

# Branch Cache



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## Introduction

Organizations constantly seek ways to lower operating costs while not affecting productivity. One particular area in which organizations look for workable solutions is network and [security infrastructure](#) supporting branch or any remote office. As an organization spreads its wings, employees start accessing documents and downloading them from a central database. A lot of these documents are heavy, demanding very high wide area network bandwidth usage having unfavorable effects on productivity.

When Microsoft released Windows 7, they also delivered BranchCache™, a solution designed to address this challenge.

This document provides an overview of BranchCache, explains the different modes in which BranchCache operates and describes how BranchCache is configured. This document additionally explains how BranchCache works with SCCM servers.

## Overview

The concept of Branch Cache is rather simple. Once it is enabled, it makes a copy of the data that is being accessed from the central database, locally in the branch office/remote location. When another source looks for the same file, it is transferred from the local cache instead of using WAN. In other words, BranchCache allows systems in the same subnet (and separated from a central content source) to download content locally rather than depending on network link back to the original content source.

BranchCache is designed to work with the existing [network and security](#) infrastructure. It supports IPv4, IPv6 and end-to-end encryption methods such as SSL and IPsec. It ensures that the most recently updated version of a package is served and that clients are authorized by SCCM server before they retrieve the package from within the local branch.

There are two types of operation or solution available in BranchCache - Hosted Cache mode and Distributed Cache mode.

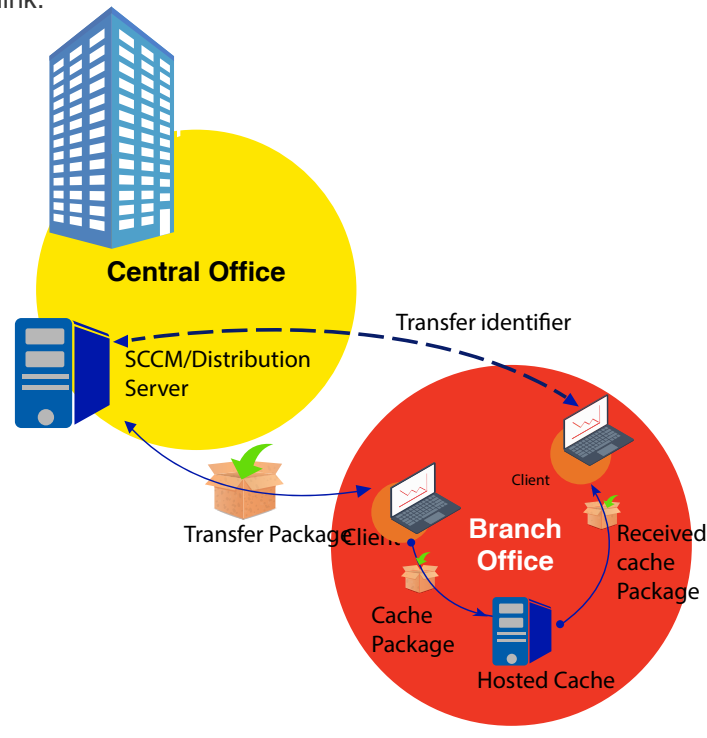
## Host Cache Mode

In the hosted cache mode, there is a computer running a Windows 2008 R2 server, where the data downloaded is saved as the local repository.

Clients are configured with the fully qualified domain name of the host computer so that they can retrieve packages from the Hosted Cache, whenever required. If the packages are not available in the cached server, they can then be retrieved from SCCM/Distribution servers by using WAN link.

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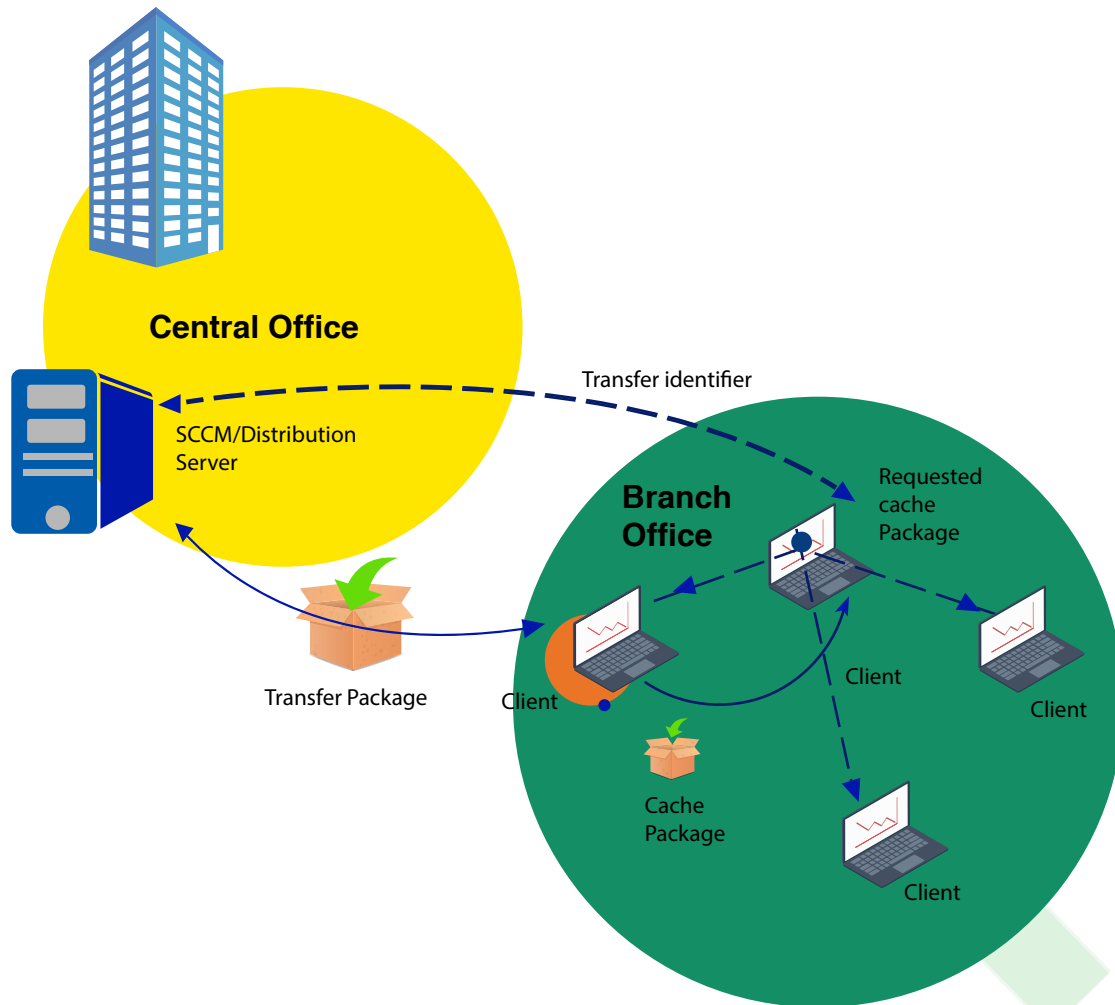
- The workstation connects to the SCCM server and requests a package exactly as it would have, if retrieving the file without using BranchCache.
- The SCCM server authenticates and authorizes the workstations in the network and security infrastructure just like it would without using BranchCache. If successful, it returns the package via the same channel that data would normally have been sent.
- The workstation uses the hashes in the package to search for the package in the Hosted Cache server. Since this is the first time any workstation has retrieved the file, it is not already cached on the local network. Therefore, the workstation retrieves the package directly from the SCCM server.
- The workstation establishes an SSL connection with the Host Cache server and it offers the package identifiers over this encrypted channel.
- The Hosted Cache server connects to the workstation and retrieves the set of blocks that it has not cached.
- The second workstation requests the same package from the SCCM server and the SCCM server authorizes the user and returns the package identifiers.
- The workstation identifiers request the package from Hosted Caches server. The Hosted Cache server encrypts the package and returns it to the workstations.
- The workstation decrypts the data, computes the hashes on the blocks received from Hosted cache and ensures that it is identical to the block hashes that the SCCM server provided as part of the package. This ensures that the content has not been modified.

## Distributed Cache Mode

The concept of Branch Cache is rather simple. Once it is enabled, it makes a copy of the data that is being accessed from the central database, locally in the branch office/remote location. When another source looks for the same file, it is transferred from the local cache instead of using WAN. In other words, BranchCache allows systems in the same subnet (and separated from a central content source) to download content locally rather than depending on network link back to the original content source.

BranchCache is designed to work with the existing network and security infrastructure. It supports IPv4, IPv6 and end-to-end encryption methods such as SSL and IPsec. It ensures that the most recently updated version of a package is served and that clients are authorized by SCCM server before they retrieve the package from within the local branch.

There are two types of operation or solution available in BranchCache - Hosted Cache mode and Distributed Cache mode.



- The workstation connects to the SCCM server and requests a package exactly as it would if it were to retrieve the package without using BranchCache.
- The SCCM server authenticates and authorizes the workstations. The server returns and identifies that the workstation used to search for the package is on the local network. Since this is the first time any workstations has attempted to retrieve the package, it is not already cached on the local network. The workstation retrieves the package directly from SCCM server and then caches it locally.
- The second workstation requests the same package from SCCM server. The SCCM server authenticates and authorizes the workstation in exactly the same manner it would if BranchCache was not being used. If successful, it returns package via the same channel that package would normally have been sent.

- The second workstation sends a request on the local network for the required package by using the WS-Discovery multicast protocol.
- The workstation that previously cached the package sends the file to the requesting workstations. The package is encrypted by using a key derived from the hashes sent by the SCCM server as part of the package.
- The workstation decrypts the package, computes the hashes on the blocks received from the first workstation and ensures that it is identical to the block hashes provided as part of the package by the SCCM server. This ensures that the package has not been modified.

## BranchCache : Configuration

BranchCache can be configured either by manual configuration (netsh command) or GPO (for mass update). These are the steps:

- Enable Branch Cache (disabled by default).
- Select Distributed Cache or Host Cache mode.
- Specify the size of the client computers cache (only for Distributed Cache mode). By default, it will use 5% of the hard disk drive for the cache.
- Specify the location of the hosted cache (Only for Host cache mode).

## Conclusion:

We can be benefitted with BranchCache if we have a remote office without having SCCM server. This will help us to reduce the bandwidth utilization of existing WAN link in the network and security infrastructure.

## References:

Reference has been taken from the document of BranchCache in Windows 7 and Windows Server 2008 R2 Overview published over Microsoft website.

## About the Author



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Ramesh Adarakatti has 8 plus years of experience as an IT Infrastructure Professional including Senior Technical Specialist in Cloud Technology Management Services Practice. He has Computer Engineering Diploma and a Masters degree in IT. In the past he has engaged in different roles such as System Engineer, Teach Lead etc. He is a specialist in Windows, VMware and SCCM Administration and in past worked with CSC Pvt Ltd and InKnowTech Pvt Ltd. In his ideal time he chooses to socialize and Music is his passion. You can reach out to him at [Ramesh.Adarakatti@happiestminds.com](mailto:Ramesh.Adarakatti@happiestminds.com)

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