

# "Caching-In" for SharePoint Performance

*@spmcDonough  
on Twitter  
for heckling  
purposes!*



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Thank you for having me, BASPUG!

# About Cardinal



Founded in 1996  
Cincinnati Ohio



350+ FTEs  
\$50M+ Revenue



Cincinnati  
Columbus  
Charlotte  
Raleigh  
Tampa



Mobile  
Portals & Collab  
UXD  
Application Dev  
WEM  
BI



Agile Coaching  
Business Analysis  
Project Management

# Session Overview

- Caching 101
- Understanding each of SharePoint's platform caching options
- How to leverage and control caching
- Scenarios quiz
- Q & A

Why I care about caching

okay ...

Why I



catching

okay ...

Why I



caching

Formerly the architect for a Fortune 25 company's publicly facing SharePoint presence

okay ...

Why I



caching

Formerly the architect for a Fortune 25 company's publicly facing SharePoint presence

Highly trafficked environment with about 75,000 page views per hour (peak).



okay ...

Why I



caching

Formerly the architect for a Fortune 25 company's publicly facing SharePoint presence

Highly trafficked environment with about 75,000 page views per hour (peak).

Averaging (at peak) 1,000 requests/second into IIS

000 requests/second into IIS



Supported initially with just 2 web front ends (WFEs). Eventually moved to 4 WFEs for growth.

... and finally

... and finally



I got sick AND  
tired of hearing some  
people complain that  
SharePoint didn't scale!!!

So, what is caching?

Webster's  
New World<sup>™</sup>  
Dictionary



Third College Edition

etc. caused by living for some time in a confined space or an isolated area, esp. in winter
cable, rope < L capere, to take hold: see HAVE |
1 a thick, heavy rope, now often of wire strands
2 the strong, heavy chain attached to a ship's anchor; anchor cables were formerly of rope
3 CABLE LENGTH 4 a bundle of insulated wires through which an electric current can be passed; telegraph or telephone cables are often laid under the ground or on the ocean floor \*5 a cablegram
6 CABLE TV —vt. -bled, -bling 1 to fasten or furnish with a cable or cables 2 to transmit by undersea cable 3 to send a cablegram —vi. to send a cablegram
Ca-ble (ká'bal), George Washington 1844-1925; U.S. novelist

\*cable car a car drawn by a moving cable, as across a canyon, over a steeply inclined street, etc.

cable-cast (ká'bál kást') -vt. -cast', -casting' to transmit directly to receivers by means of coaxial cable —n. a program that is broadcast —cable-cast'er n.

\*cable-gram (-gram) n. a message sent by undersea cable
cable-laid (ká'bál lád') adj. made of three or four plain-laid ropes twisted together from right to left

cable length a unit of nautical measure equal to 720 feet (120 fathoms or 219 m) or, in British usage, 600 feet (100 fathoms or 183 m) or 607.6 feet (¼ of a nautical mile or 185 m)

\*cable railway a street railway on which the cars are pulled by a continuously moving underground cable

cable stitch a type of raised stitch used in knitting; it resembles ropes twisted together

\*cable TV a television system in which a high antenna and one or more dish antennas receive signals from distant and local stations, electronic satellite relays, etc. and transmit them by direct cable to the receivers of persons subscribing to the system

cab-man (káb'mán) n., pl. -men (-mán) CABDRIVER

ca-bob (ká'báb) n. KEBAB

cab-o-chon (ká'bá' shán; Fr ká'bó shón') n. [Fr < caboche, head] 1 any precious stone cut in convex shape, polished but not faceted: see GEM, illus. 2 the style of cutting such a stone

ca-bombá (ká'bám'bá) n. [ModL < Sp] any of a genus (Cabomba) of waterlilies (family Cabombaceae), esp. a species (C. caroliniana) with submerged, needlelike leaves and rounded, floating ones: used in aquariums, garden pools, etc.

\*ca-boodle (ká'bód'á l) n. [ca-, colloq. intens. prefix (< ? Ger ge-) + BOODLE.] [Colloq.] lot; group (the whole caboodle)

ca-boose (ká'bóos') n. [MDu kabuus, kambuis (< ?), ship's gallery] 1 [Brit.] Naut. a ship's kitchen; gallery \*2 the trainman's car on a freight train, usually at the rear

Cab-ot (ká'b'ót) 1 John (It. name Giovanni Caboto) c. 1450-c. 1498: It. explorer in the service of England; discovered coast of North America (1497) 2 Sebastian c. 1476-1557; Eng. cartographer & explorer: son of John

cab-o-tage (ká'b'ótáj; -tájh') n. [Fr < caboter, to sail along the coast < MFr cabo, cape < Sp < L caput, HEAD] 1 coastal navigation and trade, esp. between ports within a country 2 air transport within a country 3 the right to engage in cabotage, esp. as granted to foreign carriers

ca-bretta (ká'bret'á) adj. [ < Sp cabra, goat (< L capra, fem. of caper: see CAPRIOLE) & It fem. dim. suffix -etta] designating or of a soft leather made from a special kind of sheepskin

ca-brilla (ká'bri'lá; -bré'yá) n. [Sp, prawn, dim. of cabra, goat: see prec.] any of various edible, percoid fishes (family Serranidae) found off Florida, the West Indies, etc.

Ca-brini (ká'bri'né), Saint Frances Xavier (called Mother Cabrini) 1850-1917; U.S. nun, born in Italy: first U.S. citizen canonized; her day is Dec. 22

cab-ri-ole (ká'bri'ól) n. [Fr; see fol.] 1 a leg of a table, chair, etc. that curves outward and then tapers inward down to the foot, often clawlike and grasping a ball 2 Ballet a leap in which one leg is thrown upward and then both legs are beaten together

cab-ri-olet (ká'bri'é lól) n. [Fr, dim. of cabriole, a leap, caper < It capriolo, CAPRIOLE] 1 a light two-wheeled carriage, usually with a hood that folds, drawn by one horse 2 a former style of automobile like a convertible coupe

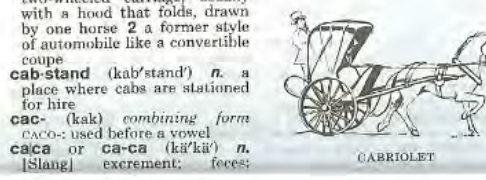
cab-stand (ká'b'stánd') n. a place where cabs are stationed for hire

cac- (kák) combining form
CACO-: used before a vowel

ca-ca (ká'ká) n. [Slang] excrement. feces:



CABLE



CABRIOLET

cacao butter COCOA BUTTER
cac-cla-toire (ká'shé' tór'e) adj. [It, lit., hunter < pp. of cacciare, to hunt, chase < VL \*capiare, to catch] cooked in a casserole with olive oil and tomatoes, onions, spices, wine, etc. [chicken caclatore]

cacha-lot (kásh'á lút', -lót) n. [Fr < Sp cachalote < colloq. Port. cachalote, head] SPERM WHALE

cache-t (kásh't) n. [Fr < Sp cachette, conceal < VL \*caccitare, store, collect, compress < L caccare, constrain < caccus, cp. of cooper's collect: see COAGENT] 1 a place in which a thief or hoodlum hides, especially, as by explorations of cupboards 2 a safe place for hiding storing things 3 anything stored or hidden in such a place —vt. to cache, cach'ing' to hide or store in a cache —SYN. HIDE'

cache-pot (kásh'pát, pót) n. [Fr < cacher, to hide (see prec.) & pot, POT] a decorative pot, jar, etc., used esp. for holding potted houseplants Also cache pot

cache-sexe (kásh'séks') n. [Fr < cacher, to hide (see CACHE) & sexe, sex] a small cloth or band worn, as by an otherwise nude dancer, to conceal the genitals

ca-chet (ká shá', kásh'á) n. [Fr < cacher; see CACHE] 1 a seal or stamp on an official letter or document: see also LETTRE DE CACHET 2 any sign of official approval 3 a) a mark or sign showing something is genuine, authentic, or of superior quality b) distinction or prestige 4 Philately a commemorative design on an envelope that marks some historical or philatelic event 5 a little, round white enclosing a bad-tasting medicine —vt. Philately to print a cachet on (an envelope)

ca-chex'ia (ká'kék'sé'á) n. [ModL < Gr kachexia, bad habit of body] < kakos, bad + hexis, habit < ecetra, to have < IE base \*sek₂-, to hold fast, conquer > SCHEME] a generally weakened, emaciated condition of the body, esp. as associated with a chronic illness Also ca-chex'y (-sé) —ca-chex'ic (-kék'tik) or ca-chex'ic (-kék'sik) adj.

cach-in-nate (ká'k'á nát') vi. -nated', -nating' < L cacinatus, pp. of cacinare: ult. of ehoic orig.] to laugh loudly or too much

cach-in-na'tion n.

ca-chou (ká shóo') n. [Fr < Port cachu < Malayalam kácu, akin to Tamil kácu] 1 CATECHU 2 a lozenge for sweetening the breath

ca-chu-cha (ká chóo'chá) n. [Sp] 1 an Andalusian dance in 4/4 time, like the bolero 2 music for this

ca-cique (ká sék') n. [Sp < Arawak word meaning "prince," "lord," "chief," "chief of a band," "prince of a tribe"] 1 a) in Spanish America, an Indian chief b) in Spanish America and Spain, a local political boss 2 any of various tropical American blackbirds (family Icteridae) with conical bills —ca-ciquism n.

cack-hand-ed (ká'k'hánd'id) adj. [Brit. Colloq.] left-handed 2 clumsy; awkward

cackle (ká'kál) vi. -led, -ling [ME caken; akin to Du cackelen, LowG kakkeln < IE base \*kak-; cf. ehoic orig.] 1 to make the shrill, broken vocal sounds of a hen 2 to laugh or chatter with similar sounds —vt. to utter in a cackling manner —n. 1 the act or sound of cackling 2 cackling laughter 3 idle or silly chatter —vt. to cackle [Brit. Colloq.] to stop talking and settle down to serious efforts

CACM Central American Common Market
cac-o- (ká'k'ó, -á) [ < Gr kakos, bad, evil] combining form bad, painful, harsh [cacography]

ca-cio-demon or ca-cio-dæ-mon (ká'k'ó dé'mán) n. [Gr kakos, bad + daimon: see prec. & DEMON] an evil spirit or devil

ca-cio-dyl (ká'k'ó dí'k, ká'k'á) n. [ < Gr kakhdátes, bad-smelling; kakos, bad + óds, < IE base \*od-, to smell > ODR, OZON] 1 a) a bad odor, esp. that of a dead animal 2 a) a bad odor, esp. that of a dead animal 2 a) a bad odor, esp. that of a dead animal

ca-cog-ra-phy (ká kág'rá'fē) n. [CACO- + -GRAPHY] 1 bad handwriting 2 incorrect spelling —cac-o-graphic (ká'k'ó'graf'ik) or cac-o-graph'ic adj.

\*ca-cio-mistle (ká'k'ó mis'el) n. [AmSp cacomistle < Nahuatl cacōmīstli < ka'ka, half + mis-āi, cougar] 1 a slender, long-tapered, cane-like carnivore (Bassariscus astutus) of the SW U.S., an omnivorous carnivore 2 any of various cacti of the SW U.S., esp. those of Mexico 2 its fruit Also cac'o-mis'tle (-mis'el, -mík'sel)

ca-copho-ny (ká ká'fá'nē) n., pl. -nies [prob. via Fr cacophonie < ML cacophonía < Gr kakophōnia < kakophōnos, harsh-sounding; kakos, bad, evil + phōnos, voice: see PHONO-] harsh, jarring sound; dissonance —ca-coph'o-nous (ká's'ó'f'ó'nús) adj. —ca-coph'o-nously adv.

ca-cus (ká'k'ús) n., pl. -tus'es or -ti (tí) [ModL < Gr kakos, bad] 1 a) a bad quality, esp. of a character or disposition 2 a) a bad quality, esp. of a character or disposition 2 a) a bad quality, esp. of a character or disposition

ca-cus-tus (ká'k'ús'tús) n., pl. -tus'es or -ti (tí) [ModL < Gr kakos, bad] 1 a) a bad quality, esp. of a character or disposition 2 a) a bad quality, esp. of a character or disposition 2 a) a bad quality, esp. of a character or disposition

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ment occurring as a sulfide or carbonate in zinc ores: it is used in some low-melting alloys, electroplating, rechargeable batteries, etc.: highly toxic dust or fumes: symbol, Cd; at. wt., 112.40; at. no., 48; sp. gr., 8.642; melt. pt., 321.1°C; boil. pt., 767°C —cad'mic (-mík) adj.

cadm-ium sulfide a toxic pigment, CdS, varying from lemon yellow (cadmium yellow) to yellowish orange (cadmium orange) and used in paints, photocells, semiconductors, etc.

Cad'mus (ká'd'más) [Gr Kadmos] a Phoenician prince and founder of Thebes: he kills a dragon and sows its teeth, from which many armed men rise, fighting each other, until only five are left to help him build the city

ca-dre (ká'drē, -drá; also, ká'-) n. [Fr, a frame < It quadro < L quadrum, a square: see QUADRATE] 1 basic structure or framework 2 an operational unit, as of staff officers or other key personnel, around which an expanded organization can be built 3 a small, unified group organized to instruct or lead a larger group; nucleus 4 a member of a political, esp. Communist, cadre

ca-du-ceus (ká dóo's'és, -doo's'és) n., pl. -cei' (-sē'í) [L; via Etr < Gr(Doric) karykeion, for Gr karykeion < keryx, herald < IE base \*kar-, to praise > OHG hruom, Ger ruhm] 1 the staff of an ancient herald; esp., the winged staff with two serpents coiled about it, carried by Mercury 2 an emblematic staff like this with either one or two serpents, used as a symbol of the medical profession —ca-du'cean adj.



CADUCEUS

ca-du-city (ká dóo's'tē, -doo's'í) n. [Fr caducité < LL caducitas < L caducus: see fol.] 1 the quality or state of being perishable 2 senility

ca-du-cous (-kas) adj. [L caducus, falling < cadere, to fall: see CASE] Bot. falling off early, as some leaves

cae-cil-jan (sē'sil'ēn, -sil'yan) n. [ < ModL < L caecilia, kind of lizard < caecus: see CECUM] any of an order (Gymnophiona) of legless tropical amphibians resembling worms

caec-m (sē'kēm) n., pl. -ca (-ká) CECUM

Caed-m (ká'd'mán) n. late 7th cent. A.D.; first Eng. poet whose name is known

Cael-lan (sē'lēn, sē'l'yan) [after L Caetius Mons, Caelian hill, named after the Tuscan Caesles Vibenna] see SEVEN HILLS OF ROME

Cael-um (sē'lēm) a small S constellation between Columba and Eridanus

Caen (kän) chief city of Basse-Normandie, NW France: pop. 117,000

Caer-nar-von-shire (kär'när'von shir', -shər) former county of NW Wales, now part of Gwynedd; also Caer-nar-von

caes-al-pin'ia (sēz'al pin'ē'á, sēs'-) adj. designating a family (Caesalpinaceae) of leguminous trees and shrubs, including the Kentucky coffee tree

Caes-ar (sē'zār) n. [after fol.] 1 the title of the emperor of Rome from Augustus to Hadrian, or of the emperor of the Holy Roman Empire 2 any of the Roman emperors 3 [often c-] any emperor or dictator

Caes-ar (sē'zār), (Gaius) Julius [L Caesar, said to be < caesus, pp. of caedere, to cut down (see -CIDE), but, prob. of Etr orig.]. c. 100-44 B.C.; Rom. general & statesman; dictator (49-44) of the Roman Empire

Caes-a-rea (sēs'á'rē'á, sēs'-, sē'zā-) 1 seaport in ancient Palestine, on the Mediterranean, S of Haifa, Israel: Roman capital of Palestine 2 city in ancient Palestine, near Mt. Hermon: also Caesarea Philippi 3 ancient name of KAYSERS

Caes-a-re-an or Caes-ar-i-an (zēs'á'rē'án) adj. of Julius Caesar or of the Caesars —n. CAESAREAN SECTION

Caesarean section [from the ancient story (by assoc. of the name Caesar with L caedere; see (Gaius) Julius CAESAR) that Caesar or an ancestor had been born in this manner] [also c- s-] a surgical operation for delivering a baby by cutting through the mother's abdominal and uterine walls

Caes-ar-ism (sē'zār iz'əm) n. [also c-] absolutism in government; autocracy —Caes-arist (-ist) n.

\*Caesar salad [so named in honor of (Gaius) Julius CAESAR by Giacomo Junia, Italian-American chef in Chicago, who invented it c. 1903] a salad of greens, grated cheese, croutons, anchovies, etc., with a dressing of olive oil, lemon juice, and raw or coddled eggs

caes-ium (sē'sē'əm) n. CESIUM

caes-pi-tose (sēs'pā tōs') adj. CESPITOSE

caes-sur'a (sē'syoo'á, zhoor'á) n., pl. -ras or -rae (-ē) [L, a cutting < pp. of caedere, to cut down (see -CIDE)] 1 a break or pause in a line of verse: in Greek and Latin verse, the caesura falls within the metrical foot; in English verse, it is usually about the middle of the line and is shown in scanning by the sign | 2 Music a break or

only, esp. of a person; corpse, as for dissection —SYN. BODY —ca-dav'er-ic adj.

ca-dav'er-ic (-ar' ev', -ar' in) n. [prec. + -INÉS] a colorless, putrid smelling, liquid ptomaine, NH₂(CH₂)₂NH₂, produced by the action of microorganisms on proteins, as in decaying flesh

ca-dav'er-ous (-ar' ós) adj. [L cadaverosus] of or like a cadaver; esp., pale, ghastly, or gaunt and haggard —ca-dav'er-ously adv. —ca-dav'er-ous-ness n.

CAD-kám' n. [C(omputer)-A(ided) D(esign)-M(anufacturing)] a computer system used in engineering, combining design techniques and manufacturing principles, as in the creation of complex wiring diagrams, the design of coordinated machine parts, etc.

cad-die (ká'd'í) n. 1 CADDIS? 2 CADDIS? 3 CADDIS?

cad-die (ká'd'í) n. [Scot form of Fr cadet; see CADET] 1 orig., an errand boy 2 a person who attends a golfer, carrying the clubs, finding the balls, etc. 3 a small, two-wheeled cart, as for carrying golf bags —vi. -died, -dying to act as a caddie

cad-dis (ká'd'is) n. [ME & OFr cadas, floss silk; confused with Fr cadis, coarse serge, after CADIZ (? where made)] 1 a coarse woolen material; worsted yarn 2 a worsted ribbon

cad-dis or cad-dice (ká'd'is) n. CADDIS WORM

cad-dis fly any of an order (Trichoptera) of small, mothlike insects with a soft body, long antennae and legs, and two pairs of hairy, membranous wings

cad-dish (ká'd'ish) adj. like or characteristic of a cad; ungentlemanly —cad'dishly adv. —cad'dish-ness n.

cad-dish worm [ < OFr cadas, floss silk (with reference to the case)] the wormlike larva of the caddis fly that usually lives in fresh water in an elongated case made of twigs, grains of sand, etc. cemented together with silk that its secret: commonly used as bait by anglers

Caddo (ká'd'ó) n., pl. -does, -doses, or -dos [Louisiana Fr Caddaux, softened < Sp Caddoquadocho < Caddo kadúhá:d-ú'p, name of a major group of the Caddo confederacy] 1 a member of any of a group of North American Indian peoples formerly living in Louisiana, Arkansas, and E Texas, now living mainly in Oklahoma 2 the Caddoan language of these peoples

Cad-doan (-án) n. [coined (1891) by J. W. Powell < prec. + -AN] a family of North American Indian languages, including Caddo, Pawnee, and Arikara

cad-dy (ká'd'ē) n., pl. -dies [ < earlier CATTY? < Malay káti, weight equivalent to a little more than a pound] 1 a small container used for tea 2 any of various devices for holding or storing certain articles, as phonograph records

cad-dy (ká'd'ē) n., pl. -dies [ < L caddi, a petty] 1 its mother and brought up by a human being, often as a pet [a caddie lamb]

cad-dy (ká'd'ē) n. [Fr < Prov < LL catus, prob. < Gaul] a bushy Mediterranean juniper (Juniperus oxycedrus) whose barklike oil is distilled from the wood is used in the treatment of skin disorders

cad-dle (ká'd'el) [ < CAVALCADE] suffix procession, parade [motorcade]

cad-dle (ká'd'el) n. [Fr < Prov caddello < L catella, fem. of catellus, whip, hence < IE base \*kat-, to bear young > ON hathna, young cat, the larva or adult of a small, shiny, black beetle (Tenebroides caedens) harmful to grain

cad-dle (ká'd'el) n. [ME < OFr < OIt caddenza or ML cadentia < Latin, pp. of cadere, to fall: see CASE] 1 fall of the voice in speaking 2 inflection or modulation in tone 3 any rhythmic flow of sound 4 measured movement, as in dancing or marching, or the beat of such movement 5 Music a series of notes or chords at the end of a phrase, section, or composition which indicates a partial or complete conclusion Also ca'dden'y (-n'sē) —ca'dden' (-n'st) or cad-den' (-nt) adj.

cad-dle (ká'd'el) n. [Fr, younger son < Gascon capdet, captain, chief (later a younger son) < LL capitulum, dim. of L caput, HEAD] 1 [Now rare] a gentleman son or brother 2 [Historical] a younger son who accompanied a volunteer in the army to offset his lack of money 3 a student in training at an armed forces academy 4 a member of a business associate \*6 (Old Slang) a pimp —cad-dle'ship n.

ca-dette (ká'd'ēt) n. [prec. + -ETTE] a member of the division of Girl Scouts for girls twelve to fourteen years of age. In full ca-dette Girl Scout

cad-dy (ká'd'í) vt., vi. cadged, cadg'ing [ < ?] to beg or get by begging; to cadge

cad-g'er n.

cad'ing (ká'd'íng) n. [Ar qād] a minor Muslim magistrate

ca-d'ing (ká'd'íng) n. [Colloq.] something that is the most luxurious or highest quality of its kind

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**cacao butter** COCOA BUTTER

**cac·cia·to|re** (kā'chə tōr'ē) *adj.* [[It, lit., hunter < pp. of *cacciare*, to hunt, chase < VL \**captiare*, to CATCH]] cooked in a casserole with olive oil and tomatoes, onions, spices, wine, etc. [chicken *cacciatore*]

**cach|a·lot** (kash'ə lät', -lō') *n.* [[Fr < Sp *cachalote* < colloq. Port *cachola*, head]] SPERM WHALE

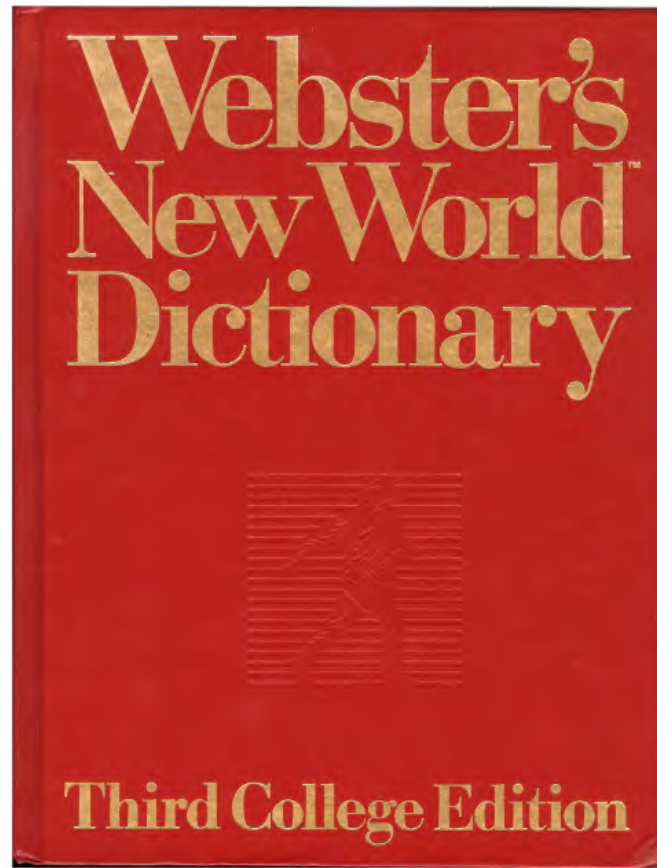
**cache** (kash) *n.* [[Fr < *cache*, conceal < VL \**coacticare*, store up, collect, compress < L *coactare*, constrain < *coactus*, pp. of *cogere*, to collect: see COGENT]] **1 a place in which stores of food, supplies, etc. are hidden, as by explorers or trappers** **2** a safe place for hiding or storing things **3** anything stored or hidden in such a place —*vt.* **cached, cach'ing** to hide or store in a cache —**SYN.** HIDE<sup>1</sup>

**cache·pot** (kash'pät, -pō') *n.* [[Fr < *cache*, to hide (see prec.) + *pot*, POT<sup>1</sup>]] a decorative pot, jar, etc., used esp. for holding potted house plants Also **cache pot**

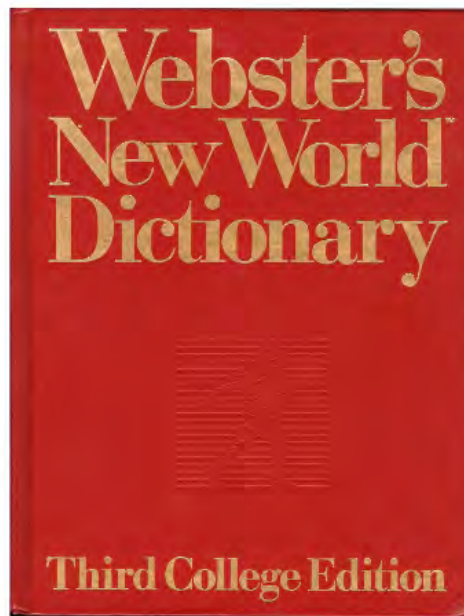
**cache·sexe** (kāsh'seks') *n.* [[Fr < *cache*, to hide (see CACHE) + *sexe*, sex]] a small cloth or band worn, as by an otherwise nude dancer, to conceal the genitals

**ca·chet** (ka shā', kash'ā) *n.* [[Fr < *cache*: see CACHE]] **1** a seal or stamp on an official letter or document: see also LETTRE DE CACHET **2** any sign of official approval **3 a)** a mark or sign showing some





Ok, so this is the dictionary  
I took to college ... AND THAT  
WAS OVER 25 YEARS AGO.



Ok, so this is the dictionary  
I took to college ... AND THAT  
WAS OVER 25 YEARS AGO.

Clearly a more contextually  
appropriate definition is needed

Cache:  
what is it?

disk-based caching

in-memory cache

virtual memory

ICP

page output cache

Web Part  
caching

post-cache substitution

Cache:

what is it? App Fabric

HTCP

Distributed Cache CARP

browser cache

Office viewing service cache

buffer

cacheability headers

object cache

BLOB cache

fragment caching



A temporary storage area where data that is computationally expensive or slow to fetch can be placed for faster access



# Option 1: Place data on a faster medium





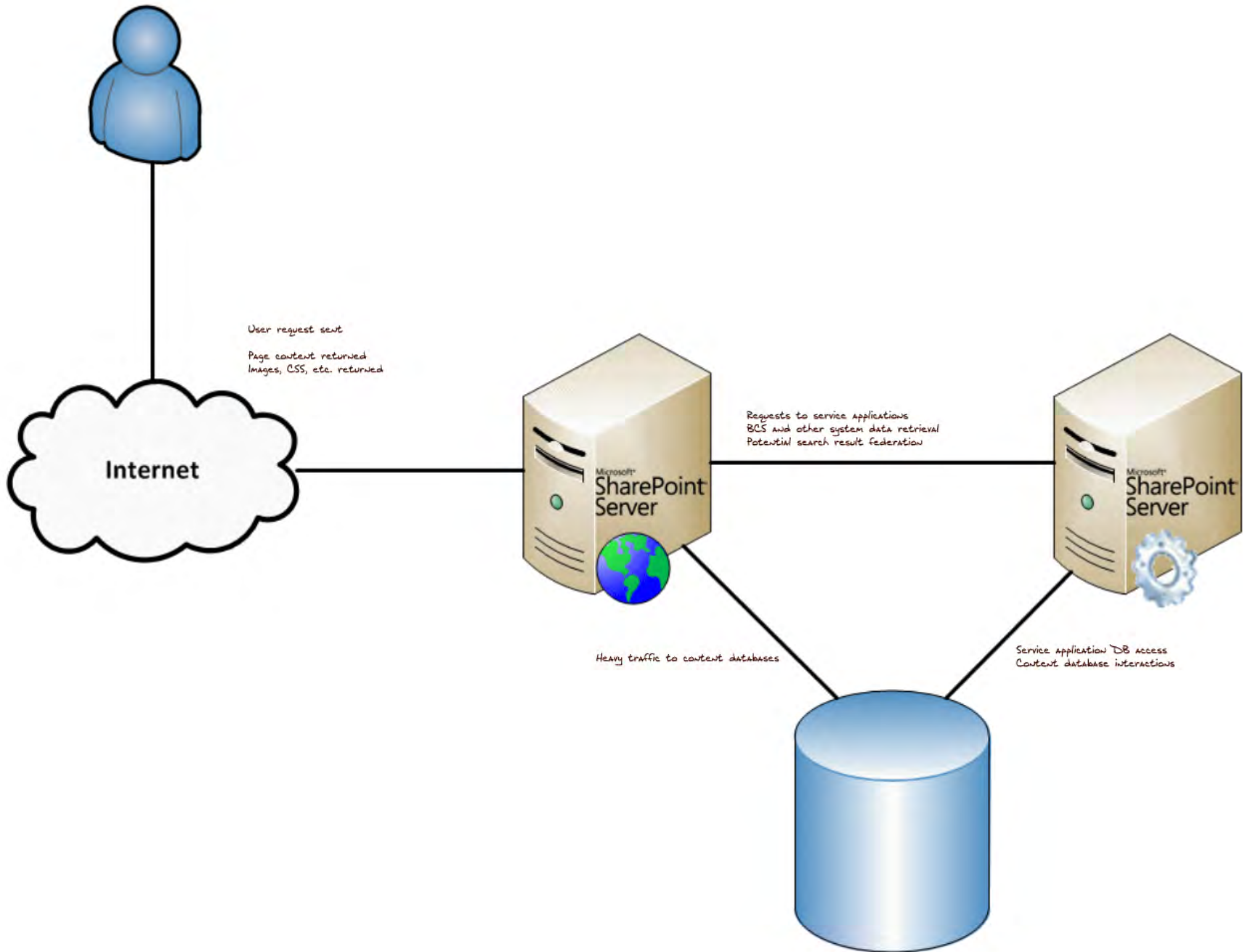
Option 2:  
place data  
closer to the  
point of usage





Why?

or at least "why for SharePoint?"



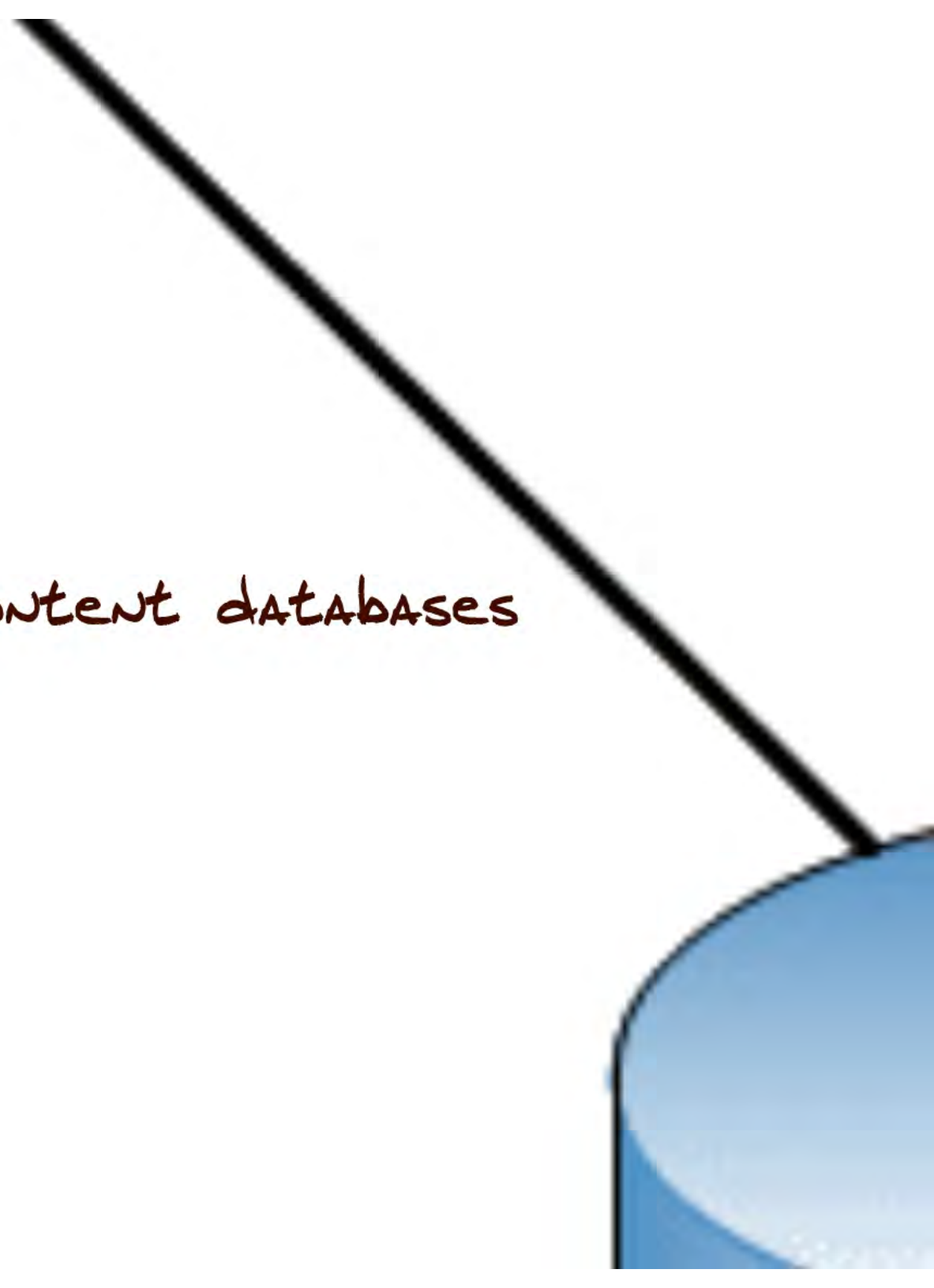


User request sent

Page content returned

Images, CSS, etc. returned

Internet



Heavy traffic to content databases

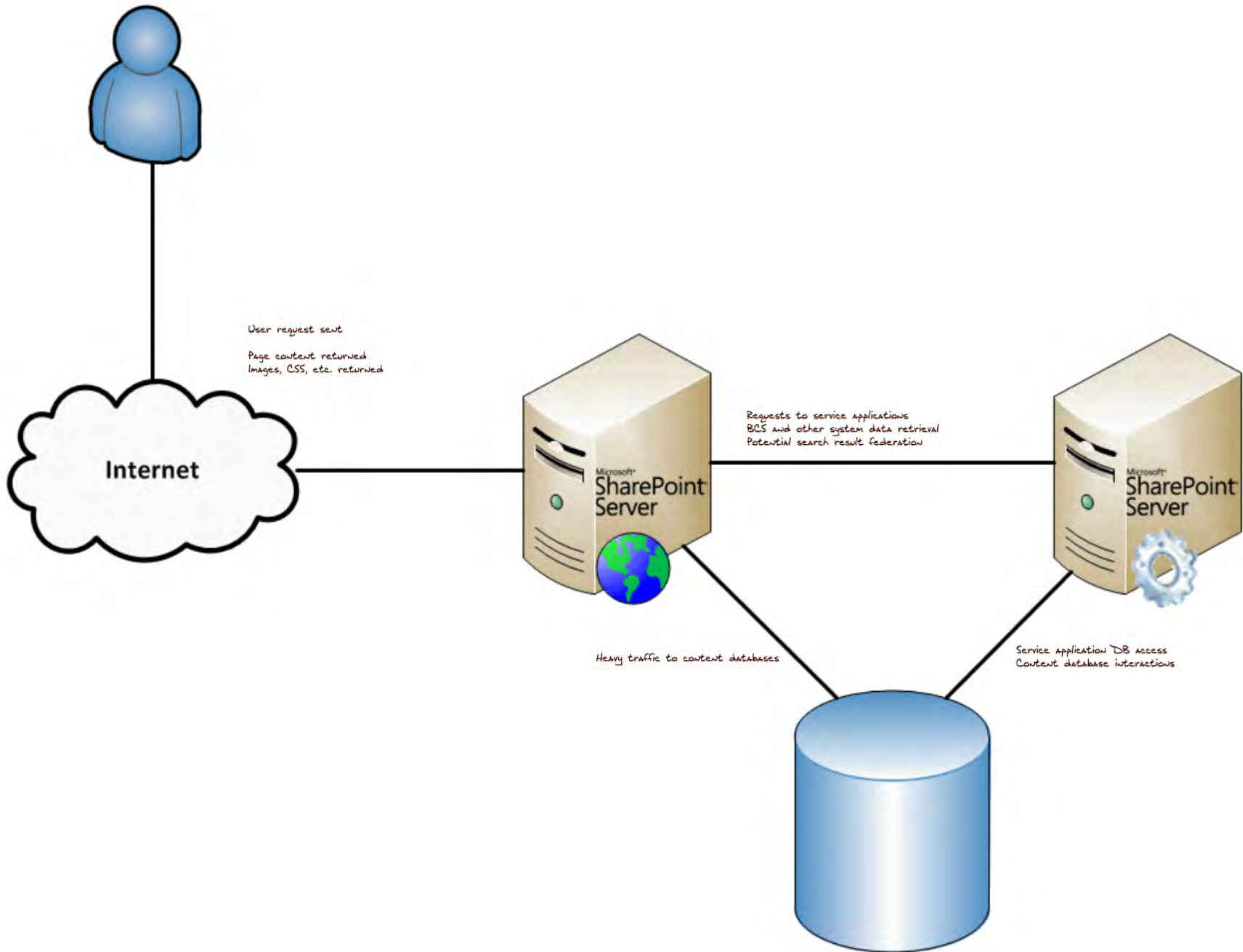


Requests to service applications  
BCS AND other system data retrieval  
Potential search result federation

int



Service application DB access  
Content database interactions

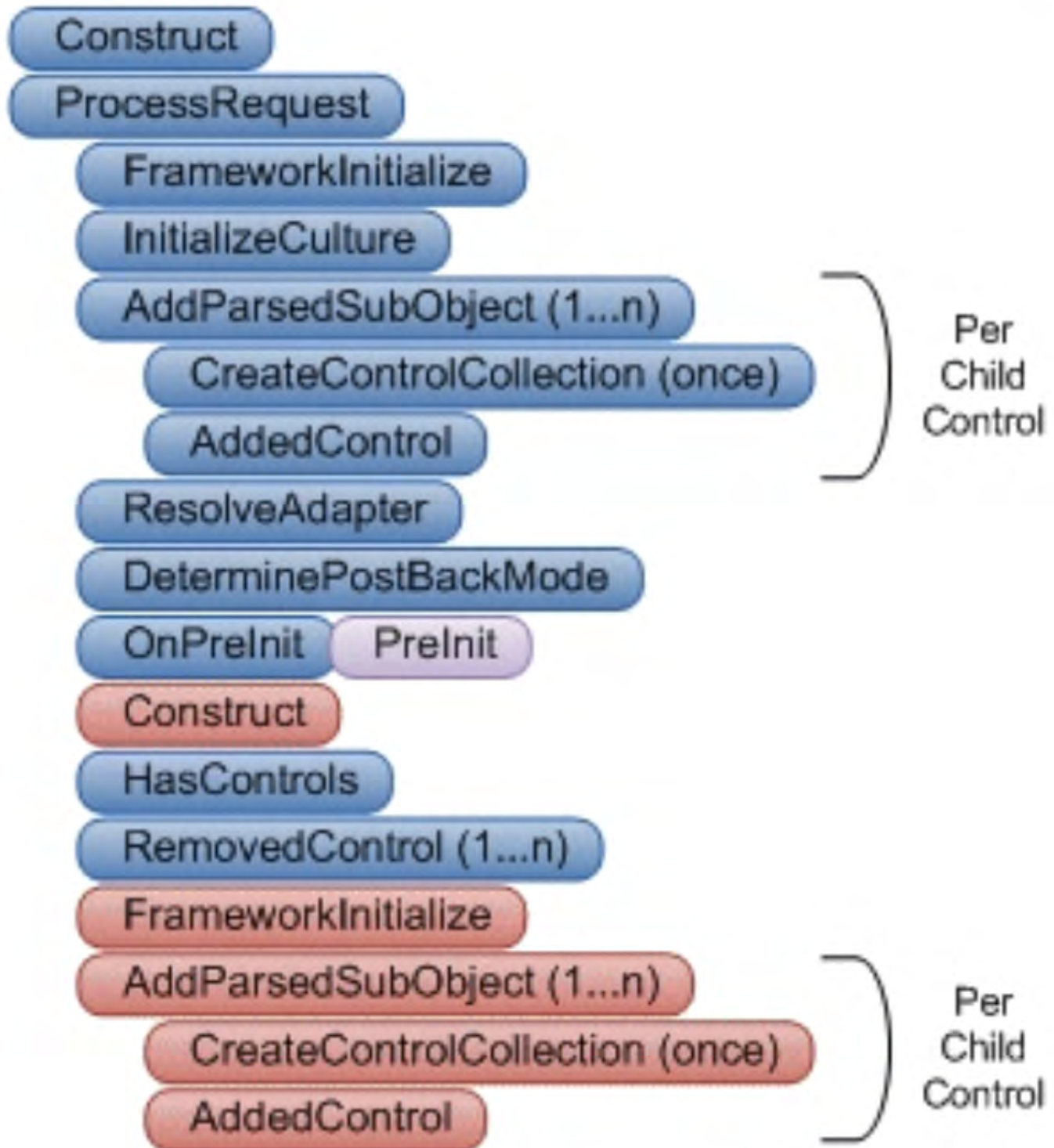




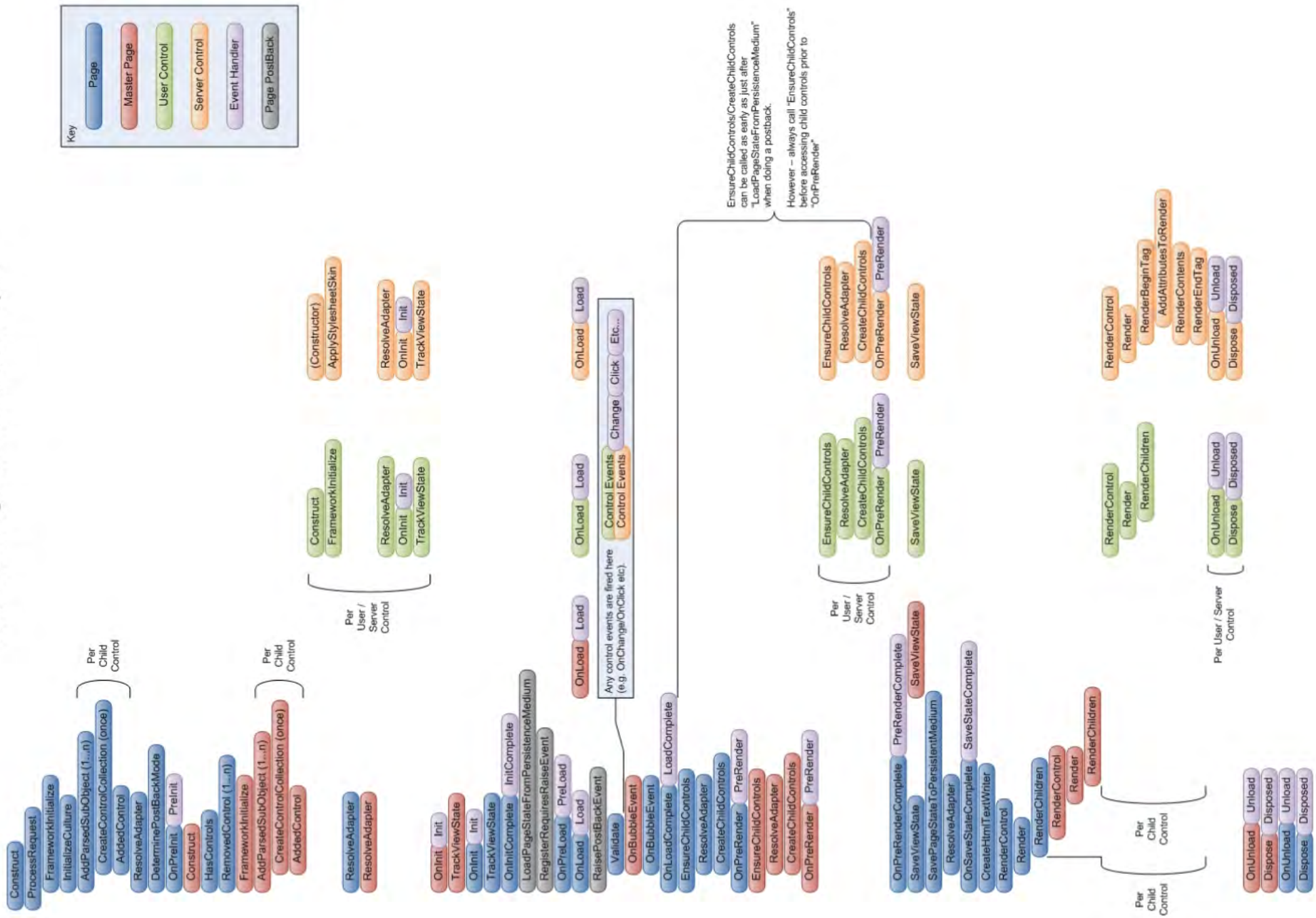
7  
8  
9



ASP.NET Page and Control Life Cycle



ASP.NET Page and Control Life Cycle



thanks, Justin Stewing!

# The ultimate goal of caching



Better performing,  
more scalable sites  
which yield a better  
user experience

# SharePoint caching: whatcha got?

- Object caching
- BLOB caching
- Page output caching
- Office web applications cache
- Distributed Cache service

CHECKLIST



# SharePoint caching: whatcha got?

- Object caching
- BLOB caching
- Page output caching
- Office web applications cache
- Distributed Cache service

CHECKLIST



*Mentioned but not covered in depth: web part cache, ASP.NET cache, IVaryByCustomHandler implementations, post-cache substitution, fragment caching, and other development topics/concerns*

Unless otherwise noted,  
we're talking about:

 SharePoint  2013+

 Microsoft®  
SharePoint® Server 2010

 Microsoft®  
Office SharePoint®  
Server 2007

int

Also, I'll have the slides from this presentation  
available later on my blog

<http://SharePointInterface.com>

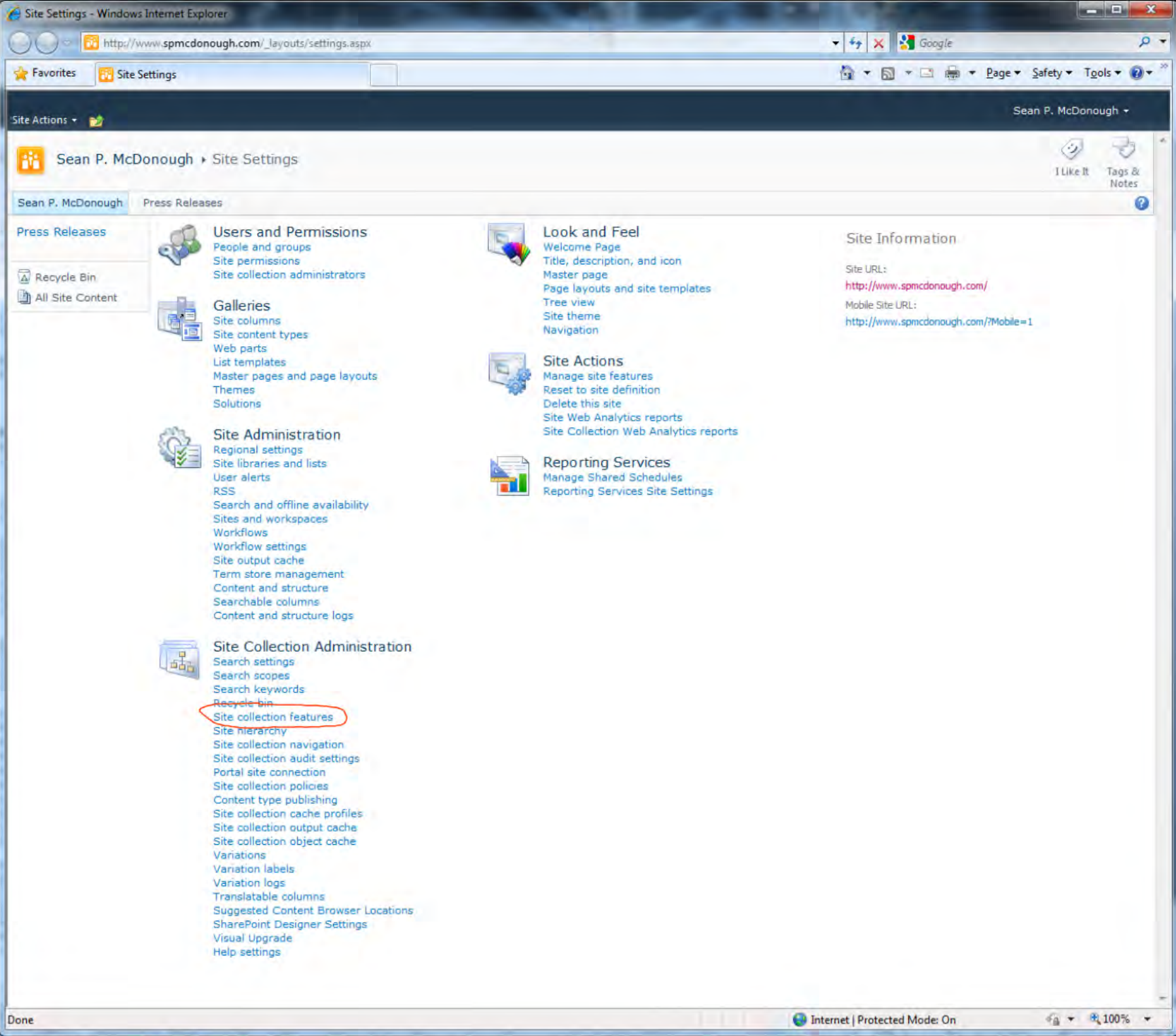


Short story  
time...

Short story  
time...



Where's the  
#\$@! "on" button?



- Press Releases
- Recycle Bin
- All Site Content

- Users and Permissions**
  - People and groups
  - Site permissions
  - Site collection administrators

- Galleries**
  - Site columns
  - Site content types
  - Web parts
  - List templates
  - Master pages and page layouts
  - Themes
  - Solutions

- Site Administration**
  - Regional settings
  - Site libraries and lists
  - User alerts
  - RSS
  - Search and offline availability
  - Sites and workspaces
  - Workflows
  - Workflow settings
  - Site output cache
  - Term store management
  - Content and structure
  - Searchable columns
  - Content and structure logs

- Site Collection Administration**
  - Search settings
  - Search scopes
  - Search keywords
  - Recycle bin
  - Site collection features**
  - Site hierarchy
  - Site collection navigation
  - Site collection audit settings
  - Portal site connection
  - Site collection policies
  - Content type publishing
  - Site collection cache profiles
  - Site collection output cache
  - Site collection object cache
  - Variations
  - Variation labels
  - Variation logs
  - Translatable columns
  - Suggested Content Browser Locations
  - SharePoint Designer Settings
  - Visual Upgrade
  - Help settings

- Look and Feel**
  - Welcome Page
  - Title, description, and icon
  - Master page
  - Page layouts and site templates
  - Tree view
  - Site theme
  - Navigation

- Site Actions**
  - Manage site features
  - Reset to site definition
  - Delete this site
  - Site Web Analytics reports
  - Site Collection Web Analytics reports

- Reporting Services**
  - Manage Shared Schedules
  - Reporting Services Site Settings

Site Information

Site URL:  
<http://www.spmcdonough.com/>  
 Mobile Site URL:  
<http://www.spmcdonough.com/?Mobile=1>

[Content and structure logs](#)



## [Site Collection Administration](#)

[Search settings](#)

[Search scopes](#)

[Search keywords](#)

[Recycle bin](#)

[Site collection features](#)

[Site hierarchy](#)

[Site collection navigation](#)

[Site collection audit settings](#)

[Portal site connection](#)

[Site collection policies](#)



















[Content type publishing](#)

[Site collection cache profiles](#)

Site Collection Features - Windows Internet Explorer

http://www.spmcdonough.com/\_layouts/ManageFeatures.aspx?Scope=Site

Sean P. McD... Open Menu

|   |  |                          |
|---|--|--------------------------|
|    | <b>Custom Site Collection Help</b><br>Creates a Help library that can be used to store custom help for this site collection.   | Activate                 |
|    | <b>Disposition Approval Workflow</b><br>Manages document expiration and retention by allowing participants to decide whether to retain or delete expired documents.  | Deactivate <b>Active</b> |
|    | <b>Document ID Service</b><br>Assigns IDs to documents in the Site Collection, which can be used to retrieve items independent of their current location.  | Activate                 |
|    | <b>Document Sets</b><br>Provides the content types required for creating and using document sets. Create a document set when you want to manage multiple documents as a single work product.                                     | Activate                 |
|    | <b>In Place Records Management</b><br>Enable the definition and declaration of records in place.   | Activate                 |
|    | <b>Library and Folder Based Retention</b><br>Allows list administrators to override content type retention schedules and set schedules on libraries and folders.   | Activate                 |
|    | <b>Open Documents in Client Applications by Default</b><br>Configures links to documents so they open in client applications instead of Web applications, by default.  | Activate                 |
|    | <b>PerformancePoint Services Site Collection Features</b><br>Features enabling the PerformancePoint Services site including content types and site definitions for this site collection.   | Activate                 |
|    | <b>Publishing Approval Workflow</b><br>Routes a page for approval. Approvers can approve or reject the page, reassign the approval task, or request changes to the page. This workflow can be edited in SharePoint Designer.     | Deactivate <b>Active</b> |
|    | <b>Report Server Integration Feature</b><br>Enables rich reporting using Microsoft SQL Server Reporting Services.  | Deactivate <b>Active</b> |
|    | <b>Reporting</b><br>Creates reports about information in Microsoft SharePoint Foundation.  | Activate                 |
|  | <b>Search Server Web Parts</b><br>This feature uploads all web parts required for Search Center.   | Activate                 |
|  | <b>SharePoint 2007 Workflows</b><br>Aggregated set of out-of-box workflow features provided by SharePoint 2007.  | Activate                 |
|  | <b>SharePoint Server Enterprise Site Collection features</b><br>Features such as InfoPath Forms Services, Visio Services, Access Services, and Excel Services Application, included in the SharePoint Server Enterprise License. | Activate                 |
|  | <b>SharePoint Server Publishing Infrastructure</b><br>Provides centralized libraries, content types, master pages and page layouts and enables page scheduling and other publishing functionality for a site collection.         | Deactivate <b>Active</b> |
|  | <b>SharePoint Server Standard Site Collection features</b><br>Features such as user profiles and search, included in the SharePoint Server Standard License.   | Activate                 |
|  | <b>Three-state workflow</b><br>Use this workflow to track items in a list.   | Activate                 |
|  | <b>Workflows</b><br>Aggregated set of out-of-box workflow features provided by SharePoint.   | Deactivate <b>Active</b> |

Of course, this poses some problems for SPF with WSS users ...

Done Internet | Protected Mode: On 100%



## **SharePoint 2007 Workflows**

Aggregated set of out-of-box workflow features provided



## **SharePoint Server Enterprise Site Collection features**

Features such as InfoPath Forms Services, Visio Services, and other features are included in the SharePoint Server Enterprise License.



## **SharePoint Server Publishing Infrastructure**

Provides centralized libraries, content types, master pages, and other functionality for a site collection.



## **SharePoint Server Standard Site Collection features**

Features such as user profiles and search, included in the SharePoint Server Standard License.



## **Three-state workflow**

Use this workflow to track items in a list.

Activate

ng

Deactivate **Active**

Activate

Activate

## Site Collection features

Services, Visio Services, Access Services  
license.

Of course, this poses  
some problems for SPF  
AND WSS users ...

ing Infrastructure



content types, master pages and page lay  
.

## Site Collection features

and search, included in the SharePoint Se





So ... how does  
the plumbing work?



Yes, just a section.

Prezi choked when I tried to use AN IMAGE of the whole web.config. It WAS really, really, REALLY big





```
</system.web>
<system.webServer>
  <security>
    <requestFiltering allowDoubleEscaping="true">
      <requestLimits maxAllowedContentLength="2147483647" />
    </requestFiltering>
  </security>
  <validation validateIntegratedModeConfiguration="false" />
  <modules runAllManagedModulesForAllRequests="true">
    <remove name="AnonymousIdentification" />
    <remove name="FileAuthorization" />
    <remove name="Profile" />
    <remove name="WebDAVModule" />
    <remove name="Session" />
    <add name="SPRequestModule" precondition="integratedMode" type="Microsoft.SharePoint.ApplicationRuntime.S
    <add name="ScriptModule" precondition="integratedMode" type="System.Web.Handlers.ScriptModule, System.Web
    <add name="SharePoint14Module" precondition="integratedMode" />
    <add name="StateServiceModule" type="Microsoft.Office.Server.Administration.StateModule, Microsoft.Office
    <add name="RSRedirectModule" type="Microsoft.ReportingServices.SharePoint.Soap.RSRedirectModule, RSShareP
    <add name="PublishingHttpModule" type="Microsoft.SharePoint.Publishing.PublishingHttpModule, Microsoft.Sh
  </modules>
  <handlers>
    <remove name="OPTIONSVerbHandler" />
    <remove name="WebServiceHandlerFactory-Integrated" />
    <remove name="svc-Integrated" />
    <remove name="WebDAV" />
    <add name="svc-Integrated" path="*.svc" verb="*" type="System.ServiceModel.Activation.HttpHandler, System
    <add name="OwssvrHandler" scriptProcessor="C:\Program Files\Common Files\Microsoft Shared\Web Server Ext
    <add name="ScriptHandlerFactory" verb="*" path="*.asmx" precondition="integratedMode" type="System.Web.Sc
    <add name="ScriptHandlerFactoryAppServices" verb="*" path="*_AppService.axd" precondition="integratedMode
    <add name="ScriptResource" precondition="integratedMode" verb="GET,HEAD" path="ScriptResource.axd" type="
    <add name="JSONHandlerFactory" path="*.json" verb="*" type="System.Web.Script.Services.ScriptHandlerFacto
    <add name="ReportViewerWebPart" verb="*" path="Reserved.ReportViewerWebPart.axd" type="Microsoft.Reportin
    <add name="ReportViewerWebControl" verb="*" path="Reserved.ReportViewerWebControl.axd" type="Microsoft.Re
  </handlers>
</system.webServer>
<system.serviceModel>
```

# Caching in action

Consider this  
sample page as  
we discuss  
SharePoint's  
caching  
mechanisms...

A Web Page

http://spdev:18480/Pages/default.aspx

## My SharePoint Site

Site Actions

Search this site...

Top-Level Site > My SharePoint Site

### Home

- My SharePoint Site
- Your SharePoint Site
- Another Site

### Welcome Back, Bob!

It is by will alone I set my mind in motion.

It is by the juice of Sapho that thoughts acquire speed, the lips acquire stains, the stains become a warning.

It is by will alone I set my mind in motion.

Just sit right back and you'll hear a tale, a tale of a fateful trip, That started from this tropic port, aboard this tiny ship. The mate was a mighty sailin' man, the Skipper brave and sure. Five passengers set sail that day for a three hour tour. A three hour tour.

The weather started

First up ...

First up ...

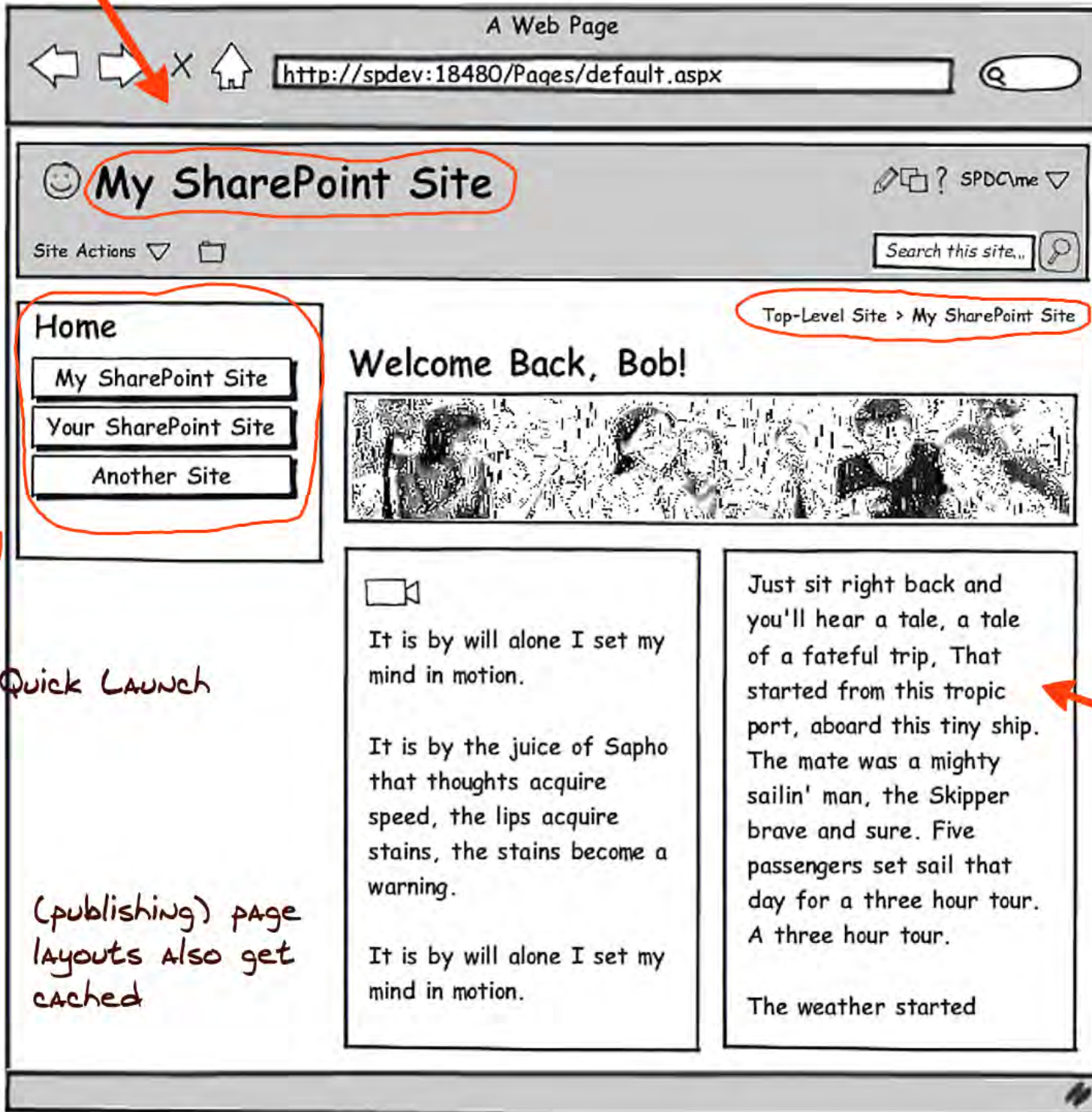


Object caching



# Object caching

Speeds access to frequently referenced structural, property, and result data



Navigational  
such as this  
breadcrumb

Top-Level Site > My SharePoint Site

Home  
My SharePoint Site  
Your SharePoint Site  
Another Site

Welcome Back, Bob!



It is by will alone I set my mind in motion.

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The weather started

... And the Quick Launch

(publishing) page layouts also get cached

If this happens  
be a Content  
Query Web  
(CQWP), the  
could be ne  
significantly  
object cache



NAVIGATIONAL DATA  
SUCH AS THIS  
breadcrumb ...



Home

My SharePoint Site

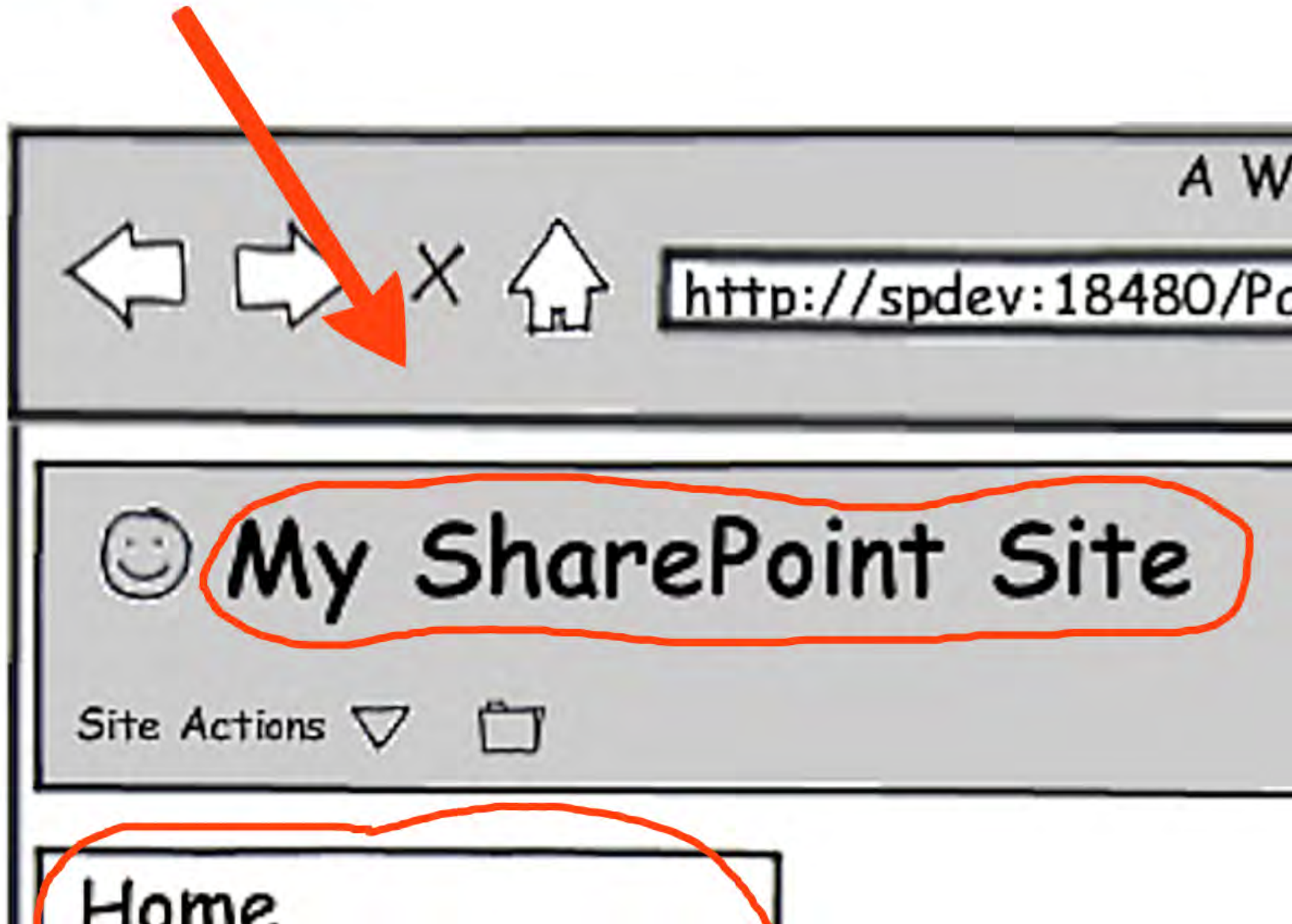
Your SharePoint Site

Another Site




... AND the Quick Launch

Site properties  
like the title



Just sit right back and  
you'll hear a tale, a tale  
of a fateful trip, That  
started from this tropic  
port, aboard this tiny ship.  
The mate was a mighty  
sailin' man, the Skipper  
brave and sure. Five  
passengers set sail that  
day for a three hour tour.  
A three hour tour.

The weather started



If this happened to  
be a Content  
Query Web Part  
(CQWP), then it  
could benefit  
significantly from  
object caching.

(publishing) page  
layouts also get  
cached

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Navigational elements such as this breadcrumb

Top-Level Site > My SharePoint Site

Home  
My SharePoint Site  
Your SharePoint Site  
Another Site

... And the Quick Launch

(publishing) page layouts also get cached

If this happens, it could be a Content Query Web Part (CQWP), it could be a significantly larger object cache



Object cache

# Object cache

Backed by memory



# Object cache

Backed by memory



Turned on by default



# Object cache

Backed by memory



Turned on by default



Default ~~size~~ allocation

100MB per  
site collection

# Object cache

Backed by memory



Turned on by default



Default size or allocation

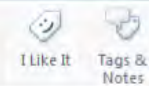
100MB per  
site collection

A trick that started with SharePoint 2010 ...



```
<Action id="0ff1ce14-1021-0000-0000-00000000" />
<Action id="ec0076ac-0c35-4880-8422-8062f59" />
<Action id="602bc8c3-9286-49a3-b973-3376ca7" />
<Action id="00e22a78-33ff-41ac-b0fb-ee46d16" />
<Action id="4b60e42e-e6fc-4188-80d2-ef39e7c" />
<Action id="1d415973-1146-4bc2-8324-83dfff5" />
</MergedActions>
<BlobCache location="C:\BlobCache\14" path="\
<ObjectCache maxSize="100" />
<OutputCacheProfiles useCacheProfileOverrides
<RuntimeFilter Assembly="Microsoft.Office.Ser
</SharePoint>
<system.web>
  <securityPolicy>
    <trustLevel name="WSS_Medium" policyFile="C
    <trustLevel name="WSS_Minimal" policyFile="
  </securityPolicy>
  <httpHandlers />
  <customErrors mode="On" />
  <httpRuntime maxRequestLength="51200" />
```

Sean P. McDonough > Site Settings



Sean P. McDonough Press Releases

Press Releases

- Recycle Bin
- All Site Content

**Users and Permissions**  
People and groups  
Site permissions  
Site collection administrators

**Galleries**  
Site columns  
Site content types  
Web parts  
List templates  
Master pages and page layouts  
Themes  
Solutions

**Site Administration**  
Regional settings  
Site libraries and lists  
User alerts  
RSS  
Search and offline availability  
Sites and workspaces  
Workflows  
Workflow settings  
Site output cache  
Term store management  
Content and structure  
Searchable columns  
Content and structure logs

**Site Collection Administration**  
Search settings  
Search scopes  
Search keywords  
Recycle bin  
Site collection features  
Site hierarchy  
Site collection navigation  
Site collection audit settings  
Portal site connection  
Site collection policies  
Content type publishing  
Site collection cache profiles  
**Site collection output cache**  
**Site collection object cache**  
Variations  
Variation labels  
Variation logs  
Translatable columns  
Suggested Content Browser Locations  
SharePoint Designer Settings  
Visual Upgrade  
Help settings

**Look and Feel**  
Welcome Page  
Title, description, and icon  
Master page  
Page layouts and site templates  
Tree view  
Site theme  
Navigation

**Site Actions**  
Manage site features  
Reset to site definition  
Delete this site  
Site Web Analytics reports  
Site Collection Web Analytics reports

**Reporting Services**  
Manage Shared Schedules  
Reporting Services Site Settings

Site Information

Site URL:  
<http://www.spmcdonough.com/>  
Mobile Site URL:  
<http://www.spmcdonough.com/?Mobile=1>



Site collection audit settings

Portal site connection

Site collection policies

Content type publishing

Site collection cache profiles

Site collection output cache

Site collection object cache

Variations

Variation labels

Variation logs

Translatable columns

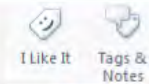
Suggested Content Browser Locations

SharePoint Designer Settings

Visual Upgrade

Help settings

### Site Collection Administration > Object cache settings



Sean P. McDonough | Press Releases

Search this site...

Press Releases

#### Object Cache Size

Object Cache Size [Learn more about the object cache.](#)

Max. Cache Size (MB):

100

Recycle Bin

All Site Content

#### Object Cache Reset

When you select this check box, all entries in the object cache will be flushed immediately when you click **OK**. If this check box is not selected, the cache will manage the expiration of items based on when they time out or are changed in the site.

Object Cache Flush

Force all servers in the farm to flush their object caches

#### Cross List Query Cache Changes

Cross list queries initiated by the Content Query Web Part or other custom implementations can use up server resources. Specifying an amount of time to cache the results of a cross list query can positively impact cross-list query performance but may display results that do not reflect the most recent changes to the items returned by the query. Checking the server each time cross list query runs will produce the most accurate results at the possible cost of slower performance across the site.

Check the server for changes every time a cross list query runs  
 Use the cached result of a cross list query for this many seconds:

60

#### Cross List Query Results Multiplier

Each cross list query might retrieve results for a variety of users. To ensure after security trimming that all users will see a valid set of results, the cross list query cache must pull more results than originally requested. Specifying a larger number will retrieve more data from the server and is ideal for site collections that have unique security applied on many lists and sites. Specifying a smaller number will consume less memory per cross list query and is ideally suited for site collections that do not have unique security on each list or site.

Cross list query multiplier:

3

OK

Cancel



## Collection Administration ▶ Object

figure settings for the object cache.

Donough

Press Releases

ases

### **Object Cache Size**

Object Cache Size [Learn more about](#)

Bin

*Search this site...*

Max. Cache Size (MB):

**100**



And now, for a painful story ...

# The take-away:

Don't dial-down the object cache allocation unless you know what you're doing and understand the implications of having too little memory allocated!

# The take-away:

Don't dial-down the object cache allocation unless you know what you're doing and understand the implications of having too little memory allocated!

*I'll give you some performance counters to watch a little later ...*

S

## Object Cache Size

Object Cache Size [Learn more about](#)

ent

## Object Cache Reset

When you select this check box, all entries in the object cache are deleted when you click **OK**. If this check box is not selected, the cache is not reset when they time out or are changed.





Object Cache Flush



Force all servers in the farm to flush t



Check the server for changes every ti

you click **OK**. If this check box is not selected, the system will refresh the content on when they time out or are changed in the database.

---

## Cross List Query Cache Changes

Cross list queries initiated by the Content Query use up server resources. Specifying an amount of time to cache the results of a query can positively impact cross-list query performance. The system will refresh the content on when they time out or are changed in the database. The most recent changes to the items returned by a query runs will produce the most accurate results across the site.

Force all servers in the farm to flush the

Check the server for changes every time  
query runs

Use the cached result of a cross list query  
seconds:

60

---

## Cross List Query Results Multiplier





Each cross list query might retrieve results that all users will see a valid set of results, originally requested. Specifying a larger number for site collections that have unique security number will consume less memory per cross list query. Cross list queries for site collections that do not have unique security on each list or

---

Cross list query multiplier:

**3**

# Guidance

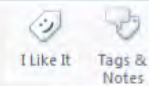
|                       | Anonymous  | Authenticated   |
|-----------------------|--|---|
| Cache Duration        |    |   |
| Cross List Multiplier |  |  |

Especially if per-site and per-item security is prevalent



Especially if per-site  
and per-item security  
is prevalent

### Site Collection Administration > Object cache settings



Sean P. McDonough | Press Releases

Search this site...

Press Releases

#### Object Cache Size

Object Cache Size [Learn more about the object cache.](#)

Max. Cache Size (MB):

100

Recycle Bin

All Site Content

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Each cross list query might retrieve results for a variety of users. To ensure after security trimming that all users will see a valid set of results, the cross list query cache must pull more results than originally requested. Specifying a larger number will retrieve more data from the server and is ideal for site collections that have unique security applied on many lists and sites. Specifying a smaller number will consume less memory per cross list query and is ideally suited for site collections that do not have unique security on each list or site.

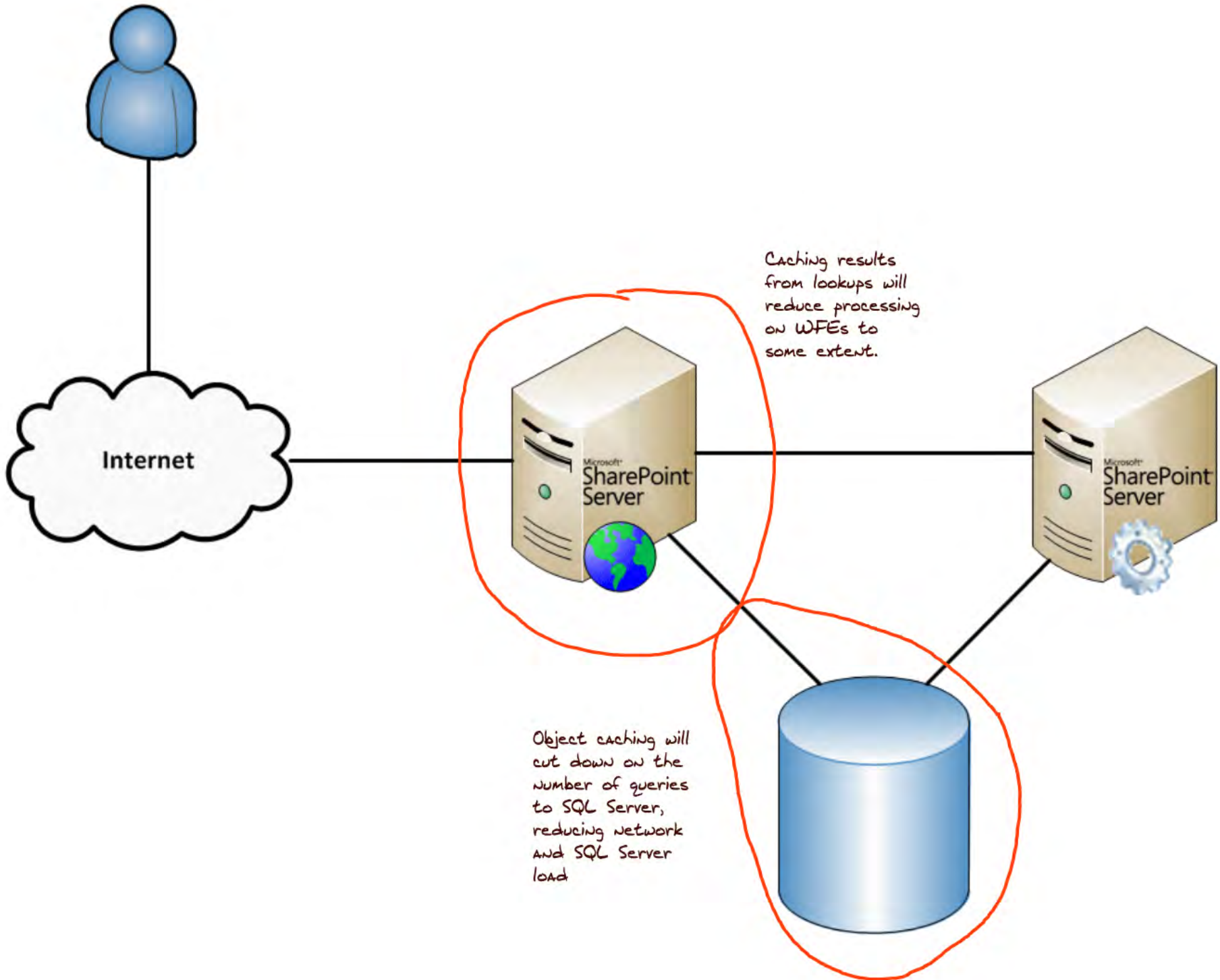
Cross list query multiplier:

3

OK

Cancel





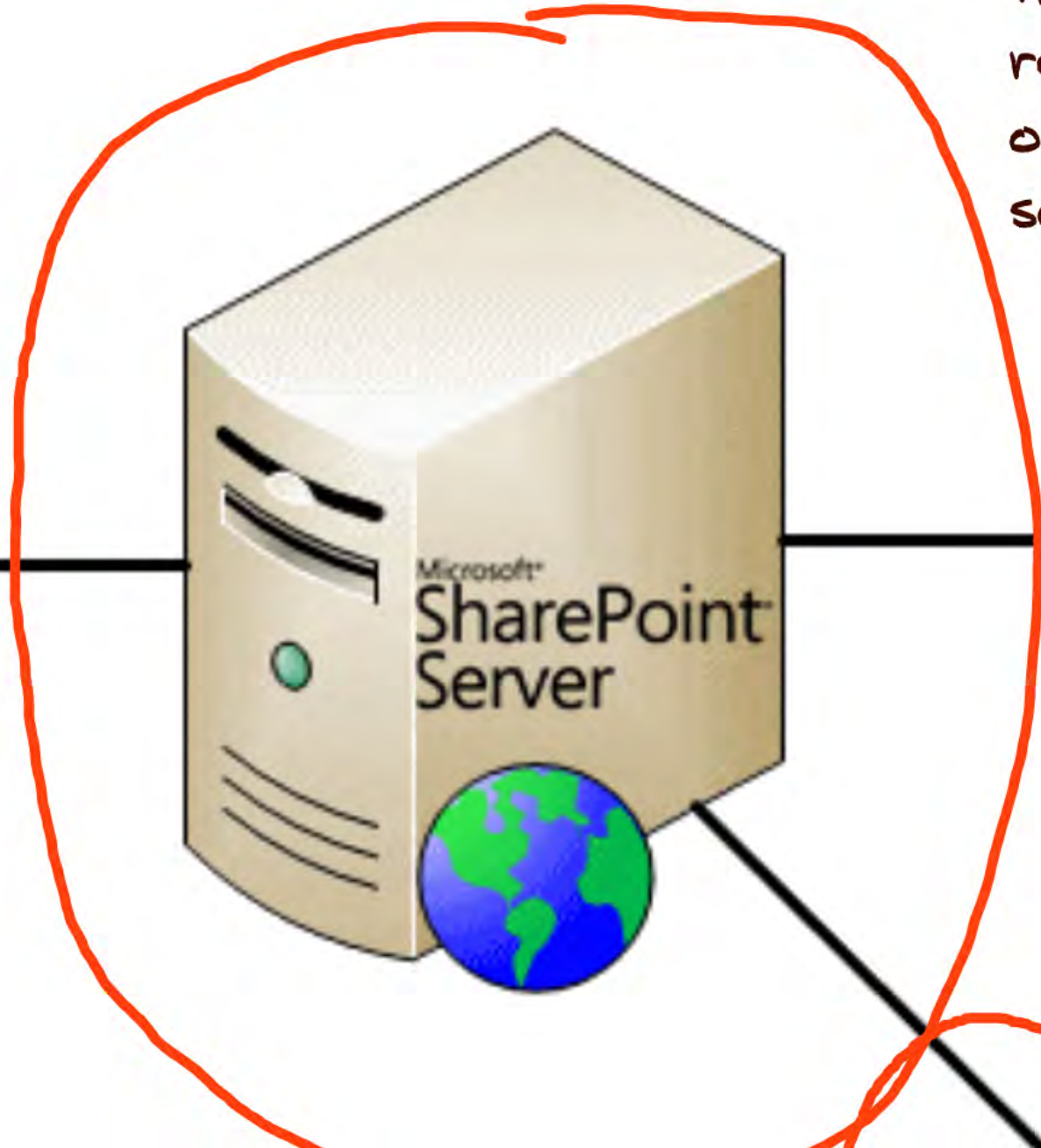
Caching results from lookups will reduce processing on WFEs to some extent.

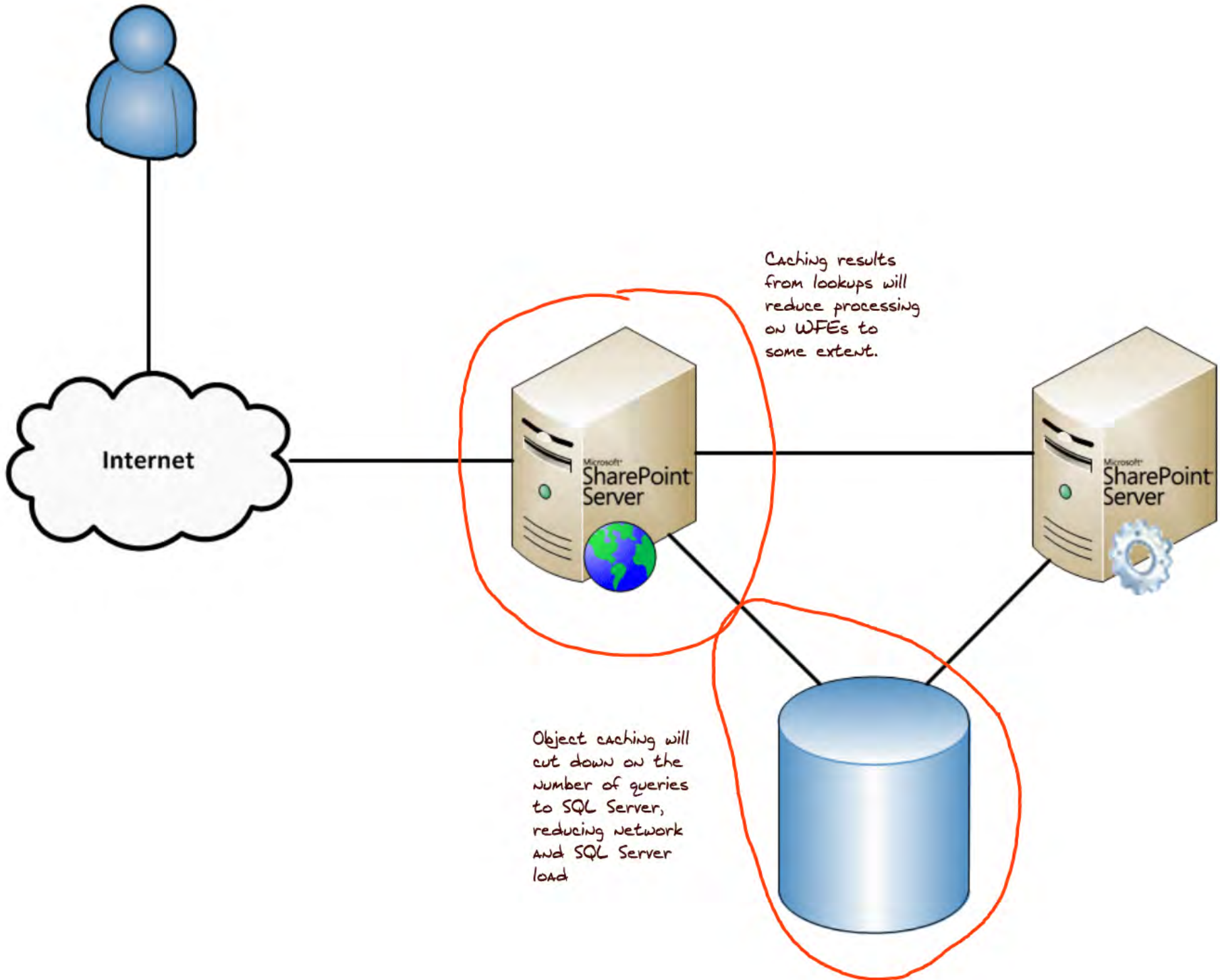
Object caching will cut down on the number of queries to SQL Server, reducing network and SQL Server load

Object caching will  
cut down on the  
number of queries  
to SQL Server,  
reducing network  
AND SQL Server  
load



Caching results from lookups will reduce processing on WFEs to some extent.





Caching results from lookups will reduce processing on WFEs to some extent.

Object caching will cut down on the number of queries to SQL Server, reducing network and SQL Server load

Next up ...

Next up ...



BLOB caching



No, not that  
kind of BLOB

BLOB = binary large object  
(document and attachment  
uploads to SharePoint)

aching



FIGHT NIGHT



# FIGHT NIGHT



BLOB

VS



Blob

# FIGHT NIGHT



BLOB

VS



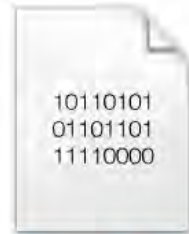
Blob

---

Chews up database space

Consumes entire cities

# FIGHT NIGHT



BLOB

VS



Blob

Chews up database space

Consumes entire cities

Hated by database admins

Bane of humanity

# FIGHT NIGHT



BLOB

VS



Blob

Chews up database space

Consumes entire cities

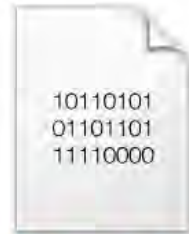
Hated by database admins

Bane of humanity

Kills attempts to organize  
database pages and extents

Kills anyone stupid enough to  
get in its slow-moving way

# FIGHT NIGHT



BLOB

VS



Blob

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Conquered with RBS

Wiped out through military  
action ... sometimes ...



BLOB

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get in its slow-moving way

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action ... sometimes ...

**WINNER!**



No, not that  
kind of BLOB

BLOB = binary large object  
(document and attachment  
uploads to SharePoint)

aching





BLOB = binary large object  
(document and attachment  
uploads to SharePoint)

aching



also known as "disk-based caching"



Everything that's  
highlighted in yellow  
would be cached  
through BLOB  
caching



http://spdev:18480/Pages/default.aspx



# My SharePoint Site

SPDC\me

Site Actions

Search this site,...

## Home

My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint Site

## Welcome Back, Bob!



SharePoint 2013's Image Renditions capability depends on the BLOB cache to store images that have been rescaled/resized to different dimensions



Caching can be extended to cover any static file type, including Flash, PDF, and other common web file types.

It is by will alone I set my mind in motion.

It is by the juice of Sapho that thoughts acquire speed, the lips acquire stains, the stains become a warning.

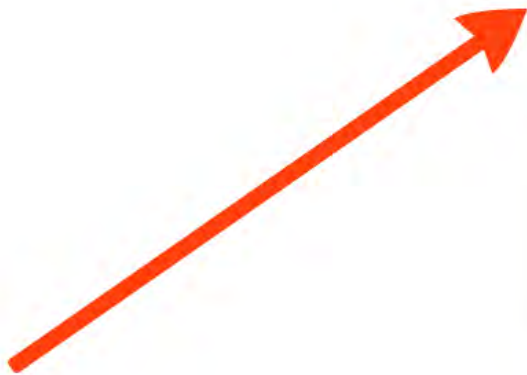
It is by will alone I set my mind in motion.

Just sit right back and you'll hear a tale, a tale of a fateful trip, That started from this tropic port, aboard this tiny ship. The mate was a mighty sailin' man, the Skipper brave and sure. Five passengers set sail that day for a three hour tour. A three hour tour.

The weather started

Everything that's highlighted in yellow would be cached through BLOB caching

Caching can be extended to cover any static file type, including Flash, PDF, and other common web file types.



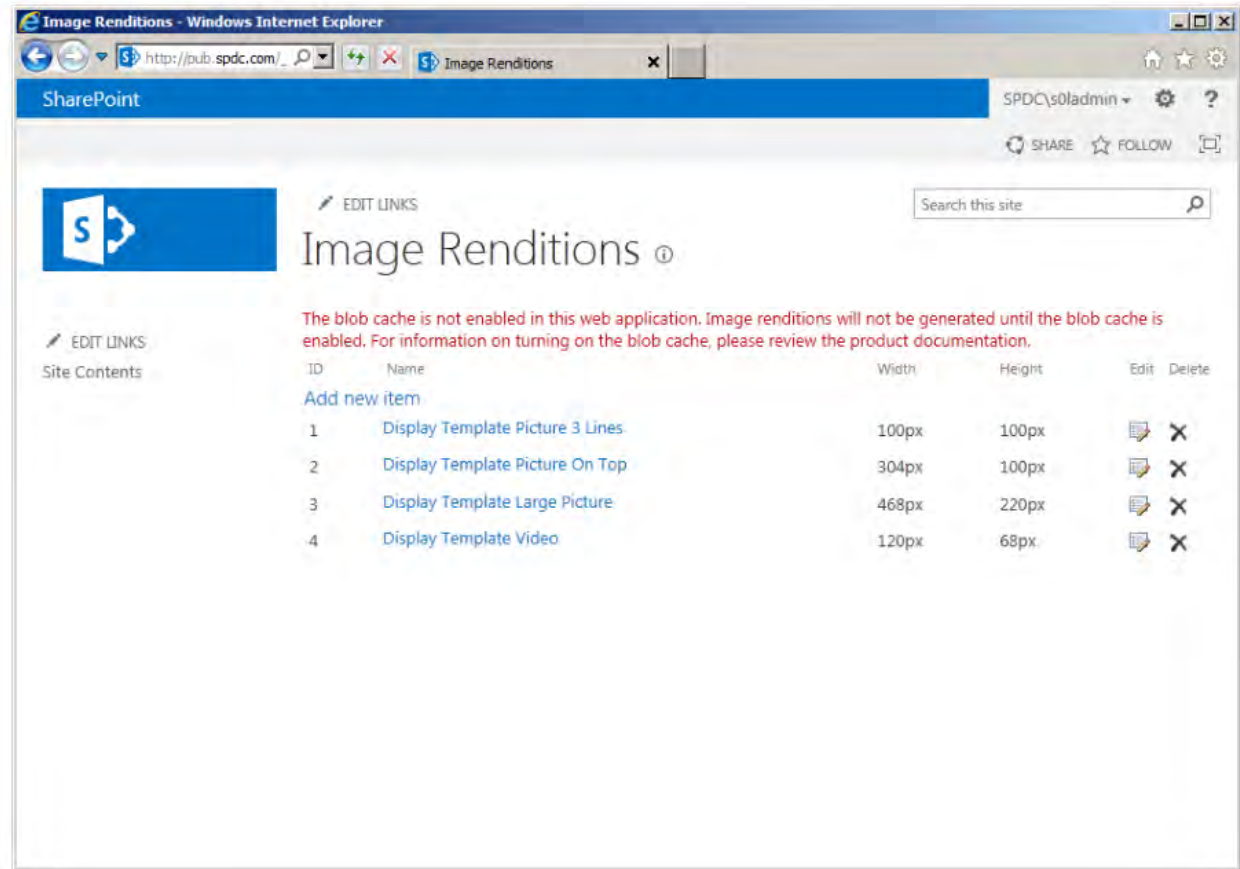
It is by v  
mind in m

It is by t  
that the



SharePoint 2013's Image Renditions capability depends on the BLOB cache to store images that have been rescaled/resized to different dimensions

ack and



SharePoint 2013's Image Renditions capability depends on the BLOB cache to store images that have been rescaled/resized to different dimensions



# My SharePoint Site

SPDC\me

Site Actions

Search this site...

## Home

My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint Site

## Welcome Back, Bob!



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The weather started

Everything that's highlighted in yellow would be cached through BLOB caching

BLOB cache

# BLOB cache

Backed by disk





# BLOB cache

Backed by disk



Turned off by default



# BLOB cache

Backed by disk



Turned off by default



Default size or allocation

10GB per  
IIS site (zone)

# BLOB cache

Backed by disk



Turned off by default



Default size or ~~allocation~~

10GB per  
IIS site (zone)

Controlled through web.config settings



```
<Action id="0ff1ce14-101a-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="0ff1ce14-101b-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="0ff1ce14-101c-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="0ff1ce14-101d-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="0ff1ce14-101e-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="0ff1ce14-1020-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="0ff1ce14-1021-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Mi
<Action id="ec0076ac-0c35-4880-8422-8062f5925bec" sourceFile="C:\Program Files\Common Files\Mi
<Action id="602bc8c3-9286-49a3-b973-3376ca78b297" sourceFile="C:\Program Files\Common Files\Mi
<Action id="00e22a78-33ff-41ac-b0fb-ee46d1636e22" sourceFile="C:\Program Files\Common Files\Mi
<Action id="4b60e42e-e6fc-4188-80d2-ef39e7cc0065" sourceFile="C:\Program Files\Common Files\Mi
<Action id="1d415973-1146-4bc2-8324-83dfff5bfe33" sourceFile="C:\Program Files\Common Files\Mi
```

```
</mergedActions>
```

```
<BlobCache location="C:\BlobCache\14" path="\".(gif|jpg|jpeg|jpe|jfif|bmp|dib|tif|tiff|ico|png|wd
```

```
<ObjectCache maxSize="100" />
```

```
<OutputCacheProfiles useCacheProfileOverrides="false" varyByHeader="" varyByParam="*" varyByCust
```

```
<RuntimeFilter Assembly="Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyTo
```

```
</SharePoint>
```

```
<system.web>
```

```
<securityPolicy>
```

```
<trustLevel name="WSS_Medium" policyFile="C:\Program Files\Common Files\Microsoft Shared\Web S
```

```
<trustLevel name="WSS_Minimal" policyFile="C:\Program Files\Common Files\Microsoft Shared\Web
```

```
</securityPolicy>
```

```
<httpHandlers />
```

```
<customErrors mode="On" />
```

```
<httpRuntime maxRequestLength="51200" />
```

```
<authentication mode="Windows" />
```

```
<identity impersonate="true" />
```

```
<authorization>
```

```
<allow users="*" />
```

```
</authorization>
```

```
<httpModules />
```

Default BlobCache Elements

# Default BlobCache Elements

MOSS 2007

```
<BlobCache location="C:\blobCache" path="\.(gif|jpg|png|css|js)$" maxSize="10" enabled="false" />
```

# Default BlobCache Elements

## MOSS 2007

```
<BlobCache location="C:\blobCache" path="\.(gif|jpg|png|css|js)$" maxSize="10" enabled="false" />
```

## SharePoint Server 2010

```
<BlobCache location="C:\BlobCache\14" path="
"\.(gif|jpg|jpeg|jpe|jfif|bmp|dib|tif|tiff|ico|png|wdp|hdp|css|js|asf|avi|flv|m4v|mov|mp3|mp4|mpe
g|mpg|rm|rmvb|wma|wmv)$" maxSize="10" enabled="false" />
```



# Default BlobCache Elements

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<BlobCache location="C:\blobCache" path="\.(gif|jpg|png|css|js)$" maxSize="10" enabled="false" />
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## SharePoint Server 2010

```
<BlobCache location="C:\BlobCache\14" path=
"\.(gif|jpg|jpeg|jpe|jfif|bmp|dib|tif|tiff|ico|png|wdp|hdp|css|js|asf|avi|flv|m4v|mov|mp3|mp4|mpe
g|mpg|rm|rmvb|wma|wmv)$" maxSize="10" enabled="false" />
```

## SharePoint Server 2013

```
<BlobCache location="C:\BlobCache\14" path=
"\.(gif|jpg|jpeg|jpe|jfif|bmp|dib|tif|tiff|themedbmp|themedcss|themedgif|themedjpg|themedpng|ico|png|wdp|hdp|css|
js|asf|avi|flv|m4v|mov|mp3|mp4|mpe
g|mpg|rm|rmvb|wma|wmv|ogg|ogv|oga|webm|xap)$" maxSize="10" enabled="false" />
```

Available Attributes

# Available Attributes

## Common

|          |   |
|----------|---|
| enabled  | true if the BLOB cache is turned-on, false if not*                      |
| location | path to location in file system where cached items will be stored*      |
| path     | regular expression against which files must match in order to be cached |
| size     | maximum disk space (in GB) that BLOB cache can consume*                 |
| max-age  | client-side cache duration (in seconds) for downloaded BLOB cache items |

Side note: to be BLOB  
cached, a file must be a  
document in a Document  
Library or a list item  
attachment. "Loose files"  
won't be cached.

# Available Attributes

## Common

|          |   |
|----------|---|
| enabled  | true if the BLOB cache is turned-on, false if not*                      |
| location | path to location in file system where cached items will be stored*      |
| path     | regular expression against which files must match in order to be cached |
| size     | maximum disk space (in GB) that BLOB cache can consume*                 |
| max-age  | client-side cache duration (in seconds) for downloaded BLOB cache items |

Recommendation:  
point at someplace  
other than C:

# Available Attributes

## Common

|          |   |
|----------|---|
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| location | path to location in file system where cached items will be stored*      |
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| size     | maximum disk space (in GB) that BLOB cache can consume*                 |
| max-age  | client-side cache duration (in seconds) for downloaded BLOB cache items |

Recommendation: make  
sure you add up your  
allocations (each site)  
and have enough disk  
space!



# Available Attributes

## Common

|          |   |
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| size     | maximum disk space (in GB) that BLOB cache can consume*                 |
| max-age  | client-side cache duration (in seconds) for downloaded BLOB cache items |

DO NOT simply delete files  
out of the BLOB cache!

Now, for a  
word about  
the MAX-AGE  
attribute ...



max-age in action: initial request (non-zero max-age value)

# max-age in action: initial request (non-zero max-age value)

| Web Sessions |        |          |   |         |   |                               |
|--------------|--------|----------|---|---------|---|-------------------------------|
| #            | Result | Protocol | URL                                       | Body    | Caching   |                               |
| 64           | 200    | HTTP     | /SiteCollectionImages/common/content...   | 79      | public, max-age=2232  | image/gif                     |
| 65           | 200    | HTTP     | /SiteCollectionImages/common/btnNoTh...   | 2,112   | public, max-age=2478  | image/gif                     |
| 66           | 200    | HTTP     | /SiteCollectionImages/common/signinOv...  | 165     | public, max-age=4707  | image/png                     |
| 67           | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 16,907  | public, max-age=5791  | image/png                     |
| 68           | 200    | HTTP     | /_controltemplates/MultiBanner/ModalP...  | 15,618  | max-age=867   | image/png                     |
| 69           | 302    | HTTP     | /s/www.kroger.com?U=/SiteCollectionI...   | 0       | max-age=0, no-cache, no-store Expires: Sun, 03 Apr 201...   |                               |
| 70           | 200    | HTTP     | /SiteCollectionImages/common/160x41...    | 5,099   | public, max-age=2141  | image/jpeg                    |
| 71           | 200    | HTTP     | /PublishingImages/section_headers/hea...  | 4,538   | public, max-age=1452  | image/jpeg                    |
| 72           | 200    | HTTP     | /PublishingImages/2011/Period_3/Week...   | 73,370  | public, max-age=1320  | image/jpeg                    |
| 73           | 200    | HTTP     | /PublishingImages/2011/Period_3/Week...   | 77,412  | public, max-age=944   | image/jpeg                    |
| 74           | 200    | HTTP     | /PublishingImages/2011/Period_3/Week...   | 52,993  | public, max-age=1307  | image/jpeg                    |
| 75           | 200    | HTTP     | /_layouts/1033/core.js?rev=mHksOQ0i...    | 265,384 | max-age=2908  | application/x-javascript      |
| 76           | 200    | HTTP     | /style%20library/omniture/s_code_krog...  | 20,172  | public, max-age=2590  | application/x-javascript      |
| 77           | 200    | HTTP     | /SiteCollectionImages/common/closeBtn...  | 879     | public, max-age=4795  | image/gif                     |
| 78           | 200    | HTTP     | /SiteCollectionImages/cons/icon_import... | 1,287   | public, max-age=2785  | image/gif                     |
| 79           | 200    | HTTP     | /iframe.php?targeting_bucket=Banner_...   | 6,147   | max-age=300, max-age=600 Expires: Sun, 03 Apr 2011 2...     | text/html; charset=utf-8      |
| 80           | 200    | HTTP     | /adj/mwl.kroger.www/?page=home_ma...      | 571     | private Expires: Sun, 03 Apr 2011 20:13:57 GMT              | application/x-javascript      |
| 81           | 200    | HTTP     | /SiteCollectionImages/common/boxBg_...    | 82      | public, max-age=767   | image/gif                     |
| 82           | 200    | HTTP     | /SiteCollectionImages/common/boxTop_...   | 923     | public, max-age=888   | image/gif                     |
| 83           | 200    | HTTP     | /includes/css/iframe.css                  | 1,603   | max-age=2592000 Expires: Tue, 03 May 2011 20:11:19 GMT      | text/css                      |
| 84           | 200    | HTTP     | /images/generic_header.png                | 10,978  | max-age=2592000 Expires: Tue, 03 May 2011 20:11:16 GMT      | image/png                     |
| 85           | 200    | HTTP     | /srv/upload_files/fea90f998a8b8d3401...   | 5,744   | max-age=2592000 Expires: Tue, 03 May 2011 20:09:42 GMT      | image/gif                     |
| 86           | 200    | HTTP     | /images/coupon-pointer.png                | 1,952   | max-age=2592000 Expires: Tue, 03 May 2011 20:09:02 GMT      | image/png                     |
| 87           | 200    | HTTP     | /srv/upload_files/acdf9eb5cc1b4b75e4...   | 5,985   | max-age=2592000 Expires: Tue, 03 May 2011 20:11:19 GMT      | image/gif                     |
| 88           | 200    | HTTP     | /srv/upload_files/46263a8ea7a6c1251a...   | 4,942   | max-age=2592000 Expires: Tue, 03 May 2011 20:11:19 GMT      | image/gif                     |
| 89           | 200    | HTTP     | /srv/upload_files/5467f518013f109e51...   | 5,241   | max-age=2592000 Expires: Tue, 03 May 2011 20:11:19 GMT      | image/gif                     |
| 90           | 200    | HTTP     | /siteCollectionImages/swf/heroHomepa...   | 105,036 | public, max-age=5897  | application/x-shockwave-flash |
| 91           | 200    | HTTP     | /PublishingImages/2011/Period_3/Week...   | 164,821 | public, max-age=1546  | image/jpeg                    |
| 92           | 200    | HTTP     | /PublishingImages/2011/Period_3/Week...   | 153,151 | public, max-age=1863  | image/jpeg                    |
| 93           | 200    | HTTP     | /PublishingImages/2011/Period_3/Week...   | 118,575 | public, max-age=1894  | image/jpeg                    |
| 94           | 200    | HTTP     | /SiteCollectionImages/common/signinOv...  | 594     | public, max-age=5181  | image/png                     |
| 95           | 200    | HTTP     | /SiteCollectionImages/common/bgSignI...   | 434     | public, max-age=5094  | image/gif                     |
| 96           | 200    | HTTP     | /SiteCollectionImages/common/signinOv...  | 470     | public, max-age=1584  | image/png                     |
| 97           | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 250     | public, max-age=2539  | image/png                     |
| 98           | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 10,762  | public, max-age=5053  | image/png                     |
| 99           | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 939     | public, max-age=6742  | image/gif                     |
| 100          | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 1,428   | public, max-age=5869  | image/gif                     |
| 101          | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 1,508   | public, max-age=1087  | image/gif                     |
| 102          | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 1,472   | public, max-age=5494  | image/gif                     |
| 103          | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 1,496   | public, max-age=4800  | image/gif                     |
| 104          | 200    | HTTP     | /_controltemplates/MultiBanner/ModalP...  | 1,386   | max-age=1776  | image/gif                     |
| 105          | 200    | HTTP     | /SiteCollectionImages/common/benefits...  | 1,511   | public, max-age=6492  | image/gif                     |
| 106          | 200    | HTTP     | /2934496/2of3_tr1_Mars_GC.jpg             | 137,333 | public, max-age=86400 Expires: Mon, 04 Apr 2011 04:05:...   | image/jpeg                    |
| 107          | 200    | HTTP     | /PublishingImages/section_headers/hea...  | 3,922   | public, max-age=1000  | image/jpeg                    |
| 108          | 200    | HTTP     | /SiteCollectionImages/common/footer_...   | 1,401   | public, max-age=4232  | image/gif                     |
| 109          | 200    | HTTP     | /SiteCollectionImages/common/footerL...   | 54      | public, max-age=1035  | image/gif                     |
| 110          | 200    | HTTP     | /SiteCollectionImages/common/boxBot...    | 838     | public, max-age=1818  | image/gif                     |
| 111          | 200    | HTTP     | /SiteCollectionImages/common/content...   | 5,785   | public, max-age=1121  | image/jpeg                    |
| 113          | 302    | HTTP     | /b/ss/krgkrogerprod/1/H.14/s2205936...    | 0       | no-cache, no-store, must-revalidate, max-age=0, proxy-re... | text/plain                    |
| 114          | 200    | HTTP     | /SiteCollectionImages/common/bgSelect...  | 654     | public, max-age=6811  | image/gif                     |
| 115          | 200    | HTTP     | /b/ss/krgkrogerprod/1/H.14/s2205936...    | 43      | no-cache, no-store, must-revalidate, max-age=0, proxy-re... | image/gif                     |

115 HTTP requests issued and answered to fully load page

max-age in action: subsequent request (re-opened browser)

max-age in action: subsequent request (re-opened browser)



| # | Result | Protocol | URL                                     | Body   | Caching   | Content-Type             |
|---|--------|----------|---|--------|---|--------------------------|
| 1 | 302    | HTTP     | /                                       | 163    |   | text/html                |
| 2 | 200    | HTTP     | /Pages/default.aspx                     | 81,746 | private Expires: Sun, 03 Apr 2011 20:23:34 GMT              | text/html; charset=utf-8 |
| 3 | 200    | HTTP     | /adj/mwl.kroger.www/?page=home_ma...    | 571    | private, x-gzip-ok="" Expires: Sun, 03 Apr 2011 20:16:05... | application/x-javascript |
| 4 | 200    | HTTP     | /b/ss/trg/krogerprod/1/H.14/s2656257... | 43     | no-cache, no-store, must-revalidate, max-age=0, proxy-re... | image/gif                |

Only 4 requests needed to load the page

# max-age in action: subsequent request (re-opened browser)

| # | Result | Protocol | URL                                     | Body   | Caching  | Content-Type             |
|---|--------|----------|---|--------|--|--------------------------|
| 1 | 302    | HTTP     | /                                       | 163    |  | text/html                |
| 2 | 200    | HTTP     | /Pages/default.aspx                     | 81,746 | private Expires: Sun, 03 Apr 2011 20:23:34 GMT               | text/html; charset=utf-8 |
| 3 | 200    | HTTP     | /adj/mwl.kroger.www/page=home_ma...     | 571    | private, x-gzip-ok="" Expires: Sun, 03 Apr 2011 20:16:05 ... | application/x-javascript |
| 4 | 200    | HTTP     | /b/ss/krgrkrogerprod/1/H.14/s2656257... | 43     | no-cache, no-store, must-revalidate, max-age=0, proxy-re...  | image/gif                |

Only 4 requests needed to load the page



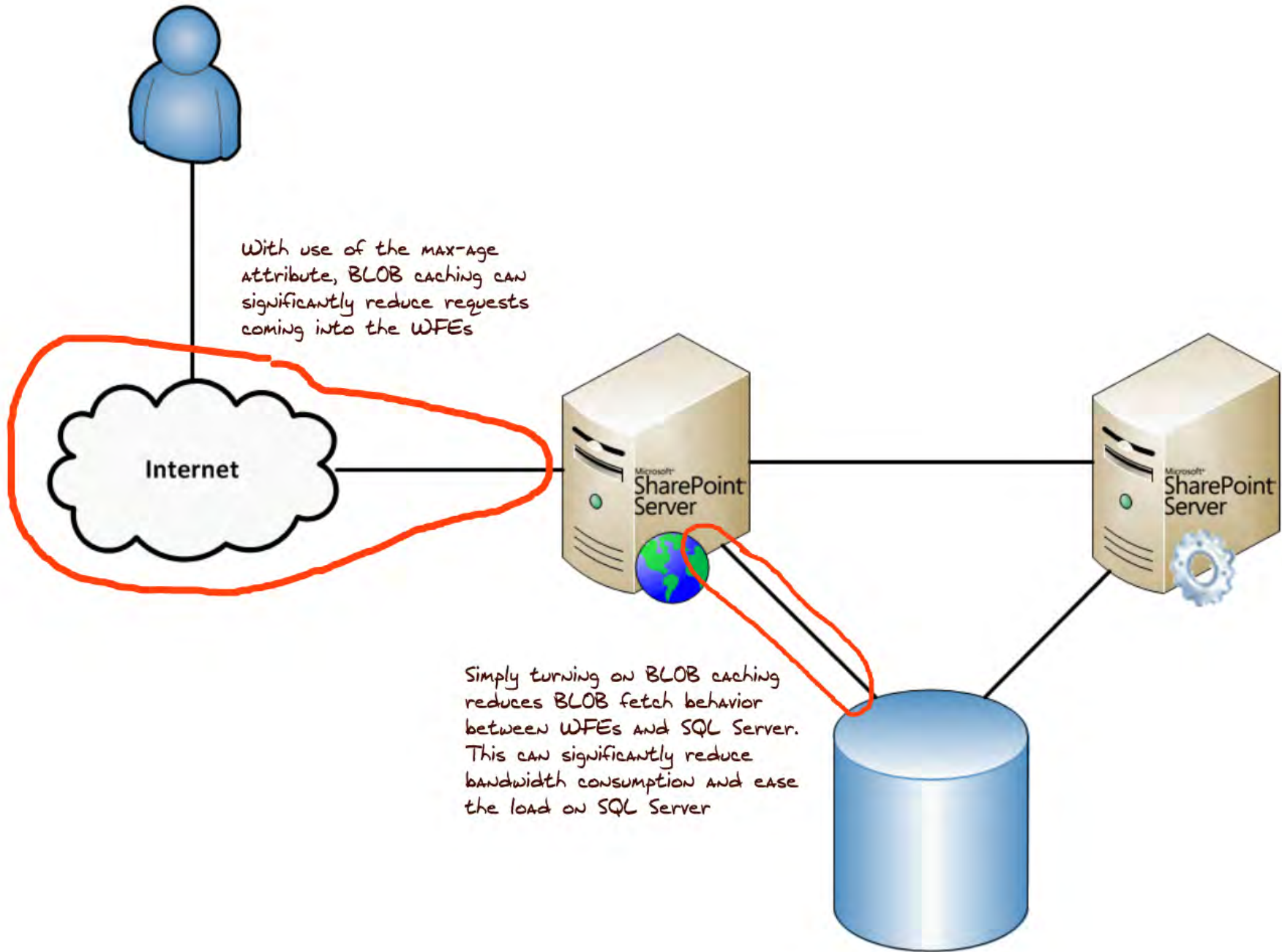
Of course, this behavior CAN work both for you AND AGAINST you ...





Of course, this behavior  
CAN work both for you  
AND AGAINST you ...

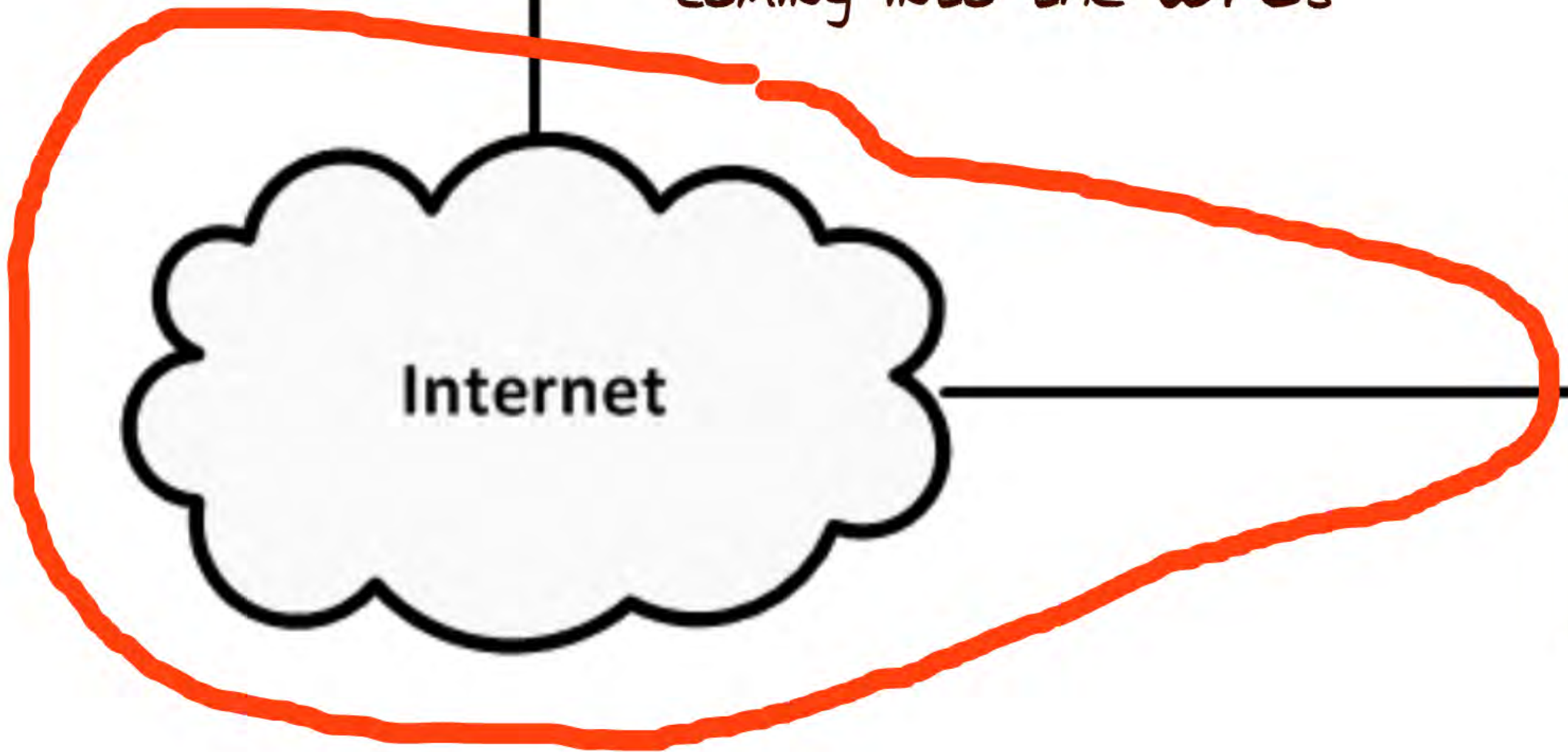
If you don't want persistent client-side caching when the BLOB cache is enabled, be sure to explicitly set a max-age value of zero (0). If you don't specify a max-age attribute value, the default is 86,400 seconds (24 hours).

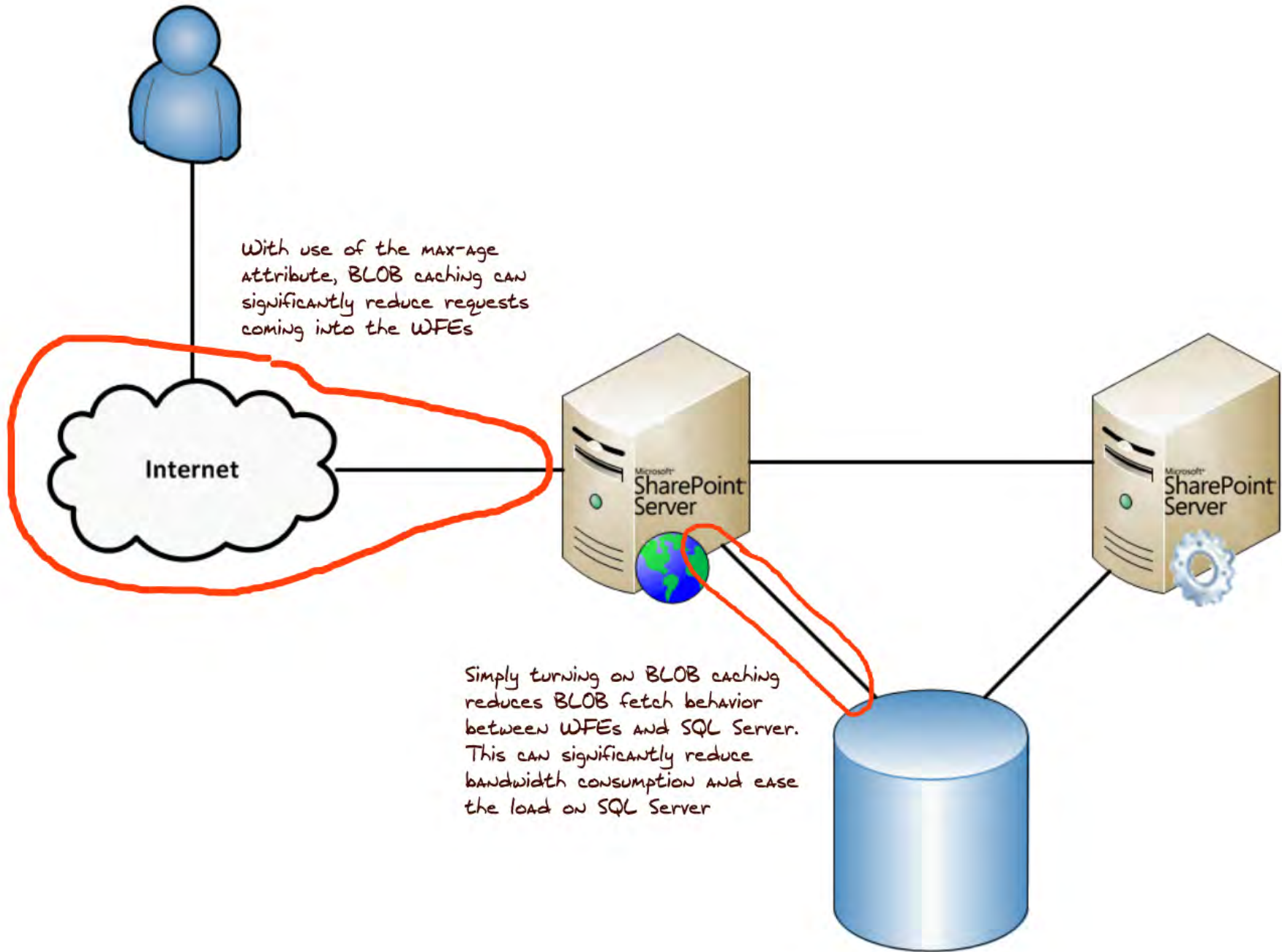




Simply turning on BLOB caching reduces BLOB fetch behavior between WFES AND SQL Server. This can significantly reduce bandwidth consumption AND ease the load on SQL Server

With use of the MAX-Age attribute, BLOB caching can significantly reduce requests coming into the WFEs





Next up...

Next up...



Page output  
caching

Next up...



# Page output caching

*piggybacks on ASP.NET output caching*





http://spdev:18480/Pages/default.aspx



# ~~My SharePoint Site~~

~~SPDC\me~~

Site Actions ~~?~~ ~~?~~

Search this site... ~~?~~

I'll talk about the reason for highlighting this a little later. For now, though, let's just say "it isn't covered by page output caching."

Top-Level Site > My SharePoint Site

## Home

My SharePoint Site

Your SharePoint Site

Another Site

Welcome Back, Bob!



It's easier to simply put red X's through the content and items that aren't covered by page output caching.



It is by will alone I set my mind in motion.

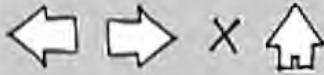
It is by the juice of Sapho that thoughts acquire speed, the lips acquire stains, the stains become a warning.

It is by will alone I set my mind in motion.

Just sit right back and you'll hear a tale, a tale of a fateful trip, That started from this tropic port, aboard this tiny ship. The mate was a mighty sailin' man, the Skipper brave and sure. Five passengers set sail that day for a three hour tour. A three hour tour.

The weather started

It's easier to simply put red X's through the content and items that aren't covered by page output caching.



http://spdev:18480/Pages/default.aspx



# ~~My SharePoint Site~~

~~SPDC\me~~

Site Actions ~~?~~ ~~?~~

Search this site... ~~?~~

I'll talk about the reason for highlighting this a little later. For now, though, let's just say "it isn't covered by page output caching."

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The weather started

Page output caching

# Page output caching

Backed by memory



# Page output caching

Backed by memory



Turned off by default  
*(thankfully)*



# Page output caching

Backed by memory



Turned off by default  
*(thankfully)*



Default size or allocation

*None\**

# Page output caching

Backed by memory



Turned off by default  
*(thankfully)*



Default size or allocation

*None\**

*A trick that started with SharePoint 2010 ...*





```
<Action id="0ff1ce14-101d-0000-0000-000000000000" sourceFile="C:\Program
<Action id="0ff1ce14-101e-0000-0000-000000000000" sourceFile="C:\Program
<Action id="0ff1ce14-1020-0000-0000-000000000000" sourceFile="C:\Program
<Action id="0ff1ce14-1021-0000-0000-000000000000" sourceFile="C:\Program
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<BlobCache location="C:\BlobCache\14" path="\.(gif|jpg|jpeg|jpe|jfif|bmp|di
<ObjectCache maxSize="100" />
<OutputCacheProfiles useCacheProfileOverrides="false" varyByHeader="" varyB
<RuntimeFilter Assembly="Microsoft.Office.Server, Version=14.0.0.0, Culture
</SharePoint>
<system.web>
  <securityPolicy>
    <trustLevel name="WSS_Medium" policyFile="C:\Program Files\Common Files\M
    <trustLevel name="WSS_Minimal" policyFile="C:\Program Files\Common Files\
  </securityPolicy>
  <httpHandlers />
  <customErrors mode="On" />
  <httpRuntime maxRequestLength="51200" />
  <authentication mode="Windows" />
  <identity impersonate="true" />
```

# So ...

How's this page  
output caching  
thing work,  
ANYWAY?



The Page Output Cache  
is like a big lookup table

# The Page Output Cache is like a big lookup table

Each page request is broken down into a set of characteristics

- Characteristics are selected based on page output cache profiles
- These characteristics (browser type, page requested, etc.) are used to build a key

Notice I said request.  
The actual content in the page that is rendered by SharePoint has no bearing on how items are cached or served from cache.



is like a Page

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- These characteri

The ca

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The cache is searched for a page with the key that was built

- If a page with the same key is found, the page HTML is returned from the cache.
- If no match is made, the page is rendered and served back. It is then cached for subsequent requests until it is expired out of the cache or ejected for other reasons.

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The trick is to balance profile granularity against memory consumption



*Search this site*



Enable output cache

Anonymous Cache Profile



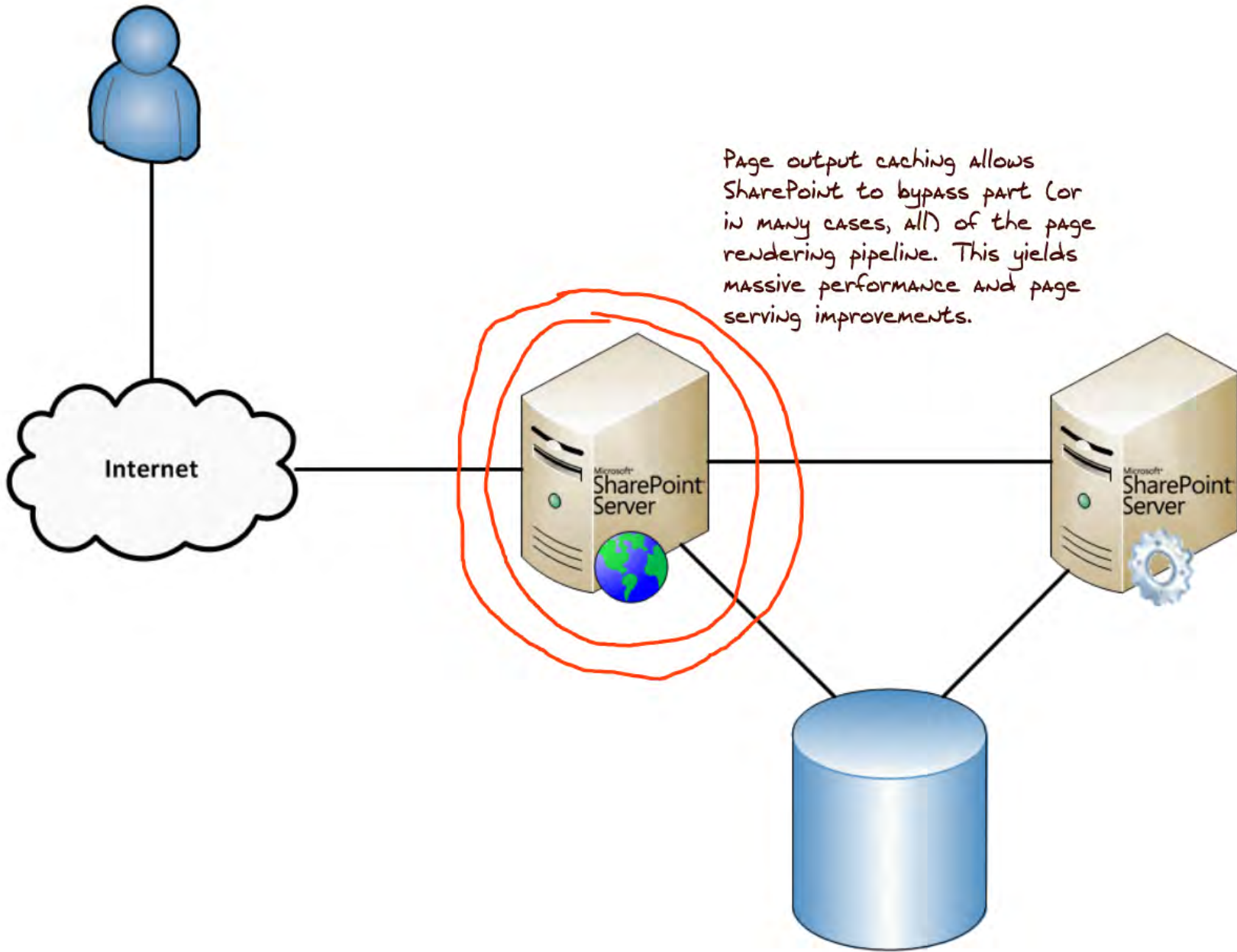
You really, really, *\*really\** need to do concurrent multi-user testing with your cache profile settings!



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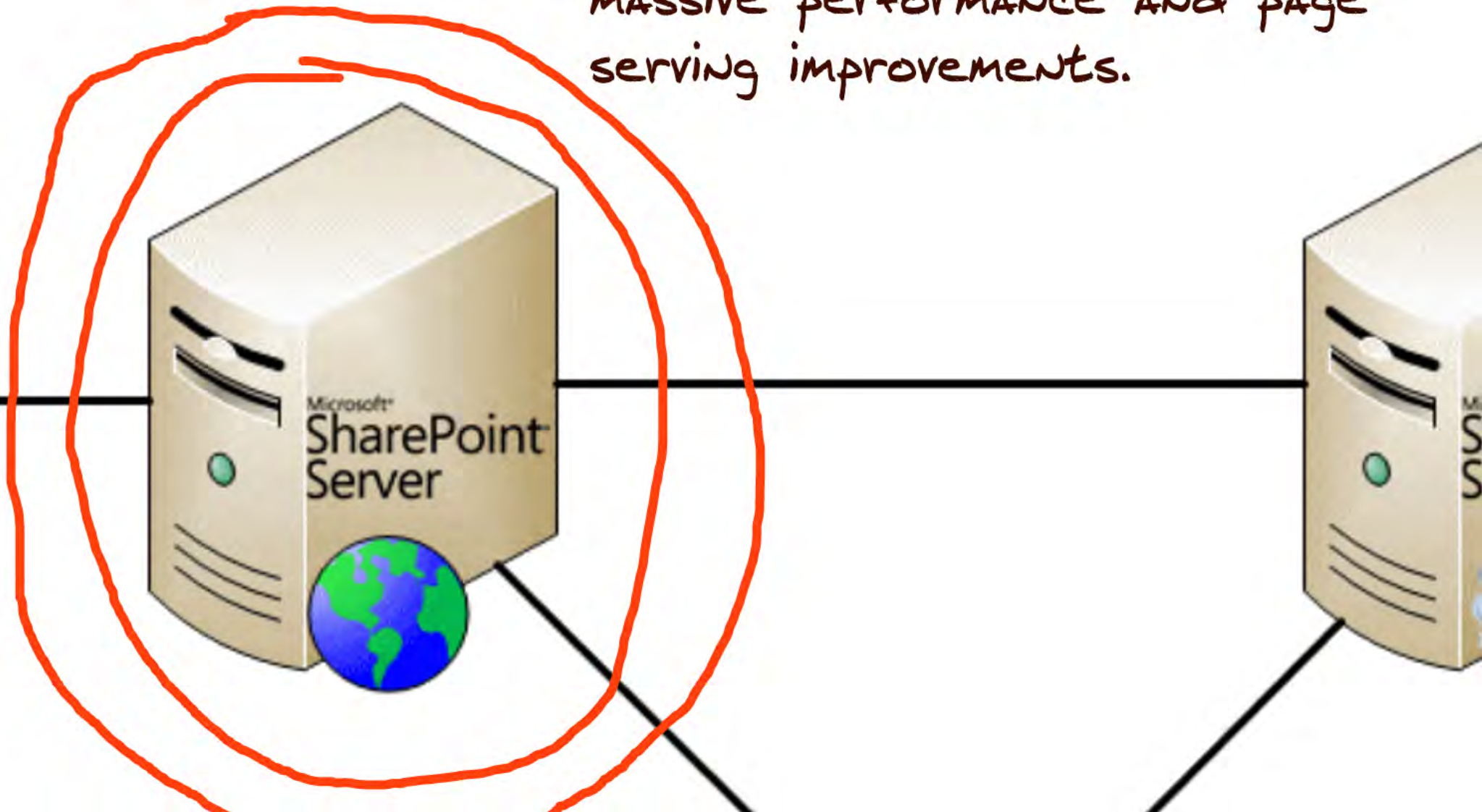


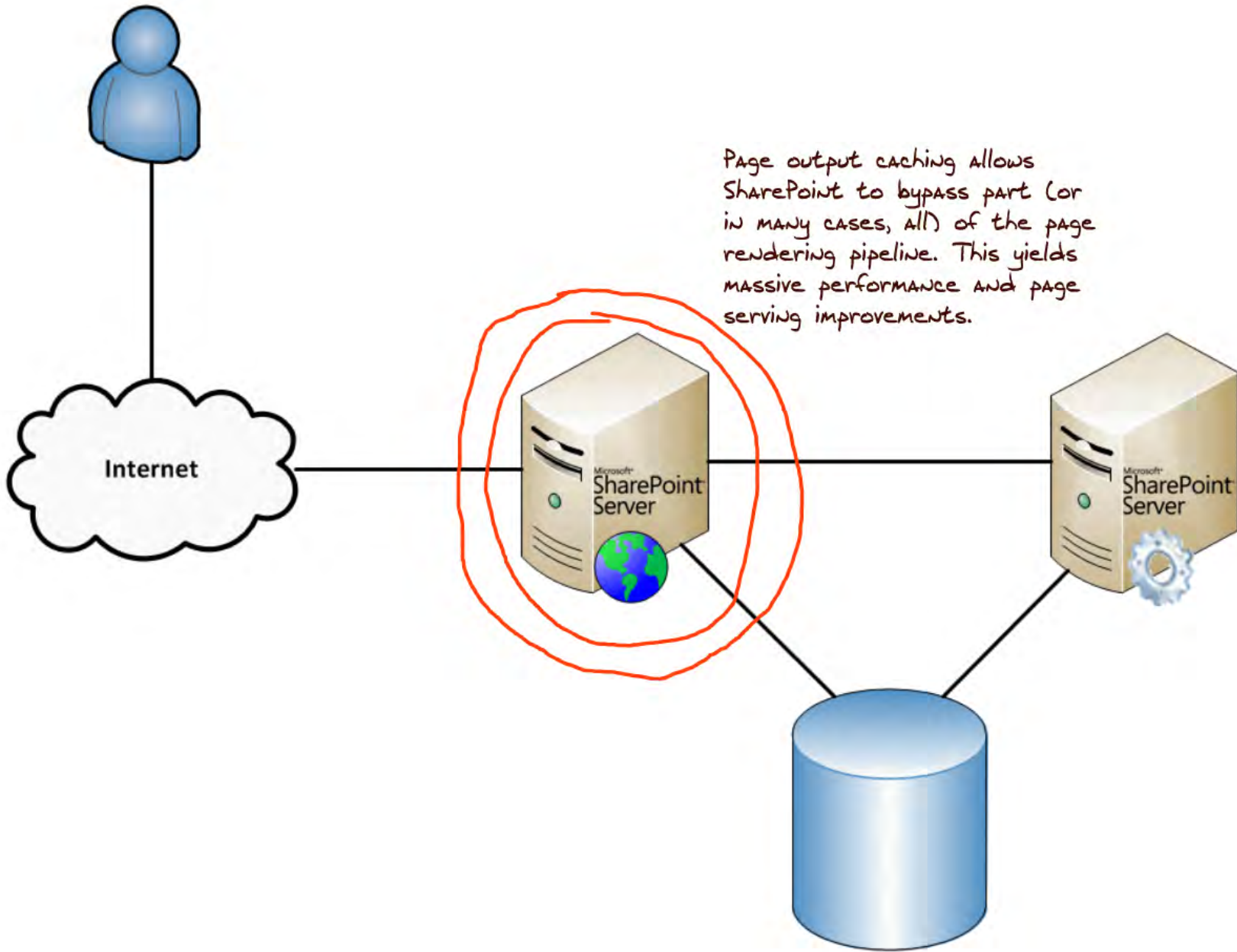
Do you sense a story coming?



Page output caching allows SharePoint to bypass part (or in many cases, all) of the page rendering pipeline. This yields massive performance and page serving improvements.

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Office Web

Apps Cache



# Office Web Apps Cache



I'm referring to  
SharePoint 2010  
specifically; things  
change dramatically  
with SharePoint 2013





Houses images, XAML (eXtensible Application Markup Language), etc, that is generated so documents can be viewed and edited via browser.



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*How the cache is implemented ...*

## Central Administration

Application Management

System Settings

Monitoring

Backup and Restore

Security

Upgrade and Migration

General Application Settings

Configuration Wizards

URL Search Web Application: 


URL

[/sites/Office\\_Viewing\\_Service\\_Cache](#)

|                        |   |
|------------------------|---|
| URL                    | http://spdev:18480/sites/Office_Viewing_Service_Cache |
| Title                  | Team Site   |
| Description            |   |
| Primary administrator: | SPDC\s0ladmin   |
| E-mail address:        |   |
| Database Name          | WSS_Content_PublishingTestWeb                         |

OK

Cancel


Site Actions  SPDC\s0ladmin

Microsoft SharePoint 2010 Central Administration > Site Collection List

I Like It Tags & Notes

Central Administration

- Application Management
- System Settings
- Monitoring
- Backup and Restore
- Security
- Upgrade and Migration
- General Application Settings
- Configuration Wizards

URL Search   Web Application:

| URL   |  |     |   |       |           |             |  |                        |               |                 |  |               |                               |
|---|--|-----|---|-------|-----------|-------------|--|------------------------|---------------|-----------------|--|---------------|-------------------------------|
| <a href="#">/sites/Office_Viewing_Service_Cache</a> | <table border="1"> <tr> <td>URL</td> <td>http://spdev:18480/sites/Office_Viewing_Service_Cache</td> </tr> <tr> <td>Title</td> <td>Team Site</td> </tr> <tr> <td>Description</td> <td></td> </tr> <tr> <td>Primary administrator:</td> <td>SPDC\s0ladmin</td> </tr> <tr> <td>E-mail address:</td> <td></td> </tr> <tr> <td>Database Name</td> <td>WSS_Content_PublishingTestWeb</td> </tr> </table> | URL | http://spdev:18480/sites/Office_Viewing_Service_Cache | Title | Team Site | Description |  | Primary administrator: | SPDC\s0ladmin | E-mail address: |  | Database Name | WSS_Content_PublishingTestWeb |
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| Primary administrator:                              | SPDC\s0ladmin  |     |   |       |           |             |  |                        |               |                 |  |               |                               |
| E-mail address:                                     |  |     |   |       |           |             |  |                        |               |                 |  |               |                               |
| Database Name                                       | WSS_Content_PublishingTestWeb  |     |   |       |           |             |  |                        |               |                 |  |               |                               |

OK Cancel

- standard Team Site (site collection)
- each Web application gets one (timer job-managed)
- can grow to consume 100 GB (by default)
- 30 day content expiration period (by default)

Recommendations

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Get friendly with  
Set-OfficeSPWebAppsCache  
PowerShell cmdlet

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- relocate cache site collection to a dedicated DB



# Recommendations



Get friendly with  
Set-OfficeSPWebAppsCache  
PowerShell cmdlet

- relocate cache site collection to a dedicated DB
- increase cache size and expiration for Web applications housing static documents
- decrease cache size and expiration for Web applications housing dynamic or highly collaborative Office documents

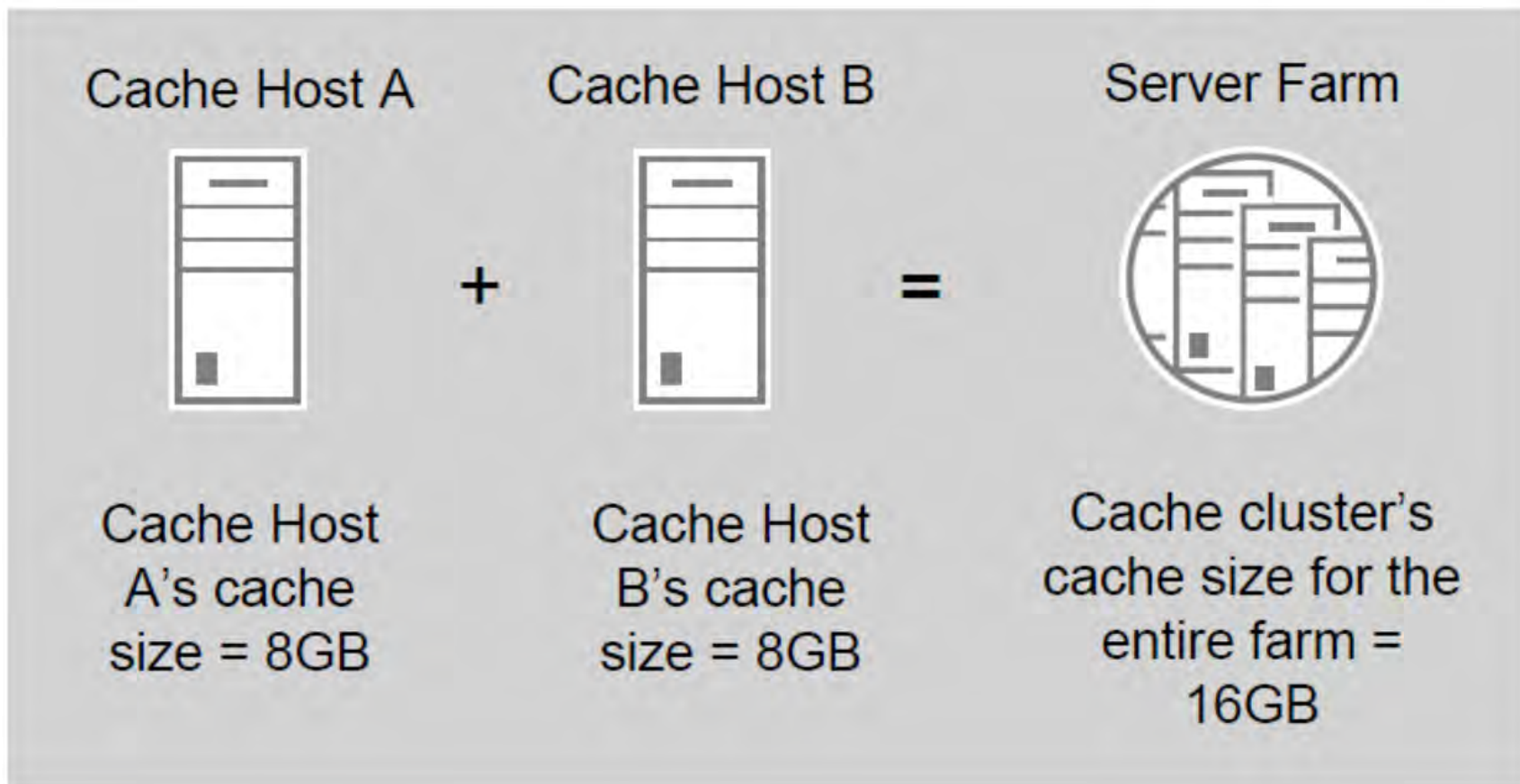
I've got some scripting  
help for you on these  
two items ...

- relocate
- increase o  
applications
- decrease o  
applic

Distributed  
Cache service

# Distributed Cache service





Provides memory-based caching for several types of data/objects.

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- authentication (tokens)
- newsfeeds
- OneNote and Access
- security trimming results
- (page) ViewState

When you first set up  
SharePoint 2013, the  
Distributed Cache service

... is running and in collocated  
mode (vs. dedicated mode)

... is configured to consume  
10% of a server's total memory



So, is there ANY  
guidance?





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- Do not run the following services on the same server running the Distributed Cache service: SQL Server, Project Server, Excel Services and Search services.



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- Review SharePoint Server 2013's Health Rules for Distributed Cache service issues




So, is there ANY  
guidance?

- Do not run the following services on the same server running the Distributed Cache service: SQL Server, Project Server, Excel Services and Search services.
- Review SharePoint Server 2013's Health Rules for Distributed Cache service issues
- If possible, run AppFabric on its own server

Is there anything else I can do or tweak?

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Before you do anything, pay attention

 **Important:**

The Distributed Cache service can end up in a nonfunctioning or unrecoverable state if you do not follow the procedures that are listed in this article. In extreme scenarios, you might have to rebuild the server farm. The Distributed Cache depends on Windows Server AppFabric as a prerequisite. Do not administer the **AppFabric Caching Service** from the **Services** window in **Administrative Tools** in **Control Panel**. Do not use the applications in the folder named **AppFabric for Windows Server** on the **Start** menu.

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**!** Important:

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## My interpretation



## "tread carefully"



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- If you need to stop the cache, use the `-graceful` switch to avoid data loss
- Get an AppFabric patch (newest is CU6, but ...) for maximum reliability and stability
- After patching the service, apply the `backgroundGC` setting for better performance
- If hosting the Distributed Cache service in a virtual machine (VM), do not use dynamically allocated memory - VM memory must be fixed

QUIN



DON'T PANIC - just for fun!

# Object caching

## Action

Cache size reduced (significantly) below 100MB

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## Potential Result

- Object cache fills and becomes memory constrained
- Resource contention and ejections lead to cache compactions
- Under heavy load, compaction process leads to thrashing
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## What to Watch

- Publishing Cache Hit Ratio performance counter
- Total Number Of Cache Compactions performance counter



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## Observation

User A requests a page. User B requests the same page.  
User B sees information tied to User A.

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## What You Can Do

- Refine the cache profile in-use (use additional attributes)
- Set caching exclusions by sub-site or page layout type
- Use post-cache substitution (donut caching) in custom code
- Leverage a custom caching handler (`IVaryByCustomHandler`)

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Memory consumption of ASP.NET worker process grows significantly over time; performance may deteriorate.

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## What You Can Do

- Adjust caching profiles if possible to reduce page load.
- Selectively disable caching for highly varying sub-sites.
- Adjust cache element values in web.config that controls ASP.NET worker process (e.g., `privateBytesLimit` attribute)

# BLOB caching

## Observation

Path property is set correctly, location is set correctly, BLOB caching is enabled, but images stored in site collection aren't being cached.

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Path property is set correctly, location is set correctly, BLOB caching is enabled, but images stored in site collection aren't being cached.

## Potential Cause

- BLOB cache only works with resources that are stored as list items in lists or document libraries.

## What You Can Do

- Leverage built-in libraries such as Site Collection Images.
- Move resources to a custom list.

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Image is changed on a SharePoint site. Some client browsers show new image while others show the old image.

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Image is changed on a SharePoint site. Some client browsers show new image while others show the old image.

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- A high max-age attribute (such as the default 24-hour value of 86,400 seconds) may be in-use.

# BLOB caching

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Image is changed on a SharePoint site. Some client browsers show new image while others show the old image.

## Potential Cause

- A high max-age attribute (such as the default 24-hour value of 86,400 seconds) may be in-use.

## What You Can Do

- Instruct clients to clear their browser cache and revisit site.
- Apply a smaller max-age attribute value or use zero (0) to disable persistent client-side caching of BLOB assets.
- Recognize that this behavior is by-design!

# References and Resources

## SharePoint Server Caches Overview

<http://download.microsoft.com/download/7/F/0/7F069D0B-B6BD-4692-868B-E8555BB72445/SharePointServerCachesPerformance.docx>

## Configure cache settings for a Web application (SharePoint Server 2010)

<http://technet.microsoft.com/en-us/library/cc770229.aspx>

## Configure object cache user accounts

<http://technet.microsoft.com/en-us/library/ff758656.aspx>

## Disk-Based Caching for Binary Large Objects

<http://msdn.microsoft.com/en-us/library/aa604896.aspx>

## Flush the BLOB cache (SharePoint Server 2010)

<http://technet.microsoft.com/en-us/library/gg277249.aspx>

## MANUALLY Clearing the MOSS 2007 BLOB Cache

<http://sharepointinterface.com/2009/10/30/manually-clearing-the-moss-2007-blob-cache/>

## MOSS 2007 Farm-Wide BLOB Cache Flushing Solution

<http://blobcachefarmflush.codeplex.com/>

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<http://www.idera.com/News/Newsletters/Quick-Tips-for-Mnging-SP2010-Office-Web-Apps-Cache.pdf>

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## Overview of microblog features, feeds, and the Distributed Cache service in SharePoint Server 2013

[http://technet.microsoft.com/library/jj219700\(office.15\).aspx](http://technet.microsoft.com/library/jj219700(office.15).aspx)

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<http://blog.idera.com/sharepoint/the-five-minute-cheat-sheet-on-sharepoint-2013s-distributed-cache-service/>

## SharePoint 2013 + Distributed Cache (AppFabric) Troubleshooting

<http://blogs.msdn.com/b/sambetts/archive/2014/03/19/sharepoint-2013-distributed-cache-appfabric-troubleshooting.aspx>

## Cumulative Update 6 (KB3042099) for Microsoft AppFabric 1.1 for Windows Server

[http://www.microsoft.com/en-us/download/details.aspx?id=46802&WT.mc\\_id=rss\\_alldownloads\\_all](http://www.microsoft.com/en-us/download/details.aspx?id=46802&WT.mc_id=rss_alldownloads_all)



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