

Configuration and research of network server active directory

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Abstract: This paper first introduces the new features and new features of the network server Windows Server 2012 R2, including hierarchical storage, parallel reconstruction, etc; Secondly, the performance of active directory is described, and it is pointed out that the core functions of the component are mainly two, namely, centralized management and directory service; Finally, the configuration of ad is discussed, and the steps of installing system and configuring components are described in detail. Combined with practical experience, the parts needing attention in the process of component configuration are summarized, such as DNS installation, role assignment, etc. I hope it can help or inspire people to improve the success rate of ad configuration.

Keywords: Active Directory; Windows Server 2012 R2; directory services

Preface: sever on Windows Server 2012 R2 is only suitable for 64 bit version. In order to ensure the smooth operation of the system, ad needs to be configured. This component has two functions, one is to provide convenience for the daily management of administrators, and the other is to provide a platform for users to obtain and share resources. The steps of configuring AD are complicated, so it is necessary to discuss this work.

1. Introduction to Windows Server 2012 R2

As a new operating system developed on the basis of windows 8.1, Windows Server 2012 R2 can not only provide a data center to meet the needs of large enterprises, but also provide users with a scientific and effective hybrid cloud solution. From the perspective of users, it can significantly improve the cost-effectiveness on the premise of reducing the difficulty of configuration.

New features

Status configuration: it is very difficult to maintain the configuration of multiple servers. In the process of maintaining servers, it is very easy to cause unsatisfactory maintenance effect due to human negligence. The newly added status configuration component of the system can establish the role and role adaptation function baseline through programming, so as to achieve the purpose of monitoring and upgrading the system and ensure that the system status can meet the requirements put forward by the administrator.

Storage location: the main function of this function is to fix the file at the corresponding level based on the file attributes to ensure that the files required by the user are saved in the fast memory.

Hierarchical storage: hierarchical storage refers to the function of dynamic storage of data blocks based on different storage categories. Although most high-end storage systems already have the function of automatic stacking, the existing operating system does not support this operation. Windows Server 2012 R2 creates a precedent for hierarchical storage. The system emphasizes that the active degree of data block is determined through the algorithm of heat map to ensure that the active data block is always at the fastest level.

Parallel rebuild: Rebuilding disks without raid usually takes a lot of time, and multiple physical disks need to be deployed at the same time. The new parallel reconstruction function of the system can solve the above problems, and the time required for scanning and repairing disks can be greatly compressed by the way of parallel reconstruction of drives. Under normal circumstances, the rebuild time of 3TB disks can be controlled within 1h.

Delete data: the original system already has the function of deleting data. The only disadvantage of this function is that it cannot delete virtual devices in running state. In view of the above situation, Windows Server 2012 R2 has made corresponding adjustments, making it possible to use this function to delete duplicate data. At the same time, the startup performance of virtual desktop has also been greatly improved.

2. Active directory component performance description

2.1 component overview

The function of ad is similar to that of Sam. it is composed of container, object, directory forest and organizational unit. It plays an important role in the implementation of network and the realization of business goals. As an indispensable component of windows, the emergence of ad provides a new direction for the management of network environment. This component can provide the following functions: first, the information related to network objects is stored hierarchically, and the information is synchronized to users, administrators and applications; Secondly, the network is organized according to its structure; Finally, the directory access standard protocol is used as the basis, together with other services for related operations, to facilitate program access.

2.2 advantages of components

The advantages of AD are mainly reflected in the following aspects;

DNS integration: the core function of DNS is to translate the computer name read by the user to ensure that the digital protocol obtained by translation meets the computer reading requirements.

Extensible: the administrator can choose to adjust the object category based on the existing architecture, or adjust the existing object category and add corresponding attributes. Among them, the architecture can provide two aspects: one is category definition, and the other is Category attribute.

Scalability: ad often contains several domains, and any domain has a controller corresponding to it. Users can change the contents of the directory to ensure that the network requirements are fully met. Under normal circumstances, the domain can be merged into a directory tree, and the directory tree can be merged into a directory forest. If the network structure contains only one domain, the domain can play the role of directory tree and directory forest.

Security: the system discussed in this paper needs to rely on ad to integrate operations such as verifying user identity and managing user access. It can be seen that the security shown by this component usually has a direct impact on the overall security of the system. This component adds a centralized verification function, which makes it possible to control the operation of access objects.

Interactivity: ad often runs on the basis of standard access protocol, which also ensures that it can interact with other directories that adapt to the protocol.

Flexibility: administrators and users can quickly and accurately find network objects by simply clicking the icon of the network neighborhood and entering the object properties.

Installation system, installation conditions the system needs to complete three basic tasks, namely, organizing existing resources, assisting computer operation, and managing device applications to ensure that applications and resources have corresponding user interfaces. In virtual environment, the system often needs to connect multiple virtual machines. Once the system fails, it will cause irreparable impact on the operation of virtual machines. The system has low requirements for computer configuration. Computers that meet the following requirements can be installed on the system: equipped with 64 bit processors; 512MB memory and 32GB hard disk capacity; Access to Gigabit Ethernet and Internet; Resolution of 1024*768 or above.

Pre preparation: before installing the system, the following work must be completed: first, disconnect the UPS equipment. If the target computer has been connected to the ups, disconnect the ups before installing the system to avoid unnecessary problems during detection. Second, backup the server. The backup content is the configuration parameters and other data required for the normal operation of the computer. For DHCP and other servers, the backup configuration information is extremely important. During the backup of information, the information attributes should be accurately distinguished and the backup set should be created according to the information attributes. Third, disable the protection software. The protection software will interfere with the installation process and slow down the installation. Fourth, access the driver. After obtaining the driver file, you should install the file to the media root directory. During the installation process, just click the option of loader to install the driver at the same time. Fifth, start the firewall by default.

System installation: when installing the system, users can choose to fully install or only install the server according to their own conditions. The difference between the two is that the complete installation includes tools and interface elements for managing graphics. If there are no special requirements, just install the server. This can not only avoid the system occupying a lot of disk space, but also reduce the number of attack surfaces. Generally speaking, the default option of the system is to install server only. Users can change the option as appropriate. For example, select full installation first, then use the server to which the graphics tool is adapted, and finally change to install server only. Another example is to completely install the system first, and then delete the server graphics to ensure that the server only includes the manager, control panel, server interface and MMC. After installation, users can choose to delete functions, roles and corresponding files they do not need. The purpose of this is to control the attack surface on the premise of saving disk space.

Configure components. After the system installation is completed, right-click the network connection to enter the adapter settings change page, click network link properties, and select IPv4 according to the system configuration. Select IP information in the configuration dialog box. After configuration, return to the main page of the system, go to the server manager and add functions / roles. After the wizard interface pops up, click ad domain services (i.e. ad DS), and then select the installation type. There are two installation types to choose. One is installation based on functions / roles, That is, configure the server by adding role services or functions. The second is remote service installation, that is, install role services according to VDI requirements. After confirming the server, click ad DS, add corresponding components and functions according to the prompts given in the prompt box, ensure that the system meets the ad configuration requirements, and install ad components in the background.

Ad DS is mainly responsible for storing the information of computers, users and related devices, and providing users with a platform for sharing resources on the premise of assisting administrators in the safe management of information. Of course, when starting technologies and applications such as group policy, ad DS is also used. If users want to log in to the network successfully on the premise that a server stops running for some reason, they need to increase the number of system configured domain controllers to two. The role of domain is mainly reflected in the following aspects: first, the organization object. The second is to accurately publish the information and resources related to domain objects. Thirdly, relying on the group policy object, the work of resource management is carried out orderly to provide protection for resource security. Finally, reduce the number of administrators, and provide convenience for users' daily operation by

delegating authorization. In addition, ad DS also points out that the DNS server should be installed on the corresponding network. During the configuration of ad DS, the corresponding replication service and namespace should be installed.

After the “installation completed” Notification pops up in the notification bar, you need to configure the corresponding domain information for AD. the configuration process is as follows: enter the operation page, change the original server to a domain server, add a new forest, enter the corresponding information in the root domain name column, and at the same time, enter the password for restoring the directory service to ensure that the password meets the requirements. The system in this link has a high probability to pop up error prompts because ad is highly dependent on DNS. Once it is found that the system does not set DNS, an error will be reported. After the configuration, the problem will be solved. After the above operations have come to an end, users can input the domain name according to their own needs, change the database storage location, and install ad on the premise of ensuring that the ad information given in the list is completely correct. After the system restarts, the manager will add two options, DNS and ad DS, respectively. After pressing the win key, the system will automatically jump to the start interface, indicating that the ad configuration has been successfully completed.

Conclusion: To sum up, after AD is configured, the stability of Windows Server 2012 R2 in the establishment of file servers, website applications and other aspects will be significantly improved, and at the same time, the system running speed will become more superior. At this stage, the system has covered many countries and has been widely used in various industries. Accurately grasping the key points of ad configuration will help users further explore the functions of the system and have guiding significance for the optimization and upgrading of the system in the future.

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This paper is a fund project: the project number of “Research on online teaching practice in Vocational Colleges (Research on Network Course Development)” of the research project on vocational education and adult education teaching reform in Jilin Province in 2020 (2020zcy316), The research results of the teaching reform research project of vocational education and adult education in Jilin Province in 2021, “practice and Research on the teaching reform of vocational practice courses based on the” five ones “project for computer majors in new engineering” project number (2021zcy303).