

Caching-In for SharePoint Performance



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Idera

Session Overview

- Caching 101
- Understanding each of SharePoint's platform caching options
- How to leverage and control caching

Why I care about caching

okay ...

Why I



caching

okay ...

Why I



caching

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

okay ...

Why I



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

okay ...

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

... and finally

... and finally

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



So, what is caching?

Webster's New WorldTM Dictionary



Third College Edition

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

cable (kâ'bal) *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 3 anchor cables were formerly of rope 4 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 (kâ'bal), 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.

cable-cast (kâ'bal kast') *vt.* -cast, -casting to transmit directly to receivers by means of coaxial cable — *n.* a program that is cablecast — **★cable-caster** *n.*

★cable-gram (-gram') *n.* a message sent by undersea cable

cable-laid (kâ'bal laid) *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 (½ 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'man) *n.* *pl.* -men (-man) CABDRIVER

cab-bob (ka bôb') *n.* KEBAB

cabio-chon (kab'ô shôn'; *Fr* ka 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-bomba (ka bôm'ba) *n.* [ModL < Sp] any of a genus (*Cabomba*) of waterlilies (family Cabombaceae), esp. a species (*C. caroliniana*) with submerged, needlelike leaves and rounded, floating ones; used in aquariums, garden pools, etc.

★ca-boodle (ka bôd'ô l) *n.* [ca-, colloq. intens. prefix (< ? Ger go-) + BOODLE] [Colloq.] lot; group [the whole caboodle]

ca-boose (ka bôos') *n.* [MDu *kabyrys*, *kambuis* (< ?), ship's galley] 1 [Brit.] Naut. a ship's kitchen; galley 2 the trainman's car on a freight train, usually at the rear

Cab-ot (kab'ot) 1 John (fl. 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

cabo-tage (kab'ô tij, -tâzh') *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 (ka bret'ta) *adj.* [Fr < Sp *cabra*, goat (< L *capra*, fem. of *caper*; see CAPRIOLE) + It fem. dim. suffix -etta] designating or of a soft leather made from a special kind of sheepskin

ca-brilla (ka bril'a, brê'ya) *n.* [Sp, prawn, dim. of *cabra*, goat; see prec.] any of various edible, percoid fishes (family Serranidae) found off Florida, the West Indies, etc.

Ca-brini (ka brê'ni), 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'rî ol') *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'rî ô l') *n.* [Fr, dim. of *cabriolet*, 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

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** (kâ'kâ) *n.* [Slang] excrement; feces

cacao butter

cacao butter (kô'ka tôr) *adj.* [It, lit., hunter < pp. of *cacciare*, hunt, chase < VL **capiare*, to catch] cooked in a casserole with olive oil and tomatoes, onions, spices, wine, etc. [chicken *cacciato*]

cacha-lot (kash'ô lô', lô') *n.* [Fr < Sp *cachalote* < colloq. *Phaecholoth*, head] SPERM WHALE

cache (kash) *n.* [Fr < *cacher*, conceal < VL **coacitare*, store up, collect, compress < L *coacare*, constrain < *co-* + *coacare*, to press] 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

cache-pot (kash'pôt, -pô') *n.* [Fr < *cacher*, to hide (see prec.) + *pot*] a decorative pot, jar, etc., used esp. for holding potted plants

★cache-pot (kash'pôt) *n.* [Fr < *cacher*, to hide (see prec.) + *pot*] a small cloth or band worn, as by an otherwise nude dancer, to conceal the genitals

ca-chet (ka shâ', kash'â) *n.* [Fr < *cacher*; see CACHE] 1 a seal or stamp on an official letter; document; see also LETTIN or CACHET 2 any sign of official approval 3 a mark or sign showing something is genuine, authentic, or of superior quality 4 distinctive prestige 5 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-chexia (ka ksh'ê) *n.* [ModL < Gr *kachexia*, bad habit of food < *kakos*, bad + *hexis*, habit < *echein*, to have < IE base **h₂ek-*, to hold fast, conquer > SCHEME] 1 a generally weakened, emaciated condition of the body, esp. as associated with a chronic illness 2 a cachexy (-sê) — **★ca-chetic** (-ksh'ik) or **ca-chex'ic** (-ksh'ik) *adj.*

cach-in-nate (kak'ô nât') *vi.* -nat'ed, -nat'ing [L *cachinnatus*, pp. of *cachinnare*; ult. of *echoic* orig., to laugh loudly or too much]

ca-chin-na-tion *n.*

ca-chou (ka shôo') *n.* [Fr < Port *cachu* < Malayalam *kaccu*, skin]

Cachou (-an) *n.* 1 CATECHU 2 a lozenge for sweetening the breath

ca-chu-cha (ka chû'ô'ô) *n.* [Sp] 1 an Andalusian dance in 3/4 time, like the bolero 2 music for this

ca-cique (ka sek') *n.* [Sp < Arawak word meaning "prince," "lord"] 1 a chief in Spanish America, an Indian chief 2 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-handed (kak'hând'id) *adj.* [Brit. Colloq.] left-handed 2 clumsy; awkward

cackle (kak'ô) *vi.* -led, -ling [ME *caekelen*; akin to *Du* *kakelen*, LowG *kakelen* < IE base **kak-*; of *echoic* orig.] 1 to make a shrill, broken vocal sound 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 — *cf.* the *cackle* [Brit. Colloq.] to stop talking and settle down to serious efforts

CACM Central American Common Market

caco- (kak'ô, -ô) [L < Gr *kakos*, bad, evil] combining form: bad, poor, harsh [caco-graphy]

caco-demon or **caclo-daemon** (kak'ô dē'man) *n.* [Gr *kakos*, bad; *daimon*; see prec. & DEMON] an evil spirit or devil

caclo-dyl (kak'ô dil', kak'ô) *n.* [L < Gr *kakodēs*, bad-smelling < *kakos*, bad + *-odes* (< IE base **od-*, to smell > ODOR, OZONE) + *-dyl*, Chem. 1 the radical As(CH₃)₂, composed of arsenic and methyl groups 2 compounds are poisonous and foul-smelling 2 a poisonous, colorless liquid, As₂(CH₃)₄, with an offensive odor; it is a polymer of this radical — **★caclo-dylic** (-dilik) *adj.*

caco-ethes (kak'ô êthēz) *n.* [L < Gr *kakothēs* < *kakos*, bad + *-ethos*, habit; see ETHICAL] a hankering (to do something); mania

ca-cog-ra-phy (ka kô'grâ fē) *n.* [CACO- + -GRAPHY] 1 bad luck; writing 2 incorrect spelling — **★caco-graphic** (ka kô'grâfik) or **★cograph'ic** (-kô'grâfik) *adj.*

★caco-mistle (ka kô'mis'tel) *n.* [AmSp *cacomixtle* < Nahuatl *cahomtli* < *cahōtli*, half + *mītl*, cougar] 1 a slender, long-stemmed, caecoonlike carnivore (*Bassariscus astutus*) of the SW U.S. and Mexico 2 its fur Also **ca-cô-mix'tle** (-mīs'ôl, -mīks'ôl)

ca-coph-o-ny (ka kô'fô nē) *n.* *pl.* -nies [prob. via Fr *cacophonie*, ML *cacophonía* < Gr *kakophōnia* < *kakophōnos*, harsh-sounding < *kakos*, bad, evil + *phōnē*, voice; see PHONO-] harsh, jarring sound; dissonance — **★ca-coph'o-nous** (-nos) *adj.* — **★ca-coph'o-nously** *adv.*

cac-tus (kak'təs) *n.* *pl.* -tuses or -tū (-tī) [ModL < Gr *kaktos*, thistle, cardoon] any desert plants of the cactus family, native to the New World, with fleshy stems, reduced or spine-like 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 (ka kyô'mi-nal) *adj.* [L < L *cucumen* (gen. *cucumini*) < *rephal*, of IE base **kai-*; see HICH) + *-al*, Phonet. *n.* named with the tip of the tongue turned backward and upward against or toward the hard palate — *n.* a cucuminal sound

cad (kad) *n.* [L < CADOR < CADET] 1 a man or boy whose behavior is not gentlemanly. Word originally applied to servants, then to the school

boy, esp. of a person; corpse, as for dissection — *SYN.* BODY — **ca-**

cad-er *adj.*

cad-er *adj.* [Fr < *cadre*, frame < It *quadro* < L *quadrum*, a square; see QUADRATE] 1 a basic structure or framework 2 an operational unit, as of staff officers or other key personnel, around which an expanded organization can be built 3 a small, unified group organized to instruct or lead a larger group; nucleus 4 a member of a political, esp. Communist, cadre

ca-du-ceus (ka dō'sē as, -dyō'sē) *n.* *pl.* -ces' [L, ? via Etr < Gr (Doric) *karykeion*, for *Gr* *kerykeion* < *keryx*, herald < IE base **kar-*, to praise > OHG *hruom*, *Ger* *ruh'm*] 1 the staff of an ancient herald; esp., the winged staff with two serpents coiled about it, carried by Mercury 2 an emblematic staff like this with either one or two serpents, used as a symbol of the medical profession — **★ca-du-cean** *adj.*

ca-du-city (ka dō'sē tē, -dyō'sē) *n.* [Fr < *caducité* < LL *caducitas* < L *caducus*; see fol.] 1 the quality or state of being perishable 2 sensility

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

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

cae-cum (sē'kam) *n.* *pl.* -ca (-ka) CECUM

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

Ca-e-li-an (sēl'ē an, -sil'yan) [after L *Caelius Mons*, Caelian hill, named after the Tuscan *Caes* *Vibenna*] see SEVEN HILLS OF ROME

Ca-e-lum (sē'lom) a small S constellation between Columba and Eridanus

Ca-en (kân) chief city of Basse-Normandie, NW France; pop. 117,000

Caernar-von-shire (kâr nâr'van shîr, -shôr) former county of NW Wales, now part of Gwynedd; also **Caernar-von**

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

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

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

Caes-a-re-a (sēs'a rē'a, sēz'-sē'a-) 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 KAYSER

Caes-ar-ean or **Caes-ar-ian** (sē zēr'ē an) *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

Caes-ar-ism (sē'zar iz'am) *n.* [also c-] absolutism in government; autocracy — **★Caes-arist** *adj.*, *n.*

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caes-sium (sē'zē am) *n.* CESIUM

caes-pi-tose (sēs'pî tōs') *adj.* CESPILOSE

caes-sura (sē zyō'r'a, zhoor'a) *n.* *pl.* -ras or -rae (-ē) [L, a cutting < pp. of *caedere*, to cut down; see -CTRE] 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 scannings by the sign || 2 Music a break or

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, semiconductor, etc.

Cad-mus (kad'mūs) [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

cad-re (ka'drē, -drā; also, ka'ē) *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

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CADUCEUS



CABRIOLET

cacao butter COCOA BUTTER

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

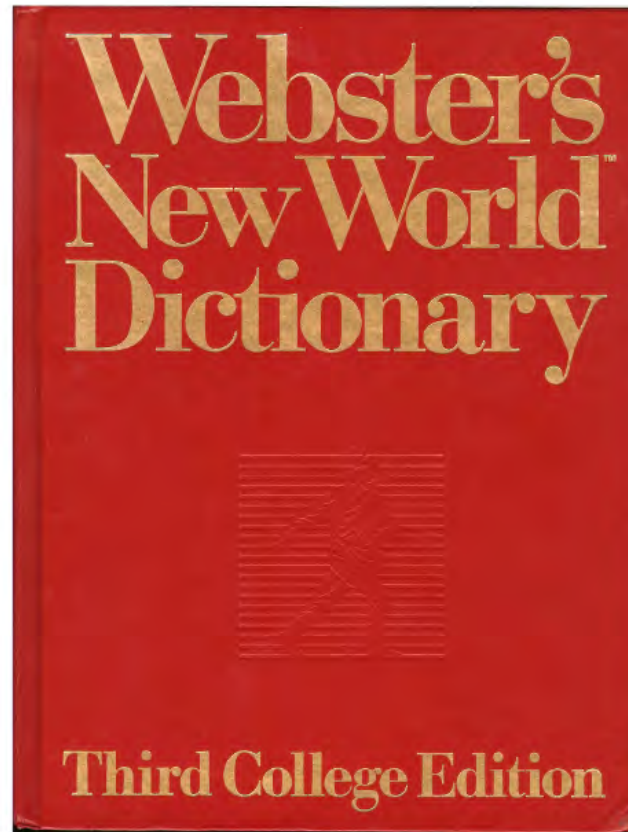
cach|a·lot (kash'ə lät', -lō') *n.* [[Fr < Sp *cachalote* < colloq. Port *cachola*, head]] SPERM WHALE

cache (kash) *n.* [[Fr < *cache*, conceal < VL **coacticare*, store up, collect, compress < L *coactare*, constrain < *coactus*, pp. of *cogere*, to collect; see COGENT]] 1 a place in which stores of food, supplies, etc. are hidden, as by explorers or trappers 2 a safe place for hiding or storing things 3 anything stored or hidden in such a place —*vt.* **cached, cach'ing** to hide or store in a cache —**SYN.** HIDE¹

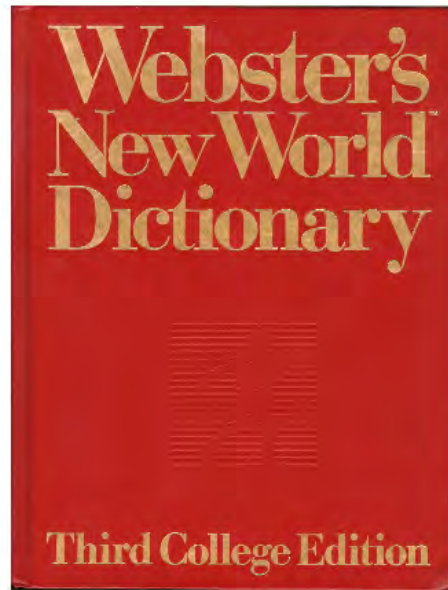
cache·pot (kash'pät, -pō') *n.* [[Fr < *cache*, to hide (see prec.) + *pot*, POT¹] a decorative pot, jar, etc., used esp. for holding potted house plants Also **cache pot**

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

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



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



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 that facilitates rapid access to data that is frequently used and/or computationally expensive to generate



Option 1: Place data on a faster medium



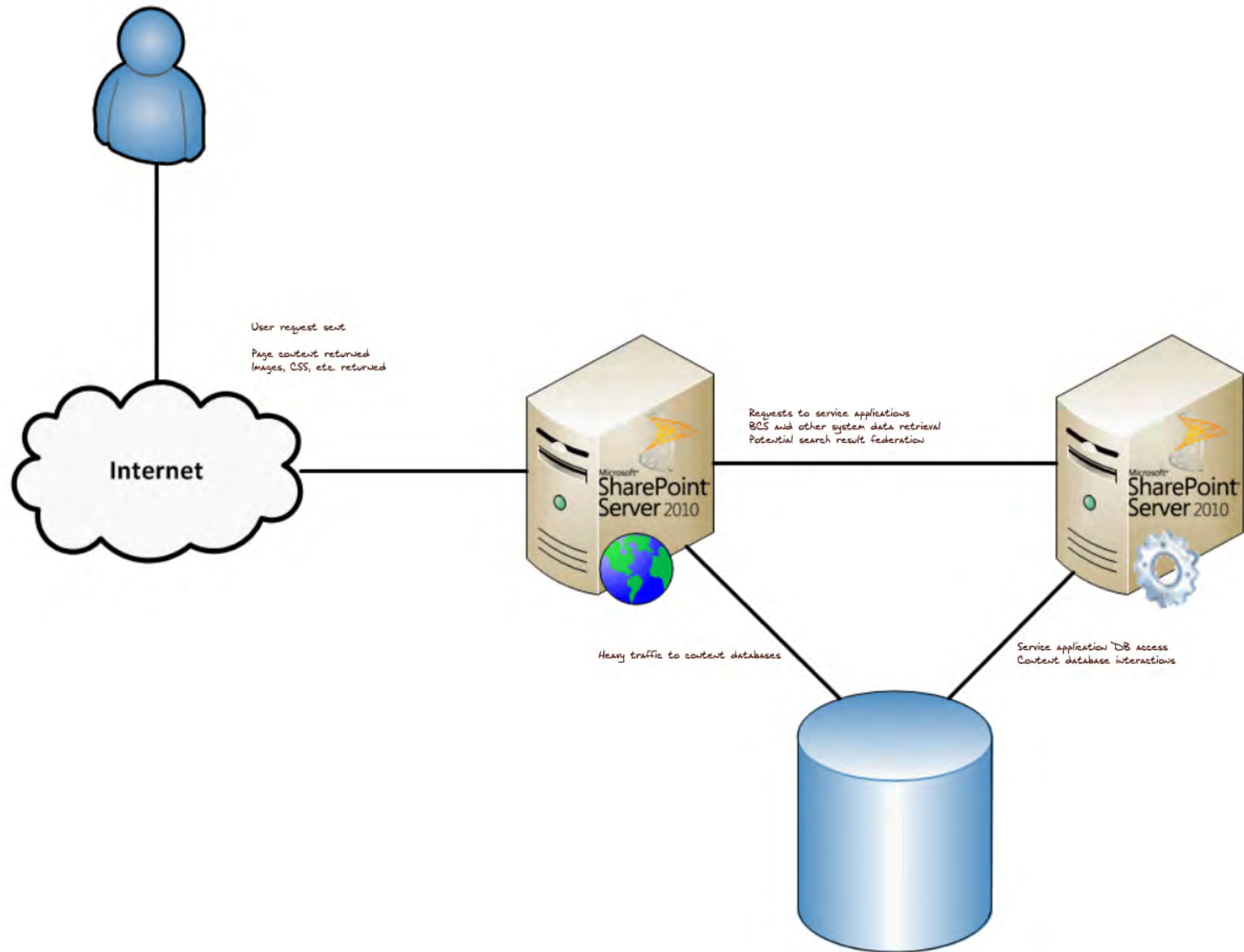


Option 2:
place data
closer to the
point of usage



Why?

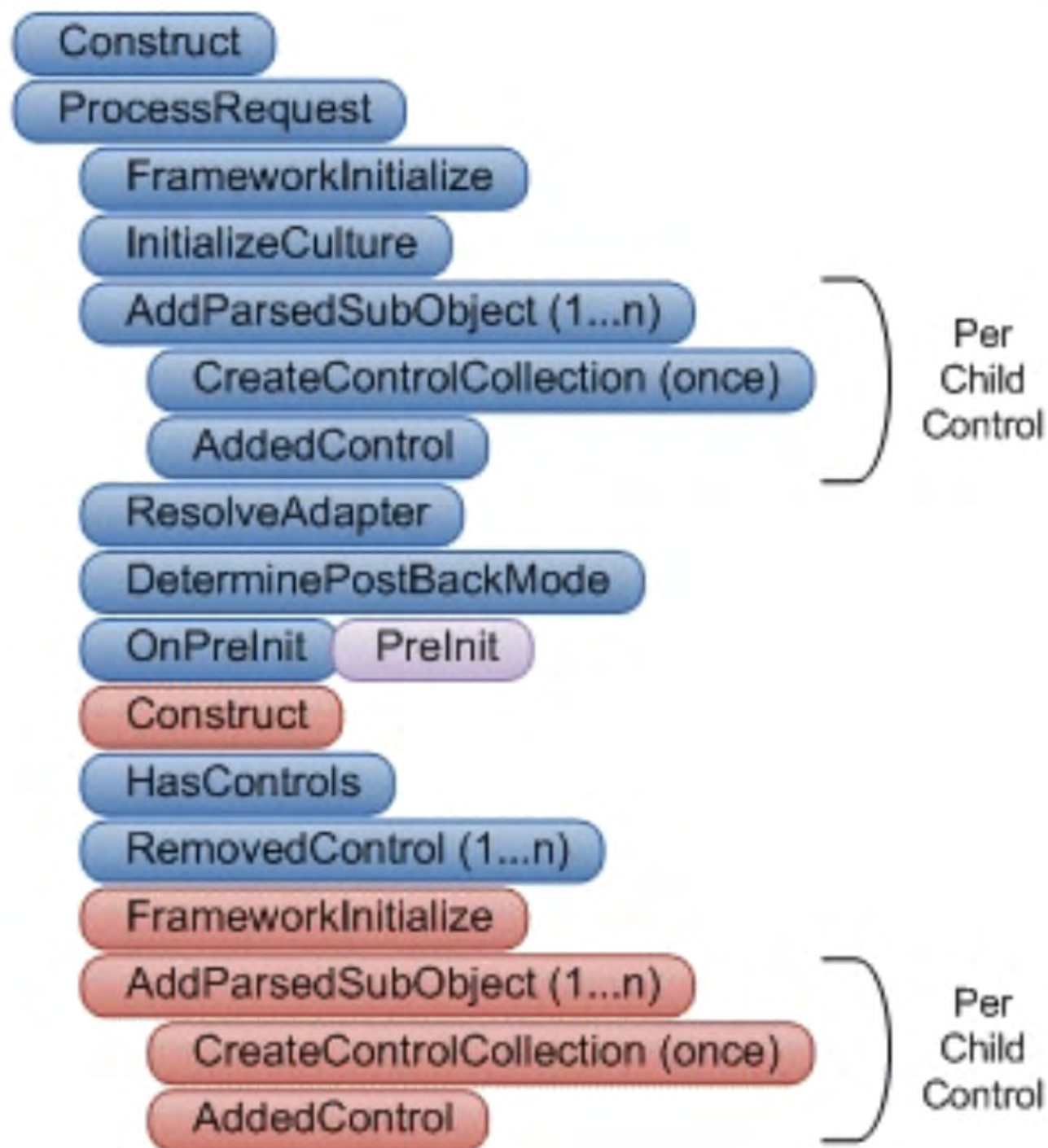
or at least "why for SharePoint?"



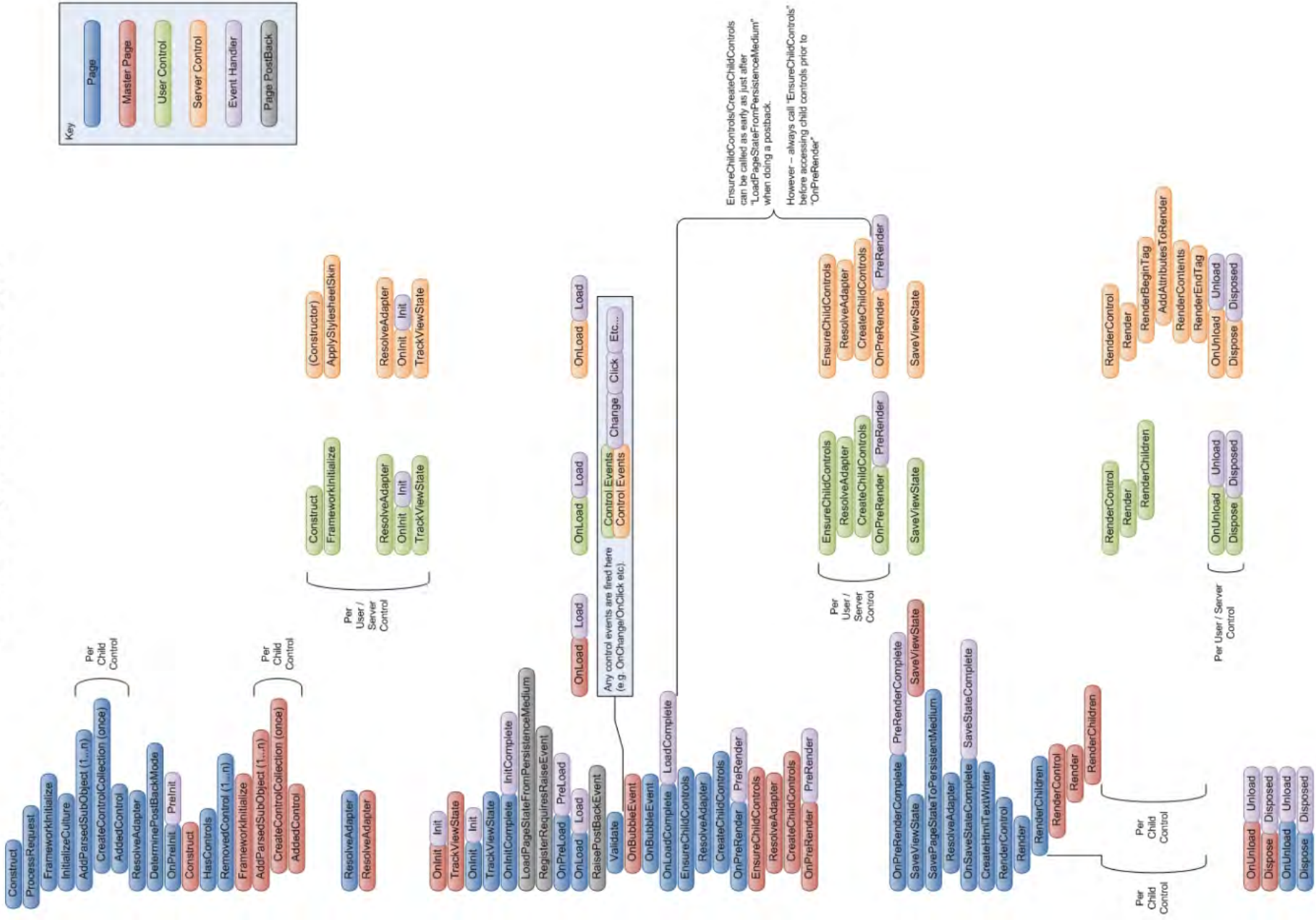


Requests to se
BCS And other
Potential searc

ASP.NET Page and Control Life Cycle



ASP.NET Page and Control Life Cycle



thanks, Justin Stenning!

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



Unless otherwise noted,
we're talking about both
of the following:



Short story
time...

Short story
time...



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

Site Settings - Windows Internet Explorer

http://www.spmcdonough.com/_layouts/settings.aspx

Google

Site Actions Sean P. McDonough

Sean P. McDonough Site Settings

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>

I Like It Tags & Notes

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

Site Actions

Sean P. McD... 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
	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%

Of course, this poses some problems for WSSv3 and SP2 users ...



SharePoint 2007 Workflows

Aggregated set of out-of-box workflow features provided



SharePoint Server Enterprise Site Collection features

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



SharePoint Server Publishing Infrastructure

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



SharePoint Server Standard Site Collection features

Features such as user profiles and search, included in the



Three-state workflow

Use this workflow to track items in a list.

Activate

Activate

Deactivate

Active

Activate

Activate

... know features provided by Office Online

... Site Collection features

... Services, Visio Services, Access Services
... license.

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

... Infrastructure

... content types, master pages and page layouts
... n.

... Site Collection features

... and search, included in the SharePoint Ser



So ... how does
the plumbing work?

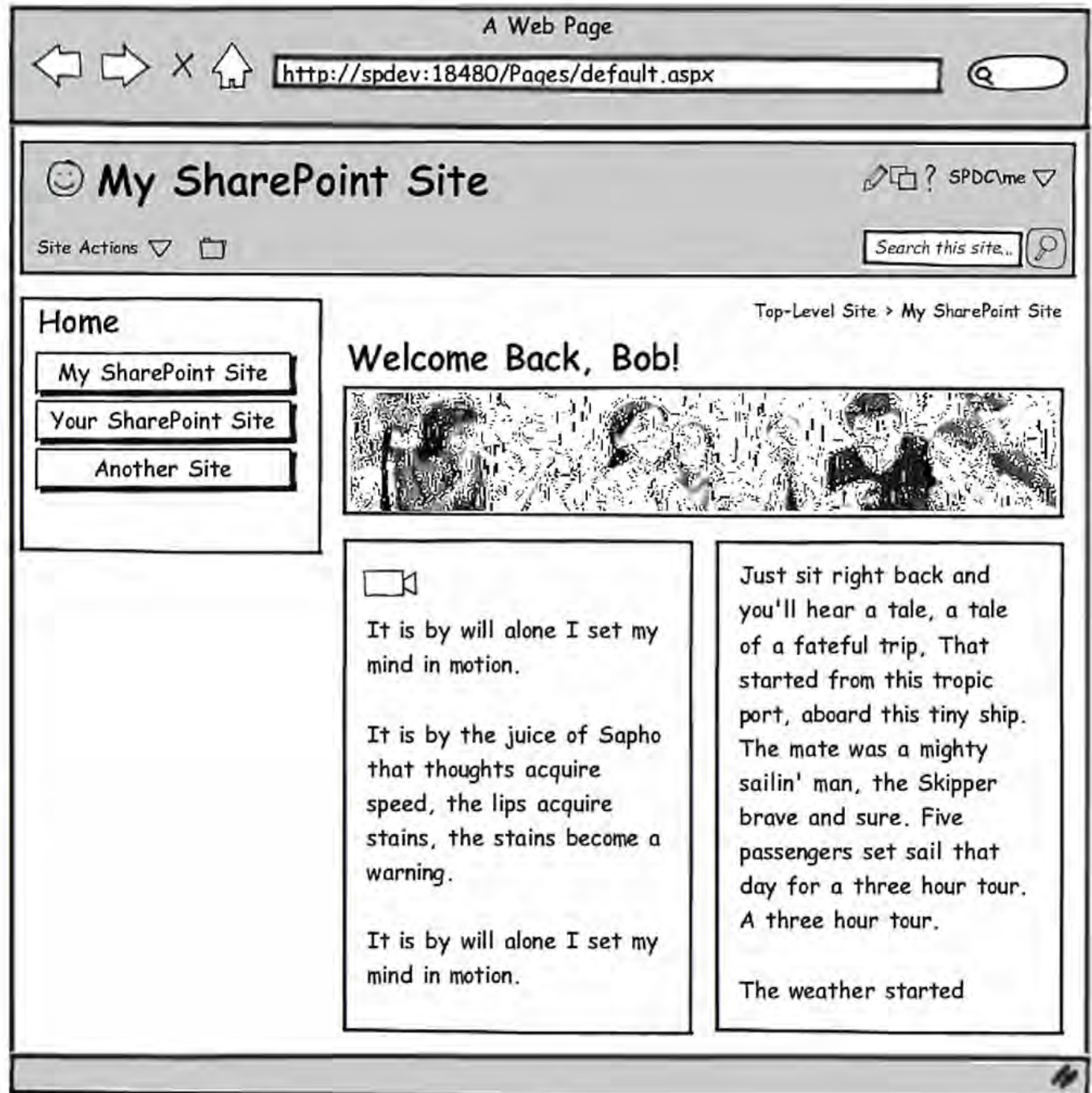
This is a
web.config
file section

[illegible]


```
<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" />
```

Caching in action

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



First up ...

First up ...



Object caching

Object caching

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

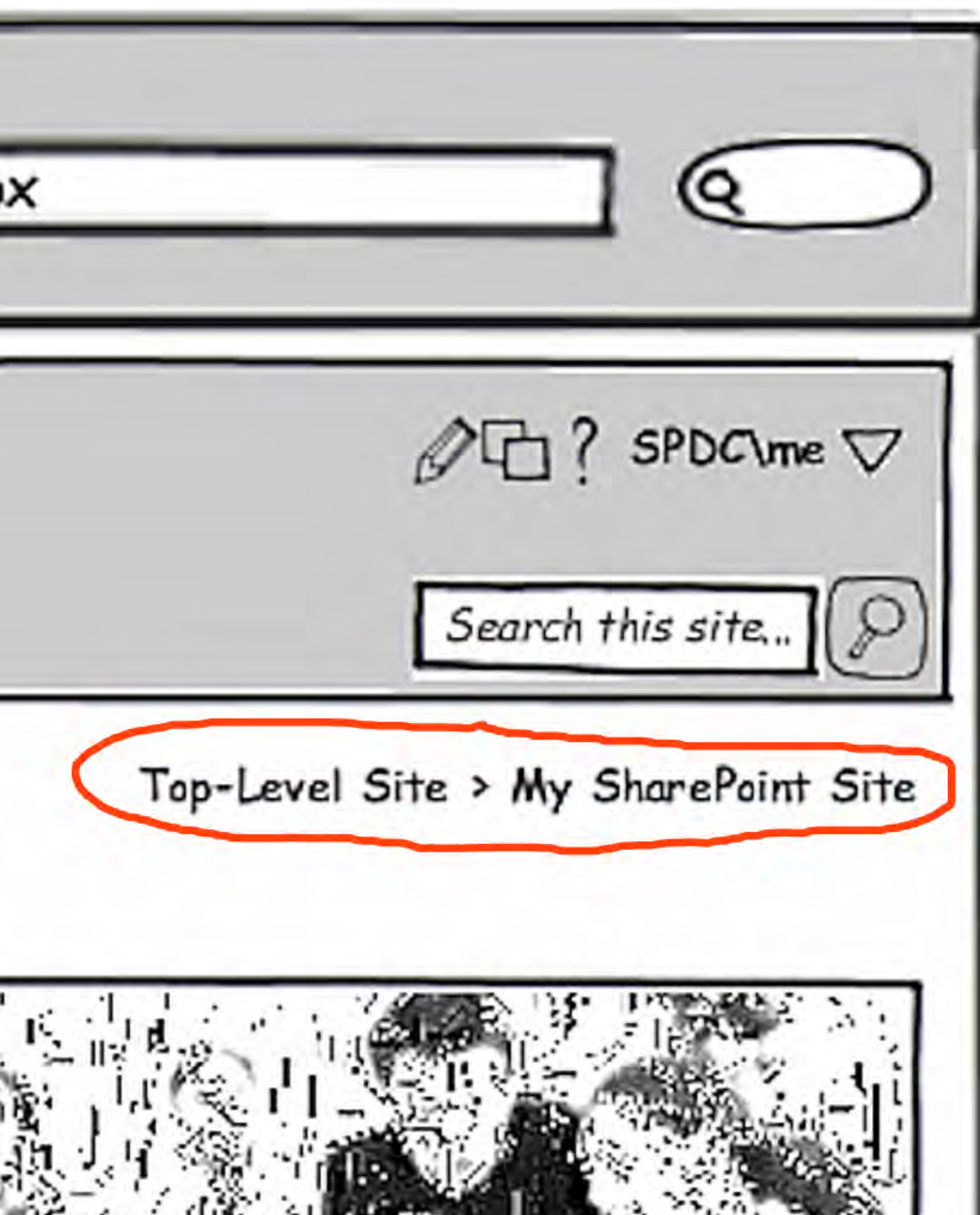


... And the Quick Launch

page layouts also
get cached

Navigational data
such as this
breadcrumb ...

If this happens
be a Content
Query Web Part
(CQWP), then
could benefit
significantly from
object caching



NAVIGATIONAL data
such as this
breadcrumb ...



Home

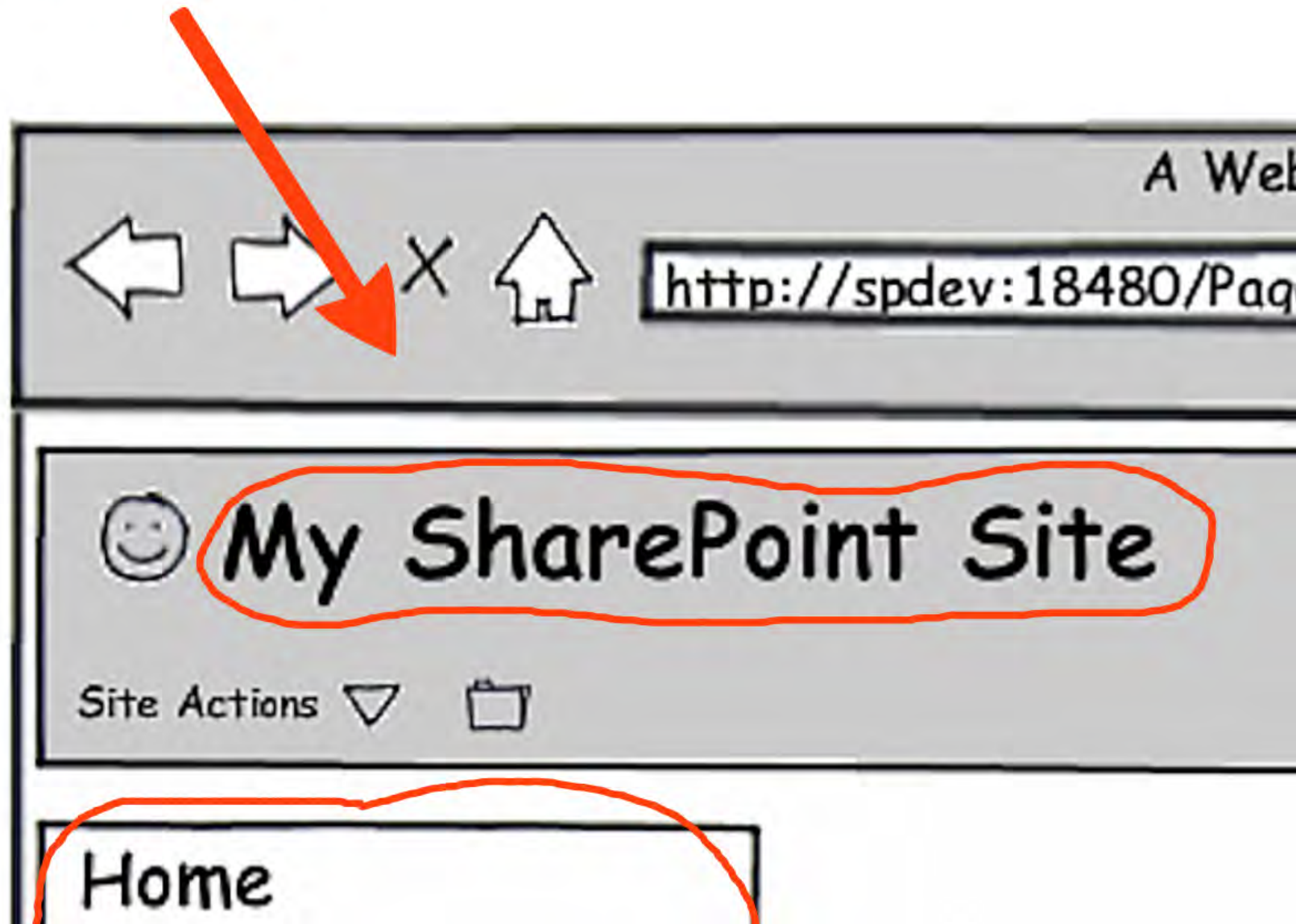
My SharePoint Site

Your SharePoint Site

Another Site

... AND the Quick Launch

Site properties
like the title



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

The weather started



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

page layouts also
get cached

the
spe
sta
war

It
min



A Web Page

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



My SharePoint Site



SPDC\me

Site Actions



Search this site...



Home

My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint Site

Welcome Back, Bob!



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

... And the Quick Launch

page layouts also get cached

Navigational data such as this breadcrumb ...

If this happens be a Content Query Web Part (CQWP), then could benefit significantly from object caching

Object cache

Object cache

Backed by memory



Object cache

Backed by memory



Turned on by default



Object cache

Backed by memory



Turned on by default



Default ~~size~~ or allocation

100MB per
site collection

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 ...

1. The first part of the document is a list of references, organized into two columns. The references are numbered 1 through 100. The first column contains references 1 through 50, and the second column contains references 51 through 100. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

2. The second part of the document is a list of references, organized into two columns. The references are numbered 101 through 200. The first column contains references 101 through 150, and the second column contains references 151 through 200. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

3. The third part of the document is a list of references, organized into two columns. The references are numbered 201 through 300. The first column contains references 201 through 250, and the second column contains references 251 through 300. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

4. The fourth part of the document is a list of references, organized into two columns. The references are numbered 301 through 400. The first column contains references 301 through 350, and the second column contains references 351 through 400. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

5. The fifth part of the document is a list of references, organized into two columns. The references are numbered 401 through 500. The first column contains references 401 through 450, and the second column contains references 451 through 500. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

6. The sixth part of the document is a list of references, organized into two columns. The references are numbered 501 through 600. The first column contains references 501 through 550, and the second column contains references 551 through 600. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

7. The seventh part of the document is a list of references, organized into two columns. The references are numbered 601 through 700. The first column contains references 601 through 650, and the second column contains references 651 through 700. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

8. The eighth part of the document is a list of references, organized into two columns. The references are numbered 701 through 800. The first column contains references 701 through 750, and the second column contains references 751 through 800. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

9. The ninth part of the document is a list of references, organized into two columns. The references are numbered 801 through 900. The first column contains references 801 through 850, and the second column contains references 851 through 900. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

10. The tenth part of the document is a list of references, organized into two columns. The references are numbered 901 through 1000. The first column contains references 901 through 950, and the second column contains references 951 through 1000. The references are listed in a standard format, including the author's name, the title of the work, and the journal or publisher. Some references are marked with a checkmark in the left margin.

```
<Action id="0ff1ce14-1021-0000-0000-000000000000">
<Action id="ec0076ac-0c35-4880-8422-8062f5925000">
<Action id="602bc8c3-9286-49a3-b973-3376ca78b000">
<Action id="00e22a78-33ff-41ac-b0fb-ee46d1630000">
<Action id="4b60e42e-e6fc-4188-80d2-ef39e7cc0000">
<Action id="1d415973-1146-4bc2-8324-83dfff5b0000">
</MergedActions>
<BlobCache location="C:\BlobCache\14" path="\.">
<ObjectCache maxSize="100" />
<OutputCacheProfiles useCacheProfileOverrides="true" />
<RuntimeFilter Assembly="Microsoft.Office.Server.Search.CrawlProvider">
</SharePoint>
<system.web>
  <securityPolicy>
    <trustLevel name="WSS_Medium" policyFile="C:\Program Files\Microsoft Office\Server\WSS_Medium.policy">
    <trustLevel name="WSS_Minimal" policyFile="C:\Program Files\Microsoft Office\Server\WSS_Minimal.policy">
  </securityPolicy>
  <httpHandlers />
  <customErrors mode="On" />
  <httpRuntime maxRequestLength="51200" />
```


Site Settings - Windows Internet Explorer

http://www.spmcdonough.com/_layouts/settings.aspx

Site Actions Sean P. McDonough

Sean P. McDonough Site Settings

Sean P. McDonough Press Releases

Press Releases

- Recycle Bin
- All Site Content

Users and Permissions

- People and groups
- Site permissions
- Site collection administrators

Galleries

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

Site Administration

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

Site Collection Administration

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

Look and Feel

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

Site Actions

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

Reporting Services

- Manage Shared Schedules
- Reporting Services Site Settings

Site Information

Site URL:
<http://www.spmcdonough.com/>

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

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](#)

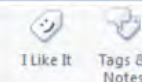
[SharePoint Designer Settings](#)

[Visual Upgrade](#)

[Help settings](#)

Site Collection Administration ▶ Object cache settings

Configure settings for the object cache.



Sean P. McDonough

Press Releases

Search this site...

Press Releases

Object Cache Size

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

Max. Cache Size (MB):

100

Recycle Bin

All Site Content

Object Cache Reset

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

☐ Object Cache Flush☐ Force all servers in the farm to flush their object caches

Cross List Query Cache Changes

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

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

60

Cross List Query Results Multiplier

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

Cross list query multiplier:

3

OK

Cancel



Collection Administration ▶ Object

figure settings for the object cache.

Donough

Press Releases

ases

Object Cache Size

Object Cache Size [Learn more about t](#)

Bin

Search this site...

Max. Cache Size (MB):

100



And now, for a painful story ...

The take-away:

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

The take-away:

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

What to Watch

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

S

Object Cache Size[Object Cache Size](#) [Learn more about](#)

ent

Object Cache Reset

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

100



Object Cache Flush



Force all servers in the farm to flush th



Check the server for changes every tim

you click **OK**. If this check box is not selected, the cache is updated when they time out or are changed in the database.

Cross List Query Cache Changes

Cross list queries initiated by the Content Query Engine use up server resources. Specifying an amount of time to cache results can positively impact cross-list query performance. The most recent changes to the items returned by a query runs will produce the most accurate results across the site.

- ☐ Force all servers in the farm to flush the
- ☐ Check the server for changes every time query runs
- ☒ Use the cached result of a cross list query seconds:

60

Cross List Query Results Multiplier

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

Cross list query multiplier:

3

Guidance

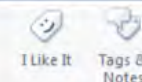
	Anonymous	Authenticated
Cache Duration		
Cross List Multiplier		 Especially if per-site and per-item security is prevalent



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

Site Collection Administration ▶ Object cache settings

Configure settings for the object cache.



Sean P. McDonough

Press Releases

Search this site...

Press Releases

Object Cache Size

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

Max. Cache Size (MB):

100

Recycle Bin

All Site Content

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60

Cross List Query Results Multiplier

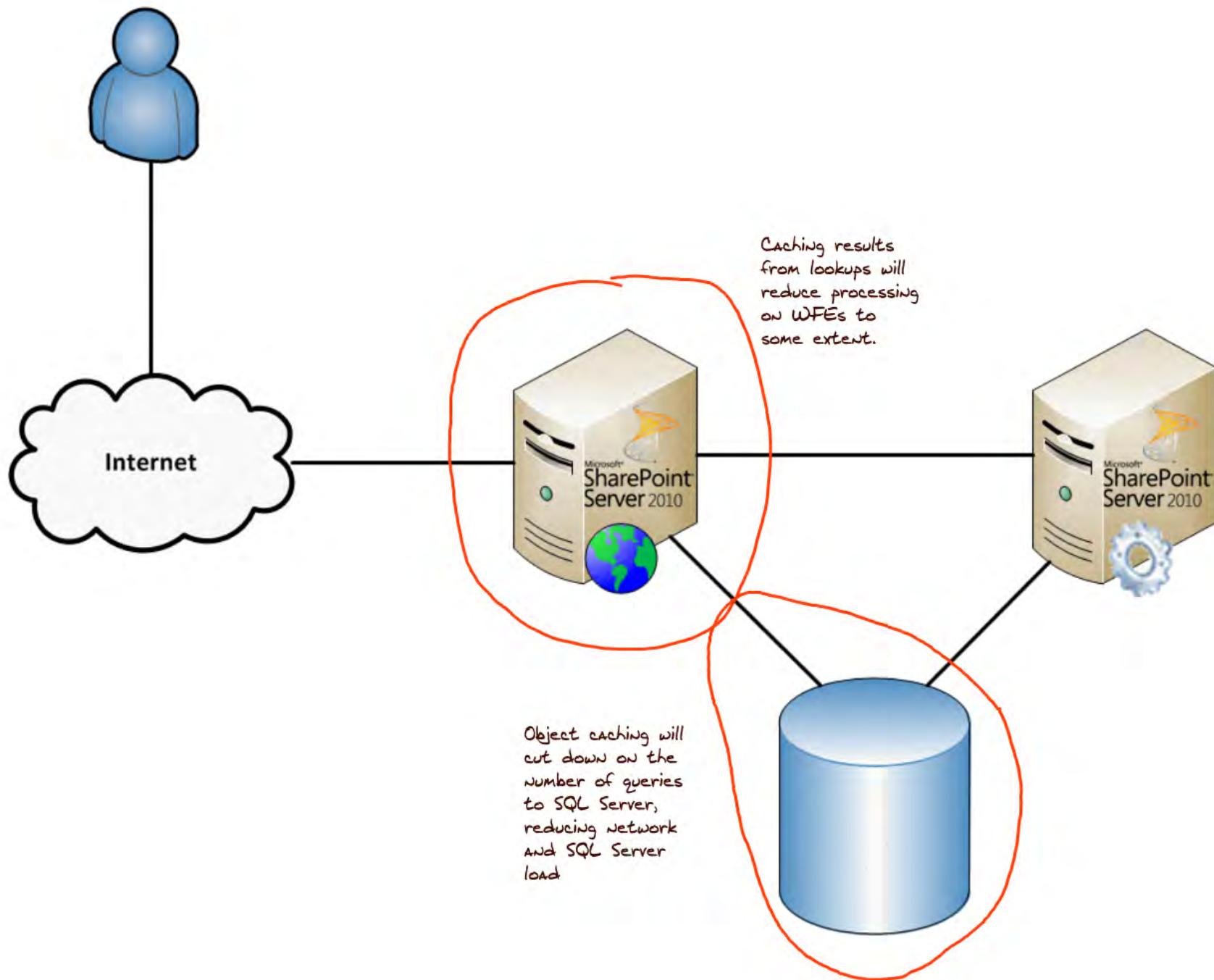
Each cross list query might retrieve results for a variety of users. To ensure after security trimming that all users will see a valid set of results, the cross list query cache must pull more results than originally requested. Specifying a larger number will retrieve more data from the server and is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

Cross list query multiplier:

3

OK

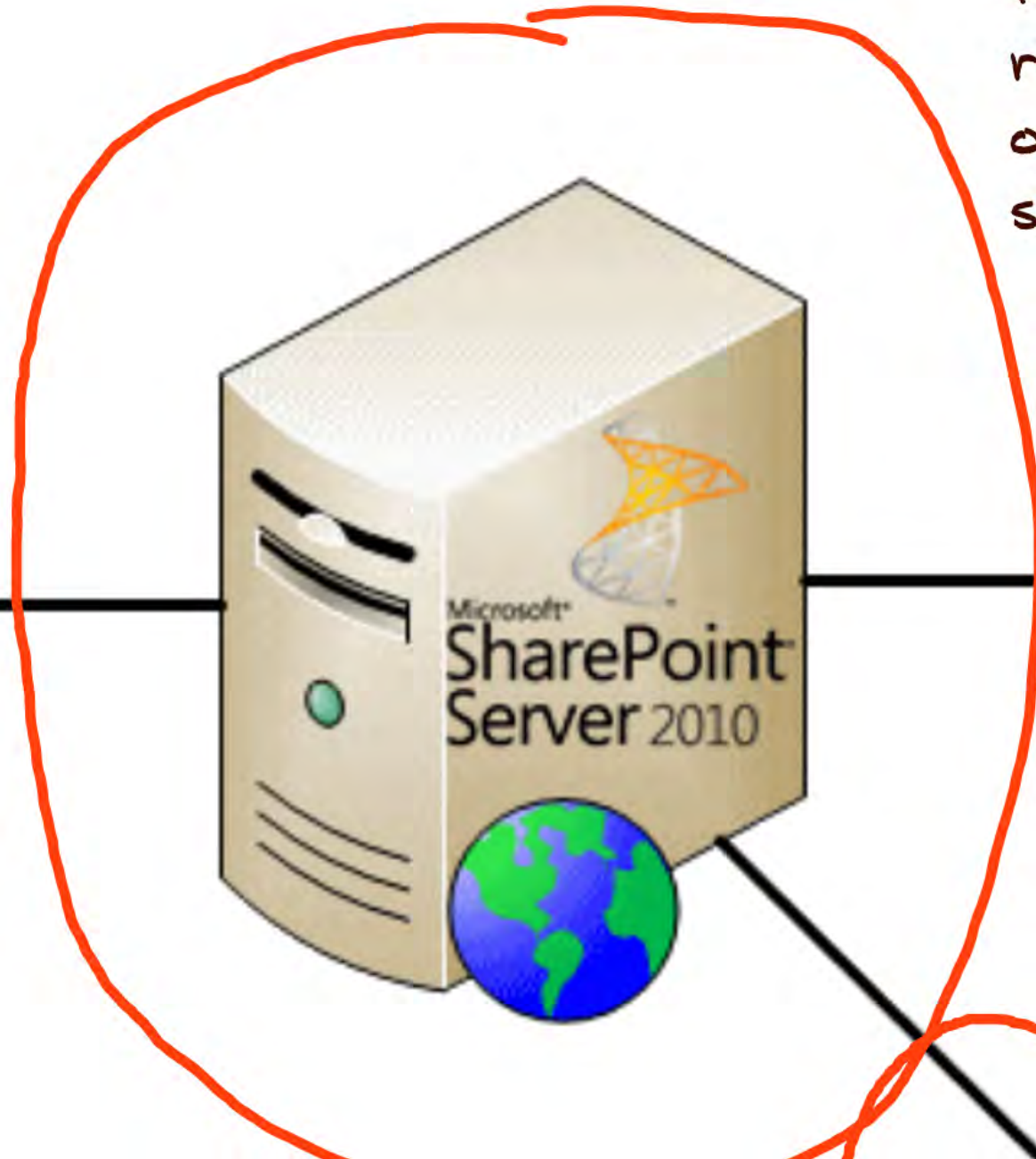
Cancel

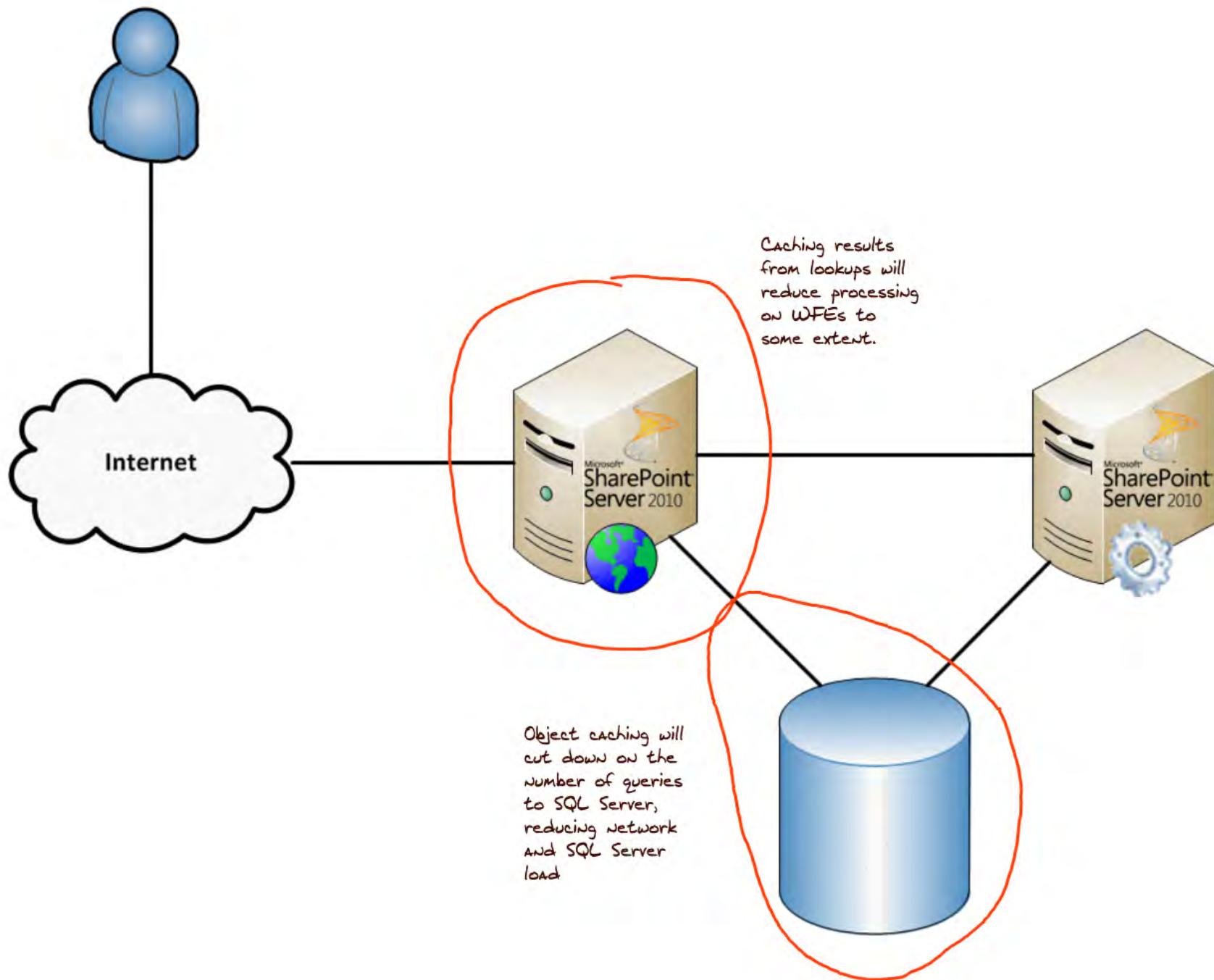


Object caching will
cut down on the
number of queries
to SQL Server,
reducing network
and SQL Server
load



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





Next up ...

Next up ...



BLOB caching

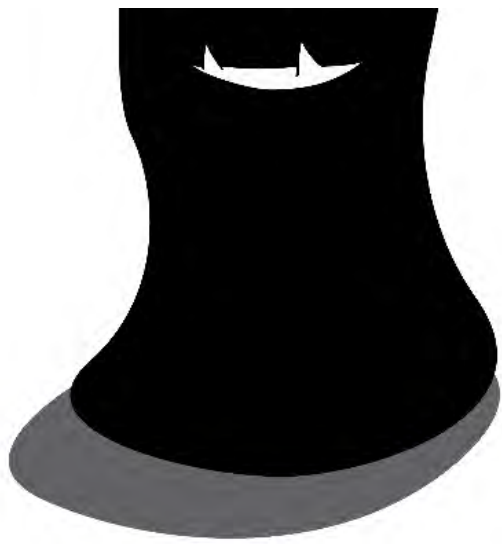


No, not that
kind of BLOB

BLOB = binary large object

teaching





BLOB = binary large object

aching



also known as "disk-based caching"



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



My SharePoint Site



SPDC\me

Site Actions

Search this site..

Home

My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint Site

Welcome Back, Bob!



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

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

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

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



My SharePoint Site



SPDC\me

Site Actions

Search this site..

Home

My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint Site

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The weather started

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

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

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



It is by w
mind in mo

It is by t
that thou



My SharePoint Site



SPDC\me

Site Actions

Search this site..

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My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint Site

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The weather started

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

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

BLOB cache

BLOB cache

Backed by disk



BLOB cache

Backed by disk



Turned off by default



BLOB cache

Backed by disk



Turned off by default



Default ~~size~~ or allocation

10GB per
IIS site (zone)

BLOB cache

Backed by disk



Turned off by default



Default ~~size~~ or allocation

10GB per
IIS site (zone)

Controlled through web.config settings


```
<Action id="0ff1ce14-1019-0000-0000-000000000000" 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
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<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

Default BlobCache Elements

MOSS 2007

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

Default BlobCache Elements

MOSS 2007

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

SharePoint Server 2010

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


Available Attributes

Available Attributes

Common

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

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

Available Attributes

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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
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max-age	client-side cache duration (in seconds) for downloaded BLOB cache items

Recommendation:
point at someplace
other than C:

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

Available Attributes

Common

enabled	true if the BLOB cache is turned-on, false if not
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Uncommon (as in "nearly never altered")

changeCheckInterval	the interval (in seconds) for checks to content DBs for new(er) BLOB cache items (5s default)
policyCheckInterval	the interval (in seconds) on which the BLOB cache settings themselves will be re-parsed (60s default)

DO NOT simply
delete files out of
the BLOB cache!

Uncommo

changeCh

policyCh

Available Attributes

Common

enabled	true if the BLOB cache is turned-on, false if not
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Now, for a
word about
the max-age
attribute ...



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

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

Web Sessions					
#	Result	Protocol	URL	Body	Caching
64	200	HTTP	/SiteCollectionImages/common/content...	79	public, max-age=2232 image/gif
65	200	HTTP	/SiteCollectionImages/common/btnNoTh...	2,112	public, max-age=2478 image/gif
66	200	HTTP	/SiteCollectionImages/common/signinOv...	165	public, max-age=4707 image/png
67	200	HTTP	/SiteCollectionImages/common/benefits...	16,907	public, max-age=5791 image/png
68	200	HTTP	/_controltemplates/MultiBanner/ModalP...	15,618	max-age=867 image/png
69	302	HTTP	/s/www.kroger.com?U=/SiteCollectionI...	0	max-age=0, no-cache, no-store Expires: Sun, 03 Apr 201...
70	200	HTTP	/SiteCollectionImages/common/160x41...	5,099	public, max-age=2141 image/jpeg
71	200	HTTP	/PublishingImages/section_headers/hea...	4,538	public, max-age=1452 image/jpeg
72	200	HTTP	/PublishingImages/2011/Period_3/Week...	73,370	public, max-age=1320 image/jpeg
73	200	HTTP	/PublishingImages/2011/Period_3/Week...	77,412	public, max-age=944 image/jpeg
74	200	HTTP	/PublishingImages/2011/Period_3/Week...	52,993	public, max-age=1307 image/jpeg
75	200	HTTP	/_layouts/1033/core.js?rev=mHksOQ0i...	265,384	max-age=2908 application/x-javascript
76	200	HTTP	/style%20library/omniture/s_code_krog...	20,172	public, max-age=2590 application/x-javascript
77	200	HTTP	/SiteCollectionImages/common/closeBtn...	879	public, max-age=4795 image/gif
78	200	HTTP	/SiteCollectionImages/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...
80	200	HTTP	/adj/fmw.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=388 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:...
107	200	HTTP	/PublishingImages/section_headers/hea...	3,922	public, max-age=1000 image/jpeg
108	200	HTTP	/SiteCollectionImages/common/footer_...	1,401	public, max-age=4232 image/gif
109	200	HTTP	/SiteCollectionImages/common/footerL...	54	public, max-age=1035 image/gif
110	200	HTTP	/SiteCollectionImages/common/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/kgkrogerprod/1/H.14/s2205936...	0	no-cache, no-store, must-revalidate, max-age=0, proxy-re...
114	200	HTTP	/SiteCollectionImages/common/bgSelect...	654	public, max-age=6811 image/gif
115	200	HTTP	/b/ss/kgkrogerprod/1/H.14/s2205936...	43	no-cache, no-store, must-revalidate, max-age=0, proxy-re...

115 HTTP
requests issued
and answered to
fully load page

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

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

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/mw1.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/lc-grkrogerprod/1/H.14/s2656257...	43	no-cache, no-store, must-revalidate, max-age=0, proxy-re...	image/gif

Only 4 requests
needed to load
the page

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

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/krgkrogerprod/1/H.14/s2656257...	43	no-cache, no-store, must-revalidate, max-age=0, proxy-re...	image/gif

Only 4 requests
needed to load
the page

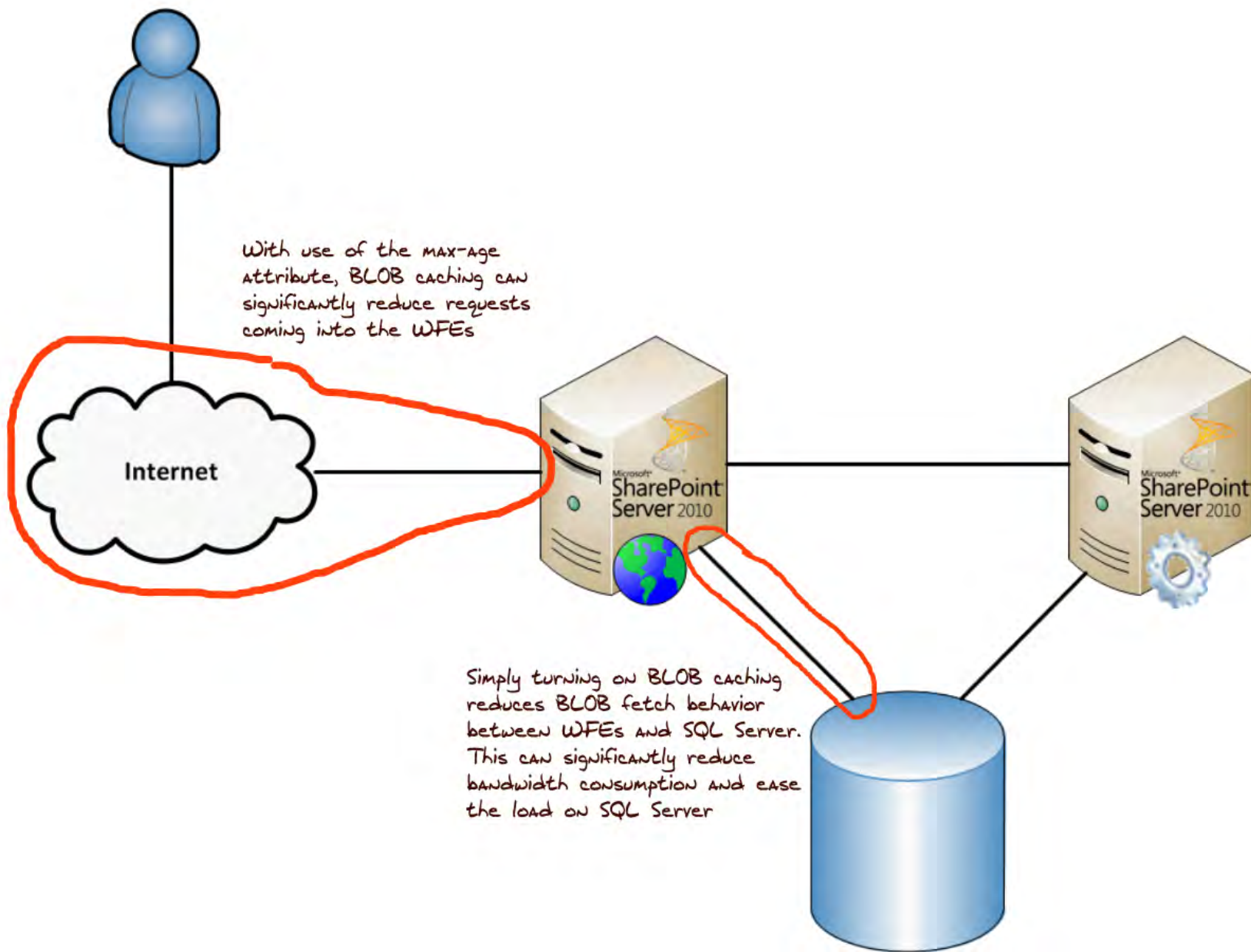


Of course, this behavior
CAN work both for you
AND AGAINST you ...



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

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

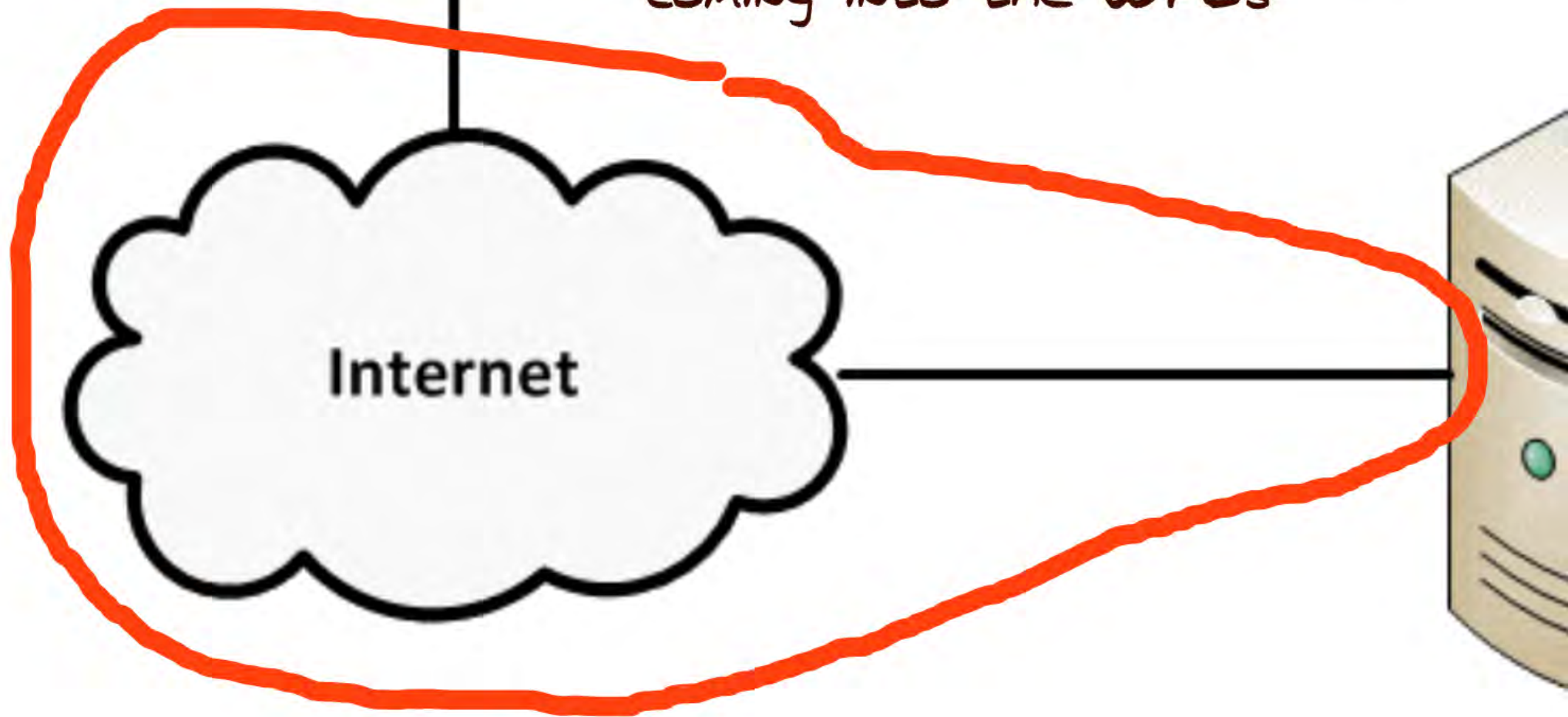


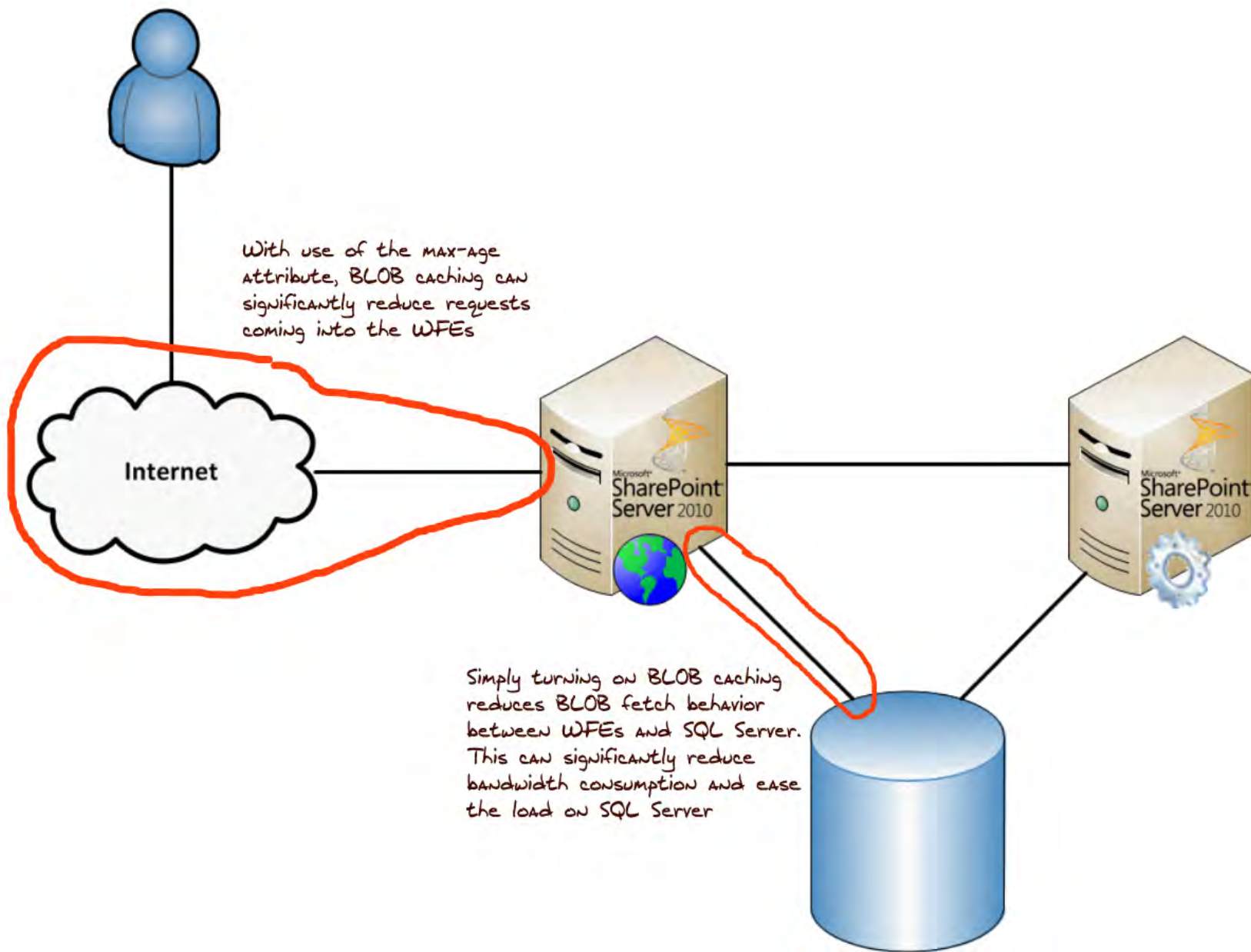


Simply turning on BLOB caching reduces BLOB fetch behavior between WFES AND SQL Server. This can significantly reduce bandwidth consumption AND ease the load on SQL Server



With use of the max-age
Attribute, BLOB caching can
significantly reduce requests
coming into the WFEs





Next up...

Next up...



Page output
caching

Next up...



Page output caching

piggybacks on ASP.NET output caching



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



~~My SharePoint Site~~

~~SPDC\me~~

Site Actions

Search this site..

Home

My SharePoint Site

Your SharePoint Site

Another Site

Top-Level Site > My SharePoint 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.

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



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



My SharePoint Site



SPDC\me



Site Actions



Search this site..



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Page output caching

Page output caching

Backed by memory



Page output caching

Backed by memory



Turned off by default
(thankfully)



Page output caching

Backed by memory



Turned off by default
(thankfully)



Default size or allocation

None*

Page output caching

Backed by memory



Turned off by default
(thankfully)



Default size or allocation

None*

A new trick that comes with SharePoint 2010 ...

[illegible]


```
<Action id="0ff1ce14-101d-0000-0000-000000000000" sourceFile="C:\Program Fi
<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>
```


[illegible]

So



So ...

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



The Page Output Cache
is like a big lookup table

The Page Output Cache is like a big lookup table

Each page request is broken down into a set of characteristics

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

Notice I said request.
The actual page that is
rendered 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 characterist

The can

- 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, it 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 Page Output Cache is like a big lookup table

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- 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

Site Actions Sean P. McDonough

Sean P. McDonough Site Settings

Sean P. McDonough Press Releases

Press Releases

- Recycle Bin
- All Site Content

Users and Permissions

- People and groups
- Site permissions
- Site collection administrators

Galleries

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

Site Administration

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

Site Collection Administration

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

Look and Feel

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

Site Actions

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

Reporting Services

- Manage Shared Schedules
- Reporting Services Site Settings

Site Information

Site URL:
<http://www.spmcdonough.com/>

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

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

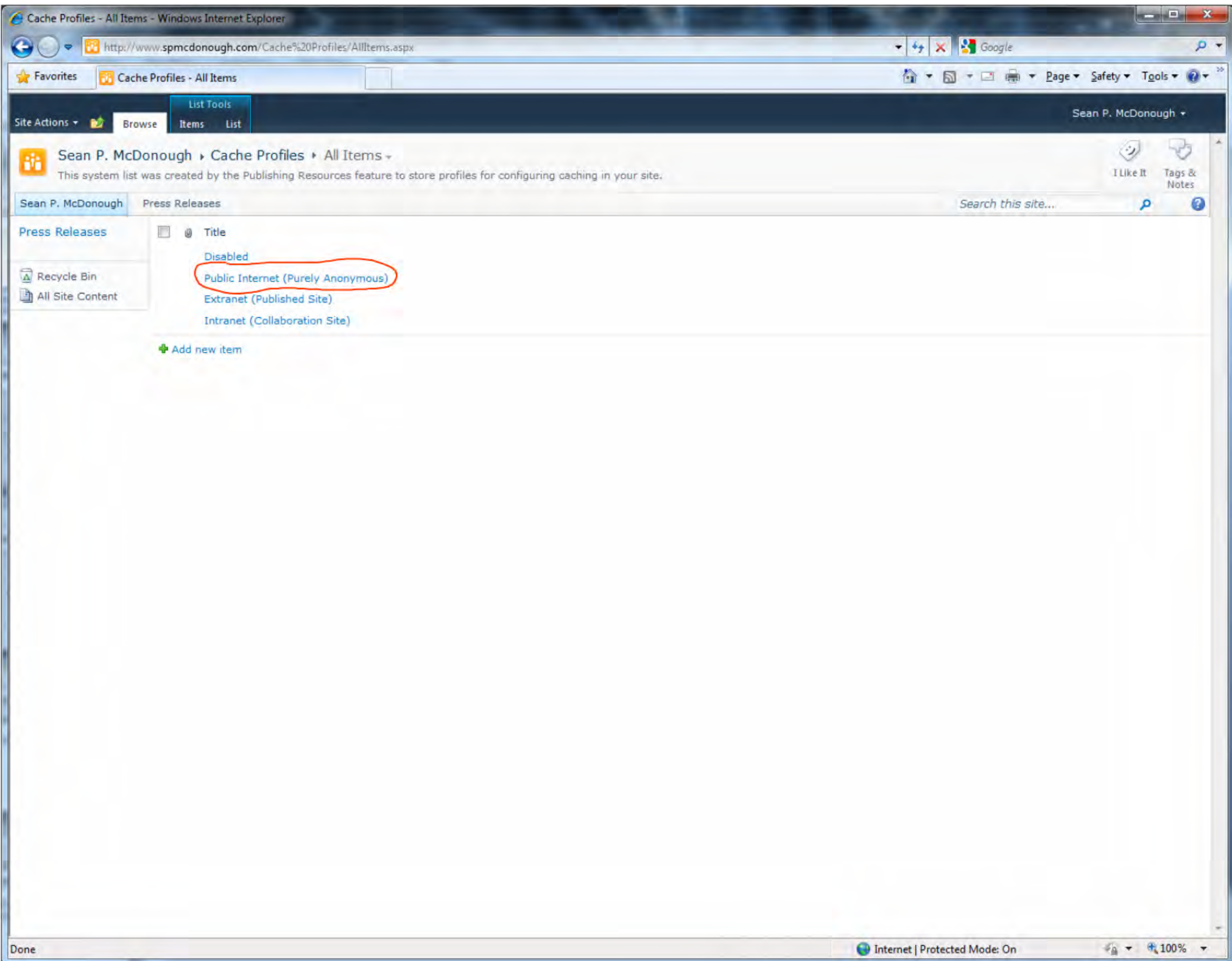
Variation labels

Variation logs

Translatable columns

Suggested Content Browser Locations

SharePoint Designer Settings



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

Cache Profiles - All Items

Site Actions - Browse Items List

Version History Item Permissions Alert Me Workflow Approve/Reject Link Tag & Notes

New Item New Folder View Item Edit Item Delete Item Manage Actions Share & Track Workflows Tags and Notes

Press Release Title Enabled Public Internet (Purely Anonymous) Extranet (Publishing Site) Intranet (Collaboration Site) Add New Item

Cache Profiles - Public Internet (Purely Anonymous)

View

Edit Item Version History Alert Me 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 receives 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%



Edit
Item



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 receives the same page as any other user.
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Vary by User Rights	
Cacheability	ServerAndPrivate
Safe for Authenticated Use	No
Allow writers to view cached content	

Content Type: Page Output Cache

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

Site Settings - Windows Internet Explorer

http://www.spmcdonough.com/_layouts/settings.aspx

Site Actions Sean P. McDonough

Sean P. McDonough Site Settings

Sean P. McDonough Press Releases

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- 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 Layout](#)

Site Collection Output Cache Settings - Windows Internet Explorer

http://www.spmcdonough.com/_Layouts/sitecachesettings.aspx

Site Actions Sean P. McDonough

Site Collection Administration > Output Cache Settings

Configure site-wide cache settings.

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.

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.](#)

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.

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 output cache

Anonymous Cache Profile

Disabled

Disabled

Public Internet (Purely Anonymous)

Extranet (Published Site)

Intranet (Collaboration Site)

Selected Anonymous Cache Profile

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 profile

☐ Enable debug cache information on pages

OK Cancel

Internet | Protected Mode: On 100%

Anonymous Cache Profile

Disabled



Disabled

Public Internet (Purely Anonymous)
Extranet (Published Site)

Select

Aut 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 profile

☐

Full text search information

Page Layouts:

☐ Page layouts can use a different page output cache p

☐ Enable debug cache information on pages

OK

Cancel

Search this site.



Enable output cache

Anonymous Cache Profile



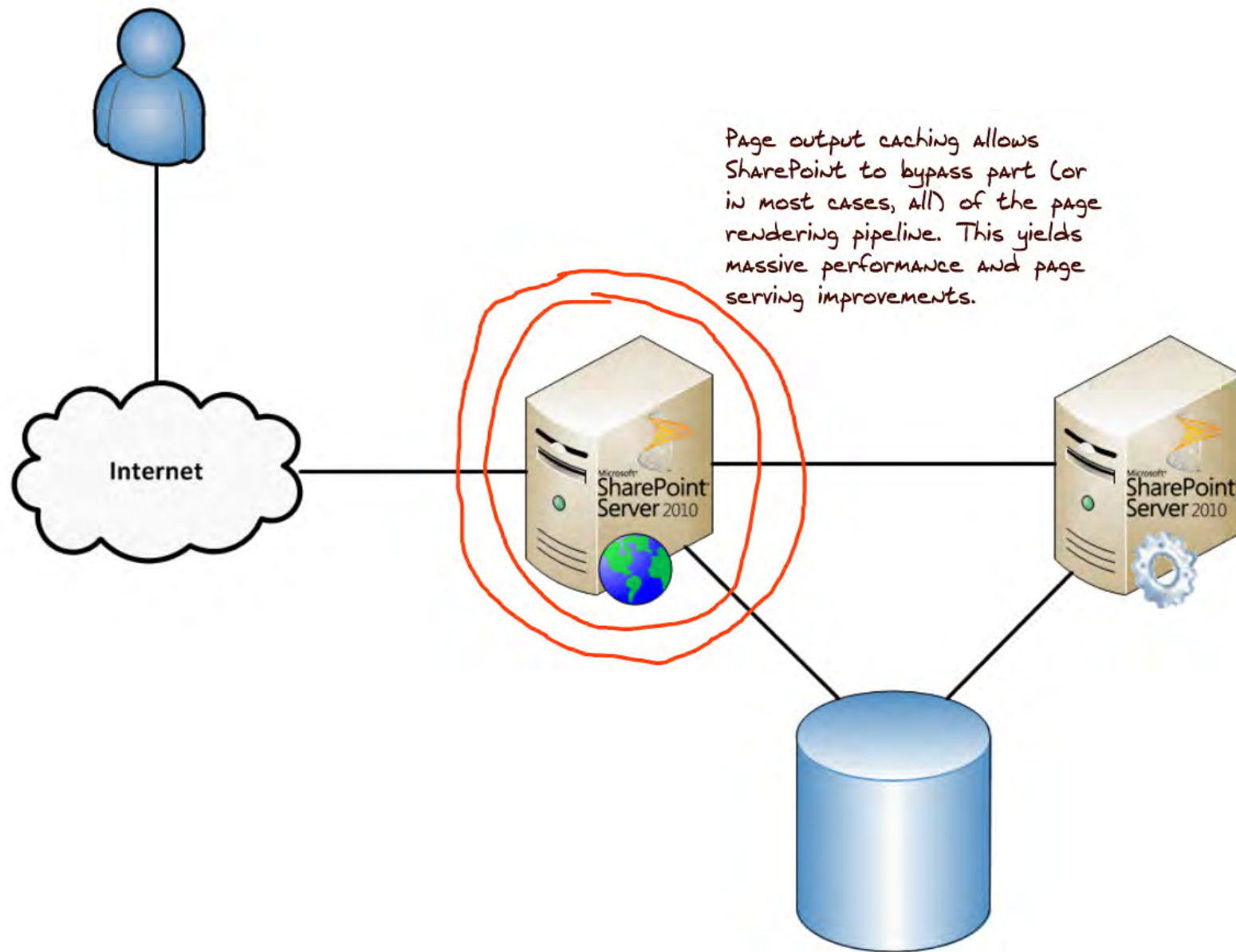
You really, really, **really** need to
do concurrent multi-user testing
with your caching settings!



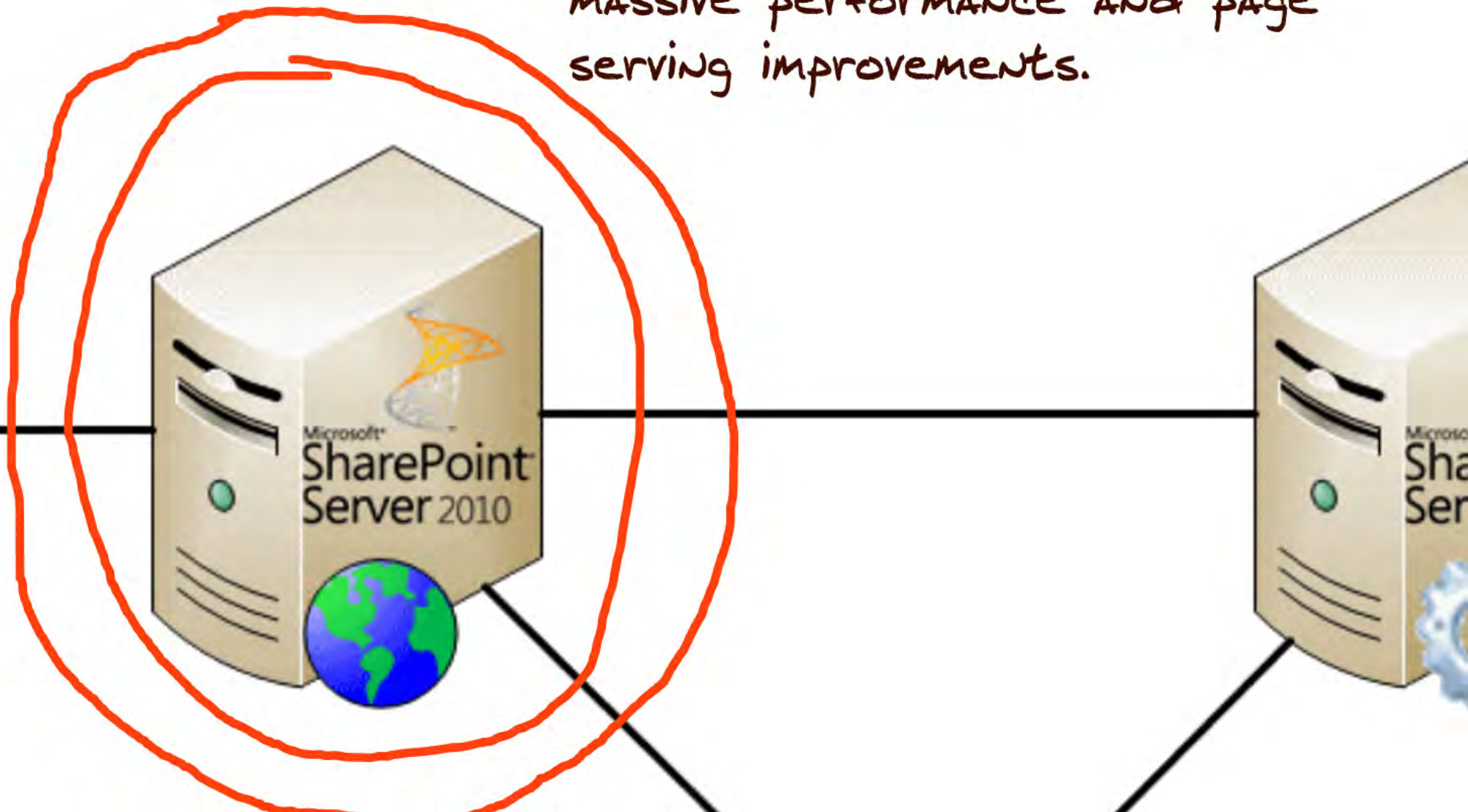
You really, really, **really** need to
do concurrent multi-user testing
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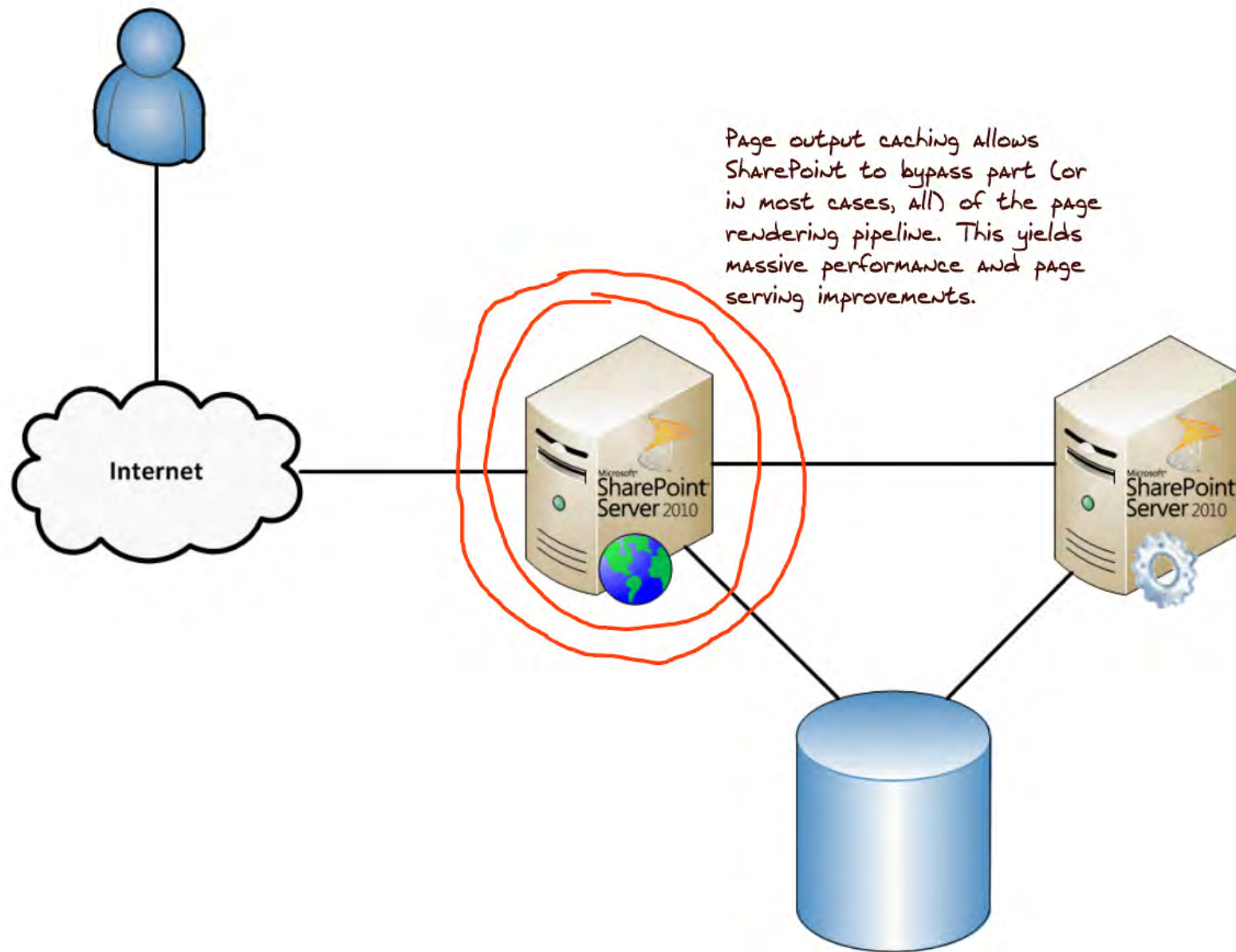


Do you sense a story coming?



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.





And finally

And finally



Office Web
Apps Cache



SharePoint 2010 Only!



SharePoint 2010 Only!



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





SharePoint 2010 Only!



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



How it works under the hood ...

Site Actions ▾

SPDC\s0ladmin ▾



SharePoint 2010 Central Administration ▸ Site Collection List



I Like It



Tags &
Notes



Central
Administration

Application Management

System Settings

Monitoring

Backup and Restore

Security

Upgrade and Migration

General Application
Settings

Configuration Wizards

URL Search



Web Application:

URL

/

[/sites/Office_Viewing_Service_Cache](#)

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

OK

Cancel

Site Actions  SPDC\s0ladmin 

Microsoft SharePoint 2010 Central Administration ▶ Site Collection List  



Central Administration

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

URL Search 

Web Application:

URL	
/	
/sites/Office_Viewing_Service_Cache	

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

OK Cancel

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

Recommendations

Recommendations



Get friendly with
`Set-OfficeSPWebAppsCache`
PowerShell cmdlet

Recommendations



Get friendly with
`Set-OfficeSPWebAppsCache`
PowerShell cmdlet

- relocate cache to a dedicated content DB

Recommendations



Get friendly with
Set-OfficeSPWebAppsCache
PowerShell cmdlet

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

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

- relocate
- increase ca
- applications
- decrease ca
- applicati
- con

Recommendations



Get friendly with
`Set-OfficeSPWebAppsCache`
PowerShell cmdlet

- relocate cache to a dedicated content 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)!*

References and Resources

Caching in Office SharePoint Server 2007

[http://technet.microsoft.com/en-us/library/cc298466\(office.12\).aspx](http://technet.microsoft.com/en-us/library/cc298466(office.12).aspx)

Configure cache settings for a Web Application (SharePoint Server 2010)

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

Configure object cache user accounts

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

Disk-Based Caching for Binary Large Objects

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

Flush the BLOB cache (SharePoint Server 2010)

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

MANUALLY Clearing the MOSS 2007 BLOB Cache

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

MOSS 2007 Farm-Wide BLOB Cache Flushing Solution

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

Client-Server Interactions and the max-age Attribute with SharePoint...

<http://sharepointinterface.com/2011/02/21/client-server-interactions-and-the-max-age-attribute-with-sharepoint-blob-caching/>

Manage the Office Web Apps cache

<http://technet.microsoft.com/en-us/library/ee837422.aspx>

Quick Tips for Managing the SharePoint 2010 Office Web Apps' Cache

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

MOSS Object Cache Memory Tuning is not an Intuitive Process

<http://sharepointinterface.com/2009/08/30/moss-object-cache-memory-tuning-is-not-an-intuitive-process/>

cache Element for caching (ASP.NET Settings Schema)

<http://msdn.microsoft.com/en-us/library/ms228248.aspx>



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SharePoint 2007 Disaster Recovery Guide
<http://tinyurl.com/SPDRGuide2007>



SharePoint 2010 Disaster Recovery Guide
<http://tinyurl.com/SPDRGuide2010>