

EXHIBIT H

BEDROCK COMPUTER TECHS., LLC V. SOFTLAYER TECH. SOLUTIONS, LLC, ET. AL

PLAINTIFF’S P.R. 3-6 INFRINGEMENT CONTENTIONS

	Claim Language	Court’s Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
1.	An information storage and retrieval system, the system comprising:		<p>Bedrock Computer Technologies LLC (“Bedrock”) does not express a position at this time as to whether the preamble of this claim limits the claim’s scope. Nevertheless, Bedrock identifies below aspects of the Accused Instrumentalities that correspond to the claim preamble.</p> <p>When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted for information storage and retrieval.</p>
(a) ¹	a linked list to store and provide access to records stored in a memory of the system, at least some of the records automatically expiring ,	<p>a linked list to store and provide access to records means “a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no next record”</p> <p>automatically expiring means “becoming obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time”</p>	<p>When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include a linked list to store and provide access to records stored in a memory of the system, at least some of the records automatically expiring.</p> <p>Within Linux kernel version 2.6.18, the data structure <code>rt_hash_table</code> in module <code>/net/ipv4/route.c</code>² anchors one or more linked list(s) to store and provide access to records stored in a memory of the system, at least some of</p>

¹ While the limitations are not lettered in the actual claims of the patent, Bedrock provides them here for ease of reference.

² The path names of the cited source code is provided for the defendants’ convenience. If any version or customization of Linux kernel version 2.6.18 deviates from the path names that are cited in these charts, such deviations are insignificant because it is the routines, functions, methods, macros, classes, data structures, etc., as embodied on servers and other devices, that infringe.

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			<p>the records automatically expiring. In this way, computer equipment configured with or utilizing software based on 2.6.18 includes a linked list to store and provide access to records stored in a memory of the system, at least some of the records automatically expiring.</p> <p>The following code excerpts from the files /net/ipv4/route.c and /include/net/route.h show the C language definition for the data structure rt_hash_table and the rtable struct definition used by rt_hash_table:</p> <pre> static struct rt_hash_bucket *rt_hash_table; struct rt_hash_bucket { struct rtable *chain; }; struct rtable { union { struct dst_entry dst; struct rtable *rt_next; } u; struct in_device *idev; unsigned rt_flags; __u16 rt_type; __u16 rt_multipath_alg; __u32 rt_dst; /* Path destination */ __u32 rt_src; /* Path source */ int rt_iif; /* Info on neighbour */ __u32 rt_gateway; /* Cache lookup keys */ struct flowi fl; /* Miscellaneous cached information */ __u32 rt_spec_dst; /* RFC1122 specific destination */ </pre>

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			<pre> struct inet_peer *peer; /* long-living peer info */ }; </pre> <p>Source: Linux kernel source code files /net/ipv4/route.c and /include/net/route.h</p> <p>In the above code, an entry in the Linux IPv4 routing cache (rt_hash_table) is a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no next record. In particular, a rt_hash_table entry contains a field named “chain” which is a pointer to the first record of the list. Records of the list are C structs of the type “rtable”. A record contains a field named u.rt_next which is a pointer to the next record in the list. If there is no next record, then the u.rt_next field contains a null pointer.</p> <p>In the Linux IPv4 routing cache, a record of a linked list of the routing cache automatically expires when it becomes obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time. More specifically, Linux IPv4 scores the desirability or need for records in the information storage system based on the following criteria:</p> <ol style="list-style-type: none"> 1. The age of the routing cache record 2. The type of route (such as multicast, broadcast, and local) 3. If the route has been redirected <p>The function rt_score is the function that scores the desirability or need for records in the information storage system:</p> <pre> static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; </pre>

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			<pre> score = ~score & ~(3<<30); if (rt_valuable(rt)) score = (1<<31); if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; } static __inline__ int rt_valuable(struct rtable *rth) { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY)) rth->u.dst.expires; } </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>At least some of the records—if not all of the records—automatically expire according to the criteria used by <code>rt_score</code>. The records are stored in memory of the information storage system.</p>
(b)	<p>a record search means utilizing a search key to access the linked list,</p>	<p>function: “utilizing a search key to access the linked list”</p> <p>structure: “CPU 10 and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4 lines 22-48, programmed with software instructions as described in Boxes 31-36 and Boxes 39-41 of FIG. 3 and in col. 5 line 53-col. 6 line 4 and col. 6 lines 14-20, and/or programmed with software instructions as described in the pseudocode of Search Table Procedure (cols. 11 and 12) or Alternate Version of Search Table Procedure (cols. 11, 12,</p>	<p>When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include a record search means utilizing a search key to access the linked list or its equivalent.</p> <p>The following code within <code>route.c</code> performs the function of utilizing a search key to access the linked list:</p> <pre> unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << </pre>

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		13, and 14), or the equivalents thereof'	<pre> 5)); if (!rt_intern_hash(hash, rt, &rt)) * or * hash = rt_hash_code(daddr, saddr ^ (dev->ifindex << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); err = rt_intern_hash(hash, rth, &rtres); * or * hash = rt_hash_code(daddr, saddr ^ (fl.iif << 5)); err = rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(oldflp->fl4_dst, oldflp->fl4_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); * or * hash = rt_hash_code(oldflp->fl4_dst, oldflp->fl4_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); static unsigned int rt_hash_code(u32 daddr, u32 saddr) { return (jhash_2words(daddr, saddr, rt_hash_rnd) & rt_hash_mask); } rt_intern_hash accesses the linked list and searches for a record by comparing keys: rthp = &rt_hash_table[hash].chain; spin_lock_bh(rt_hash_lock_addr(hash)); while ((rth = *rthp) != NULL) { #ifdef CONFIG_IP_ROUTE_MULTIPATH_CACHED if (!(rth->u.dst.flags & DST_BALANCED) && compare_keys(&rth->fl, &rt->fl)) { #else </pre>

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			<pre> if (compare_keys(&rth->fl, &rt->fl)) { #endif **** *rp = rth; return 0; } **** chain_length++; rthp = &rth->u.rt_next; } **** spin_unlock_bh(rt_hash_lock_addr(hash)); *rp = rt; return 0; } static inline int compare_keys(struct flowi *f1, struct flowi *f2) { return memcmp(&f1->nl_u.ip4_u, &f2->nl_u.ip4_u, sizeof(f1->nl_u.ip4_u)) == 0 && f1->oif == f2->oif && f1->iif == f2->iif; } </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>Bedrock contends that that this limitation is literally met by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>

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(c)	<p><u>the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed, and</u></p>	<p>function: “identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed”</p> <p>structure: “CPU 10 and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4 lines 22-48, programmed with software instructions as described in Boxes 33-42 of FIG. 3 and in col. 5 line 53-col. 6 line 34, and/or programmed with software instructions as described in the pseudo-code of Search Table Procedure (cols. 11 and 12) or Alternate Version of Search Table Procedure (cols. 11, 12, 13, and 14), or the equivalents thereof”</p>	<p>When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include a record search means, the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed or its equivalent.</p> <p>Specifically, code contained within function <code>rt_intern_hash</code> comprises record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed or its equivalent.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function performs the function of identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed:</p> <pre> rthp = &rt_hash_table[hash].chain; spin_lock_bh(rt_hash_lock_addr(hash)); while ((rth = *rthp) != NULL) { #ifdef CONFIG_IP_ROUTE_MULTIPATH_CACHED if (!(rth->u.dst.flags & DST_BALANCED) && compare_keys(&rth->fl, &rt->fl)) { #else if (compare_keys(&rth->fl, &rt->fl)) { #endif **** *rp = rth; return 0; } **** </pre>

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			<pre> if (!atomic_read(&rth->u.dst.__refcnt)) { u32 score = rt_score(rth); if (score <= min_score) { cand = rth; candp = rthp; min_score = score; } chain_length++; rthp = &rth->u.rt_next; } if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } **** spin_unlock_bh(rt_hash_lock_addr(hash)); *rp = rt; return 0; } static inline int compare_keys(struct flowi *f11, struct flowi *f12) { return memcmp(&f11->nl_u.ip4_u, &f12->nl_u.ip4_u, sizeof(f11- >nl_u.ip4_u)) == 0 && f11->oif == f12->oif && f11->iif == f12->iif; } static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; score = ~score & ~(3<<30); if (rt_valuable(rt)) score = (1<<31); </pre>

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			<pre data-bbox="1518 332 2446 617"> if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; } static __inline__ int rt_valuable(struct rtable *rth) { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY) rth->u.dst.expires; } </pre> <p data-bbox="1518 665 2217 698">Source: Linux kernel source code file /net/ipv4/route.c</p> <p data-bbox="1518 738 2499 917">Note that the record(s) identified as expired upon traversal of the linked list is not necessarily the record that rt_intern_hash was called to find. Both the identification and the removal are performed when the linked list is accessed, as is evidenced by the locking and unlocking of the linked list by rt_intern_hash.</p> <p data-bbox="1518 958 2499 1177">Bedrock contends that that this limitation is literally met by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>
(d)	means, utilizing the record search means, for accessing the linked list and, at the same time, removing at least some of	function: “utilizing the record search means, accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list” structure: “CPU 10 and RAM 11 of FIG. 1 and col. 3 lines	When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include means, utilizing the record

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	<p>the expired ones of the records in the linked list.</p>	<p>52-56 and portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions that provide the insert, retrieve, or delete record capability as described in the flowchart of FIG. 5 and col. 7 line 65 – col. 8 line 32, FIG. 6 and col. 8 lines 33-44, or FIG. 7 and col. 8 lines 45-59, respectively, and/or programmed with software instructions that provide the insert, retrieve or delete record capability as described in the pseudocode of Insert Procedure (cols. 9 and 10), Retrieve Procedure (cols. 9, 10, 11, and 12), or Delete Procedure (cols. 11 and 12), respectively, or the equivalents thereof”</p>	<p>search means, for accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list or its equivalent.</p> <p>The code identified below collectively performs the function of utilizing the record search means, accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list. This function is parsed out below for convenience.</p> <p>The following calls to the hashing function and <code>rt_intern_hash</code> are all utilizations of the record search means:</p> <pre> unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << 5)); if (!rt_intern_hash(hash, rt, &rt)) * or * hash = rt_hash_code(daddr, saddr ^ (dev->ifindex << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); err = rt_intern_hash(hash, rth, &rtres); * or * hash = rt_hash_code(daddr, saddr ^ (fl.iif << 5)); err = rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); * or * hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ </pre>

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			<pre> (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); rt_intern_hash, inserts a record: static int rt_intern_hash(unsigned hash, struct rtable *rt, struct rtable **rp) { struct rtable *rth, **rthp; unsigned long now; struct rtable *cand, **candp; u32 min_score; int chain_length; int attempts = !in_softirq(); **** rt->u.rt_next = rt_hash_table[hash].chain; #ifdef RT_CACHE_DEBUG >= 2 if (rt->u.rt_next) { struct rtable *trt; printk(KERN_DEBUG "rt_cache @%02x: %u.%u.%u.%u", hash, NIPQUAD(rt->rt_dst)); for (trt = rt->u.rt_next; trt; trt = trt->u.rt_next) printk(" . %u.%u.%u.%u", NIPQUAD(trt->rt_dst)); printk("\n"); } #endif rt_hash_table[hash].chain = rt; spin_unlock_bh(rt_hash_lock_addr(hash)); *rp = rt; return 0; rt_intern_hash retrieves a record: static int rt_intern_hash(unsigned hash, struct rtable *rt, struct rtable **rp) { struct rtable *rth, **rthp; unsigned long now; struct rtable *cand, **candp; u32 min_score; int chain_length; int attempts = !in_softirq(); *** </pre>

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			<pre> before /* Put it first */ *rthp = rth->u.rt_next; /* * Since lookup is lockfree, the deletion * must be visible to another weakly ordered CPU * the insertion at the start of the hash chain. */ rcu_assign_pointer(rth->u.rt_next, rt_hash_table[hash].chain); /* * Since lookup is lockfree, the update writes * must be ordered for consistency on SMP. */ rcu_assign_pointer(rt_hash_table[hash].chain, rth); rth->u.dst.__use++; dst_hold(&rth->u.dst); rth->u.dst.lastuse = now; spin_unlock_bh(rt_hash_lock_addr(hash)); rt_drop(rt); *rp = rth; return 0; } rt_intern_hash is also invoked when deleting a record: unsigned hash = rt_hash_code(daddr, keys[i] ^ (ikeys[k] << 5)); rthp=&rt_hash_table[hash].chain; rcu_read_lock(); while ((rth = rcu_dereference(*rthp)) != NULL) { struct rtable *rt; if (rth->fl.fl4_dst != daddr rth->fl.fl4_src != keys[i] rth->fl.oif != ikeys[k] rth->fl.iif != 0) { rthp = &rth->u.rt_next; continue; } </pre>

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			<pre data-bbox="1895 329 2346 781"> if (rth->rt_dst != daddr rth->rt_src != saddr rth->u.dst.error rth->rt_gateway != old_gw rth->u.dst.dev != dev) break; dst_hold(&rth->u.dst); rcu_read_unlock(); rt = dst_alloc(&ipv4_dst_ops); **** rt_del(hash, rth); if (!rt_intern_hash(hash, rt, &rt)) ip_rt_put(rt); goto do_next; } </pre> <p data-bbox="1516 824 2214 854">Source: Linux kernel source code file /net/ipv4/route.c</p> <p data-bbox="1516 898 2494 1000">As explained above, code within rt_intern_hash performs the function of accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list.</p> <p data-bbox="1516 1044 2494 1256">Bedrock contends that that this limitation is literally met both identically and by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>
2.	The information storage and retrieval system according to claim 1	function: “dynamically determining maximum number for the record search means to remove in the accessed linked list of records”	When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells,

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	<p>further including means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records.</p>	<p>structure: “CPU 10, and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions to dynamically determine a maximum number of records to remove by choosing a search strategy of removing all expired records from a linked list or removing some but not all of the expired records as described in col. 6 line 56 – col. 7 line 15 and/or programmed with software instructions to dynamically determine a maximum number of records to remove by choosing between the pseudocode of the Search Table Procedure (cols. 11 and 12) or Alternative Version of Search Table Procedure (cols. 11, 12, 13, and 14), or the equivalents thereof”</p>	<p>offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records or its equivalent.</p> <p>Specifically, code contained within function <code>rt_intern_hash</code>, in module <code>/net/ipv4/route.c</code>, dynamically executes based upon comparison with variable <code>ip_rt_gc_elasticity</code>. In this way, computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 includes means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records or its equivalent.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function performs the function of dynamically determining maximum number for the record search means to remove in the accessed linked list of records:</p> <pre> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre> <p><code>chain_length</code> is a variable that dynamically changes to accurately represent the length of a chain, which is a factor internal to the information storage system:</p> <pre> chain_length++; </pre>

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			<p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>Bedrock contends that that this limitation is literally met by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>
3.	<p>A method for storing and retrieving information records using a linked list to store and provide access to the records, at least some of the records automatically expiring, the method comprising the steps of:</p>	<p><u>a linked list to store and provide access to the records</u> means “a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no next record”</p> <p><u>automatically expiring</u> means “becoming obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time”</p>	<p>Bedrock does not express a position at this time as to whether the preamble of this claim limits the claim's scope. Nevertheless, Bedrock identifies below aspects of the Accused Instrumentalities that correspond to the claim preamble.</p> <p>When AOL uses (or induces or contributes to others' use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others' practice of) a method for storing and retrieving information records that uses a linked list to store and provide access to the records, where at least some of the records are automatically expiring. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to store and retrieve information records using a linked list to store and provide access to the records, where at least some of the records are automatically expiring.</p> <p>The following code excerpts from the files /net/ipv4/route.c and /include/net/route.h show the C language definition for the data structure <code>rt_hash_table</code> and the <code>rtable</code> struct definition used by <code>rt_hash_table</code>:</p>

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			<pre> static struct rt_hash_bucket *rt_hash_table; struct rt_hash_bucket { struct rtable *chain; }; struct rtable { union { struct dst_entry dst; struct rtable *rt_next; } u; struct in_device *idev; unsigned rt_flags; __u16 rt_type; __u16 rt_multipath_alg; __u32 rt_dst; /* Path destination */ __u32 rt_src; /* Path source */ int rt_iif; /* Info on neighbour */ __u32 rt_gateway; /* Cache lookup keys */ struct flowi fl; /* Miscellaneous cached information */ __u32 rt_spec_dst; /* RFC1122 specific destination */ }; struct inet_peer *peer; /* long-living peer info */ </pre> <p>Source: Linux kernel source code files /net/ipv4/route.c and /include/net/route.h</p> <p>In the above code, an entry in the Linux IPv4 routing cache (rt_hash_table) is a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no</p>

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			<p>next record. In particular, a <code>rt_hash_table</code> entry contains a field named "chain" which is a pointer to the first record of the list. Records of the list are C structs of the type "rtable". A record contains a field named <code>u.rt_next</code> which is a pointer to the next record in the list. If there is no next record, then the <code>u.rt_next</code> field contains a null pointer.</p> <p>In the Linux IPv4 routing cache, a record of a linked list of the routing cache automatically expires when it becomes obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time. More specifically, Linux IPv4 scores the desirability or need for records in the information storage system based on the following criteria:</p> <ol style="list-style-type: none"> 1. The age of the routing cache record 2. The type of route (such as multicast, broadcast, and local) 3. If the route has been redirected <p>The function <code>rt_score</code> is the function that scores the desirability or need for records in the information storage system:</p> <pre>static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; score = ~score & ~(3<<30); if (rt_valuable(rt)) score = (1<<31); if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; }</pre>

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			<pre data-bbox="1516 310 2368 472"> } static __inline__ int rt_valuable(struct rtable *rth) { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY)) rth->u.dst.expires; } </pre> <p data-bbox="1516 537 2214 570">Source: Linux kernel source code file /net/ipv4/route.c</p> <p data-bbox="1516 610 2497 716">At least some of the records—if not all of the records—automatically expire according to the criteria used by <code>rt_score</code>. The records are stored in memory of the information storage system.</p>
(a)	accessing the linked list of records,	linked list means “a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no next record”	<p data-bbox="1516 760 2483 971">When AOL uses (or induces or contributes to others' use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others' practice of) a method that includes the step of accessing the linked list of records. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to access a linked list of records.</p> <p data-bbox="1516 1011 2483 1157">Specifically, the data structure <code>rt_hash_table</code> in module <code>/net/ipv4/route.c</code> is used to access the linked list of records. Additionally, code contained within the function <code>rt_intern_hash</code> in module <code>/net/ipv4/route.c</code> is also used to access the linked list of records.</p> <p data-bbox="1516 1198 2483 1263">The following code excerpts within <code>route.c</code> performs the step of accessing a linked list of records:</p> <pre data-bbox="1516 1304 2456 1403"> unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << 5)); if (!rt_intern_hash(hash, rt, &rt)) </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> * or * hash = rt_hash_code(daddr, saddr ^ (dev->ifindex << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); err = rt_intern_hash(hash, rth, &rtres); * or * hash = rt_hash_code(daddr, saddr ^ (fl.iif << 5)); err = rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(oldflp->fl4_dst, oldflp->fl4_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); * or * hash = rt_hash_code(oldflp->fl4_dst, oldflp->fl4_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); </pre> <p>rt_intern_hash accesses the linked list:</p> <pre> rthp = &rt_hash_table[hash].chain; </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p>
(b)	identifying at least some of the automatically expired ones of the records, and	expired means “obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time”	When AOL uses (or induces or contributes to others’ use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others’ practice of) a method that includes the step of identifying at least some of the automatically expired ones of the records. Computer equipment configured

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to identify at least some of the automatically expired ones of the records.</p> <p>In the Linux IPv4 routing cache, a record of a linked list of the routing cache automatically expires when it becomes obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time. More specifically, Linux IPv4 scores the desirability or need for records in the information storage system based on the following criteria:</p> <ol style="list-style-type: none"> 1. The age of the routing cache record 2. The type of route (such as multicast, broadcast, and local) 3. If the route has been redirected <p>The function <code>rt_score</code> is the function that scores the desirability or need for records in the information storage system:</p> <pre> static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; score = ~score & ~(3<<30); if (rt_valuable(rt)) score = (1<<31); if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; } static inline int rt_valuable(struct rtable *rth) </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre data-bbox="1516 310 2368 399"> { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY)) rth->u.dst.expires; } </pre> <p data-bbox="1516 467 2214 496">Source: Linux kernel source code file /net/ipv4/route.c</p> <p data-bbox="1516 537 2494 605">At least some of the records—if not all of the records—automatically expire according to the criteria used by <code>rt_score</code>.</p> <p data-bbox="1516 651 2494 751">Code contained within or accessed by the function <code>rt_intern_hash</code> in module /net/ipv4/route.c uses <code>rt_score</code> to practice a method that includes the step of identifying at least some of the automatically expired ones of the records.</p> <p data-bbox="1516 797 2467 898">The following code excerpt from the <code>rt_intern_hash</code> function performs the step of identifying at least some of the automatically expired ones of the records:</p> <pre data-bbox="1516 967 2233 1385"> rthp = &rt_hash_table[hash].chain; spin_lock_bh(rt_hash_lock_addr(hash)); while ((rth = *rthp) != NULL) { #ifdef CONFIG_IP_ROUTE_MULTIPATH_CACHED if (!(rth->u.dst.flags & DST_BALANCED) && compare_keys(&rth->fl, &rt->fl)) { #else if (compare_keys(&rth->fl, &rt->fl)) { #endif **** *rp = rth; return 0; } } **** </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre data-bbox="1607 305 2233 618"> if (!atomic_read(&rth->u.dst.__refcnt)) { u32 score = rt_score(rth); if (score <= min_score) { cand = rth; candp = rthp; min_score = score; } chain_length++; rthp = &rth->u.rt_next; } if (cand) { </pre> <p data-bbox="1516 656 2214 688">Source: Linux kernel source code file /net/ipv4/route.c</p>
(c)	<p data-bbox="263 732 620 906">removing at least some of the automatically expired records from the linked list when the linked list is accessed.</p>	<p data-bbox="685 732 1473 870"><u>removing at least some of the automatically expired records from the linked list</u> means “adjusting the pointer in the linked list to bypass the previously identified expired records”</p> <p data-bbox="685 914 1454 1019"><u>when the linked list is accessed</u> means “both identification and removal of the automatically expired record(s) occurs during the same access of the linked list”</p>	<p data-bbox="1516 732 2494 1052">When AOL uses (or induces or contributes to others’ use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others’ practice of) a method that includes the step of removing at least some of the automatically expired records from the linked list when the linked list is accessed. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to remove at least some of the automatically expired records from the linked list when the linked list is accessed.</p> <p data-bbox="1516 1096 2494 1234">Specifically, code contained within the function rt_intern_hash in module /net/ipv4/route.c is used to practice a method that includes the step of removing at least some of the automatically expired records from the linked list when the linked list is accessed.</p> <p data-bbox="1516 1278 2494 1383">The following code excerpt from the rt_intern_hash function is an example of removing at least some of the automatically expired records from the linked list when the linked list is accessed:</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre data-bbox="1607 331 2475 613"> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre> <p data-bbox="1516 656 2494 760">The line of code “*candp = cand->u.rt_next;” performs the step of adjusting the pointer in the linked list to bypass the previously identified expired records.</p> <p data-bbox="1516 802 2214 834">Source: Linux kernel source code file /net/ipv4/route.c</p> <p data-bbox="1516 876 2494 980">Both the identification and the removal are performed when the linked list is accessed, as is evidenced by the locking and unlocking of the linked list by rt_intern_hash.</p>
	<p data-bbox="263 1026 575 1058">{ordering of the steps}</p>	<p data-bbox="685 1026 1489 1166">ordering of the steps: The “identifying” step must start before “removal” can begin. However, identification need not be completed before removal can begin. The identification step may overlap with the removal step.</p>	<p data-bbox="1516 1026 2376 1091">As shown in the code below, the “identifying” step starts before the “removal” step:</p> <pre data-bbox="1607 1133 2475 1414"> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre>

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4.	The method according to claim 3 further including the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed.	dynamically determining means “making a decision based on factors internal or external to the information storage and retrieval system”	<p>When AOL uses (or induces or contributes to others' use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others' practice of) a method that includes the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed.</p> <p>Specifically, code contained within function <code>rt_intern_hash</code> (in module <code>/net/ipv4/route.c</code>) that dynamically executes based upon comparison with variable <code>ip_rt_gc_elasticity</code> is used to perform the claimed act(s). In this way, computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 practices a method that includes the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to dynamically determine maximum number of expired ones of the records to remove when the linked list is accessed.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function performs the step of dynamically determining the maximum number of expired ones of the records to remove when the linked list is accessed:</p> <pre> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre>

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	<p>records with same hash address, at least some of the records automatically expiring,</p>	<p>52-56 and portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions to provide a hash table having a pointer to the head of a linked list of externally chained records as described in col. 5 lines 16-26 and/or programmed with software instructions as described in the pseudo-code of Definitions, definition number 4, or the equivalents thereof”</p>	<p>chaining technique to store the records with same hash address, where at least some of the records are automatically expiring or its equivalent.</p> <p>Specifically, data structure <code>rt_hash_table</code> in module <code>/net/ipv4/route.c</code> implements a hashing means to provide access to records stored in a memory of the system and using an external chaining technique to store the records with same hash address, where at least some of the records automatically are expiring or its equivalent.</p> <p>The following code excerpts from the files <code>/net/ipv4/route.c</code> and <code>/include/net/route.h</code> show the C language definition for the data structure <code>rt_hash_table</code> and the <code>rtable</code> struct definition used by <code>rt_hash_table</code>:</p> <pre> static struct rt_hash_bucket *rt_hash_table; struct rt_hash_bucket { struct rtable *chain; }; struct rtable { union { struct dst_entry dst; struct rtable *rt_next; } u; struct in_device *idev; unsigned rt_flags; __u16 rt_type; __u16 rt_multipath_alg; __u32 rt_dst; /* Path destination */ __u32 rt_src; /* Path source */ int rt_iif; /* Info on neighbour */ u32 rt_gateway; </pre>

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			<pre> /* Cache lookup keys */ struct flowi fl; /* Miscellaneous cached information */ __u32 rt_spec_dst; /* RFC1122 specific destination */ struct inet_peer *peer; /* long-living peer info */ }; **** ipv4_dst_ops.kmem_cache = kmem_cache_create("ip_dst_cache", sizeof(struct rtable), 0, SLAB_HWCACHE_ALIGN, NULL, NULL); **** rt_hash_table = (struct rt_hash_bucket *) alloc_large_system_hash("IP route cache", sizeof(struct rt_hash_bucket), rhash_entries, (num_physpages >= 128 * 1024) ? 15 : 17, 0, &rt_hash_log, &rt_hash_mask, 0); memset(rt_hash_table, 0, (rt_hash_mask + 1) * sizeof(struct rt_hash_bucket)); </pre> <p>Source: Linux kernel source code file /net/ipv4/route.h</p>
(b)	<p>a record search means utilizing a search key to access a linked list of records having the same hash address,</p>	<p>function: “utilizing a search key to access the linked list”</p> <p>structure: “CPU 10 and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4 lines 22-48, programmed with software instructions as described in Boxes 31-36 and Boxes 39-41 of FIG. 3 and in col. 5 line 53-col. 6 line 4 and col. 6 lines 14-20, and/or programmed with software instructions as described in the</p>	<p>When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include a record search means utilizing a search key to access a linked list of records having the same hash address or its equivalent.</p> <p>The following code within route.c performs the function of utilizing a</p>

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		pseudocode of Search Table Procedure (cols. 11 and 12) or Alternate Version of Search Table Procedure (cols. 11, 12, 13, and 14), or the equivalents thereof'	<p>search key to access the linked list:</p> <pre> unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << 5)); if (!rt_intern_hash(hash, rth, &rt)) * or * hash = rt_hash_code(daddr, saddr ^ (dev->ifindex << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); err = rt_intern_hash(hash, rth, &rtres); * or * hash = rt_hash_code(daddr, saddr ^ (fl.iif << 5)); err = rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); * or * hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); static unsigned int rt_hash_code(u32 daddr, u32 saddr) { return (jhash_2words(daddr, saddr, rt_hash_rnd) & rt_hash_mask); } rt_intern_hash accesses the linked list and searches for a record by comparing keys: spin_lock_bh(rt_hash_lock_addr(hash)); while ((rth = *rthp) != NULL) { </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> #ifdef CONFIG_IP_ROUTE_MULTIPATH_CACHED if (!(rth->u.dst.flags & DST_BALANCED) && compare_keys(&rth->fl, &rt->fl)) { #else if (compare_keys(&rth->fl, &rt->fl)) { #endif **** *rp = rth; return 0; } **** chain_length++; rthp = &rth->u.rt_next; } **** spin_unlock_bh(rt_hash_lock_addr(hash)); *rp = rt; return 0; } static inline int compare_keys(struct flowi *fl1, struct flowi *fl2) { return memcmp(&fl1->nl_u.ip4_u, &fl2->nl_u.ip4_u, sizeof(fl1->nl_u.ip4_u)) == 0 && fl1->oif == fl2->oif && fl1->iif == fl2->iif; } </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>Bedrock contends that that this limitation is literally met by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			this term.
(c)	<p>the record search means including means for identifying and removing at least some expired ones of the records from the linked list of records when the linked list is accessed, and</p>	<p>function: “identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed”</p> <p>structure: “CPU 10 and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4 lines 22-48, programmed with software instructions as described in Boxes 33-42 of FIG. 3 and in col. 5 line 53-col. 6 line 34, and/or programmed with software instructions as described in the pseudo-code of Search Table Procedure (cols. 11 and 12) or Alternate Version of Search Table Procedure (cols. 11, 12, 13, and 14), or the equivalents thereof”</p>	<p>When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include the record search means including means for identifying and removing at least some expired ones of the records from the linked list of records when the linked list is accessed or its equivalent.</p> <p>Specifically, code contained within function <code>rt_intern_hash</code> comprises record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed or its equivalent.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function performs the function of identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed:</p> <pre> rthp = &rt_hash_table[hash].chain; spin_lock_bh(rt_hash_lock_addr(hash)); while ((rth = *rthp) != NULL) { #ifdef CONFIG_IP_ROUTE_MULTIPATH_CACHED if (!(rth->u.dst.flags & DST_BALANCED) && compare_keys(&rth->fl, &rt->fl)) { #else if (compare_keys(&rth->fl, &rt->fl)) { #endif **** *rp = rth; return 0; } </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> **** if (!atomic_read(&rth->u.dst.__refcnt)) { u32 score = rt_score(rth); if (score <= min_score) { cand = rth; candp = rthp; min_score = score; } chain_length++; rthp = &rth->u.rt_next; } if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } } **** spin_unlock_bh(rt_hash_lock_addr(hash)); *rp = rt; return 0; } static inline int compare_keys(struct flowi *f11, struct flowi *f12) { return memcmp(&f11->nl_u.ip4_u, &f12->nl_u.ip4_u, sizeof(f11->nl_u.ip4_u)) == 0 && f11->oif == f12->oif && f11->iif == f12->iif; } static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; score = ~score & ~(3<<30); </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre data-bbox="1516 329 2446 686"> if (rt_valuable(rt)) score = (1<<31); if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; } static __inline__ int rt_valuable(struct rtable *rth) { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY)) rth->u.dst.expires; } </pre> <p data-bbox="1516 751 2217 784">Source: Linux kernel source code file /net/ipv4/route.c</p> <p data-bbox="1516 824 2494 1003">Note that the record(s) identified as expired upon traversal of the linked list is not necessarily the record that <code>rt_intern_hash</code> was called to find. Both the identification and the removal are performed when the linked list is accessed, as is evidenced by the locking and unlocking of the linked list by <code>rt_intern_hash</code>.</p> <p data-bbox="1516 1044 2494 1255">Bedrock contends that that this limitation is literally met by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>
(d)	mea[n]s, utilizing the record search means, for inserting, retrieving, and	function: “utilizing the record search means, inserting, retrieving, and deleting records from the system and, at the same time, removing at least some expired ones of the records	When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL makes, uses, sells,

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
	<p>deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records.</p>	<p>in the accessed linked list of records”</p> <p>structure: “CPU 10 and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions that provide the insert, retrieve, and delete record capability as described in the flowchart of FIG. 5 and col. 7 line 65 – col. 8 line 32, FIG. 6 and col. 8 lines 33-44, or FIG. 7 and col. 8 lines 45-59, respectively, and/or programmed with software instructions that provide the insert, retrieve and delete record capability as described in the pseudo-code of Insert Procedure (cols. 9 and 10), Retrieve Procedure (cols. 9, 10, 11, and 12), and Delete Procedure (cols. 11 and 12), respectively, or the equivalents thereof”</p>	<p>offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include means, utilizing the record search means, for inserting, retrieving, and deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records or its equivalent.</p> <p>The code identified below collectively performs the function of utilizing the record search means, inserting, retrieving, and deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records. This function is parsed out below for convenience.</p> <p>Specifically, the following calls to the hashing function and <code>rt_intern_hash</code> are all utilizations of the record search means:</p> <pre> unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << 5)); if (!rt_intern_hash(hash, rt, &rt)) * or * hash = rt_hash_code(daddr, saddr ^ (dev->ifindex << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); err = rt_intern_hash(hash, rth, &rtres); * or * hash = rt_hash_code(daddr, saddr ^ (fl.iif << 5)); err = rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); * or * </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); rt_intern_hash, inserts a record: static int rt_intern_hash(unsigned hash, struct rtable *rt, struct rtable **rp) { struct rtable *rth, **rthp; unsigned long now; struct rtable *cand, **candp; u32 min_score; int chain_length; int attempts = !in_softirq(); **** rt->u.rt_next = rt_hash_table[hash].chain; #if RT_CACHE_DEBUG >= 2 if (rt->u.rt_next) { struct rtable *trt; printk(KERN_DEBUG "rt_cache @%02x: %u.%u.%u.%u", hash, NIPQUAD(rt->rt_dst)); for (trt = rt->u.rt_next; trt; trt = trt->u.rt_next) printk(" . %u.%u.%u.%u", NIPQUAD(trt->rt_dst)); printk("\n"); } #endif rt_hash_table[hash].chain = rt; spin_unlock_bh(rt_hash_lock_addr(hash)); *rp = rt; return 0; } rt_intern_hash retrieves a record: static int rt_intern_hash(unsigned hash, struct rtable *rt, struct rtable **rp) { struct rtable *rth, **rthp; unsigned long now; struct rtable *cand, **candp; u32 min_score; int chain_length; </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> int attempts = !in_softirq(); *** /* Put it first */ *rthp = rth->u.rt_next; /* * Since lookup is lockfree, the deletion * must be visible to another weakly ordered CPU before * the insertion at the start of the hash chain. */ rcu_assign_pointer(rth->u.rt_next, rt_hash_table[hash].chain); /* * Since lookup is lockfree, the update writes * must be ordered for consistency on SMP. */ rcu_assign_pointer(rt_hash_table[hash].chain, rth); rth->u.dst.__use++; dst_hold(&rth->u.dst); rth->u.dst.lastuse = now; spin_unlock_bh(rt_hash_lock_addr(hash)); rt_drop(rt); *rp = rth; return 0; } rt_intern_hash is also invoked when deleting a record: unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << 5)); rthp=&rt_hash_table[hash].chain; rcu_read_lock(); while ((rth = rcu_dereference(*rthp)) != NULL) { struct rtable *rt; if (rth->fl.fl4_dst != daddr rth->fl.fl4_src != skeys[i] rth->fl.oif != ikeys[k] rth->fl.iif != 0) { </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> rthp = &rth->u.rt_next; continue; } if (rth->rt_dst != daddr rth->rt_src != saddr rth->u.dst.error rth->rt_gateway != old_gw rth->u.dst.dev != dev) break; dst_hold(&rth->u.dst); rcu_read_unlock(); rt = dst_alloc(&ipv4_dst_ops); **** rt_del(hash, rth); if (!rt_intern_hash(hash, rt, &rt)) ip_rt_put(rt); goto do_next; } </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>As explained above, code within rt_intern_hash performs the function of removing at least some of the expired ones of the records in the linked list.</p> <p>Bedrock contends that that this limitation is literally met both identically and by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>
6.	The information storage and retrieval system	function: “dynamically determining maximum number for the record search means to remove in the accessed linked list	When AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) computer equipment configured with or utilizing

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
	<p>according to claim 5 further including means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records.</p>	<p>of records”</p> <p>structure: “CPU 10, and RAM 11 of FIG. 1 and col. 3 lines 52-56 and portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions to dynamically determine a maximum number of records to remove by choosing a search strategy of removing all expired records from a linked list or removing some but not all of the expired records as described in col. 6 line 56 – col. 7 line 15 and/or programmed with software instructions to dynamically determine a maximum number of records to remove by choosing between the pseudocode of the Search Table Procedure (cols. 11 and 12) or Alternative Version of Search Table Procedure (cols. 11, 12, 13, and 14), or the equivalents thereof”</p>	<p>software based on Linux kernel version 2.6.18, AOL makes, uses, sells, offers to sell or imports (or actively induces or contributes to same) a system that is especially adapted to include means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records or its equivalent.</p> <p>Specifically, code contained within function <code>rt_intern_hash</code>, in module <code>/net/ipv4/route.c</code>, dynamically executes based upon comparison with variable <code>ip_rt_gc_elasticity</code>. In this way, computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 includes means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records or its equivalent.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function performs the function of dynamically determining maximum number for the record search means to remove in the accessed linked list of records:</p> <pre> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre> <p><code>chain_length</code> is a variable that dynamically changes to accurately represent the length of a chain, which is a factor internal to the information storage system:</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre>chain_length++;</pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>Bedrock contends that that this limitation is literally met by statutory equivalence per 35 U.S.C. § 112 ¶ 6, i.e., the code in the Accused Instrumentality performs the identical function as construed by the Court, in substantially the same way as the construed structure for this term, to achieve substantially the same result achieved by the construed structure for this term.</p>
7.	<p>A method for storing and retrieving information records using a hashing technique to provide access to the records and using an external chaining technique to store the records with same hash address, at least some of the records automatically expiring, the method comprising the steps of:</p>	<p>external chaining means “a technique for resolving hash collisions using a linked list(s)”</p> <p>automatically expiring means “becoming obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time”</p>	<p>Bedrock does not express a position at this time as to whether the preamble of this claim limits the claim’s scope. Nevertheless, Bedrock identifies below aspects of the Accused Instrumentalities that correspond to the claim preamble.</p> <p>When AOL uses (or induces or contributes to others’ use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others’ practice of) a method for storing and retrieving information records using a hashing technique to provide access to the records and using an external chaining technique to store the records with same hash address, at least some of the records automatically expiring. The Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to store and retrieve information records using a hashing technique to provide access to the records and using an external chaining technique to store the records with same hash address, where at least some of the records automatically expire.</p> <p>The Linux IPv4 routing cache use external chaining, a technique for</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>resolving hash collisions using linked lists. In particular, for each unique hash value, the routing cache table, <code>rt_hash_table</code>, contains an entry called a <code>rt_hash_bucket</code>. In turn, a bucket contains an entry named "chain" which is a pointer to the first record of a linked list of routing cache records.</p> <pre>static struct rt_hash_bucket *rt_hash_table; struct rt_hash_bucket { struct rtable *chain; spinlock_t lock; } __attribute__((__aligned__(8)));</pre> <p>Source: Linux kernel source code file <code>/net/ipv4/route.c</code></p> <p>In the Linux IPv4 routing cache, a record of a linked list of the routing cache automatically expires when it becomes obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time. More specifically, Linux IPv4 scores the desirability or need for records in the information storage system based on the following criteria:</p> <ol style="list-style-type: none"> 1. The age of the routing cache record 2. The type of route (such as multicast, broadcast, and local) 3. If the route has been redirected <p>The function <code>rt_score</code> is the function that scores the desirability or need for records in the information storage system:</p> <pre>static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; score = ~score & ~(3<<30);</pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<pre> if (rt_valuable(rt)) score = (1<<31); if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; } static __inline__ int rt_valuable(struct rtable *rth) { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY)) rth->u.dst.expires; } </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p>
(a)	accessing a linked list of records having same hash address,	a linked list of records means “a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no next record”	<p>When AOL uses (or induces or contributes to others’ use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others’ practice of) a method that includes the step of accessing a linked list of records having same hash address. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to access a linked list of records having same hash address.</p> <p>Specifically, data structure <code>rt_hash_table</code> in module <code>/net/ipv4/route.c</code> is used to access a linked list of records having the same hash address. Additionally, code contained within the function <code>rt_intern_hash</code> in module <code>/net/ipv4/route.c</code> is also used to access a linked list of records having the same hash address. In this way, computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 practices a method that includes the step of accessing a linked list of records having same hash address.</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>The following code excerpts from the files /net/ipv4/route.c and /include/net/route.h show the C language definition for the data structure <code>rt_hash_table</code> and the <code>rtable</code> struct definition used by <code>rt_hash_table</code>:</p> <pre> static struct rt_hash_bucket *rt_hash_table; struct rt_hash_bucket { struct rtable *chain; }; struct rtable { union { struct dst_entry dst; struct rtable *rt_next; } u; struct in_device *idev; unsigned rt_flags; __u16 rt_type; __u16 rt_multipath_alg; __u32 rt_dst; /* Path destination */ __u32 rt_src; /* Path source */ int rt_iif; /* Info on neighbour */ __u32 rt_gateway; /* Cache lookup keys */ struct flowi fl; /* Miscellaneous cached information */ __u32 rt_spec_dst; /* RFC1122 specific destination */ } */ struct inet_peer *peer; /* long-living peer info */ }; </pre> <p>Source: Linux kernel source code files /net/ipv4/route.c and /include/net/route.h</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>In the above code, an entry in the Linux IPv4 routing cache (rt_hash_table) is a list, capable of containing two or more records, in which each record contains a pointer to the next record or information indicating there is no next record. In particular, a rt_hash_table entry contains a field named "chain" which is a pointer to the first record of the list. Records of the list are C structs of the type "rtable". A record contains a field named u.rt_next which is a pointer to the next record in the list. If there is no next record, then the u.rt_next field contains a null pointer. Because records are hashed to a hash table address before they are added to the chain of records anchored from that address, all records on a chain will have the same hash address.</p> <p>The following code excerpts within route.c performs the step of accessing a linked list of records:</p> <pre> unsigned hash = rt_hash_code(daddr, skeys[i] ^ (ikeys[k] << 5)); if (!rt_intern_hash(hash, rt, &rt)) * or * hash = rt_hash_code(daddr, saddr ^ (dev->ifindex << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); return rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(daddr, saddr ^ (fl->iif << 5)); err = rt_intern_hash(hash, rth, &rtres); * or * hash = rt_hash_code(daddr, saddr ^ (fl.iif << 5)); err = rt_intern_hash(hash, rth, (struct rtable**) &skb->dst); * or * hash = rt_hash_code(oldflp->fl4_dst, oldflp->fl4_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); </pre>

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			<p>* or *</p> <pre> hash = rt_hash_code(oldflp->f14_dst, oldflp->f14_src ^ (oldflp->oif << 5)); err = rt_intern_hash(hash, rth, rp); </pre> <p>rt_intern_hash accesses the linked list:</p> <pre> rthp = &rt_hash_table[hash].chain; </pre> <p>Source: Linux kernel source code file /net/ipv4/route.c</p>
(b)	identifying at least some of the automatically expired ones of the records,	expired means “obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time”	<p>When AOL uses (or induces or contributes to others’ use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others’ practice of) a method that includes the step of identifying at least some of the automatically expired ones of the records. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to identify at least some of the automatically expired ones of the records.</p> <p>In the Linux IPv4 routing cache, a record of a linked list of the routing cache automatically expires when it becomes obsolete and therefore no longer needed or desired in the storage system because of some condition, event, or period of time. More specifically, Linux IPv4 scores the desirability or need for records in the information storage system based on the following criteria:</p> <ol style="list-style-type: none"> 1. The age of the routing cache record 2. The type of route (such as multicast, broadcast, and local)

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>3. If the route has been redirected</p> <p>The function <code>rt_score</code> is the function that scores the desirability or need for records in the information storage system:</p> <pre>static inline u32 rt_score(struct rtable *rt) { u32 score = jiffies - rt->u.dst.lastuse; score = ~score & ~(3<<30); if (rt_valuable(rt)) score = (1<<31); if (!rt->fl.iif !(rt->rt_flags & (RTCF_BROADCAST RTCF_MULTICAST RTCF_LOCAL))) score = (1<<30); return score; } static __inline__ int rt_valuable(struct rtable *rth) { return (rth->rt_flags & (RTCF_REDIRECTED RTCF_NOTIFY)) rth->u.dst.expires; }</pre> <p>Source: Linux kernel source code file <code>/net/ipv4/route.c</code></p> <p>At least some of the records—if not all of the records—automatically expire according to the criteria used by <code>rt_score</code>.</p> <p>Code contained within or accessed by the function <code>rt_intern_hash</code> in module <code>/net/ipv4/route.c</code> uses <code>rt_score</code> to practice a method that includes the step of identifying at least some of the automatically expired ones of the records.</p>

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			<p>The following code excerpt from the <code>rt_intern_hash</code> function performs the step of identifying at least some of the automatically expired ones of the records:</p> <pre> rthp = &rt_hash_table[hash].chain; spin_lock_bh(rt_hash_lock_addr(hash)); while ((rth = *rthp) != NULL) { #ifdef CONFIG_IP_ROUTE_MULTIPATH_CACHED if (!(rth->u.dst.flags & DST_BALANCED) && compare_keys(&rth->fl, &rt->fl)) { #else if (compare_keys(&rth->fl, &rt->fl)) { #endif **** *rp = rth; return 0; } **** if (!atomic_read(&rth->u.dst.__refcnt)) { u32 score = rt_score(rth); if (score <= min_score) { cand = rth; candp = rthp; min_score = score; } chain_length++; rthp = &rth->u.rt_next; } if (cand) { </pre> <p>Source: Linux kernel source code file <code>/net/ipv4/route.c</code></p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
(c)	<p>removing at least some of the automatically expired records from the linked list when the linked list is accessed, and</p>	<p><u>removing at least some of the automatically expired records from the linked list</u> means “adjusting the pointer in the linked list to bypass the previously identified expired records”</p> <p><u>when the linked list is accessed</u> means “both identification and removal of the automatically expired record(s) occurs during the same access of the linked list”</p>	<p>When AOL uses (or induces or contributes to others' use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others' practice of) a method that includes the step of removing at least some of the automatically expired records from the linked list when the linked list is accessed. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to remove at least some of the automatically expired records from the linked list when the linked list is accessed.</p> <p>Specifically, code contained within the function <code>rt_intern_hash</code> in module <code>/net/ipv4/route.c</code> is used to practice a method that includes the step of removing at least some of the automatically expired records from the linked list when the linked list is accessed.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function is an example of removing at least some of the automatically expired records from the linked list when the linked list is accessed:</p> <pre> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre> <p>The line of code “<code>*candp = cand->u.rt_next;</code>” performs the step of adjusting</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>the pointer in the linked list to bypass the previously identified expired records.</p> <p>Source: Linux kernel source code file /net/ipv4/route.c</p> <p>Both the identification and the removal are performed when the linked list is accessed, as is evidenced by the locking and unlocking of the linked list by rt_intern_hash.</p>
(d)	inserting, retrieving or deleting one of the records from the system following the step of removing.		<p>When AOL uses (or induces or contributes to others' use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others' practice of) a method that includes the step of inserting, retrieving or deleting one of the records from the system following the step of removing. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to insert, retrieve or delete one of the records from the system following the step of removing.</p> <p>Specifically, code contained within the function rt_intern_hash in module /net/ipv4/route.c is used to practice a method that includes the step of inserting one of the records from the system following the step of removing.</p> <p>The following excerpt from the rt_intern_hash function is an example code which practices a method that includes the step of inserting one of the records from the system following the step of removing:</p> <pre data-bbox="1518 1279 2150 1380"> rt->u.rt_next = rt_hash_table[hash].chain; **** rt_hash_table[hash].chain = rt; </pre>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			Source: Linux kernel source code file /net/ipv4/route.c
	{ordering of the steps}	ordering of the steps: The “identifying” step must start before “removal” can begin. However, identification need not be completed before removal can begin. The identification step may overlap with the removal step. The ultimate step of claim 7 must follow or at least partially follow the penultimate step of claim 7.	As shown in the code below, the “identifying” step starts before the “removal” step: <pre> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre> Further, the ultimate step of claim 7 follows the penultimate step of claim 7.
8.	The method according to claim 7 further including the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed.	dynamically determining means “making a decision based on factors internal or external to the information storage and retrieval system”	When AOL uses (or induces or contributes to others’ use of) computer equipment configured with or utilizing software based on Linux kernel version 2.6.18, AOL practices (or induces or contributes to others’ practice of) a method that includes the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed. Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 is especially adapted to dynamically determine maximum number of expired ones of the records to remove when the linked list is accessed. Specifically, code contained within function rt_intern_hash, in module /net/ipv4/route.c, dynamically executes based upon comparison with

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			<p>variable <code>ip_rt_gc_elasticity</code>. In this way, computer equipment configured with or utilizing software based on Linux kernel version 2.6.18 practices a method that includes the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed.</p> <p>The following code excerpt from the <code>rt_intern_hash</code> function performs the step of dynamically determining the maximum number of expired ones of the records to remove when the linked list is accessed:</p> <pre> if (cand) { /* ip_rt_gc_elasticity used to be average length of chain * length, when exceeded gc becomes really aggressive. * * The second limit is less certain. At the moment it allows * only 2 entries per bucket. We will see. */ if (chain_length > ip_rt_gc_elasticity) { *candp = cand->u.rt_next; rt_free(cand); } } </pre> <p><code>chain_length</code> is a variable that dynamically changes to accurately represent the length of a chain, which is a factor internal to the information storage system:</p> <pre> chain_length++; </pre> <p>The line of code “<code>if (chain_length > ip_rt_gc_elasticity)</code>” therefore makes a decision based on factors internal or external to the information storage and retrieval system.</p>

	Claim Language	Court's Construction	Accused Instrumentalities: Computer equipment configured with or utilizing software based on Linux kernel version 2.6.18
			Source: Linux kernel source code file /net/ipv4/route.c