

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

WSOU INVESTMENTS, LLC d/b/a
BRAZOS LICENSING AND
DEVELOPMENT,

Plaintiff,

v.

ZTE CORPORATION, ZTE (USA)
INC., AND ZTE (TX), INC.

Defendants.

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CIVIL ACTION NO. 6:20-cv-224

JURY TRIAL DEMANDED

**ORIGINAL COMPLAINT FOR PATENT
INFRINGEMENT**

Plaintiff WSOU Investments, LLC d/b/a Brazos Licensing and Development (“Brazos” or “Plaintiff”), by and through its attorneys, files this Complaint for Patent Infringement against Defendants ZTE Corporation, ZTE (USA), Inc. and ZTE (TX), Inc. (collectively “ZTE” or “Defendants”) and alleges:

NATURE OF THE ACTION

1. This is a civil action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. §§ 1, et seq., including §§ 271, 281, 284, and 285.

THE PARTIES

2. Brazos is a limited liability corporation organized and existing under the laws of Delaware, with its principal place of business at 605 Austin Ave, Ste 6, Waco, TX 76701.

3. On information and belief, Defendant Zhongxing Telecommunications Equipment (abbreviated as “ZTE”) Corporation is a Chinese corporation that does business in Texas, directly or through intermediaries, with a principal place of business at ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen China.

4. On information and belief, Defendant ZTE (USA) Inc. is a New Jersey corporation that does business in Texas, directly or through intermediaries, with a principal place of business in business in Richardson, Texas.

5. On information and belief, Defendant ZTE (TX) Inc. is a Texas corporation that does business in Texas, directly or through intermediaries, with a principal place of business in business in Austin, Texas.

6. All of the Defendants operate under and identify with the trade name “ZTE.” Each of the Defendants may be referred to individually as a “ZTE Defendant” and, collectively, Defendants may be referred to below as “ZTE” or as the “ZTE Defendants.”

JURISDICTION AND VENUE

7. This is an action for patent infringement which arises under the Patent Laws of the United States, in particular, 35 U.S.C. §§271, 281, 284, and 285.

8. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

9. This Court has specific and general personal jurisdiction over each ZTE Defendant pursuant to due process and/or the Texas Long Arm Statute, because each ZTE Defendant has committed acts giving rise to this action within Texas and within this judicial district. The Court’s exercise of jurisdiction over each ZTE Defendant would not offend traditional notions of fair play and substantial justice because ZTE has established minimum contacts with the forum. For example, on information and belief, ZTE Defendants have committed acts of infringement in this judicial district, by among other things, selling and offering for sale products that infringe the asserted patent, directly or through intermediaries, as alleged herein.

10. Venue in the Western District of Texas is proper pursuant to 28 U.S.C. §§1391 and/or 1400(b). The ZTE Defendants have committed acts of infringement and have places of businesses in this District and/or are foreign entities for purpose of §1391. As non-limiting examples, ZTE (TX) has maintained a place of business at 7000 N MO-PAC EXPRESSWAY 200 AUSTIN, TX 7873; and, ZTE (USA) has maintained a place of business at 6500 River Place Blvd., Austin, TX 78730. ZTE Corporation also describes a “research-and-development center in Austin, Texas.”¹

COUNT ONE - INFRINGEMENT OF
U.S. PATENT NO. 7,487,240

11. Brazos re-alleges and incorporates by reference the preceding paragraphs of this Complaint.

12. On February 3, 2009, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,487,240 (“the ’240 Patent”), entitled “CENTRALIZED INTERNET PROTOCOL/MULTI-PROTOCOL LABEL SWITCHING CONNECTIVITY VERIFICATION IN A COMMUNICATIONS NETWORK MANAGEMENT CONTEXT.” A true and correct copy of the ’240 Patent is attached as Exhibit A to this Complaint.

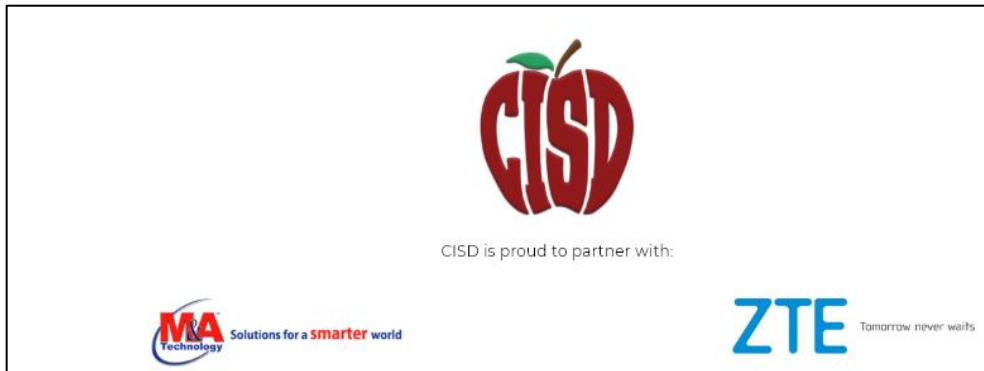
13. Brazos is the owner of all rights, title, and interest in and to the ’240 Patent, including the right to assert all causes of action arising under the ’240 Patent and the right to any remedies for the infringement of the ’240 Patent.

14. ZTE makes, uses, sells, offers for sale, imports, and/or distributes, in the United States, network management systems (collectively, the “Accused Products”).

¹ https://res-www.zte.com.cn/mediares/magazine/publication/tech_en/pdf/201009.pdf

15. The Accused Products include ZTE element management systems, including the NetNumen U31 element management system (EMS) and network management system (NMS).

16. ZTE has partnered with M&A Technologies to provide solutions for home internet services in Texas and has established LTE towers in Texas, USA.



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In March 2017 CISD began to work with M&A and their partner ZTE to design the private LTE network that would need to be built in order to cover all students enrolled in CISD.

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Tower 2 - Sansom Park, TX

<https://digitalequity4all.cisd.net/project-info.html>.

17. ZTE uses Accused Products to manage Uni-RAN and Uni-core Network Elements in an LTE Project in New York.

ZTE

**Technical Proposal for Town
of Caroline, New York
TD-LTE Project**

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The NetNumen U31 supports flexible North-bound interface configurations, supporting various different protocols such as CORBA, FTP, DB, SNMP and CLI interface for easier integration and to realize the flawless integration with the high level OSS system.

http://www.townofcaroline.org/uploads/6/2/7/8/62781479/m_a_technology_-_broadband_proposal.pdf (Pages 5, 24).

18. ZTE provides network management solutions such as the Accused Products. ZTE NetNumen U31, for example, is an integrated user-oriented network management system, providing functions such as data configuration, performance data collection, alarms analysis, northbound interfaces, log records, signal trace to assist the network launch, maintenance, and optimization.

ZTE NetNumen U31 solution adopts advanced and mature architecture which is fully TMN and 3GPP compliant. It is an integrated user oriented network management system based on unified J2EE platform, providing abundant functions such as data configuration, performance data collecting, alarms analysis, northbound interfaces, log records, signal trace to assist the network launch, maintenance and optimization.

<https://www.zte.com.cn/global/products/wireless/201903111102/Network-Management-Solution>

19. By using the Accused Products, a user can perform integrated and centralized management operations on the network elements such as Configuration Management, Fault Management, Performance management, etc.

The NetNumen U31 Unified Element Management System (NetNumen U31 or EMS) is a special network element management system used to manage and maintain ZTE's digital microwave transmission equipment.

By using the NetNumen U31 system, users can configure and maintain individual microwave network elements, and manage a microwave transmission network in a unified manner. NetNumen U31 provides the following management functions:

- Configuration management
- Fault management
- Performance management
- Topology management
- Security management
- Log management

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 7).

20. The Accused Products can allow unified management over a various pieces of telecommunications equipment, including Corporate Telecommunications Network (CTN), Synchronous Digital Hierarchy (SDH), Router, Switch, etc.

The U31 R22 is a network management system that is located at the network element management layer/subnetwork management layer and performs EMS/NMS management.

The U31 R22 allows unified management over a series of telecommunications equipment, including CTN, SDH, WDM/OTN, BRAS, Router, Switch serials equipment, and supports the LCT function. The U31 R22 can communicate with BSS/OSS through the NBI interfaces.

<https://www.scribd.com/document/399872799/NetNumen-U31-R22-V12-16-10-Unified-Network-Management-System-Product-Description-V1-0> (Page 9)

21. The Accused Products provide various performance management functions for monitoring the operation status of the network devices to ensure the effective, stable, and secure running of the network.

The NetNumen U31 system provides a diversity of performance management functions for monitoring the running status of microwave transmission equipment to ensure the efficiency, stability, and security of the managed network. It collects performance data from the network, analyzes the collected data, and then provides the network administrator with sufficient and complete information for the operation and maintenance of the network. The network administrator can make appropriate operation policies based on the network status to guarantee high-efficiency operation of the network.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 9).

22. A user can define a measurement task and/ or threshold task for a performance data measurement on the Accused Products for collecting performance data from managed Network Elements (NEs). Based on the performance data collected, other performance management operations can be performed on an element or the network. Therefore, a measurement task can be used to verify network connectivity. The performance data calculated can also be used to determine whether a customer's Service Level Agreements (SLA) are being met or not.

Measurement Task

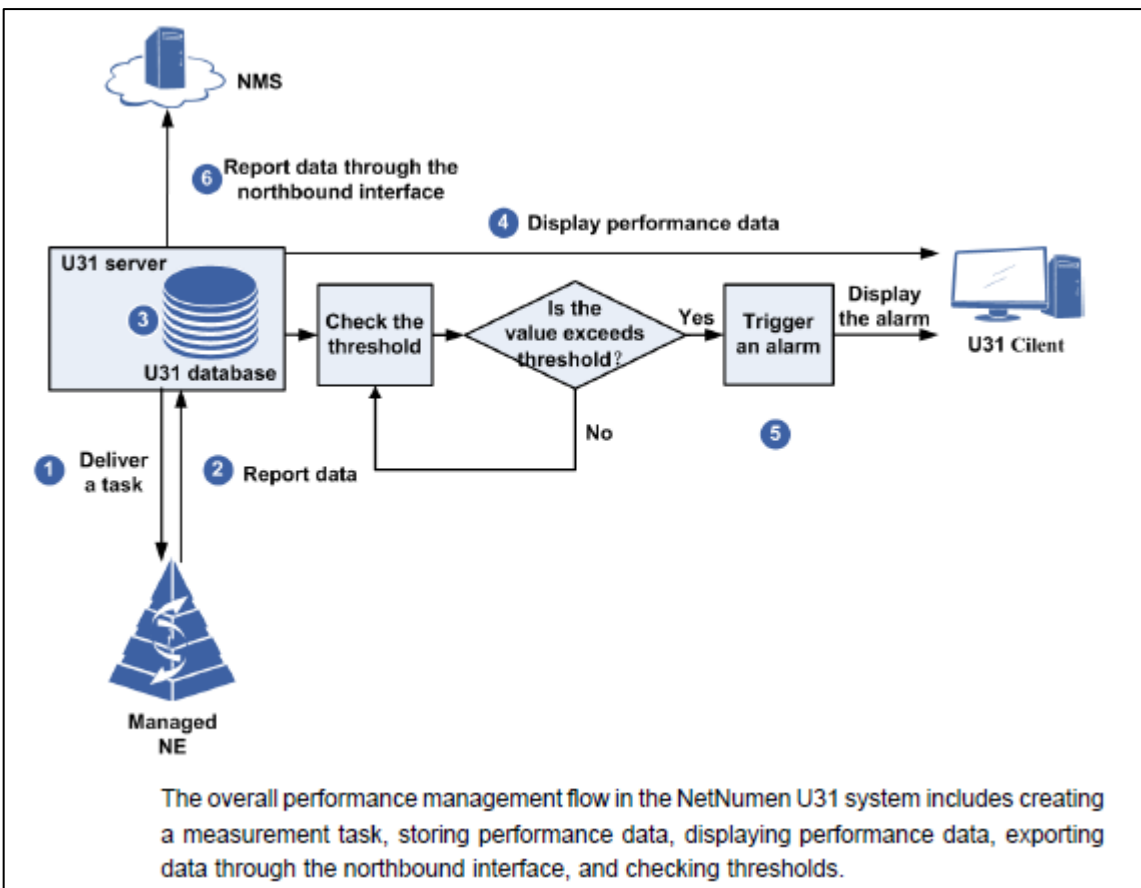
Measurement task is a task defined for performance data measurement. After a measurement task is created, the system automatically collects the values of required performance parameters during the preset period, and gives the statistical result of network performance, from which the operator can know the network operation status.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 10).

Threshold task, also called QoS task, is intended to monitoring specific measurement data during a preset period. As defined in a threshold task, when the calculated value of an index exceeds the preset high threshold or smaller than the preset low threshold, a threshold crossing alarm is raised. The threshold crossing alarm disappears when the calculated value during a later measurement period is within the preset threshold range.

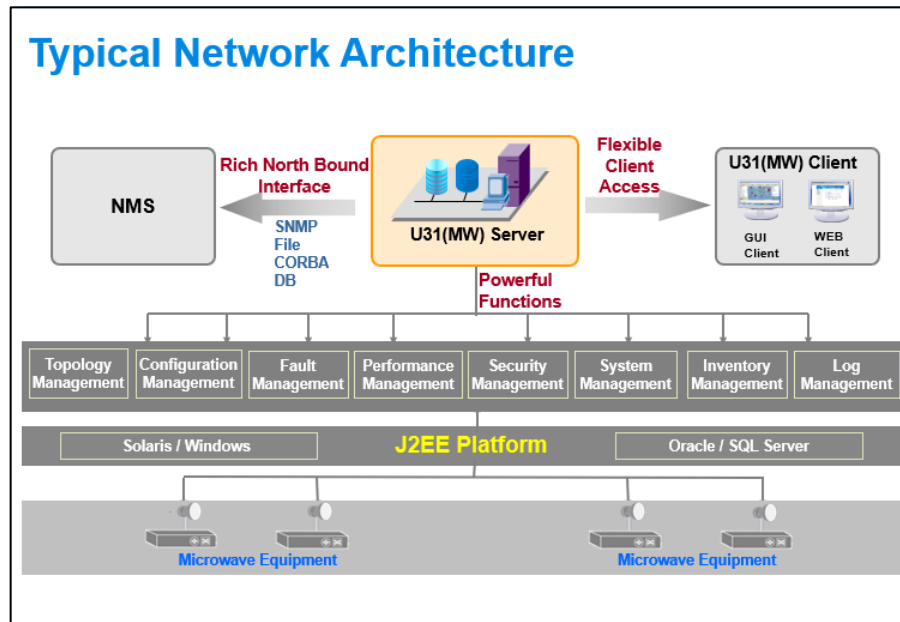
<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 11).

23. The Performance Management flow in the Accused Products includes creating a measurement task, storing performance data, displaying performance data, exporting data through the northbound interface, and checking thresholds. After a performance measurement task is created in the Accused Products, an Accused Products server delivers the task to a NE (Network Element). The NE reports the performance data back to the Accused Products server and displays the performance data to the user. The Accused Products server stores the performance data in its database. Based on the thresholds set by the user, the server displays alarms to the user.



<https://vdocuments.site/download/sj-20141121113158-004-netnumen-u31-r06-v121430-unified-element-management> (Page 6).

24. A typical Network Architecture incorporating an Accused Products server is shown below.



<https://www.scribd.com/presentation/379887074/165853166-06-NetNumen-U31-System-Description-ppt> (Slide 8).

25. A threshold task can be defined to monitor specific measurement data during a preset period. When the calculated value of a specific performance object is larger than a high threshold or smaller than a low threshold (e.g., threshold range) a threshold crossing alarm is raised and reported to the fault management module of the system.

A threshold task is used for the NetNumen U31 system to monitor the measured data during a preset period and calculate the values of specific Performance Objects (POs). If the calculation result of a PO exceeds the preset threshold range, the system raises a threshold crossing alarm and reports it to the fault management module for display.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 59).

26. The Accused Products can manage several types of Layer-2 and Layer-3 objects such as routers, switches, etc., including those made by ZTE.

T8000 and other ZTE service provider routers are managed through the Netnumen U31 management system, which handles the needs of the element, network and service layers. The system can manage multiple network layers, namely, the access layer, bearer layer, control layer and application layer. This means the solution can be deployed in different O&M scenarios. Netnumen provides full FCAPS functionality.

https://www.zte.com.cn/global/about/magazine/zte-technologies/2011/4/en_546/244383 (Page 2).

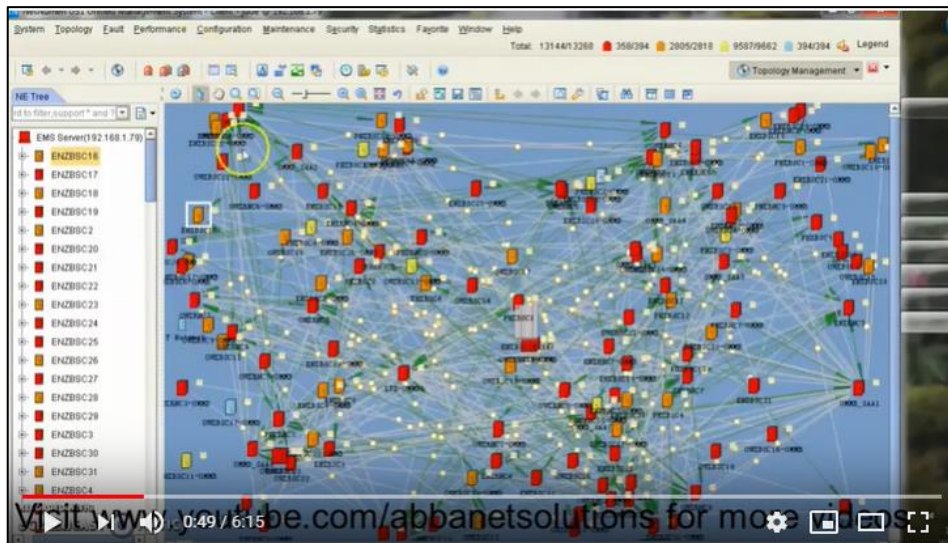
The ZXR10 2900E series switches are the superior layer 2 switches presented by ZTE. With innovative "easy" concept incorporated in every detail, ZXR10 2900E series switches bring users the ultimate efficiency, cutting the maintenance costs of the network through simple yet efficient methods. The ZXR10 2900E provides enhanced layer 2 threat defense capabilities to mitigate network attacks. Multiple measures like bi-direction ACL, dynamic ARP inspection, MAC/IP/port automatic binding after 802.1X authentication help enterprises to better secure their networks.

http://enterprise.zte.com.cn/en/products/network_Infrastructure/switches/CampusSwitches/201708/t20170802_464935.html.

ZXR10 5900E series MPLS easy-maintenance switches are box-like layer 3 MPLS routing switches that deliver superior integrated network services for space-constrained environments in service provider networks. It can serve as an aggregation switch in various scenarios including Metro area networks and IP RAN.

https://www.zte.com.cn/global/products/bearer/data_communication/ethernet_switch/5900E-EN.

27. The topology management tab in the Accused Products shows all present Network Elements (NEs) in a hierarchy in the form of a tree with the objects emanating from its branches.



<https://www.youtube.com/watch?v=YXA4mn2IUCQ>.

28. The server in the Accused Products verifies connectivity using functions such as Fault Management, Performance Management (i.e., using measurement tasks, threshold tasks, etc. thereby performing a connectivity verification job), etc. A configuration process in the Accused Products allows a user to add new objects, measurement tasks, etc.

NetNumen U31 Topology ADD an Agent

From main window you can see and create new agent. The Agent is sw part that manage NE. Create Object = Create new agent. It is possible to create element without physical HW installed. (eg. UR9000 Agent is linked to HW UMP, slot 5-6). For SDR Agent is linked to HW in CC Board.

No.	Name	ID	Type	Status	IP Address
1	BZTP1	OMMOID=iy2u645-3	Multi-mod..		198.18.14.36
	BZTP2	OMMOID=iy2uwyf-4	Multi-mod..		198.18.14.44
	RZTP1	OMMOID=iy2u8cs-2	Multi-mod..		198.18.14.52
	RZTP2	OMMOID=iy2umh-1	Multi-mod..		198.18.14.60
	OMMB1	OMMOID=iy2u645-1	MD SDR		198.18.14.4

<https://www.scribd.com/document/380600612/03-NetNumen-U31-Introduction-40P> (Page 15).

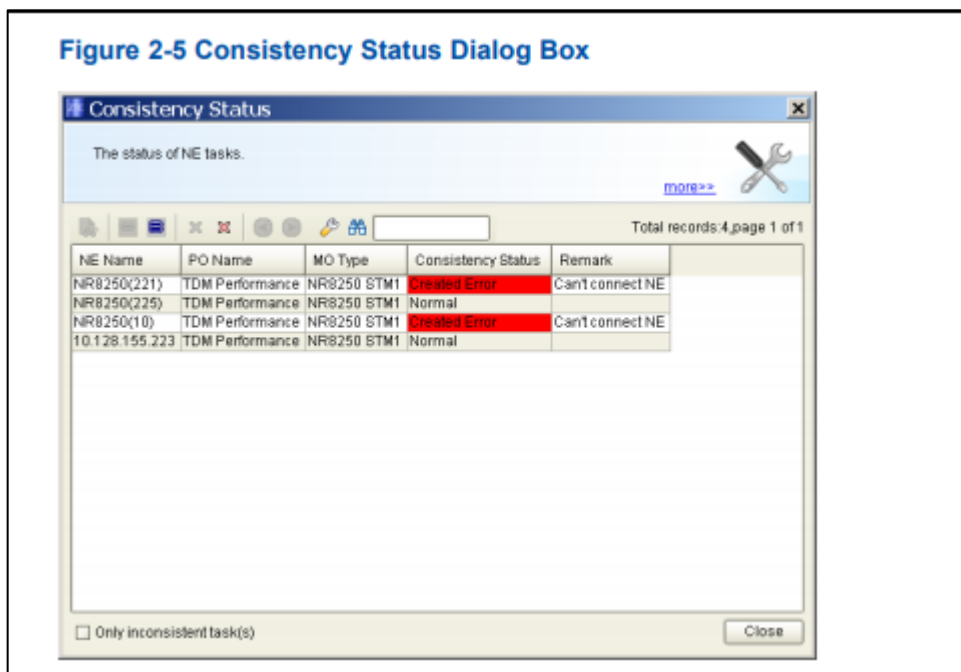
29. After a measurement task becomes active, network elements (NEs) start collecting performance data on the task schedule and transfer the collected data to the Accused Products. The Accused Products check the consistency status of a NE measurement task.

The NetNumen U31 system does not collect required performance data for a suspended measurement task. After you activate the suspended measurement task, the system converts the measurement task into individual NE measurement task(s) that can be identified and performed by corresponding NEs, and then synchronizes the NE measurement task(s) to corresponding NE(s).

After the synchronization is completed, the system checks the consistency status of each NE measurement task involved in the measurement task. If the consistency status of an NE measurement task is abnormal, the system deems that the activation of the measurement task fails. You need to troubleshoot the synchronization failure and perform the activation operation again. For how to check the consistency status of a measurement task, refer to Section 2.8 Viewing the Consistency Status of a Measurement Task.

If the synchronization is successful, corresponding NE(s) collect performance data according to the task schedule and transfer the collected performance data to the system. The system stores the received performance data in its database.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNullmen-U31-Performance-Management-155P> (Page 24-25).



<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 29).

30. Once data collection is completed, the Accused Products store performance data in a database and can display it. A user queries allow a user to view the performance data from the database.

In the NetNumen U31 system, you can query performance data stored in the database, which is collected according to measurement tasks. The query result can be displayed in various formats in the client window.

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You can use any one of the following five performance data query modes to query performance data.

- Query performance data by customized conditions
- Query performance data by measurement task
- Query performance data by query template
- Query performance data by common template
- Query real-time performance data

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 117).

You can query performance data in near-real time due to the feature that the system can collect performance data at the granularity of 10 seconds, 30 seconds, and 1 minute. When the collection granularity is 10 seconds, the query result can be regarded as almost real-time. Note that this function can only be used to query a small amount of performance data at a time, for example, the values of at most 60 counters.

The performance data query methods (the minimum granularity is 15 minutes) described in previous sections can be used to query performance data from more counters although the performance delay is relatively long.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 125).

Realtime Data Query_4

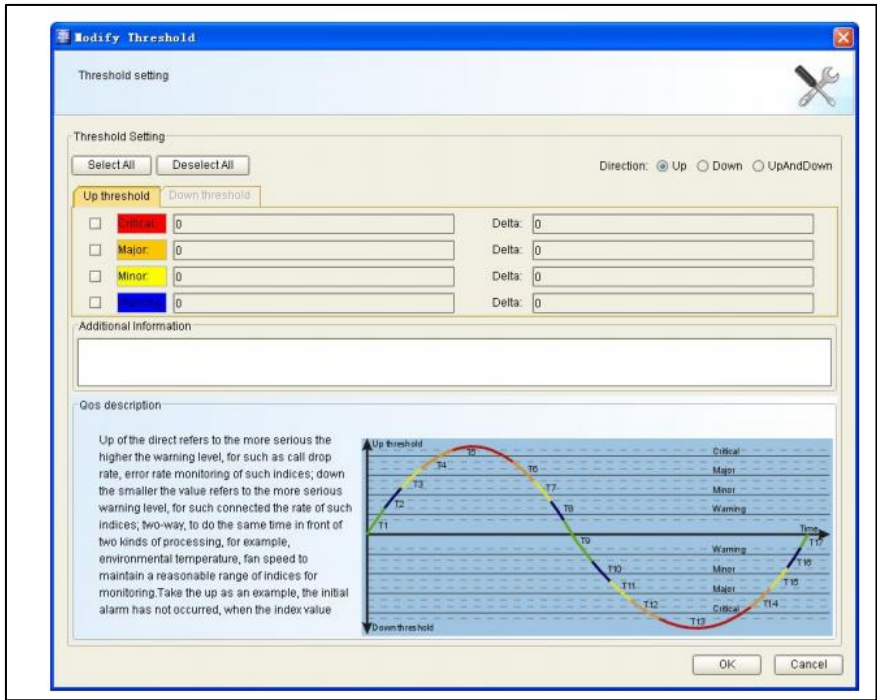
Form Date Graphics

Enter filter text

Collection Time	Collection Granularity	NE Location	MO Location	Current ratio of the CPU usage(%)	Current ratio of the system memory usage(%)	Current ratio of the user memory usage(%)
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%
2011-03-27 05:2...	10 second(s)	ME(WCDMA)...	CPU(WCDMA...	10.00%	11.00%	12.00%

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 127).

31. The Accused Products allows users to input threshold values of different parameters relating to connectivity. For example, a user can create a threshold task with different attributes and can also add values for 4 thresholds in the threshold setting tab for a task.



<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 62).

Threshold task setting. [more>>](#)

Threshold Task Location General

Task Name: Thresholdtask_NR8250 RF

Creator: admin

Start Time: 2011-08-01 16:45:00 Status: Activated

End Time: 2020-01-01 00:00:00 Granularity: 15 minute(s)

The effective date and effective time is the filter to trigger alarm by the threshold task.

Effective Date

Week Month

Sunday Monday Tuesday

Wednesday Thursday Friday

Saturday

Effective Time

From: 00 : 00 : 00 To: 24 : 00 : 00

Begin Time	End Time
00:00:00	24:00:00

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 64).

32. A threshold task can be defined in the Accused Product to monitor specific measurement data during a present period. When the calculated value of a specific performance object is larger than a high threshold or smaller than a low threshold (or not lies within the threshold range), a threshold crossing alarm is raised and reported to the fault management module of the system.

A threshold task is used for the NetNumen U31 system to monitor the measured data during a preset period and calculate the values of specific Performance Objects (POs). If the calculation result of a PO exceeds the preset threshold range, the system raises a threshold crossing alarm and reports it to the fault management module for display.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 59).

33. A threshold task in the Accused Products can be defined to monitor a key performance index (KPI). The system raises a performance threshold crossing alarm with the corresponding severity once the value of the index is larger than a high threshold or smaller than a low threshold.

Performance Threshold Management

The system supports the setting of upper and lower thresholds for key performance indexes. Once the value of an index is higher than the upper threshold or lower than the lower threshold, the fault management module of the system can raise a threshold crossing alarm.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 9).

The management objects of a performance threshold task (also called threshold task) are counters and/or indexes. You can define a threshold task for monitoring specific index(es). To define an index, you need to specify its name, formula and type.

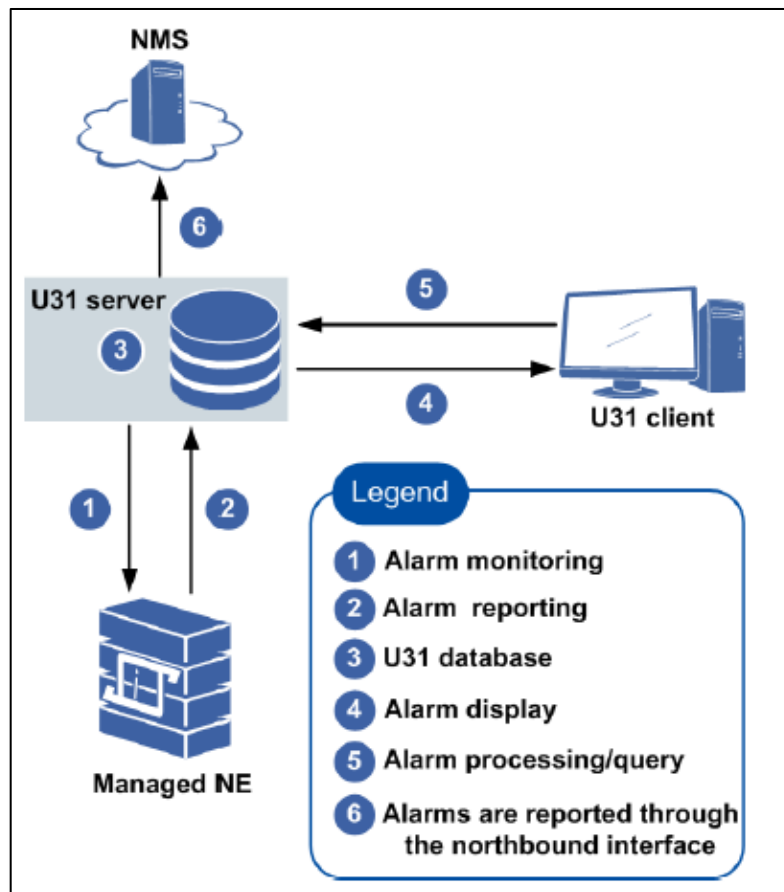
Performance indexes can be classified into the following four types according to their importance and usage.

- **Key Performance Index (KPI)**

A KPI is an index that indicates a key performance of a network. The purpose of a threshold task is to monitor one or more KPIs. When the system detects that the value of a KPI exceeds the threshold range specified in the task, a threshold crossing alarm is raised. Threshold crossing alarms are classified into four levels by severity: critical, major, minor and warning. All KPI threshold crossing alarms have the same alarm code.

<https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P> (Page 48).

34. The threshold comparisons can lead to alarm generation in the Accused Products.



<https://www.scribd.com/document/331167170/NetNumen-U31-Fault-Management-Operation-Guide> (Page 7).

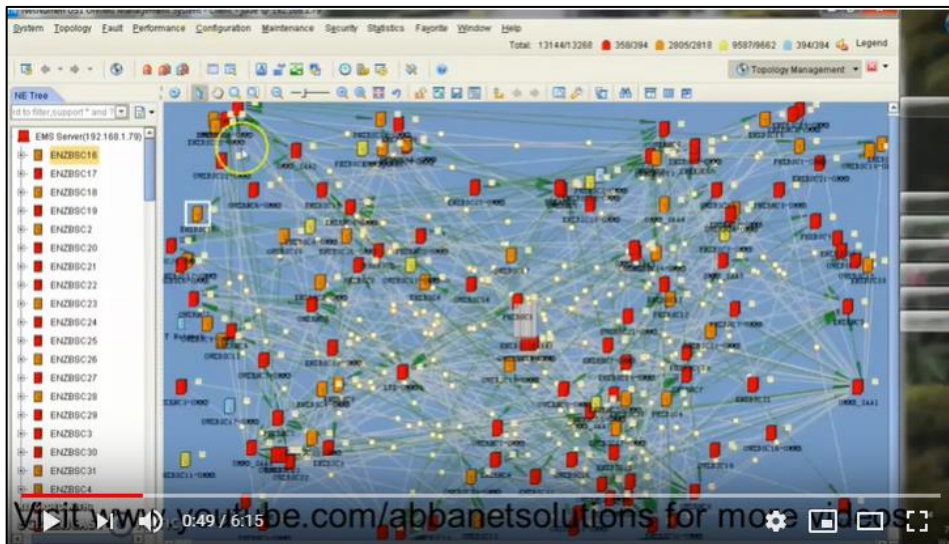
35. The topology management module in the Accused Products provides a network topology graph that shows the dynamic operation status of managed networks, thus enabling the configuration monitoring and the fault monitoring functions. A topology graph in the Accused Products reflects faults in the form of visual and audio alarms. Further, the system provides a mapping relationship between alarm severity levels and the icon colors of faulty NEs.

The topology management module provides a network topology graph that shows the dynamic operation status of managed networks in real time, thus enabling the configuration monitoring and the fault monitoring functions.

- Configuration Monitoring: By regular synchronization, the system can dynamically display configuration changes in network devices. It shows the operation results of adding and deleting NEs and the configuration information of NEs on the topology graph, and informs users of the configuration changes. The update cycle of configuration information can be set as needed.
- Fault Monitoring: The topology graph can reflect faults occurring in lower-level network element management systems in the form of visual and audio alarms. In addition, the system provides a mapping relationship between alarm severity levels and the icon colors of faulty NEs. Acknowledged, unacknowledged, handled and removed faults are displayed differently.

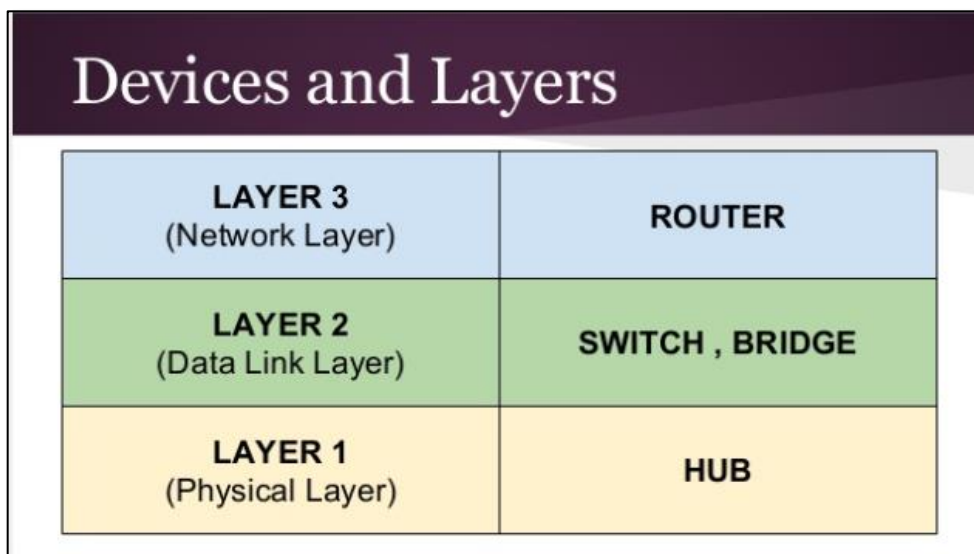
<https://www.scribd.com/document/296996672/SJ-20110907140552-026-NetNumen-U31-R52-V12-11-30-System-Topology-Management-Operation-Guide> (Page 10).

36. The topology management tab shows all present Network Elements (NEs). The alarms are generated based on the value of performance indices. Based on these alarms, the Network element is colored and shown with different colors.



<https://www.youtube.com/watch?v=YXA4mn2IUCQ>.

37. The Accused Products identify Layer-2 and Layer-3 objects associated with alarms within the topology graph.



<https://www.slideshare.net/NarendranThangarajan/a-primer-on-network-devices>.

38. The server in the Accused Products is located at a network element management layer and performs Element Management System (EMS) and Network Management System (NMS) management.

The U31 R22 is a network management system that is located at the network element management layer/subnetwork management layer and performs EMS/NMS management.

The U31 R22 allows unified management over a series of telecommunications equipment, including CTN, SDH, WDM/OTN, BRAS, Router, Switch serials equipment, and supports the LCT function. The U31 R22 can communicate with BSS/OSS through the NBI interfaces.

<https://www.scribd.com/document/399872799/NetNumen-U31-R22-V12-16-10-Unified-Network-Management-System-Product-Description-V1-0> (Page 9).

NE Type	NE and Hardware Version
Router	ZXR10 T1200/T600 (V2.6.02/V2.6.03/V2.08.20/V2.08.21.B/V2.8.22/V2.08.30/V2.8.32) ZXR10 T128/T64E (V2.2/V2.6.02-V2.6.03/V2.08.21.B) ZXR10 GER (V2.2/V2.6.02-V2.8.01) ZXR10 ZSR (V2.6.03-V2.8.01/V2.8.01B/V2.08.11.B/V3.00.11) ZXR10 GAR (V2.2/V2.6.02-V2.8.01) ZXR10 T8000 (V1.00.10/V2.00.20) ZXR10 M6000-3S (V3.00.10) ZXR10 M6000-5S (V3.00.10) ZXR10 M6000-8S (V3.00.10) ZXR10 M6000-18S (V3.00.10) ZXR10 M6000-2S10 (V1.00) ZXR10 6800 (V1.00.10/V1.00.20/V2.00.21/V2.00.20) ZXR10 1800/2800/3800 (V2.00.10)
Switch	ZXR10 G series (V2.6.02D/V2.8.01C/V2.8.02B/V2.8.01.C) ZXR10 8900 (V2.8.01C/V2.8.02A/V2.8.02B/V2.8.02C/V2.8.02.C.3/V-2.8.02.C.4/V2.8.03.C.4/V3.00.01/V3.00.02) ZXR10 8900E (V3.00.01/V3.00.02/V3.03.10/V3.01.01/V3.02.01) ZXR10 6900 (V2.8.01C/V2.8.02A/V2.8.02B/V2.8.02C/V2.8.02.C.3/V-2.8.02.C.4/V2.8.03.C.4) ZXR10 5960 (V3.00.20/V3.02.20) ZXR10 5950 (V2.8.23.A.19) ZXR10 5900E (V3.00.10/V3.00.11) ZXR10 5900A/5200A (V2.8.23.A.11) ZXR10 5900 (V2.8.02) ZXR10 5900 STACK (V3.00.11) ZXR10 5960 STACK (V3.00.20) ZXR10 5900 /5200 (V2.6.02-V2.6.03/V2.8.02A/V2.8.23.A/V2.8.23.A-.11) ZXR10 5250-24T (V1.2.12.R)

<https://www.scribd.com/document/399872799/NetNumen-U31-R22-V12-16-10-Unified-Network-Management-System-Product-Description-V1-0> (Page 15).

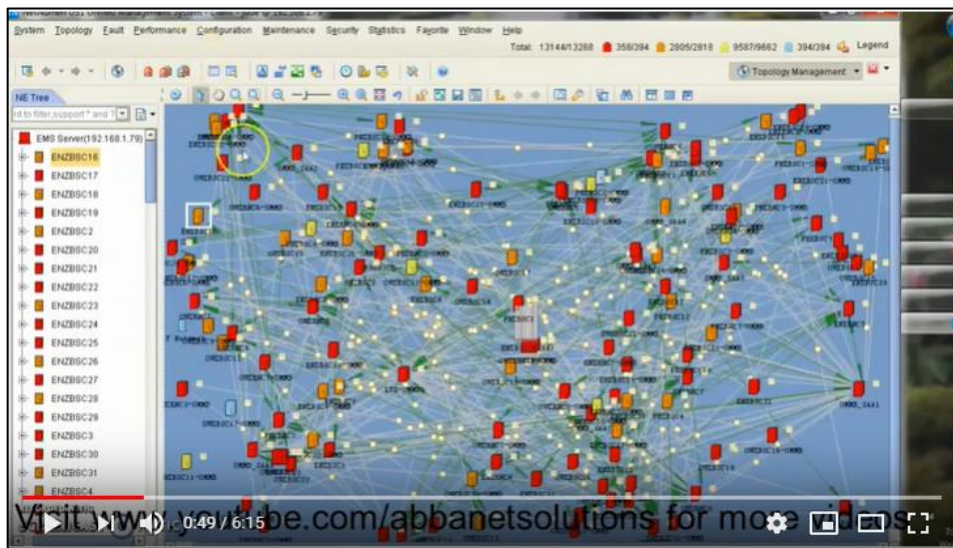
As noted above, the topology graph can reflect faults with visual and audio alarms. Further, the Accused Products provide a mapping relationship between alarm severity levels and the icon colors of faulty NEs.

The topology management module provides a network topology graph that shows the dynamic operation status of managed networks in real time, thus enabling the configuration monitoring and the fault monitoring functions.

- Configuration Monitoring: By regular synchronization, the system can dynamically display configuration changes in network devices. It shows the operation results of adding and deleting NEs and the configuration information of NEs on the topology graph, and informs users of the configuration changes. The update cycle of configuration information can be set as needed.
- Fault Monitoring: The topology graph can reflect faults occurring in lower-level network element management systems in the form of visual and audio alarms. In addition, the system provides a mapping relationship between alarm severity levels and the icon colors of faulty NEs. Acknowledged, unacknowledged, handled and removed faults are displayed differently.

<https://www.scribd.com/document/296996672/SJ-20110907140552-026-NetNumen-U31-R52-V12-11-30-System-Topology-Management-Operation-Guide> (Page 10).

39. The topology management tab shows all present Network Elements (NE), including Layer-2 and Layer-3 objects having alarm based on the value of performance indices. Based on these alarms, the Network element is colored.



<https://www.youtube.com/watch?v=YXA4mn2IUCQ>.

40. In view of preceding paragraphs, each and every element of at least claim 6 of the '240 Patent is found in the Accused Products.

41. ZTE has and continues to directly infringe at least one claim of the '240 Patent, literally or under the doctrine of equivalents, by making, using, selling, offering for sale, importing, and/or distributing the Accused Products in the United States, including within this judicial district, without the authority of Brazos.

42. ZTE has received notice and actual or constructive knowledge of the '240 Patent since at least the date of service of this Complaint.

43. Since at least the date of service of this Complaint, through its actions, ZTE has actively induced product makers, distributors, retailers, and/or end users of the Accused Products to infringe the '240 Patent throughout the United States, including within this judicial district,

by, among other things, advertising and promoting the use of the Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and other instructions on how to implement and configure the Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- <https://www.scribd.com/document/380600612/03-NetNumen-U31-Introduction-40P>
- <https://digitalequity4all.cisd.net/project-info.html>
- http://www.townofcaroline.org/uploads/6/2/7/8/62781479/m_a_technology_-_broadband_proposal.pdf,
- https://www.zte.com.cn/global/about/magazine/zte-technologies/2009/11/en_441/178926
- <https://www.zte.com.cn/global/products/wireless/201903111102/Network-Management-Solution>
- <https://www.scribd.com/document/376180121/06-MW-AC3102-E01-0-NetNumen-U31-Performance-Management-155P>
- <https://www.scribd.com/document/399872799/NetNumen-U31-R22-V12-16-10-Unified-Network-Management-System-Product-Description-V1-0>
- <https://www.scribd.com/presentation/379887074/165853166-06-NetNumen-U31-System-Description-ppt>
- <https://www.scribd.com/document/331167170/NetNumen-U31-Fault-Management-Operation-Guide>
- <https://www.scribd.com/document/296996672/SJ-20110907140552-026-NetNumen-U31-R52-V12-11-30-System-Topology-Management-Operation-Guide>
- <https://www.youtube.com/watch?v=YXA4mn2IUCQ>
- https://www.zte.com.cn/global/about/magazine/zte-technologies/2011/4/en_546/244383
- http://enterprise.zte.com.cn/en/products/network_Infrastructure/switches/CampusSwitches/201708/t20170802_464935.html
- https://www.zte.com.cn/global/products/bearer/data_communication/ethernet_switch/5900E-EN

- <https://vdocuments.site/download/sj-20141121113158-004-netnumen-u31-r06-v121430-unified-element-management>

44. Since at least the date of service of this Complaint, through its actions, ZTE has contributed to the infringement of the '240 Patent by having others sell, offer for sale, or use the Accused Products throughout the United States, including within this judicial district, with knowledge that the Accused Products infringe the '240 Patent. The Accused Products are especially made or adapted for infringing the '240 Patent and have no substantial non-infringing use. For example, in view of the preceding paragraphs, the Accused Products contain functionality which is material to at least one claim of the '240 Patent.

JURY DEMAND

Brazos hereby demands a jury on all issues so triable.

REQUEST FOR RELIEF

WHEREFORE, Brazos respectfully requests that the Court:

- (A) Enter judgment that ZTE infringes one or more claims of the '240 Patent literally and/or under the doctrine of equivalents;
- (B) Enter judgment that ZTE has induced infringement and continues to induce infringement of one or more claims of the '240 Patent;
- (C) Enter judgment that ZTE has contributed to and continues to contribute to the infringement of one or more claims of the '240 Patent;
- (D) Award Brazos damages, to be paid by ZTE in an amount adequate to compensate Brazos for such damages, together with pre-judgment and post-judgment interest for the infringement by ZTE of the '240 Patent through the date such judgment is entered in accordance

with 35 U.S.C. §284, and increase such award by up to three times the amount found or assessed in accordance with 35 U.S.C. §284;

(E) Declare this case exceptional pursuant to 35 U.S.C. §285; and

(F) Award Brazos its costs, disbursements, attorneys' fees, and such further and additional relief as is deemed appropriate by this Court.

Dated: March 25, 2020

Respectfully submitted,

/s/ James L. Etheridge

James L. Etheridge
Texas State Bar No. 24059147
Ryan S. Loveless
Texas State Bar No. 24036997
Travis L. Richins
Texas State Bar No. 24061296
ETHERIDGE LAW GROUP, PLLC
2600 E. Southlake Blvd., Suite 120 / 324
Southlake, Texas 76092
Telephone: (817) 470-7249
Facsimile: (817) 887-5950
Jim@EtheridgeLaw.com
Ryan@EtheridgeLaw.com
Travis@EtheridgeLaw.com

COUNSEL FOR PLAINTIFF