

A TECHNIQUE OF DISPATCHING ALGORITHMS FOR
WEB-SERVER CLUSTER SYSTEM

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Providing reliable and efficient services are primary goals in designing a web server cluster (WSC). Data replication techniques can be used to improve the reliability of the system. One of the techniques is Neighbor Replica Distribution Technique (NRDT). Domain Name Server (DNS) is one of the software used for managing request information from users. However, DNS is not suitable for the NRDT of managing data replication. This thesis proposes web cluster architecture based on NRDT to enhance DNS. This concept is called NRDT-DNS. The function of NRDT-DNS is to dispatch any user requests through a host name to IP-address mapping mechanism. This technique enables services from one node to be

replicated to other nodes that are neighbored to the original node. The design and implementation of the NRDT-DNS algorithm are based on six nodes. Three services were being set up for NRDT-DNS. There are Telnet, FTP and HTTP services. Four cases have been considered for the purpose of this thesis. In the first case, the primary node is up while in the second case, the primary node is down with the first neighbor is up. On the other hand, the third case is the situation when the primary node is down together with the first neighbor is down. Finally, the primary node is down and all its neighbors are down in the fourth case. It has been proven that from the implementation of the NRDT-DNS, all those four cases have successfully met the objectives of the thesis.

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Menyediakan perkhidmatan yang cekap dan boleh dipercayai adalah matlamat utama dalam pembinaan *web server cluster* (WSC). Teknik replika data boleh digunakan untuk meningkatkan kebolehpercayaan sesuatu sistem. Salah satu teknik mereplika data ialah *Neighbor Replica Distributed Technique* (NRDT). *Domain Name Server* (DNS) adalah antara perisian yang digunakan untuk mengurus permintaan maklumat daripada pengguna. Walaubagaimanapun DNS tidak sesuai digunakan untuk mengurus replika data bermodelkan NRDT. Tesis ini mencadangkan, senibina *web cluster* berasaskan NRDT digunakan dalam meningkatkan kebolehpercayaan DNS. Kaedah ini dipanggil NRDT-DNS. Fungsi NRDT-DNS ialah menghantar permintaan pengguna melalui pemetaan nama hos kepada alamat hos. Teknik ini membenarkan perkhidmatan dari satu nod di

replikasikan ke nod yang lain, yang berjiran dengannya. NRDT-DNS yang direkabentuk algorithmanya dan dilaksanakan adalah berasaskan kepada enam nod. Tiga perkhidmatan yang digunakan oleh NRDT-DNS iaitu perkhidmatan Telnet, perkhidmatan FTP and perkhidmatan HTTP. Semasa pelaksanaan NRDT-DNS, empat kes telah diberi perhatian. Kes yang pertama melibatkan nod utama dihidupkan manakala di dalam kes kedua nod utama dimatikan sementara nod jiran yang pertama dihidupkan. Bagi kes yang ketiga, nod utama dan nod jiran pertama dimatikan. Bagi kes yang terakhir pula, nod utama beserta kesemua nod jiran dimatikan. Pelaksanaan NRDT-DNS bagi kesemua kes yang telah dinyatakan membuktikan bahawa ianya telah memenuhi objektif-objektif tesis ini dengan jayanya.