

# Adaptive Compression

The demands for bandwidth in branch offices continue to increase. More and more data and applications reside in remote datacenters are delivered over the WAN. File transfers, backups, video, and other rich enterprise applications all require significant network bandwidth. This flood of application traffic often leads to congested WAN pipes and poor application performance. One solution to this dilemma is to upgrade network bandwidth. However, such an approach can have a significant cost in terms of additional telecom spending. In addition, in some areas of the world, faster WAN links may not be available. Even after an upgrade, today's bandwidth hungry applications will quickly consume the additional capacity. This leads to a viscous cycle of continuous network upgrades. Citrix Branch Repeater™ with HDX™ technology offers a far more cost effective solution to addressing the problem of limited bandwidth and network congestion.

## How It Works

Citrix Branch Repeater provides breakthrough adaptive compression technology to reduce WAN bandwidth requirements. Adaptive compression works between appliance pairs residing on opposite ends of a WAN connection. It uses multiple compression engines to optimize all applications traffic at full WAN speeds.

Branch Repeater uses several standard compression algorithms to reduce the size of data as it moves across the WAN. Branch Repeater also maintains a compression history that is shared across connections. This means that data sent earlier by one connection can be used later to optimize traffic flowing over another connection. Smaller data streams that are seen frequently are stored in memory for low-latency access. Larger data streams, such as bulk file transfers, are stored on disk. This large-history, multi-session compression technology erases the distinction between “compressible” and “uncompressible” data. For example, a JPEG image is normally considered to be uncompressible. But when sent multiple times, the entire image can be replaced by a pointer to the data already in the receiving appliance's compression history, resulting in

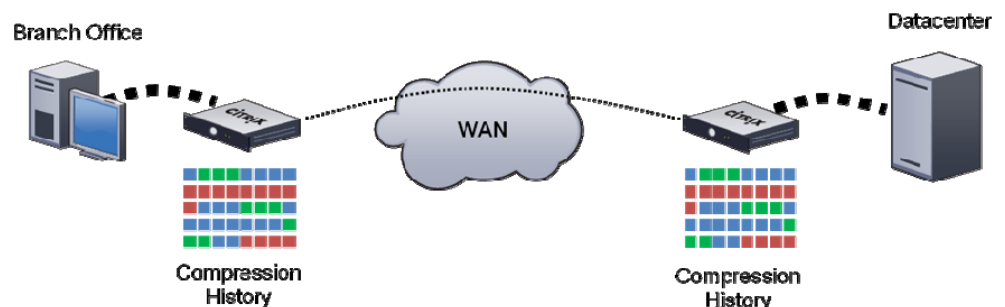


Figure 1 Reducing bandwidth requirements with adaptive compression

significant bandwidth savings.

Branch Repeater is not limited to referencing whole file objects. By leveraging pattern-matching down to the block and byte level it can also remove redundant data transmitted across different files and applications. For example, consider a branch user who downloads a file attachment from their email, edits the document, and then saves the resulting file to a remote file share. With Branch Repeater's advanced differential compression techniques, the only data transferred during the save operation is the delta between the original file attachment and the modified version.

Adaptive compression automatically self-adjusts based on bandwidth, network conditions, and type of traffic. In typical deployments multi-level compression results in compression ratios of 10:1 to 300:1, with peak ratios as high as 3500:1.

## Key Benefits

### **Support more users and applications on the same bandwidth**

Shrinking IT budgets mean that IT organizations must figure out ways to do more with less. Adaptive compression allows you to support more users and applications using existing WAN capacity. Now you can grow your business without growing bandwidth.

### **Solve network congestion issues**

For heavily congested links, adaptive compression can provide immediate relief by reducing bandwidth usage by up to 80%.

### **Speed collaborative workflows between remote sites**

Adaptive compression is ideally suited to accelerate the exchange of large files between distributed project teams. By deploying Branch Repeater colleagues can pass files back and forth around the globe in just a fraction of the time.

## Summary

The demands for additional network capacity are not going away. The cost of upgrading WAN circuits may be less expensive today than it was a few years ago. However, these cost savings have not kept pace with the flood of new, bandwidth hungry applications operating on the network. Instead of continuously upgrading network bandwidth, Citrix Branch Repeater with HDX technology provides a smart alternative to drastically reduce the bandwidth requirements in each location and use existing capacity more intelligently.

## Additional Resources

- Visit <http://www.citrix.com/branchrepeater>
- Courses – <http://www.citrix.com/training>
- Knowledgebase – <http://www.citrix.com/kb>