BIGFIX

Software Distribution for a Distributed World

Executive Summary

The distributed enterprise presents a unique set of challenges for software distribution. As more and more corporate networks use a variety of connection technologies—from satellite to shared MPLS and more—to access remote, mobile, and roaming endpoints, the need to meet these challenges grows ever greater. In order to meet the demands of this new environment, software distribution models that assume a level of decentralization are better suited than legacy models that rely on local area networking (LAN) protocols and technologies.

Many software distribution solutions are based on a single network model and offer, at best, piecemeal functionality to address one or more of the requirements of the distributed enterprise. By contrast, BigFix has been providing payload and software distribution since its inception and offers mature, enterprise-class software distribution capabilities that address the full range of distributed network challenges.

BigFix implementation ensures the distributed enterprise the highest degree of visibility, speed, and control—at the lowest cost—for software distribution programs.

Distributed network challenges can be grouped into the following broad areas:

- High-latency, low-bandwidth networks
- Highly distributed assets with centralized IT
- Dynamically changing networks
- Roaming endpoint support
- Identifying and targeting the specific assets that need specific packages
- Complexity of multi-platform packaging
- Poor visibility and long lag time
- Cost and resource requirements to scale

For each challenge area, BigFix offers the following functionality:

- Dynamic bandwidth throttling
- Relay infrastructure with pre-caching
- Support for dynamic and evolving networks
- Dynamic relay selection
- Intelligent software distribution based on endpoint characteristics
- Software distribution wizards and end-user self-provisioning
- Continuous software application license usage and metering, including support for existing software repositories
- Low-cost scalability with minimal infrastructure requirements

BigFix ensures the distributed enterprise the highest degree of visibility, speed, and control—at the lowest cost—for software distribution programs.

Challenge: High-latency, low-bandwidth networks, particularly in satellite offices. Even as corporate networks stretch ever further globally, network infrastructures struggle to keep up. Many enterprise infrastructures, especially in segments such as retail, run over low-bandwidth, high-latency networks. As a result, software distribution tasks can take up a high percentage of available bandwidth, slowing network performance—and end-user productivity.

BigFix functionality: Dynamic bandwidth throttling. BigFix can be configured to consume no more than a specified percentage of available bandwidth. This ensures a high quality of service delivery without negatively impacting network bandwidth or latency. To provide a sense of this rich policy-based flexibility, the bandwidth allocated can be dynamically throttled based upon the type of asset, version of OS, location of the asset, type of payload or any combination of these properties and others defined by the IT staff.

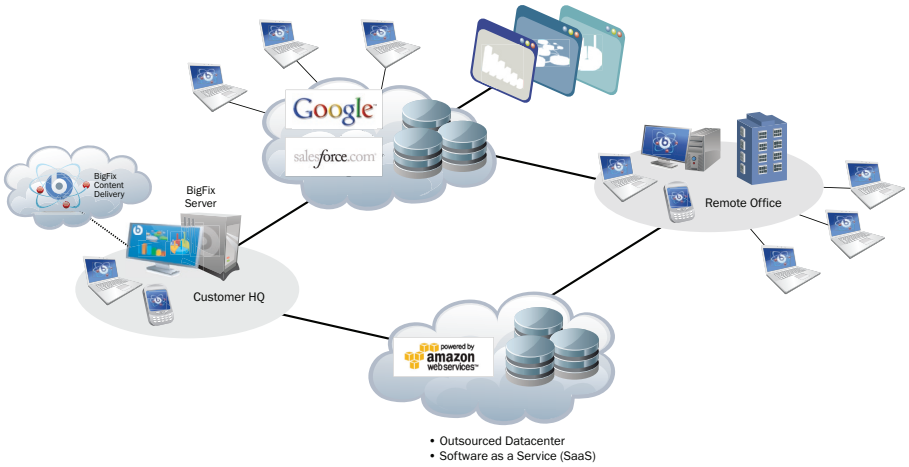
> **Customer example:** One of the world's largest hotel chains, based in the Washington, DC area, was able to distribute Windows XP SP2 to hotel locations as far away as Kuala Lumpur with no noticeable impact on the network.

With BigFix, the endpoint checks itself and installs a patch when needed, cutting down on communication with the server.

Challenge: Highly distributed assets with centralized IT. Pushing out packages across distributed assets is difficult to do, especially if the organization does not employ pre-caching. IT often has to schedule patches, which creates a lag between the need for a patch and the time it is actually delivered—not to mention the significant time required to send the patch out across the wire. In addition many existing solutions use highly "chatty" network protocols better suited for the LAN environment, requiring a large amount of communication between the endpoint and the server. This consumes even more network bandwidth and time.

BigFix functionality: Relay infrastructure with pre-caching. In the BigFix infrastructure, BigFix-managed assets can perform the functions of a Relay (not as a dedicated piece of hardware, but as a shared device). Relays act as proxy points between a remote set of machines in one part of the network and the BigFix server (typically deployed at a customer's main data center or headquarters office). Relays can also function as caching points that will cache software packages for distribution to downstream devices. This can greatly reduce network bandwidth and dramatically increase service delivery across globally distributed and low-bandwidth environments. Furthermore, with BigFix, the endpoint checks itself and installs a patch when needed, cutting down on communication with the server.

> **Customer example:** One of the world's largest retailers has a VSAT (satellite) network with low-bandwidth (56k) links to its remote stores. Each store has approximately 100 devices communicating through a single relay. When IT chooses to distribute software, the package is distributed once to the BigFix Relay. The downstream devices then obtain the software from the upstream relay within their own subnet/VLAN.



BigFix's intelligent agent architecture fits into any type of network model—centralized, distributed, or even cloud-based computing environments.

Because BigFix pushes all processing to the endpoint—eliminating the need for a heavy, central server-centric architecture—the solution can transform to support an enterprise network no matter how it changes.

Challenge: Dynamic, radically changing networks. Competing technologies are based on the premise that all endpoints are on the same, privately connected LAN. These tools rely on heavy back-end client-server technologies that are extremely brittle and susceptible to failure as the network changes. Such tools are not equipped to handle radical changes when networks are opened to partner networks, cloud networks, etc. However, as the evolution continues from private to highly distributed to cloud networks, a company's vital information is increasingly contained outside of the network perimeter, in the Internet cloud. This creates the need for a solution that can manage assets residing anywhere on any type of network.

BigFix functionality: Support for dynamic and evolving networks. Unlike many vendors who play "catch up" as networks evolve, BigFix is based on an assumption that the network is dynamic and ever-changing. Because BigFix pushes all processing to the endpoint—eliminating the need for a heavy, central server-centric architecture—the solution can transform to support an enterprise network no matter how it changes (see "Endpoint-Based Processing: The Key to BigFix Successes in Distributed Environments"). Lightweight, agent-based processing ensures that software distribution is available enterprise-wide to all devices, on or off the network. And BigFix is easily extensible to meet future network needs. To obtain functionality you don't have today, simply subscribe to a new feed from the BigFix Content Delivery service—minimal or no additional hardware or infrastructure is required.

> **Customer example:** A global retailer rapidly expanded their 5,000 endpoint deployment of BigFix to over 150,000 endpoints without adding additional server infrastructure. Moreover, they continue to add new BigFix services—in addition to software distribution—without installing more software or hardware to their implementation.

Challenge: Support for roaming endpoints. Because many software distribution tools can provide updates only during defined change management windows, these tools cannot effectively manage roaming endpoints—which may or may not be on the corporate network when IT operations are performed. Since the majority of end users connect remotely at some point during the workweek, this represents a very large set of the computing population.

BigFix functionality: Dynamic relay selection. BigFix enables devices to find the closet Relay, regardless of location—even when traveling outside the corporate network and connecting through an open Internet connection such as a wireless hotspot. This ensures that software distribution can be handled regardless of the location of the device. Additionally, endpoints can obtain software packages such as anti-virus updates from the vendor itself off its Internet-facing distribution points. Thus, the mobile computing devices do not need to route through the corporate network to obtain an update.

> **Customer example:** One of the largest school districts in the country is able to maintain management, including patch and anti-virus updating, to a fleet of mobile computing devices that travel in and out of its corporate network several times a day.

BigFix has achieved 95%+ first-pass success rates on some of the most complex and distributed networks in the world—ensuring not only that the software has been delivered to the appropriate devices, but also that it has been installed correctly.

Challenge: Identifying the need for and applicability of a particular patch or package. Many IT organizations are forced to utilize a "push and pray" approach to software distribution. Because the software distribution tool offers poor visibility and no validation mechanism, IT pushes out a patch without being able to determine 1) whether a given endpoint actually needs the patch, or 2) whether the patch is installed correctly on a given endpoint.

BigFix functionality: Intelligent software distribution based on endpoint characteristics. BigFix enables administrators to define baseline configurations for device types based on any characteristic of the device. When a new device becomes part of a group or a device changes state and becomes active within a group, it inherits the baseline for that group and all software packages—applications, patches, endpoint security updates, etc.—are automatically downloaded and applied if the administrator has configured BigFix to perform these actions. This also cuts down on network bandwidth usage as it eliminates dissemination of unnecessary patches. Additionally, BigFix has achieved 95%+ first-pass success rates on some of the most complex and distributed networks in the world—ensuring not only that the software has been delivered to the appropriate devices, but also that it has been installed correctly.

> **Customer example:** One of the country's largest HMOs expands its device footprint by an average of 10% per year. As new machines are deployed, they automatically become active within a specific group and inherit the baseline characteristics of that group. Without any administrator interaction the devices are automatically configured with the appropriate settings, and the appropriate applications are applied. This has dramatically decreased the time it takes to provision a new device and deploy it into the production environment.

Challenge: The complexity of multi-platform software distribution. In many solutions, multi-platform software distribution involves complex, multi-step script and code writing that requires specialized knowledge and, in turn, specialized staff. Worse, manual, multi-step processes increase the likelihood of errors, and the length of time required to develop the code creates a large window of vulnerability in the time-sensitive software installation and validation process.

BigFix functionality: Software distribution wizards and end-user self-provisioning. BigFix includes several software distribution wizards that walk administrators through the process of distributing software through the BigFix infrastructure. No code writing or scripts are required—whether the endpoint is running Linux, Unix, Windows, or Mac. BigFix operators can also provide end users the ability to self-provision authorized software. This raises end-user satisfaction with IT and also improves IT operational efficiency.

> **Customer example:** By leveraging BigFix's cross-platform coverage and automated software distribution, a large retail client was able to reduce dedicated FTEs by 2/3 and recognize $1 million in annual savings.

BigFix's software distribution product can support software distribution to hundreds of thousands of globally distributed endpoints in a dynamic network environment with a single server.

Challenge: Poor visibility and long lag time, translating to poor currency of data and increased risk. For most tools, updated visibility into endpoint status occurs only during an inventory cycle—which may take place as infrequently as once a week. As a result, IT doesn't know what's on its endpoints, or which endpoints need which patches. After software delivery, this poor visibility prevents IT from getting accurate validation that software has been delivered and installed correctly—either across all endpoints or for a single endpoint. This also exposes the organization to increased risk and overspending on software that may be unauthorized or unnecessary.

BigFix functionality: Continuous software application license usage and metering, including support for existing software repositories. BigFix offers software asset management (SAM) technology that continuously monitors the state and usage of applications running on an endpoint. BigFix can be configured to support and distribute software from an existing repository. The BigFix software distribution solution provides a rich set of reports that correlates application usage and license allocation to active application contracts/licensing, ensuring that organizations never exceed purchased licenses and are actively using the applications they have licensed. This information is used to properly reallocate licenses and to distribute and remove software based on usage. By increasing visibility, organizations enjoy the benefit of having better control and management over their assets, which translates directly into cost savings. Buy only what you need and use what you have.

> **Customer example:** BigFix saved an energy company tens of thousands of dollars in software licensing fees by performing a true-up and discovering that there was a significant amount of unnecessary software installed on laptops. IT staff also enjoyed the certainty that they were in compliance with software licensing contracts.

Challenge: The high cost of scalability. The variety of connectivity options gives the distributed enterprise multiple approaches for scaling assets. While most software distribution tools can scale as the enterprise grows, this scalability comes at a high cost and can require a substantial investment in additional infrastructure. Since these tools rely on servers to do most of the processing and analysis instead of distributing that work directly to the endpoint agents, scaling requires adding many layers of hierarchical servers—sometimes in the hundreds. Beyond the capital expenditure involved, the costs associated with the administrative overhead are not trivial.

BigFix functionality: BigFix's software distribution product can support software distribution to hundreds of thousands of globally distributed endpoints in a dynamic network environment with a single server. Time to implementation can be measured in days for most customers, enabling rapid time to value.

> **Customer example:** As the number of endpoints continues to grow at one of the largest federal agencies, the IT staff there is confident that it will not require additional server infrastructure to manage the growing environment. Rather than spend their time managing the back-end infrastructure, they can look for other ways to leverage the BigFix Unified Management Platform.

Enhance Existing Distribution Functionality with BigFix

While BigFix offers excellent end-to-end software distribution capabilities as a standalone solution, it also works with existing solutions to enhance and expand functionality. For example, for organizations that employ Wyse or InstallShield for packaging, BigFix can take the outputs and offer the comprehensive, granular visibility, validation, and reporting that it provides with any tool. IT organizations can also look to BigFix as a key technology partner in addressing the security and management challenges associated with bridging the gap between physical and virtualized device management.

Endpoint-Based Processing: The Key to BigFix Successes in Distributed Environments

Legacy software distribution products are built under the assumption that the endpoints are all located on the LAN—the same network as the server. Thus, having all processing performed on the server presents no performance or efficiency problems. However, in distributed environments with roaming endpoints, the central server processing model breaks down. True speed, accuracy, and efficiency requires a model where processing is conducted on the endpoint itself—exactly the BigFix approach.

With BigFix, having the assessment and analysis conducted on the endpoint increases the speed of asset discovery and software delivery as well as the accuracy of the classification and installation validation. This is due to a number of factors, including the optimization of server-endpoint communication. Less communication is required between the server and endpoint, increasing speed and reducing the amount of network bandwidth consumed. Additionally, BigFix doesn't rely on LAN-based protocols such as SMB and RPC, which are slow, insecure, and simply inappropriate for communication over long-haul, distributed environments. Rather, BigFix uses a highly secure PKI communication protocol and carefully monitors and consumes only the bandwidth available to transmit data, making it both effiicient and secure.

Without waiting for a centralized server to finish performing a compiled analysis of asset classification data, the IT operator is able to receive answers to inquiries on assets within minutes. This is true for queries on a single computer, a set of computers, or the entire computing environment. This results in highly accurate software classification, distribution, and validation as well as a less-complex and heavyweight back-end infrastructure. By matching the characteristics of a distributed enterprise, the BigFix architecture results in less network bandwidth usage, increased speed accompanied by greater accuracy and reliability, and better scalability.

Endpoint processing in the BigFix software distribution solution is carried out through the BigFix Agent, a key component of the BigFix Unified Management Platform. Continuously assessing the endpoint and enforcing policy—regardless of connectivity—this single, multi-purpose management agent represents a radical departure from legacy client-server architectures and powers a resilient distributed intelligent infrastructure. The BigFix Agent communicates policy information with the BigFix Server—which hosts the BigFix console, reporting/analysis dashboards, and policies—through BigFix Policy Messages, also known as Fixlet messages. The fourth component of the Unified Management Platform, BigFix Relays act as communication and aggregation points and staging areas for BigFix Policy Messages and patch/remediation content.

BigFix: Addressing the Needs of the Distributed Enterprise from the Ground Up

The distributed enterprise is a fact of corporate life—one whose presence will only continue to grow. IT organizations need a software distribution solution that can address the key challenges of software delivery across a distributed network, including poor visibility and high-latency, low-bandwidth networks.

Only BigFix tackles the problems of distributed networks from the ground up. BigFix's endpoint-centric architecture is built on the premise of visibility into all assets regardless of location, platform, or connection state. What's more, BigFix offers management of endpoints worldwide from a single management console.

BigFix enables unsurpassed levels of real-time visibility and control of globally distributed desktop, mobile, and server computer infrastructures ranging from hundreds to hundreds of thousands of endpoints. The BigFix technology platform continuously manages the health and security of computers at the velocity of change. Without requiring massive investment in dedicated management resources, BigFix optimizes software distribution for the complex and highly distributed networks.

As an example of the level of control possible, BigFix can dynamically configure an MSI package locally on an endpoint, leveraging the advanced configurability available in the BigFix action language. BigFix can impersonate the local logged-on user and can install machine and user parts of an application in a single action. After installation, BigFix provides immediate feedback and visibility into the success or failure of the install back to IT.

BigFix frees the IT administrator to automate software distribution to a device or a group of devices, significantly driving down cost. For example, IT can schedule software or patch deployment in advance, specifying exactly when the delivery is to take place—whether it's the next day or the next week.

Once the BigFix platform is deployed, implementing additional solutions is as simple as subscribing them to the device—no additional infrastructure is required. This subscription model applies not only to solutions that are available today, but also to new solution offerings that BigFix develops over time, so the organization can add functionality to address changing network requirements—all through a lightweight, instant-on process that imposes minimal or no impact on the customer.

About BigFix

BigFix®, Inc. is a leading provider of high-performance enterprise systems and security management solutions that revolutionizes the way IT organizations manage and secure their computing infrastructures.