



CrossKeys Systems Corp.

Bandwidth management software

Tolly Verified No.	201302
Part	a
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Achievement Effective bandwidth management.

Overview CrossKeys Dyband is unique bandwidth management software that allows service providers to control aggregate and individual bandwidth usage. It minimizes network congestion and prevents aggressive users from monopolizing bandwidth. Real-time monitoring provides visibility into actual network conditions and historical reporting improves capacity analysis.

Results Test results demonstrated that the CrossKeys Dyband provides:

Bandwidth Management:

Bandwidth is controlled on an individual basis as well as on hierarchical structured aggregation points. A range of priority settings provides for guaranteed, preferred, and equitable allocation schemes enabling distribution of available bandwidth to all subscribers. Rate ramps prevent monopolization by aggressive subscribers and allow operators to define an acceptable average rate, which can be reduced when usage increases.

Real Time Statistics and Historical Reporting:

Performance statistics are provided for average rate, peak rate, congestion percent, and congestion delay for the most recent:

- 60 one-second intervals
- 60 one-minute intervals
- 24 one-hour intervals

Subscriber reports based on up-to-the-second performance criteria are provided on a real-time basis. Detailed historical reports are available for an entire network, aggregations points (groups or subnets), as well as for selectable individual subscriber(s).

Auto Discovery:

Dyband automatically discovers the network and new subscribers and displays them in a hierarchical topology. Through profiles, operators can establish an unlimited number of service tiers. Inheritance of profiles allows operators to efficiently assign policies to subscribers. Policies propagate via inheritance down the topology tree.

Works in Dynamic Host Configuration Protocol (DHCP) and static addressed environments.

Fault Tolerance:

Traffic is transferred to a standby system if a failure is detected along the path through the active system. This fault-tolerance allows traffic to continue to be shaped and performance statistics to be archived.

Test Methodology**Bandwidth Management:**

A 33-Mbyte file was downloaded between an FTP server and a client PC located on the other side of the device under test (DUT). Download times were noted. Initially, the download was rate limited to 400-Kb/s and downloaded in 718 seconds. Next, rate limiting was increased to 800-Kb/s, and download time decreased to 359 seconds. Finally, the rate limit was returned to 400-Kb/s, and download was initiated. Approximately one minute into the download, the rate limit was changed to 800-Kb/s and applied. The statistics screen noted instantly that the rate limit was increased and the duration of download for the 33-Mbyte file validated the applied bandwidth change.

Real Time Monitoring and Historical Reporting:

Real time statistics were viewed via the Dyband Cmon console. Historical reports were displayed via the Dyband Miner application queried from a SQL database.

Auto Discovery:

In The Tolly Group test network, a new workstation was added that was located behind two routers/subnets from the DUT. A new device was promptly discovered, and the route was displayed via the hierarchical tree. In another test a new workstation was added and was assigned an IP address via DHCP. The address was released and the object displayed in the console was edited to show a different IP address. The workstation renewed its IP and the object was updated with the new IP address.

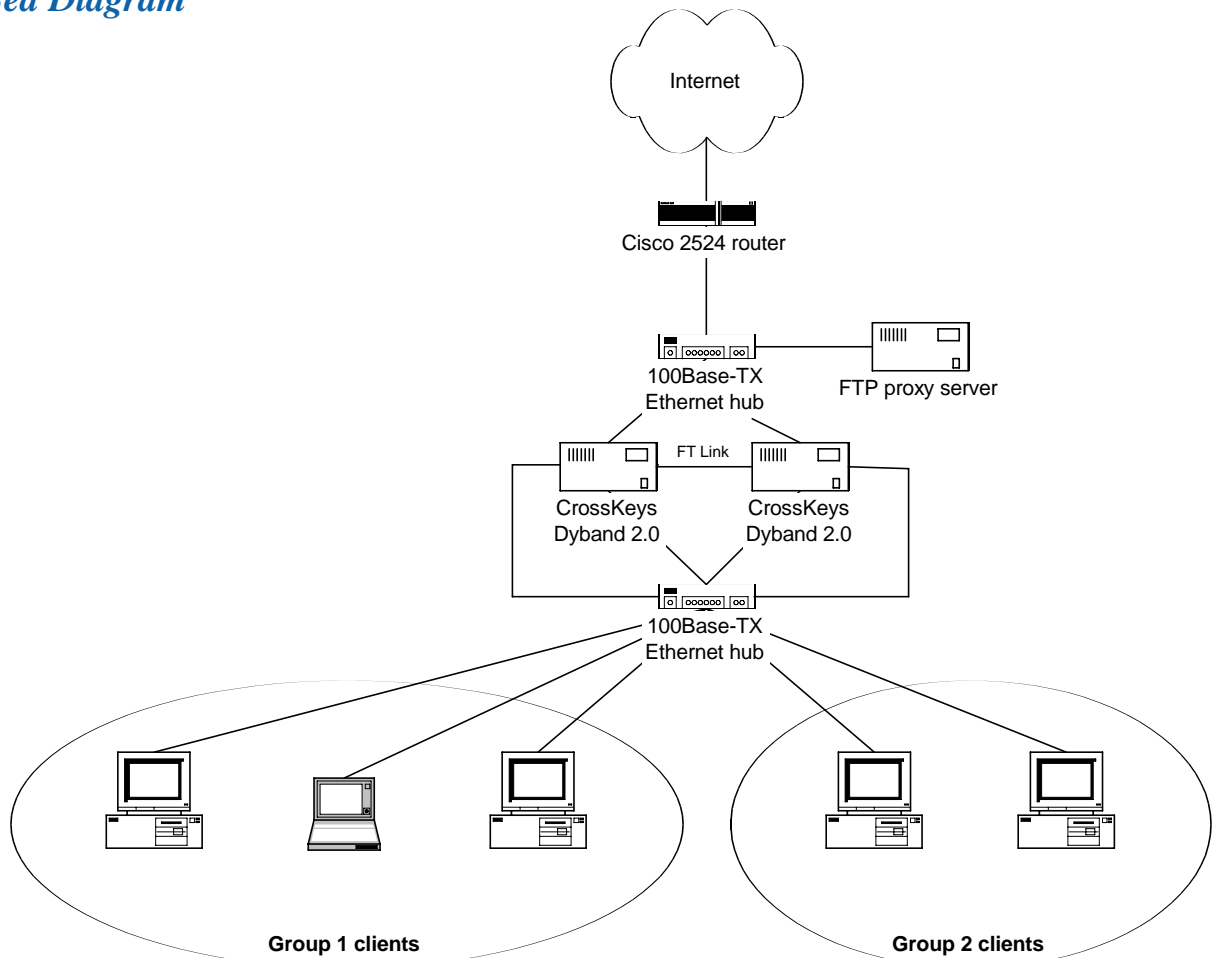
(**Note:** The manual editing of the IP address in the object was required as Windows associated the MAC address with IPs in the DHCP environment, and this was the only way to demonstrate the DUT's capability to update IPs in a DHCP environment.)

Fault Tolerance:

A hardware failure in one of two redundant Dyband units was simulated by the removal of the cable from the device under test. Within 10 seconds, the second DUT had taken control and traffic and bandwidth shaping resumed.

Test Equipment

- A) Two PCs loaded with Dyband 2.0 traffic-shaping software
- B) Two 100Base-TX Ethernet hubs
- C) One PC acting as an FTP server
- D) Five additional PCs acting as network clients
- E) Internet router

Test Bed Diagram*For More Product Information Contact:*

CrossKeys Dyband Business Unit
 3435 Winchester Road, Suite 400
 Allentown, PA 18104-2209
 Tel: 1-866 GO DYBAND
 Fax: 1-610-530-2020
<http://www.crosskeysdyband.com>

CROSSKEYS
Dyband™

For More Information on The Tolly Group's Services:

Visit our World Wide Web site at: <http://www.tolly.com>, E-mail to info@tolly.com, call (800) 933-1699 or (732) 528-3300, or fax (732) 528-1888.