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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KALADHAR VORUGANTI,
STEVEN ROBERT KLEIMAN,
JAMES HARTWELL HOLL II,
GOKUL SOUNDARARAJAN, SHAILAJA KAMILA, and
SUBRAMANIAN MOHAN

Appeal 2018-007924
Application 14/338,157
Technology Center 2400

Before JEREMY J. CURCURI, JAMES B. ARPIN, and
MICHAEL M. BARRY, *Administrative Patent Judges*.

CURCURI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1, 3–6, and 21–35. Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

Claims 1, 3–6, and 21–35 are rejected under 35 U.S.C. § 101 as directed to a judicial exception without significantly more. Final Act. 2–3.

Claims 1, 3, 4, 21–23, 26, 28–30, 33, and 35 are rejected under 35 U.S.C. § 103 as obvious over Upadhya (US 2013/0111034 A1; May 2, 2013) and Gordon (US 2015/0254150 A1; Sep. 10, 2015). Final Act. 4–11.

Claims 5, 24, and 31 are rejected under U.S.C. § 103(a) as obvious over Upadhya, Gordon, and Oslake (US 2013/0268914 A1; Oct. 10, 2013). Final Act. 10–12.

Claims 6, 25, and 32 are rejected under U.S.C. § 103(a) as obvious over Upadhya, Gordon, and Lango (US 2014/0282824 A1; Sep. 18, 2014). Final Act. 12–13.

Claims 27 and 34 are rejected under U.S.C. § 103(a) as obvious over Upadhya, Gordon, and Agrawal (US 2008/0270971 A1; Oct. 30, 2008). Final Act. 13–14.

We reverse.

STATEMENT OF THE CASE

Appellants' invention relates to a "storage management framework where storage functionality is made available to consumers in the form of services." Spec. ¶ 2. Claim 1 is illustrative and reproduced below:

> 1. A method, comprising:
>
> selecting from a plurality of storage service level (SSL) instances a first SSL instance for a tenant and a second SSL instance for an application of the tenant, wherein a SSL instance is based on resources of a storage domain assigned according to a service level capability (SLC) template which comprises a protection profile and a set of one or more storage profiles and which is independent of a particular storage domain,
>
> wherein a protection profile comprises storage service topology information and a first plurality of defined service level objective (SLO) dimensions,

> wherein the storage service topology information comprises nodes that represent storage services and relationships between the nodes that correspond to the first plurality of defined SLO dimensions,
>
> wherein the nodes are associated with the set of one or more storage profiles which comprises a second plurality of defined SLO dimensions;
>
> based on an application programming interface instruction with a first parameter that indicates a name of the second SSL instance and a second parameter that indicates a size, provisioning a storage object in resources of a storage domain assigned to the second SSL instance; and
>
> managing usage of the provisioned storage object based on defined SLO dimensions of a SLC template corresponding to the second SSL instance.

PRINCIPLES OF LAW

We review the appealed rejections for error based upon the issues identified by Appellants, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

THE JUDICIAL EXCEPTION REJECTION OF CLAIMS 1, 3–6, AND 21–35

The Examiner determines claims 1, 3–6, and 21–35 are directed to a judicial exception without significantly more. Final Act. 2–3. The Examiner determines "[c]laims 1, [21, and 29] are directed to a method[,] system and non-transitory medium for provisioning services in a network using a template. Such claims are directed toward methods of organizing human activities with respect to configuration of computing networks." Final Act. 3; *see also* Final Act. 2–3 (determining the claims do not recite significantly more than the abstract idea), Ans. 14–15.

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the U.S. Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (citation omitted).

In determining whether a claim falls within an excluded category, we are guided by the Court's two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." *See Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.").

Concepts determined to be abstract ideas, and, thus, patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); "tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores" (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S.

252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Court held that "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* (citing *Benson* and *Flook*); *see, e.g.*, *id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (citation omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

The U.S. Patent and Trademark Office ("USPTO") recently published revised guidance on the application of § 101. USPTO's 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019). Under that guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and
> (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h) (9th ed. 2018)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

> (3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)); or
>
> (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See 84 Fed. Reg. at 56.

The Examiner generally states that independent claim 1 "provision[s] services in a network using a template. Such claims are directed toward methods of organizing human activities with respect to configuration of computing networks." Final Act. 3; *see also* Ans. 14 ("Configuring or in other words provisioning computing systems is a well-established human practice. Configuring computers is a basic responsibility of network administrators and the performing of such configuration using templates is common."). Contrary to the Examiner's determinations, we determine that the claim limitations determined by the Examiner to recite an abstract idea

do not correspond to certain methods of organizing human activity, mental processes, or mathematical concepts. In particular, claim 1 recites "selecting... a first SSL instance for a tenant and a second SSL instance for an application of the tenant"; "provisioning a storage object"; and "managing usage of the provisioned storage object." We disagree with the Examiner's determination that these activities are certain methods of organizing human activity. In the context of the invention, selecting SSL instances, and provisioning and managing storage objects is simply not certain methods of organizing human activity.

Appellants' Specification discloses

> The disclosed technology provides an automation engine that can operate at scale and determine where to provision new storage, as well as what actions to take when SLO violations occur[]. ... Thus, the ability to describe service requirements and monitor both resource utilization and service conformance is useful for managing resources at scale in a cost-effective manner.

Spec. ¶ 24.

Appellants' Specification further discloses

> At block 650, the process 600 services storage asks to use the storage object. At block 655, the process 600 can monitor the usage of the storage object. At decision block 660, the process 600 determines whether the usage of the storage object violates requirements of the SSL instance. If that is so, at block 665, the process 600 executes corrective action such that the usage of the storage object conforms to the requirements.

Spec. ¶ 103; *see also* Spec. ¶ 45 ("The fourth step 140 of the workflow of FIG. 1 is **Service Management Automation**. Once an application provisions storage (e.g., step 130 in FIG. 1) of a particular SSL instance (e.g., Premium, Standard, Value, etc.), an underlying set of internal

management constructs get created to monitor the SLOs, analyze potential violations proactively or reactively, plan corrective actions, and execute the corrective action via a workflow.").

Selecting SSL instances, and provisioning and managing storage objects, in the context of the invention, is not certain methods of organizing of human activity because managing storage objects is specifically disclosed as an automated process that only exists and has meaning within the context of a computer environment, and is not a fundamental economic principal or practice, a commercial or legal interaction, or managing personal behavior or relationships or interactions between two people.

The Examiner does not sufficiently articulate why the claimed concepts fall within the subject matter groupings of abstract ideas of mathematical concepts, certain methods of organizing human activity, or mental processes. *See* 84 Fed. Reg. 56.

Accordingly, we are persuaded by Appellants' arguments that

> [t]he present claims improve computer functionality by provisioning storage resources via a services model based on templates that describe storage services via measurable attributes that are independent of vendor technology. The disclosed technology treats different SLO dimensions in an integrated manner and selects storage and application level templates accordingly. The specifically claimed technology allows services to be defined by SLOs independent of the underlying hardware technology, which facilitates provisioning on a large scale.

App. Br. 9; *see also* Reply Br. 3 (citing Spec. ¶ 24).

In addition, we note Appellants' Specification discloses

> Storage administrators face challenges in dealing with the complexities of shared storage environments, e.g., when they provision and de-provision hundreds or thousands of

> applications, users or workloads. To ease this burden, the disclosed SLO technology provides the ability to successfully automate common provisioning and management workflows, and monitors[] compliance with service objectives.

Spec. ¶ 24.

Because claim 1 overcomes a problem specifically arising in the realm of computer networks, "the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks," and accordingly, the claims are not directed to an abstract idea. *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1258–59 (Fed. Cir. 2014).

Thus, we do not sustain the rejection of independent claim 1 under 35 U.S.C. § 101. Claims 3–6 depend from claim 1. We, therefore, also do not sustain the rejection of those claims under 35 U.S.C. § 101.

Independent claims 21 and 29 recite similar language as claim 1. We, therefore, also do not sustain the rejection of independent claims 21 and 29 under 35 U.S.C. § 101. Claims 22–28 and 30–35 variously depend from claims 21 and 29. We, therefore, also do not sustain the rejection of those claims under 35 U.S.C. § 101.

THE OBVIOUSNESS REJECTION OF CLAIMS 1, 3, 4, 21–23, 26, 28–30, 33, AND 35 OVER UPADHYA AND GORDON

The Examiner finds Upadhya and Gordon teach all of the limitations of claim 1. Final Act. 4–8.

In particular, the Examiner finds Upadhya teaches "selecting from a plurality of storage service level (SSL) instances a first SSL instance for a tenant and a second SSL instance for an application of the tenant," as recited

in claim 1. Final Act. 4 (citing Upadhya ¶ 2). For this limitation of claim 1, the Examiner specifically cites to the following disclosure in Upadhya:

> selecting, by the application aware appliance, server computing resources for running the requested cloud served software application from a server computing cloud that is a subset of the computing cloud based on the server computing resource identification information portion of the user request for the cloud served software application.

Upadhya ¶ 2.

Upadhya further discloses the following:

> selecting, by the application aware appliance, a software application storage template from a plurality of software application storage templates based on the software identification information portion of the user request for the cloud served software application, each software application storage template of the plurality of software application storage templates being associated with a copyable installation of the requested cloud served software application associated with each software application storage template.

Upadhya ¶ 2.

Appellants present the following principal contentions:

"[T]he Office never shows any disclosure or suggestion in the combination of selecting an SSL instance for a tenant, selecting another SSL instance for an application of the tenant, and then provisioning a storage object in resources of a storage domain assigned to the second SSL instance." App. Br. 11. Instead,

> [T]he Office is interpreting the selection of the "server computing resources" as the recited selection of SSL instances. However, nothing in Upadhya discloses or suggests that one of the server computing resources is selected for a tenant and another for an application of the tenant. The statement in Upadhya is just that server computing resources are selected for running an application. Thus, the Office seems to overlook or

> ignore the part of the claim element that specifies selecting one SSL instance for a tenant and a second SSL instance for an application of the tenant.

App. Br. 12.

In response, the Examiner explains "by selecting an application storage temple (**SLC template**), the system selects **a first SSL instance** for the tenant (storage volumes meeting the template requirements) and **a second SSL instance** for (particular application instance specified in the template)." Ans. 16–17

In the Reply Brief, Appellants further contends

> Upadhya's selection of one template from multiple templates cannot be transformed into selection of two templates based on the template being a storage volume that has an installed application. If the Office is interpreting Upadhya's template as an SSL instance to reject the claim, then Upadhya needs to disclose selecting two templates - one for a tenant and one for an application. It does not. Upadhya discloses selecting a template, which is a pre-provisioned volume that has an installed application. Furthermore, the claim recites that the first SSL instance is selected for a tenant and the second is selected for an application of the tenant. If required to be consistent in interpretation, the Office would have to argue that Upadhya discloses selecting a [] first template for a tenant and a second template for an application of the tenant. It does not. Therefore, the Office tries to contort the application installed on Upadhya's selected template into an SSL instance for an application of the tenant. That defies reason on its face. Upadhya's application installed in a template cannot be a template for an application of a tenant.

Reply Br. 4.

Appellants' contentions persuade us that the Examiner erred in finding Upadhya teaches "selecting from a plurality of storage service level

(SSL) instances a first SSL instance for a tenant and a second SSL instance for an application of the tenant," as recited in claim 1.

Appellants' Specification discloses

> There can be multiple SSL instances for different levels in the scheme, e.g., tenant level, application level, or storage object level (e.g., as shown in FIGs. 13 and 14) [sic]. The process 600 can determine which SSL instance is controlling. For example, a first SSL instance can be selected for a tenant of the network storage controllers, and a second SSL instance can be selected for an application to be performed for the tenant. The first SSL instance can be overridden by the second SSL instance when the storage object is provisioned for the application.

Spec. ¶ 104. Thus, Appellants' Specification describes multiple SSL instances, operating in a hierarchy, where one SSL instance may override another SSL instance.

At best, Upadhya's software application storage template describes the "first SSL instance" as recited in claim 1, to the extent that Upadhya's template describes a storage service level. Nonetheless, we do not agree that Upadhya's associated software application describes a "second SSL instance" as recited in claim 1, for reasons explained on page 5 of the Reply Brief. In short, the Examiner's analysis improperly construes "SSL instance" two different ways in order to create a mapping between claim 1's first and second SSL instances and Upadhya's software application storage template and associated software application. To the extent that Upadhya's software application storage template describes an "SSL instance," then Upadhya's associated software application cannot describe an additional "SSL instance."

We, therefore, do not sustain the Examiner's rejection of claim 1. We also do not sustain the Examiner's rejection of claims 3 and 4, which depend from claim 1.

Independent claim 21 recites "select from a plurality of storage service level (SSL) instances a first SSL instance for a tenant and a second SSL instance for an application of the tenant." We, therefore, do not sustain the Examiner's rejection of claim 21 for the reasons discussed above when addressing claim 1. We also do not sustain the Examiner's rejection of claims 22, 23, 26, and 28, which depend from claim 21.

Independent claim 29 recites "select from a plurality of storage service level (SSL) instances a first SSL instance for a tenant and a second SSL instance for an application of the tenant." We, therefore, do not sustain the Examiner's rejection of claim 29 for the reasons discussed above when addressing claim 1. We also do not sustain the Examiner's rejection of claims 30, 33, and 35, which depend from claim 29.

THE REMAINING REJECTIONS

The Examiner does not find that any of the additional secondary references cures the deficiencies of Upadhya discussed above. *See* Final Act. 10–14.

We, therefore, do not sustain the Examiner's rejection of claims 5, 24, and 31 as obvious over Upadhya, Gordon, and Oslake; the Examiner's rejection of claims 6, 25, and 32 as obvious over Upadhya, Gordon, and Lango; or the Examiner's rejection of claims 27 and 34 as obvious over Upadhya, Gordon, and Agrawal.

ORDER

The Examiner's rejections of claims 1, 3–6, and 21–35 under 35 U.S.C. §§ 101 and 103 are reversed.

REVERSED