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NIAS (NEC Information Assessment System)
Integrated File Server Management Software

December, 2018
AI Platform Division,
NEC Corporation

NIAS
Information Assessment System
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NIAS Introduction - Table of Contents

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1. Challenges in File and Data Management

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Challenges of Disordered File Server

Trash Box

- ✓ No organized rule for file/folder creation and management

- ✓ **Huge amount of old files and unused files** spoil the efficient file search and usage

Repeated Disk Expansion

- ✓ **Capital investment cost** unexpectedly increasing due to rapid increase of file data

- ✓ Back-up and disaster recovery needs more and more cost to handle large data

Information Leakage

- ✓ **No rule of access right setting** relying on specific users

- ✓ **Personal information are not appropriately managed based on file organization rule**

Time Consuming Work

- ✓ Information change and update history management of Active Directory requiring big effort

- ✓ **Information system division manages every request** for access right change

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Inactive Data Occupying File Server

Increase ratio of file capacity is 1.55 times every year resulting in 9 times increase in five years

In addition;

68%	**76%**	**53%**	**28%**
files are not referenced more than 90 days	files are not updated more than 1 year	files are large (10MB or more) but it occupies only 1% of total file number.	Files are duplicated files Deletion of it results in 14% capacity reduction

Stored data increases dramatically, but the most of the unused data is occupying the file servers.

（NEC's survey with 50 companies/organizations)

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2. NIAS Solutions

a. Visualization
b. Organization / Capacity Reduction
c. Access Right Setting
d. Resource Management

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NIAS Solution Overview

Safer and more efficient operation management of file servers

Cost Saving

a. Visualization

Automated graphical report creation enabling to immediately grasp the file server

b. Organization / Capacity Reduction

Periodical data organization and reduction of unused one

Removing Risks

Efficiency

Option product

c. Access Right Setting

Modification of access right using view list. Easy detection and optimization of inappropriate access rights

d. Resource Management

Active Directory setting, quota setting, and workflow for approval

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2. NIAS Solutions

a. Visualization
b. Organization / Capacity Reduction
c. Access Right Setting
d. Resource Management

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Status Check on Dashboard

Status of file server can be checked with intuitive UI
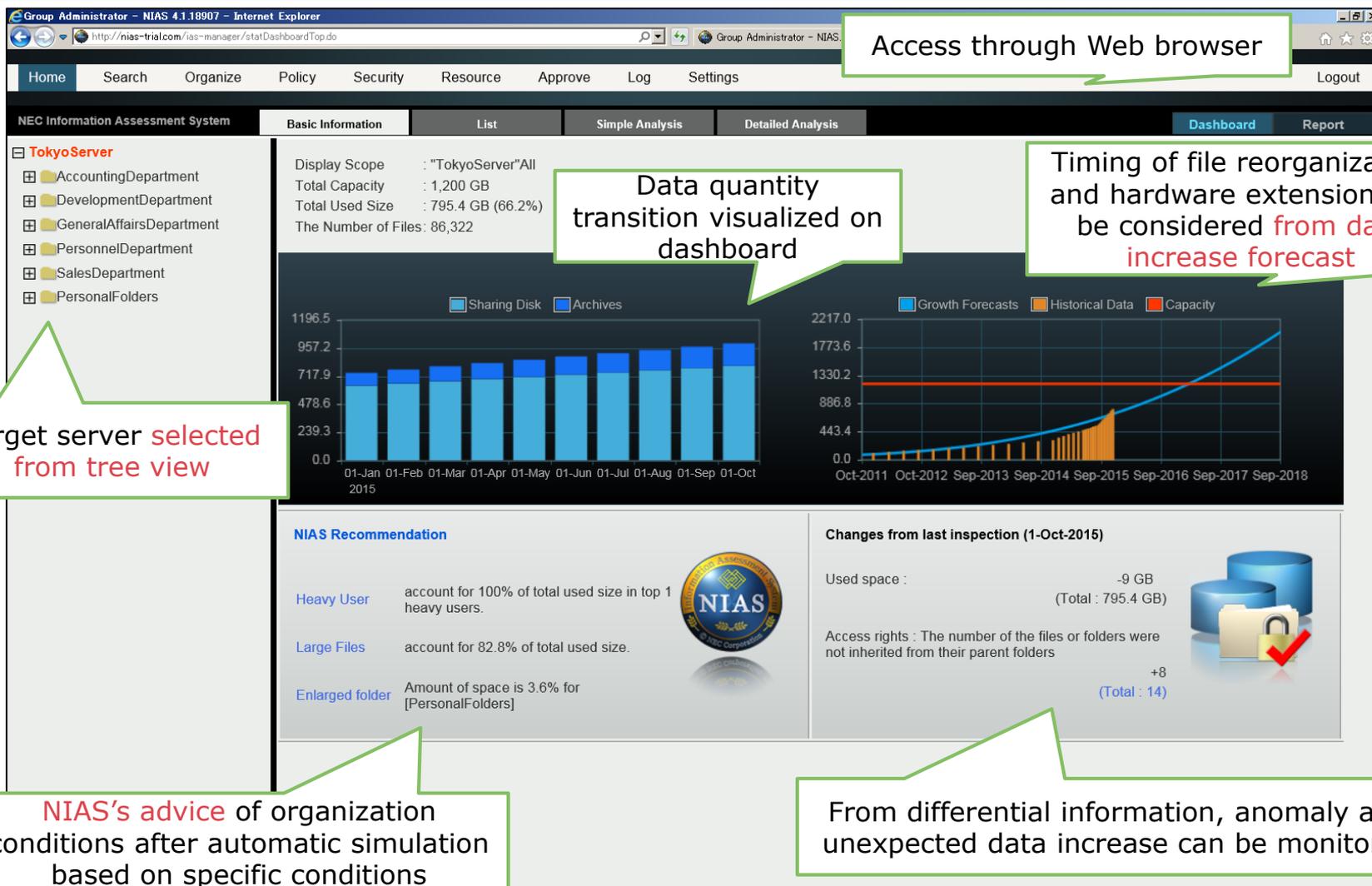
Access through Web browser

Data quantity transition visualized on dashboard

Timing of file reorganization and hardware extension can be considered from data increase forecast

Target server selected from tree view

NIAS's advice of organization conditions after automatic simulation based on specific conditions

From differential information, anomaly and unexpected data increase can be monitored

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File Server Status Details

Usage status of file server can be output as report document

Name ▼	Total Files ▼	▼ Total Size(GB) ▼	Heavy User ⟳	Not Modified ⟳	Not Accessed ⟳
PersonalFolders	36,108	337.4 / 350 96.3%	100.0%	38.4%	22.4%
PersonnelDepartment	9,997	97.4 / 160 60.8%	100.0%	41.1%	19.9%
DevelopmentDepartment	10,030	97.4 / 160 60.8%	100.0%	38.1%	23.3%
GeneralAffairsDepartment	10,077	95.4 / 160 59.5%	100.0%	36.0%	19.8%
AccountingDepartment	10,198	84.1 / 160 52.5%	100.0%	42.4%	26.4%
SalesDepartment	9,912	83.9 /			

TokyoServer
- AccountingDepartment
- DevelopmentDepartment
- GeneralAffairsDepartment
- PersonnelDepartment
- SalesDepartment
- PersonalFolders

NEC Information Assessment System — Basic Information | List | Simple Analysis | Detailed Analysis — Dashboard | Report

Home | Search | Organize | Policy | Security | Resource | Approve | Log | Settings — Logout

Usage status of shared folder being displayed in the single view as a consolidated list
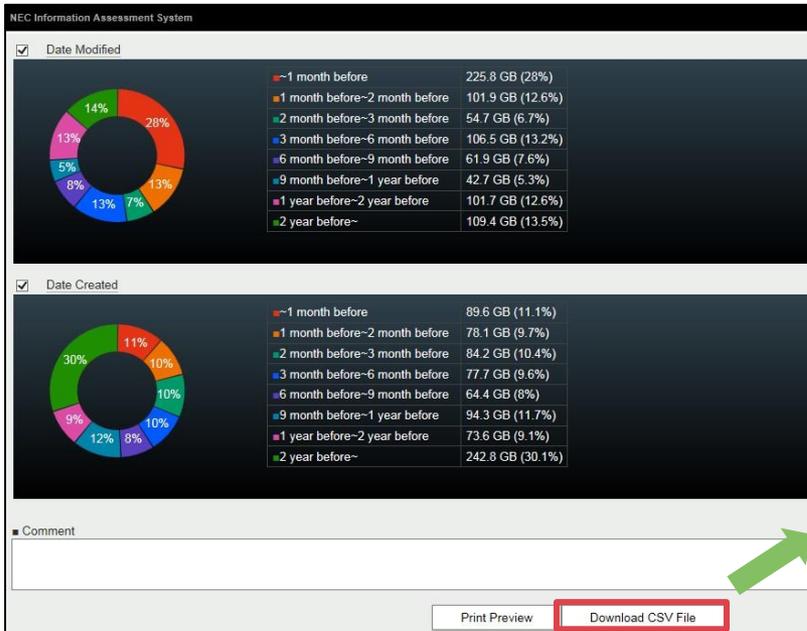
File Name	Statistics Information
capacity.csv	Increase trend
archive.csv	Transition information of usage quantity
reference.csv	Reference trend
modification.csv	Update trend
size.csv	Size trend
duplication.csv	Duplication trend
owner.csv	Owner trend
type.csv	File format trend
prediction.csv	Increase forecast trend of total usage quantity
actual.csv	Increase forecast trend of total usage quantity
ias_summary.csv	Summary information

CSV file and page for printing are available

Rapid Simulation of Outcomes (1/2)

Easy condition setting to list organization target files

[Organization Conditions]
Heavy User: User information occupying large spaces
Not Modified: Not updated in certain period of time
Not Accessed: Not referred in certain period of time
Large Files: File with file size beyond certain size
Duplicated Files: Same files are existing in some places

Slide bar to adjust condition details

Cross tabulation by combining several conditions

Real time analysis help you analyze the issues in file server

Here instantly reflects the settings above

File list output

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Rapid Simulation of Outcomes (2/2)

Detailed condition setting to drill down and analyze specific part

[Statistics type]
Data Modified: Frequency of file update
Data Created: Frequency of file creation
Data Accessed: Frequency of file reference
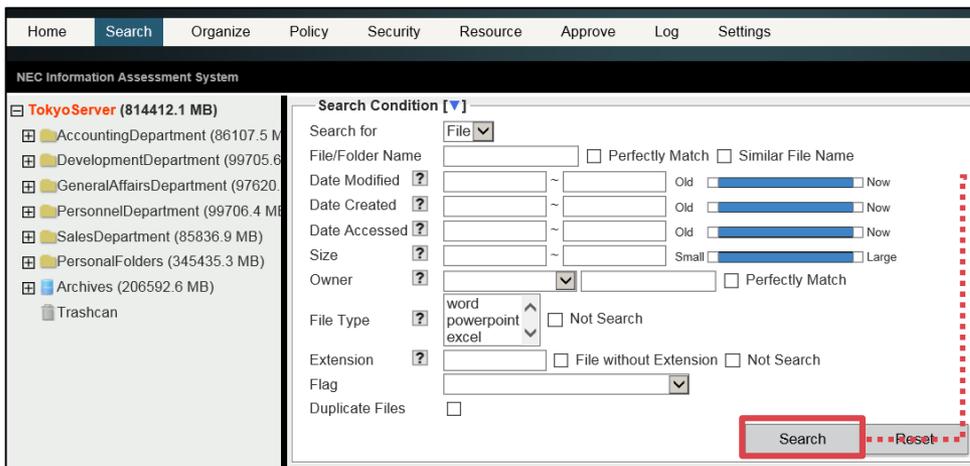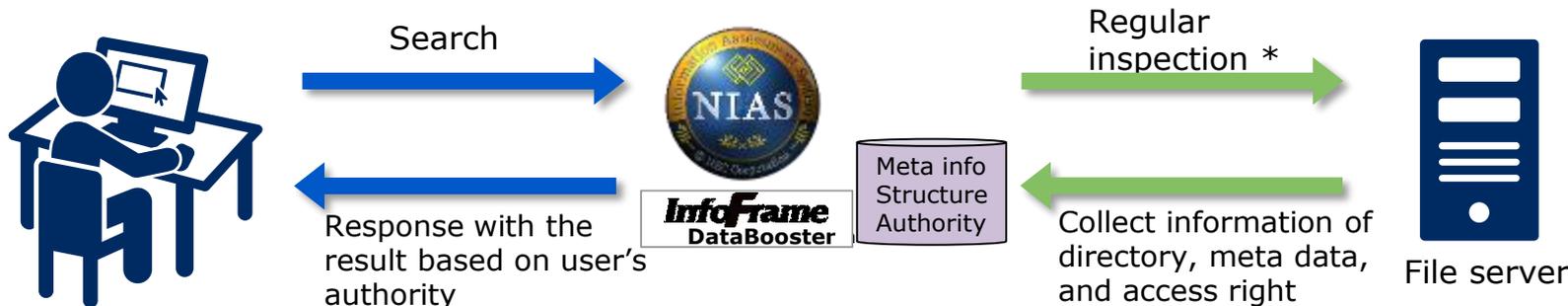File Sizes: File size
Duplicate Files: File duplication status
Owners: File owner

Ultrafast Search Using Memory DB

Only several seconds required for 2 billions (1 PB) of files search

- **General user can use it** with Active Directory linkage. In this case, the files not to be accessed by this user **cannot be shown** as a search result.
- Enable to **narrow down and search** from items such as folder structure and file name

*Quick scan reduces **maximum 40%** of scanning time

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2. NIAS Solutions

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Flexible Options for Operation and Organization

Operation are flexibly selected - auto/manual, delete/move, etc.

Operation

▌ With **user's confirmation**

> Effective in case necessity of the files needs to be checked and confirmed by the users

▌ **Auto organization** with policy

> File organization will be done automatically based on operational rules

> Our recommendation is with user check in the first time. Once organization is completed, automatic organization is recommended.

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Organization

▌ **Delete** unused files
- Delete (to trashcan)
  - Scheduling is enabled (delete in several days, etc.)
- Delete (deleted completely)

▌ **Organize / archive** files
- Move to archive space
  - Maintaining folder structure and creating shortcut
- Copy
- Compress (zip)
- Put flag of necessary/unnecessary
- Delete duplicated files
- Change the owner
- Move to "Box"

Never used	Delete
Possibly used	Move
Often used	

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Example of "User's Confirmation"

Administrator

1. Decide target files

2. Request to select files to avoid unexpected deletion

User

4. Automatically move files without flags

3. Put flag to keep files

Organization target

File server

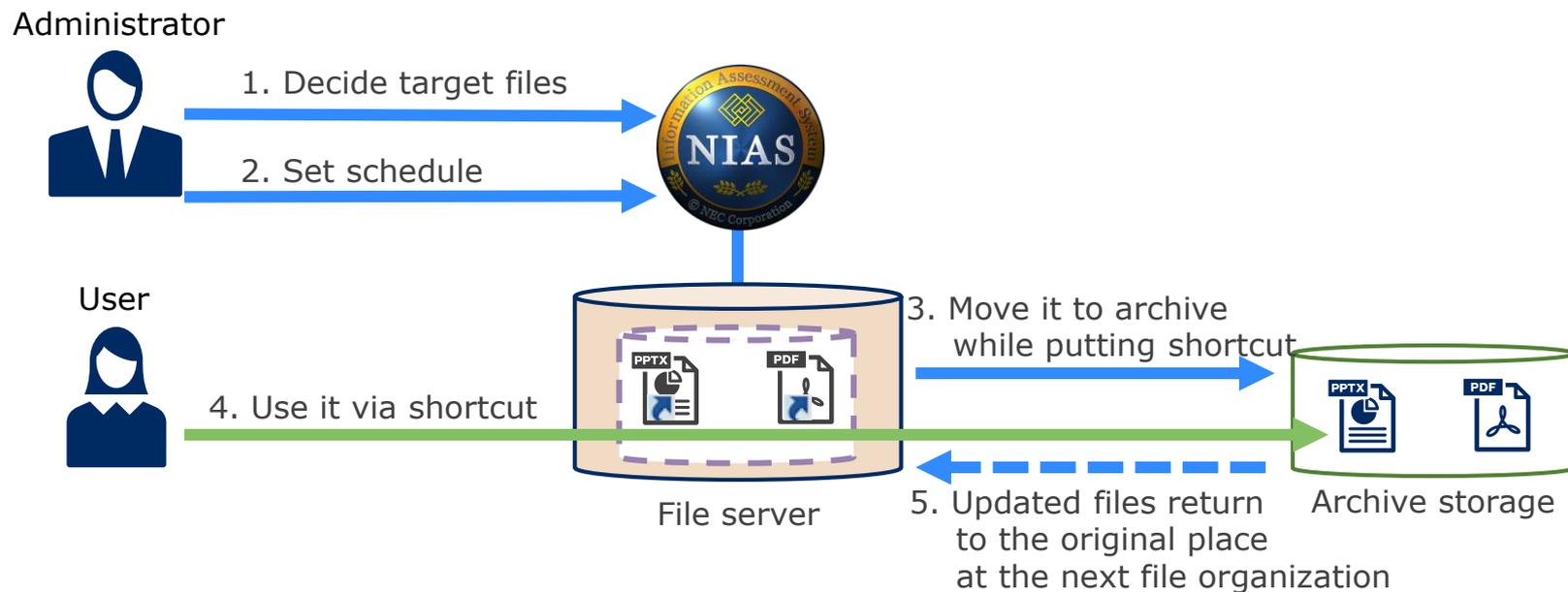Archive storage
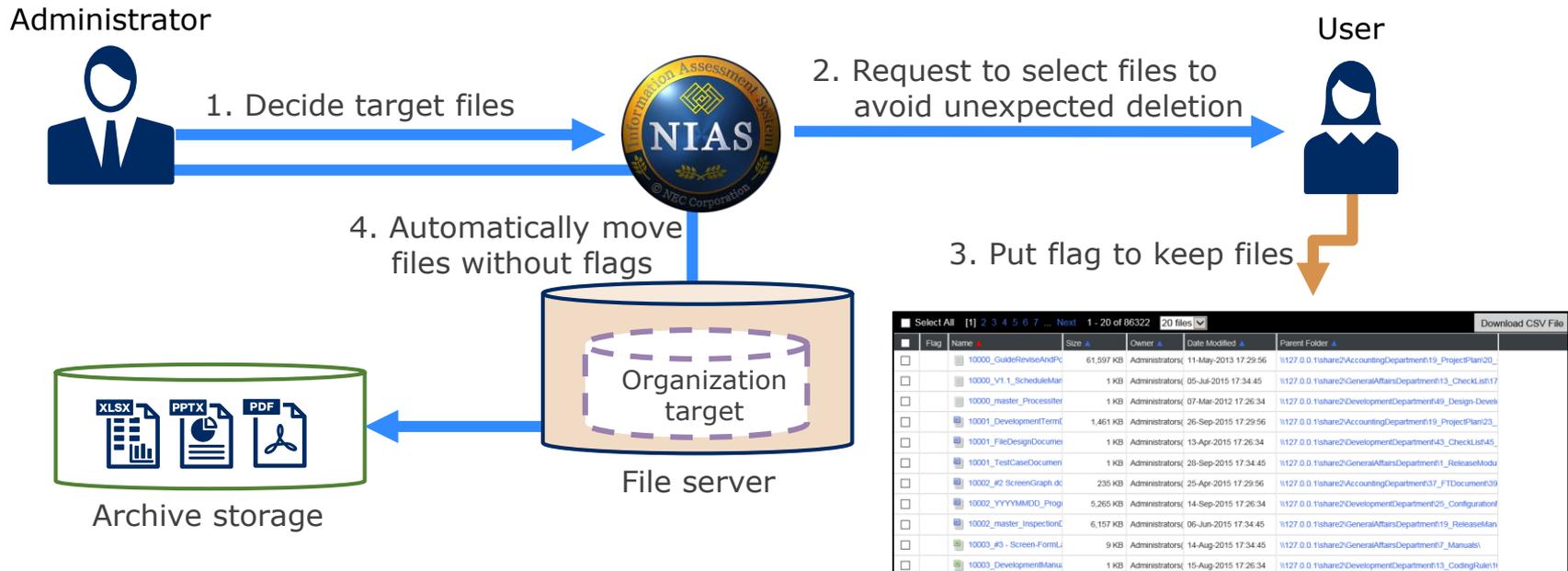
Scenario

- Request users to select files to be remained by putting flags. Simultaneously, notify that <u>files without necessary flag will be deleted</u>

- Archive the file from file server without shortcut. The file is treated as deleted one

- Move back files from archive based on request from users on demand as a special request

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Example of "Automatic Organization"

Administrator

1. Decide target files
2. Set schedule

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User

4. Use it via shortcut

File server

3. Move it to archive while putting shortcut

Archive storage

5. Updated files return to the original place at the next file organization

Scenario

- Files which are not referred beyond the days of preset period, are automatically moved to the archives with shortcut left in the original place
- After archiving, users can open / update file via shortcut
- Updated files via shortcut are automatically moved back into the original folder

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2. NIAS Solutions

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Visualization of Access Rights

Only single click to grasp the access right of specific folder

Inappropriate setting can be immediately modified from the view of NIAS

Active Directory group member can be checked from the view

Detailed access rights of every user can be checked with NIAS UI, enabling you to know "allow" and "deny" status.

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Access Right Modification

Detailed access rights of specific folder is shown in the single view. Access right can be modified with the view list while confirming if it was modified properly, leading to setting error prevention

Advanced access right setting (13 items)

Basic access right setting (6 items)

Operation can be managed with scheduling, and future expiration date can be also scheduled.

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Modification Based on Folder's Access Rights

NIAS visualizes the irregular access right settings of folders enabling comparison among each folder in the tree view

Red file / folder is existing under the blue one

Inappropriate settings are marked in red

Comparison of upper and lower folder

Inappropriate setting can be modified instantly

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Modification Based on User's Access Rights

Specific user/group's access right setting can be shown in tree view. The result is automatically output after investigating user's group and its access permission status

Access right Settings

Name Search
User / Group name: NIASDEMO\Harry

Cancel | Reset | Execute

Access right Settings

☐ Name Search
User / Group name [?]

☐ Search Access

Allow		Deny	
☐ 🔒 Full control		☐ 🔒 Full control	
☐ Modify		☐ Modify	
☐ Read & execute		☐ Read & execute	
☐ Read		☐ Read	
☐ Write		☐ Write	

☐ Not Inherited

Cancel | Reset | Execute

Search with more detailed conditions is enabled

☐ TokyoServer
 ⊞ 📁 AccountingDepartment
 ⊞ 📁 DevelopmentDepartment
 ⊞ 📁 GeneralAffairsDepartment
 ⊞ 📁 PersonnelDepartment
 ⊞ 📁 SalesDepartment
 ⊟ 📁 PersonalFolders
  ⊞ 📁 Elizabeth
  ⊞ 📁 Harold
  ⊞ 📁 Jane
  ⊞ 📁 Ruby
  ⊞ 📁 Thomas
  ⊞ 📁 Tom

Gray: Not accessible area

Blue: There is the area that is accessible under this folder

Black: Accessible area

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For being Compliant to Certain Policy

By visualizing the inappropriate access right setting of folders, operation with some compliance guideline can be achieved

Example of the guideline to modify operation;

① Folders which administrator cannot access to

② Folders which have access right of retired person or invalid user

③ Folders which have access right of specific user's account

④ Folders which anyone can access to (e.g. everyone, full control, etc.)
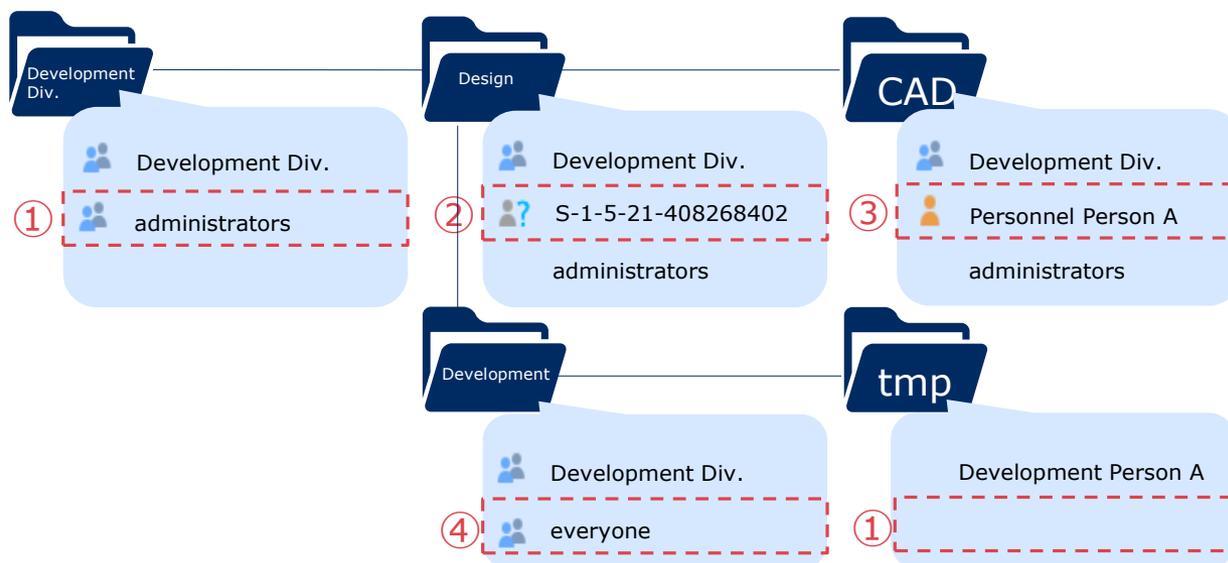
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Time-Saving Setting in Single View

Active Directory setting and folder creation (quota setting) is enabled. Application/approval workflow with access right setting is offered with this option function

Account management with Active Directory

Change group member of Active Directory in the single view

Scheduling execution timing

Active Directory

Storage

Folder creation (quota setting) with storage

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Active Directory Editing

Active Directory information can be easily modified by only importing / exporting the CSV files.

List of current AD information

Just single click to start export

Scheduled AD editing helps the large-scale organization/personnel change

Specifying modified CSV file and import to change AD information

Scheduling for setting change date of AD

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Workflow Setting

Efficient operation with workflow and integrated setting

- Efficient setting for personnel/organization change
- Project based setting operation
- Workflow for application and approval
- Applicant and approver can be selected according to its purpose

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3. Case Studies and Actual Benefits

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Takenaka Civil Engineering & Construction Co., Ltd.
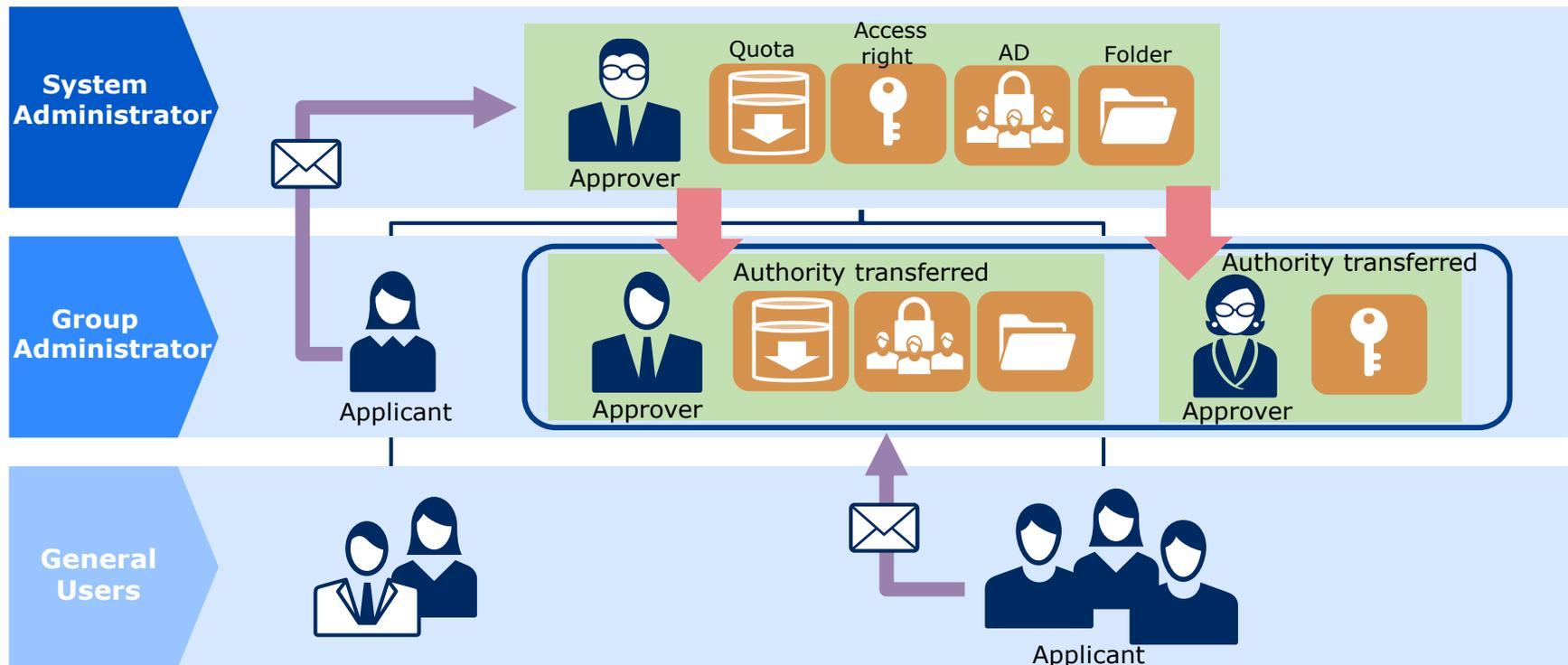
Access right setting once required several tens of hours, but after NIAS implementation the time was dramatically reduced with the benefits of reducing administrator's working time, setting mistake, and security risks.

Challenges

- In every opportunity of personnel change, each folder's access right was modified using the records of Excel files.

- Manual operation has limitation of accuracy, with the possibilities and risks of setting mistakes.
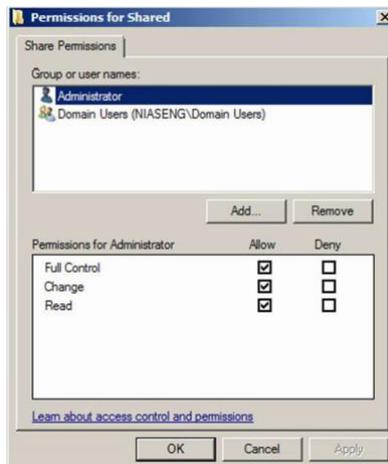
Benefits

- ✓ Folder tree view helps grasp setting status and investigate irregular access right, resulting in easy modification of any issue.

- ✓ Confirmation with GUI largely reduces the risks of setting mistake.

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gloops, Inc.
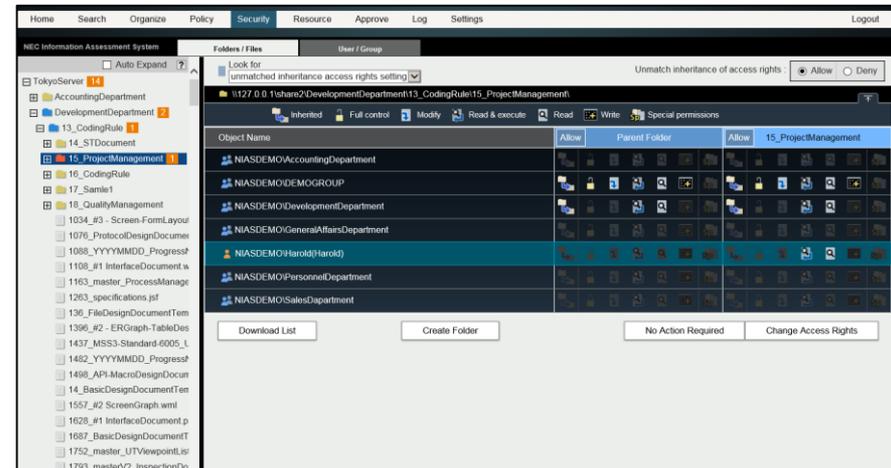
NIAS helped visualize and modify all access right inconsistencies caused by rapid business growth and frequent organizational changes

Challenges

- Organizational changes to cope with a rapidly growing workforce following business expansion led to frequent changes in access rights and its inconsistencies.
- The large amount of files made it physically impossible to manually check the actual situation and change access rights.
- The amount of data on file servers increased suddenly, as did storage costs.

Why NIAS?

- Visualization and modification of access rights can be done in a single view
- Group member of Active Directory can be edited with NIAS easy-to-understand view
- Quick response in handling with more than 100TB data capacity
- Rich experiences of implementation

Benefit

- ✓ As much as 1.2 million inconsistencies were modified in 2, 3 days.
- ✓ Appropriate status greatly reduces the risks of information leakage.
- ✓ By managing duplicated or large files, large amount of capacity reduction / free space creation are enabled.
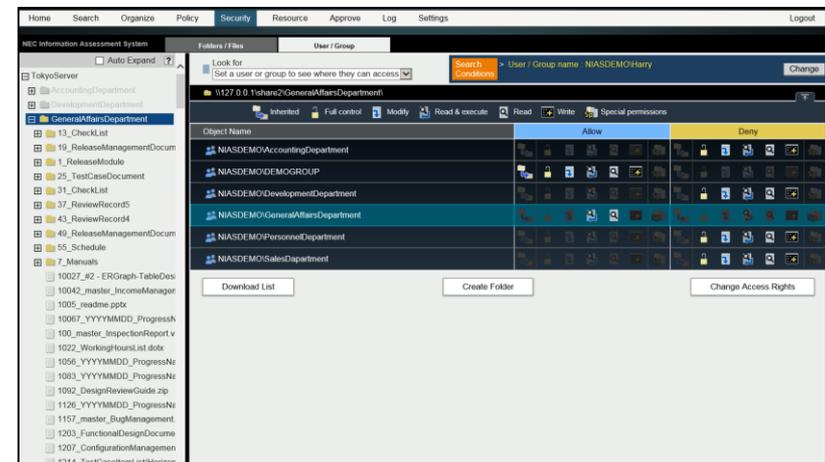
https://www.nec.com/en/global/prod/nias/case_study/gloops/

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Benefit 1: Capacity and System Cost Reduction

Comparison of differences in total disk usage, with or without NIAS. This simulation indicates 40% cost reduction with NIAS operation

<Capacity reduction simulation> * 5-year simulation of 3.5TB file server's capacity increase

File server's capacity without NIAS

File server's capacity with NIAS

31 TB

18 TB

(The GB)

(A year.).
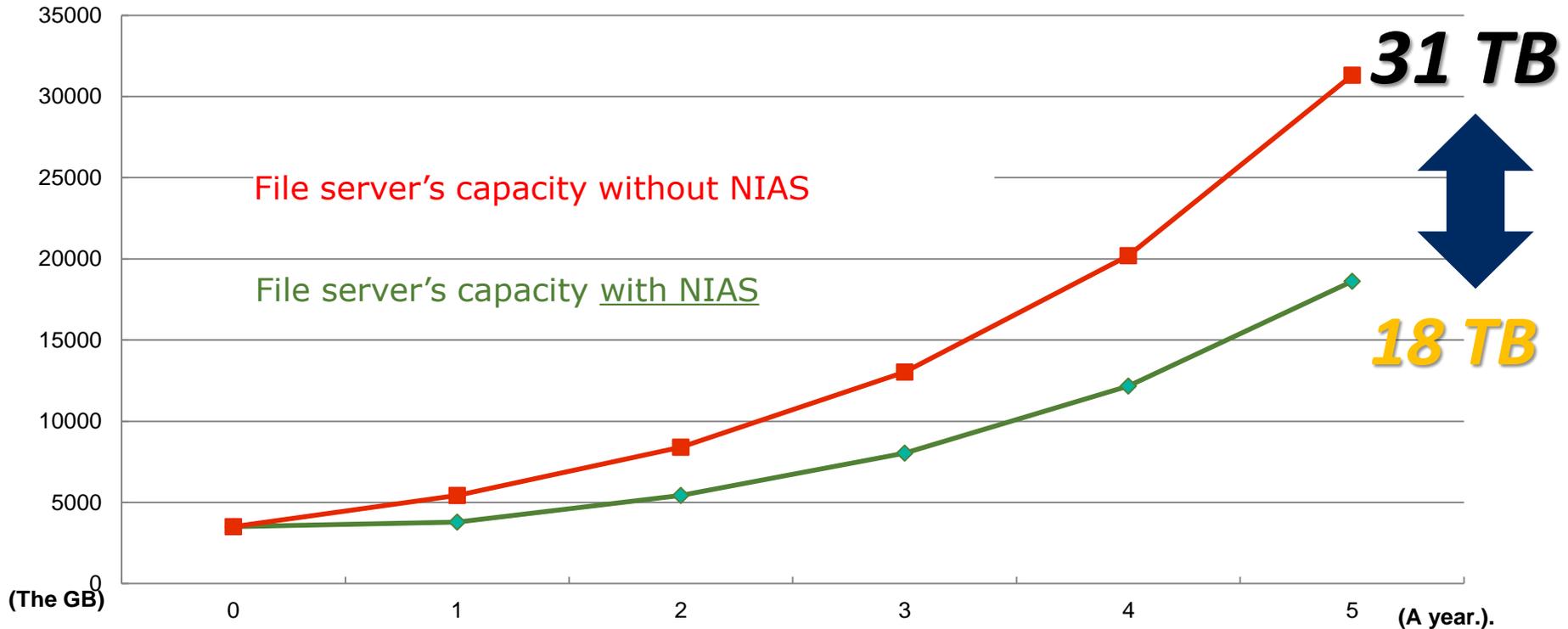
	1st year	2nd year	3rd year	4th year	5th year	6th year
Disk capacity without NIAS (GB)	3,500	5,425	8,409	13,034	20,202	31,313
Disk capacity with NIAS (GB)	3,500	3,798	5,425	8,040	12,167	18,622

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Reducing file search time by 5 minutes contributes to cost reduction by about 600 USD / per one person in one year

<NIAS file search window>

File search function of NIAS enables to find out required file instantly.

<Cost simulation of file search>

* Per 1 person

2.5 $
1 day

50 $
1 month

600 $
1 month

In case of 100 of employees...

60,000 $

1 year

*1 day: 5 minutes reduction from 30 USD, payment per hour
*1 month: 20 working days x 2.5 USD
*1 Year: 12 months x 50 USD

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4. System Requirements and Licensing Scheme

System Configuration / Requirement

NIAS Management Server

- Supported up to 100TB for 1 management server
- Be able to set up 1 to 10 management servers

OS		Windows Server 2016 Windows Server 2012 / 2012 R2 Windows Storage Server 2016 Windows Storage Server 2012 / 2012R2
CPU		Dual Core or higher (Quad Core is recommended)
Memory		4GB or higher (*1)
Disk		about 15 GB required for managing 1TB file size
Virtualization		VMware, Hyper-V

(*1) **Please estimate the required memory depended on the number of file.**

✓	- 2M files (approx. 1TB)	:4 GB
✓ 2M files (approx. 1TB)	- 10M files (approx. 5TB)	:8 GB
✓ 10M files (approx. 5TB)	- 20M files(approx. 10TB)	:12 GB
✓ 20M files(approx. 10TB)	- 40M files (approx. 20TB)	:18 GB
✓ 40M files (approx. 20TB)	- 60M files (approx. 30TB)	:24 GB
✓ 60M files (approx. 30TB)	- 80M files (approx. 40TB)	:28 GB
✓ 80M files (approx. 40TB)	- 100M files (approx. 50TB)	:32 GB
✓ 100M files (approx. 50TB)	- 200M files (approx. 100TB)	:64 GB

Client

Browser	Internet Explorer 9/10/11

File Server

File Server	-CIFS sharing (EMC,NetApp, etc) -NTFS (Windows server)

Active Directory

Multi domain supported

Others	Active Directory integration Mail integration (alarm notice)

Supported storages of quota management function with Resource Management Option	●Windows(2008 SP2 or later) , ●NEC Storage M Series NAS Gateway ●EMC VNX(VNX OE for FILE 8.1), EMC Isilon(OneFS 7.0 or later), EMC Unity(UnityOE 4.0, 4.1) ●NetApp(7-Mode 8.1,8.2 / Cluster-Mode 8.2,8.3,9.0,9.3) *Quota function only supports gtree folder of NetApp.

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Licensing Scheme

CODE	License	Remarks
Main License		
UL1379-601E-I	NIAS V4.1 Basic License (Base/1TB)	1 license required for 1 management server / 1TB can be managed with this license
UL1379-611E-I	NIAS V4.1 1TB Additional license	Management target capacity: 1TB Additional
UL1379-621E-I	NIAS V4.1 10TB Additional license	Management target capacity: 10TB Additional
UL1379-631E-I	NIAS V4.1 30TB Additional license	Management target capacity: 30TB Additional
UL1379-641E-I	NIAS V4.1 50TB Additional license	Management target capacity: 50TB Additional
UL1379-651E-I	NIAS V4.1 100TB Additional license	Management target capacity: 100TB Additional
Resource Management Option License		
UL1379-605E-I	NIAS V4.1 Resource Management Option License (Base/1TB)	1 license required for 1 management server / 1TB can be managed with this license
UL1379-615E-I	NIAS V4.1 Resource Management Option License (+1TB)	Management target capacity: 1TB Additional
UL1379-625E-I	NIAS V4.1 Resource Management Option License (+10TB)	Management target capacity: 10TB Additional
UL1379-635E-I	NIAS V4.1 Resource Management Option License (+30TB)	Management target capacity: 30TB Additional
UL1379-645E-I	NIAS V4.1 Resource Management Option License (+50TB)	Management target capacity: 50TB Additional
UL1379-655E-I	NIAS V4.1 Resource Management Option License (+100TB)	Management target capacity: 100TB Additional

To use resource management function, please purchase above license same quantity with NIAS standard license

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Configuration Examples

The case 10TB file server is managed with NIAS

File server
Disk capacity   : 30TB ⎤
Actual usage   :   7TB ⎦ ①
Number of files : 10 million files
Quota setting   : Required

NIAS server
CPU   : Quad Core
Memory : 12GB ②
Disk   : 105GB ③

CODE	License	Remarks
Main License		
UL1379-601E-I	NIAS V4.1 Basic License (Base/1TB)	1 license is required for 1 management server
UL1379-621E-I	NIAS V4.1 10TB Additional license	Additional 10TB can be managed
Resource Management Option License		
UL1379-605E-I	NIAS V4.1 Resource Management Option License (Base/1TB)	1 license is required for 1 management server
UL1379-625E-I	NIAS V4.1 Resource Management Option License (+10TB)	Additional 10TB can be managed

[Point]
1. License depends on total file capacity of management target (actual stored data capacity)
2. Required memory depends on number of files
3. Disk capacity depends on management target capacity

5. Additional Information and Tips

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Efficient Operation Using NIAS

PDCA cycle / Plan -> Organization -> Operation

File Server

NIAS

Automatic organization referring to the policy during inspection

File server utilization status check

System Administrator

Approval authority transferred

Instruction of capacity reduction

Instruction of access right modification

Group Administrator

Approval

Automatic organization

Access right change

General Users

New application

Organization request

Organization result

parts are covered by resource management option

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Remote File Server Management

Easy and high-speed management for remote file server

▌By implementing the Agent to the remote file server, remote server can be managed in high-speed and more easily.

Agent

Agent

Agent

WAN

WAN

Agent

WAN

NIAS management server

WAN

Agent

By installing Agent in each location, remote file server can be managed from single management server

*Agent is provided with base license of NIAS.
 Additional license is not required for this functionality.

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Access Right Setting to Multiple Folders with CSV Import

With NIAS resource management option, access right of multiple folders can be set

Start path needs to be set in advance
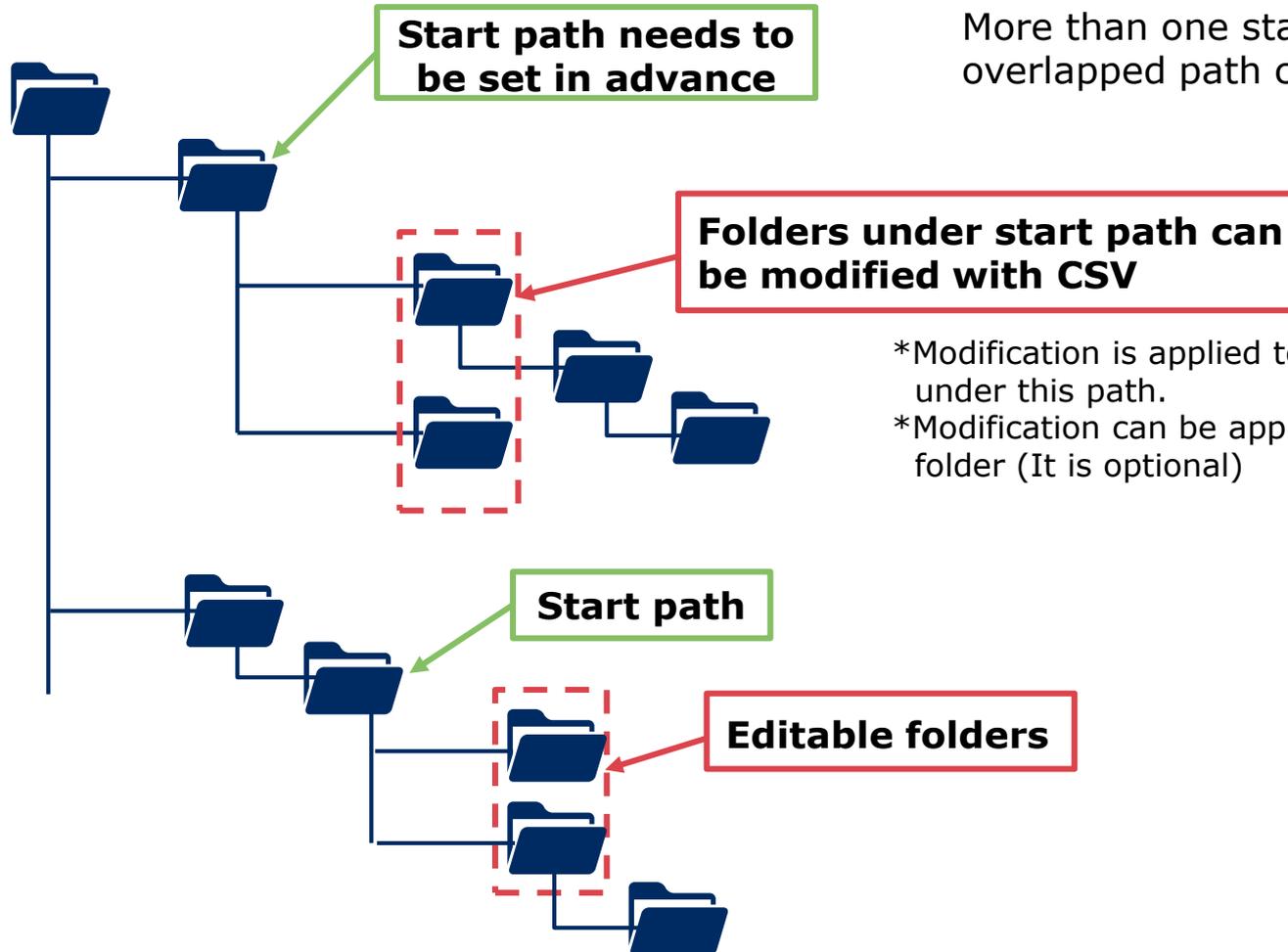
More than one start path can be set, but overlapped path can not be specified.

Folders under start path can be modified with CSV

*Modification is applied to inheritance folder/file under this path.
*Modification can be applied to Non-inherited folder (It is optional)

Start path

Editable folders

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Active Directory Multi-Domain Support

One NIAS server can manage domain of associated company

Domain tree
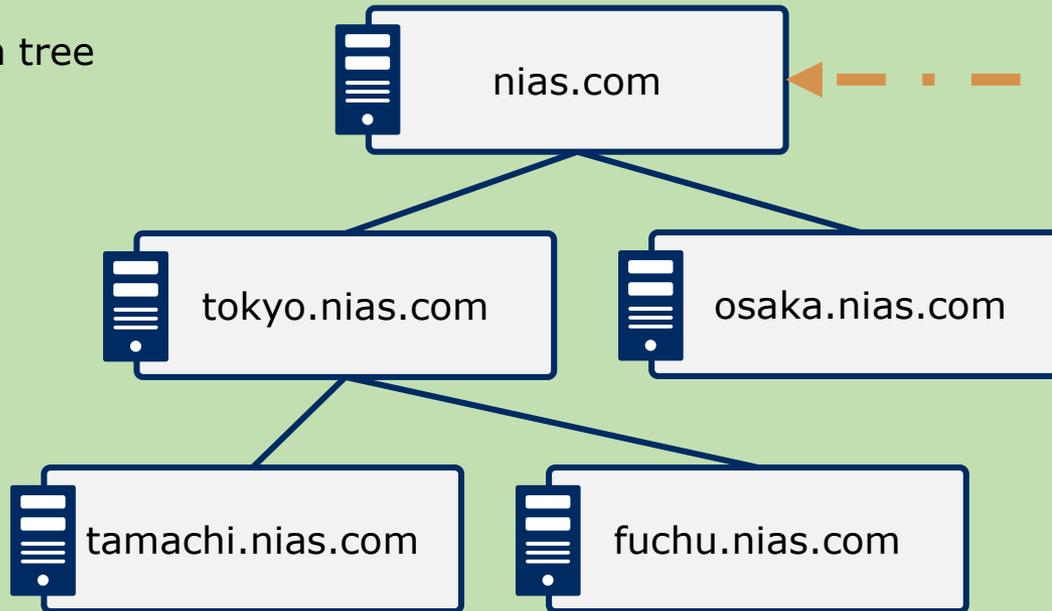
Operation cost can be reduced by managing the domain simultaneously.

[Detailed case]
 - There are several domains because of the integration of organizations or companies
 - IT systems are integrated but there are domains in each organization as organization structure (parent company - child company) is different among them

[Notices]
NIAS supports multi-domain environment having trust relationships within the single domain-tree. NIAS does not support multi-forest and multi-domain tree environment.

Benefits from both on-premises and cloud environment

On-premises
High response

✖

Cloud
Economical and large capacity

Cloud gateway product

NIAS

Data transfer through cloud gateway

File server

Object storage

[Easy]
Easy to automatically extract old data in file server, and to transfer it to gateway server.

[Secure]
Data is encrypted and transferred. With deduplication or compression, it will be more cost-effective

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Notices

▎During the inspection by NIAS management server, the final reference date (Access date) of the file is not changed/revised (final reference date of the folder is revised). However, virus scan software installed in NIAS server or file server does virus scan and final access date is possibly changed/revised. Also, by the operation of other software such as backup and full-text retrieval software may update the access date. Or OS of Windows Vista or later may have preset setting that final reference date is invalid (final reference date is treated as the same one as final update date). These above elements influence the analysis of NIAS on "Data Accessed," and NIAS may not show the correct/intended result.

▎NIAS utilizes the simple authentication (simple bind) as the user authentication method of Active Directory linkage. Other authentication methods are not supported by NIAS. (Authentication method except simple bind does not enable the linkage between NIAS and Active Directory)

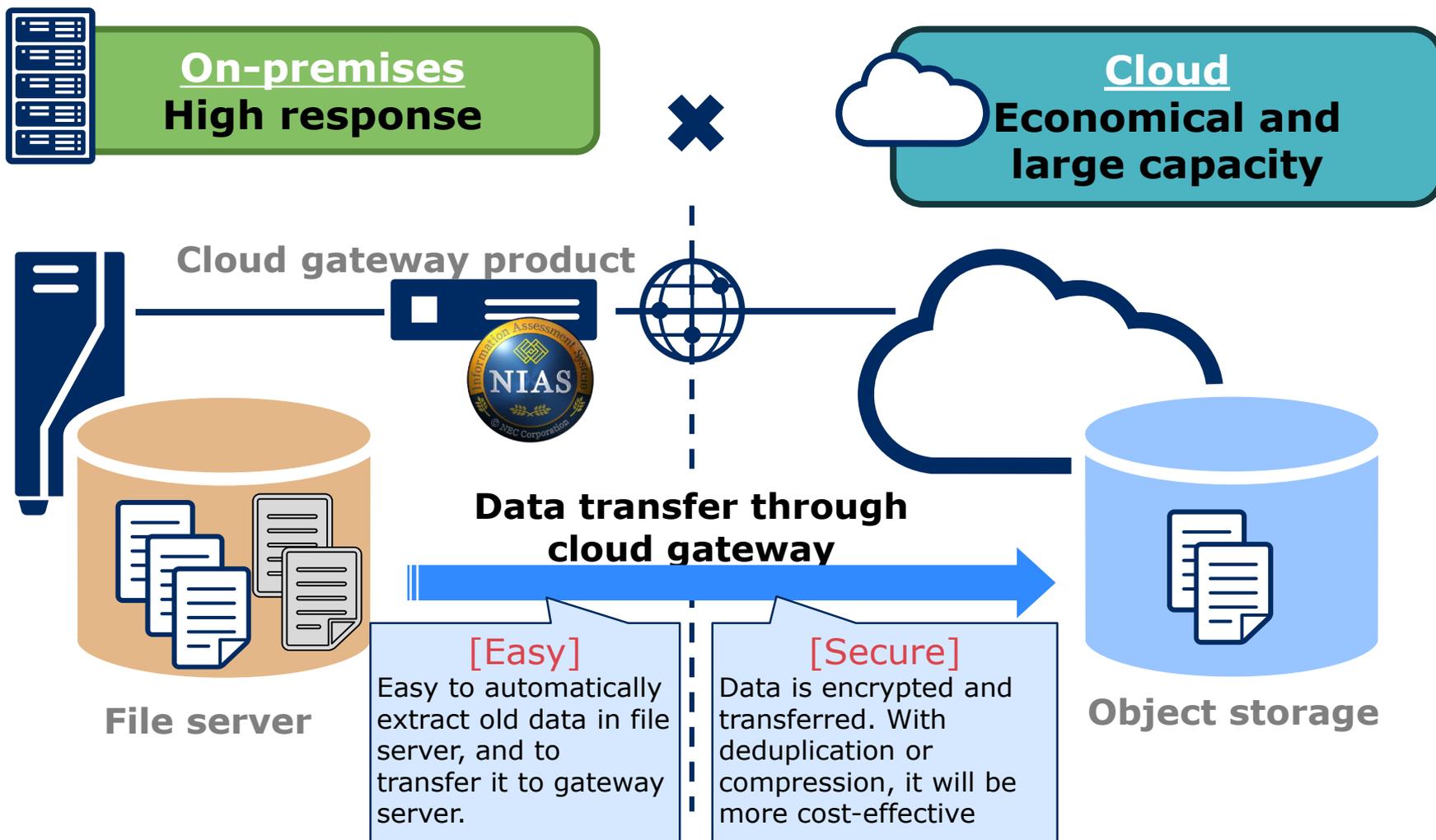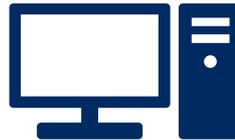▎NIAS supports multi-domain environment having trust relationships within the single domain-tree. NIAS does not support multi-forest and multi-domain tree management.

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Contact Us

Request a free trial license

Request an online Demo

Web:
https://www.nec.com/nias/

Demo site:
http://nias-trial.com/ias-manager/

E-mail:
sales@nias.jp.nec.com

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