13/487,895	Pending
Method And System For Managing A Distributed Network Of Network Monitoring Devices	11/092,226	Pending
Routing Validation	13/412,604	Pending
Methods And System For Modeling Wireless Communications In A Network	13/590,088	Pending
A Method For Identifying And Analyzing Network Configuration Differences	11/505,228	Pending
Disparate Network Model Synchronization	11/501,389	Pending
Automatic Access To Network Devices Using Various Authentication Schemes	13/556,174	Pending
Network Physical Connection Inference For Ip Tunnels	13/454,034	Pending
Generation Of A Network Topology Hierarchy	11/506,651	Pending
Integrated Debugging Environment For A Network Simulation	11/506,650	Pending
Managing Service Levels On A Shared Network	12/652,499	Pending
Capture, Analysis, And Visualization Of Concurrent System And Network Behavior Of An Application	11/505,176	Pending
Managing Captured Network Traffic Data	13/424,005	Pending
Automatic Estimation Of Node Location Based On Trace Information	11/490,586	Pending
Network Capacity Planning For Multiple Instances Of An Application	13/657,541	Pending
Visualizing A Complex Network Based On A Set Of Objects Of Interest	11/503,555	Pending
Analyzing Security Compliance Within A Network	11/505,171	Pending
User-Configurable Network Performance Monitors	11/678,595	Pending
Traffic Flow Inference Based On Link Loads And Gravity Measures	13/674,874	Pending
Identifying And Reporting Differences In Network Activity Data Files	11/776,708	Pending
Assessing Network And Device Compliance With Security Policies	11/776,721	Pending
Link Inference In Large Networks Based On Incomplete Data	13/301,688	Pending
Mapping Virtual Internet Protocol Addresses	13/487,863	Pending
Multi-Variate Network Survivability Analysis	13/412,623	Pending
Network Simulation And Analysis Using Operational Forwarding Data	11/838,417	Pending
System And Method For Inferring Connectivity Among Network Segments In The Absence Of Configuration Information	13/448,389	Pending
Modeling And Simulating Flow Propagation In Dynamic Bandwidth Systems	11/941,186	Pending
System And Method For Separately Analyzing Protocol And Congestion Delay In Networks	13/333,955	Pending
Tuning Routing Metrics To Reduce Maximum Link Utilization and/or Provide Failure Resiliency	13/556,178	Pending
Verifying Data Consistency Among Multiple Structured Files	13/454,050	Pending
Selective Monitoring Of Software Applications	12/176,325	Pending
Virtualization Planning System	13/595,372	Pending
Dedicated And Priority Based Allocation In Multi-Hop Wireless Systems	12/435,932	Pending
Inferring Connectivity In The Presence Of Conflicting Network Data	13/430,541	Pending
Incrementally Improved Auto-Discovery Of Network Devices	13/669,117	Pending
End-To-End Analysis Of Transactions In Networks With Traffic-Altering Devices	12/623,592	Pending
Memory Utilization Analysis	13/746,273	Pending
Network Path Discovery And Analysis	12/900,348	Pending
Network Path Discovery And Analysis	12/900,357	Pending
Network Path Discovery And Analysis	13/210,351	Pending
Web Transaction Analysis	12/963,481	Pending
Correcting Packet Timestamps In Virtualized Environments	13/021,709	Pending
Multi-Tier Message Correlation	13/117,105	Pending
Multi-Variate Sales Performance Analysis System	13/165,589	Pending
Overhead Management For Event Tracing Software	13/365,496	Pending

Overhead Management For Event Tracing Software	13/400,973	Pending
Correlating Input And Output Requests Between Client And Server Components In A Multi-Tier Application	13/365,484	Pending
Assessing Application Performance With An Operational Index	13/444,583	Pending
Business-Hour-Oriented Performance Analysis	13/570,572	Pending
Quick Path Discovery	13/568,988	Pending
Methods And System For Workflow Management Of Sales Opportunities	13/645,688	Pending
Detected Ip Link And Connectivity Inference	13/654,859	Pending
Tuning Routing Metrics To Reduce Maximum Link Utilization And End-To-End Delay Violations	13/677,283	Pending
Tracking Objects Within Dynamic Environments	13/693,165	Pending
Methods And Systems For Efficient Updating Of Time-Aligned Graphs In A Monitoring System	13/715,381	Pending
Using Routing Information and Inter-layer Relationships to Determine Utilization in a Transport Network	13/745,055	Pending

SCHEDULE B

Foreign Patents

Title	App. #	Patent #
Systems and Methods for Intelligent Probe Testing	EP04779832	EP1683301
Mapping Off-Network Traffic to an Administered Network	EP07840777	EP2050237
Interactive MPLS Traffic Engineering	EP08745196	EP2137882
Selective Monitoring of Software Applications	EP08782100	EP2181391
Incremental and Targeted Auto-Discovery of Network Devices	EP09791704	EP2316192
Correcting Packet Timestamps in Virtualized Environments	EP11740471	Pending
Verifying Data Consistency Among Multiple Structured Files	EP08782099	Pending
Inferring Connectivity in the Presence of Conflicting Network Data	EP09790111	Pending
Memory Utilization Analysis	EP10707389	Pending
Network Path Discovery and Analysis	EP10822714	Pending
Overhead Management for Event Tracing Software	PCT/US12/23722	Pending
Assessing Application Performance with an Operational Index	PCT/US12/33102	Pending
Business-Hour-Oriented Performance Analysis	PCT/US12/50097	Pending
Correlating Input and Output Requests between Client and Server Components in a Multi-Tier Application	PCT/US12/23725	Pending