SharePoint Saturday
Louisville, Kentucky
July 28, 2012

"Caching-In" for SharePoint Performance

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General Information

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  - Footage will be shown at http://mysp.tv

SHAREPOINT SATURDAY LOUISVILLE

Session Overview

- Caching conceptual review
- Understanding each of SharePoint's platform caching options
- How to leverage and control caching
- Caching's "cloudy future"
- Scenarios quiz
- Q & A

Why I care about caching

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) in 2009

okay ...

Why I

First company of this size using MOSS 2007 for Internet presence

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

with about 75,000 page views per hour (peak) in 2009

ak) 1,000 requests/second into IIS

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

... and finally

I'm sick and tired of hearing some people complain that "SharePoint doesn't scale"!!!

So, what is caching?

Webster's New World™ Dictionary

Third College Edition

etc. caused by living for some time in a confined space or an isolated area, esp. in winter

ca·ble (kā′bəl) *n.* [ME & OFr < LL *capulum*, a 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 to —*vi.* to send a cablegram

CABLE

Ca·ble (kā′bəl), **George Washington** 1844-1925; U.S. novelist

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

ca|ble·cast (kā′bəl kast′) *vt.* **-cast′, -cast′ing** to transmit directly to receivers by means of coaxial cable —*n.* a program that is cablecast —**ca′|ble·cast|er** *n.*

☆**ca|ble·gram** (-gram′) *n.* a message sent by undersea cable

ca|ble-laid (kā′bəl lād′) *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 ($\frac{1}{10}$ 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 (kab′mən) *n., pl.* **-men** (-mən) CABDRIVER

ca·bob (kə bäb′) *n.* KEBAB

cab|o·chon (kab′ə shän′; *Fr* kȧ bô shôn′) *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·bom|ba (kə bäm′bə) *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·bood|le** (kə bo͞od′ə l) *n.* [*ca-*, colloq. intens. prefix (< ? Ger *ge-*) + BOODLE] [Colloq.] lot; group */the whole caboodle/*

ca·boose (kə bo͞os′) *n.* [MDu *kabuys, kambuis* (< ?), ship's galley] **1** [Brit.] *Naut.* a ship's kitchen; galley ☆**2** the trainmen's car on a freight train, usually at the rear

Cab·ot (kab′ət) **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 (kab′ə tij, -täzh′) *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 (kə bret′ə) *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·bril|la (kə bril′ə, -brē′yə) *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·bri|ni (kə brē′nē), 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 (kab′rē ōl′) *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·rio·let (kab′rē ə lā′) *n.* [Fr, dim. of *cabriole*, a leap, caper < It *capriola*, 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

CARRIOLET

cab·stand (kab′stand′) *n.* a place where cabs are stationed for hire

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

ca|ca or **ca-ca** (kä′kä′) *n.* [Slang] excrement; feces:

cacao butter COCOA BUTTER

cac·cia·to|re (kä′chə tôr′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 < *cacher*, 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[1]

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

cache-sexe (kȧsh′seks′) *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 (ka shā′, kash′ā) *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; prestige **4** *Philately* a commemorative design on an envelope that marks some historical or philatelic event **5** a little, round wafer enclosing a bad-tasting medicine —*vt.* *Philately* to print a cachet on (an envelope)

ca·chex|i|a (kə kek′sē ə) *n.* [ModL < Gr *kachexia*, bad habit of body < *kakos*, bad + *hexis*, habit < *echein*, to have < IE base **segh-*, to hold fast, conquer > SCHEME] a generally weakened, emaciated condition of the body, esp. as associated with a chronic illness Also **ca·chex′|y** (-sē) —**ca·chec′tic** (-kek′tik) or **ca·chex′ic** (-kek′sik) *adj.*

cach·in·nate (kak′ə nāt′) *vi.* **-nat′|ed, -nat′ing** [< L *cachinnatus*, pp. of *cachinnare*: ult. of echoic orig.] to laugh loudly or too much —**cach′in·na′tion** *n.*

ca·chou (ka sho͞o′) *n.* [Fr < Port *cachu* < Malayalam *kāccu*, akin to Tamil *kācu*] **1** CATECHU **2** a lozenge for sweetening the breath

ca·chu·cha (kə cho͞o′chə) *n.* [Sp] **1** an Andalusian dance in 3/4 time, like the bolero **2** music for this

ca·cique (kə sēk′) *n.* [Sp < Arawak word meaning "prince," "lord"] **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·ciqu′ism** *n.*

cack·hand|ed (kak′han′did) *adj.* **1** [Brit. Colloq.] left-handed **2** clumsy; awkward

cack|le (kak′əl) *vi.* **-led, -ling** [ME *cakelen*; akin to Du *kakkelen*, LowG *kakkeln* < IE base **kak-*: of echoic 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 —**cut the cackle** [Brit. Colloq.] to stop talking and settle down to serious efforts

CACM Central American Common Market

cac|o- (kak′ō, -ə) [< Gr *kakos*, bad, evil] *combining form* bad, poor, harsh */cacography/*

cac|o·de|mon or **cac|o·dae|mon** (kak′ō dē′mən) *n.* [Gr *kakodaimōn*: see prec. & DEMON] an evil spirit or devil

cac|o·dyl (kak′ō dil′, kak′ə-) *n.* [< Gr *kakōdēs*, bad-smelling (< *kakos*, bad + *-ōdēs* (< IE base **od-*, to smell > ODOR, OZONE) + -YL] *Chem.* **1** the radical $As(CH_3)_2$, composed of arsenic and methyl: its compounds are poisonous and foul-smelling **2** a poisonous, colorless liquid, $As_2(CH_3)_4$, with an offensive odor: it is a polymer of the radical —**cac′o·dyl′ic** (-dil′ik) *adj.*

ca|co·e|thes (kak′ō ē′thēz′) *n.* [L < Gr *kakoēthēs* < *kakos*, bad + *ēthos*, habit: see ETHICAL] a hankering (to do something); mania

ca·cog·ra·phy (kə käg′rə fē) *n.* [CACO- + -GRAPHY] **1** bad handwriting **2** incorrect spelling —**cac|o·graph|ic** (kak′ə graf′ik) or **cac′o·graph′i·cal** *adj.*

☆**cac|o·mis|tle** (kak′ə mis′əl) *n.* [AmSp *cacomixtle* < Nahuatl *λa?komisλi* < *λa?ko*, half + *mis-λi*, cougar] **1** a slender, long-tailed, raccoonlike carnivore (*Bassariscus astutus*) of the SW U.S. and Mexico **2** its fur Also **cac′|o·mix′le** (-mis′əl, -mik′səl)

ca·coph|o·ny (kə käf′ə nē) *n., pl.* **-nies** [prob. via Fr *cacophonie* < ML *cacophonia* < Gr *kakophōnia* < *kakophōnos*, harsh-sounding < *kakos*, bad, evil + *phōnē*, voice: see PHONO-] harsh, jarring sound; dissonance —**ca·coph′|o·nous** (-nəs) *adj.* —**ca·coph′|o·nous|ly** *adv.*

cac·tus (kak′təs) *n., pl.* **-tus|es** or **-|ti′** (-tī′) [ModL < Gr *kaktos*, kind of thistle, cardoon] any desert plants of the cactus family, native to the New World, with fleshy stems, reduced or spinelike leaves, and often showy flowers —*adj.* designating a family (Cactaceae) of dicotyledonous plants (order Caryophyllales), including the prickly pear, saguaro, and cereus

ca·cu·mi·nal (kə kyo͞o′mə nəl) *adj.* [< L *cacumen* (gen. *cacuminis*), top (< redupl. of IE base **keu-*: see HIGH) + -AL] *Phonet.* pronounced with the tip of the tongue turned backward and upward against or toward the hard palate —*n.* a cacuminal sound

cad (kad) *n.* [< CADDIE & CADET] **1** a man or boy whose behavior is not gentlemanly. Word originally applied to servants, then to town boys by students at British universities and public schools

body, esp. of a person; corpse, as for dissection —*SYN.* BODY —**ca·dav′eric** *adj.*

ca·dav·er·ine (-ər ēn′, -ər in) *n.* [prec. + -INE[3]] a colorless, putrid-smelling, liquid ptomaine, $NH_2(CH_2)_5NH_2$, produced by the action of microorganisms on proteins, as in decaying flesh

ca·dav·er·ous (-ər əs) *adj.* [L *cadaverosus*] of or like a cadaver; esp., pale, ghastly, or gaunt and haggard —**ca·dav′er·ous|ly** *adv.* —**ca·dav′er·ous·ness** *n.*

CAD/CAM (kad′kam′) *n.* [*C(omputer-)A(ided) D(esign)/C(omputer-)A(ided) 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·dice (kad′is) *n.* **1** CADDIS[1] **2** CADDIS[2]

cad·die (kad′ē) *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, -dy·ing** to act as a caddie

cad·dis[1] (kad′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[2] or **cad·dice** (kad′is) *n.* CADDIS WORM

caddis 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 (kad′ish) *adj.* like or characteristic of a cad; ungentlemanly —**cad′dish|ly** *adv.* —**cad′dish·ness** *n.*

caddis 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 it secretes: commonly used as bait by anglers

Cad·do (kad′ō) *n., pl.* **-does, -dos,** or **-|do** [Louisiana Fr *Cadaux*, shortened < Sp *Cadojodacho* < Caddo *kaduhdá·ču?*, 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·do|an (-ən) *n.* [coined (1891) by J. W. Powell < prec. + -AN] a family of North American Indian languages, including Caddo, Pawnee and Arikara

caddy[1] (kad′ē) *n., pl.* **-dies** [< earlier CATTY[2] < Malay *kātī*, 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

caddy[2] (kad′ē) *n., vi.* CADDIE

cade[1] (kād) *adj.* [LME, a pet] untended by its mother and brought up by a human being, often as a pet */a cade lamb/*

cade[2] (kād) *n.* [Fr < Prov < LL *catanus*, prob. < Gaul] a bushy Mediterranean juniper (*Juniperus oxycedrus*) whose tarlike oil distilled from the wood is used in the treatment of skin disorders

-cade (kād) [< (CAVAL)CADE] *suffix* procession, parade */motorcade/*

ca·delle (kə del′) *n.* [Fr < Prov *cadello* < L *catella*, fem. of *catellus*, puppy, whelp < IE base **kat-*, to bear young > ON *hathna*, young goat] the larva or adult of a small, shiny, black beetle (*Tenebroides mauritanicus*) harmful to grain

ca·dence (kād′'ns) *n.* [ME < OFr < OIt *cadenza* or ML *cadentia* < L *cadens*, prp. of *cadere*, to fall: see CASE[1]] **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′den|cy** (-'n sē) —**ca′denced** (-'nst) or **ca·den′tial** *adj.*

ca·dent (-'nt) *adj.* **1** orig., falling **2** having cadence

ca·den|za (kə den′zə) *n.* [It: see CADENCE] **1** an elaborate, often improvised musical passage played unaccompanied by the solo instrument in a concerto, usually near the end of the first or the last movement **2** any brilliant flourish in an aria or solo passage

ca·det (kə det′) *n.* [Fr, younger son < Gascon *capdet*, captain, chief < Prov *capdel* < LL *capitellum*, dim. of L *caput*, HEAD] **1** [Now Rare] a younger son or brother **2** [Historical] a younger son who became a gentleman volunteer in the army to offset his lack of patrimony **3** a student in training at an armed forces academy **4** a student at a military school ☆**5** any trainee, as a practice teacher or junior business associate ☆**6** [Old Slang] a pimp —**ca|det′|ship** *n.*

☆**Ca·dette** (kə det′) *n.* [prec. + -ETTE] a member of the division of the Girl Scouts for girls twelve to fourteen years of age In full **Cadette Girl Scout**

cadge (kaj) *vt., vi.* **cadged, cadg′ing** [< ?] to beg or get by begging; sponge —**cadg′er** *n.*

ca·di (kä′dē, kā′-) *n.* [Ar *qāḍī*] a minor Muslim magistrate

Cad·il·lac (kad′'l ak′) *n.* [Colloq.] something that is the most luxurious or highest quality of its kind

Ca·dil·lac (kȧ dē yȧk′; *E* kad′'l ak′), Sieur **An·toine de la Mothe** (än twȧn da la môt′) c. 1658-1730; Fr. explorer in America

Ca·diz (kə diz′, kā′diz) **1** seaport in SW Spain, on the Atlantic: pop. 158,000: Sp. name **Cá·diz** (kä′theth′) **2** city in N Negros, in the Philippines: pop. 130,000

Cad·me·an (kad mē′ən) *adj.* of or like Cadmus

Cadmean victory ...

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** (-mik) *adj.*

cadmium 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 (kad′məs) [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 (ka′drē′, -drā′; *also* , kä′-) *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·ce|us (kə do͞o′sē əs, -dyo͞o′-) *n., pl.* **-ce|i′** (-sē ī′) [L, ? via Etr < Gr(Doric) *karykeion*, for Gr *kērykeion* < *kēryx*, 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′ce|an** *adj.*

CADUCEUS

ca·du·ci|ty (kə do͞o′sə tē, -dyo͞o′-) *n.* [Fr *caducité* < LL *caducitas* < L *caducus*: see fol.] **1** the quality or state of being perishable **2** senility

ca·du·cous (-kəs) *adj.* [L *caducus*, falling < *cadere*, to fall: see CASE[1]] *Bot.* falling off early, as some leaves

cae·cil|i|an (sē sil′ē ən, -sil′yən) *n.* [< ModL < L *caecilia*, kind of lizard < *caecus*: see CECUM] any of an order (Gymnophiona) of legless tropical amphibians resembling worms

cae·cum (sē′kəm) *n., pl.* **-|ca** (-kə) CECUM

Caed·mon (kad′mən) fl. late 7th cent. A.D.; first Eng. poet whose name is known

Cae·li|an (sē′lē ən, sēl′yən) [after L *Caelius Mons*, Caelian hill, named after the Tuscan *Caeles Vibenna*] see SEVEN HILLS OF ROME

Cae·lum (sē′ləm) 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′vən shir′, -shər) former county of NW Wales, now part of Gwynedd: also **Caer·nar′von**

caes·al·pin|i|a (sez′al pin′ē ə, sēs′-) *adj.* designating a family (Caesalpiniaceae) of leguminous trees and shrubs, including the Kentucky coffee tree

Cae·sar (sē′zər) *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

Cae·sar (sē′zər), **(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·re|a (ses′ə rē′ə, sez′-, sē′zə-) **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* KAYSERI

Cae·sar·e|an or **Cae·sar·i|an** (sə zer′ē ən) *adj.* of Julius Caesar or 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

Cae·sar·ism (sē′zər iz′əm) *n.* [*also* **c-**] absolutism in government; autocracy —**Cae′sar·ist** *adj., 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, garlic, and raw or coddled eggs

cae·si|um (sē′zē əm) *n.* CESIUM

caes·pi·tose (ses′pə tōs′) *adj.* CESPITOSE

cae·sura (si zyoor′ə, -zhoor′ə) *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

cacao butter COCOA BUTTER

cac·cia·to|re (kä′chə tôr′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]*

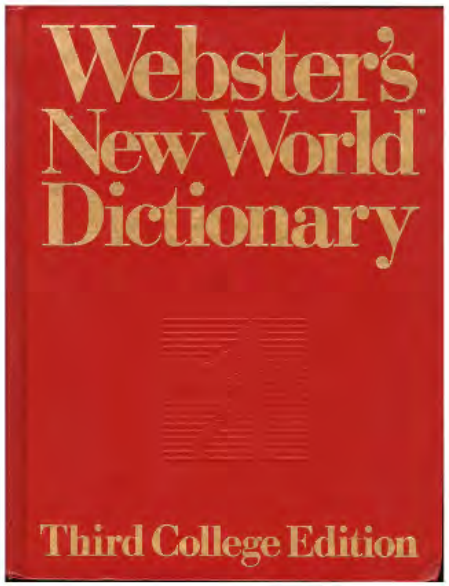
cach|a·lot (kash′ə lät′, -lō′) ***n.*** [Fr < Sp *cachalote* < colloq. Port *cachola*, head] SPERM WHALE

cache (kash) ***n.*** [Fr < *cacher*, 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[1]

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

cache-sexe (kȧsh′seks′) ***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 (ka shā′, kash′ā) ***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*) distin-

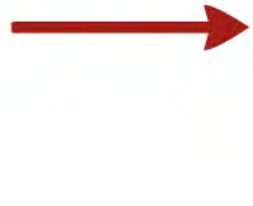


Ok, so this is the dictionary
I took to college ... and
that was over 20 years ago.

Clearly a more up-to-date definition is needed

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

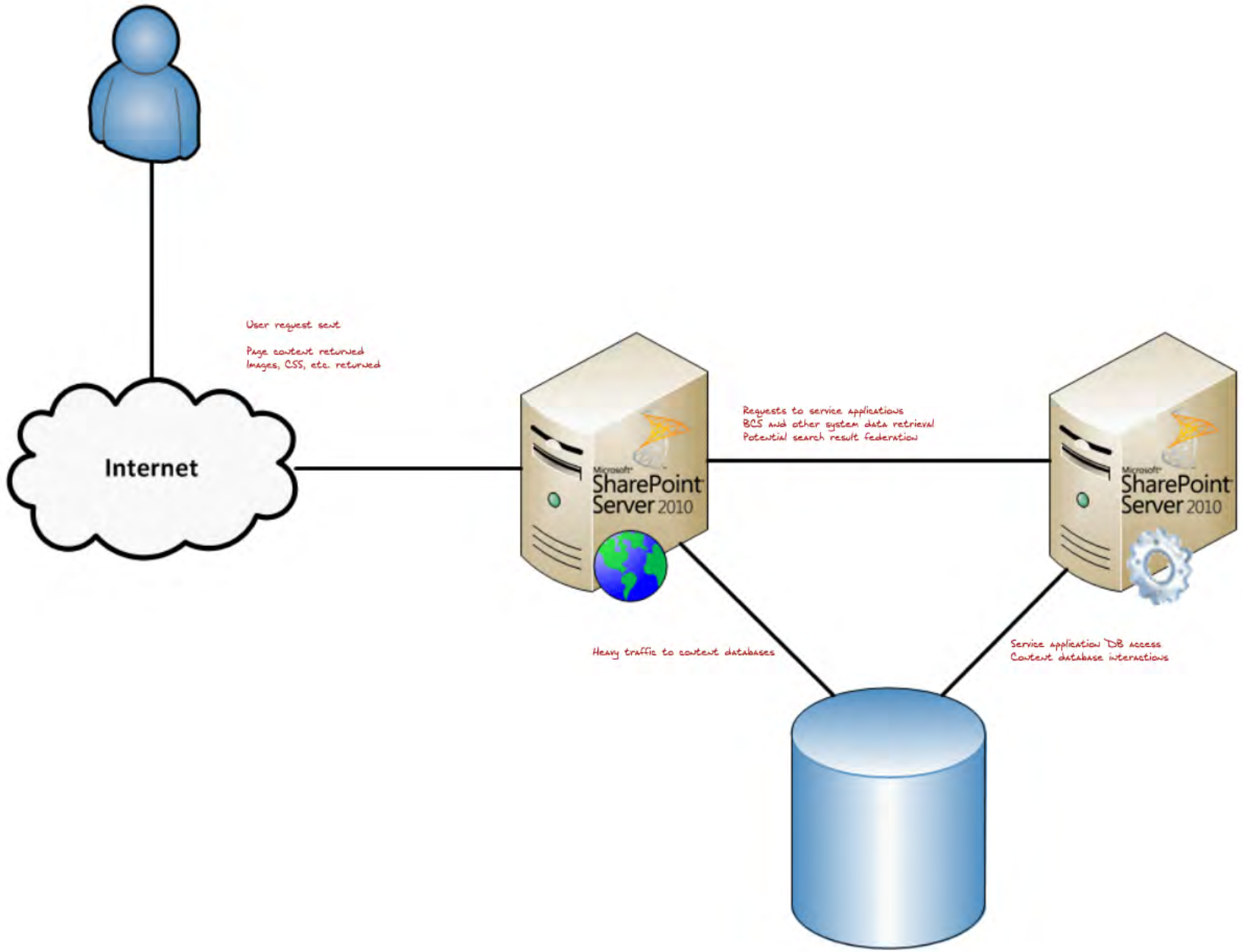
Option 1: Place data on a faster medium

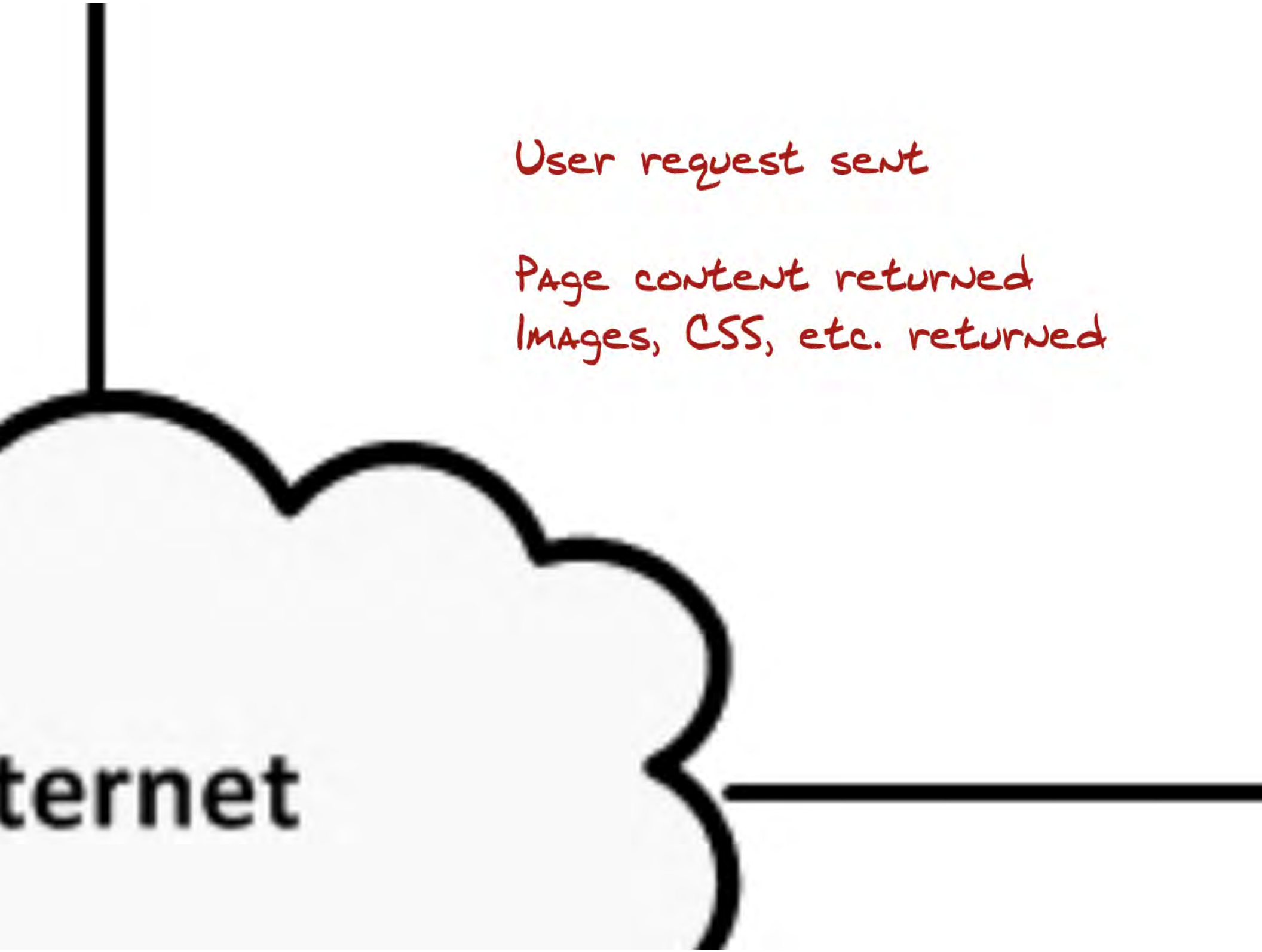


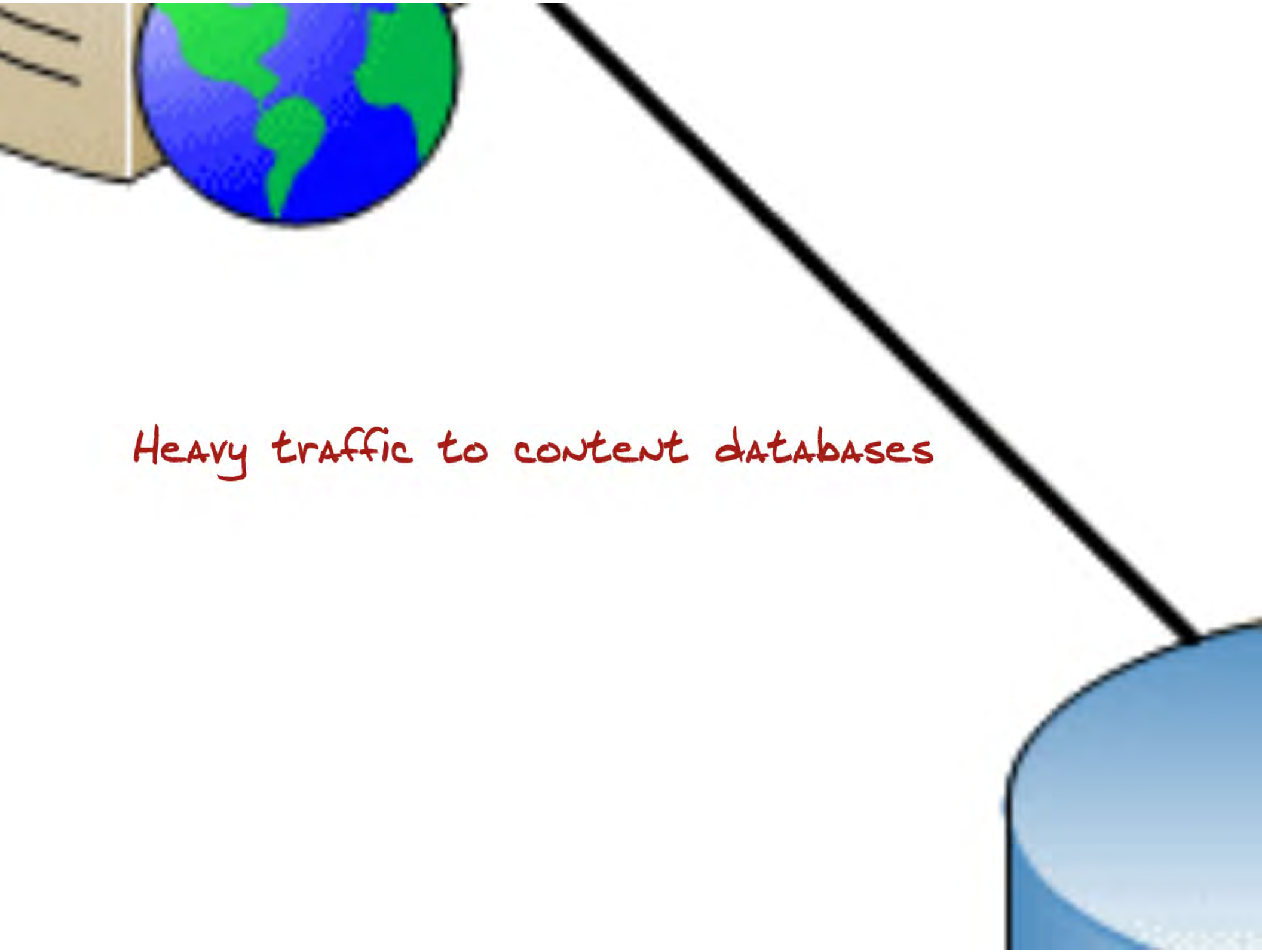
Option 2:
place data
closer to the
point of usage

Why?

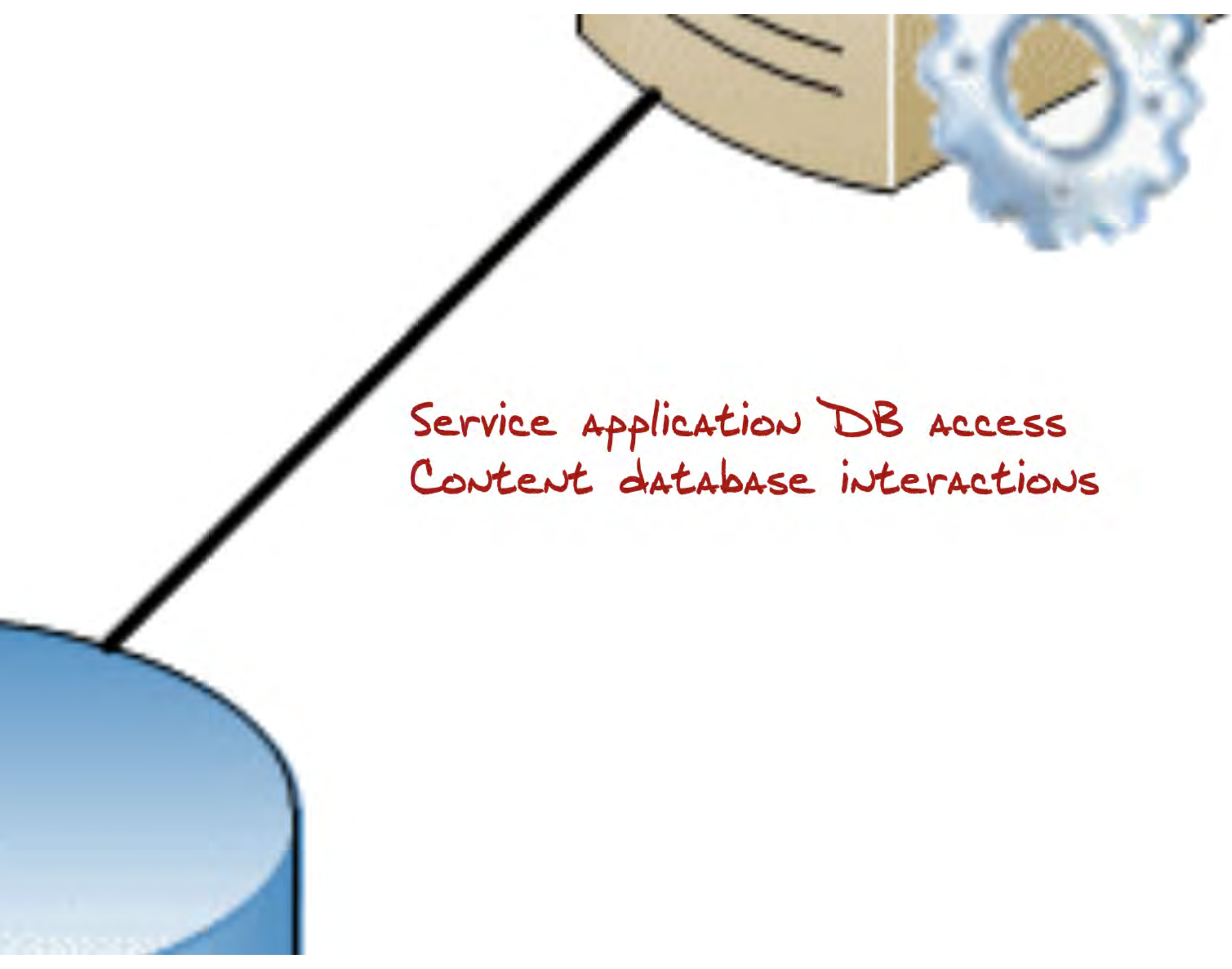
or at least "why for SharePoint?"


User request sent
Page content returned
Images, CSS, etc. returned
Internet
Microsoft SharePoint Server 2010
Requests to service applications
BCS and other system data retrieval
Potential search result federation
Microsoft SharePoint Server 2010
Heavy traffic to content databases
Service application DB access
Content database interactions


User request sent
Page content returned
Images, CSS, etc. returned
ternet

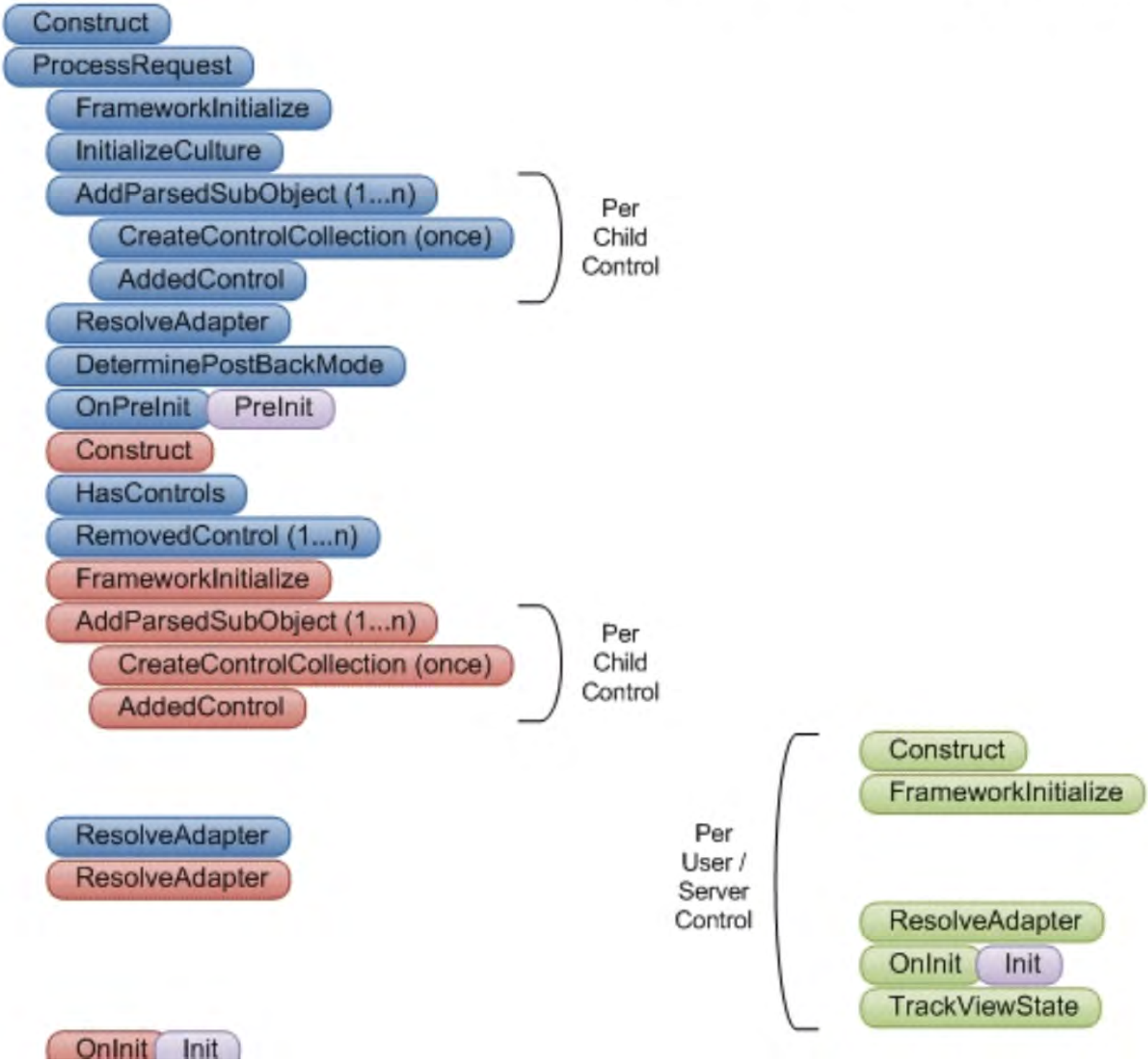

Heavy traffic to content databases

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

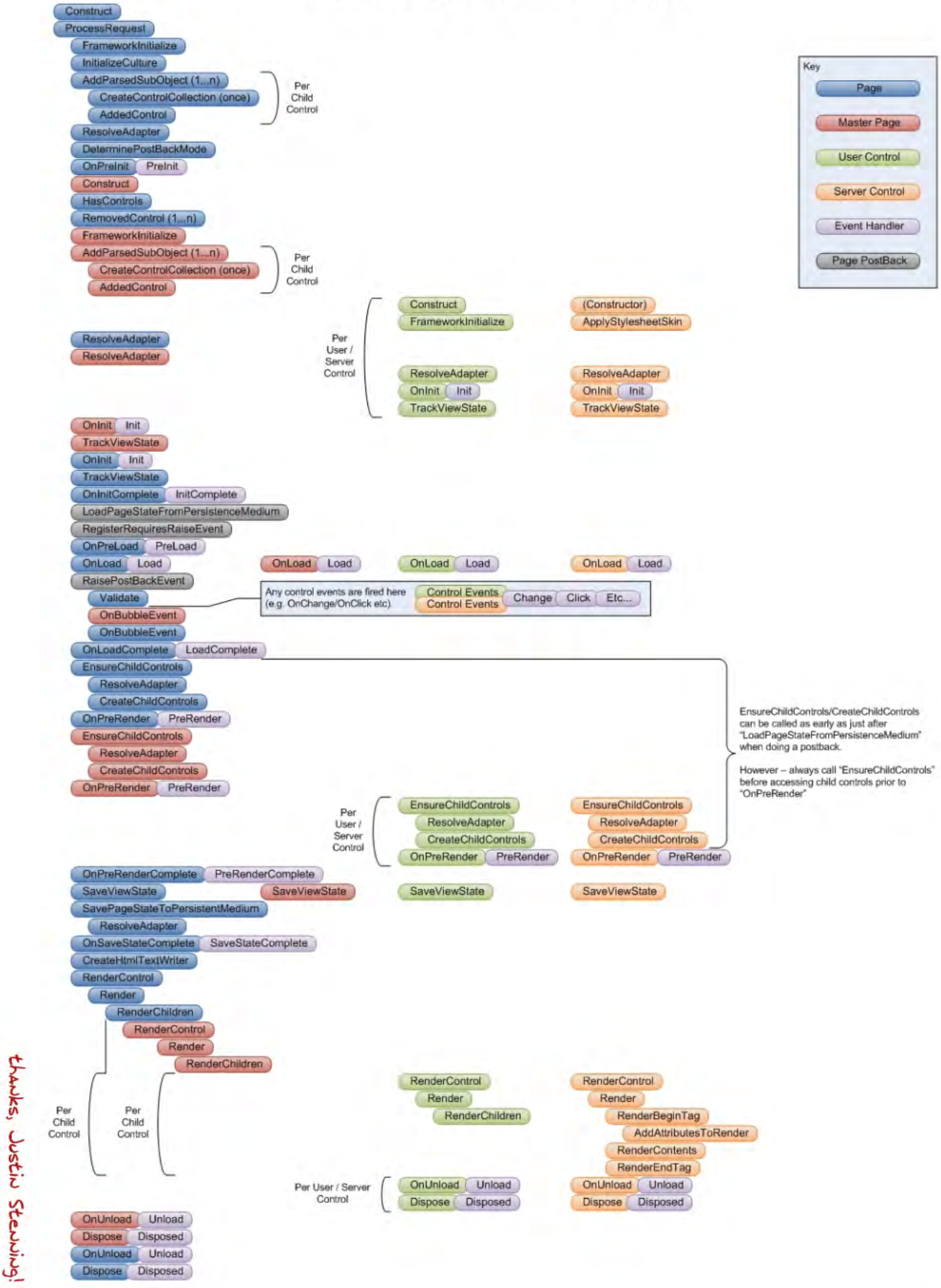

Service application DB access
Content database interactions

ASP.NET Page and Control Life Cycle

ASP.NET Page and C



ASP.NET Page and Control Life Cycle



thanks, Justin Stenning!

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The ultimate goal of caching

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

SharePoint caching: whatcha got?

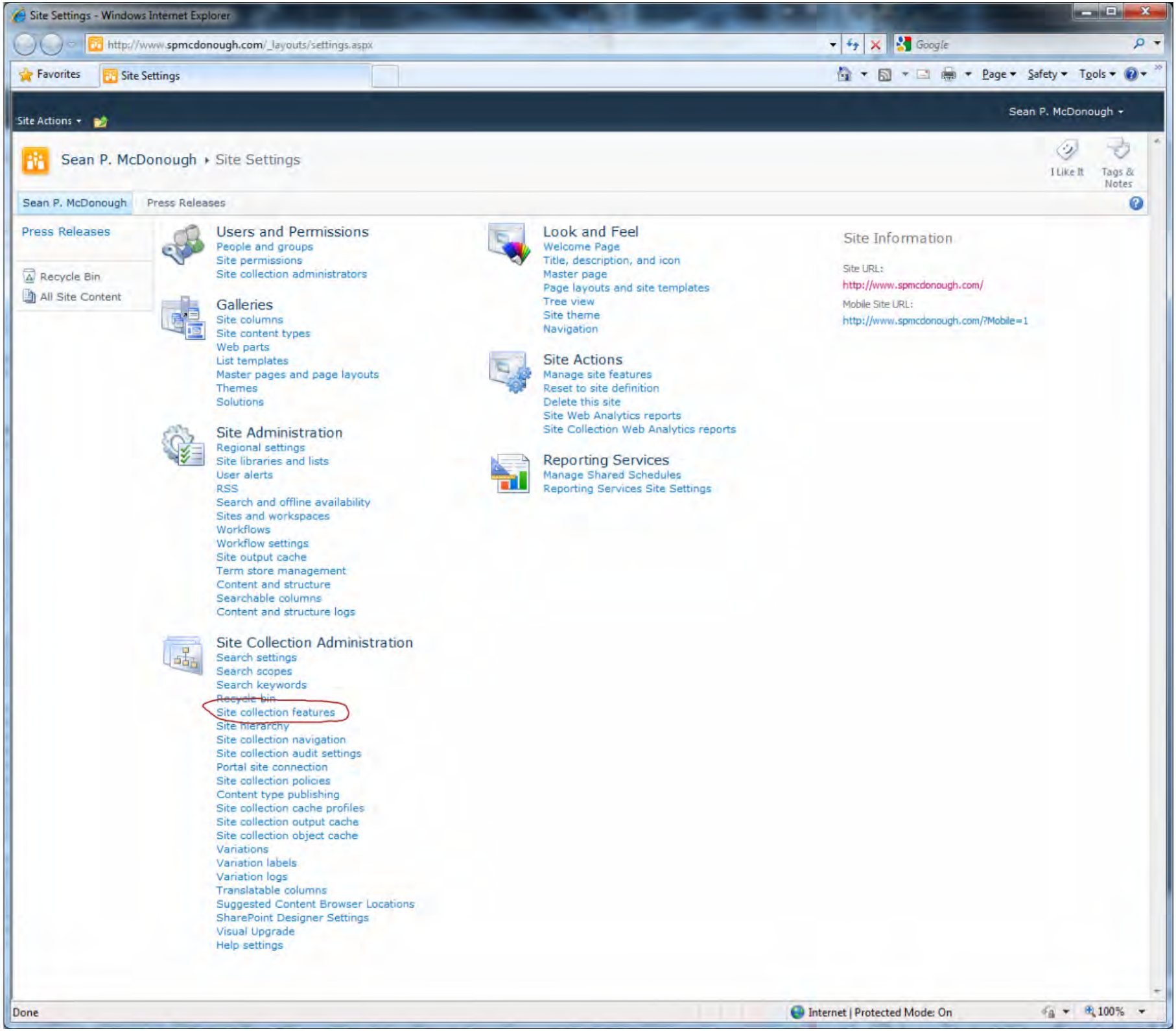
- Object caching
- BLOB caching
- Page output caching
- Office web applications cache

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 both of the following:

Short story time...

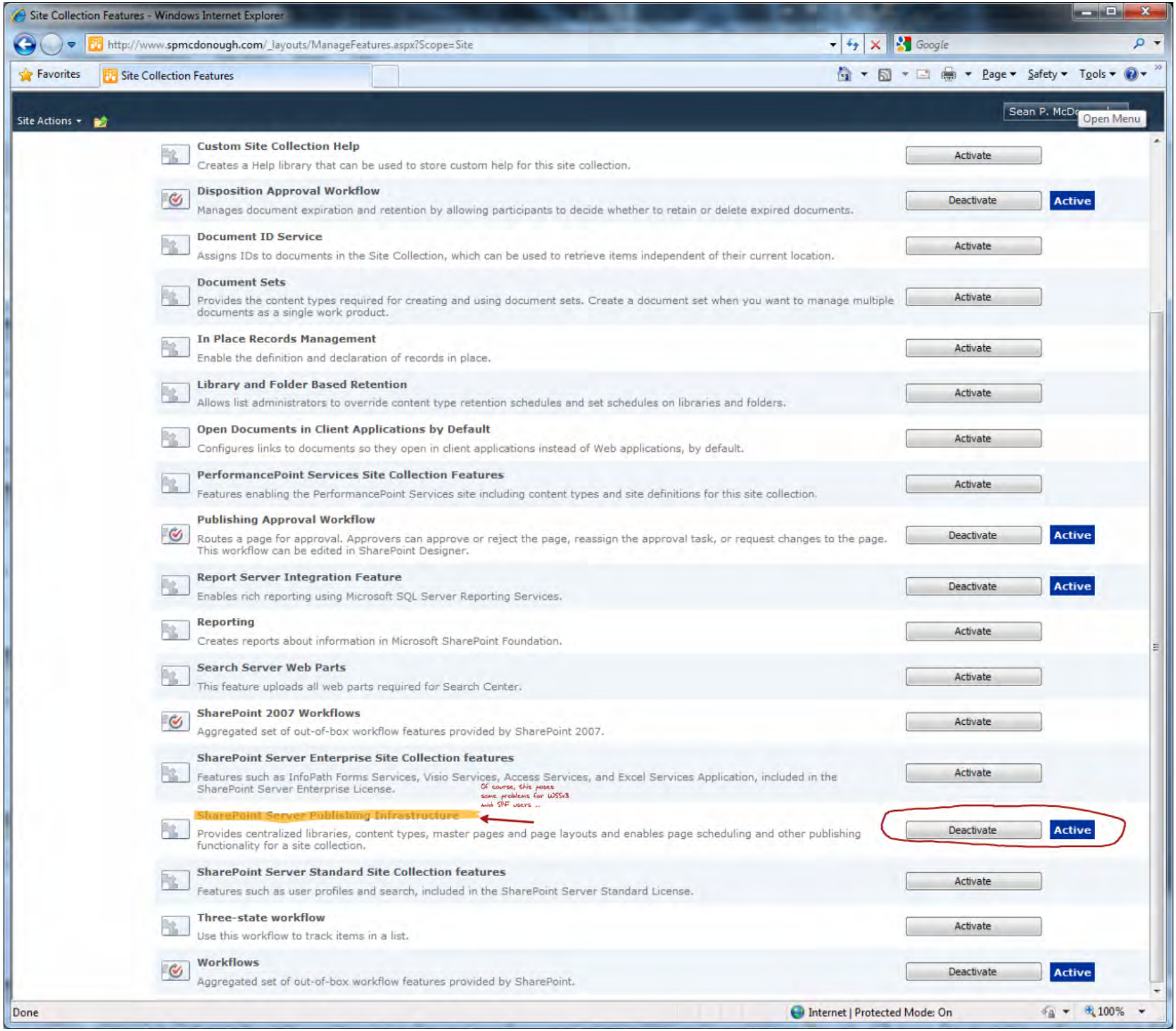
Where's the #$@! "on" button?


Site Settings - Windows Internet Explorer
http://www.spmcdonough.com/_layouts/settings.aspx
Google
Favorites
Site Settings
Page
Safety
Tools
Site Actions
Sean P. McDonough
Sean P. McDonough ▸ Site Settings
I Like It
Tags & Notes
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
Done
Internet | Protected Mode: On
100%

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 Features - Windows Internet Explorer
http://www.spmcdonough.com/_layouts/ManageFeatures.aspx?Scope=Site
Favorites
Site Collection Features
Page
Safety
Tools
Site Actions
Open Menu
Custom Site Collection Help
Creates a Help library that can be used to store custom help for this site collection.
Activate
Disposition Approval Workflow
Manages document expiration and retention by allowing participants to decide whether to retain or delete expired documents.
Deactivate
Active
Document ID Service
Assigns IDs to documents in the Site Collection, which can be used to retrieve items independent of their current location.
Activate
Document Sets
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
In Place Records Management
Enable the definition and declaration of records in place.
Activate
Library and Folder Based Retention
Allows list administrators to override content type retention schedules and set schedules on libraries and folders.
Activate
Open Documents in Client Applications by Default
Configures links to documents so they open in client applications instead of Web applications, by default.
Activate
PerformancePoint Services Site Collection Features
Features enabling the PerformancePoint Services site including content types and site definitions for this site collection.
Activate
Publishing Approval Workflow
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
Active
Report Server Integration Feature
Enables rich reporting using Microsoft SQL Server Reporting Services.
Deactivate
Active
Reporting
Creates reports about information in Microsoft SharePoint Foundation.
Activate
Search Server Web Parts
This feature uploads all web parts required for Search Center.
Activate
SharePoint 2007 Workflows
Aggregated set of out-of-box workflow features provided by SharePoint 2007.
Activate
SharePoint Server Enterprise Site Collection features
Features such as InfoPath Forms Services, Visio Services, Access Services, and Excel Services Application, included in the SharePoint Server Enterprise License.
Activate
Of course, this poses some problems for WSS3 and SNF users ...
SharePoint Server Publishing Infrastructure
Provides centralized libraries, content types, master pages and page layouts and enables page scheduling and other publishing functionality for a site collection.
Deactivate
Active
SharePoint Server Standard Site Collection features
Features such as user profiles and search, included in the SharePoint Server Standard License.
Activate
Three-state workflow
Use this workflow to track items in a list.
Activate
Workflows
Aggregated set of out-of-box workflow features provided by SharePoint.
Deactivate
Active
Done
Internet | Protected Mode: On
100%

SharePoint 2007 Workflows

Aggregated set of out-of-box workflow features provid

SharePoint Server Enterprise Site Collection fea

Features such as InfoPath Forms Services, Visio Servic
SharePoint Server Enterprise License.

SharePoint Server Publishing Infrastructure

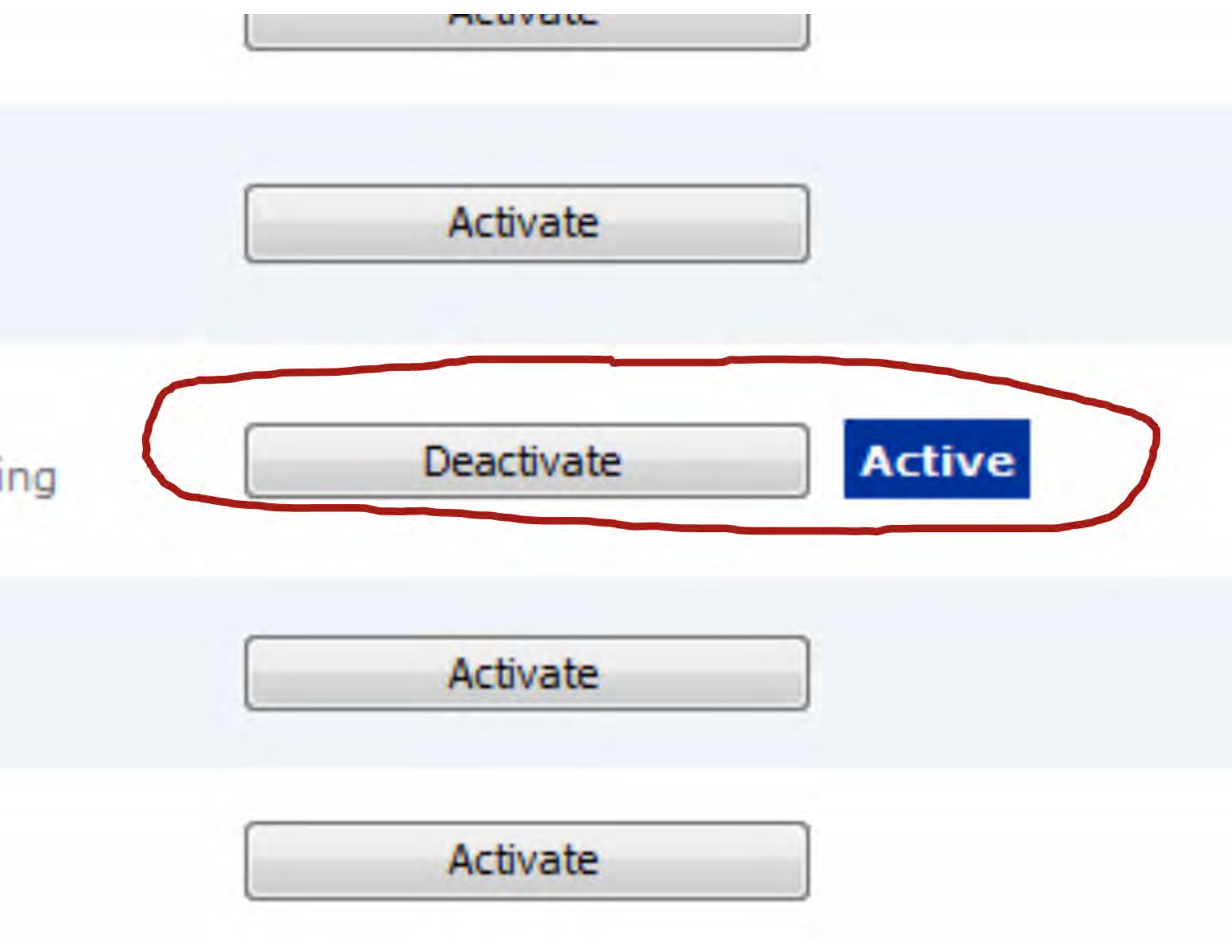
Provides centralized libraries, content types, master pa
functionality for a site collection.

SharePoint Server Standard Site Collection featu

Features such as user profiles and search, included in t

Three-state workflow

Use this workflow to track items in a list.


Activate
Activate
ing
Deactivate
Active
Activate
Activate

ise Site Collection features

ms Services, Visio Services, Access Servic
License.

Of course, this poses
some problems for WSSv3
and SPF users ...

ng Infrastructure

content types, master pages and page layo
n.

d Site Collection features

and search, included in the SharePoint Se

So … how does the plumbing work?

This is a web.config file section

Yes, just a section.

Prezi choked when I tried to use an image of the whole web.config. It was really, really, REALLY big

```
    <machineKey validationKey="D0580BED7E8B10F1281E63023A6B5A057D8DC770B53DA72E" decryptionKey="98A395174F2D3EC29D
  </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.SPRe
      <add name="ScriptModule" preCondition="integratedMode" type="System.Web.Handlers.ScriptModule, System.Web.Ex
      <add name="SharePoint14Module" preCondition="integratedMode" />
      <add name="StateServiceModule" type="Microsoft.Office.Server.Administration.StateModule, Microsoft.Office.Se
      <add name="RSRedirectModule" type="Microsoft.ReportingServices.SharePoint.Soap.RSRedirectModule, RSSharePoin
      <add name="PublishingHttpModule" type="Microsoft.SharePoint.Publishing.PublishingHttpModule, Microsoft.Share
    </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.Se
      <add name="OwssvrHandler" scriptProcessor="C:\Program Files\Common Files\Microsoft Shared\Web Server Extensi
      <add name="ScriptHandlerFactory" verb="*" path="*.asmx" preCondition="integratedMode" type="System.Web.Scrip
      <add name="ScriptHandlerFactoryAppServices" verb="*" path="*_AppService.axd" preCondition="integratedMode" t
      <add name="ScriptResource" preCondition="integratedMode" verb="GET,HEAD" path="ScriptResource.axd" type="Sys
      <add name="JSONHandlerFactory" path="*.json" verb="*" type="System.Web.Script.Services.ScriptHandlerFactory,
      <add name="ReportViewerWebPart" verb="*" path="Reserved.ReportViewerWebPart.axd" type="Microsoft.ReportingSe
      <add name="ReportViewerWebControl" verb="*" path="Reserved.ReportViewerWebControl.axd" type="Microsoft.Repor
    </handlers>
  </system.webServer>
  <system.serviceModel>
    <serviceHostingEnvironment aspNetCompatibilityEnabled="true" />
```

Always wired-in

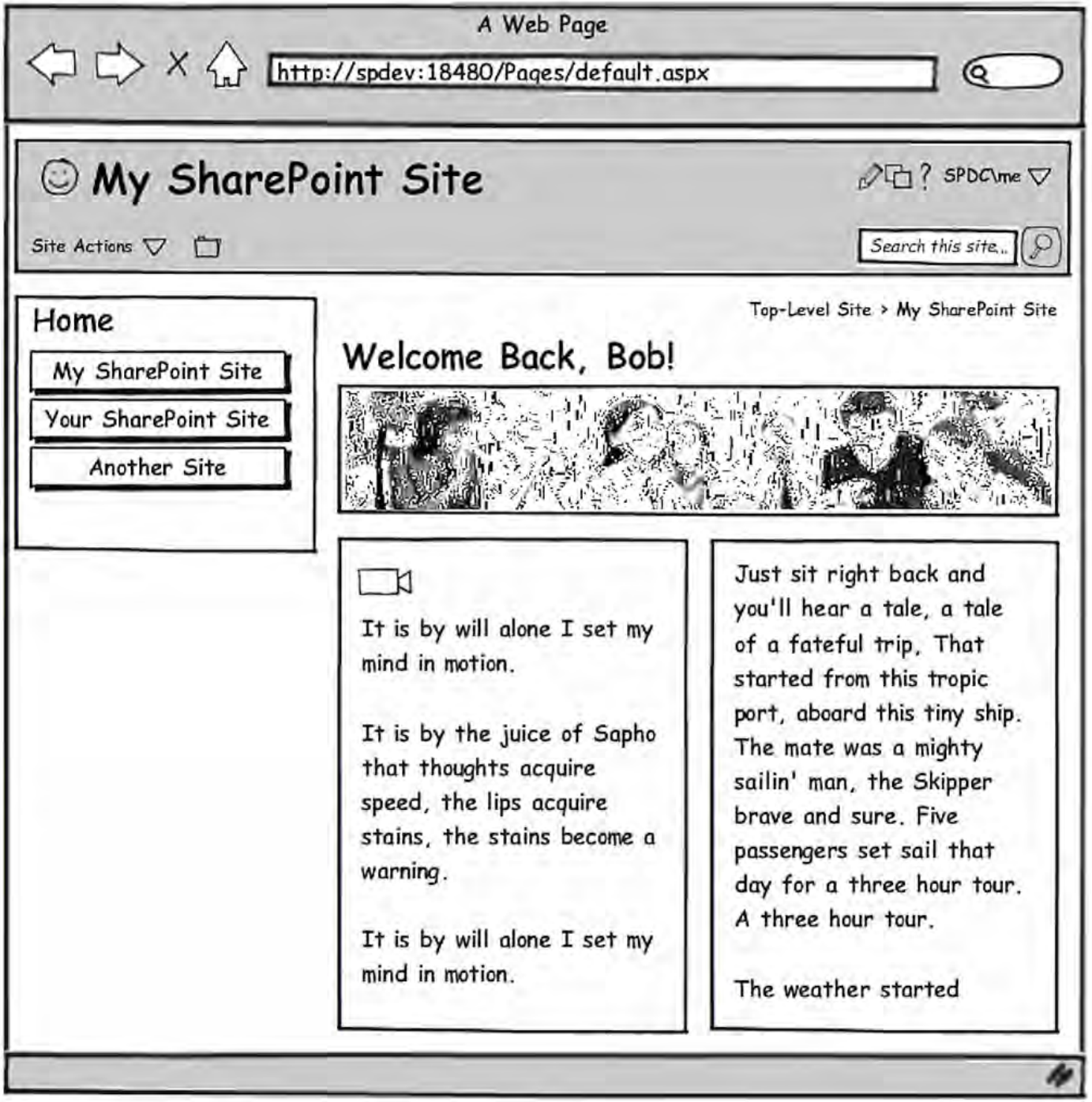
Worth noting:

- Plumbing is active even if you aren't using it
- Some caching (specifically BLOB caching) works fine with non-publishing site collections

```
  <machineKey validationKey="D0580BED7E8B1
</system.web>
<system.webServer>
  <security>
    <requestFiltering allowDoubleEscaping=
      <requestLimits maxAllowedContentLeng
    </requestFiltering>
  </security>
  <validation validateIntegratedModeConfig
  <modules runAllManagedModulesForAllReque
    <remove name="AnonymousIdentification"
    <remove name="FileAuthorization" />
    <remove name="Profile" />
    <remove name="WebDAVModule" />
    <remove name="Session" />
    <add name="SPRequestModule" preConditi
    <add name="ScriptModule" preCondition=
    <add name="SharePoint14Module" preCond
    <add name="StateServiceModule" type="M
    <add name="BSRedirectModule" type="Mic
    <add name="PublishingHttpModule" type=
  </modules>
  <handlers>
    <remove name="OPTIONSVerbHandler" />
    <remove name="WebServiceHandlerFactory
    <remove name="svc-Integrated" />
    <remove name="WebDAV" />
    <add name="svc-Integrated" path="*.svc
    <add name="OwssvrHandler" scriptProces
    <add name="ScriptHandlerFactory" verb=
    <add name="ScriptHandlerFactoryAppServ
    <add name="ScriptResource" preConditio
    <add name="JSONHandlerFactory" path="*
    <add name="ReportViewerWebPart" verb="
    <add name="ReportViewerWebControl" ver
  </handlers>
</system.webServer>
<system.serviceModel>
  <serviceHostingEnvironment aspNetCompati
```

Caching in action

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

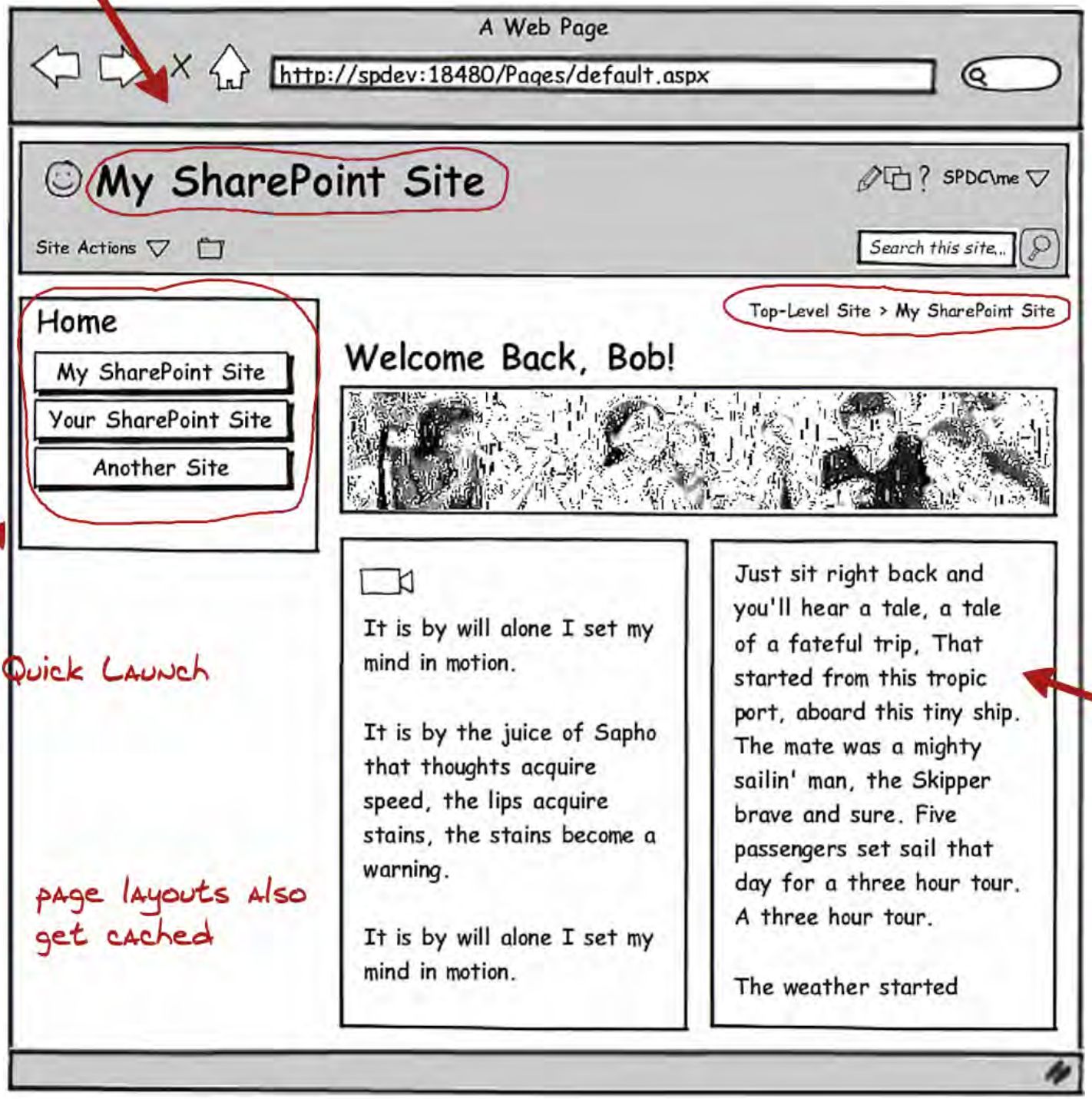


First up ...

Object caching

Object caching

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



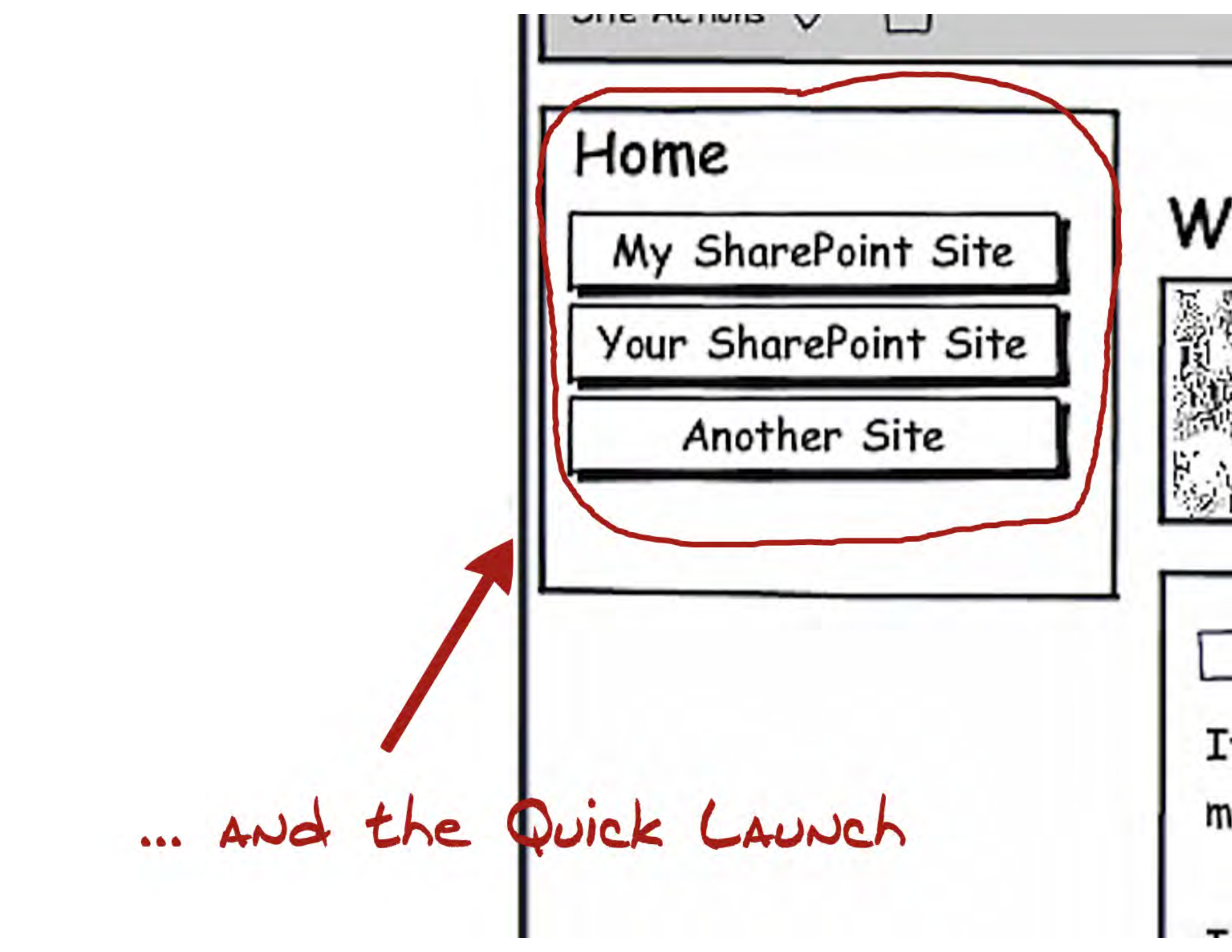
Navigational da
such as this
breadcrumb ...

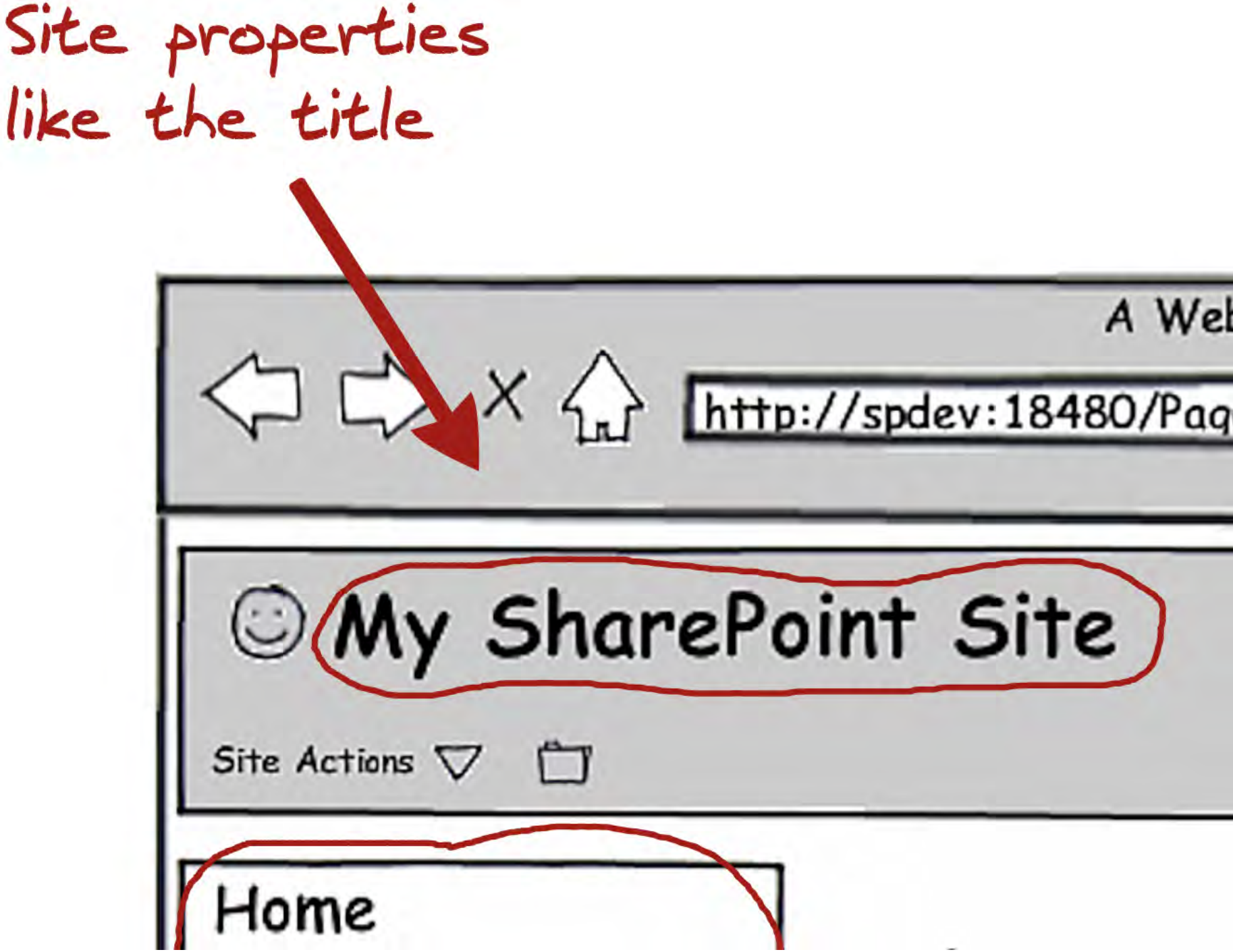
... and the Quick Launch

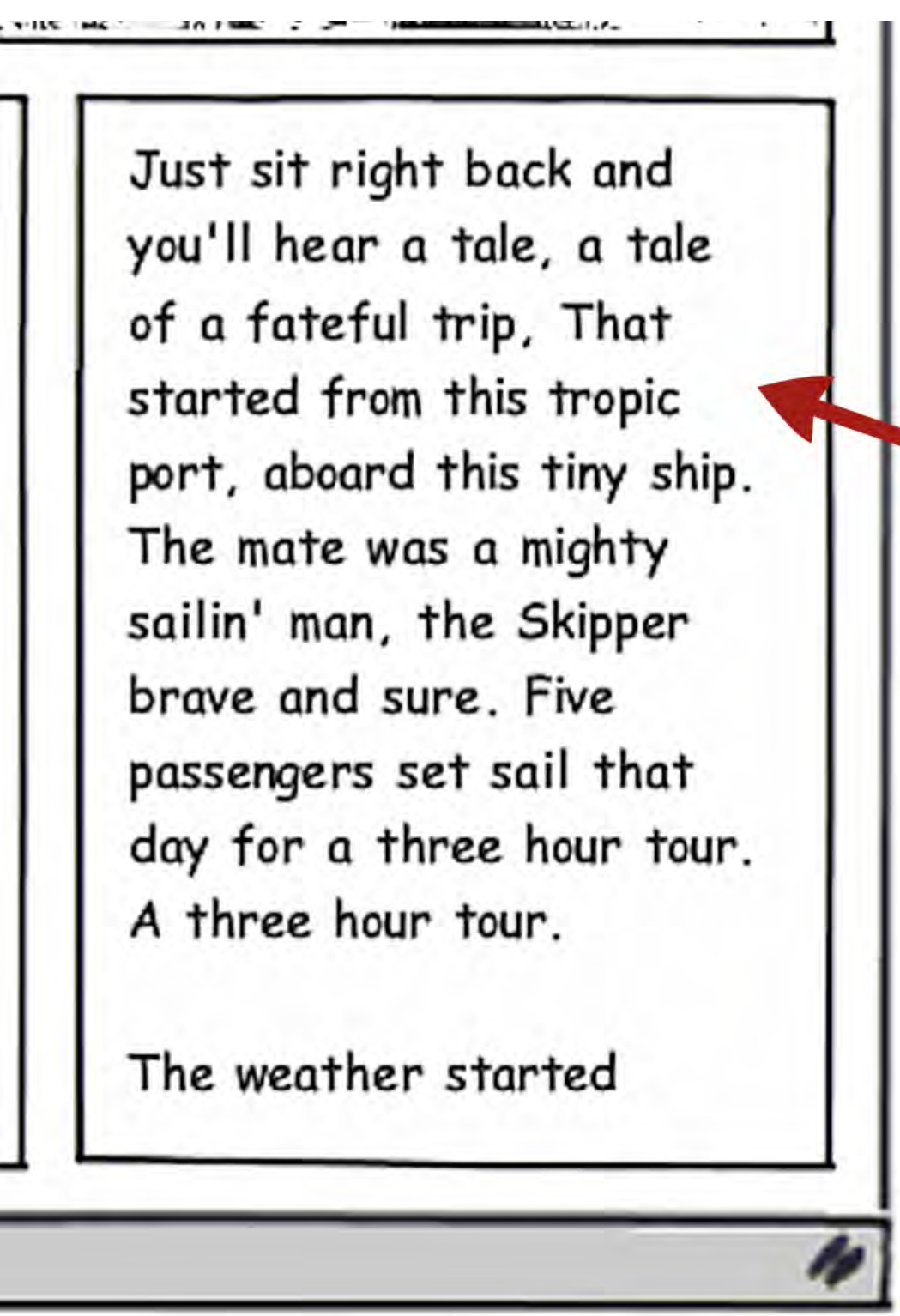
page layouts also
get cached

If this happe
be a Conten
Query Web f
(CQWP), the
could benefit
significantly f
object cachin

Navigational data such as this breadcrumb ...


Home
My SharePoint Site
Your SharePoint Site
Another Site
... and the Quick Launch


Site properties
like the title
A Web
http://spdev:18480/Pag
My SharePoint Site
Site Actions
Home



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

page layouts also get cached

tho
spe
sta
war

It
min

Object cache

Backed by memory

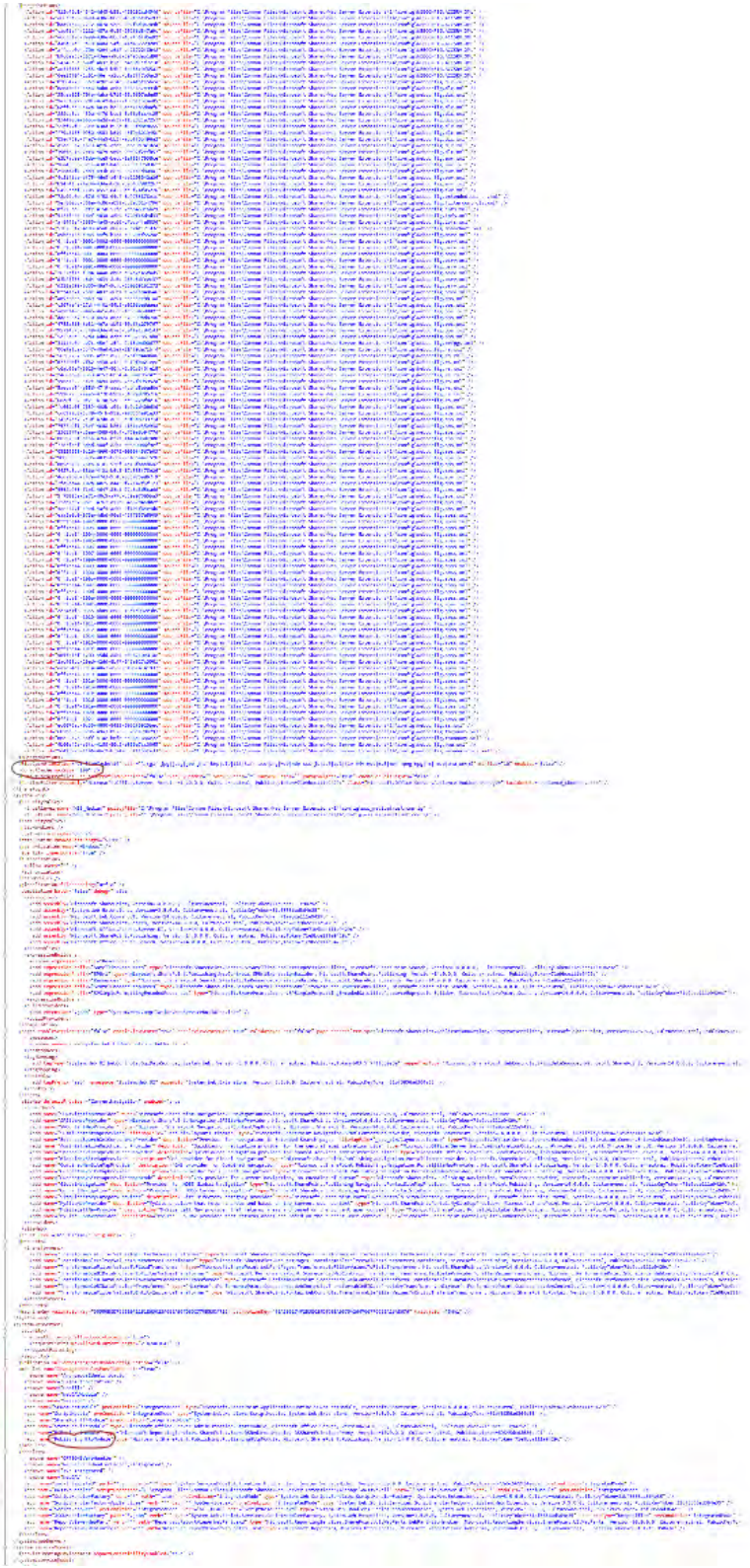
Turned on by default

Default ~~size or~~ allocation

100MB per site collection

A new trick that comes with SharePoint 2010 ...

is a config ection



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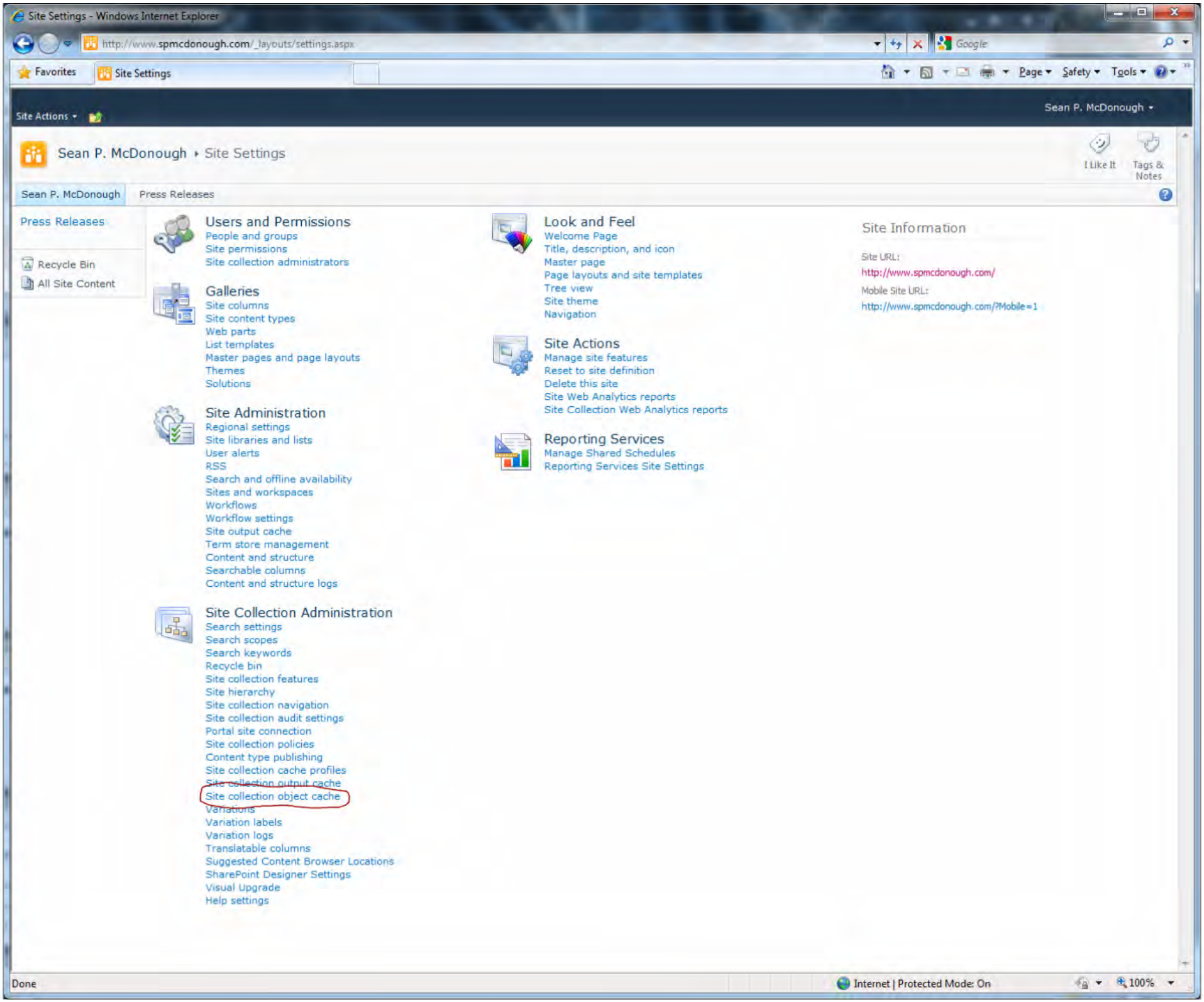
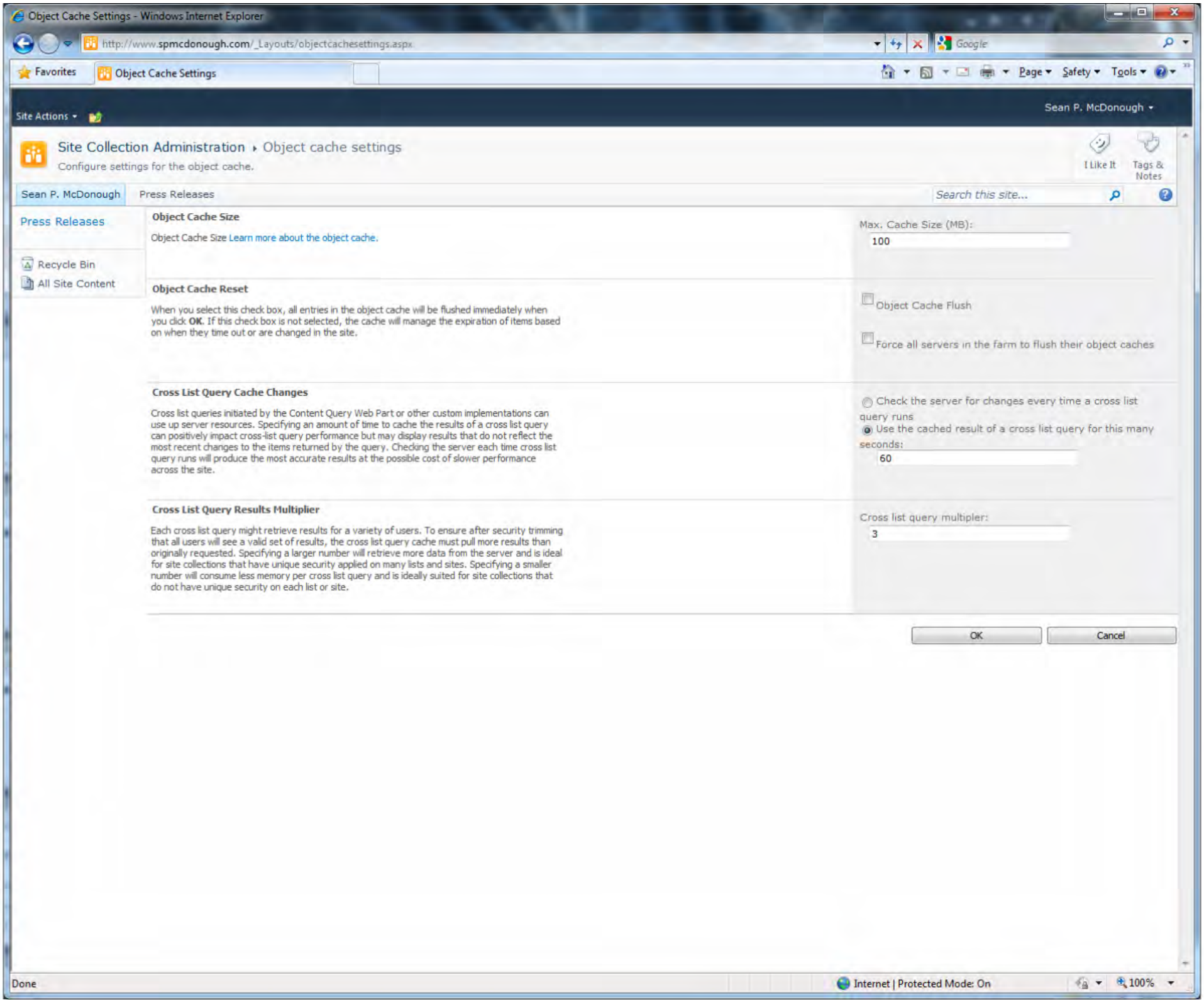
- Some caching (specifically BLOB caching) works fine with non-publishing site collections

Yes, just a section.
Prezi choked when I tried to use an image of the whole web.config. It was really, really, REALLY

```
      <Action id="0ff1ce14-1021-0000-0000-000000000
      <Action id="ec0076ac-0c35-4880-8422-8062f5925
      <Action id="602bc8c3-9286-49a3-b973-3376ca78b
      <Action id="00e22a78-33ff-41ac-b0fb-ee46d1636
      <Action id="4b60e42e-e6fc-4188-80d2-ef39e7cc0
      <Action id="1d415973-1146-4bc2-8324-83dfff5bf
    </MergedActions>
    <BlobCache location="C:\BlobCache\14" path="\.(
    <ObjectCache maxSize="100" />
    <OutputCacheProfiles useCacheProfileOverrides="
    <RuntimeFilter Assembly="Microsoft.Office.Serve
  </SharePoint>
  <system.web>
    <securityPolicy>
      <trustLevel name="WSS_Medium" policyFile="C:\
      <trustLevel name="WSS_Minimal" policyFile="C:
    </securityPolicy>
    <httpHandlers />
    <customErrors mode="On" />
    <httpRuntime maxRequestLength="51200" />
```


Site Settings - Windows Internet Explorer
http://www.spmcdonough.com/_layouts/settings.aspx
Favorites
Site Settings
Site Actions
Sean P. McDonough
Sean P. McDonough ▸ Site Settings
I Like It
Tags & Notes
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
Done
Internet | Protected Mode: On
100%

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


Object Cache Settings - Windows Internet Explorer
http://www.spmcdonough.com/_Layouts/objectcachesettings.aspx
Google
Favorites
Object Cache Settings
Page
Safety
Tools
Site Actions
Sean P. McDonough
Site Collection Administration ▸ Object cache settings
Configure settings for the object cache.
I Like It
Tags & Notes
Sean P. McDonough
Press Releases
Search this site...
Press Releases
Recycle Bin
All Site Content
Object Cache Size
Object Cache Size Learn more about the object cache.
Max. Cache Size (MB):
100
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 multipler:
3
OK
Cancel
Done
Internet | Protected Mode: On
100%

e Collection Administration ▸ Object

figure settings for the object cache.

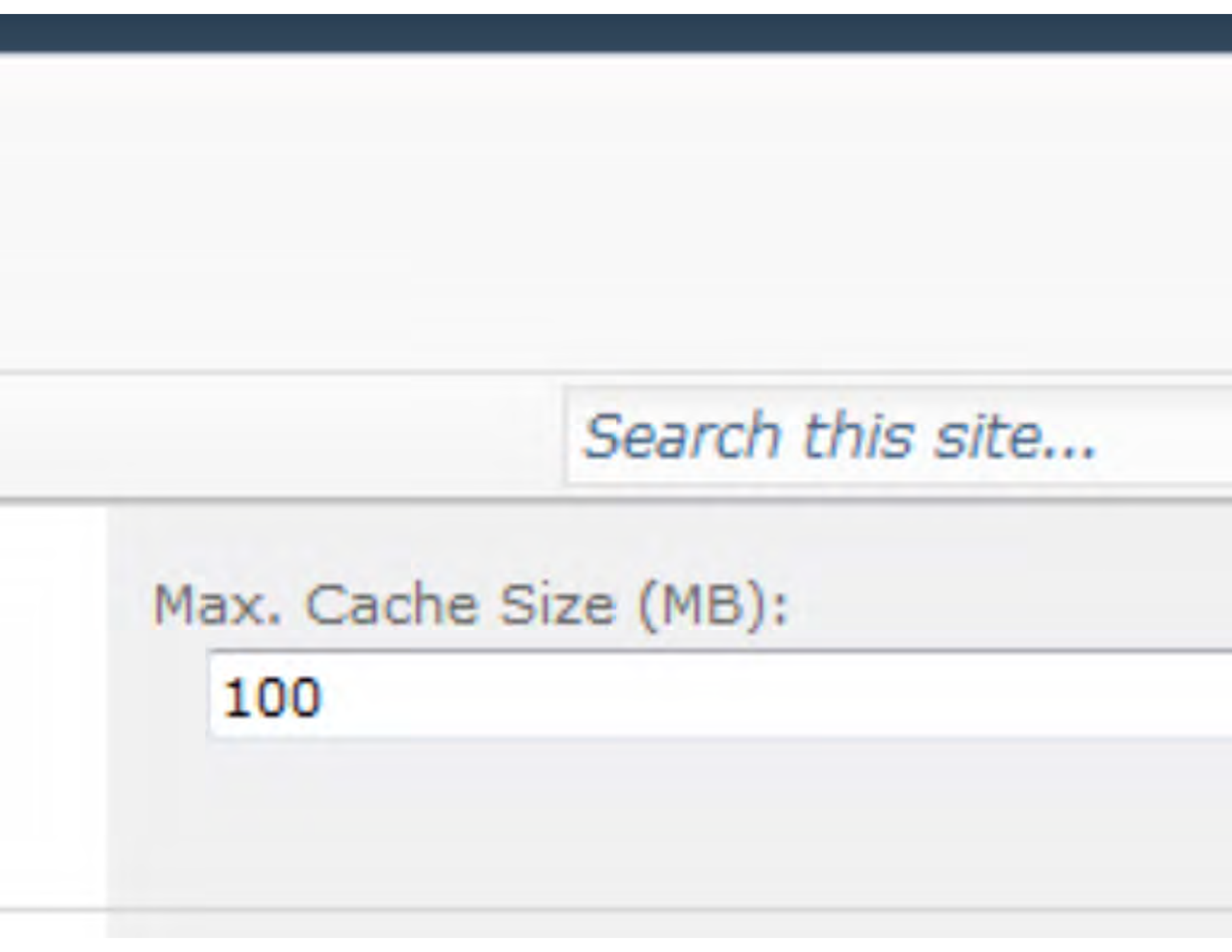
Donough | Press Releases

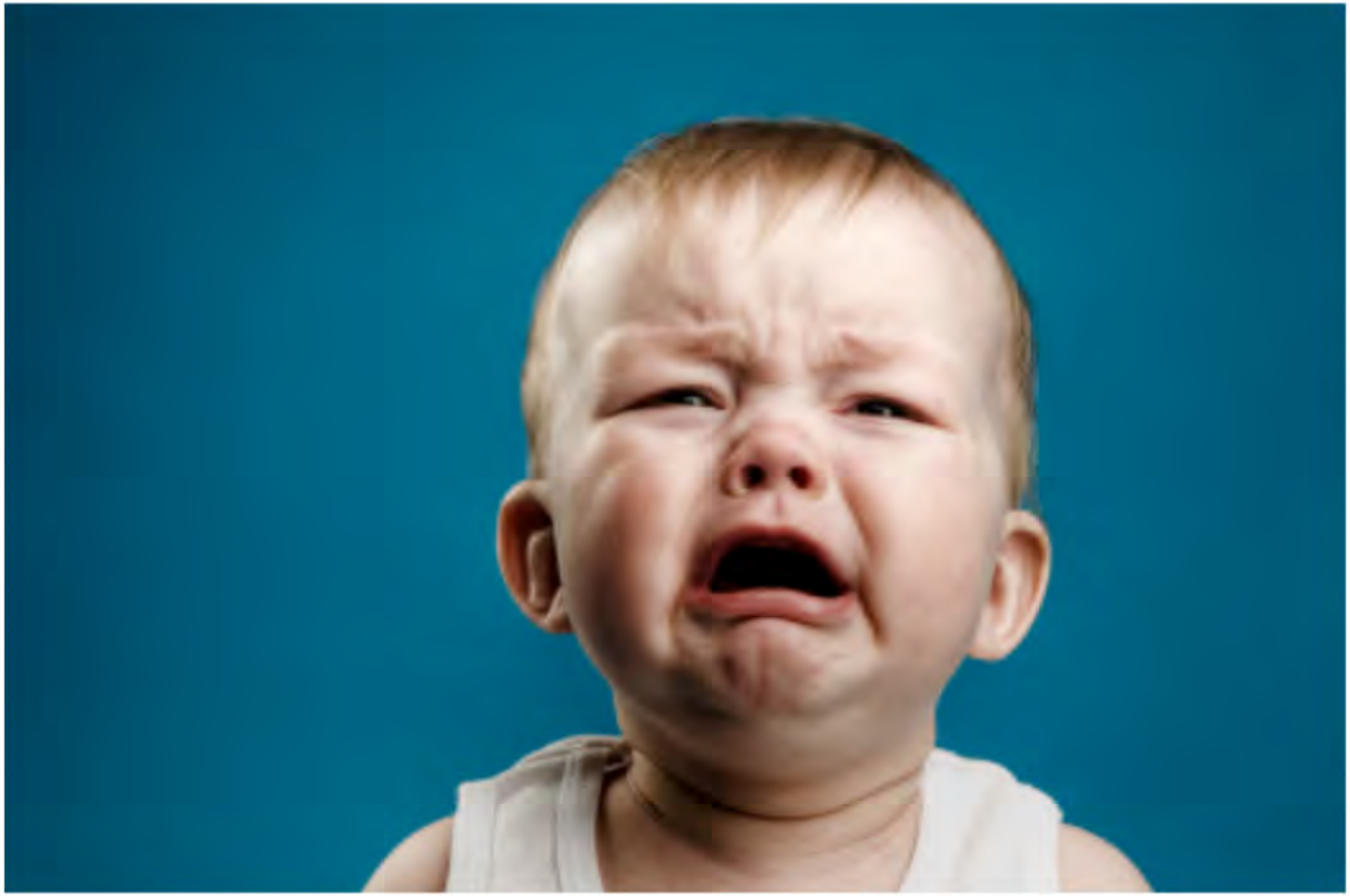
ases

Bin

Object Cache Size

Object Cache Size Learn more about t


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!

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

s

ent

Object Cache Size Learn more about

Object Cache Reset

When you select this check box, all e
you click **OK**. If this check box is not s
on when they time out or are change

100

☐ Object Cache Flush

☐ Force all servers in the farm to flush th

◯ Check the server for changes every tir

you click **OK**. If this check box is not selecte
on when they time out or are changed in th

Cross List Query Cache Changes

Cross list queries initiated by the Content Q
use up server resources. Specifying an amo
can positively impact cross-list query perfor
most recent changes to the items returned
query runs will produce the most accurate r
across the site.

Force all servers in the farm to flush the

Check the server for changes every tim

query runs

Use the cached result of a cross list que

seconds:

60

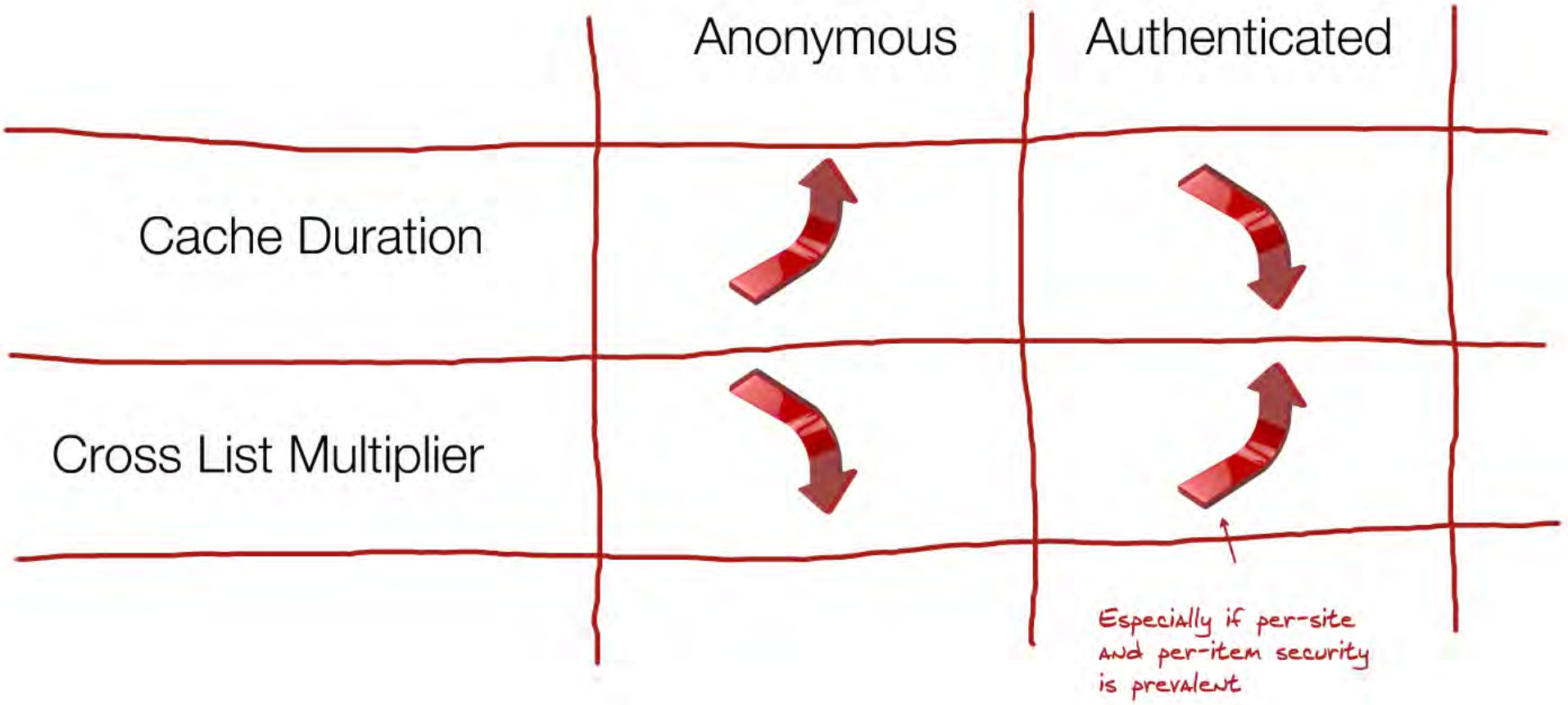
Cross List Query Results Multiplier

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

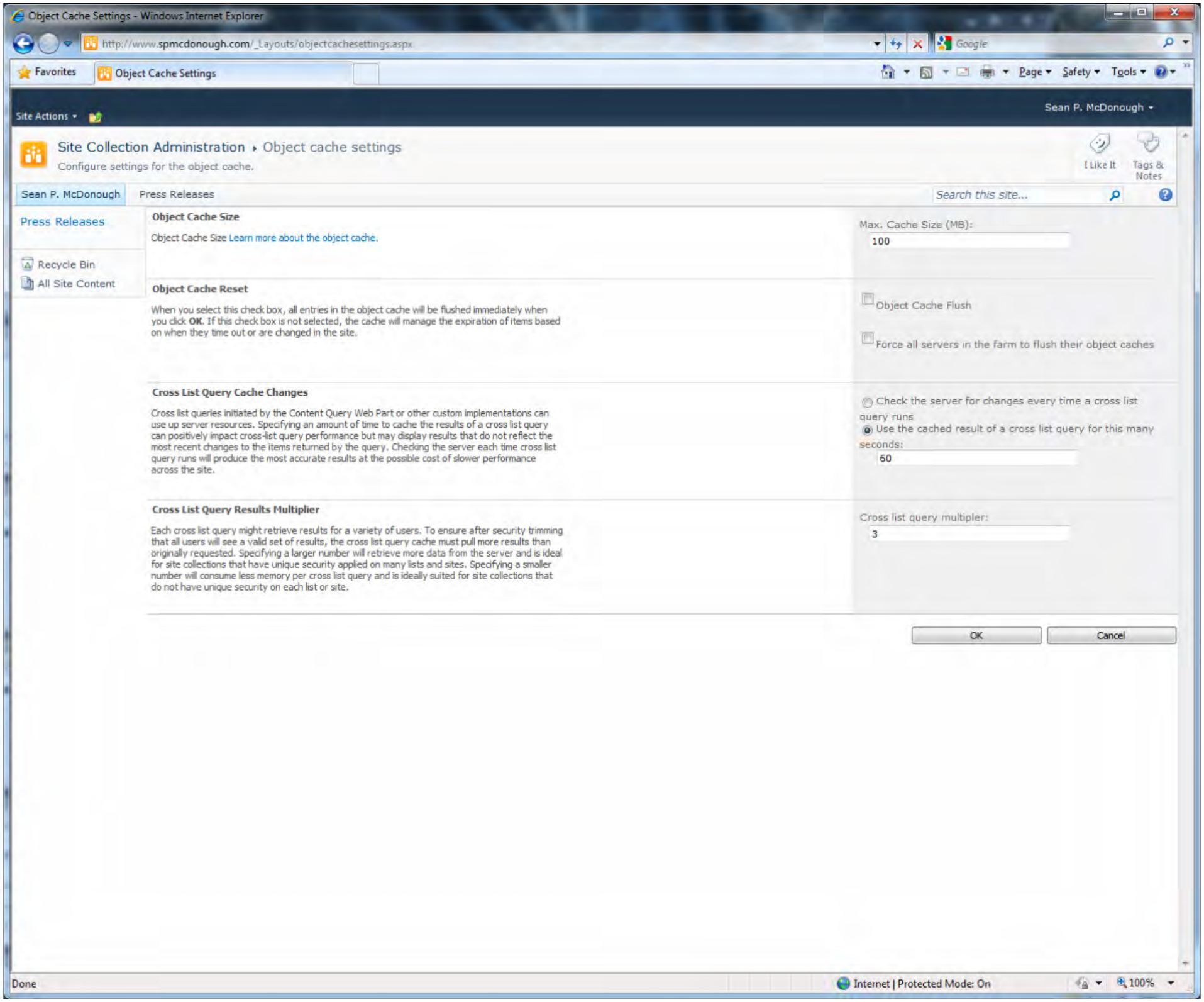
Cross list query multipler:

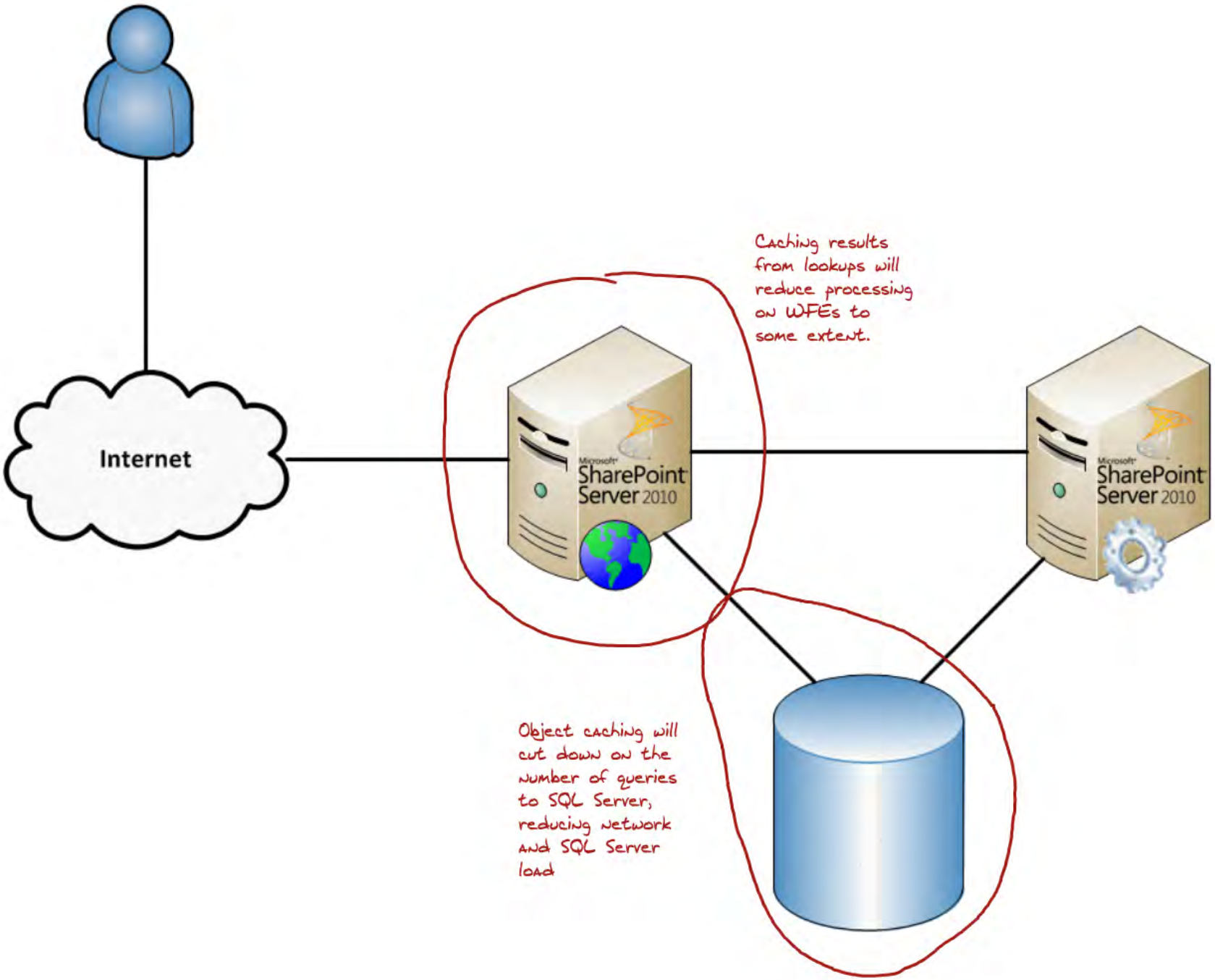
3

Guidance

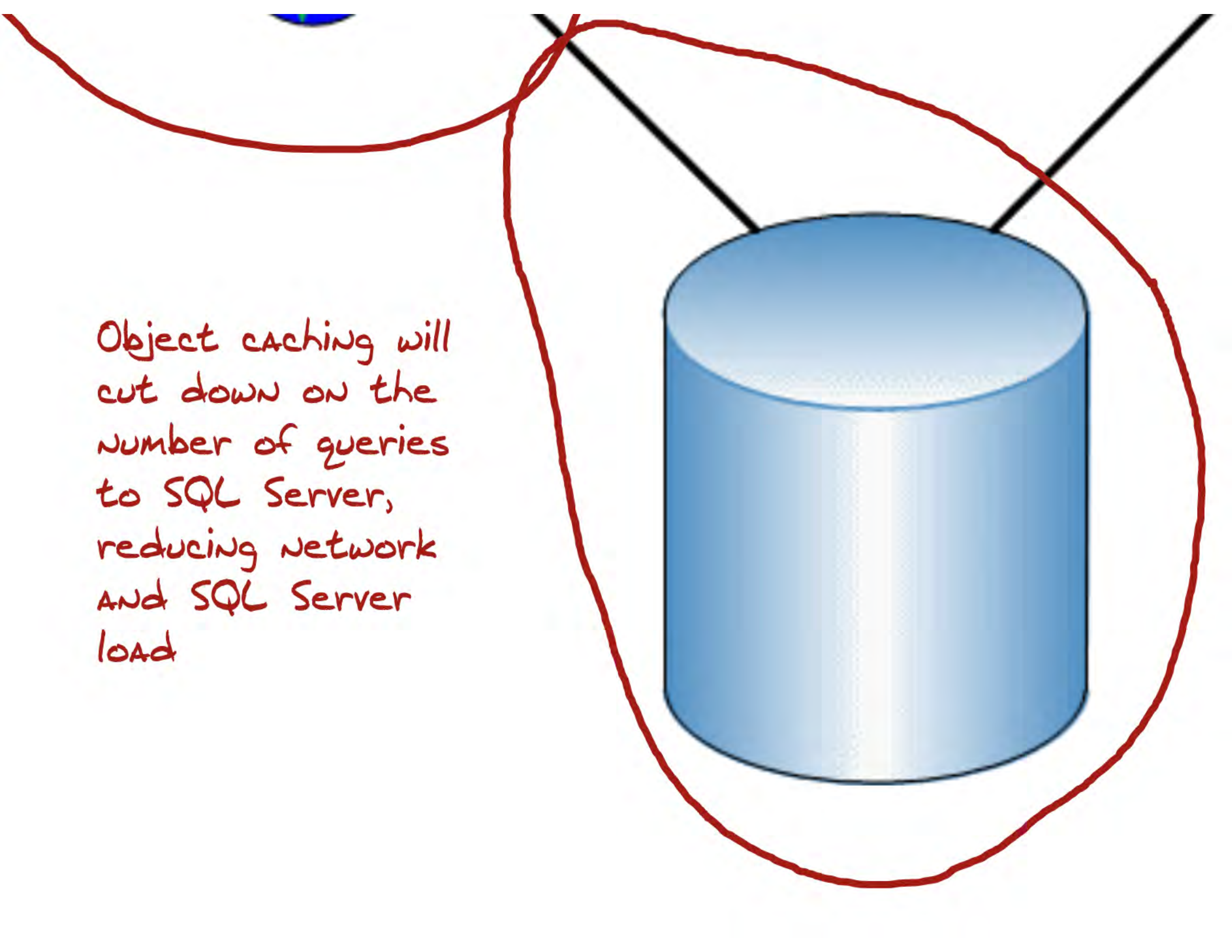

Anonymous
Authenticated
Cache Duration
Cross List Multiplier
Especially if per-site and per-item security is prevalent

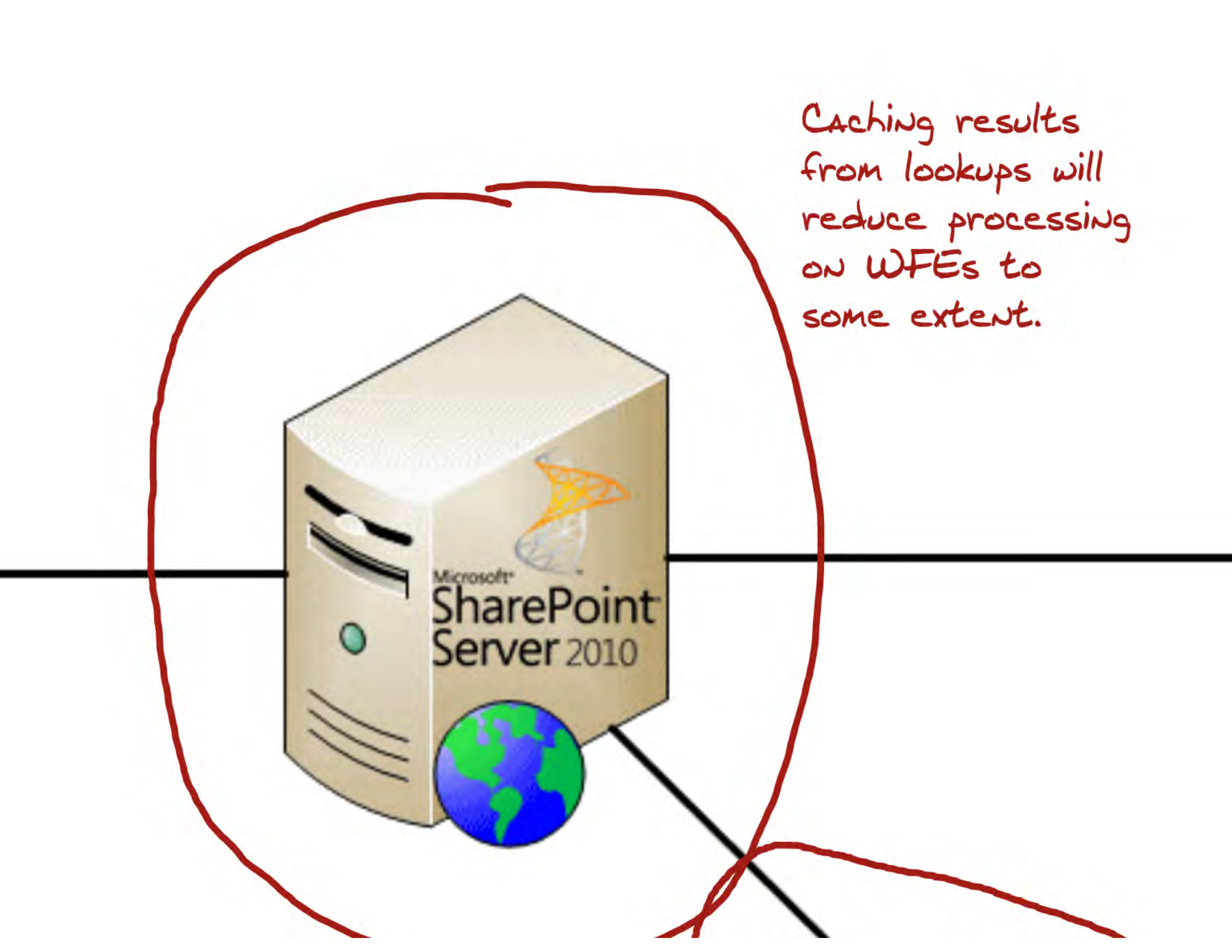
Especially if per-site and per-item security is prevalent


Object Cache Settings - Windows Internet Explorer
http://www.spmcdonough.com/_Layouts/objectcachesettings.aspx
Google
Favorites
Object Cache Settings
Page
Safety
Tools
Site Actions
Sean P. McDonough
Site Collection Administration ▸ Object cache settings
Configure settings for the object cache.
I Like It
Tags & Notes
Sean P. McDonough
Press Releases
Search this site...
Press Releases
Recycle Bin
All Site Content
Object Cache Size
Object Cache Size Learn more about the object cache.
Max. Cache Size (MB):
100
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 multipler:
3
OK
Cancel
Done
Internet | Protected Mode: On
100%


Internet
Caching results from lookups will reduce processing on WFEs to some extent.
Microsoft SharePoint Server 2010
Microsoft SharePoint Server 2010
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.
Microsoft
SharePoint
Server 2010

Current problem with SharePoint 2010

Object cache access accounts are configurable, but their defaults are not good choices for most environments

- Portal Super User: System Account
- Portal Super Reader: NT Authority\Local Service

Problems this causes

- Items can be checked-out to the System Account in some cases, and this may force a re-fetch of objects from the content database
- Access denied issues with claims-based authentication since NT Authority\Local Service account does not properly resolve

The fix

- Use PowerShell to assign domain user accounts to each role and then specify web application policies for each account

Next up ...

BLOB caching

caching

No, not that kind of BLOB

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

FIGHT NIGHT

BLOB

VS

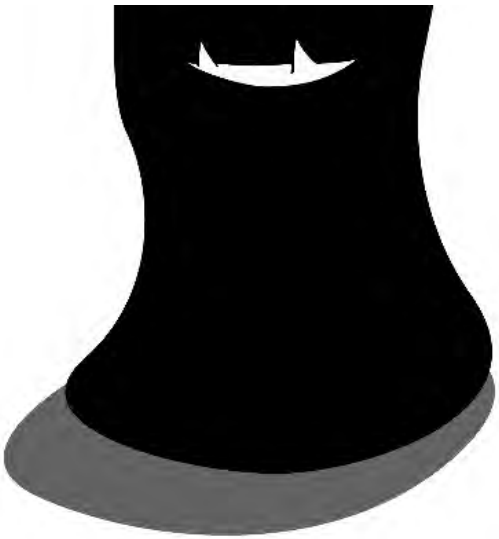
Blob

BLOB

VS

Blob

BLOB	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
Conquered with RBS	Wiped out through military action ... sometimes ...
	WINNER!



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

caching

also known as "disk-based caching"

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

A Web Page

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

My SharePoint Site

SPDC\me

Site Actions

Search this site...

Top-Level Site > My SharePoint Site

Home

- My SharePoint Site
- Your SharePoint Site
- Another Site

Welcome Back, Bob!

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.

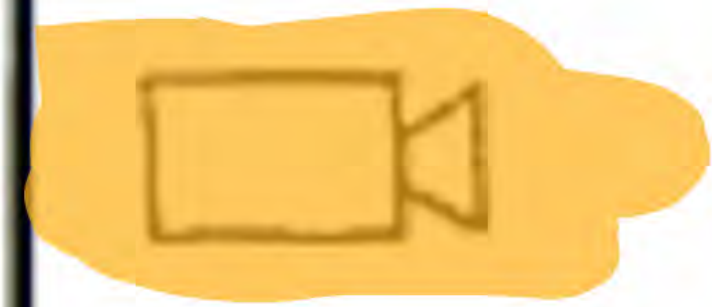
It is by the juice of Sapho that thoughts acquire speed, the lips acquire stains, the stains become a warning.

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 [illegible] would be cached through BLOB caching



It is by w

mind in mo

It is by t

that thou

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

BLOB cache

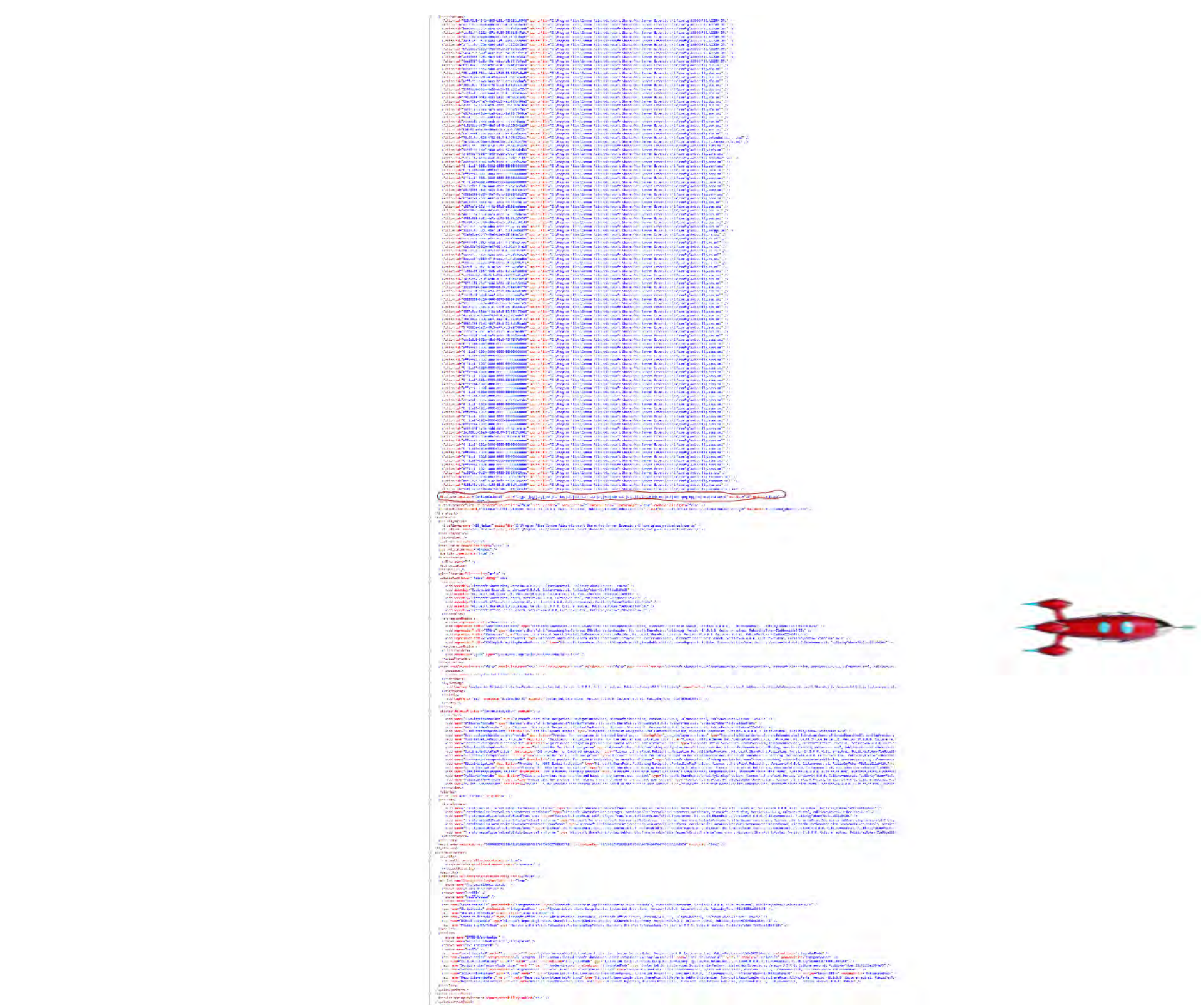
Backed by disk

Turned off by default

Default ~~size or~~ allocation

10GB per
IIS site (zone)

Controlled through web.config settings



```
      <Action id="0ff1ce14-1019-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-101a-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-101b-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-101c-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-101d-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-101e-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-1020-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="0ff1ce14-1021-0000-0000-000000000000" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="ec0076ac-0c35-4880-8422-8062f5925bec" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="602bc8c3-9286-49a3-b973-3376ca78b297" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="00e22a78-33ff-41ac-b0fb-ee46d1636e22" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="4b60e42e-e6fc-4188-80d2-ef39e7cc0065" sourceFile="C:\Program Files\Common Files\Micro
      <Action id="1d415973-1146-4bc2-8324-83dfff5bfe33" sourceFile="C:\Program Files\Common Files\Micro
    </MergedActions>
    <BlobCache location="C:\BlobCache\14" path="\.(gif|jpg|jpeg|jpe|jfif|bmp|dib|tif|tiff|ico|png|wdp|h
    <ObjectCache maxSize="100" />
    <OutputCacheProfiles useCacheProfileOverrides="false" varyByHeader="" varyByParam="*" varyByCustom=
    <RuntimeFilter Assembly="Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken
  </SharePoint>
  <system.web>
    <securityPolicy>
      <trustLevel name="WSS_Medium" policyFile="C:\Program Files\Common Files\Microsoft Shared\Web Serv
      <trustLevel name="WSS_Minimal" policyFile="C:\Program Files\Common Files\Microsoft Shared\Web Ser
    </securityPolicy>
    <httpHandlers />
    <customErrors mode="On" />
    <httpRuntime maxRequestLength="51200" />
    <authentication mode="Windows" />
    <identity impersonate="true" />
    <authorization>
      <allow users="*" />
    </authorization>
    <httpModules />
    <globalization fileEncoding="utf-8" />
```

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|mpeg
|mpg|rm|rmvb|wma|wmv)$" maxSize="10" enabled="false" />
```

Some 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.

Recommendation:
point at someplace
other than C:

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

Some Available Attributes

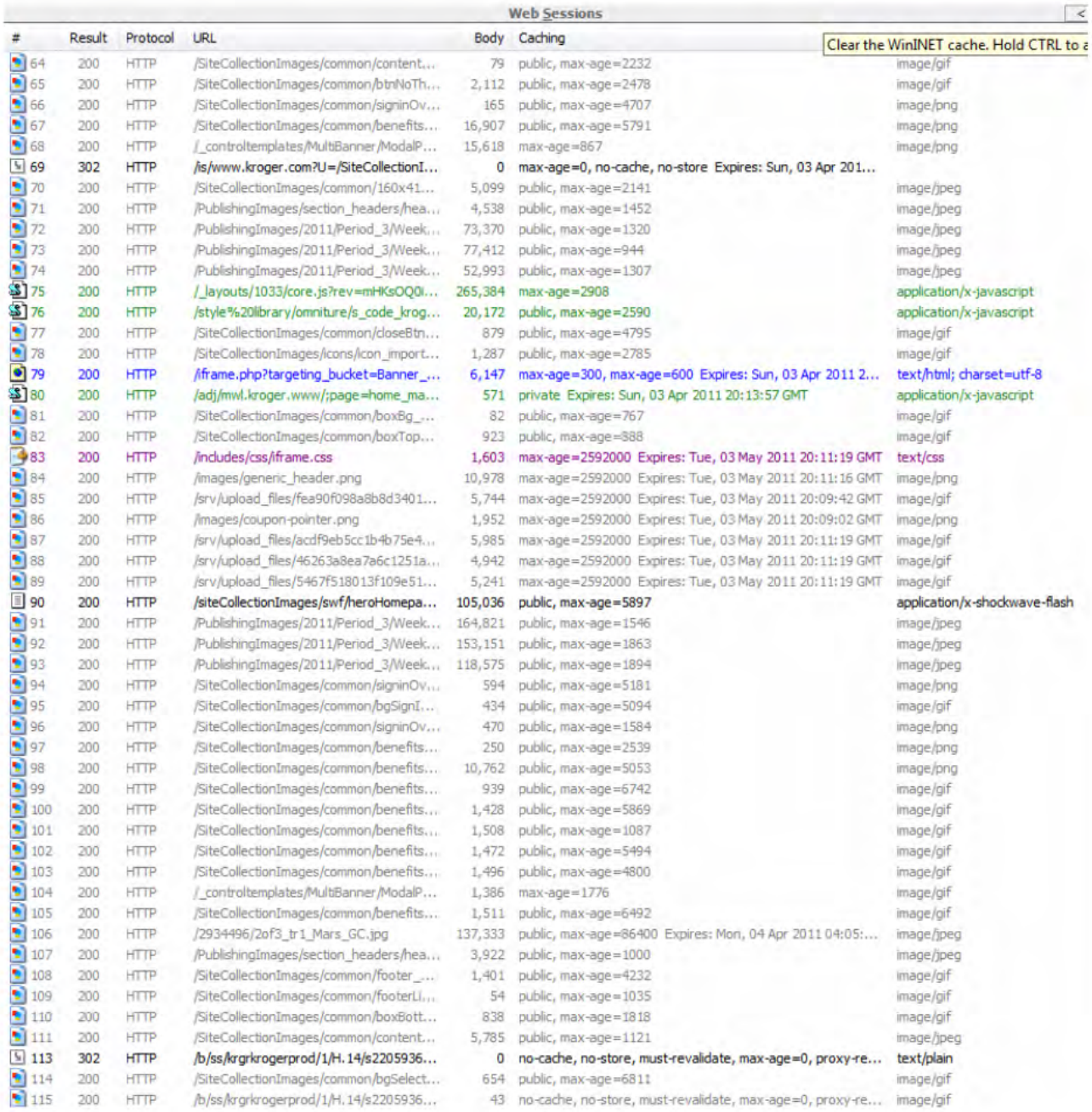
Common

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

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)



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	/is/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/icons/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/fea90f098a8b8d3401...	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/footerLi...	54	public, max-age=1035	image/gif
110	200	HTTP	/SiteCollectionImages/common/boxBott...	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/krgrkrogerprod/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/krgrkrogerprod/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

Web Sessions

#	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/s26562257...	43	no-cache, no-store, must-revalidate, max-age=0, proxy-re...	image/gif

Only 4 requests needed to load the page

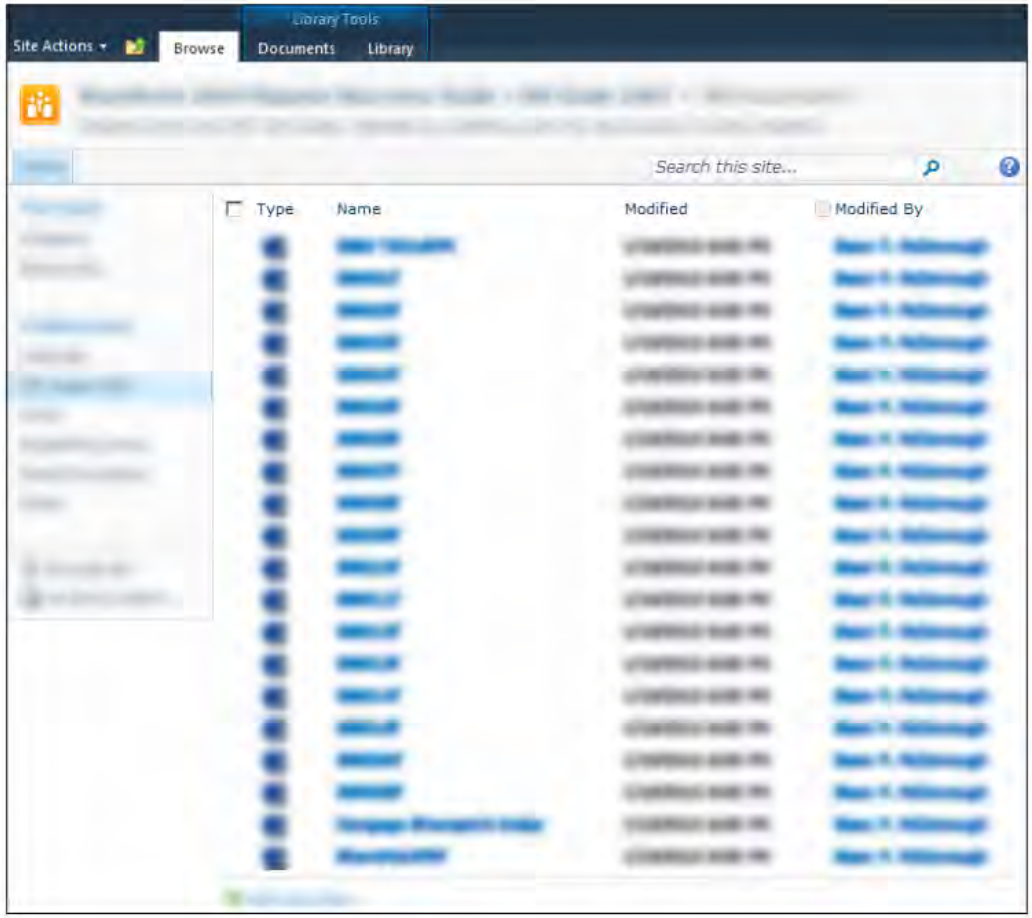
Of course, this behavior can work both for you and against you ...

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 specifiy a max-age attribute value, the default is 86,400 seconds (24 hours).

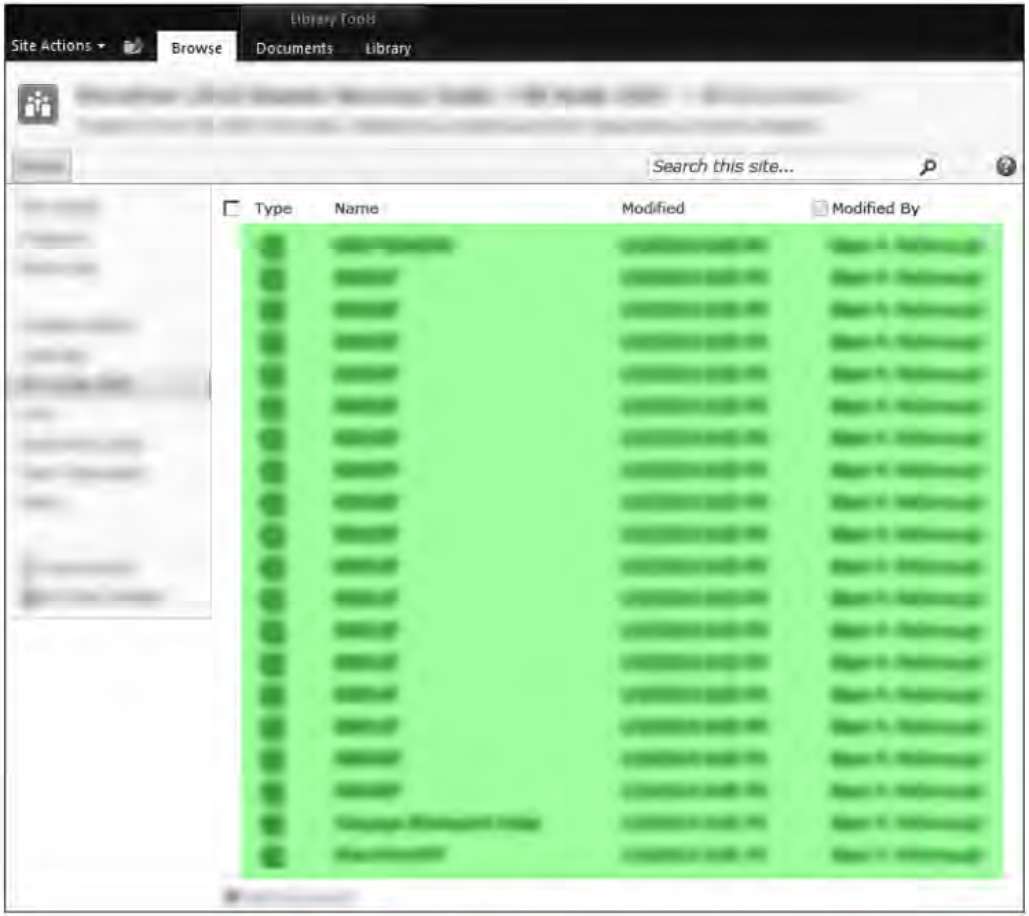
Speaking of pain points ...

Let's talk about a small BLOB Cache security issue

Let's talk about a small BLOB Cache security issue



This is an ordinary, out-of-the-box document library. BLOB Caching works quite well with it.

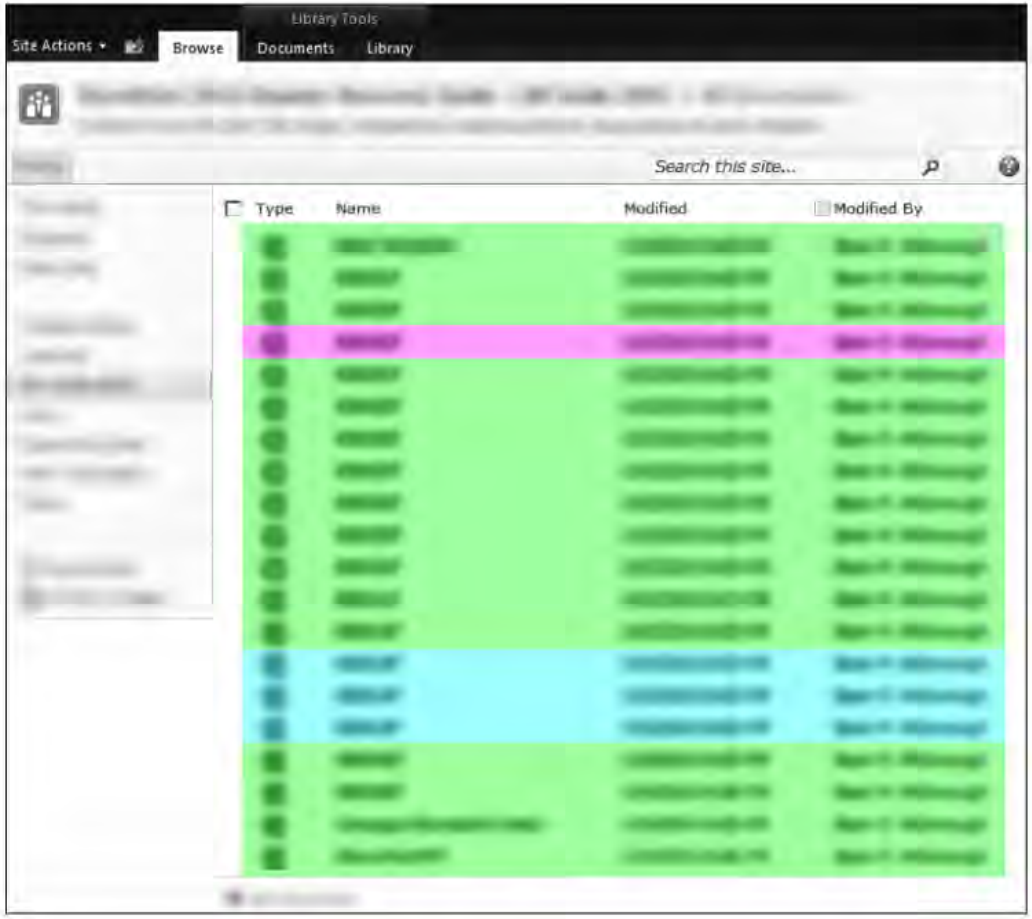


Phase One

Anonymous access

- Add document extension to cached file types
- Enable anonymous access on the list
- Enable the BLOB Cache for parent Web application

Net effect: everyone has access to documents



Phase Two

Anonymous access

User 1 only (per item perms)

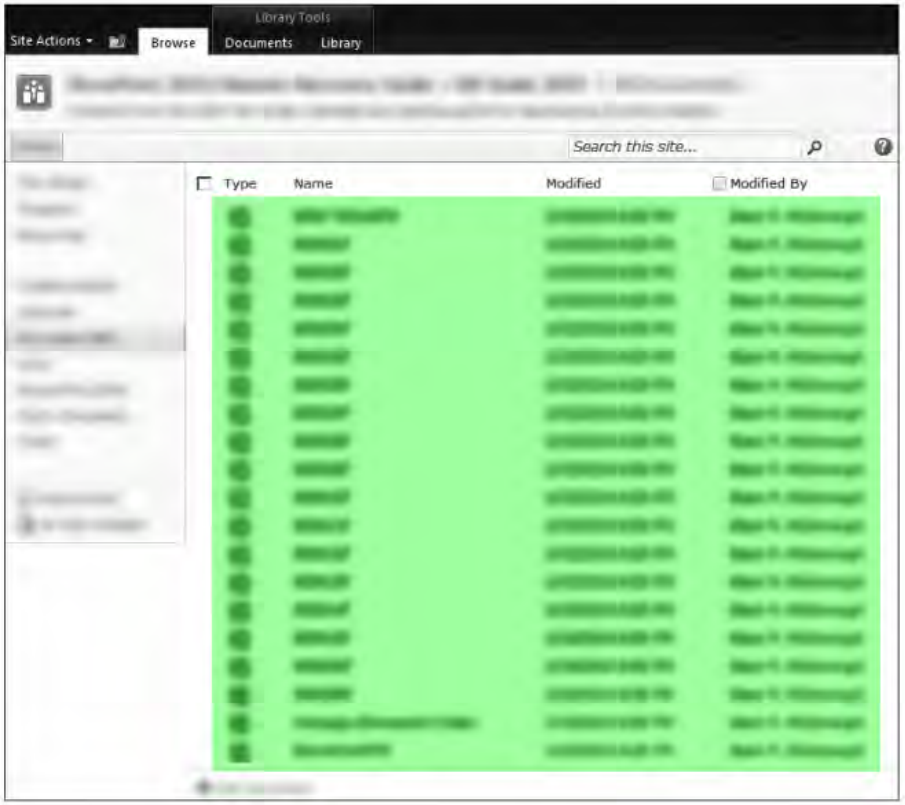
User 2 only (per item perms)

- Make some per-item permission changes to one or more items in the list

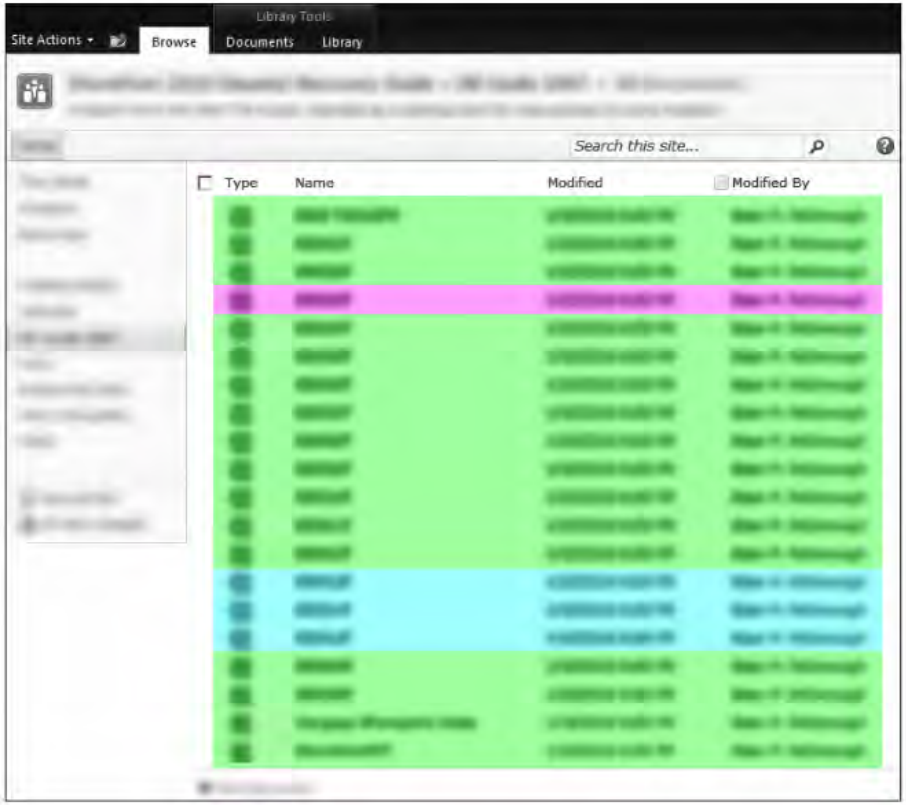
Per-item permissions are ignored!

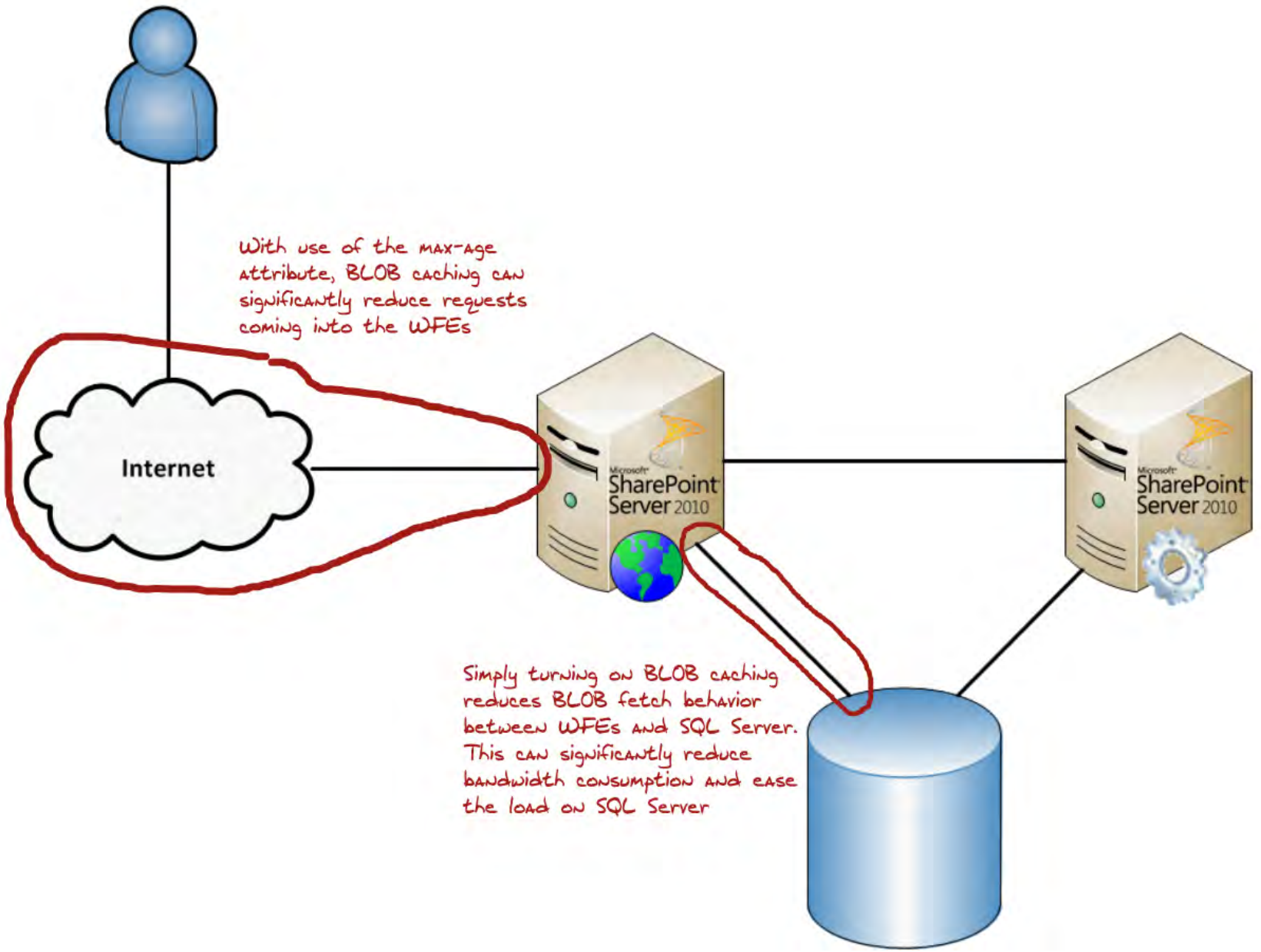
- You need to physically dump the contents of the BLOB Cache to reset it

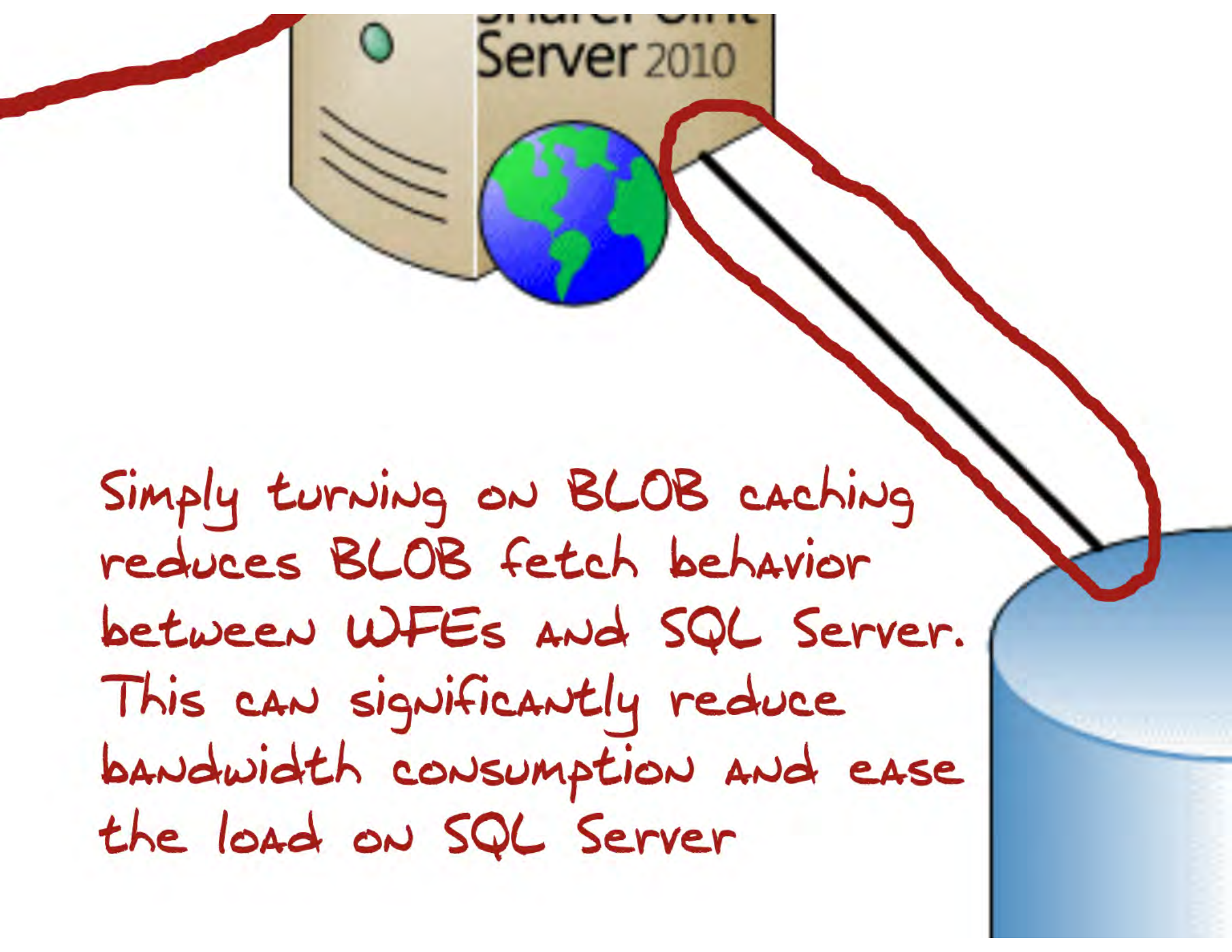
What the BLOB Cache Uses



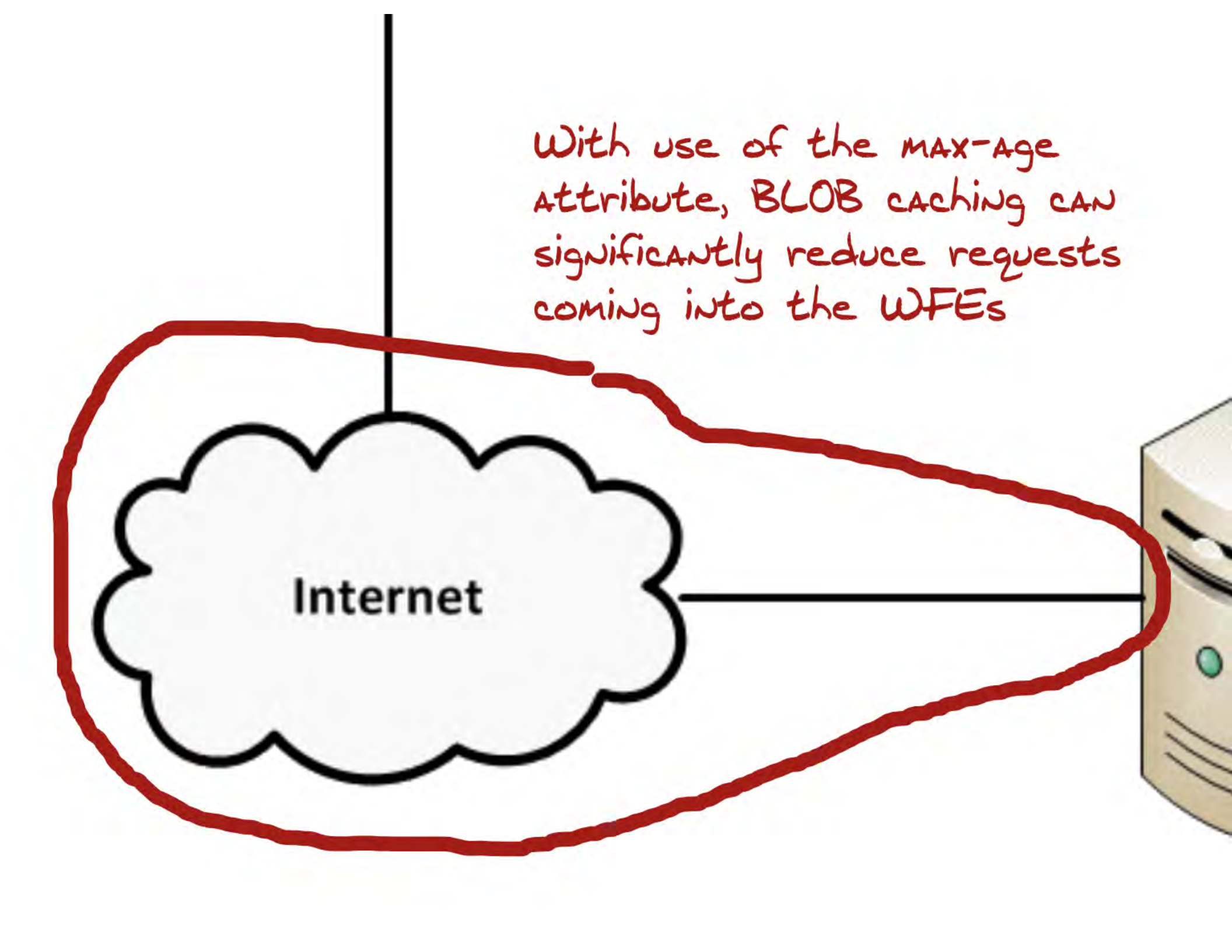
What you set




With use of the max-age attribute, BLOB caching can significantly reduce requests coming into the WFEs
Internet
Microsoft SharePoint Server 2010
Microsoft SharePoint Server 2010
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



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
Internet

Next up...

Page output caching

piggybacks on ASP.NET output caching

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

A Web Page

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

My SharePoint Site

SPDC\me

Site Actions

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."

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.

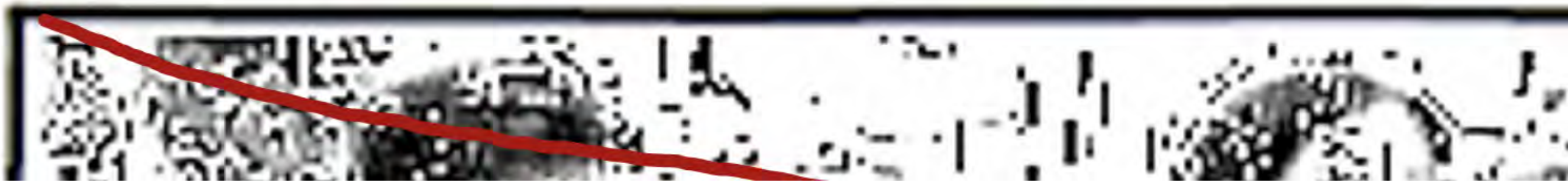
The weather started

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

int 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."

Welcome Back, Bob!



Page output caching

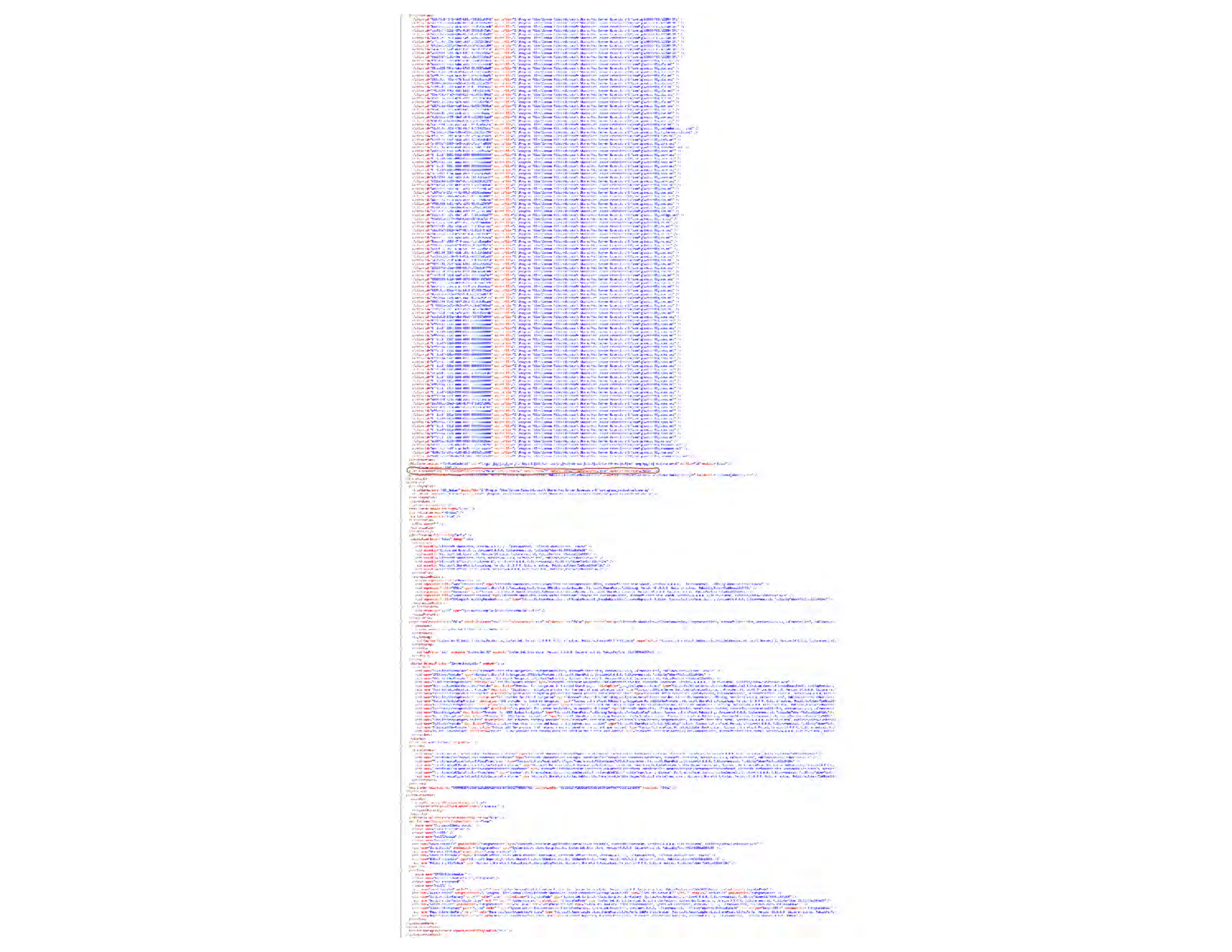
Backed by memory

Turned off by default (thankfully)

Default size or allocation

None*

A new trick that comes with SharePoint 2010 ...



```
    <Action id="0ff1ce14-101d-0000-0000-000000000000" sourceFile="C:\Program Fi
    <Action id="0ff1ce14-101e-0000-0000-000000000000" sourceFile="C:\Program Fi
    <Action id="0ff1ce14-1020-0000-0000-000000000000" sourceFile="C:\Program Fi
    <Action id="0ff1ce14-1021-0000-0000-000000000000" sourceFile="C:\Program Fi
    <Action id="ec0076ac-0c35-4880-8422-8062f5925bec" sourceFile="C:\Program Fi
    <Action id="602bc8c3-9286-49a3-b973-3376ca78b297" sourceFile="C:\Program Fi
    <Action id="00e22a78-33ff-41ac-b0fb-ee46d1636e22" sourceFile="C:\Program Fi
    <Action id="4b60e42e-e6fc-4188-80d2-ef39e7cc0065" sourceFile="C:\Program Fi
    <Action id="1d415973-1146-4bc2-8324-83dfff5bfe33" sourceFile="C:\Program Fi
  </MergedActions>
  <BlobCache location="C:\BlobCache\14" path="\.(gif|jpg|jpeg|jpe|jfif|bmp|dib|
  <ObjectCache maxSize="100" />
  <OutputCacheProfiles useCacheProfileOverrides="false" varyByHeader="" varyByP
  <RuntimeFilter Assembly="Microsoft.Office.Server, Version=14.0.0.0, Culture=n
</SharePoint>
<system.web>
  <securityPolicy>
    <trustLevel name="WSS_Medium" policyFile="C:\Program Files\Common Files\Mic
    <trustLevel name="WSS_Minimal" policyFile="C:\Program Files\Common Files\Mi
  </securityPolicy>
  <httpHandlers />
  <customErrors mode="On" />
  <httpRuntime maxRequestLength="51200" />
  <authentication mode="Windows" />
  <identity impersonate="true" />
  <authorization>
```

So ...

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

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.

The Page is like a big

Each page request is

- Characteristics are se
- These characteristi

The cac

- If

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

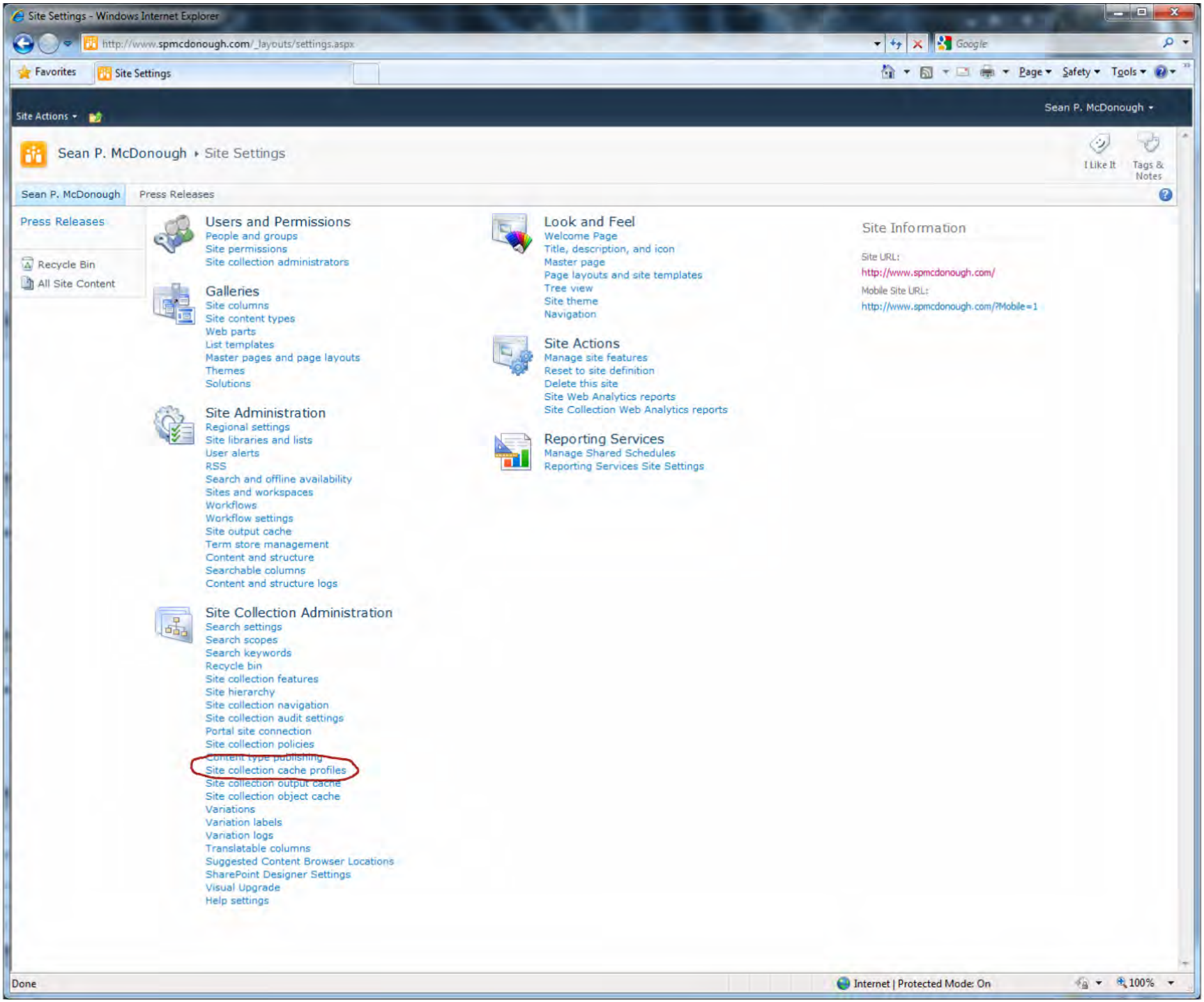
The cache is searched for a page with the key that was built

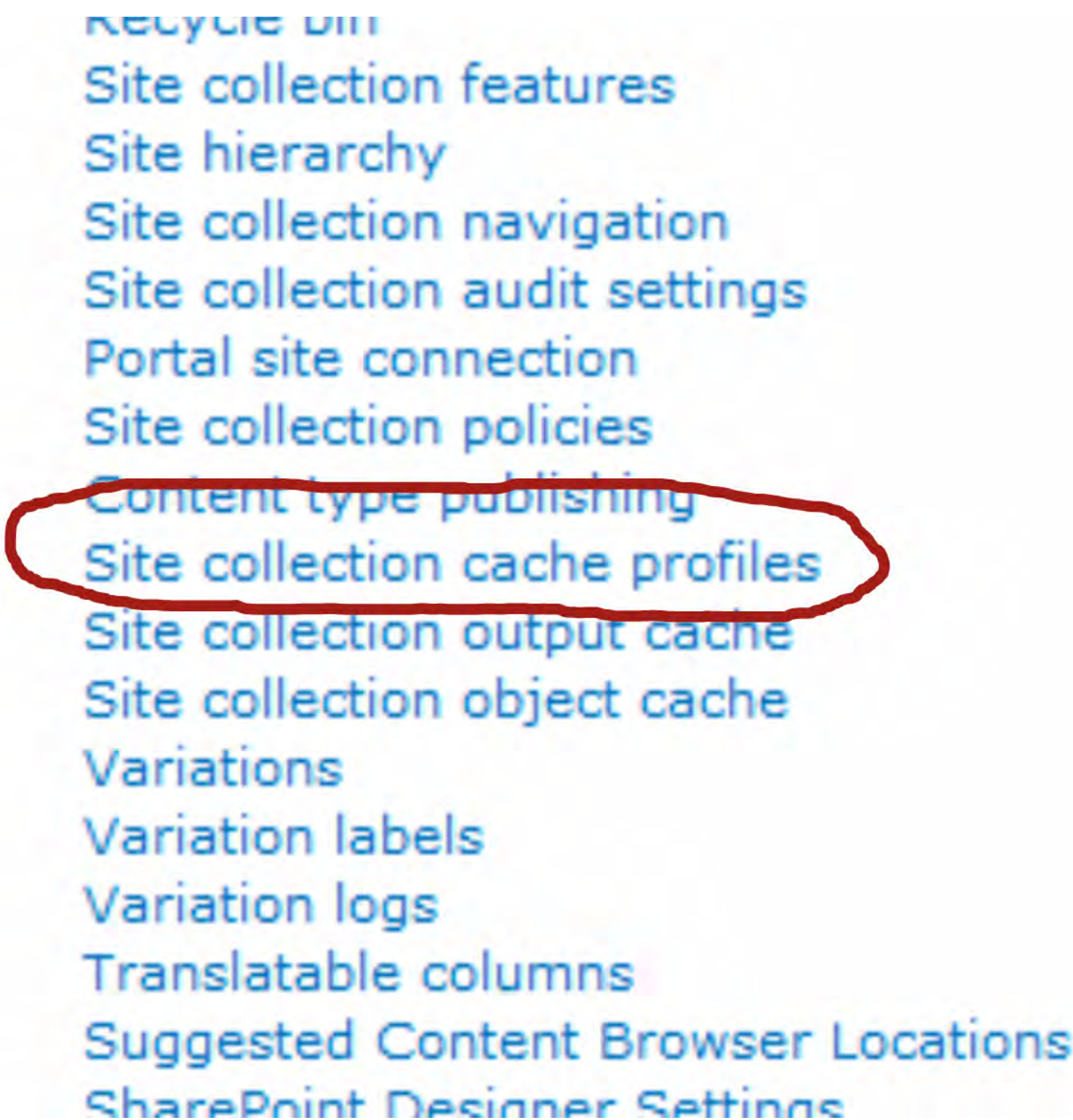
- If a page with the same key is found, the page HTML is returned from the cache.
- If no match is made, the page is rendered and served back. It is then cached for subsequent requests until it is expired out of the cache or ejected for other reasons.

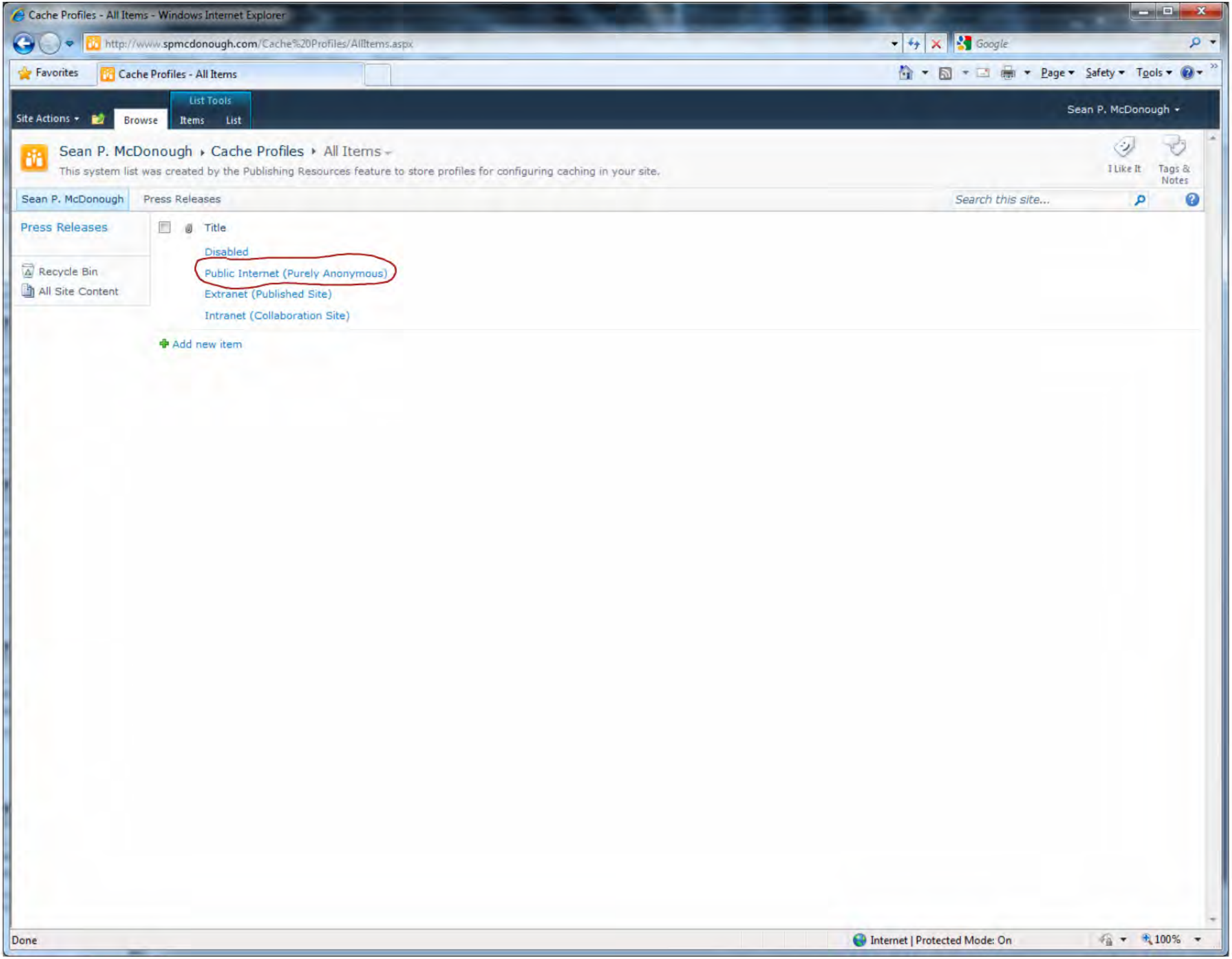
The trick is to balance profile granularity against memory consumption

Configuring Page Output Caching

A quick tour


Site Settings - Windows Internet Explorer
http://www.spmcdonough.com/_layouts/settings.aspx
Favorites
Site Settings
Site Actions
Sean P. McDonough
Sean P. McDonough ▸ Site Settings
I Like It
Tags & Notes
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
Done
Internet | Protected Mode: On
100%


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


Cache Profiles - All Items - Windows Internet Explorer
http://www.spmcdonough.com/Cache%20Profiles/AllItems.aspx
Google
Favorites
Cache Profiles - All Items
Page
Safety
Tools
Site Actions
Browse
List Tools
Items
List
Sean P. McDonough
Sean P. McDonough ▸ Cache Profiles ▸ All Items
This system list was created by the Publishing Resources feature to store profiles for configuring caching in your site.
I Like It
Tags & Notes
Sean P. McDonough
Press Releases
Search this site...
Press Releases
Recycle Bin
All Site Content
Title
Disabled
Public Internet (Purely Anonymous)
Extranet (Published Site)
Intranet (Collaboration Site)
Add new item
Done
Internet | Protected Mode: On
100%

. McDonough ▸ Cache Profiles ▸ All Items

em list was created by the Publishing Resources feature to store profile

ugh | Press Releases

Title

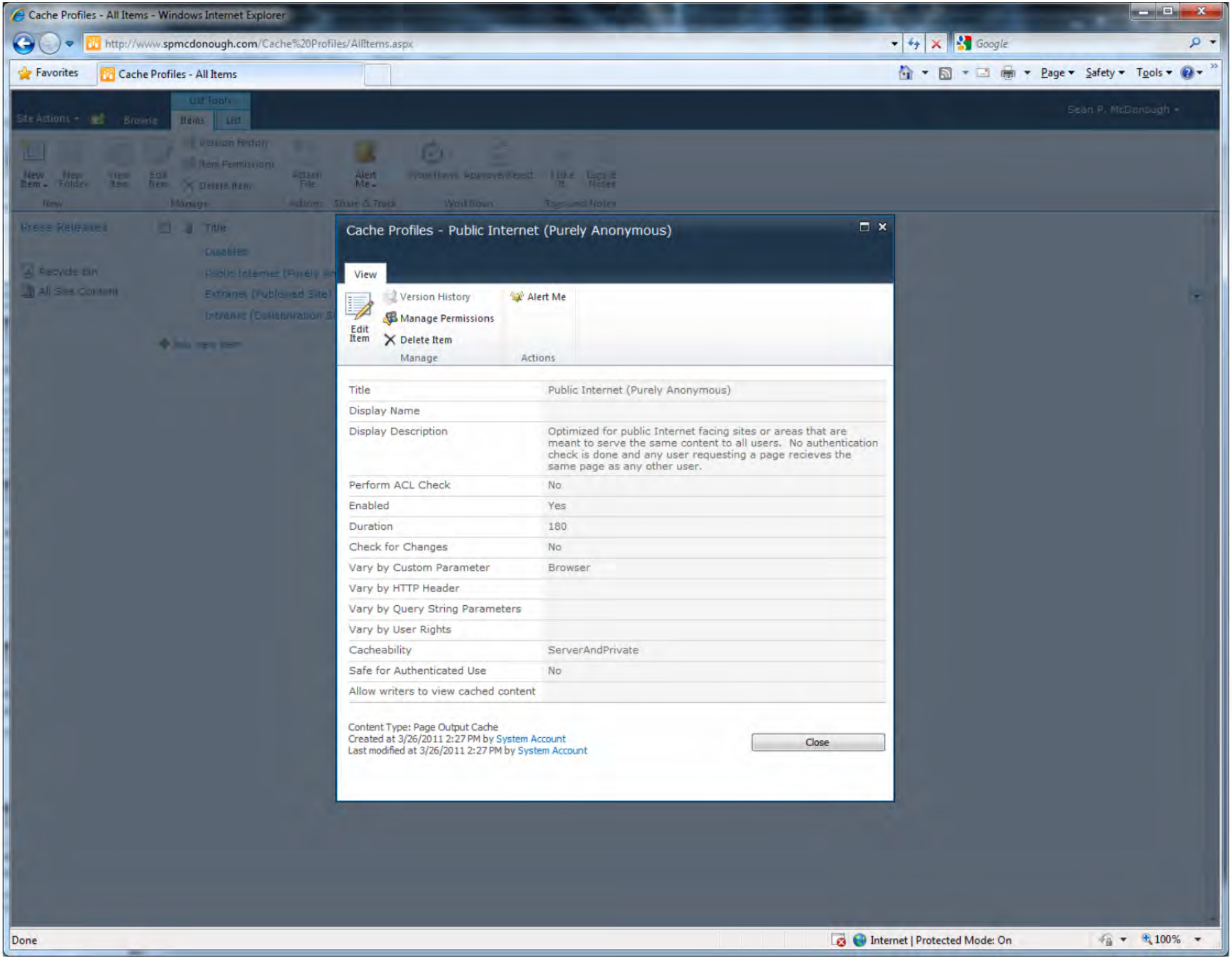
Disabled

Public Internet (Purely Anonymous)

Extranet (Published Site)

Intranet (Collaboration Site)

Add new item


Cache Profiles - All Items - Windows Internet Explorer
http://www.spmcdonough.com/Cache%20Profiles/AllItems.aspx
Favorites
Cache Profiles - All Items
Cache Profiles - Public Internet (Purely Anonymous)
View
Edit Item
Version History
Manage Permissions
Delete Item
Manage
Alert Me
Actions
Title
Public Internet (Purely Anonymous)
Display Name
Display Description
Optimized for public Internet facing sites or areas that are meant to serve the same content to all users. No authentication check is done and any user requesting a page recieves the same page as any other user.
Perform ACL Check
No
Enabled
Yes
Duration
180
Check for Changes
No
Vary by Custom Parameter
Browser
Vary by HTTP Header
Vary by Query String Parameters
Vary by User Rights
Cacheability
ServerAndPrivate
Safe for Authenticated Use
No
Allow writers to view cached content
Content Type: Page Output Cache
Created at 3/26/2011 2:27 PM by System Account
Last modified at 3/26/2011 2:27 PM by System Account
Close
Done
Internet | Protected Mode: On
100%

Version History

Alert Me

Edit Item

Manage Permissions

Delete Item

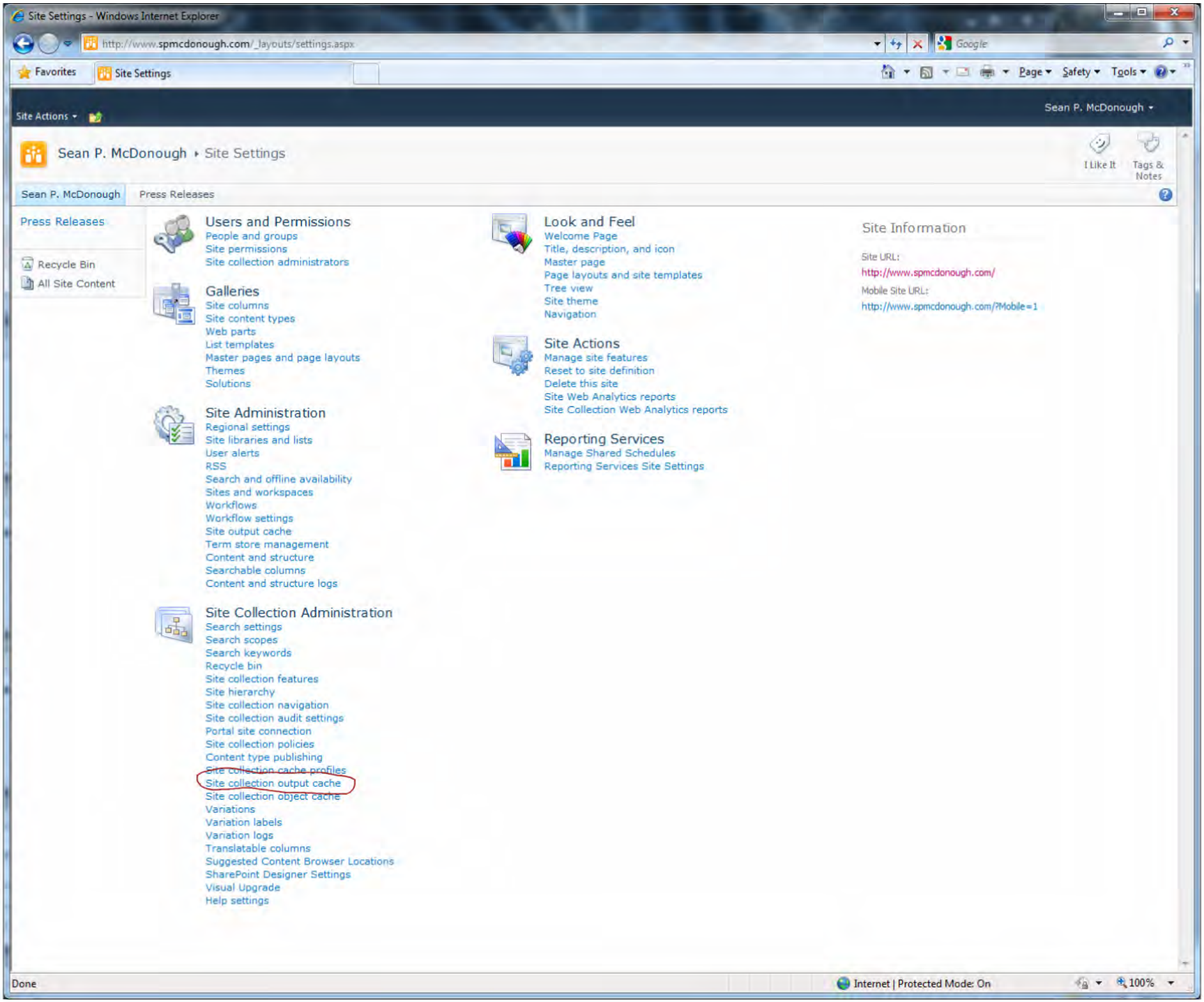
Manage

Actions

Title	Public Internet (Purely Anonymous)
Display Name	
Display Description	Optimized for public Internet facing sites or areas that are meant to serve the same content to all users. No authentication check is done and any user requesting a page recieves the same page as any other user.
Perform ACL Check	No
Enabled	Yes
Duration	180
Check for Changes	No
Vary by Custom Parameter	Browser
Vary by HTTP Header	
Vary by Query String Parameters	
Vary by User Rights	
Cacheability	ServerAndPrivate
Safe for Authenticated Use	No
Allow writers to view cached content	

Content Type: Page Output Cache

Created at 3/26/2011 2:27 PM by System Account


Site Settings - Windows Internet Explorer
http://www.spmcdonough.com/_layouts/settings.aspx
Favorites
Site Settings
Site Actions
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Sean P. McDonough ▸ Site Settings
I Like It
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Press Releases
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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
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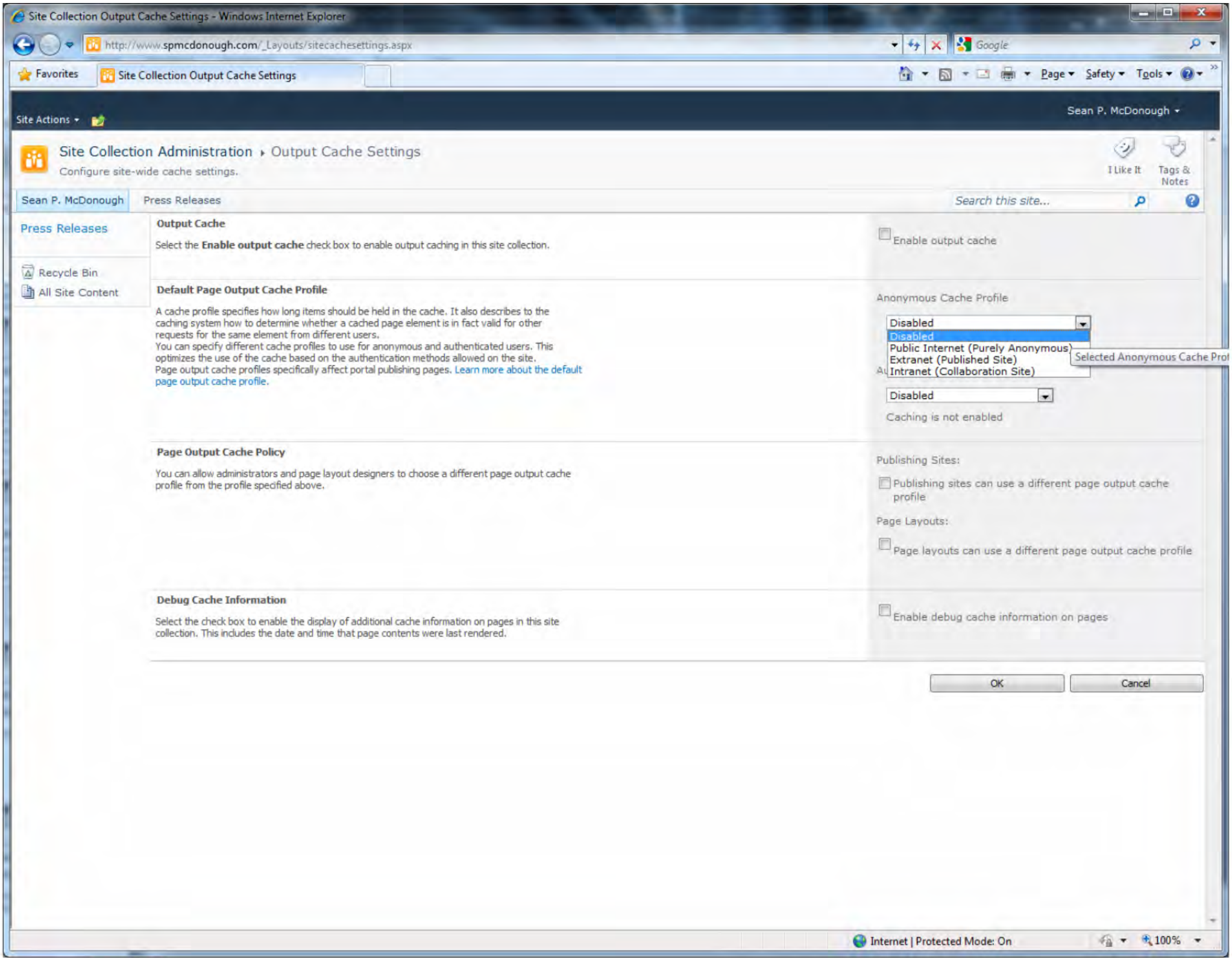
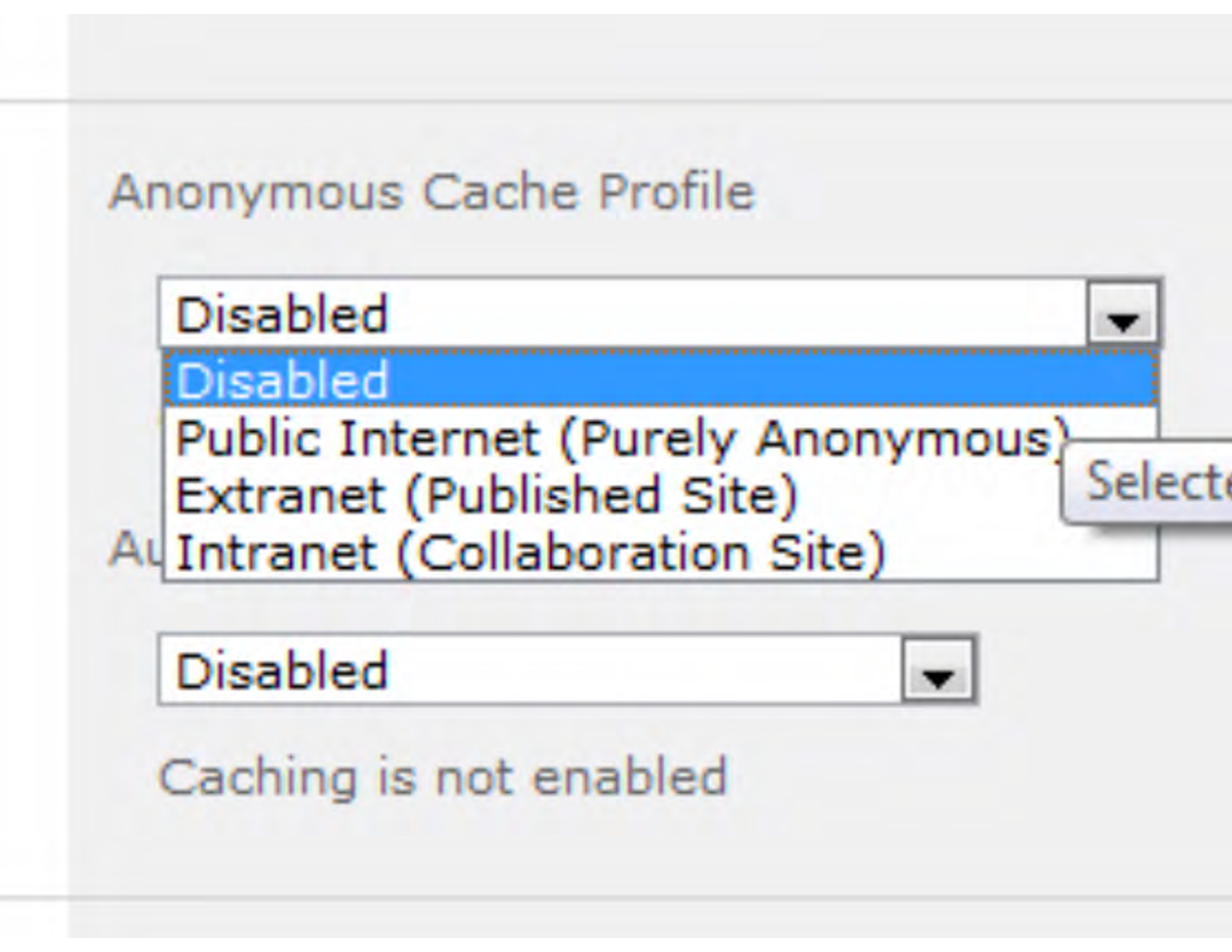
Welcome Page
Title, description, and icon
Master page
Page layouts and site templates
Tree view
Site theme
Navigation
Site Actions
Manage site features
Reset to site definition
Delete this site
Site Web Analytics reports
Site Collection Web Analytics reports
Reporting Services
Manage Shared Schedules
Reporting Services Site Settings
Site Information
Site URL:
http://www.spmcdonough.com/
Mobile Site URL:
http://www.spmcdonough.com/?Mobile=1
Done
Internet | Protected Mode: On
100%

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


Site Collection Output Cache Settings - Windows Internet Explorer
http://www.spmcdonough.com/_Layouts/sitecachesettings.aspx
Google
Favorites
Site Collection Output Cache Settings
Page
Safety
Tools
Site Actions
Sean P. McDonough
Site Collection Administration ▸ Output Cache Settings
Configure site-wide cache settings.
I Like It
Tags & Notes
Sean P. McDonough
Press Releases
Search this site...
Press Releases
Recycle Bin
All Site Content
Output Cache
Select the Enable output cache check box to enable output caching in this site collection.
Enable output cache
Default Page Output Cache Profile
A cache profile specifies how long items should be held in the cache. It also describes to the caching system how to determine whether a cached page element is in fact valid for other requests for the same element from different users.
You can specify different cache profiles to use for anonymous and authenticated users. This optimizes the use of the cache based on the authentication methods allowed on the site.
Page output cache profiles specifically affect portal publishing pages. Learn more about the default page output cache profile.
Anonymous Cache Profile
Disabled
Disabled
Public Internet (Purely Anonymous)
Extranet (Published Site)
Intranet (Collaboration Site)
Selected Anonymous Cache Prof
Disabled
Caching is not enabled
Page Output Cache Policy
You can allow administrators and page layout designers to choose a different page output cache profile from the profile specified above.
Publishing Sites:
Publishing sites can use a different page output cache profile
Page Layouts:
Page layouts can use a different page output cache profile
Debug Cache Information
Select the check box to enable the display of additional cache information on pages in this site collection. This includes the date and time that page contents were last rendered.
Enable debug cache information on pages
OK
Cancel
Internet | Protected Mode: On
100%


Anonymous Cache Profile
Disabled
Disabled
Public Internet (Purely Anonymous)
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Intranet (Collaboration Site)
Disabled
Caching is not enabled

Disabled

Caching is not enabled

Publishing Sites:

Publishing sites can use a different page output cache profile

Page Layouts:

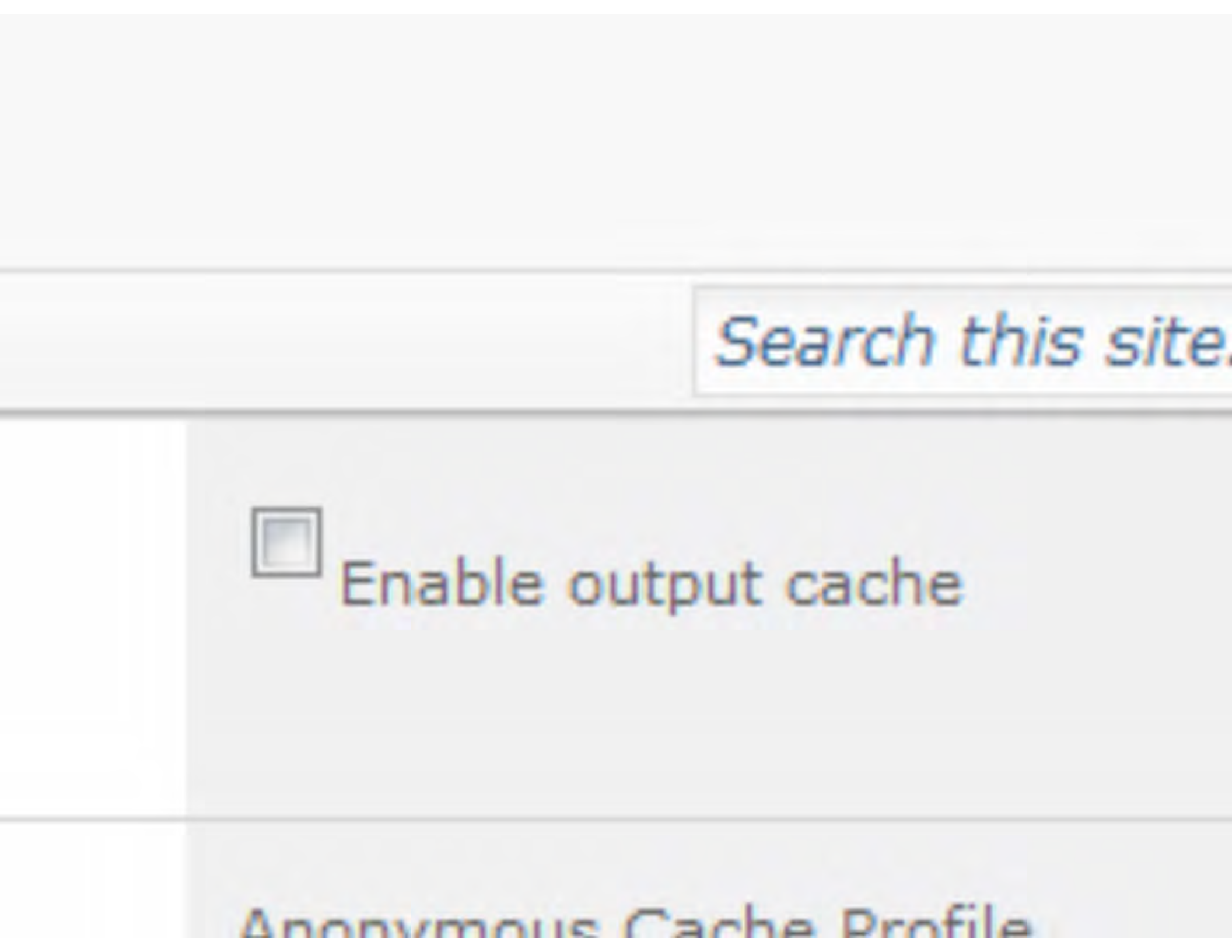
Page layouts can use a different page output cache pr

Page Layouts:

☐ Page layouts can use a different page output cache pr

☐ Enable debug cache information on pages

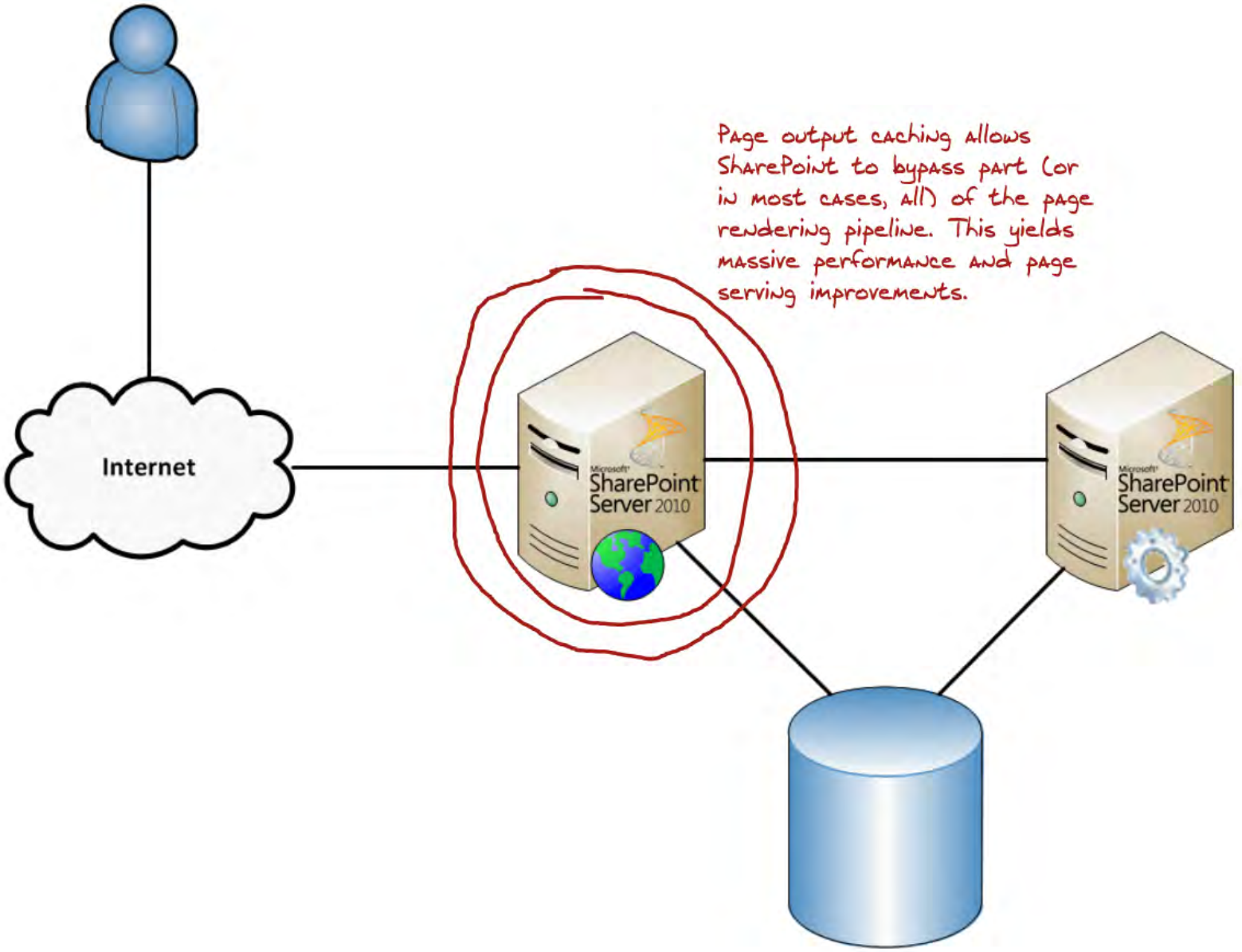
OK Cancel


Search this site
Enable output cache

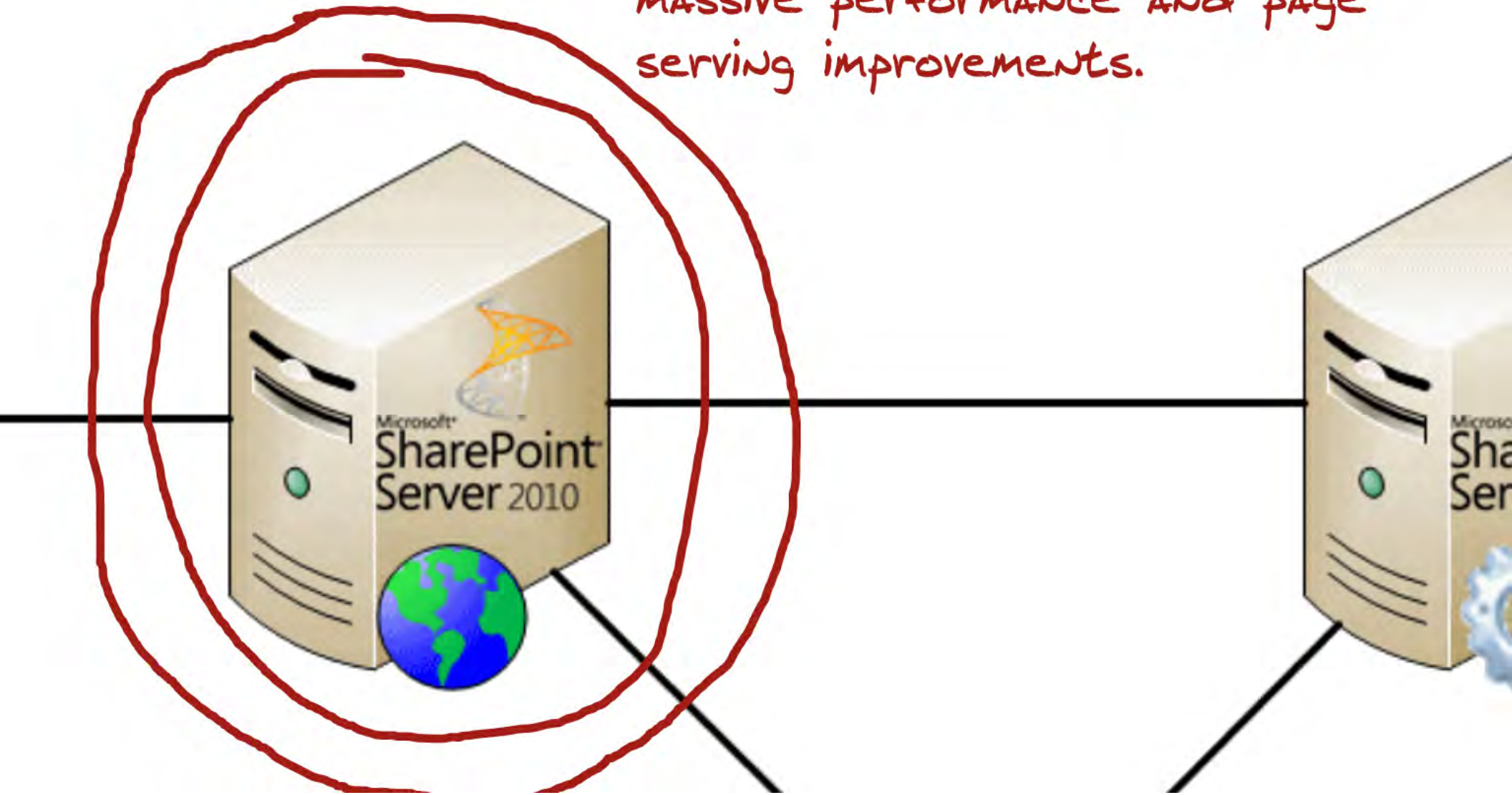
STOP

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

Do you sense a story coming?


Page output caching allows SharePoint to bypass part (or in most cases, all) of the page rendering pipeline. This yields massive performance and page serving improvements.
Internet
Microsoft SharePoint Server 2010
Microsoft SharePoint Server 2010

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



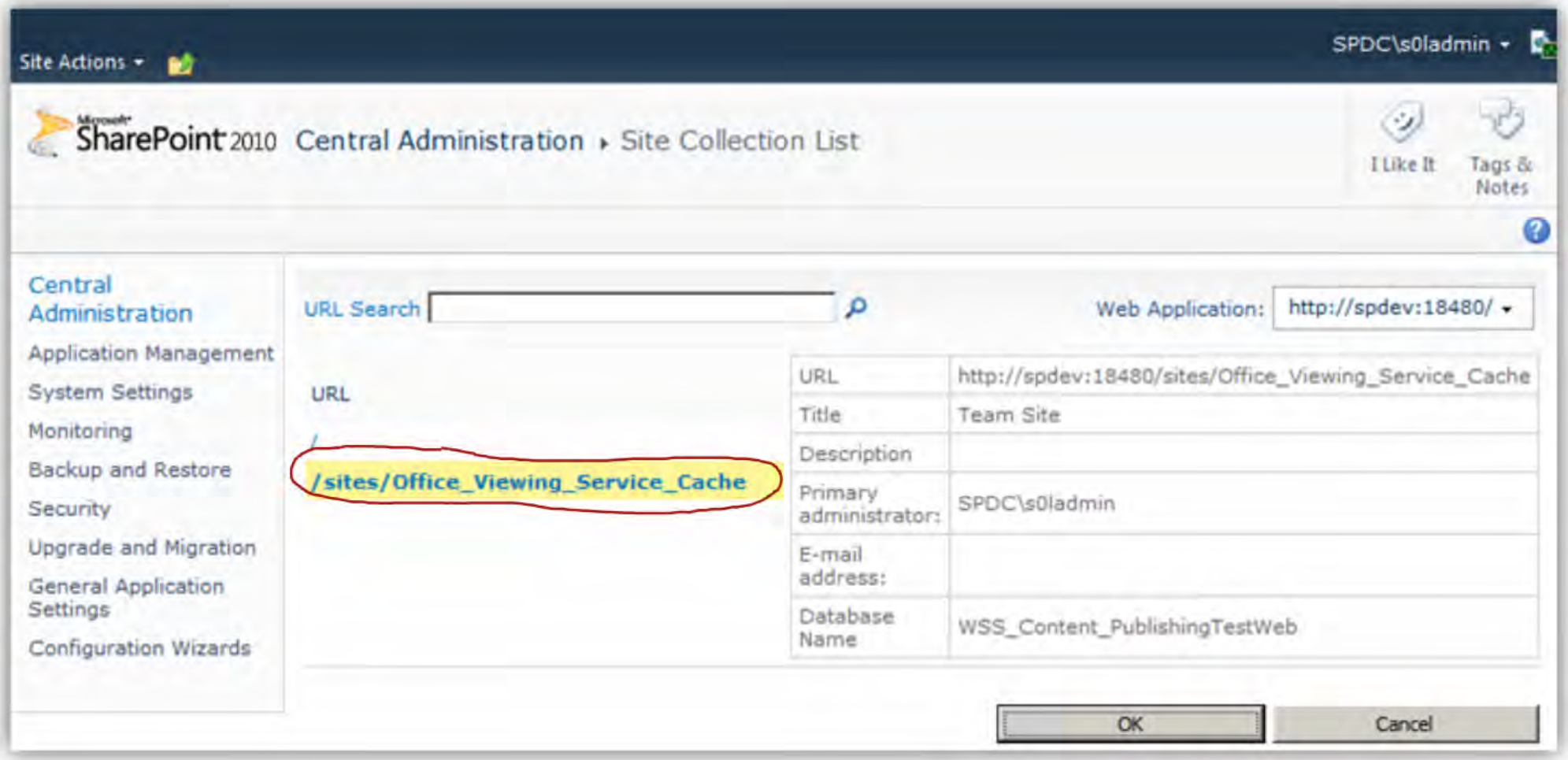
And finally

Office Web Apps Cache

SharePoint 2010 Only!

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

How the cache is implemented ...



- 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

Get friendly with Set-OfficeSPWebAppsCache PowerShell cmdlet

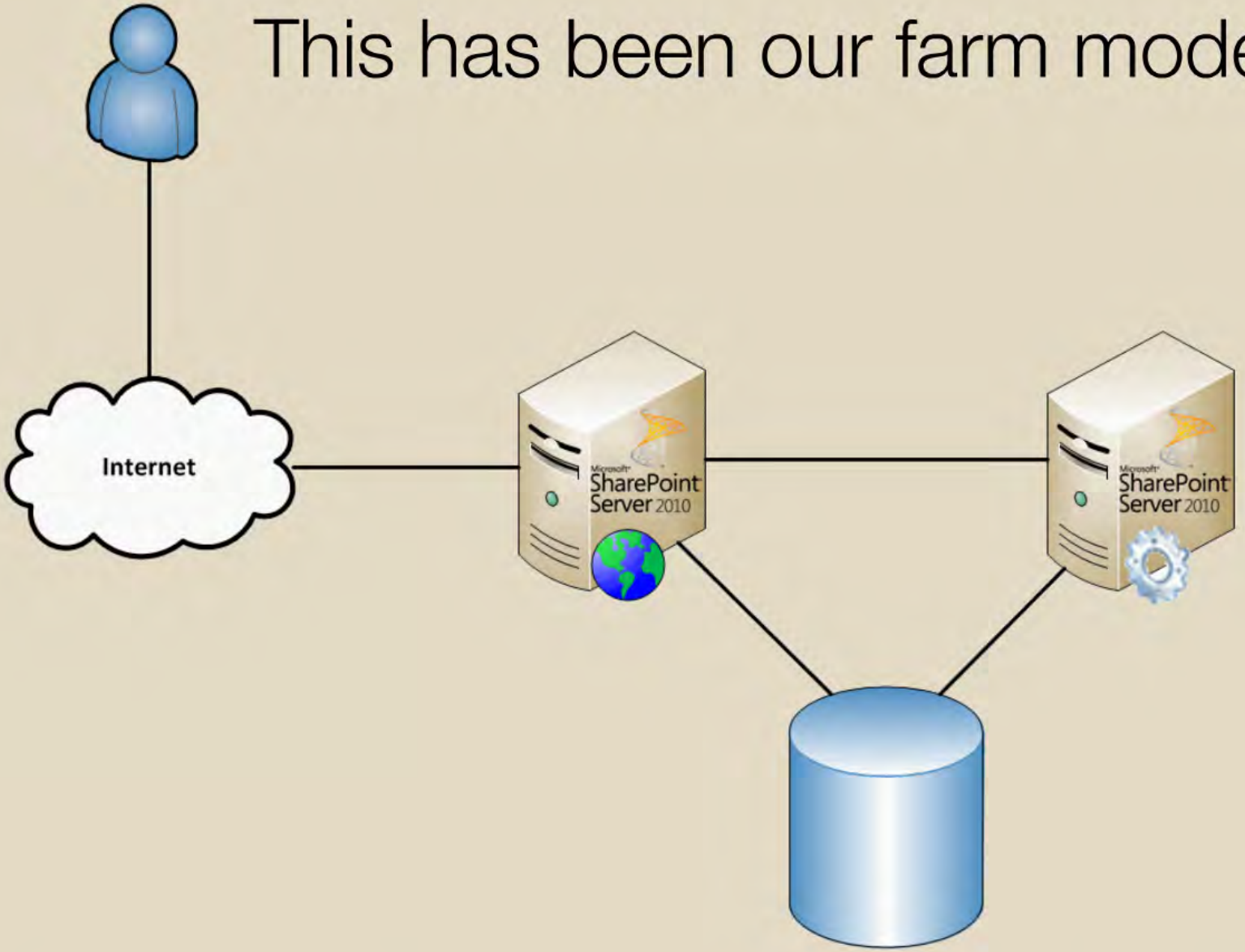
- relocate cache site collection to a dedicated DB
- increase cache size and expiration for Web applications housing static documents
- decrease cache size and expiration for Web applications housing dynamic or highly collaborative Office documents

- permissions to content DBs (service app acct)!

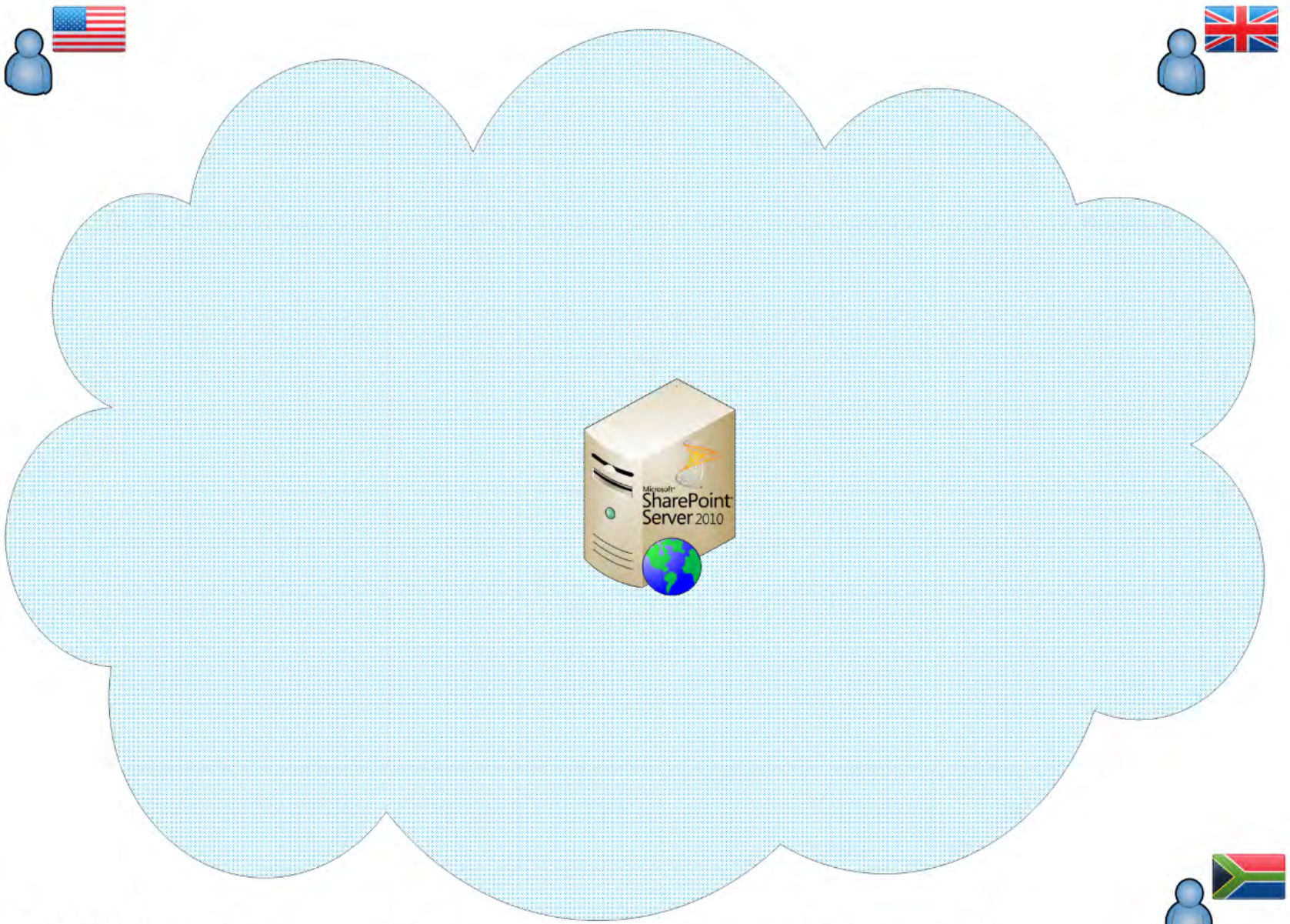
Caching's "cloudy" future

SharePoint in WAN environments

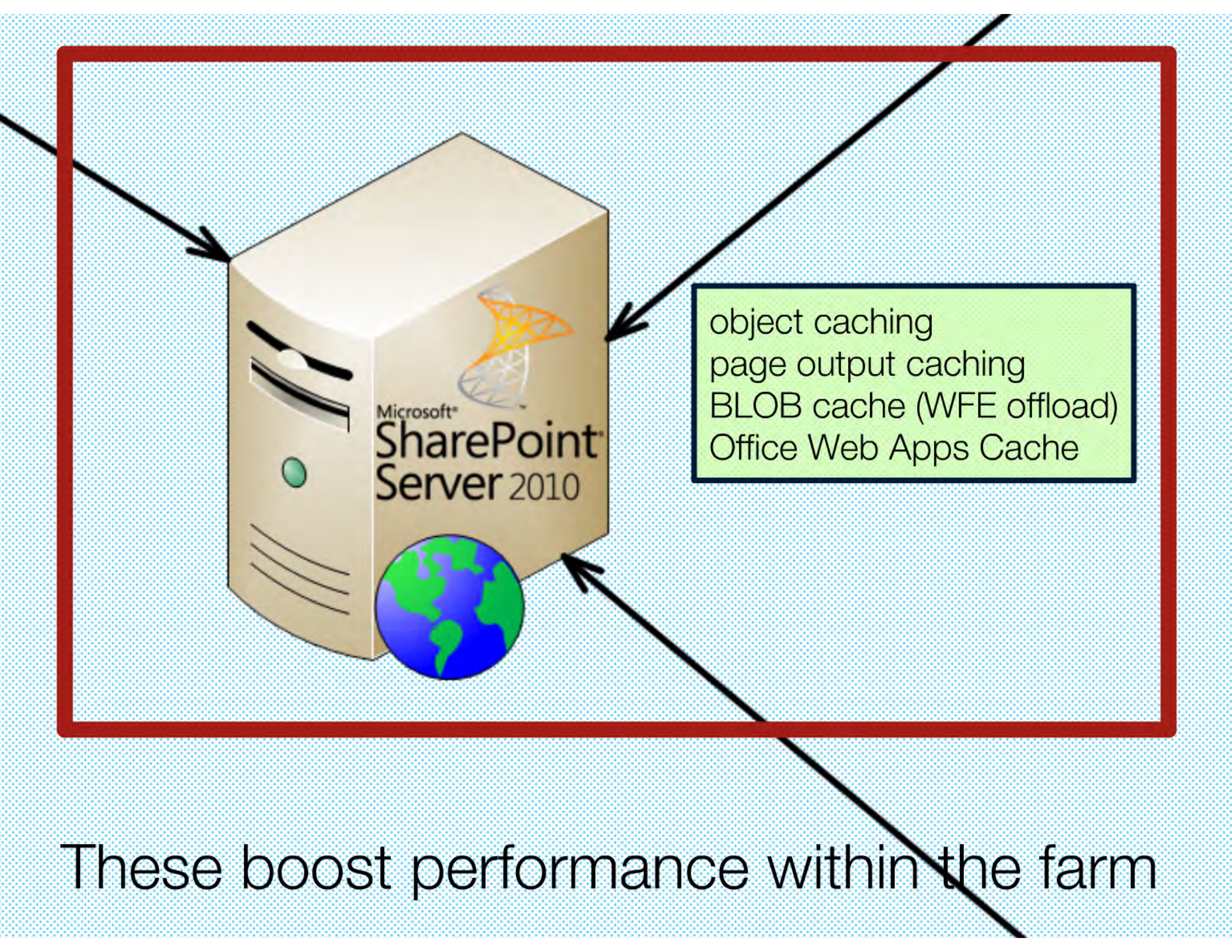
This has been our farm model



Primary focus: inside the farm

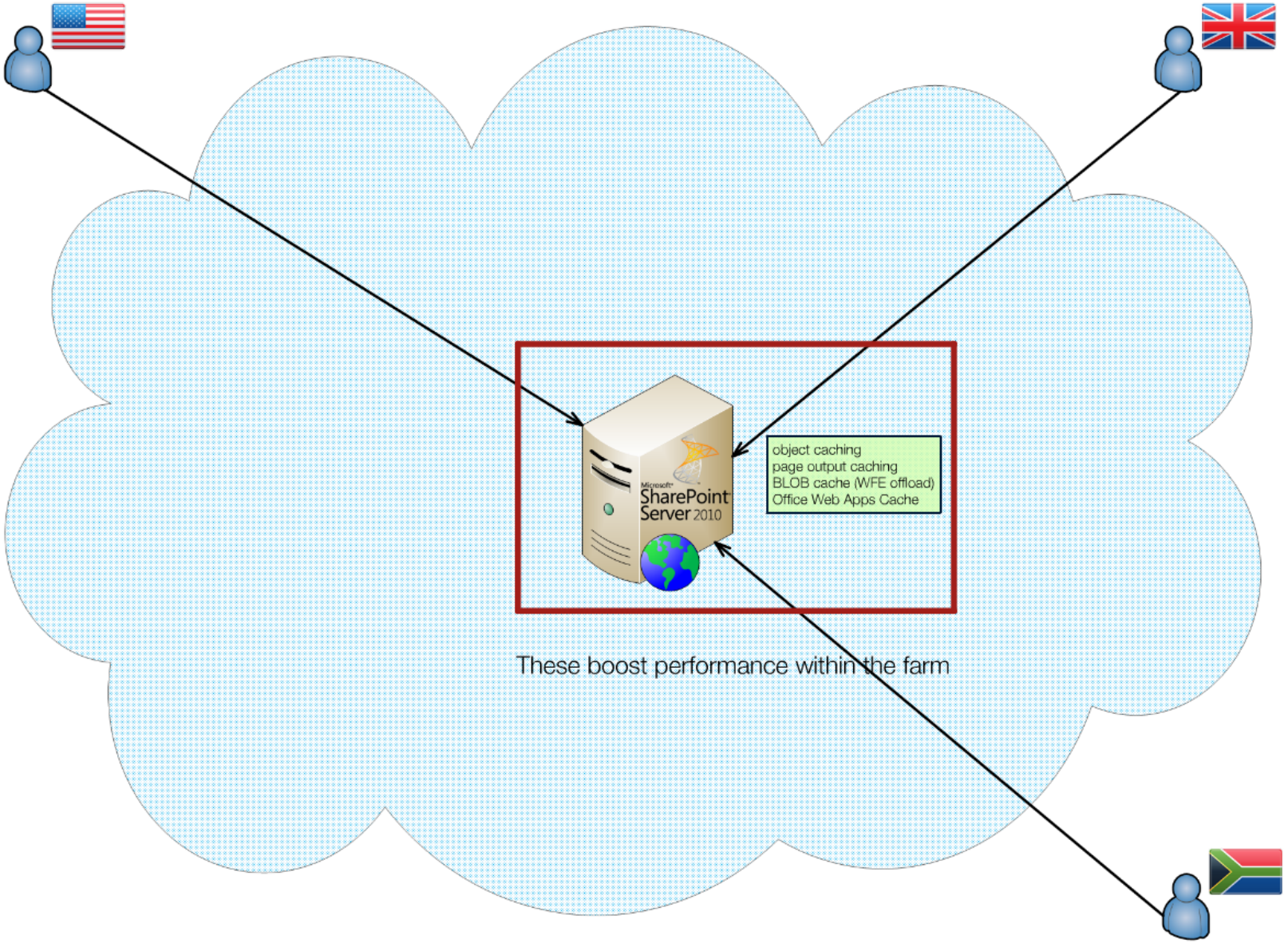


With the cloud, our attention needs to shift to outside the farm



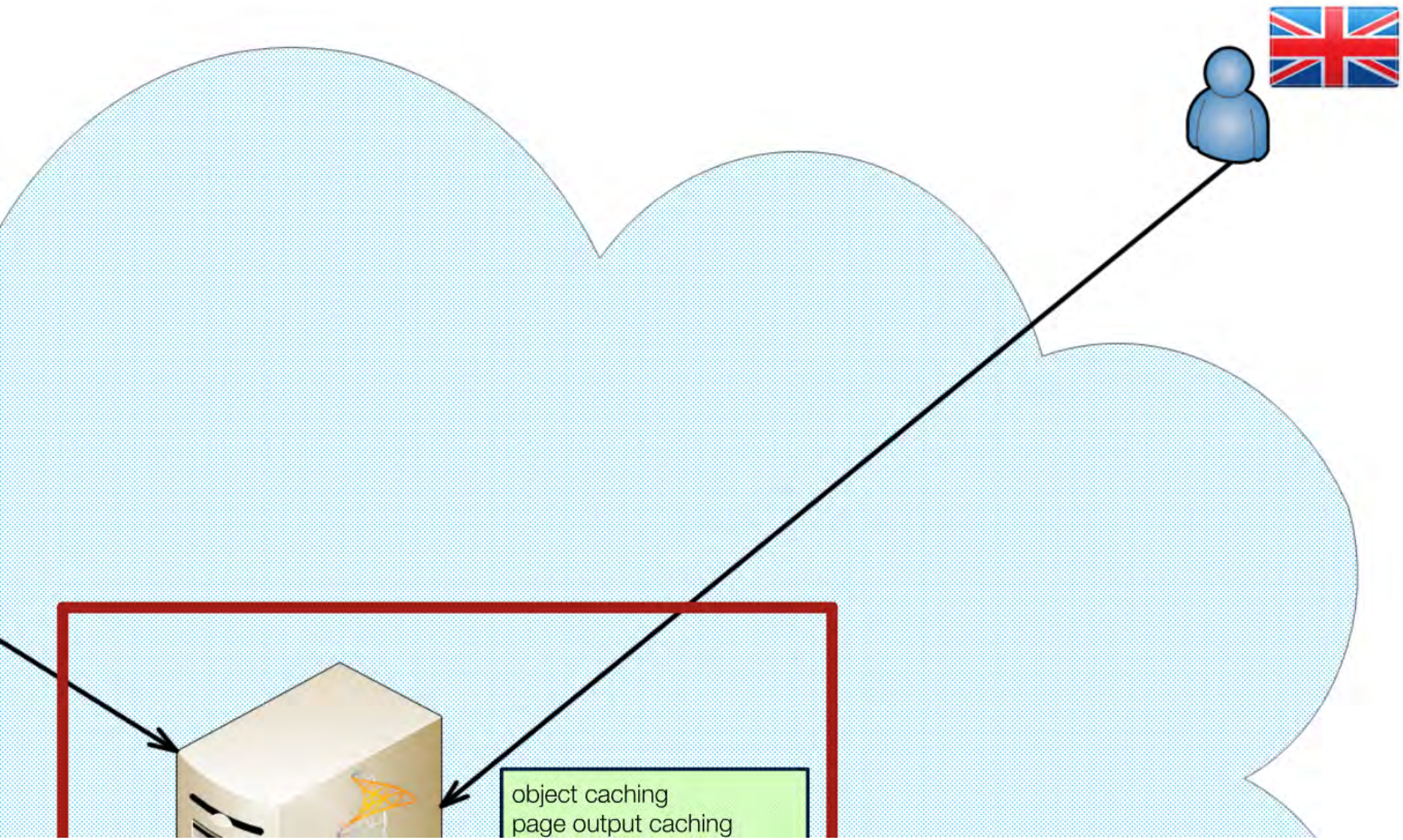
These boost performance within the farm

between client and farm



Performance challenges between clients and SharePoint farm are oftentimes more significant (and controllable) than those within the farm

Shift to focus on connections between client and farm



So, what are your options?

More importantly: what can you actually control?

Start with the mindset that data has a long way to travel ...

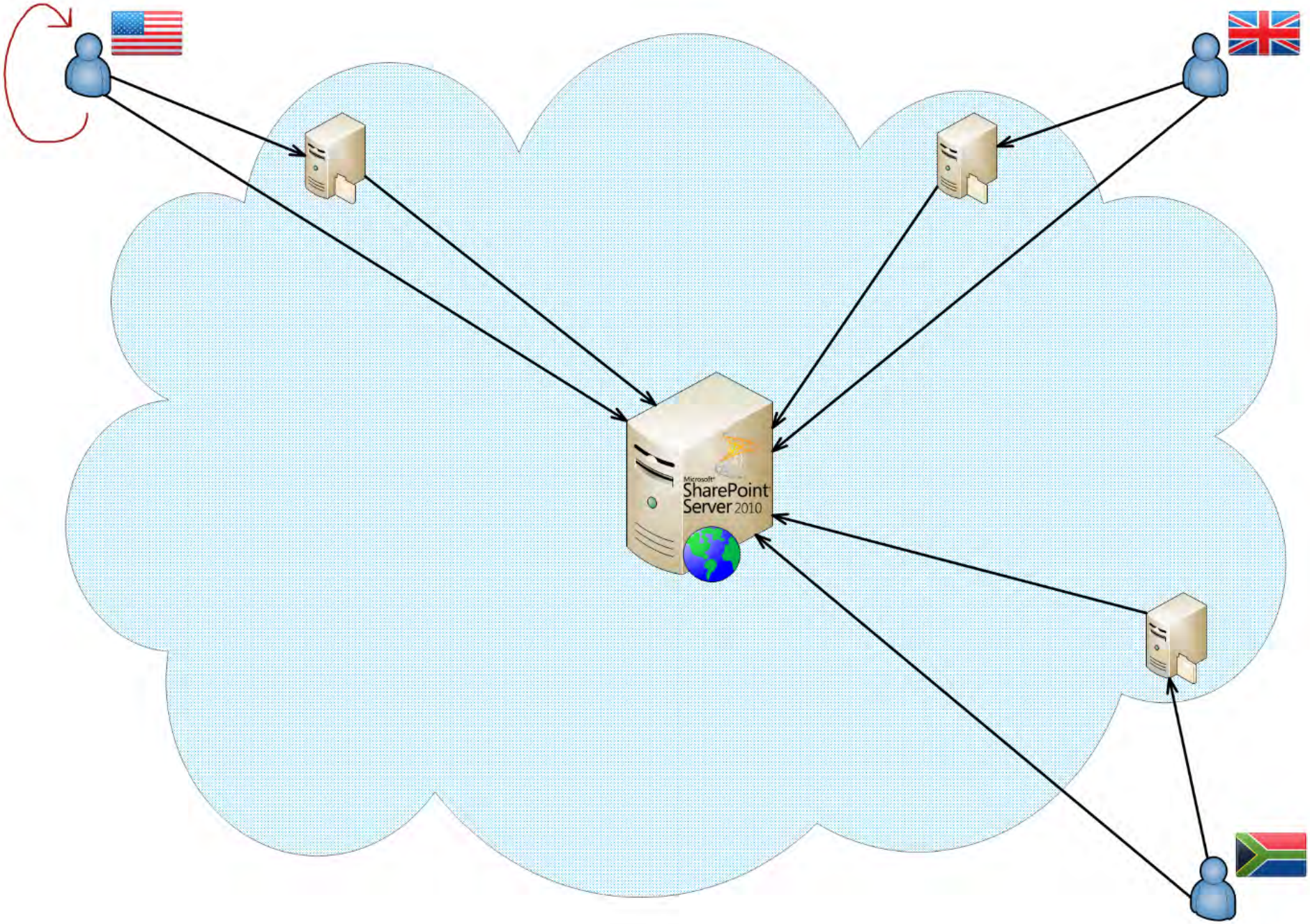
Your goal is to reduce the number of trips and make the existing ones shorter

"smaller" ≠ "shorter"

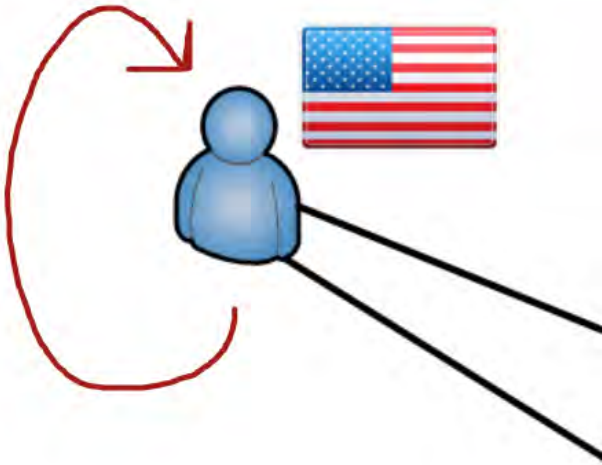
(size) (distance)

ber of
s shorter

- this is still a caching talk
- techniques like IIS compression, the use of CSS sprites, 3rd party tools (like Aptimize), etc., can also help but are beyond the scope of this session


Microsoft
SharePoint
Server 2010

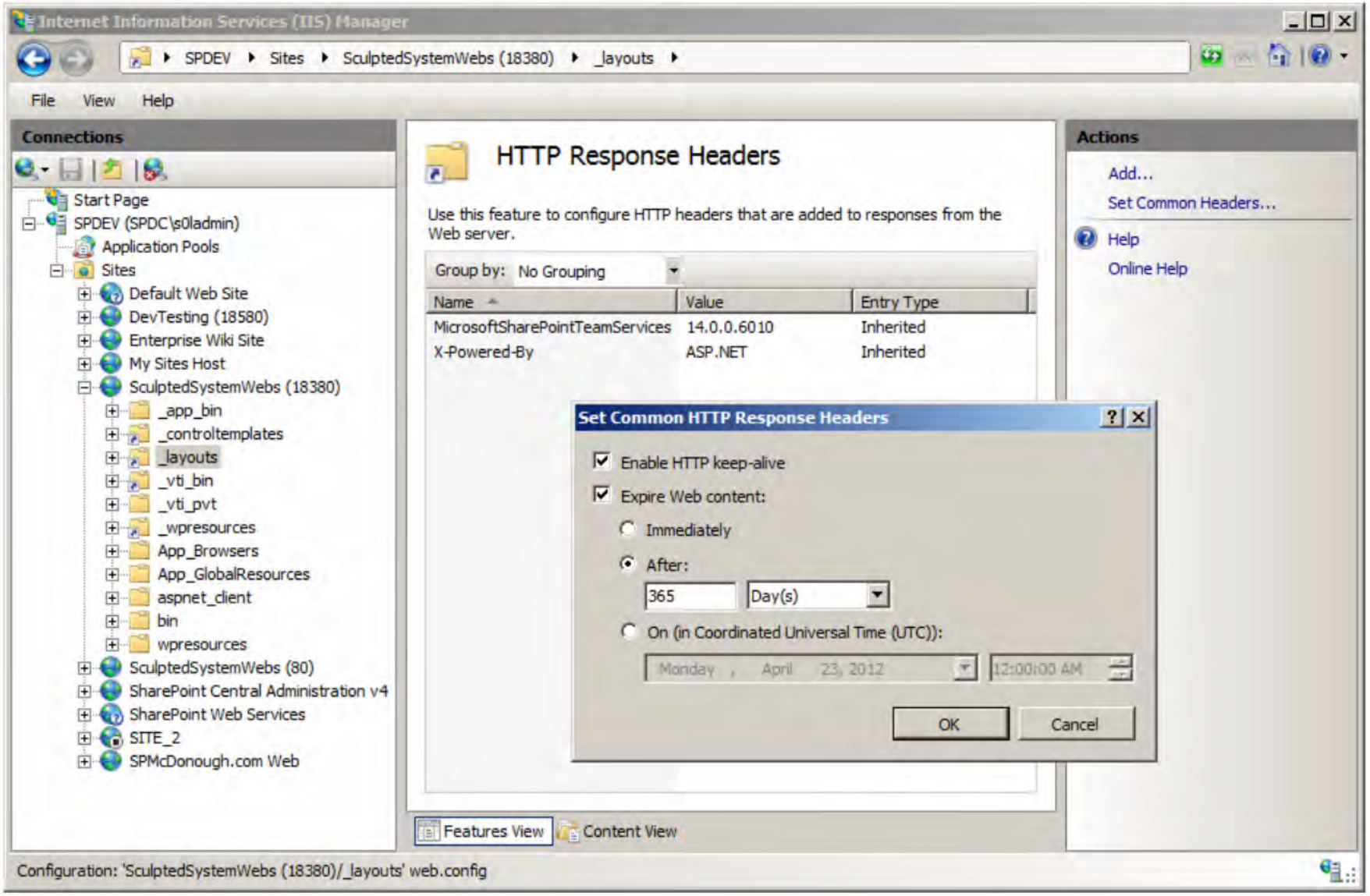
Reducing the number of trips

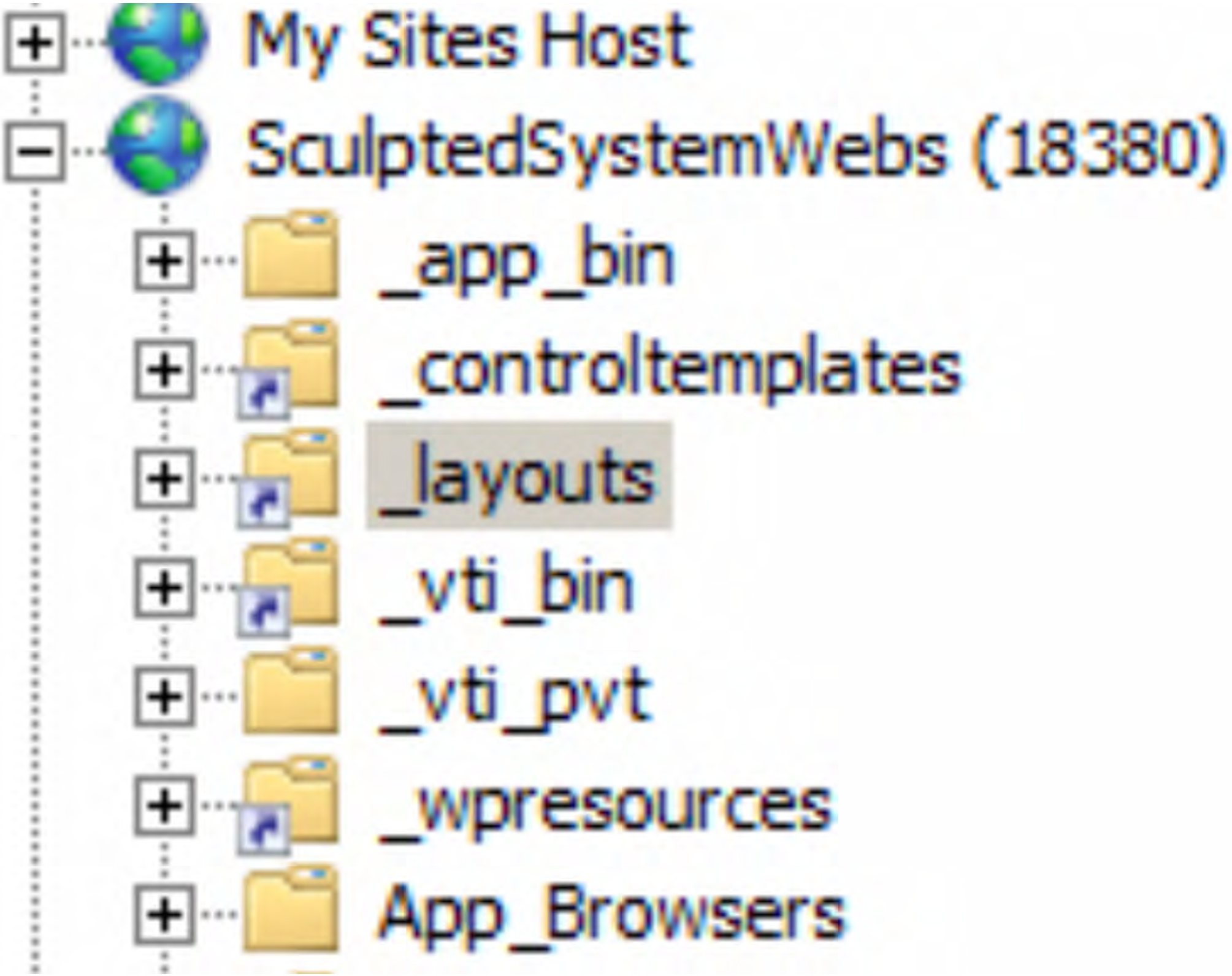


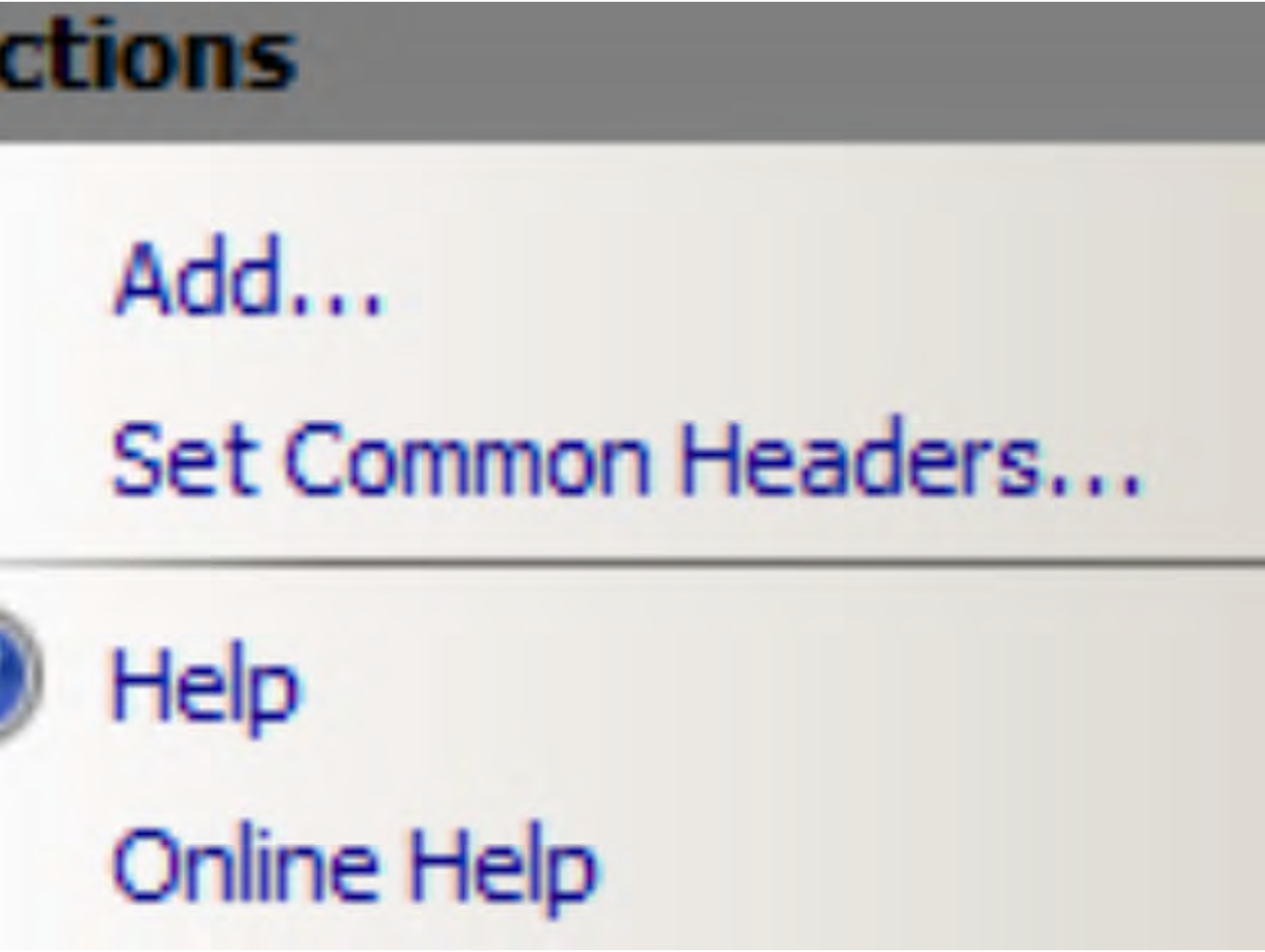
- cache files on the client
- accomplished with judicious use of the max-age attribute when leveraging the BLOB Cache

What about max-age for non-BLOB-cached items?

Hello, IIS Manager!

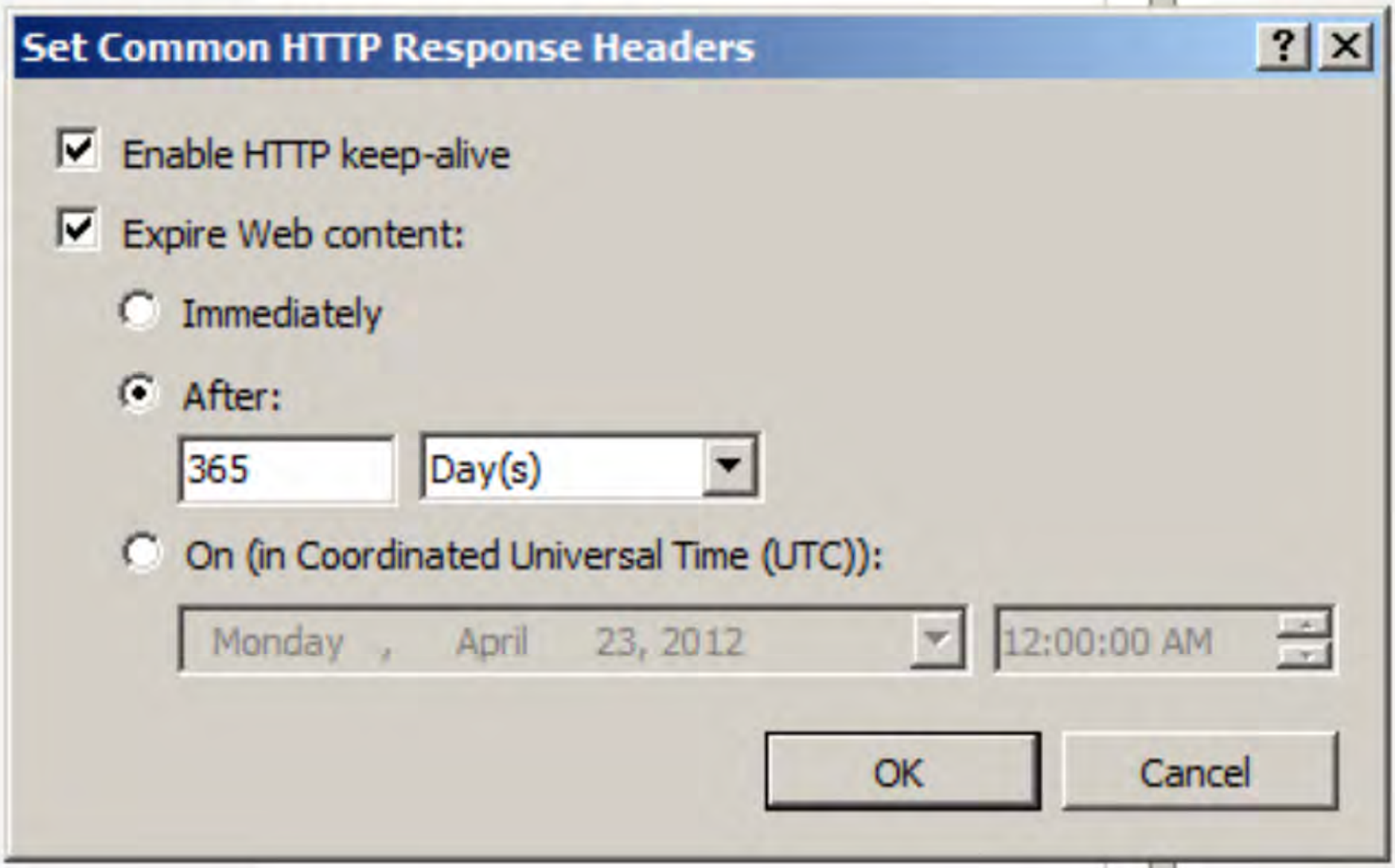



My Sites Host
SculptedSystemWebs (18380)
_app_bin
_controltemplates
_layouts
_vti_bin
_vti_pvt
_wpresources
App_Browsers

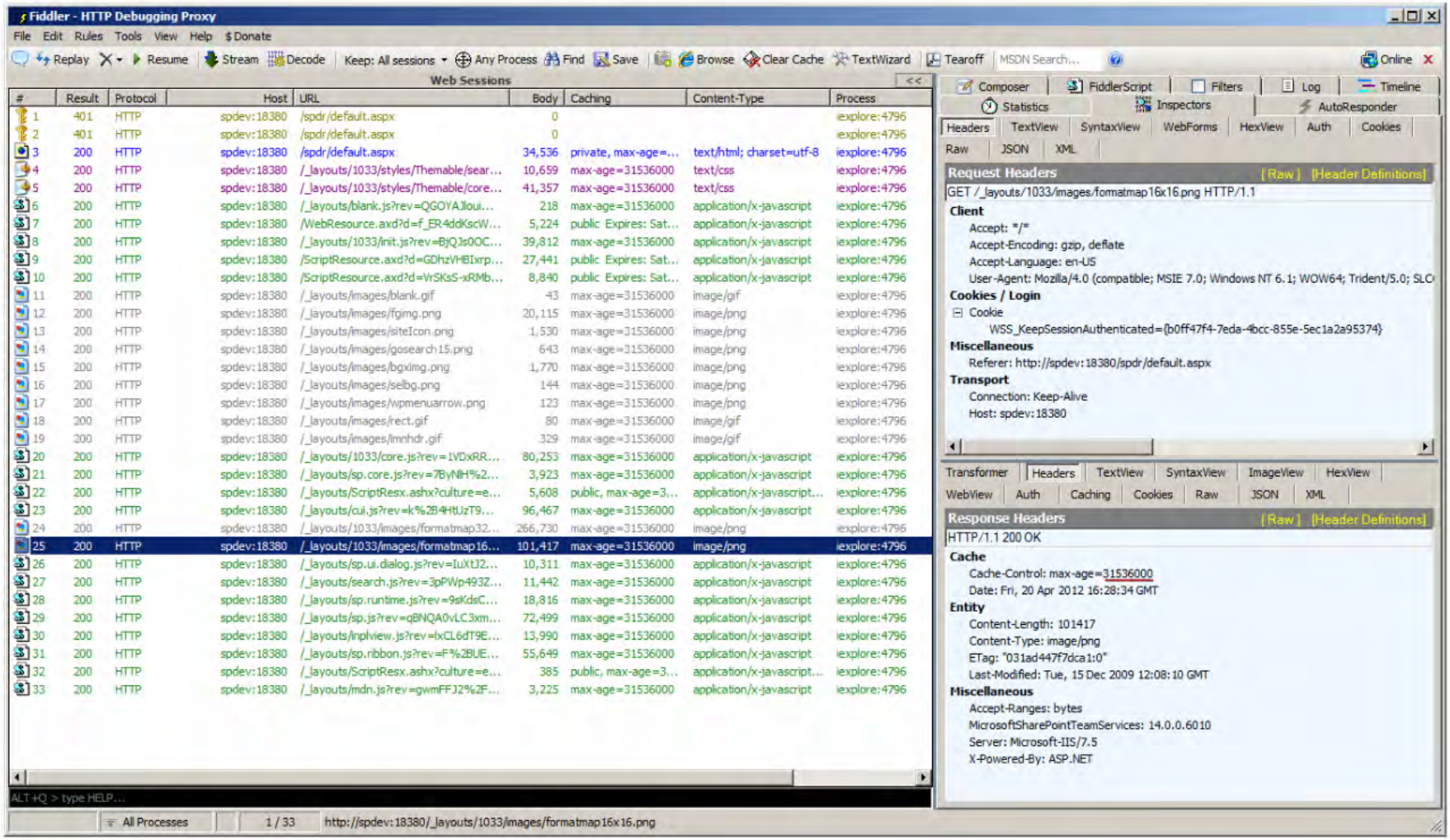

ctions
Add...
Set Common Headers...
Help
Online Help

harePointTeamServices 14.0.0.6010 Inherited

l-By ASP.NET Inherited



View Content View


Fiddler - HTTP Debugging Proxy
File Edit Rules Tools View Help $Donate
Replay Resume Stream Decode Keep: All sessions Any Process Find Save Browse Clear Cache TextWizard Tearoff MSDN Search... Online
Web Sessions
Result Protocol Host URL Body Caching Content-Type Process
1 401 HTTP spdev:18380 /spdr/default.aspx 0 iexplore:4796
2 401 HTTP spdev:18380 /spdr/default.aspx 0 iexplore:4796
3 200 HTTP spdev:18380 /spdr/default.aspx 34,536 private, max-age=... text/html; charset=utf-8 iexplore:4796
4 200 HTTP spdev:18380 /_layouts/1033/styles/Themable/sear... 10,659 max-age=31536000 text/css iexplore:4796
5 200 HTTP spdev:18380 /_layouts/1033/styles/Themable/core... 41,357 max-age=31536000 text/css iexplore:4796
6 200 HTTP spdev:18380 /_layouts/blank.js?rev=QGOYAJloui... 218 max-age=31536000 application/x-javascript iexplore:4796
7 200 HTTP spdev:18380 /WebResource.axd?d=f_ER4ddKscW... 5,224 public Expires: Sat... application/x-javascript iexplore:4796
8 200 HTTP spdev:18380 /_layouts/1033/init.js?rev=BjQJs0OC... 39,812 max-age=31536000 application/x-javascript iexplore:4796
9 200 HTTP spdev:18380 /ScriptResource.axd?d=GDhzVHBIxrp... 27,441 public Expires: Sat... application/x-javascript iexplore:4796
10 200 HTTP spdev:18380 /ScriptResource.axd?d=VrSKsS-xRMb... 8,840 public Expires: Sat... application/x-javascript iexplore:4796
11 200 HTTP spdev:18380 /_layouts/images/blank.gif 43 max-age=31536000 image/gif iexplore:4796
12 200 HTTP spdev:18380 /_layouts/images/fgimg.png 20,115 max-age=31536000 image/png iexplore:4796
13 200 HTTP spdev:18380 /_layouts/images/siteIcon.png 1,530 max-age=31536000 image/png iexplore:4796
14 200 HTTP spdev:18380 /_layouts/images/gosearch15.png 643 max-age=31536000 image/png iexplore:4796
15 200 HTTP spdev:18380 /_layouts/images/bgximg.png 1,770 max-age=31536000 image/png iexplore:4796
16 200 HTTP spdev:18380 /_layouts/images/selbg.png 144 max-age=31536000 image/png iexplore:4796
17 200 HTTP spdev:18380 /_layouts/images/wpmenuarrow.png 123 max-age=31536000 image/png iexplore:4796
18 200 HTTP spdev:18380 /_layouts/images/rect.gif 80 max-age=31536000 image/gif iexplore:4796
19 200 HTTP spdev:18380 /_layouts/images/lmnhdr.gif 329 max-age=31536000 image/gif iexplore:4796
20 200 HTTP spdev:18380 /_layouts/1033/core.js?rev=1VDxRR... 80,253 max-age=31536000 application/x-javascript iexplore:4796
21 200 HTTP spdev:18380 /_layouts/sp.core.js?rev=7ByNlH%2... 3,923 max-age=31536000 application/x-javascript iexplore:4796
22 200 HTTP spdev:18380 /_layouts/ScriptResx.ashx?culture=e... 5,608 public, max-age=3... application/x-javascript... iexplore:4796
23 200 HTTP spdev:18380 /_layouts/cui.js?rev=k%2B4HtUzT9... 96,467 max-age=31536000 application/x-javascript iexplore:4796
24 200 HTTP spdev:18380 /_layouts/1033/images/formatmap32... 266,730 max-age=31536000 image/png iexplore:4796
25 200 HTTP spdev:18380 /_layouts/1033/images/formatmap16... 101,417 max-age=31536000 image/png iexplore:4796
26 200 HTTP spdev:18380 /_layouts/sp.ui.dialog.js?rev=IuXtJ2... 10,311 max-age=31536000 application/x-javascript iexplore:4796
27 200 HTTP spdev:18380 /_layouts/search.js?rev=3pPWp493Z... 11,442 max-age=31536000 application/x-javascript iexplore:4796
28 200 HTTP spdev:18380 /_layouts/sp.runtime.js?rev=9sKdsC... 18,816 max-age=31536000 application/x-javascript iexplore:4796
29 200 HTTP spdev:18380 /_layouts/sp.js?rev=qBNQA0vLC3xm... 72,499 max-age=31536000 application/x-javascript iexplore:4796
30 200 HTTP spdev:18380 /_layouts/inplview.js?rev=lxCL6dT9E... 13,990 max-age=31536000 application/x-javascript iexplore:4796
31 200 HTTP spdev:18380 /_layouts/sp.ribbon.js?rev=F%2BUE... 55,649 max-age=31536000 application/x-javascript iexplore:4796
32 200 HTTP spdev:18380 /_layouts/ScriptResx.ashx?culture=e... 385 public, max-age=3... application/x-javascript... iexplore:4796
33 200 HTTP spdev:18380 /_layouts/mdn.js?rev=gwmFFJ2%2F... 3,225 max-age=31536000 application/x-javascript iexplore:4796
ALT+Q > type HELP...
All Processes 1 / 33 http://spdev:18380/_layouts/1033/images/formatmap16x16.png
Composer FiddlerScript Filters Log Timeline
Statistics Inspectors AutoResponder
Headers TextView SyntaxView WebForms HexView Auth Cookies
Raw JSON XML
Request Headers [Raw] [Header Definitions]
GET /_layouts/1033/images/formatmap16x16.png HTTP/1.1
Client
Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US
User-Agent: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 6.1; WOW64; Trident/5.0; SLC
Cookies / Login
Cookie
WSS_KeepSessionAuthenticated={b0ff47f4-7eda-4bcc-855e-5ec1a2a95374}
Miscellaneous
Referer: http://spdev:18380/spdr/default.aspx
Transport
Connection: Keep-Alive
Host: spdev:18380
Transformer Headers TextView SyntaxView ImageView HexView
WebView Auth Caching Cookies Raw JSON XML
Response Headers [Raw] [Header Definitions]
HTTP/1.1 200 OK
Cache
Cache-Control: max-age=31536000
Date: Fri, 20 Apr 2012 16:28:34 GMT
Entity
Content-Length: 101417
Content-Type: image/png
ETag: "031ad447f7dca1:0"
Last-Modified: Tue, 15 Dec 2009 12:08:10 GMT
Miscellaneous
Accept-Ranges: bytes
MicrosoftSharePointTeamServices: 14.0.0.6010
Server: Microsoft-IIS/7.5
X-Powered-By: ASP.NET

spdev:18380	/WebResource.axd?d=f_ER4ddKscW...	5,224	public Expires: Sat...
spdev:18380	/_layouts/1033/init.js?rev=BjQJs0OC...	39,812	max-age=31536000
spdev:18380	/ScriptResource.axd?d=GDhzVHBIxrp...	27,441	public Expires: Sat...
spdev:18380	/ScriptResource.axd?d=VrSKsS-xRMb...	8,840	public Expires: Sat...
spdev:18380	/_layouts/images/blank.gif	43	max-age=31536000
spdev:18380	/_layouts/images/fgimg.png	20,115	max-age=31536000
spdev:18380	/_layouts/images/siteIcon.png	1,530	max-age=31536000
spdev:18380	/_layouts/images/gosearch15.png	643	max-age=31536000
spdev:18380	/_layouts/images/bgximg.png	1,770	max-age=31536000
spdev:18380	/_layouts/images/selbg.png	144	max-age=31536000
spdev:18380	/_layouts/images/wpmenuarrow.png	123	max-age=31536000
spdev:18380	/_layouts/images/rect.gif	80	max-age=31536000
spdev:18380	/_layouts/images/imnhdr.gif	329	max-age=31536000
spdev:18380	/_layouts/1033/core.js?rev=1VDxRR...	80,253	max-age=31536000
spdev:18380	/_layouts/sp.core.js?rev=7ByNlH%2...	3,923	max-age=31536000
spdev:18380	/_layouts/ScriptResx.ashx?culture=e...	5,608	public, max-age=3...
spdev:18380	/_layouts/cui.js?rev=k%2B4HtUzT9...	96,467	max-age=31536000
spdev:18380	/_layouts/1033/images/formatmap32...	266,730	max-age=31536000
spdev:18380	/_layouts/1033/images/formatmap16...	101,417	max-age=31536000
spdev:18380	/_layouts/sp.ui.dialog.js?rev=IuXtJ2...	10,311	max-age=31536000

WebView | Auth | Caching | Cookies | Raw | JSON | XML

Response Headers

[Raw] [Header Definit

HTTP/1.1 200 OK

Cache

Cache-Control: max-age=31536000

Date: Fri, 20 Apr 2012 16:28:34 GMT

Entity

Content-Length: 101417

Content-Type: image/png

ETag: "031ad447f7dca1:0"

Last-Modified: Tue, 15 Dec 2009 12:08:10 GMT

Miscellaneous

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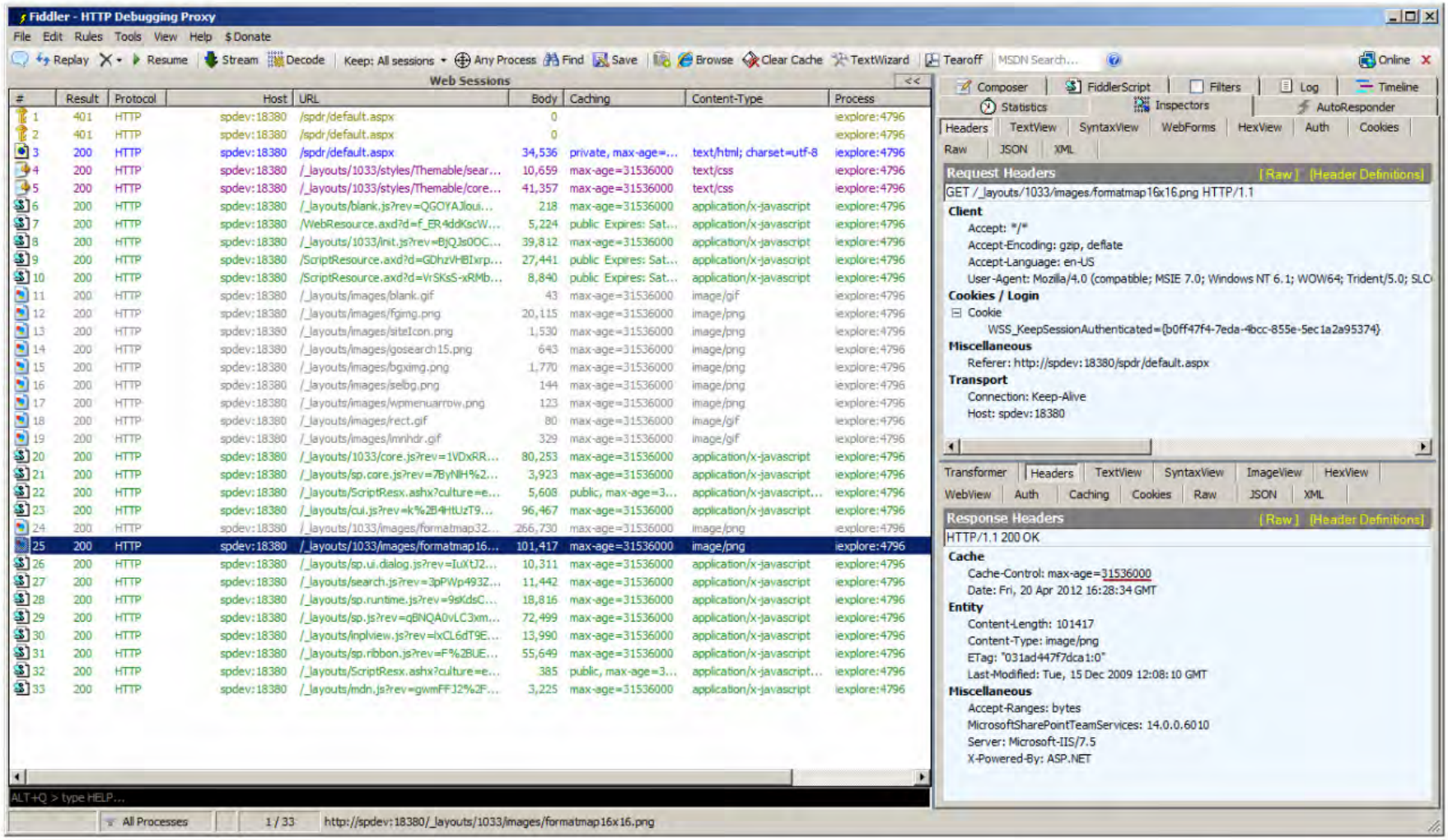
X-Powered-By: ASP.NET



- All _layouts items have max-age values set
- 31536000 = 365 * 24 * 60 * 60

You can obviously control this behavior

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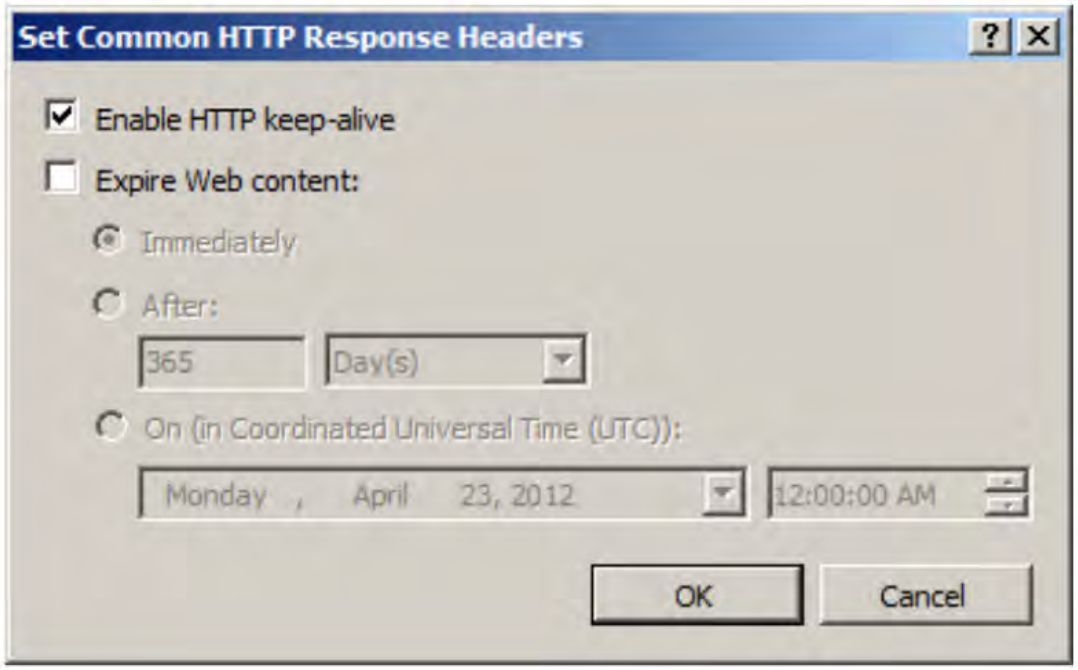

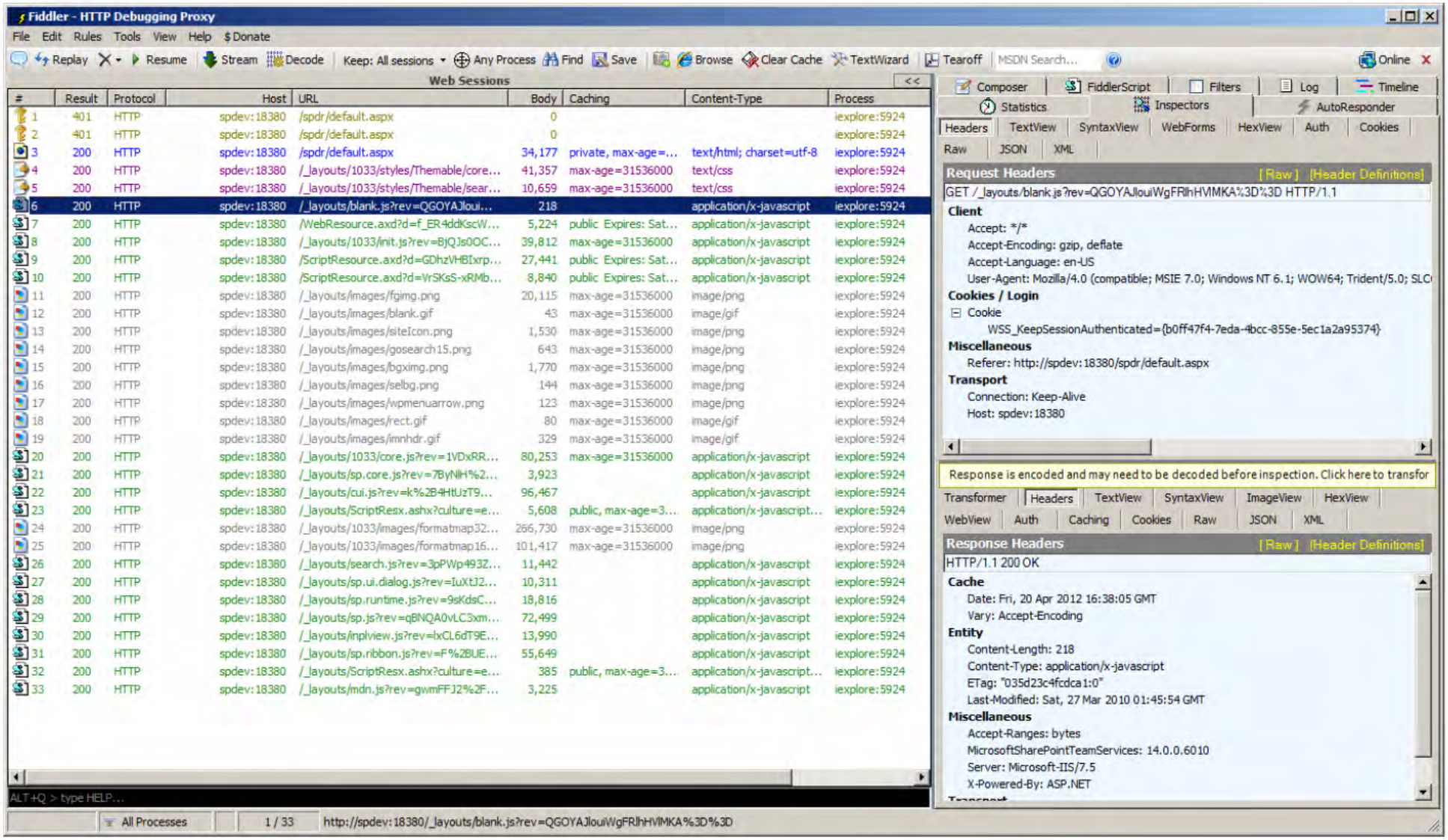
Fiddler - HTTP Debugging Proxy
File Edit Rules Tools View Help $Donate
Replay Resume Stream Decode Keep: All sessions Any Process Find Save Browse Clear Cache TextWizard Tearoff MSDN Search... Online
Web Sessions
Result Protocol Host URL Body Caching Content-Type Process
1 401 HTTP spdev:18380 /spdr/default.aspx 0 iexplore:5924
2 401 HTTP spdev:18380 /spdr/default.aspx 0 iexplore:5924
3 200 HTTP spdev:18380 /spdr/default.aspx 34,177 private, max-age=... text/html; charset=utf-8 iexplore:5924
4 200 HTTP spdev:18380 /_layouts/1033/styles/Themable/core... 41,357 max-age=31536000 text/css iexplore:5924
5 200 HTTP spdev:18380 /_layouts/1033/styles/Themable/sear... 10,659 max-age=31536000 text/css iexplore:5924
6 200 HTTP spdev:18380 /_layouts/blank.js?rev=QGOYAJlou... 218 application/x-javascript iexplore:5924
7 200 HTTP spdev:18380 /WebResource.axd?d=f_ER4ddKscW... 5,224 public Expires: Sat... application/x-javascript iexplore:5924
8 200 HTTP spdev:18380 /_layouts/1033/init.js?rev=BjQJs0OC... 39,812 max-age=31536000 application/x-javascript iexplore:5924
9 200 HTTP spdev:18380 /ScriptResource.axd?d=GDhzVHBIxrp... 27,441 public Expires: Sat... application/x-javascript iexplore:5924
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17 200 HTTP spdev:18380 /_layouts/images/wpmenuarrow.png 123 max-age=31536000 image/png iexplore:5924
18 200 HTTP spdev:18380 /_layouts/images/rect.gif 80 max-age=31536000 image/gif iexplore:5924
19 200 HTTP spdev:18380 /_layouts/images/imnhdr.gif 329 max-age=31536000 image/gif iexplore:5924
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23 200 HTTP spdev:18380 /_layouts/ScriptResx.ashx?culture=e... 5,608 public, max-age=3... application/x-javascript... iexplore:5924
24 200 HTTP spdev:18380 /_layouts/1033/images/formatmap32... 266,730 max-age=31536000 image/png iexplore:5924
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26 200 HTTP spdev:18380 /_layouts/search.js?rev=3pPWp493Z... 11,442 application/x-javascript iexplore:5924
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28 200 HTTP spdev:18380 /_layouts/sp.runtime.js?rev=9sKdsC... 18,816 application/x-javascript iexplore:5924
29 200 HTTP spdev:18380 /_layouts/sp.js?rev=qBNQA0vLC3xm... 72,499 application/x-javascript iexplore:5924
30 200 HTTP spdev:18380 /_layouts/inplview.js?rev=lxCL6dT9E... 13,990 application/x-javascript iexplore:5924
31 200 HTTP spdev:18380 /_layouts/sp.ribbon.js?rev=F%2BUE... 55,649 application/x-javascript iexplore:5924
32 200 HTTP spdev:18380 /_layouts/ScriptResx.ashx?culture=e... 385 public, max-age=3... application/x-javascript... iexplore:5924
33 200 HTTP spdev:18380 /_layouts/mdn.js?rev=gwmFFJ2%2F... 3,225 application/x-javascript iexplore:5924
ALT+Q > type HELP...
All Processes 1 / 33 http://spdev:18380/_layouts/blank.js?rev=QGOYAJlouiWgFRlhHVlMKA%3D%3D
Composer FiddlerScript Filters Log Timeline
Statistics Inspectors AutoResponder
Headers TextView SyntaxView WebForms HexView Auth Cookies
Raw JSON XML
Request Headers [Raw] [Header Definitions]
GET /_layouts/blank.js?rev=QGOYAJlouiWgFRlhHVlMKA%3D%3D HTTP/1.1
Client
Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US
User-Agent: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 6.1; WOW64; Trident/5.0; SLC
Cookies / Login
Cookie
WSS_KeepSessionAuthenticated={b0ff47f4-7eda-4bcc-855e-5ec1a2a95374}
Miscellaneous
Referer: http://spdev:18380/spdr/default.aspx
Transport
Connection: Keep-Alive
Host: spdev:18380
Response is encoded and may need to be decoded before inspection. Click here to transfor
Transformer Headers TextView SyntaxView ImageView HexView
WebView Auth Caching Cookies Raw JSON XML
Response Headers [Raw] [Header Definitions]
HTTP/1.1 200 OK
Cache
Date: Fri, 20 Apr 2012 16:38:05 GMT
Vary: Accept-Encoding
Entity
Content-Length: 218
Content-Type: application/x-javascript
ETag: "035d23c4fcdca1:0"
Last-Modified: Sat, 27 Mar 2010 01:45:54 GMT
Miscellaneous
Accept-Ranges: bytes
MicrosoftSharePointTeamServices: 14.0.0.6010
Server: Microsoft-IIS/7.5
X-Powered-By: ASP.NET

criptResource.axd?d=GDhzVHBIxrp...	27,441	public Expires: Sat...	application/x-javas
criptResource.axd?d=VrSKsS-xRMb...	8,840	public Expires: Sat...	application/x-javas
ayouts/images/fgimg.png	20,115	max-age=31536000	image/png
ayouts/images/blank.gif	43	max-age=31536000	image/gif
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ayouts/images/gosearch15.png	643	max-age=31536000	image/png
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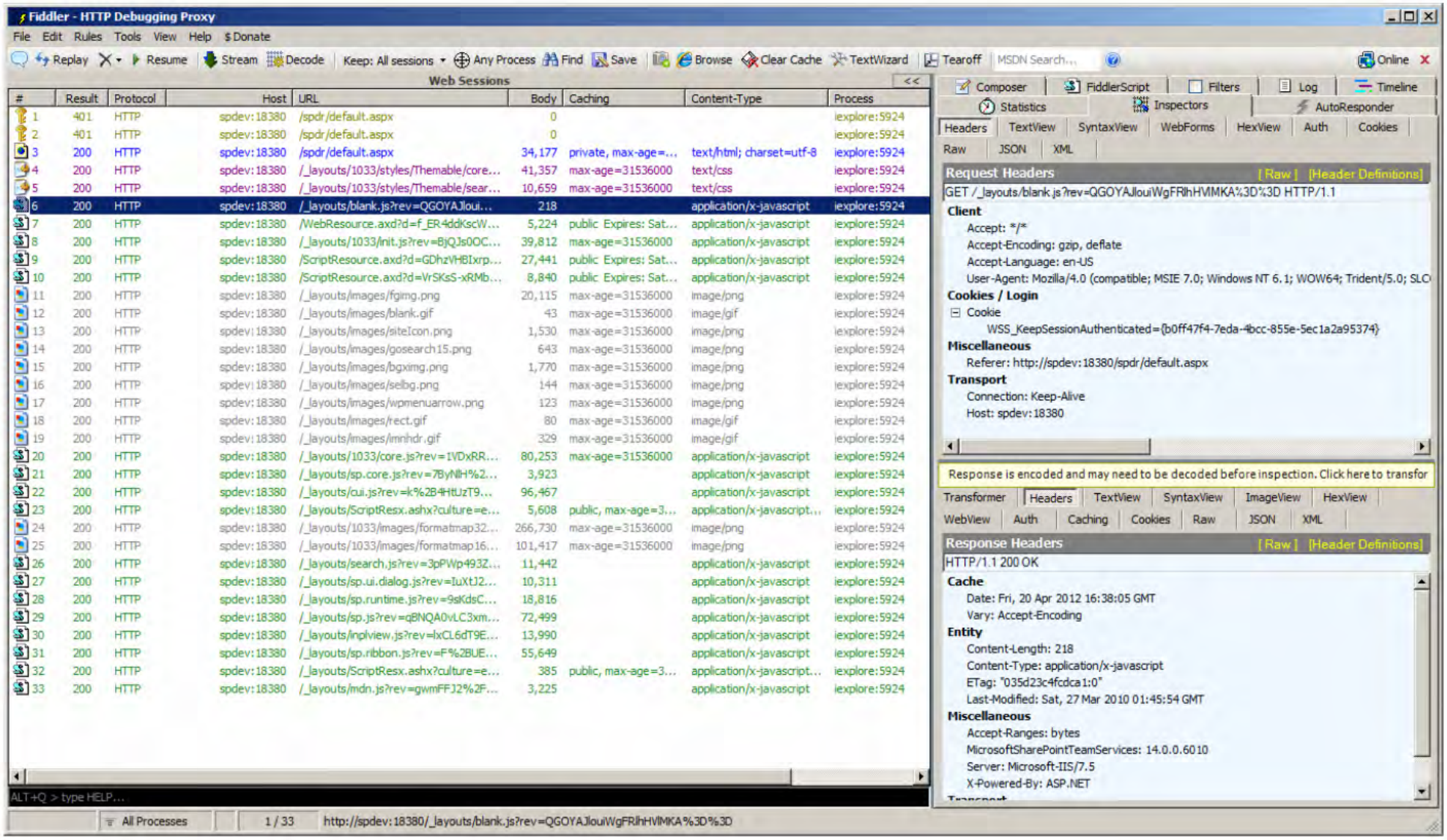
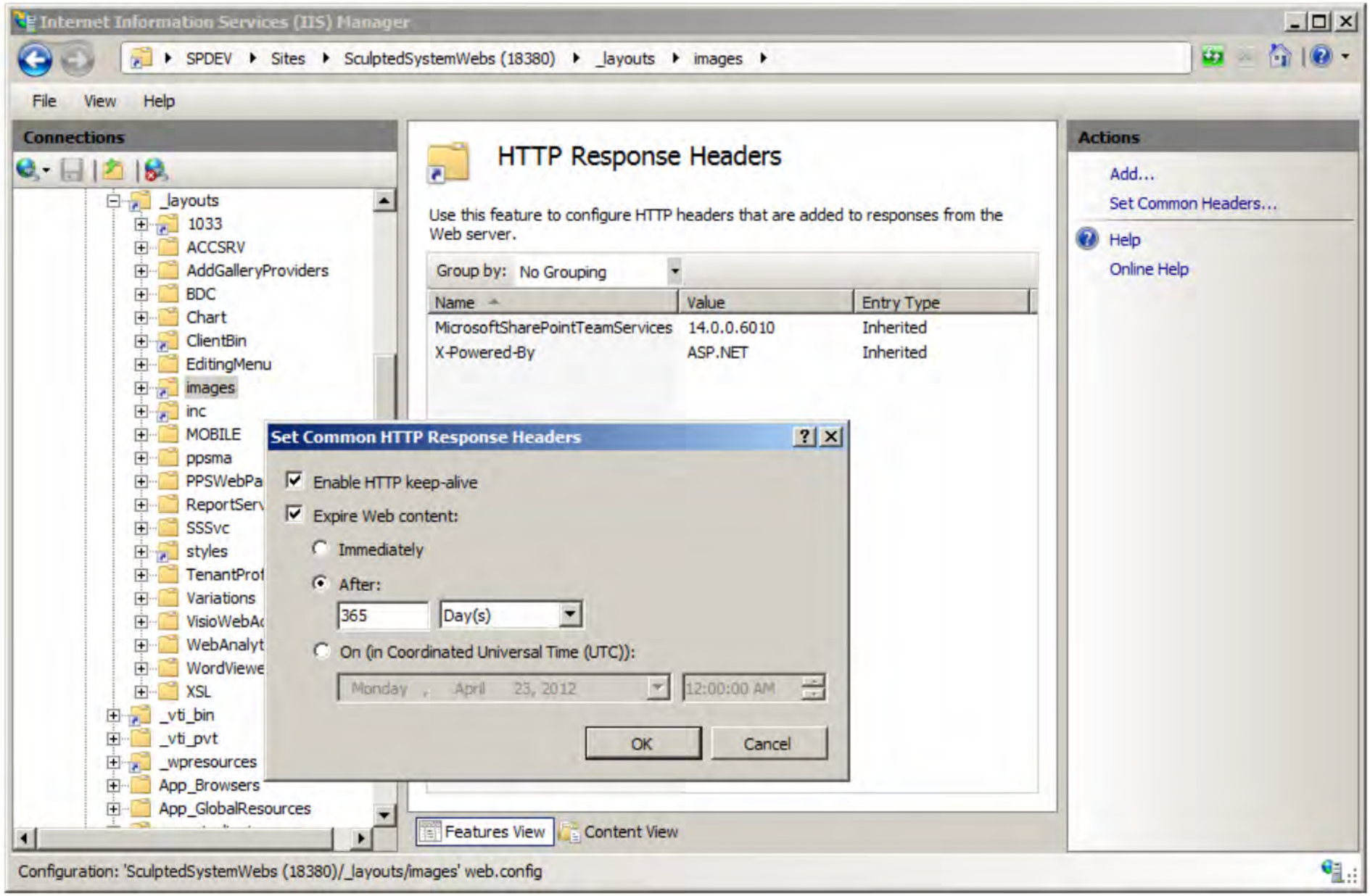
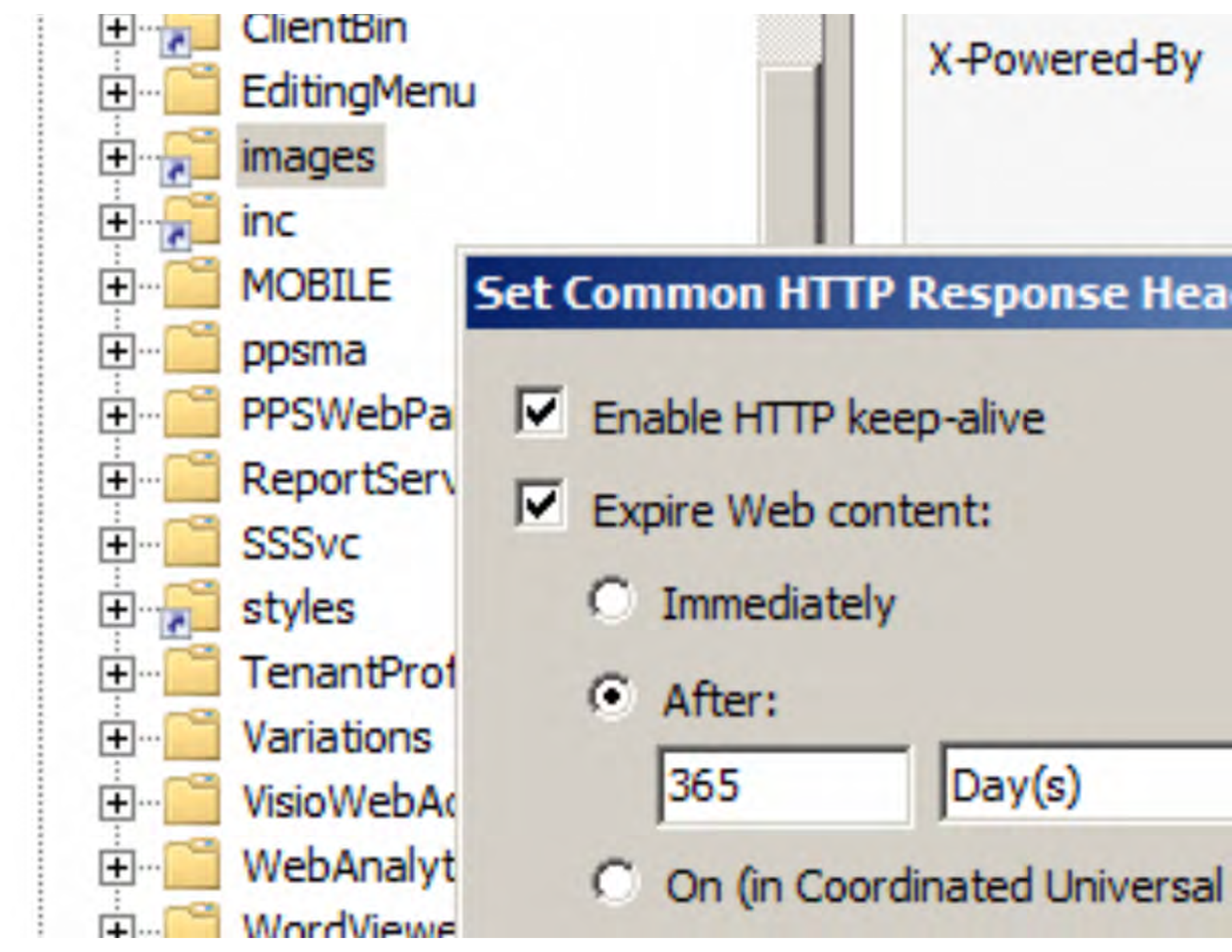
ayouts/images/selbg.png	144	max-age=31536000	image/png
ayouts/images/wpmenuarrow.png	123	max-age=31536000	image/png
ayouts/images/rect.gif	80	max-age=31536000	image/gif
ayouts/images/imnhdr.gif	329	max-age=31536000	image/gif
ayouts/1033/core.js?rev=1VDxRR...	80,253	max-age=31536000	application/x-javas
ayouts/sp.core.js?rev=7ByNlH%2...	3,923		application/x-javas
ayouts/cui.js?rev=k%2B4HtUzT9...	96,467		application/x-javas
ayouts/ScriptResx.ashx?culture=e...	5,608	public, max-age=3...	application/x-javas
ayouts/1033/images/formatmap32...	266,730	max-age=31536000	image/png
ayouts/1033/images/formatmap16...	101,417	max-age=31536000	image/png
ayouts/search.js?rev=3pPWp493Z...	11,442		application/x-javas
ayouts/sp.ui.dialog.js?rev=IuXtJ2...	10,311		application/x-javas

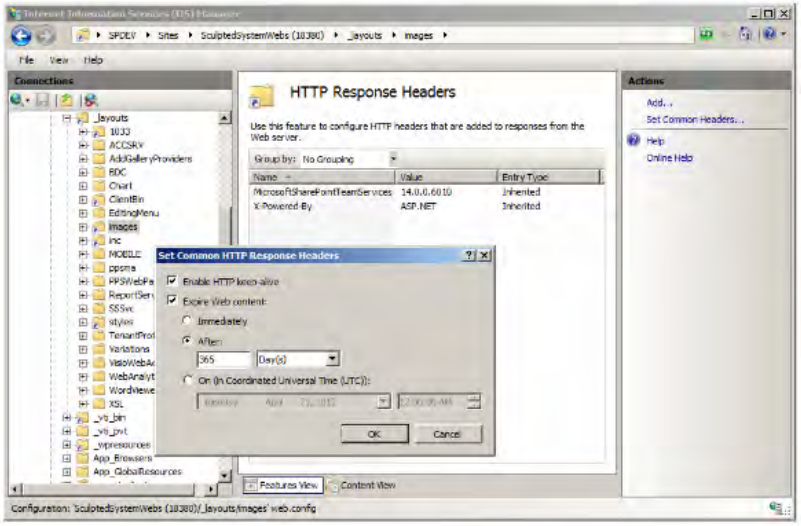
Wait ... why are we still seeing max-age in-effect?




Internet Information Services (IIS) Manager
SPDEV ▸ Sites ▸ SculptedSystemWebs (18380) ▸ _layouts ▸ images ▸
File View Help
Connections
_layouts
1033
ACCSRV
AddGalleryProviders
BDC
Chart
ClientBin
EditingMenu
images
inc
MOBILE
ppsma
PPSWebPa
ReportServ
SSSvc
styles
TenantProf
Variations
VisioWebAc
WebAnalyt
WordViewe
XSL
_vti_bin
_vti_pvt
_wpresources
App_Browsers
App_GlobalResources
HTTP Response Headers
Use this feature to configure HTTP headers that are added to responses from the Web server.
Group by: No Grouping
Name
Value
Entry Type
MicrosoftSharePointTeamServices
14.0.0.6010
Inherited
X-Powered-By
ASP.NET
Inherited
Set Common HTTP Response Headers
Enable HTTP keep-alive
Expire Web content:
Immediately
After:
365
Day(s)
On (in Coordinated Universal Time (UTC)):
Monday , April 23, 2012
12:00:00 AM
OK
Cancel
Actions
Add...
Set Common Headers...
Help
Online Help
Features View
Content View
Configuration: 'SculptedSystemWebs (18380)/_layouts/images' web.config

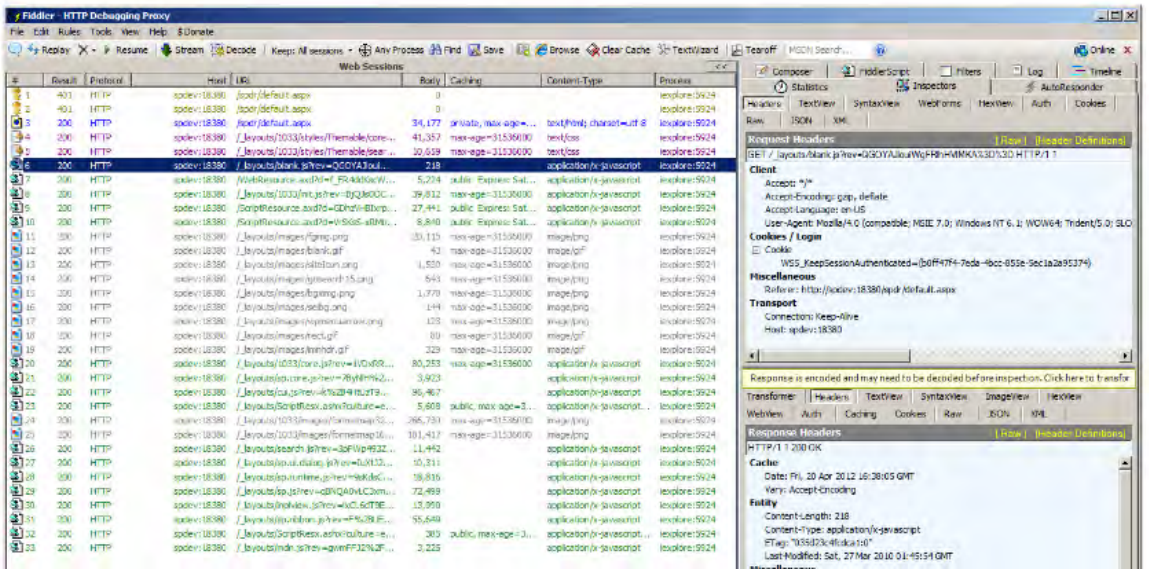

ClientBin
EditingMenu
images
inc
MOBILE
ppsma
PPSWebPa
ReportServ
SSSvc
styles
TenantProf
Variations
VisioWebAc
WebAnalyt
X-Powered-By
Set Common HTTP Response Hea
Enable HTTP keep-alive
Expire Web content:
Immediately
After:
365
Day(s)
On (in Coordinated Universal

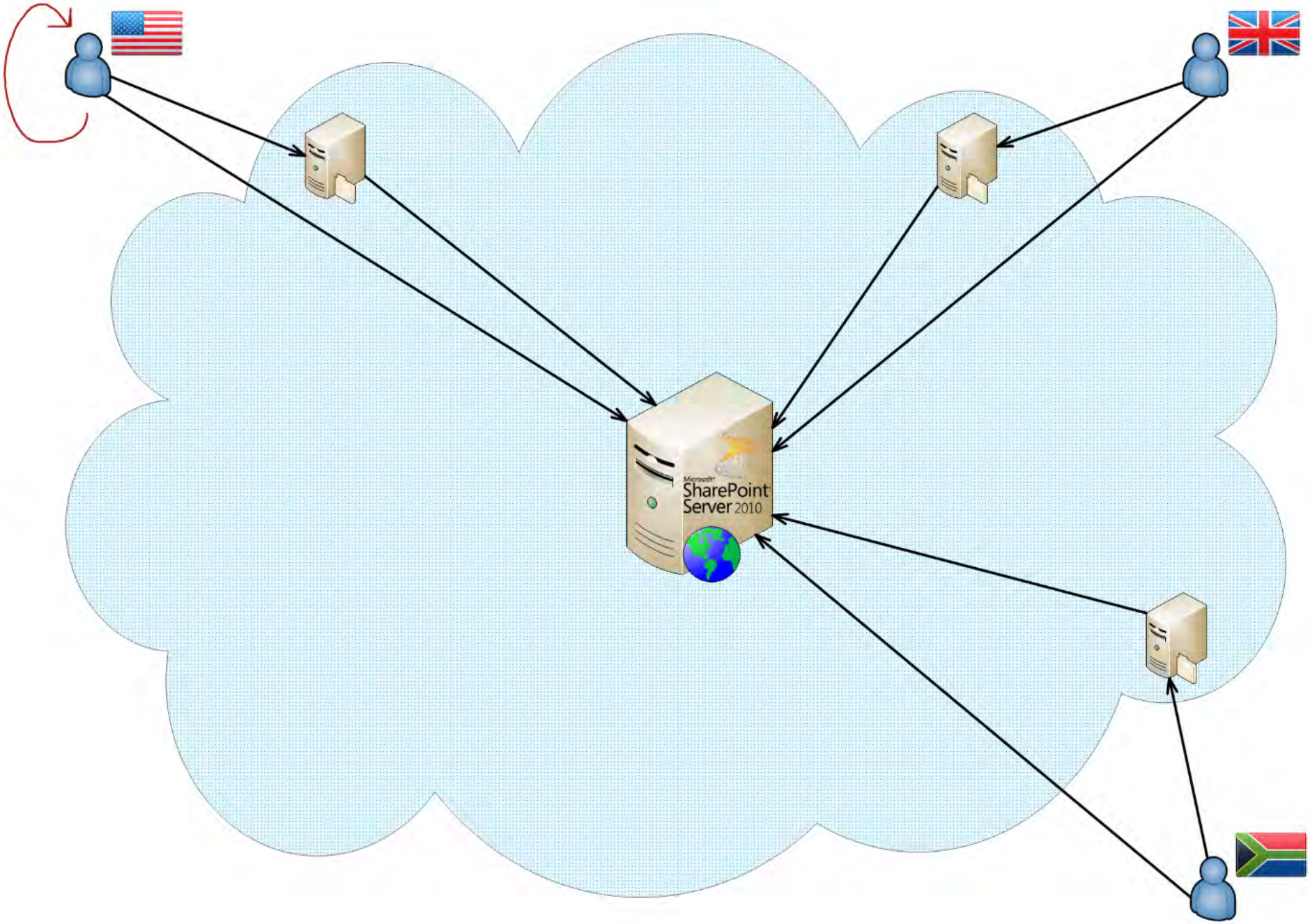
Note: these max-age values are not public!

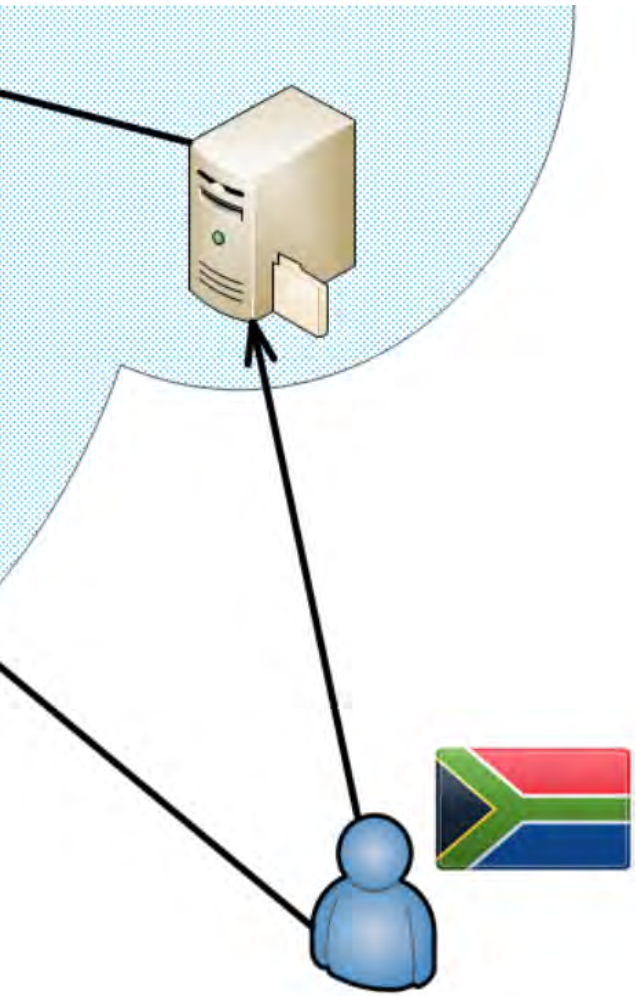


Response headers can vary for subdirectories

Wait ... why are we still seeing max-age in-effect?




Microsoft
SharePoint
Server 2010



Making trips shorter

- content delivery networks (such as Akamai's Dynamic Site Accelerator)
- Serve cacheable resources from "local" servers

CDNs at a high level

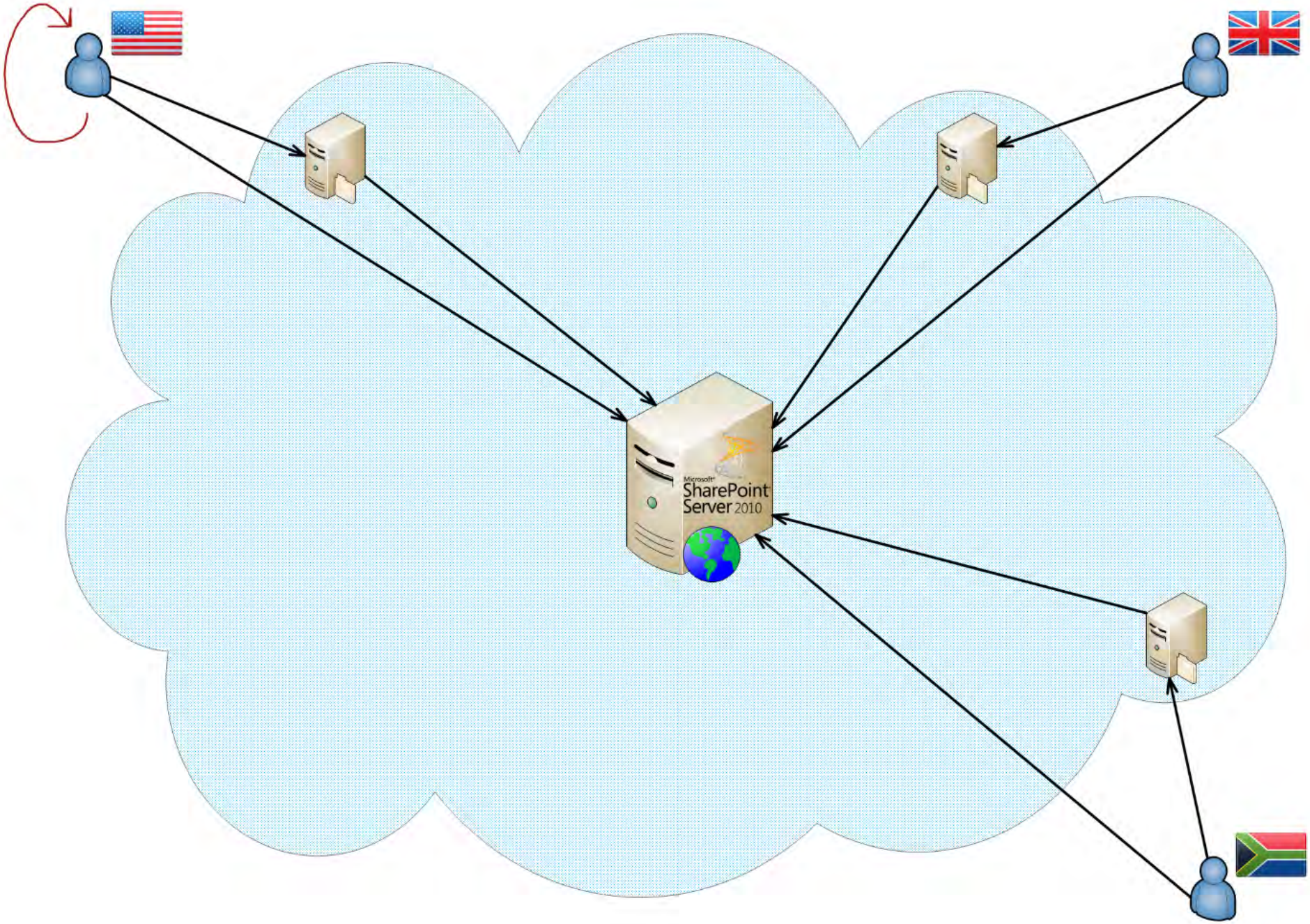
- require some investment of time to properly configure initially

  includes DNS changes

- for SharePoint, commonly used for non-page (non-dynamic) payload

  standard BLOB cache items

- CDNs aren't free, so you need to carefully consider their value


Microsoft
SharePoint
Server 2010

Don't panic - just for fun!

Object caching

Action

Cache size reduced (significantly) below 100MB

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
- SharePoint's ability to serve pages falls through the floor

What to Watch

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

Object caching

Observation

A publishing site is established in a Web application that is using claims-based authentication. "Access Denied" errors keep appearing - even for site administrators.

Potential Cause

- The default Portal Super User and Portal Super Reader Object Cache accounts are in-use for the Web application

What You Can Do

- Set up new user accounts, establish Web application policies for those accounts, and run some simple PowerShell commands to map the accounts.

Page output caching

Observation

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

Potential Cause

- Page output cache profile isn't granular enough to distinguish User A from User B

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)

A Web Page

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

My SharePoint Site

SPDC\me

Site Actions

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."

Search this site...

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.

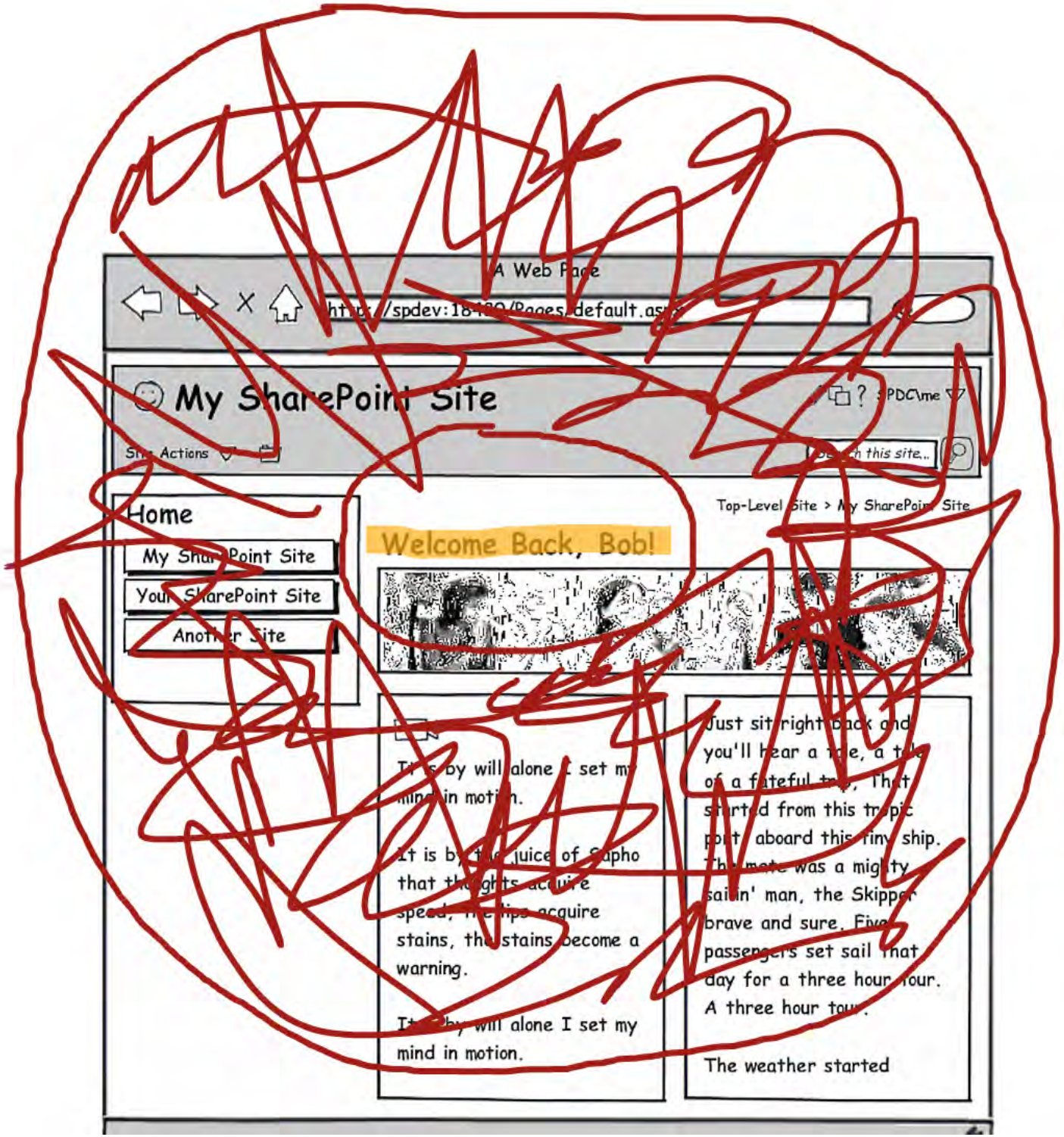
It is by will alone I set my mind in motion.

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


A Web Page
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A three hour tour.
The weather started

Page output caching

Observation

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

Potential Cause

- Page output caching profile is overly granular and too many pages are being cached causing excessive memory load.

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.

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.

BLOB caching

Observation

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

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Disk-Based Caching for Binary Large Objects
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Client Cache <clientCache>

http://www.iis.net/ConfigReference/system.webServer/staticContent/clientCache

IIS7 Cache-Control

http://stackoverflow.com/questions/642954/iis7-cache-control

Akamai's Dynamic Site Accelerator

http://www.akamai.com/html/solutions/dynamic_site_accelerator.html

Clean-Up Items

- Fill out your evaluation forms!
- Visit the Dugout for a sneak peak of SharePoint 2013 and Networking.
- See you back at Home Plate for the Closing and Raffles!!

SHAREPOINT SATURDAY
LOUISVILLE

SharePint

SharePoint by **day**, SharePint by **night**

Tonight's SharePint is generously sponsored by rackspace HOSTING

SharePint is being held right here at the Marriott immediately following the event. Visit the Rackspace booth for your ticket.

For each unused drink ticket turned back in, a $5 donation will be made to charity.

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SharePoint 2007 Disaster Recovery Guide

http://tinyurl.com/SPDRGuide2007

SharePoint 2010 Disaster Recovery Guide

http://tinyurl.com/SPDRGuide2010